Texas Pension Review Board

2019-2020 Biennial Report

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Biennial Report

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November 30, 2020

The Texas Pension Review Board (PRB) is pleased to present this Biennial Report on its activities and findings for 2019 through 2020. During this biennium, the PRB has worked diligently to execute its mission to provide information and recommendations to help ensure that Texas public retirement systems are properly managed and actuarially sound.

The PRB service population consists of the members, administrators, and trustees of 100 Texas public retirement systems; state and local government officials; and the public. The total membership of actuarially funded Texas public retirement systems is over 2.8 million active and retired members and the total net assets of the plans are approximately $282 billion.

The 86th Legislature passed major pension bills that mandated new reporting requirements for Texas pension systems aimed at increasing investment transparency and ensuring Texas systems have a plan in place leading them towards fully funding their promised benefits. Through its limited staff and resources, the PRB has made great efforts to accomplish its new and existing mandates.

During the 2019-2020 biennium, the agency focused on the following:

1. Implementing the new legislative requirements by adopting rules for investment expense reporting; issuing guidance for investment practices and performance evaluations and for developing a funding policy; providing templates and samples to further assist retirement systems with the new requirements; and reviewing evaluations from the systems to develop PRB's Investment Performance Report for the Legislature.
2. Developing legislative recommendations to help further the legislature's goal of enhancing transparency and responsible pension funding; providing technical support to systems, including augmenting the online Data Center to provide individual and comparative pension data for Texas systems; and making education available to systems' trustees and administrators.
3. Conducting and publishing two additional intensive actuarial reviews. The Board also invited systems from prior reviews to give updates on their progress towards improving funding. Overall, the review process encouraged systems experiencing funding shortfall to work with their governmental sponsors to develop a plan to guide them towards stability in the future.

The PRB is the sole ongoing oversight mechanism for Texas public retirement systems. To fulfill its mission requires the combined effort of the systems, their sponsoring governmental entities, and other members of the Texas public pension plan community and we appreciate their continued participation. The PRB remains focused to help ensure that retirement benefits are securely provided at the lowest cost to the taxpayers.

Sincerely,

Stephanie Leibe
Chair

Texas Pension Review Board

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Texas Pension Review Board

2019-2020 Biennial Report

EXECUTIVE SUMMARY

Over the past two years, the Texas Pension Review Board (the "Board" or the "PRB") has prioritized implementing the 86th Legislature's newest mandates stemming from Senate Bills 322 and 2224. SB 322 involved investment reporting and review; it amended statute to enhance transparency of pension investment expenses, as well as added a new section of code to require an evaluation by an independent firm of a public retirement system's investment practices and performance. SB 2224 enacted the recommendations from the PRB's previous interim study, *Funding Policies for Fixed-Rate Plans* by requiring all Texas public retirement systems to develop and adopt a funding policy that targets 100% funding.

To implement the new laws, the PRB published guidance, engaged in rulemaking, provided technical assistance, and made certain to involve all stakeholders in the process. In response to the new requirements, most public retirement systems that were required to submit investment practices and performance evaluations have done so, and all but a few systems have adopted funding policies. The PRB expects to begin receiving annual financial reports with expanded investment expense information by April of 2021.

During the interim, staff analyzed the submitted funding policies and investment practices and performance evaluations and presenting the findings to the board and its committees. The committees requested staff to evaluate whether these statutory requirements could be improved. They also asked staff to analyze the funding soundness restoration plan requirement, noting a disconnect between this requirement and that of the funding policy and the PRB's *Pension Funding Guidelines*. In line with Texas Government Code §801.203, which requires the PRB to include in the Biennial Report recommendations of any legislation relating to public retirement systems the board finds advisable, recommendations to the Legislature have been included in this report.

While the majority of Texas' public retirement systems remain well-funded, significant fiscal challenges face some Texas pension plans. In 2018, the PRB began to perform intensive actuarial reviews of systems exhibiting serious funding challenges. In 2019, the PRB added two additional reviews to its previous seven, which highlighted risks that could threaten long-term funding stability and provided recommendations to put the systems on a path to solid financial footing. Those systems were invited, along with their associated governmental sponsors, to PRB meetings to discuss the issues raised in the intensive reviews. Additionally, the PRB followed up with the previous systems under intensive review, inviting the plans and associated governmental entities to update the board on any further progress.

The board chair of one system that underwent intensive review thanked the PRB for its support and guidance, noting that "[the plan] has made more progress in the last two years than the previous twenty." He further stated that "all interested parties are fully aware that [the plan is] way behind the curve and [he] truly believes [they] have the right people in the right places now." The PRB continues to provide technical assistance to those systems and others upon request and strives to facilitate movement towards full funding for all plans that may be struggling to find footing.

The PRB provides education to trustees and system administrators of Texas public retirement systems and tracks compliance through the Minimum Educational Training (MET) Program. Since the PRB's online courses were published in late 2016, more than 3,400 course completions have been recorded.

Additionally, the agency's TLFFRA specialist has been working closely with TLFFRA systems to provide technical assistance and training. In March of 2020, the PRB published its biennial *Texas Local Firefighters Retirement Act (TLFFRA) Pension Report*, which was highly rated among educational publications by constituents in the PRB's May 2019 Educational Services Survey.

During the 86th Legislative Session, the agency conducted a pensions training session for legislative staff, published the *Guide to Public Retirement Systems in Texas* as a resource for policymakers, tracked and provided actuarial impact statements for bills pertaining to Texas public retirement systems, and testified at House Pensions, Investments and Financial Services and Senate State Affairs Committee hearings.

During the interim, the Board provided testimony to the House Pensions, Investments and Financial Services Committee and continues to brief legislators upon request. To date, four pension-related bills have been filed since pre-filing began on November 9, 2020. As part of its mandate, the PRB will continue to work with the Legislature to provide thorough and accurate actuarial analysis of bills.

In February 2020, S&P Global noted that they "believe that [the PRB] supports transparency and adds a layer of protection for beneficiaries and taxpayers throughout the state." The PRB will continue to assist Texas public retirement systems, their beneficiaries, and the public and is confident that all stakeholders are benefitting from the transparency and funding initiatives enacted by the 86th Legislature.

PENSION REVIEW BOARD OVERVIEW

MISSION STATEMENT

The Pension Review Board (PRB) is mandated to oversee all Texas public retirement systems, both state and local, in regard to their actuarial soundness and compliance with state law. The mission of the PRB is to provide the State of Texas with the necessary information and recommendations to help ensure that its public retirement systems, whose combined assets total in the multi-billions, are actuarially sound; benefits are equitable; the systems are properly managed; tax expenditures for employee benefits are kept to a minimum while still providing for those employees; and to expand the knowledge and education of administrators, trustees, and members of Texas public retirement systems.

STATUTORY FUNCTIONS

The PRB was established in 1979 as an oversight agency for Texas public retirement systems. The general duties of the PRB outlined in Chapter 801 of the Government Code are to (1) conduct a continuing review of all public retirement systems, including compiling and comparing information about benefits, creditable service, financing and administration of systems; (2) conduct intensive studies of potential or existing problems that threaten the actuarial soundness of public retirement systems; (3) administer the Minimum Educational Training Program (MET) for public pension trustees and administrators, providing qualified training content on fundamental public pension topics; (4) provide information and technical assistance on pension planning to public retirement systems on request; (5) recommend policies, practices, and legislation to public retirement systems and appropriate governmental entities; and (6) prepare actuarial impact studies on proposed legislation. The Board can furnish other appropriate services such as actuarial studies or other requirements of systems and can establish appropriate fees for these activities and services.

BOARD COMPOSITION

The Board consists of seven members appointed by the Governor with the advice and consent of the Senate. The PRB is composed of members with the following qualifications or experience: three persons who have experience in the fields of securities investment, pension administration, or pension law and are not members or retirees of a public retirement system; one active public retirement system member; one retired public retirement system member; one person who has experience in the field of governmental finance; and one actuary.

Since the publication of the 2017-2018 Biennial Report, the following changes have occurred in the Board’s composition. On April 10, 2019, Governor Greg Abbott appointed Ms. Stephanie Leibe as Board Chair. On September 4, 2019, Governor Abbott appointed Ms. Shari Shivers to the Board to fill the place of Judge Andrew Cable, whose term had expired. On November 25, 2019, Governor Abbott appointed Mr. Christopher Zook, replacing Mr. Joshua McGee who resigned in July of 2019. Ms. Shivers resigned on November 3, 2020.

ORGANIZATIONAL STRUCTURE

The PRB is authorized for 13 total full-time equivalents (FTEs) but currently has 10 employees including the executive director and three vacant positions. To comply with the 5% reduction of the agency's budget for the current biennium, the PRB will leave the 13th FTE position vacant. Through its small staff and limited resources, the PRB provides highly technical analysis of public pensions that corresponds to demographic shifts and changes in the complexity of pension fund investments. As issues related to public pensions grow more complex, the PRB staff strives to provide even higher quality service to the public, the Legislature, the Governor, public retirement systems, and their administrators, trustees, and members. The executive director, selected by the Board, manages the day-to-day operations of the agency and provides oversight for all programs and activities. The agency is organized based on two main work areas: operational and analytical.

Operational

Administrative and Accounting

The administrative and accounting team handles all matters related to accounting and human resources including management of appropriated funds, purchasing and property control, personnel files, and coordinating board member travel. The division is also responsible for document management, records retention, stakeholder outreach, continuity of operations and risk management plans, and providing all necessary administrative support for the agency.

Analytical

Actuarial and Financial Services

The actuarial and financial services team provides actuarial and financial expertise to the agency, public retirement systems, the Legislature, and the public. The team is responsible for evaluating compliance and identifying and addressing potential threats to actuarial soundness. It provides in-depth reviews of system actuarial reports including valuations, overseeing intensive actuarial review of public retirement systems, and providing actuarial reviews during legislative sessions. This team also assists systems to facilitate their compliance with state reporting requirements and maintains the Texas Public Pension Data Center.

Policy and Communications

The policy and communications team provides technical assistance and support to public retirement systems, the Legislature, and the public. The team maintains agency publications including the weekly news clips, website, and Board meeting materials. During the legislative session, the team tracks pension-related bills and provides summaries of the bills for stakeholders and responds to requests from the Legislature to assist with policy research or address constituent concerns. The team also organizes Board and Committee meetings, reviews system policies, and studies relevant public pension topics.

Training and Accreditation

This team is responsible for administering the agency's Minimum Educational Training (MET) Program for trustees and system administrators. The team maintains the PRB's own training, including online offerings, accredits other training providers, and tracks reporting compliance with the MET requirements.

MAJOR ACCOMPLISHMENTS & ACTIVITIES

TRANSPARENCY INITIATIVES AND RESULTING MANDATES

Funding Policy

Legislation resulting from previous interim study

In the 2017-2018 biennium, the Board directed staff to research and identify the role that funding policies could play in helping plans meet their funding objectives. The Board adopted the interim study, *Funding Policies for Fixed-Rate Plans*, at its January 2019 meeting, including the recommendation that all Texas public retirement systems, including fixed-rate plans, adopt and maintain a written funding policy that fully funds the plan over as brief a period as possible, as recommended in the PRB *Pension Funding Guidelines*. The study further recommended that the funding policy utilize a finite, or closed, amortization period, and be developed in conjunction with the plan sponsor whenever possible.

As a direct result of the study and the Board's recommendation, the Legislature enacted SB 2224 (86R), creating Texas Government Code Section 802.2011. The statute requires the governing body of a Texas public retirement system to adopt a written funding policy by January 1, 2020 detailing the governing body's plan for achieving full funding. The policy and any subsequent changes must be submitted to the PRB and sponsor no later than the 31st day after the date the policy or change is adopted.

PRB Guidance

The PRB assisted systems with the development of their funding policies by providing feedback on preliminary drafts upon request, developing a sample funding policy, and publishing informal guidance for developing a funding policy. The PRB adopted the *Guidance for Developing a Funding Policy* (See Appendix A) on October 17, 2019, with stakeholder input, to assist systems with understanding and creating a funding policy. The guidance clarifies that the funding policy should be used as a retirement system's roadmap to fully fund its long-term obligations and encourages its development with input from the system's sponsoring governmental entity whenever possible. The guidance includes a checklist of potential questions for trustees to consider while developing their funding policy. Additionally, the guidance outlines that a funding policy should include the following components:

I. Clear and concrete funding objectives;
II. Actuarial methods;
III. A roadmap to achieve funding objectives; and
IV. Actions that will be taken to address actual experience that diverges from assumptions.

By stakeholder request, the PRB also provided systems with a sample funding policy specifically with the varied contribution and governance structures of Texas public retirement systems in mind. As found in the interim study, most Texas systems have a fixed-rate contribution structure and may also have certain components of plan design and governance codified in statute. Some plans relayed to the PRB that the fixed-rate contribution structure paired with the plan design may make it more difficult to develop an effective funding policy due to the limits on the governing bodies' discretionary authority over plan changes. Rather than provide a one-size-fits-all approach, the sample funding policy provided sample elements based on best practices that could be customized to create a unique policy to meet each system's needs. The PRB received positive feedback from multiple systems regarding the sample funding policy. (See Appendix B)

Summary of funding policies received

To date, the PRB has received funding policies for 96 of 100 systems.[1] To allow systems and stakeholders to easily compare the funding policies, which were wide-ranging in format, staff created a standardized table that condenses the funding policies into core components, including contribution type, contribution benchmark, corrective actions such as risk sharing, and contribution and benefit change parameters. (See Appendix C) The tables were divided by plans contributing on an actuarially determined contribution (ADC) rate, a modified ADC rate, or fixed-rate contribution basis (non-ADC).[2] In addition to the funding policy table mentioned previously, staff created a summary document which depicts trends within the policies (Appendix D).

Through its analysis of funding policies received, the PRB observed that most systems used elements of the PRB's sample funding policy. Most notably, of the 55 funding policies received from non-ADC systems:

- 50 used some form of ADC benchmarking:
    - 94% with a starting or ultimate ADC benchmark at or below 30 years, in line with PRB *Pension Funding Guidelines*; and
    - 80% with an ADC benchmark using a closed or layered-closed period.
- 12 included risk sharing elements in their funding policy; and
- 15 utilized parameters for contribution and/or benefit changes within their funding policies.

Most funding policies from non-ADC plans compared the ADC benchmark to the plan's actual contribution or funding period to trigger action such as notifying the plan sponsor and/or member association to consider or recommend contribution and/or benefit changes.

The PRB discussed the elements of the adopted funding policies over several meetings in 2020. Staff first presented a summary of the received funding policies to the Actuarial Committee on May 7th. The Committee raised concern regarding seven funding policies that specified that their trigger action was to notify the sponsor and/or member association and request a meeting to develop a 20-year plan to establish fixed contributions to achieve 100% funding over a 30-yr closed period. The Committee noted this approach would effectively take 50 years or more to achieve full funding.

The Board expressed serious concern that rolling amortization period benchmarks, included in 10 of the 96 plans, might not meet statutory requirements, since an amortization period that resets every year would prevent a system from ever achieving 100% full funding. Industry standard-setting bodies, such as the Actuarial Standards Board, discourage the use of rolling amortization periods. Actuarial Standard of Practice No. 4 will be revised in 2021, which will likely indicate that the use of a rolling amortization period is not reasonable.

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[1] The PRB has not yet received funding policies from Colorado River Municipal Water District Defined Benefit Retirement Plan, Midland Firemen's Relief and Retirement Fund, Northeast Medical Center Hospital Retirement Plan, and University Park Firemen's Relief and Retirement Fund.

[2] ADC is defined in the PRB's *Funding Policies for Fixed-Rate Plans* as the cost of benefits earned by workers in the current year (the normal cost) plus an amortization payment calculated over a closed period on any unfunded liability.

Due to the concern, the Board requested staff to reach out to the plans that utilized a rolling ADC benchmark in their funding policies. Several systems indicated to staff that their plans were working on updating their rolling ADC benchmark to a closed period; however, other systems decided to keep the rolling ADC benchmark in the funding policy, as the plan actuary noted that if all assumptions were met, the plans could achieve full funding with a rolling benchmark. The Board also invited plans with a rolling ADC benchmark to attend its September 2020 Actuarial Committee meeting for further discussion.

In the interim study and within its intensive actuarial reviews, the PRB has encouraged plans to work closely with their sponsors when developing their funding policies; however, current funding policy statute does not require this. The Actuarial Committee cited a benefit of the funding policies was the increased potential for communication and collaboration between sponsors and plans, especially as a means for resolving funding issues should they arise. However, the Committee also raised concern that only four of the funding policies received from fixed-rate plans clearly indicated the sponsor had played a role in the process.

At its May 2020 Actuarial Committee meeting, a committee member mentioned that he believed a funding policy to be a necessity for every plan and that the submitted policies showed great progress by the systems. He noted that many systems were restricted in their ability to make unilateral plan design changes and therefore felt plan sponsors should be involved with the development and approval of the funding policy. Furthermore, he added that the PRB should recommend increased sponsor involvement to the Legislature. The Board requested that staff research potential improvements to the funding policy statute, including recommending to the Legislature that the process include plan sponsors.

Review of Funding Policy and Funding Soundness Restoration Plan (FSRP) statutory requirements

In May of 2020, PRB staff provided the Actuarial Committee with a timeline of legislation and PRB guidelines relating to retirement system funding over the last five years. Staff pointed out a disparity between the various elements of the funding policy, FSRP legislation, and the PRB's *Pension Funding Guidelines*, which were updated in 2017 to lower the maximum amortization period from 40 years to 30 years. Staff pointed out that while the FSRP mandate required plans to work with their associated sponsors to formulate a plan towards improved funding, the funding policy requirement, which should be the foundation of the system's funding decisions, did not require the sponsor to be involved in the development process.

The Committee directed staff to bring to the board areas for potential improvement to the funding policy and FSRP laws as they related to procedure, clarity, and implementation. At the June 2020 board meeting, staff provided a comprehensive list of 10 issues concerning funding policy and funding soundness restoration plan requirements. Please refer to Appendix E1 for the list of issues and background information that was presented for Board update and discussion.

Through two subsequent meetings in August and September, staff worked with the Actuarial Committee to ultimately construct recommendations to improve the two statutes. Staff researched similar statutory requirements in other states, analyzed previously submitted FSRPs, and worked with retirement systems and other stakeholders to incorporate feedback on possible proposed recommendations. The PRB provided comment periods on the draft recommendations prior to meetings so that systems could take the time to consider the proposed changes.

The final Committee recommendations were presented to the Board and adopted for the Legislature to consider, which can be found in Appendix E2. The recommendations concern four major areas:

Funding Policy Statute

1. Add the sponsor to the funding policy requirement.

Funding Soundness Restoration Plan (FSRP) Policy Statute

2. Increase sponsor accountability and tie funding policy and FSRP together.
3. Update the threshold, target and trigger.
4. Update timelines and consequences if original FSRP is not working.

Investment Practices and Performance Evaluations

Guidance for Systems

The Texas Legislature enacted SB 322 during the 86th Legislative Session, which focused on public retirement system investment transparency. The bill added Texas Government Code Section 802.109, which requires systems with assets greater than $30 million to select an independent firm with substantial experience in evaluating institutional investment practices and performance to evaluate the appropriateness, adequacy, and effectiveness of the retirement system's investment practices and performance and to make recommendations for improving the retirement system's investment policies, procedures, and practices.

The PRB focused on providing information to the retirement systems quickly, since the first evaluations were required to be submitted one year after the legislation was enacted. The agency worked diligently with industry experts to publish informal guidance within months of the bill's passage, with a goal to assist plans with completing a comprehensive evaluation. The five elements in the informal guidance included identifying and reviewing existing policies and procedures, comparing existing policies and procedures to best practices, assessing if policies were being followed, identifying strengths and weaknesses of policies, and providing a description of the methodology. Staff also provided retirement systems with technical assistance and information to comply with the new requirement.

Investment Committee Meetings

In response to the legislation, the PRB created an Investments Committee to focus on its new mandates concerning investment evaluation and reporting. The Committee held three meetings in 2020 and had substantial discussion regarding investment practices and performance evaluations.

At the July 28, 2020 Investment Committee meeting, staff presented an overview of the investment practices and performance evaluations and the types of recommendations identified by the evaluations. Staff highlighted evaluations that made no recommendations for improvement and did not provide clear explanation as to why no recommendations were appropriate. The Committee directed staff to contact those systems regarding the concern, and many systems have provided updated evaluations to the PRB addressing the concern.

At its September 29, 2020 meeting, staff provided examples of summaries that would be drafted for each evaluation to provide the retirement systems, the Legislature, and the public with a brief snapshot of the key information included. The Investment Committee asked staff to identify and recommend potential legislative changes to be presented to the Board for possible adoption. Staff presented four potential legislative recommendations based on previous committee discussions and observations from the evaluations.

Investment Practices and Performance Evaluations

The first evaluations were to be completed by May 1, 2020 and were due to the PRB by June 1, 2020. Of the 100 public retirement systems in Texas, the PRB expected 56 evaluations covering 62 plans that met the $30 million threshold. Fifty-three of the 56 expected evaluations were received, and two additional evaluations were received from systems just under the $30 million threshold, bringing the total evaluations received to 55. The PRB worked with many systems experiencing Covid-19 delays.

Texas Government Code §802.109 required the evaluations to include five specific components of review. If there was an overarching theme across the evaluations, it was the importance of investment fee review and documentation. Fee-related issues were a focus in four of the five areas of evaluation. In response to a need identified by evaluators, the PRB plans to publish a Texas-specific investment fee benchmarking resource once the enhanced fee disclosures required by SB 322 are fully implemented. Key recommendations in each statutory area were as follows:

- Investment Policy Statement (IPS): Systems should review the IPS annually. Comprehensive investment fee review must be completed regularly, and investment fee policies should be documented in the IPS.
- Asset Allocation: Systems should take a holistic approach to the asset allocation process that considers both the assets and the liabilities that the trust is designed to support.
- Investment Fees: Systems should use industry and peer benchmarks when reviewing investment fees. Fee transparency, disclosing direct and indirect fees as well as reviewing net-of-fee performance is of utmost importance. Passive investments should also be considered to help reduce fees overall or offset higher fees from active and alternative investments.
- Governance: Systems should define roles and responsibilities more clearly, especially investment fee responsibilities, as they are crucial for proper oversight of any investment program.
- Investment Manager Selection and Monitoring: Systems should document investment manager hiring and firing criteria more clearly in the IPS, and net-of-fee metrics must be used to measure performance. The rationale for hiring and firing decisions should also be well documented.

To provide a comprehensive picture, the PRB examined the independence and efficacy of the evaluations ability to improve a trustee or stakeholders' understanding of a system. The law allows existing investment consultants to perform the evaluations if the firm does not directly or indirectly manage investments of the retirement system. The majority (39) were performed by the existing investment consultant while 14 were performed by an independent third party. Nearly all the third-party evaluations provided at least one recommendation, usually many more, and provided additional outside analysis of the investment consultants role in the investment program. Approximately one-third of the evaluations lacked both recommendations for improvement as well as an explanation justifying this conclusion. The PRB worked with these systems and many elected to submit updates to their evaluations.

Investment Performance Report and Legislative Recommendations

Texas Government Code Section 802.109(i) requires the PRB to submit an Investment Performance Report that both compiles and summarizes the information from the evaluations and include the report in the agency's Biennial Report to the Legislature. This report contains aggregate analysis of the evaluations, a summary of each individual evaluation and resources including a compilation of references from the evaluations to help systems access best practices and relevant benchmarking resources.

As previously noted, the PRB's Investment Committee directed staff to include in the report proposals for improvements to current statutory requirements regarding the evaluations. After its analysis of the first round of evaluations, the PRB identified opportunities where modifications to the statute may provide additional clarity to systems in future evaluations and enhance the transparency and objectivity of the evaluations for all stakeholders. Taking inspiration from some of the best evaluation reports, the PRB recommends the following statutory changes:

1. Amend statute to require evaluations to detail how the evaluator determined the need, or lack thereof, for any recommendations.
2. Amend statute to require a formal review-and-comment process prior to publication.
3. Review and consider the feasibility of whether an independent firm conducting the evaluation should be a different firm from the one that helped the system develop its existing investment policies, procedures and practices.
4. Amend statute to require evaluators to identify its qualifications and potential conflicts-of-interest; codifying existing PRB informal guidance.

At the November 12, 2020 meeting, the Board approved the *Investment Performance Report* draft and adopted all proposed legislative recommendations. The 2020 *Investment Performance Report* can be found in Appendix F.

Investment Expense Reporting

Along with adding the investment practices and performance evaluation requirement, SB 322 also amended Texas Government Code Section 802.103(a), which enhanced public retirement system investment expense reporting. The new statute requires public retirement systems to include in their annual financial report all direct and indirect commissions and fees paid by the retirement system for the sale, purchase, or management of the system's assets and to provide the names of the investment managers engaged by the retirement system.

Rulemaking

In July 2019, the PRB began the rulemaking process to clarify statute and to assist systems with reporting investment expense information. Throughout the process of developing the rules, the PRB sought input from systems, consultants, and investment professionals. Staff corresponded with representatives from many systems to discuss the elements of investment fee reporting and implementation of the requirement. Staff also researched best practices for reporting investment expenses and examined pre-existing investment expense disclosures from systems in Texas and other states. Input from the systems and other industry experts directly influenced the development of the rules.

On December 6, 2019, the proposed Chapter 609 rules were published in the *Texas Register* for public comment. The PRB received two comments from systems regarding the proposed rules and made clarifying changes to the language based on the comments. The revised rules were adopted by the PRB during its February 6, 2020 Board meeting and made effective March 15, 2020.

The new rules provide a comprehensive definition of investment expense; lay out an implementation schedule; provide instructions on how to report fees; and adopt by reference the guide explaining the five asset classes to be used to report those expenses.

Retirement System Assistance

The reporting deadline for annual financial reports to be sent to the PRB depends on the public retirement system's fiscal year end date, rather than a set date in statute. Because of this, the PRB rules implemented an initial deadline based on whether the system had greater than 180 days remaining in its fiscal year after the final adoption of the PRB rules. Staff developed the following table to help systems prepare for the initial investment fee disclosure due dates. As shown in the table, the PRB anticipates the first group of systems with investment expense disclosures required in their annual financial reports must submit their reports by April 2021. Some systems have already begun including this information, even though it is not yet required by law.

Initial Investment Expense Disclosure Timeline

Fiscal Year	System's Fiscal Year End Date	Annual Financial Report Due to the PRB
2020	September 30, 2020	April 29, 2021
2020	October 31, 2020	May 30, 2021
2020	December 31, 2020	July 30, 2021
2021	February 28, 2021	September 27, 2021
2021	June 30, 2021	January 27, 2022
2021	July 31, 2021	February 27, 2022
2021	August 31, 2021	March 30, 2022

Statute requires systems to report their investment fees and commissions by asset class. Throughout the PRB's discussion with stakeholders, the topic of clear, defined asset classes frequently arose because different consultants and systems used varying asset classes in their reports. Without clarifying the required asset classes, it would be difficult to directly compare fees from one system to another and would decrease the overall utility of the investment fee information to both the Board and other stakeholders.

Taking into consideration the use of different asset classes across systems, the PRB adopted the *2020 Asset Class Categorization Guide* (*ACC Guide*) by reference. Chapter 609.111 of the PRB rules requires systems to report their fees and commissions by the following asset classes: cash, fixed income, public equity, real assets, and alternative/other. The *ACC Guide* provides a non-exhaustive list of examples of the types of investments that would fall under each class and clarifies that for investment products containing investments in more than one asset class, fees must be reported according to the corresponding asset class. The PRB approved the *ACC Guide* during its February 6, 2020 Board meeting, circulated the guide to systems, and made it available on the PRB website. (See Appendix G)

Systems sought additional guidance for reporting investment information in their annual financial reports, specifically requesting a template. Staff developed a template, which is an optional tool to assist plans; plans are not required to use this format to comply with the requirements of the Texas Government Code Section 802.103, nor are they asked to submit templates to the PRB as a separate report. Staff used certain systems' current reporting methods as inspiration for developing a template that could be easily utilized by the systems and their consultants. (See Appendix H)

The PRB continues to provide technical assistance and work with plans to comply with the requirement. staff maintains communication with systems by providing reminders of the requirement as their fiscal years close. As the new expense disclosures are submitted to the agency, staff will compile the information for the Board and stakeholders to allow for the comparison of investment fees across Texas public retirement systems.

Rule Review

In accordance with Texas Government Code §2001.039, the PRB reviewed its rules in 2019. In 2020, the Board adopted changes to several rules, including updates to references to statue and other non-substantive changes. The most significant change was made to MET rules, which included amending the §607.140, to streamline public retirement system reporting and allow systems to submit training reports annually rather than twice a year. In its review, the PRB also repealed a training rule that was already expired. The process further allowed the PRB to create a more efficient review plan, wherein the PRB will review all rules at once, rather than on staggered schedules.

REPORTING REQUIREMENTS

Funding Soundness Restoration Plan

To date, 16 systems have submitted funding soundness restoration plans (FSRPs). Of those, eight systems and their sponsors have successfully brought their amortization period below 40 years, three systems are working towards 40 years, and five systems are developing a revised plan since the initial FSRP was not met, including one of those five plans developing a second revised FSRP. One system that previously successfully completed an FSRP is now at risk of becoming subject to a new FSRP entirely.

Eight additional systems are currently required to submit FSRPs. Ten more systems will be subject to the FSRP requirement if their next actuarial valuation shows an amortization period of over 40 years. A list of systems' FSRP status can be found in Appendix I, and Appendix J contains a summary of the FSRPs received since the bill's passage.

The FSRP is outlined in Chapters 802.2015 and 802.2016 of the Texas Government Code. The statutes state that a public retirement system is required to notify its associated governmental entity if it receives an actuarial valuation indicating the system's actual contributions are insufficient to achieve an amortization period of 40 years or less. Should the system's amortization period exceed 40 years over several valuations, the public retirement system and its associated governmental entity are required to formulate an FSRP. The FSRP must be designed to achieve an amortization period of 40 years or less within 10 years. The FSRP requirement varies for certain systems, including exemption from the requirement. A flowchart outlining the requirements may be found in Appendix K.

Texas public retirement systems that are subject to the FSRP requirement have six months after the date on which the actuarial valuation that triggers the FSRP formulation requirement is adopted by the retirement system. The systems and their associated governmental entity must submit the FSRP and any changes to the plan to the PRB within 31 days after the FSRP is agreed to. Additionally, the PRB must be notified every two years of any updates to the progress made towards improved actuarial soundness. Texas Government Code Section 802.2015(d) requires plans to formulate a revised FSRP if the system conducts an actuarial valuation showing that the system's amortization period exceeds 40 years, and the previously formulated FSRP has not been adhered to.

Fort Worth Employees Retirement Fund

Fort Worth Employees Retirement Fund (FWERF) became subject to the FSRP requirement on June 15, 2016, with a submission deadline of January 15, 2017. In 2017, the Fort Worth City Manager established a task force to locally develop a comprehensive reform package for FWERF. FWERF and the City continued to provide regular updates to the PRB on the process of developing the FSRP leading up to the submission in March 2019. A major element of the reform, increasing employee contributions, depended on an affirmative vote of a majority of total membership. FWERF and the City noted that they worked to educate the members on the importance of plan funding, ultimately avoiding the need for legislative changes.

In March of 2019, FWERF submitted its FSRP with significant changes including but not limited to:

- City and member contribution increases;
- Elimination of COLA for all future service (for those currently eligible) for service on or after July 20, 2019;
- Risk-sharing of future contributions. If the contribution rate is less than the ADC for two consecutive years, the total contribution will be increased by up to 4% (no more than 2% of pay in one year), split 60% from the City and 40% from employees.

FSRP Updates Provided by Plans with Outstanding FSRPs or that Required Repeat-Revised FSRPs

At its June 2020 meeting, the Board raised concern about plans that were exceptionally late to submit their FSRPs and requested staff to invite those plans, as well as the only plan to require a second revised FSRP, to upcoming Actuarial Committee meetings. Of the four systems invited, three provide updates at the August and September 2020 Actuarial Committee meetings. The Committee received updates from city and fund representatives for the following systems: Irving Firemen's Relief and Retirement Fund, Midland Firemen's Relief and Retirement Fund, and Orange Firemen's Relief and Retirement Fund. The plans provided following updates:

- *Irving Firemen's Relief and Retirement Fund* was required to submit an FSRP in April of 2019. In September of 2020, the plan's Chair noted that the board made several changes including lowering its assumed rate of return, which was previously one of the highest in the state and lowering its payroll growth assumption. These assumption changes typically raise a plan's unfunded actuarial accrued liability and in turn, a larger required contribution. For fixed-rate plans, it could lead to a larger percentage of unpaid contribution. The plan's Chair assured the PRB that Irving Fire was focused on getting the funding it needed to close the contribution gap. He stated that the membership voted to decrease benefits such as the DROP interest rate, which was noted in the PRB's intensive review as a potential risk; change the final average salary calculation from highest three to highest five-year average; and create a second tier for new members. The Chair further stated that the decrease in member benefits caused the City to agree to increase its contributions to the plan. According to its most recent actuarial valuation, the plan changes and contribution increase narrowed the gap and lowered the plan's amortization period.
- *Midland Firemen's Relief and Retirement Fund* provided historical background regarding the plan's funding issues, noting overtime and payroll system issues. The fund emphasized that they are working diligently with the city to develop a long-term solution, contributing to the delay in its overdue revised FSRP (due August of 2019).
- *Orange Firemen's Relief and Retirement Fund* is the only plan that has been required to develop a second revised FSRP. The plan noted that it changed investment consultants to lower costs and, following its actuary's advice, lowered its payroll growth assumption. The plan and sponsor noted that they are trying to make sufficient changes to produce an effective FSRP.

Summary of Reporting requirements and calendar

In an effort to help Texas public retirement systems easily remain informed of statutory reporting requirements, the agency streamlined two previous resources into just one document. The *Summary of Reporting Requirements for Texas Public Retirement Systems* contains information on all reports that systems are required to submit to the PRB. The document also contains links to the statute outlining the requirements, helpful forms and informal guidance documents, and reporting dates for each report, including the recently added Funding Policy and Investment Practices and Performance Evaluation requirements (See Appendix L).

COVID-19 AND MARKET CRISIS RESPONSE

Transition to Remote Operations

The PRB followed the COVID-19 situation closely, and in preparation for a potential stay-at-home order, staff engaged in a work-from-home drill on March 11, 2020. On March 16, 2020, the PRB smoothly transitioned to a full remote work environment due to a robust disaster preparedness plan already in place that relied upon remote work technological capability. The PRB's service delivery and operations were not impacted as a result of the preparedness plan.

Despite working remotely, the PRB staff worked to consistently provide systems, the Legislature, and other stakeholders with a consistent level of support. Staff remained accessible to stakeholders via email, telephone, and videoconference. Board meetings were held via videoconference in accordance with the Governor's authorization of March 16, 2020 concerning the suspension of certain Texas Open Meetings Act (TOMA) requirements in response to the declaration of a state disaster as of March 13, 2020. Beginning with its May 7, 2020 committee meetings, the PRB provided an opportunity to the public to easily and safely attend PRB meetings via Zoom. The meetings were also streamed on YouTube to increase public accessibility for viewing live and recorded meetings.

Joint Committee Meeting – Market and Actuarial Impacts of COVID

In response to the market volatility and losses in March 2020, the PRB held a joint meeting of the Investment and Actuarial Committees on May 7 via Zoom to discuss potential impacts on Texas public pension systems due to the COVID-19 pandemic. The PRB closely monitored the impact of COVID-19 on capital markets including asset volatility, economic indicators and impacts from stimulus policy.

The PRB assessed potential severe impacts to both systems and sponsors and found that while certain markets such as the bond market and oil futures contracts were showing signs of severe stress, the swift support from both the federal government and Federal Reserve Bank effectively alleviated concerns allowing the market to stabilize. The PRB modeled estimated investment impacts on Texas pension systems using system asset allocation data and capital market returns during the crisis. The resulting model analysis presented at the meeting provided a range of estimated investment returns for all systems and predicted that most systems experienced an approximate 10% drawdown during Q1 2020, with a recovery beginning to take place thereafter. The Committee concluded that it was highly unlikely that the economy would recover at a fast rate and unlikely that Texas plans would be able to receive the returns they were used to receiving in the past going forward. (See Appendix M)

During the actuarial portion of the meeting, the PRB introduced new actuarial metrics to better identify plans most at risk in both the short and long-term from the sharp market decline. Staff identified the plans the plans most likely to have near-term liquidity issues using non-investment cash flow and liquidity ratio. The Committee discussed how being forced to sell assets at undesired low values would make it harder for systems to achieve their assumed rates of return. Staff also introduced several new comparative and predictive metrics to help stakeholders assess longer-term impacts. These new metrics offer stakeholders a simple way to estimate changes in contribution requirements and/or impacts on amortization periods due to potential changes in a plan's assets or liabilities, without the need to perform expensive, detailed projections. (See Appendix N)

Work with plans on delayed reports

In March 2020, the PRB began reaching out to systems to provide technical or other assistance due to potential delayed reporting or other issues caused by the pandemic. Plans informed the PRB that COVID-19 contributed to difficulty meeting reporting deadlines. The PRB kept in frequent contact with affected plans and provided updates to the Board.

Open Meetings Assistance to Systems

To assist systems with possible questions about TOMA suspensions, the PRB provided a concise summary of the suspended provisions and a link to further resources. Additionally, staff provided advice and assistance to systems who reached out for help with transitioning to new technology, such as Zoom, for their meetings. By providing virtual meeting-related technical assistance to systems, the PRB helped plans continue conducting necessary meetings.

PUBLIC RETIREMENT SYSTEM REVIEWS AND ANALYSIS

Public Retirement System Intensive Reviews

Following its mandate to conduct intensive studies of potential or existing problems that threaten the actuarial soundness of public retirement systems, the PRB conducted two intensive actuarial reviews during the 2019-2020 Biennium. The intensive reviews analyzed risks facing the Odessa Firemen's Relief & Retirement Fund (Appendix O) and the Paris Firefighters' Relief & Retirement Fund (Appendix P).

Among other risks, the reviews highlighted specific risks such as being underfunded to the point that the systems were essentially operating as a pay-as-you-go plan with a contribution structure that barely funded even half of the yearly benefit payments. Paris Firefighters' Relief and Retirement Fund was discovered to be at risk of completely running out of assets within the next 25 years. The process provided multiple opportunities for input from both the system and sponsor, including inviting initial input into the review, written responses from the system and sponsoring city for inclusion in the final published report as well as inviting both parties to attend the PRB's Actuarial Committee meeting to discuss the review's findings and answer questions. Appendix Q provides a comprehensive summary of the systems' progress after the review publication, including systems that were reviewed prior to 2019.

Key recommendations made through the 2019 intensive reviews included the following:

- Increase contributions or provide a cash infusion to prevent assets from depleting;
- Utilize stress testing to continually evaluate how the fund would perform under different economic conditions;
- Continuously evaluate the level of service being provided by third-party advisors;
- Conduct an in-depth asset-liability study of potential risks; and
- Regularly review actuarial assumptions against experience, making necessary changes.

Updates from previous Intensive Reviews

Galveston Employees' Retirement Plan for Police. In January of 2018, the PRB published its Intensive Actuarial Review of Galveston Employees' Retirement Plan for Police (the Plan). The review noted that the funded status had declined since 2000: the liabilities grew by 103% over that period and the assets declined by 14%. The Board adopted the review and its recommendations, including that the system and its sponsor work together to develop a funding policy based on an actuarially determined contribution.

In the year following the review, the Plan and City attended five PRB meetings to provide updates on any progress toward addressing the plan's funding shortfall. During the meetings, the parties expressed difficulty finding common ground. The PRB continually encouraged them to put perceived past mistakes aside and work together to shore up funding.

After months of negotiations, in June of 2019, House Bill 2763 was enacted, containing many elements of PRB intensive review recommendations, including a funding policy with a closed-layered 30-year amortization period beginning January 1, 2019. The legislation included statutory contribution increases and a shared risk provision, requiring any ADC increases to be split equally between members and the city for valuations after January 1, 2025. Additionally, the legislation:

- Increased the board size to 8 members, split equally between members and city appointees;
- Established qualifications for trustees, including that all elected or designated trustees have demonstrated financial, accounting, business, investment, budgeting, or actuarial expertise; a bachelor's degree from an accredited institution of higher education; or be vetted to verify they are capable of performing their duties as a trustee; and
- Established that trustees must undergo training specific to their roles as pension fund trustees.

Irving Firemen's Relief and Retirement Fund. In October of 2018, the PRB published an Intensive Actuarial Review of Irving Firemen's Relief and Retirement Fund (Irving Fire). The PRB brought special attention to the deferred retirement option plan (DROP), because the DROP program offered a guaranteed 6.25% annual rate of return, which was 2% less than the actuarial investment return assumption. It also allowed the interest to continue post-retirement, which meant effectively an unlimited period to accrue interest.

Following the review, Irving Fire attended three PRB meetings to provide updates towards its progress. In September of 2020, Irving Fire's Chair discussed steps the plan took to improve its financial status. He emphasized that educating plan members on the issues facing the fund was central to inciting change, including major changes concerning DROP interest rates and applicability; a benefit calculation change; and adding a new tier. These actions by the membership led the City to increase its contribution to the plan. According to its most recent actuarial valuation, the changes decrease Irving Fire's amortization period from infinite to 43.7 years. The PRB will work with the fund to verify the amortization period.

DATA/REPORTING

Texas Public Pension Data Center

Launched in January of 2019, the PRB's *Texas Public Pension Data Center* provides lawmakers, taxpayers, pension systems, and other stakeholders with a searchable, user-friendly database of Texas public retirement system information. Over the 2019-2020 biennium, the agency worked to improve the *Data Center*, which includes key actuarial and financial indicators of retirement system health over time, as well as demographic, benefit and governance information. Planned future improvements include enhanced data visualization and the addition of comparative benchmarks, such as statewide and national averages for key metrics. These updates are expected to be completed in early 2021.

Public Pension Search Tool

To promote transparency and open government, the PRB continues its online data partnership with the office of the Texas Comptroller of Public Accounts for the *Public Pension Search Tool*. The PRB provides the Comptroller's Office the most recent financial and actuarial data received from Texas public retirement systems as required under Section 801.209(a) of the Government Code.

Agency Website

PRB staff has strived to display the most recent and relevant information produced by and related to the PRB to stakeholders in the most straightforward manner. The agency does this by adding new reports, presentations, agendas, meeting packets and recordings to the "Recently Added" section on the homepage of its website. When meetings are held in the Capitol Annex or via teleconference, the homepage is updated to include a link to the meeting live stream broadcast. The PRB places a high priority on enhancing its educational outreach through its website to offer pension-related resources to PRB constituents.

Guide to Public Retirement Systems in Texas

Every odd-numbered year, the PRB publishes the *Guide to Public Retirement Systems in Texas* (*Guide*). This publication is timed to coincide with the beginning of each legislative session. Due to expected policy interest concerning public retirement systems, the PRB included information in the *Guide* to provide lawmakers with as much relevant and current information on the state's retirement systems as possible. The March 2019 *Guide to Public Retirement Systems in Texas* can be found on the agency's website.

The agency is currently working on publishing the 2021 *Guide* for the 87th Legislature. The online *Data Center* has allowed much of the information previously published only biennially in the *Guide* to be available as soon as it is reviewed by the agency. Because of this, future iterations of the *Guide* will be streamlined to focus on information not already available through the agency's data portal.

MET PROGRAM

PRB Minimum Educational Training (Met) Program

Section 801.211 of the Government Code directs the PRB to develop and administer an educational training program for trustees and administrators of Texas public retirement systems. Program efforts include completing the online courses, reviewing sponsor and individual course applications, a survey of sponsor course evaluations, and MET online courses copyright.

Online Courses

The PRB has researched, written, designed, and published 7 online courses to assist trustees and system administrators to obtain required training. Each course covers one of the following core content areas:

Fiduciary Matters, Governance, Actuarial Matters, Investments, Risk Management, Ethics and Benefits Administration. The online courses are available free of charge on the PRB website. As of November of 2020, there have been more than 3,400 course completions.

Upon Board request, staff presented data on participants taking PRB online courses compared to receiving training from other MET sponsors at its June 27, 2019 meeting. To provide this information, staff reviewed data received from the systems' semiannual trustee training reports, beginning in 2017 when all 7 PRB online courses became available.

The results of the research showed that most participants received training from the PRB for Core training, however, for the Continuing Education (CE) requirement, a majority of participants received training from sponsors other than the PRB. The following table shows the percentage of MET participants that took Core and CE training from the PRB, retirement systems, and other MET sponsors from January 1, 2017 through June 2019.

Provider/Sponsor	Core	CE
PRB Online	**68%**	**15%**
Retirement System In-House	**4%**	**14%**
Other Sponsors		
TEXPERS	23%	50%
TLFFRA	5%	14%
Other	NA	7%
Subtotal – Other Sponsors	**28%**	**71%**
Total – All Providers/Sponsors	**100%**	**100%**

Sponsor Accreditation

To date, the PRB has accredited 24 MET sponsors, as well as 67 individual courses offered by non-accredited sponsors. Of the 24 approved MET sponsors, 22 are currently still accredited and two chose not to renew their sponsorship after the initial 2-year period. Frequent providers of training activities, including public retirement systems conducting in-house training, may apply to become sponsors accredited by the PRB to conduct trainings for MET credit hours. Those sponsors who become accredited do not need to obtain approval for each course offered; sponsors may be accredited to offer Core instruction, Continuing Education, or both. A retirement system or training organization offering infrequent training activities, and/or which does not wish to become an accredited sponsor, may apply for approval of individual courses. A list of accredited sponsors can be found in Appendix R.

MET Compliance and Reporting

At its February 6, 2020 meeting, the Board adopted amendments to the Texas Administrative Code Rule §607.140, to change the reporting deadline from twice per year to once per year. This change minimized required reporting from systems, since most system administrators and trustees are now in a two-year continuing education cycle and are only required to report four hours of training over a two-year cycle. The information submitted to the PRB has been compiled to create the Public Retirement System Compliance with Minimum Educational Training Requirements report. The report in Appendix S contains data from the most recently completed training cycle reported to the PRB for Texas public retirement system trustees and system administrators.

The following table provides overall MET compliance information by retirement system type.

System Type	Percent of Trustees and Administrators Compliant
Statewide	**95.2%**
Municipal	**94.4%**
Local Fire Fighter	**74.5%**
Special District and Supplemental	**73.6%**

TECHNICAL ASSISTANCE

The PRB provides technical assistance to the Legislature, public retirement systems, state agencies, and the public. In 2019, the agency exceeded its performance measure target for unique technical assistance reports produced by staff, with 112% of its target attained. This was largely due to legislative requests and assistance to public retirement systems concerning new legislation passed during the 86th Legislative Session. The PRB again surpassed its target in 2020, reaching 116% of its target. In addition to providing technical assistance including guidance on new reporting requirements, the PRB aided with issues related to COVID-19.

Complaints Regarding Retirement Systems

This biennium, the PRB worked on five complaints concerning public retirement systems. The PRB makes great effort to promptly respond to complaints regarding any registered Texas public retirement system. Staff researches the complaint by contacting the complainant as well as representatives of the retirement system that is the subject of the complaint. All parties contacted are given the opportunity to provide information regarding the complaint and may be asked for additional information. After the research has been completed, the staff develops a document in which the facts of the issue are stated, as provided by the parties involved. The final complaint document includes the agency’s research and suggestions that may be useful in preventing a recurrence of the problem. The conclusion of the document states whether policies and procedures of the retirement system were followed correctly.

News Clips

As part of its educational outreach, the PRB delivers an electronic weekly news clips service to its constituents. The content features news about the following topics: Texas pension plans, Texas economic indicators, and national pensions, investments, and legal matters.

Customer Service Survey

As part of the strategic planning process, the PRB conducted its customer service survey in April through May 2020. The survey included questions on the PRB's educational services and mission, staff, communication, technical assistance, printed information, online resources, complaint handling, timeliness, facilities, and overall satisfaction. The PRB received predominantly positive responses from the 2020 *Customer Service Survey*.

The survey indicated an 85.42% overall satisfaction rating, and 13 of the 14 questions had averages answers of "satisfied" or higher. The two highest scoring customer service categories were the PRB staff category and the education and mission category. Throughout the entire survey, only two "very unsatisfied" answers were received, which were about the PRB website and data portal. The PRB will use the results of the survey to consider potential service improvements suggested by respondents, such as improving website navigation.

Respondents were also able to provide additional comments at the end of the survey on areas of improvement or to expand upon their feedback. Overall, the comments reflected that PRB staff members strive to serve their constituents in an efficient and timely manner.

Educational Services Survey

In May 2019, the PRB conducted a survey to assess constituents' satisfaction with PRB educational services and to capture a budget performance measure. Overall, over 90% expressed satisfaction with the educational services.

The survey had questions about the PRB's *Texas Public Pension Data Center*, the Minimum Education Training online courses, the presentation of information pertaining to the legislative session, weekly news clips, and the TLFFRA report. The PRB's TLFFRA report received the highest scoring feedback; all respondents that answered the question indicated that they were satisfied. Overall, the survey feedback indicated that constituents are satisfied with the PRB's educational services and would like for the PRB to continue providing additional educational services.

Pension Data Requests

This biennium, the PRB received several requests for large numbers of reports, such as actuarial valuations and annual financial reports covering 20-30 years, that the agency keeps on record. Requests came in from national organizations, legislative offices, and the media. Currently, the PRB does not hold this information on its data portal but plans to add actual reports in the future. The PRB worked diligently to fulfill all requests within a timely manner.

SPECIFIC ASSISTANCE FOR TLFFRA SYSTEMS

The TLFFRA specialist is the agency's point person on TLFFRA issues and continues to work closely with TLFFRA systems to provide a substantial amount of technical assistance and information on various issues, including service verification, questions relating to the TLFFRA statute, and assisting the systems with reporting requirements. In addition to presenting at the TLFFRA Peer Review in May of 2019, the PRB provided materials and presented a session on the legislative changes from the 86th session, including SB 322 and SB 2224, at the 2019 Annual TLFFRA Conference in Amarillo.

The *Texas Local Fire Fighters Retirement Act Pension Report (TLFFRA Report)* provides general and comparative pension-related data for paid and part-paid retirement plans organized under the TLFFRA statute. The report features a directory of contracted actuaries, investment managers and other service professionals and allows TLFFRA systems to access peer information in areas including actuarial, financial and governance. The Board approved the report at its February 6, 2020 meeting, and the report was published online and sent to TLFFRA systems in early March.

86TH LEGISLATURE

Public Pension Legislation

The 86th Session of the Texas Legislature convened on January 8, 2019 and adjourned on May 27, 2019. During the session, the PRB tracked 120 bills and companion bills pertaining to Texas public retirement systems. The PRB issued 43 actuarial impact statements to the Legislative Budget Board analyzing the actuarial effect of these bills and committee substitutes. The agency closely monitored these pension bills and published a weekly tracking report on the status of those bills for its constituents. Major pension-related legislation passed during the regular session can be found in Appendix T.

Presentations to the Legislature & Interim Hearings

On February 13, 2019, the PRB provided invited testimony to the House Pensions, Investments, and Financial Services Committee. The presentation included: the PRB mission and duties; major agency activities; a brief overview of defined benefit plans; reports received by the PRB; intensive reviews; and an overview of recent and potential pension bills for the 86th Session. (See Appendix U)

The PRB was invited to provide a staff briefing on the agency overview to the Texas Republican Caucus on February 5, 2020. The presentation reviewed recent public pension legislation and discussed the key actuarial concepts and measures used to examine systems' financial health. (See Appendix V)

On March 9, 2020, the PRB presented a report to the House Pensions, Investments, and Financial Services Committee concerning 86th Interim Charge 1.

> Monitor the agencies and programs under the Committee's jurisdiction and oversee the implementation of relevant legislation passed by the 86th Legislature. Conduct active oversight of all associated rulemaking and other governmental actions taken to ensure intended legislative outcome of all legislation, including:
>
> - SB 322, which relates to the evaluation and reporting of investment practices and performances of certain public retirement systems. Examine the process by which state agencies and public retirement system collaborate on, plan, and implement the structure necessary to perform these evaluations; and
> - SB 2224, which relates to requiring a public retirement system to adopt a written funding policy. Examine the process by which state agencies and public retirement systems collaborate on, plan and implement the structure necessary to create sound and practical funding policies.

The presentation discussed the PRB's role in implementing SB 322 (investment expense reporting) and SB 2224 (funding policies), as well as reviewed the agency's areas of focus and current Texas pension system trends. (See Appendix W)

APPENDICES

APPENDIX A – GUIDANCE FOR DEVELOPING A FUNDING POLICY

TEXAS PENSION REVIEW BOARD

Guidance for Developing a Funding Policy

As required by Senate Bill 2224 (86R)
(Adopted October 17, 2019)

Texas Government Code §802.2011 requires **the governing board of a Texas public retirement system to adopt a written funding policy by January 1, 2020**. The policy is intended to be used as a retirement system's roadmap to fully fund its long-term obligations. The policy should be created with input from the system's sponsoring governmental entity whenever possible.

<u>The funding policy is required to be filed with its sponsor and the Texas Pension Review Board (PRB) no later than the 31st day after the date the policy is changed or adopted.</u>

A funding policy helps a system achieve the three fundamental goals of public pension funding: benefit security, contribution stability, and intergenerational equity. While different pension plans and their governmental sponsors may prioritize these goals differently, the funding policy should strive to **balance** these three primary pension funding goals so that member benefits are secure; employers and employees are afforded some level of contribution predictability from year to year; and liabilities are managed so that future taxpayers are not burdened with costs associated with a previous generation's service. For a more detailed discussion of the benefits of adopting a funding policy, please see the PRB's *2019 Interim Study: Funding Policies for Fixed-Rate Pension Plans*.

A funding policy should include the following components:

I. Clear and concrete funding objectives;
II. Actuarial methods;
III. A roadmap to achieve funding objectives; and
IV. Actions that will be taken to address actual experience that diverges from assumptions.

<u>Components of a Funding Policy</u>

I. Establishing Clear and Concrete Funding Objectives

A funding policy should clearly establish the retirement system's funding objectives. Per Government Code §802.2011, **the funding policy must target a funded ratio of 100% or greater.** The PRB recommends that systems adopt a funding policy that fully funds the plan **over as brief a period as possible**, with **10 – 25 years** being the preferable range, using a finite, or **closed, funding period**.

II. Selecting Actuarial Methods

An important role of a funding policy is to **set boundaries on what is allowable for actuarial calculations**. At a minimum, the three actuarial methods that should be addressed are the actuarial cost method, the asset-smoothing method, and the amortization policy.

Actuarial Cost Method	Asset Smoothing Method	Amortization Policy
An actuarial cost method is a way to allocate pieces of a participant's total expected benefit to each year of their working career. The most common actuarial cost method used in Texas, and the cost method required by GASB for financial reporting disclosures, is the entry age normal (EAN) method. Under the EAN method, benefits are assumed to accrue as a level percentage of pay over the period from the member's entry into the plan until his/her assumed termination or retirement. A funding policy should state the desired goals and purpose of the cost method if it does not specify the exact cost method to be used.	Asset smoothing techniques can help keep contributions stable and more predictable over time. Under smoothing, asset gains and losses are generally recognized over a period of years rather than immediately. A five-year smoothing period where 20% of any gain or loss is recognized in each subsequent year is typically used in Texas. The funding policy should specify the amount of return subject to smoothing (i.e. how much is deferred), the time period of the deferral, and if the smoothed value is subject to a corridor.	An amortization method is a procedure for determining the amount, timing, and pattern of recognition of a plan's gains and losses. Amortization amounts can be level dollar amounts or determined as a percentage of covered payroll. Level dollar amounts are preferable unless payroll is expected to decrease in the future. One approach that helps minimize annual contribution volatility while maintaining a finite, closed funding period is the use of layered amortization, where a single closed-period amortization base is established for each year's realized experience. Another approach is to establish closed-period amortization bases with varying recognition periods dependent upon the cause of a gain or loss. For example, one approach might be to amortize investment and/or actuarial experience gains or losses over a 5-year period, gains or losses attributable to assumption changes over a 10-year period, and gains or losses attributable to plan amendments over a 25-year period.

A funding policy may also include directions on how to account for expected plan administrative expenses, how often experience studies should be completed to maintain up-to-date demographic actuarial assumptions, and how to set the interest discount rate.

Negative Amortization

Negative amortization occurs when contributions are insufficient to cover the cost of benefits accrued and the interest accrued on the unfunded liability during the year. Plans should be careful in their use of negative amortization. If a plan's amortization policy results in negative amortization, the funding policy should outline the expected period over which negative amortization will occur and provide justification for the use of negative amortization.

III. Developing a Roadmap to Achieve Funding Objectives

A funding policy should provide a clear plan detailing how the system's funding goals will be met.

Contribution Rates

An actuarially determined contribution (ADC) structure requires the payment of an ADC rate. An ADC is defined as the cost of benefits earned by workers in the current year (the normal cost) plus an amortization payment to recognize prior gains and/or losses. ADC contribution structures inherently adjust to the plan's changing funded status to maintain the overall trajectory towards fully funding benefit promises. This approach contrasts with fixed-rate funding structure which does not change from year-to-year unless proactive steps are taken.

If contributions are not made based on an ADC rate, the plan's governing body should establish and include the following items in the funding policy:

1. Determine an ADC that can be used as a benchmark to monitor whether the actual contributions are guiding the plan toward the stated funding objectives.
2. Establish what conditions will trigger action when the current actual contribution rate moves away from the benchmark ADC. For example, a certain funded ratio or difference between actual contribution and ADC could be used.
3. Identify tangible steps that will be taken to mitigate the differences between the actual and benchmark contribution rates, such as contribution and benefit changes. See Section IV for examples.

Benefit and Contribution Change Parameters

A funding policy should include elements designed to impede deviation from progress toward funding goals. This may be done by establishing parameters under which future benefit increases and contribution reductions can be considered.

Examples

A funding policy might state that:

- ➢ benefit enhancements can be made only if the funded ratio will remain at a certain level after the increase; or
- ➢ contribution reductions may only occur if a minimum amortization period is maintained.

IV. Adopting Actions to Address Actual Experience That Diverges from Assumptions

A funding policy should develop predetermined steps for how a plan should respond to **both positive and negative experiences that differ from the plan's assumptions**. The following methods can be used to manage funding risk.

Risk-Sharing

A funding policy should identify key risks faced by the plan and how those risks, and their associated costs, will be distributed between the employer and employees. This structure prevents one party from bearing all the risk in a funding policy. Often when there is no formal risk-sharing policy, benefit reductions or cost increases are imposed on employees, retirees or both after the plan's condition has deteriorated, rather than proactively, in advance, and in a manner transparent to members and stakeholders.[i]

Example: If investment returns are not as high as projected, the associated costs will need to be covered by additional contributions or benefit reductions distributed amongst members and the sponsor.

Contributions

A solution to ensure the plan meets its funding objectives is to require that the actual contribution rate is equal to or exceeds the ADC. If that is not achievable, the funding policy should identify what the trigger should be for a required adjustment to actual contribution rates. Techniques such as the following could be used to help move the actual contribution rate in the proper direction.

<u>Contribution Corridor</u>

Example: If the actual total contribution rate is within 2% of the ADC, no change is required. However, if the total contribution is more than 2% *over or under* the ADC, a change in contribution rates is required.

<u>Maximum and Minimum Contribution Rates</u>

Example: If the ADC exceeds a pre-determined maximum contribution rate, the funding policy may require the plan to adopt benefit changes. Conversely, if the ADC drops beneath a pre-determined minimum rate, the funding policy may require certain benefit increases, such as a COLA.

<u>Contribution Smoothing</u>

Example: If the actual total contribution rate needs to be increased by 2%, the rate could be increased in increments until the total contribution rate meets the ADC. Similarly, if the contribution rate needs to be decreased by 2%, the rate may be slowly decreased over time. The funding policy may state that the contribution rate may not increase or decrease by more than a given percentage each fiscal year.

Benefits

A funding policy may also establish when benefit adjustments will occur and include provisions that specify how both positive and negative experience will be addressed. Plans may allow for increased benefits or an increased COLA as a result of a positive deviation, but plans will need to ensure they are able to consistently meet the new funding demands of the changes.

Example: The funding policy could require that if sponsor contributions are increased, member benefits must be decreased in some proportional manner. Or, the policy may include provisions that grant a COLA to retirees if the funded ratio, after the benefit change, remains above a specified percentage. Caps may also be placed on maximum COLAs, or COLAs can be tied to inflation, to manage plan costs.

<u>Examples of Funding Policy Components</u>

Many pension plans across the United States have already adopted a funding policy, including several in Texas. Below are examples of components from those funding policies.

Component	Plan	Description
Benefit and Contribution Change Parameters	South Dakota Retirement System	The system may not consider **benefit improvements** unless the fair value funded ratio is and will remain after fully funding the cost of the improvement, over 120%.[ii] Proposed benefit improvements must be consistent with both the Board's long-term benefit goals and sound public policy with regard to retirement practices.
	City of Austin Employees' Retirement System	Employer **contribution** rate reductions should be considered only when annual COLA adjustments are built into funding assumptions and the funded ratio will remain greater than or equal to 105% after the reduction.[iii]
	City of Austin Employees' Retirement System	A **COLA** may be adjusted only when the adjustment can be financially supported; the funded ratio is ≥ 80% after incorporating the COLA; the amortization period is ≤ 20 years after incorporating the COLA; and the actual employer contribution rate is ≥ the ADC but no more than 18% after incorporating the COLA.[iv]
Contribution Smoothing	Fort Worth Employees' Retirement Fund	The contribution rate may not increase more than 2% of pay in one year or 4% in total to account for the ADC increase. If the maximum contribution increase has been applied and the actual contribution is still insufficient, the City Council must consider additional benefit reductions.[v]
Risk-sharing	South Dakota Retirement System	Should the funded ratio fall below 100% or if the fixed contribution rates are not sufficient to meet the actuarial requirement, the system is required to recommend corrective action, including benefit or contribution changes, in its annual report to the Legislature and Governor.[vi]
	Houston Firefighters' Relief & Retirement Fund Houston Municipal Employees Pension System Houston Police Officers' Pension System	The 3 Houston plans have a statutory funding policy that established a target contribution rate and a corridor around that rate. The plans and the City are required to take corrective action, including negotiating benefit reductions, if the recommended contribution falls outside the corridor. [vii]

Component	Plan	Description
Risk-sharing	Galveston Employees Retirement Plan for Police	Beginning January 1, 2025, if the actuarial valuation recommends an ADC that exceeds the aggregate (employee and City) contribution rate, the excess contribution will be split equally as a percentage of pay between the City and employee contribution rates.[viii]
	Maine Public Employees	COLAs are tied to investment returns. Reductions to COLAs may occur after severe market losses. The reductions will be removed once markets improve.[ix]
	Wisconsin State Retirement System	Retirement annuities are adjusted using a formula that factors in investment returns.[x]
	Pennsylvania State Employees' Pennsylvania Public School Employees'	The employee contribution rate increases or decreases based on investment plan returns.[xi]

Questions Systems and Sponsors Should Discuss During Funding Policy Development

The process of developing a funding policy presents an opportunity for a system's board of trustees to have an open, robust discussion of their priorities regarding the funding needs of the plan. The policy should be created with input from the system's sponsoring governmental entity whenever possible. The following checklist represents a set of fundamental questions trustees should consider during funding policy development but is not exhaustive.

- ☐ **Introduction**
  - ☐ What is the purpose of the policy? What are we trying to achieve in this policy?
  - ☐ How is the plan governed? What statutes or ordinances govern plan funding?
  - ☐ What are our funding priorities?
- ☐ **Funding Objectives**
  - ☐ Over what time period will we achieve 100% funding?
  - ☐ How will we measure progress towards full funding? How will we measure if our funding objectives are being met?
- ☐ **Actuarial Methods**
  - ☐ What valuation methods do we use to determine the ADC (or benchmark ADC)?
  - ☐ How frequently should we calculate the ADC (or benchmark ADC)?
  - ☐ How will we ensure we are meeting the ADC (or benchmark ADC)?
  - ☐ Will we employ any asset smoothing methods? If so, what are they?
  - ☐ What measures do our system and sponsor need to take to achieve 100% funding?
  - ☐ How should we prepare for unanticipated changes?
  - ☐ How frequently will actuarial experience studies occur?
  - ☐ How is the interest discount rate determined?
  - ☐ Is a negative amortization period ever acceptable, and if so, under what conditions?
- ☐ **Plan for Achieving Funding Objectives**
  - ☐ How much money do we need today to pay for future promises?
  - ☐ Will we use contribution smoothing methods? If so, what are they?
  - ☐ What conditions must be met to adopt benefit increases or cost-of-living adjustments?
  - ☐ What conditions must be met for contribution decreases to occur?
- ☐ **Risk Management Policy**
  - ☐ What actions will we take should actual investment returns be less than the assumed investment returns used in the actuarial valuation? Should we consider action after a certain margin or threshold (positive or negative)?
  - ☐ What actions will trigger changes to our assumptions at the next actuarial valuation?
  - ☐ What conditions would trigger a contribution increase and what conditions must be met for contributions to return to their normal rate?
  - ☐ Could we increase contributions temporarily?
  - ☐ What conditions would trigger a review of our system's funding policy?

[i] Brainard, Keith, and Alex Brown, *In Depth: Risk Sharing in Public Retirement Plans. National Association of State Retirement Administrators*, January 2019, https://www.nasra.org/content.asp?contentid=124
[ii] South Dakota Retirement System*, SDRS Funding and System Management Policies*, https://sdrs.sd.gov/docs/SDRSFundingPolicy.pdf.
[iii] City of Austin Employees' Retirement System Benefits & Services Committee, *City of Austin Employee's Retirement System Board Approved Policy: Funding Policy and Guideline*s, 20142014. https://www.coaers.org/Portals/0/Resources/Publications/2-c%20F-2%20Funding%20Policy%20and%20Guidelines%202014-11-25.pdf?ver=2015-06-17-102341-677.
[iv] *ibid.*
[v] Employees' Retirement Fund of the City of Fort Worth, *Annual Actuarial Valuation*, 19 April 2019, p. 9, https://fortworthretirementtx-investments.documents-on-demand.com/?l=f419ce743442e5119795001fbc00ed84&d=64e81193956ae911a2cd000c29a59557.
[vi] South Dakota Retirement System*, SDRS Funding and System Management Policies*, https://sdrs.sd.gov/docs/SDRSFundingPolicy.pdf.
[vii] Retirement Horizons Incorporated, *City of Houston HMEPS Pension Reform Cost Analysis*,15 March 2017, https://www.houstontx.gov/pensions/public/documents/rhi-HMEPS.pdf.
[viii] H.B. 2763, 86th Texas Legislature, Regular Session, 2019, https://capitol.texas.gov/tlodocs/86R/billtext/pdf/HB02763F.pdf#navpanes=0
[ix] Maine Public Employees Retirement System, *Summary: PLD Plan Changes*, www.mainepers.org/Pensions/PLD%202018-Summary.htm.
[x] Brainard, Keith, and Alex Brown, *Shared-Risk in Public Retirement Plans. National Association of State Retirement Administrators*, June 9, 2014, p. 2, https://www.nasra.org/files/Issue%20Briefs/NASRASharedRiskBrief.pdf;
The Pew Charitable Trusts, *Cost-Sharing Features of State Defined Benefit Pension Plans: Distributing Risk Can Help Preserve Plans' Fiscal Health*, January 2017, p. 8, https://www.pewtrusts.org/-/media/assets/2017/05/definedbenefitplansreport.pdf.
[xi] *The Pew Charitable Trusts, Cost-Sharing Features of State Defined Benefit Pension Plans: Distributing Risk Can Help Preserve Plans' Fiscal Health, January 2017, p. 2, https://www.pewtrusts.org/-/media/assets/2017/05/definedbenefitplansreport.pdf.*

APPENDIX B – SAMPLE FUNDING POLICY

TEXAS PENSION REVIEW BOARD

Sample Funding Policy

Texas Government Code §802.2011 requires the governing board of a Texas public retirement system to "adopt a written funding policy that details the governing body's plan for achieving a funded ratio of the system that is equal to or greater than 100 percent." The process of developing a funding policy presents an opportunity for system trustees to have an open, robust discussion of the plan's funding needs to establish the board's funding priorities. The policy should be created with input from the system's sponsoring governmental entity whenever possible.

The *Guidance for Developing a Funding Policy*, adopted by the Pension Review Board (PRB) on October 17, 2019, includes a checklist of potential questions for trustees to consider during funding policy development and, recognizing the wide variety of governing structures throughout Texas, does not attempt to provide a one-size-fits-all approach. However, it should be noted that more than 50 percent of Texas plans currently contribute on a fixed-rate basis, and the governing boards have limited discretionary authority over either benefit or contribution changes. At the request of stakeholders, the PRB developed the following sample funding policy with this governance structure in mind.

This sample funding policy is provided as an example of what a funding policy may look like and is not intended to indicate the specific methods outlined below are the best methods for any given retirement system, nor to imply an endorsement of these specific methods over other actuarial best practices.

Introduction

This funding policy outlines a formal long-term strategy for financing the pension obligations accruing under the ***(system name)*** with the goal of achieving a funded ratio that is equal to or greater than 100%, as required by Texas Government Code §802.2011.

This policy is limited by the authority granted to the board of trustees under ***(governing statute)***. Therefore, this document creates a framework for proactively managing risks by outlining how the board will approach future changes to benefit and contributions levels under different conditions. In the event this policy conflicts with any statutory language, the statute shall prevail.

Funding Priorities

The primary funding priorities are to:

1. Ensure the security of accrued benefits by making certain contributions and assets are sufficient to pay benefits when due.
2. Limit the volatility of contribution rates for both the members of ***(system name)*** and ***(sponsoring governmental entity)***, consistent with other funding objectives.
3. Ensure that each generation of members and employers incurs the cost of benefits for the employees who provide services to them, rather than deferring those costs to future members and employers;

4. Provide a reasonable margin for adverse experience to help offset risks.
5. Continue progress of systematic reduction of the Unfunded Actuarial Accrued Liability.

Funding Objectives

The system's funding objectives are:

- A funded ratio of 100% or more by ***(date)***.
- A fully funded system with no unfunded liabilities.

Actuarial Methods

The board has adopted the following actuarial methods for purposes of actuarial valuations and the determination of the benchmark ADC:

I. Cost Method

The individual entry age normal actuarial cost method.

II. Asset Smoothing

A five-year asset smoothing period where 20% of any gain or loss is recognized in each subsequent year.

III. Amortization Policy

The amortization payment will be calculated as a level percent of payroll, as follows:

The amortization payment will be calculated as a layered closed-period amortization method with a single 30-year closed-period amortization base established for the initial UAAL base and a single 20-year closed-period amortization base established for each year's realized gains or losses thereafter.

Given the current assumed rate of return of X% and payroll growth of Y%, the amortization payment is expected to result in negative amortization if the single equivalent amortization period is above Z years. The board's goal is to eliminate negative amortization as quickly as possible and ultimately maintain a contribution rate above the threshold that results in negative amortization.

Actuarial Assumptions Guidelines

A comprehensive experience study will be completed at least once every 5 years with possible review of individual assumptions more frequently, based on advice from the system's actuary. All assumptions will be determined based on actuarial standards of practice taking into account both actual experience and reasonable future expectations.

Actuarially Determined Contribution Benchmark

This policy has outlined a benchmark ADC for establishing a path towards achieving the goal of 100% funding. The following will trigger the board to act to adjust or recommend adjustments to benefit and/or contribution levels.

The board will notify ***(sponsoring governmental entity)*** upon receipt of 2 actuarial valuations showing the actual contribution is more than 2% over or under the ADC. In such case, a change in contribution rates is recommended. If the actual rate is within 2% of the ADC, no change is required.

Consideration of Plan Modifications

Guidelines for Future Reductions in Contributions

The board believes it is best to consider supporting a reduction in the actual employer contribution rate only when the following conditions exist:

A. The funded ratio is at least 105%;

B. Benefit reductions for current active members implemented within the last 10 years have been reinstated;

C. Regular cost of living adjustments are built into funding assumptions; and

D. The total contribution rate is not less than the Normal Cost.

Guidelines for Future Benefit Enhancements

For all other benefit enhancements not specifically mentioned above, the board believes it is best to support such enhancements only when the following conditions exist:

A. Annual cost of living adjustments are built into funding assumptions; and

B. The funded ratio is equal to or greater than 120% after incorporating the benefit enhancement, and

C. The actuarially determined contribution rate is less than or equal to the actual contribution rate.

Risk-Sharing Mechanisms

The board has determined that the key risk facing the system is when actual experience diverges from actuarial assumptions, resulting in actuarial losses. The following methods for sharing risk between the members and the sponsoring government will be considered/recommended:

- The actual contribution will be compared to the ADC each year. If the actual rate is less than the ADC rate for 2 consecutive years, the sponsor and employee contributions will be increased by no more than 2% of pay in one year or 4% total. The increase will be split 60% sponsor and 40% employees. If the maximum contribution increase has been applied and the actual contribution is still insufficient, the board shall recommend corrective action, including benefit or contribution changes, to the members and the sponsoring governmental entity.
- COLAs are tied to investment returns. Crediting rate is the lesser of CPI or 100% of the 5-year smoothed return minus 5%, not less than 0% or greater than 4%.

Review of Funding Policy

This policy may be amended from time-to-time to reflect changes in other board policies, emerging best practices for public defined benefit pension plans, prevailing opinions of future board members, and suggested changes by system stakeholders. Suggested changes to the policy may be submitted to the board in writing for consideration at future meetings.

This Policy was adopted on ***(date)***.

APPENDIX C – FUNDING POLICY SUMMARY TABLES

Summary of Funding Policies Received by Pension Review Board
Non-ADC Plans

		Benchmark and Actions Resulting			Additional Components			
System Name	**Contribution Type**	**ADC Benchmark Am Pd**	**Condition(s) that Trigger Actions**	**Actions Resulting from Trigger**	**Risk Sharing**	**Contribution Change Parameters**	**Benefit Change Parameters**	**Additional Amortization Policy Provisions**
				Closed Benchmarks at/under 30 yrs				
Weslaco Firemen's Relief & Retirement Fund	Fixed	15-yr closed	2 AVs showing funding period > ADC benchmark am pd	**Board will:** - Notify the City and member employee groups - Work with the City and the active members to consider changes to benefit and contribution levels	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
San Antonio Fire & Police Pension Fund	Fixed	25-yr closed	Effective am pd not sufficient to reach a 100% FR by 12/31/2044	**Board will:** - Work with the City to address contribution rate and/or plan modifications	None	**Board may not recommend any changes that result in:** - a FR < 90%; or - an effective am pd > 15 yrs	**Board may not recommend any changes that result in:** - a FR < 90%; or - an effective am pd > 15 yrs	30-yr amort of surpluses
The Woodlands Firefighters' Retirement System	Fixed	20-yr closed	3 AVs showing fixed contrib rates < ADC benchmark by more than 2%	**Board will:** - Work with system's actuary to develop proposals for changes to the system that results in 100% funding over 15-yr closed pd - Notify Township governing body and member assn - Request work together with Township and member assn to develop plan that will establish fixed contrib	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	**Payroll Growth Assumption for Benchmark:** - Lesser of 3% and avg payroll growth of fire dept over the since Jan, 2016, or once 10 Avs have been performed, over the last 10
Amarillo Firemen's Relief & Retirement Fund	Fixed	30-yr closed	- Am pd is not reasonably in line with ADC benchmark am pd, such as within 5 yrs; **or** - Total contribution rate is not reasonably in line with ADC benchmark rate, such as within 2% of payroll	**Positive Divergence:** - Board may consider benefit increase, such as ad hoc COLA, that results in am pd somewhat less than ADC benchmark am pd **Negative Divergence:** - Board will notify the City and member employee group/assn - Board may consider contrib rate increase, benefit formula reduction or combination	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Atlanta Firemen's Relief & Retirement Fund	Fixed	30-yr closed	- Am pd is not reasonably in line with ADC benchmark am pd, such as within 5 yrs; **or** - Total contribution rate is not reasonably in line with ADC benchmark rate, such as within 2% of payroll	**Positive Divergence:** - Board may consider benefit increase, such as ad hoc COLA, that results in am pd somewhat less than ADC benchmark am pd **Negative Divergence:** - Board will notify the City and member employee group/assn - Board may consider contrib rate increase, benefit formula reduction or combination	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Beaumont Firemen's Relief & Retirement Fund	Fixed	30-yr closed	- Am pd is not reasonably in line with ADC benchmark am pd, such as within 5 yrs; **or** - Total contribution rate is not reasonably in line with ADC benchmark rate, such as within 2% of payroll	**Positive Divergence:** - Board may consider benefit increase, such as ad hoc COLA that results in am pd somewhat less than ADC benchmark am pd **Negative Divergence:** - Board will notify the City and member employee group/assn - Board may consider contrib rate increase, benefit formula reduction or combination	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Brownwood Firemen's Relief & Retirement Fund	Fixed	30-yr closed	- Am pd is not reasonably in line with ADC benchmark am pd, such as within 5 yrs; **or** - Total contribution rate is not reasonably in line with ADC benchmark rate, such as within 2% of payroll	**Positive Divergence:** - Board may consider benefit increase, such as ad hoc COLA, that results in am pd somewhat less than ADC benchmark am pd **Negative Divergence:** - Board will notify the City and member employee group/assn - Board may consider contrib rate increase, benefit formula reduction or combination	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None

System Name	Contribution Type	Benchmark and Actions Resulting: ADC Benchmark Am Pd	Benchmark and Actions Resulting: Condition(s) that Trigger Actions	Benchmark and Actions Resulting: Actions Resulting from Trigger	Additional Components: Risk Sharing	Additional Components: Contribution Change Parameters	Additional Components: Benefit Change Parameters	Additional Components: Additional Amortization Policy Provisions
Cleburne Firemen's Relief & Retirement Fund	Fixed	30-yr closed	- Am pd is not reasonably in line with ADC benchmark am pd, such as within 5 yrs; **or** - Total contribution rate is not reasonably in line with ADC benchmark rate, such as within 2% of payroll	**Positive Divergence:** - Board may consider benefit increase, such as ad hoc COLA, that results in am pd somewhat less than ADC benchmark am pd **Negative Divergence:** - Board will notify the City and member employee group/assn - Board may consider contrib rate increase, benefit formula reduction or combination	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Corpus Christi Fire Fighters' Retirement System	Fixed	30-yr closed	- Am pd is not reasonably in line with ADC benchmark am pd, such as within 5 yrs; **or** - Total contribution rate is not reasonably in line with ADC benchmark rate, such as within 2% of payroll	**Positive Divergence:** - Board may consider benefit increase, such as ad hoc COLA, that results in am pd somewhat less than ADC benchmark am pd **Negative Divergence:** - Board will notify the City and member employee group/assn - Board may consider contrib rate increase, benefit formula reduction or combination	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Corsicana Firemen's Relief & Retirement Fund	Fixed	30-yr closed	- Am pd is not reasonably in line with ADC benchmark am pd, such as within 5 yrs; **or** - Total contribution rate is not reasonably in line with ADC benchmark rate, such as within 2% of payroll	**Positive Divergence:** - Board may consider benefit increase, such as ad hoc COLA, that results in am pd somewhat less than ADC benchmark am pd **Negative Divergence:** - Board will notify the City and member employee group/assn - Board may consider contrib rate increase, benefit formula reduction or combination	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Galveston Firefighter's Relief & Retirement Fund	Fixed	30-yr closed	- Am pd is not reasonably in line with ADC benchmark am pd, such as within 5 yrs; **or** - Total contribution rate is not reasonably in line with ADC benchmark rate, such as within 2% of payroll	**Positive Divergence:** - Board may consider benefit increase, such as ad hoc COLA, that results in am pd somewhat less than ADC benchmark am pd **Negative Divergence:** - Board will notify the City and member employee group/assn - Board may consider contrib rate increase, benefit formula reduction or combination	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Killeen Firemen's Relief & Retirement Fund	Fixed	30-yr closed	- Am pd is not reasonably in line with ADC benchmark am pd, such as within 5 yrs; **or** - Total contribution rate is not reasonably in line with ADC benchmark rate, such as within 2% of payroll	**Positive Divergence:** - Board may consider benefit increase, such as ad hoc COLA, that results in am pd somewhat less than ADC benchmark am pd **Negative Divergence:** - Board will notify the City and member employee group/assn - Board may consider contrib rate increase, benefit formula reduction or combination	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Laredo Firefighters Retirement System	Fixed	30-yr closed	- Am pd is not reasonably in line with ADC benchmark am pd, such as within 5 yrs; **or** - Total contribution rate is not reasonably in line with ADC benchmark rate, such as within 2% of payroll	**Positive Divergence:** - Board may consider benefit increase, such as ad hoc COLA, that results in am pd somewhat less than ADC benchmark am pd **Negative Divergence:** - Board will notify the City and member employee group/assn - Board may consider contrib rate increase, benefit formula reduction or combination	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None

Summary of Funding Policies Received by Pension Review Board
Non-ADC Plans

System Name	Contribution Type	Benchmark and Actions Resulting			Additional Components			
		ADC Benchmark Am Pd	Condition(s) that Trigger Actions	Actions Resulting from Trigger	Risk Sharing	Contribution Change Parameters	Benefit Change Parameters	Additional Amortization Policy Provisions
Lufkin Firemen's Relief & Retirement Fund	Fixed	30-yr closed	- Am pd is not reasonably in line with ADC benchmark am pd, such as within 5 yrs; **or** - Total contribution rate is not reasonably in line with ADC benchmark rate, such as within 2% of payroll	**Positive Divergence:** - Board may consider benefit increase, such as ad hoc COLA, that results in am pd somewhat less than ADC benchmark am pd **Negative Divergence:** - Board will notify the City and member employee group/assn - Board may consider contrib rate increase, benefit formula reduction or combination	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
McAllen Firemen's Relief & Retirement Fund	Fixed	30-yr closed	- Am pd is not reasonably in line with ADC benchmark am pd, such as within 5 yrs; **or** - Total contribution rate is not reasonably in line with ADC benchmark rate, such as within 2% of payroll	**Positive Divergence:** - Board may consider benefit increase, such as ad hoc COLA, that results in am pd somewhat less than ADC benchmark am pd **Negative Divergence:** - Board will notify the City and member employee group/assn - Board may consider contrib rate increase, benefit formula reduction or combination	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Texarkana Firemen's Relief & Retirement Fund	Fixed	30-yr closed	- Am pd is not reasonably in line with ADC benchmark am pd, such as within 5 yrs; **or** - Total contribution rate is not reasonably in line with ADC benchmark rate, such as within 2% of payroll	**Positive Divergence:** - Board may consider benefit increase, such as ad hoc COLA, that results in am pd somewhat less than ADC benchmark am pd **Negative Divergence:** - Board will notify the City and member employee group/assn - Board may consider contrib rate increase, benefit formula reduction or combination	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Texas City Firemen's Relief & Retirement Fund	Fixed	30-yr closed	- Am pd is not reasonably in line with ADC benchmark am pd, such as within 5 yrs; **or** - Total contribution rate is not reasonably in line with ADC benchmark rate, such as within 2% of payroll	**Positive Divergence:** - Board may consider benefit increase, such as ad hoc COLA, that results in am pd somewhat less than ADC benchmark am pd **Negative Divergence:** - Board will notify the City and member employee group/assn - Board may consider contrib rate increase, benefit formula reduction or combination	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Travis County ESD #6 Firefighters' Relief and Retirement Fund	Fixed	30-yr closed	- Am pd is not reasonably in line with ADC benchmark am pd, such as within 5 yrs; **or** - Total contribution rate is not reasonably in line with ADC benchmark rate, such as within 2% of payroll	**Positive Divergence:** - Board may consider benefit increase, such as ad hoc COLA, that results in am pd somewhat less than ADC benchmark am pd **Negative Divergence:** - Board will notify the City and member employee group/assn - Board may consider contrib rate increase, benefit formula reduction or combination	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Tyler Firefighters' Relief & Retirement Fund	Fixed	30-yr closed	- Am pd is not reasonably in line with ADC benchmark am pd, such as within 5 yrs; **or** - Total contribution rate is not reasonably in line with ADC benchmark rate, such as within 2% of payroll	**Positive Divergence:** - Board may consider benefit increase, such as ad hoc COLA, that results in am pd somewhat less than ADC benchmark am pd **Negative Divergence:** - Board will notify the City and member employee group/assn - Board may consider contrib rate increase, benefit formula reduction or combination	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None

		Benchmark and Actions Resulting			Additional Components			
System Name	**Contribution Type**	**ADC Benchmark Am Pd**	**Condition(s) that Trigger Actions**	**Actions Resulting from Trigger**	**Risk Sharing**	**Contribution Change Parameters**	**Benefit Change Parameters**	**Additional Amortization Policy Provisions**
Galveston Employees' Retirement Fund	Fixed	30-yr closed	- Am pd is not reasonably in line with ADC benchmark am pd, such as within 5 yrs; **or** - Total contribution rate is not reasonably in line with ADC benchmark rate, such as within 1% of payroll	**Positive Divergence:** - Board may consider benefit increases, such as inc in dollar cap on benefits or ad hoc COLA, or lowering investment return assumptions, that results in am pd somewhat less than ADC benchmark am pd **Negative Divergence:** - Board will notify the City and member employee group/assn - Board may consider contrib rate increase, benefit formula reduction or combination	None	None	None	None
Lubbock Fire Pension Fund	TMRS Linked	30-yr closed	None	**Board will:** - Take all appropriate measures to maintain a fiscally responsible fund such as make changes to benefits and eligibility requirements, inc/dec in member's contribution rate, changes to investment portfolio sector allocations, or changes to the assumed rate of return	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Austin Police Retirement System	Fixed	30-yr closed, beginning 12/31/2020 System is currently in discussions and planning with the City to improve the financial stability of the system.	- 2 AVs showing effective funding period > ADC benchmark by 3+ yrs; **or** - 2 AVs showing ADC benchmark > fixed contribution rates by 2% or more	**Board will:** - Notify the City - Engage in planning as needed with the City to ensure continued progress toward policy goals	**Board intends to maintain cost-sharing arrangement with City where:** - City contributes $\geq$ 60% of increases - Members contribute $\leq$ 40% - If the increase is insufficient to pay full ADC, the Board will consider/recommend corrective action including possible benefit changes and/or additional contribution increases	**Per APRS statute:** - Any member contribution rate change must be approved by majority vote of contributory members - City council must approve City contribution changes	**Per APRS statute, before any enhancements:** - Must be approved by Fund's actuary and otherwise permitted under the System's statute and policies	None
Funding Policies with Layered Closed Benchmarks at/under 30 yrs								
Irving Supplemental Benefit Plan	Fixed	20-yr layered closed	2 AVs showing actual contribution over/under ADC benchmark by more than 0.5%	**Board will:** - Notify the City - Consider and may recommend combined rate change **ADC Contribution** - It is the intent of the Board that the ADC determined by a given AV will be contributed in the calendar yr beginning 1 yr after the AV date	**Contributions:** - Increases capped for members/City at 0.5% of pay in one yr, or 1% total - If max contribution increase has been applied and contribution still insufficient, Board shall recommend corrective action, including benefit or contribution changes	**Employer rate decreases only considered if:** - FR $\geq$ 105% - Total contribution rate is not < normal cost	**Enhancements may only occur when:** - FR $\geq$ 110% after incorporating enhancement - ADC rate $\leq$ actual contribution rate	**Negative Amortization:** - Board's goal is to eliminate negative amortization as quickly as possible and ultimately maintain a contribution rate above the threshold that results in negative amortization
City of El Paso Employees Retirement Trust	Fixed	25-yr layered closed	ADC benchmark > City contribution rate in any yr	**Board will:** - Recommend additional City contribution	None	None	**Enhancements may only occur when:** - FR $\geq$ 80% after the increase - Decrease in FR due to enhancement not > 1% - Max COLA not > CPI since last COLA	None

Summary of Funding Policies Received by Pension Review Board
Non-ADC Plans

System Name	Contribution Type	Benchmark and Actions Resulting: ADC Benchmark Am Pd	Benchmark and Actions Resulting: Condition(s) that Trigger Actions	Benchmark and Actions Resulting: Actions Resulting from Trigger	Additional Components: Risk Sharing	Additional Components: Contribution Change Parameters	Additional Components: Benefit Change Parameters	Additional Components: Additional Amortization Policy Provisions
San Benito Firemen Relief & Retirement Fund	Fixed	30-yr layered closed	2 AVs showing actual contributions > 2% over/under ADC benchmark	**Board will:** - Notify City - Recommend a contribution rate change	**Jointly Developed with City:** - Funding policy presented, approved and adopted by the City of San Benito City Commission. Signed by Mayor **Contributions:** - Increases split 60% sponsor/40% employee, max 2% each (or 4% total) - If max contribution increase has been applied and contribution still insufficient, Board shall recommend corrective action, including benefit or contribution changes **Benefits:** - COLAs tied to investment returns. Crediting rate the lesser of CPI or 100% of 5-yr smoothed return minus 5%, min 0%, max 4%	**Employer contribution reductions considered if:** - FR ≥ 105% - Benefit reductions for current active members implemented within the last 10 yrs reinstated; - Regular COLAs built into funding assumptions; - Total contribution rate not < normal cost	**Enhancements considered if:** - Annual COLAs built into funding assumptions; - FR > 120% after incorporating benefit enhancement; - ADC ≤ actual contrib rate Benefit changes as per TLFFRA statute[2]	**Negative Amortization:** - Board's goal is to eliminate negative amortization as quickly as possible and ultimately maintain a contribution rate above the threshold that results in negative amortization
Denison Firemen's Relief & Retirement Fund	Fixed	30-yr layered closed	2 AVs showing actual contributions < ADC benchmark by more than 2%	**Board and City will:** - Develop a plan of action including contribution increases or benefit changes to bring the contribution rate to ≥ ADC benchmark	**Contributions:** - Increases either split evenly between City and members or different agreed-upon amounts - May be phased in over time	Contribution changes per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	**Negative Amortization:** - Board will periodically review whether contributions are sufficient to pay normal cost plus interest on UAAL
Sweetwater Firemen's Relief & Retirement Fund	Fixed	30-yr layered closed	2 AVs showing fixed contrib rates < ADC benchmark by more than 2%	**Board and City will:** - Develop a plan of action including contribution increases or benefit changes so that combined contribution rate will be ≥ ADC benchmark	**Contributions:** - Increases either split evenly between City and members or different agreed-upon amounts - May be phased in over time	Contribution changes per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	**Negative Amortization:** - Board will periodically review whether contributions are sufficient to pay normal cost plus interest on UAAL
Longview Firemen's Relief & Retirement Fund	Fixed	30-yr layered closed	4 AVs showing actual contrib > 2% over/under ADC benchmark	**Board will:** - Notify the City - Recommend City and member contributions to increase by no more than 1% of pay in one yr or 2% total - Employees will have option to increase contribution or make benefit changes	**Contributions:** - Increases split 50%/50% City and members	**Reductions should only be considered if:** - FR ≥105% and total contribution rate not < normal cost Contribution changes per TLFFRA statute[1]	**Board supports enhancements only when:** - FR ≥ 105% after incorporating enhancement - ADC rate ≤ actual contrib rate Benefit changes as per TLFFRA statute[2]	**Negative Amortization:** - Board's goal is to eliminate negative amortization as quickly as possible and ultimately maintain a contribution rate above the threshold that results in negative amortization
Port Arthur Firemen's Relief & Retirement Fund	TMRS Linked	30-yr layered closed	2 AVs showing fixed contrib rates < ADC benchmark by more than 2%	**Board and City will:** - Develop a plan of action including contribution increases or benefit changes so that combined contribution rate will be ≥ ADC benchmark	**Contributions:** - Increases either split evenly between City and members or different agreed-upon amounts - May be phased in over time	Contribution changes per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	**Negative Amortization:** - Board will periodically review whether contributions are sufficient to pay normal cost plus interest on UAAL
Closed Benchmarks at/under 30 yrs to Ultimate Layered Closed Benchmark at/under 30 yrs								
Waxahachie Firemen's Relief & Retirement Fund	TMRS Linked	25-yr closed to ultimate 15 yr layered closed	2 AVs showing funding period > ADC benchmark am pd	**Board will:** - Notify City and member group/assn of difference - Work with City and active members to consider benefit/contribution modifications to return funding pd to ADC benchmark	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None

Summary of Funding Policies Received by Pension Review Board
Non-ADC Plans

System Name	Contribution Type	Benchmark and Actions Resulting: ADC Benchmark Am Pd	Benchmark and Actions Resulting: Condition(s) that Trigger Actions	Benchmark and Actions Resulting: Actions Resulting from Trigger	Additional Components: Risk Sharing	Additional Components: Contribution Change Parameters	Additional Components: Benefit Change Parameters	Additional Components: Additional Amortization Policy Provisions
Austin Employees Retirement System	Fixed	- 25-yr closed beginning 12/31/2020 - All other changes in UAAL amortized over 15-yr closed pd	- 2 AVs showing actual funding period > ADC benchmark; **or** - 1 AV showing funding period > maximum PRB *Funding Guidelines* period	**Board will:** - Notify the City and members - Work with City to consider contribution/benefit modifications to return funding period to ADC benchmark period	None	**Reductions may only occur if:** - COLAs built into assumptions; and - FR will remain ≥ 105%. - ER should not decrease by >1% of pay per yr - Board has reviewed sensitivty and stress testing analysis **Increases may occur after:** - Majority vote from regular full-time members	**Enhancements may only occur after:** - COLA included in assumptions; - FR ≥ 120% after incorp; - Employer ADC = statutory rate; and - Board has reviewed sensitivty and stress testing analysis **COLAs only considered when:** - Financially supported on a regular, periodic basis; - FR ≥ 80% after incorporating COLA; - Am pd ≤ 20 yrs after incorp COLA; - Actual employer contrib rate ≥ ADC rate; and - Board has reviewed sensitivity and stress testing analysis	Under the Amended Supplemental Funding Plan, any future benefit enhancemetns or COLAs will require recommendation from the City Manager and approval by the City Council
Dallas Police & Fire Pension System - Combined Plan	Fixed	25-yr closed to ultimate 20 yr layered closed	2 AVs showing actual contribution varies from the ADC benchmark by > 2%	**Negative Divergence:** - With 2/3rds vote, Board will recommend an increase in City rate **Positive Divergence:** - With 2/3rds vote, Board may recommend a reduction in City rate if the reduction does not extend funding pd	**Contributions/Benefits:** - Per statute, in 2024 an analysis will be conducted to asses the adequacy of the funding of the plan and, if necessary, changes may be made at that time	**City contributions may be decreased if:** - 2/3rds Board vote and City in agreement - Does not increase the am pd	**Granting COLA/Reduction of retirement age/ Reduction am pd of DROP annuities:** - Per statutory criteria **All other enhancements may only occur:** - If funding pd would not exceed 25 yrs after adoption	None
Temple Firefighters' Relief & Retirement Fund	Fixed	25-yr closed to ultimate 20 yr layered closed	2 AVs showing funding period > ADC benchmark am pd	**Board will:** - Notify City and member group/assn of difference - Work with City and active members to consider benefit/contribution modifications to return funding pd to ADC benchmark	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Greenville Firemen's Relief & Retirement Fund	Fixed	30-yr closed to ultimate 15 yr layered closed	2 AVs showing funding period > ADC benchmark am pd	**Board will:** - Notify City and member group/assn of difference - Work with City and active members to consider benefit/contribution modifications to return funding pd to ADC benchmark	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Conroe Fire Fighters' Retirement Fund	Fixed	30-yr closed to ultimate 20 yr layered closed	2 AVs showing funding period > ADC benchmark am pd	**Board will:** - Notify City and member group/assn of difference - Work with City and active members to consider benefit/contribution modifications to return funding pd to ADC benchmark	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Paris Firemen's Relief & Retirement Fund	Fixed	30-yr closed to ultimate 20 yr layered closed	2 AVs showing funding period > ADC benchmark am pd	**Board will:** - Notify City and member group/assn of difference - Work with City and active members to consider benefit/contribution modifications to return funding pd to ADC benchmark	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Closed Benchmarks over 30 yrs to Ultimate Layered Closed Benchmark at/under 30 yrs								
Plainview Firemen's Relief & Retirement Fund	Fixed	35-yr closed to ultimate 20 yr layered closed	2 AVs showing funding period > ADC benchmark am pd	**Board will:** - Notify the City and member group/assn of difference - Work with City and active members to consider benefit/contribution modifications to return funding pd to ADC benchmark	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Marshall Firemen's Relief & Retirement Fund	Fixed	35-yr closed to ultimate 20 yr layered closed	2 AVs showing funding period > ADC benchmark am pd	**Board will:** - Notify the City and member/group assn of difference - Work with City and active members to consider benefit/contribution modifications to return funding pd to ADC benchmark	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None

System Name	Contribution Type	Benchmark and Actions Resulting: ADC Benchmark Am Pd	Benchmark and Actions Resulting: Condition(s) that Trigger Actions	Benchmark and Actions Resulting: Actions Resulting from Trigger	Additional Components: Risk Sharing	Additional Components: Contribution Change Parameters	Additional Components: Benefit Change Parameters	Additional Components: Additional Amortization Policy Provisions
Harlingen Firemen's Relief & Retirement Fund	Fixed	35-yr closed to ultimate 30 yr layered closed	2 AVs showing funding period > ADC benchmark am pd	**Board will:** - Notify the City and member group/assn of difference - Work with City and active members to consider benefit/contribution modifications to return funding pd to ADC benchmark	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	None
Layered Closed Benchmarks over 30 yrs								
Irving Firemen's Relief and Retirement Fund	Fixed	40-yr layered closed	2 AVs showing actual contribution over/under ADC benchmark by more than 0.5%	**Board will:** - Notify the City - Consider and may recommend combined rate change **ADC Contribution** - It is the intent of the Board that the ADC determined by a given AV will be contributed in the calendar yr beginning 1 yr after the AV date	**Contributions:** - Increases capped at 0.5% of pay in one yr or 1% total - Increases split 60%/40% between City and employees - If max contribution increase has been applied and contribution still insufficient, Board shall recommend corrective action, including benefit or contribution changes	**Reductions in employer rate should only be considered if:** - FR $\geq$ 105% - Benefit reductions for current active members implemented within the last 10 yrs have been reinstated - Total contribution rate is not < normal cost	**Board supports enhancements only when:** - FR $\geq$ 110% after incorporating enhancement - ADC rate $\leq$ actual contribution rate	**Negative Amortization:** - Board's goal is to eliminate negative amortization as quickly as possible and ultimately maintain a contribution rate above the threshold that results in negative amortization
Alternative Benchmark								
Employees Retirement System of Texas - including ERS, LECOS & JRS II	Fixed	Once 31 yr amortization pd achieved, the system will reset ADC benchmark to match the avg yrs/svc at retirement for the plan as of the AV date when the 31-yr pd was achieved.[3]	Funding period > ADC benchmark am pd	**Board will:** - Direct staff to request funding from the legislature to achieve a 31-year funding period - After 31-yr period achieved, staff will request funding from the legislature to achieve the ADC benchmark	None	Min 6% contribution for members and a range of 6-10% of aggregate compensation for State contributions as per Texas Constitution	**Board recommends that enhancements should occur only if:** - Before and after enhancement, funding period is $\leq$ 25 yrs - Enhancement does not increase normal cost - FR $\geq$ 90% before and after enhancement ERS statute requires the am period to be < 31 yrs for the legislature to consider a benefit enhancement	None
Teacher Retirement System of Texas	Fixed	Declining UAAL	If after the phase-in of scheduled contribution rate increases, AV projects UAAL will not begin to decline by the 5th yr following AV	**Board will:** - Request a contribution change in legislative appropriations request	**Contributions:** - All contributions (sponsor, member, district) will increase per statutorily set schedule (5-year phase-in)	A minimum of 6% contribution for members and a range of 6-10% of aggregate compensation for State contributions as per Texas Constitution	TRS statute requires the am period to be under 31 years in order for the legislature to consider a benefit enhancement.	None
Rolling Benchmarks								
El Paso Firemen's & Policemen's Staff Plan and Trust	Fixed	10-yr rolling	2 AVs showing am pd > ADC benchmark am pd	**Sponsor and Board shall adhere to FSRP policy set forth in the plan document:** - Will increase employer and member contribution rates	**Contributions:** - Contribution changes (inc/dec) are proportional for employee and sponsor	**Contributions may decrease if:** - 2 AVs showing an am pd of 0 yrs (overfunded) - Sum of contribution decrease cannot exceed what is necessary to amortize UAAL over 0 yrs	**Benefit increases may only occur if:** - Board votes on and approves the change - Increase approved by an actuary - Approved by majority of members - Increase does not raise the am pd	None
Abilene Firemen's Relief & Retirement Fund	Fixed	30-yr rolling	2 (or 3 if annual) AVs showing fixed contrib rates < ADC benchmark by more than 2%	**Board will:** - Notify City, members and member assn - Request meeting with City/members to develop a 20-yr (at the latest) plan that will establish fixed contrib rates that will result in 100% funding over a 30-yr closed period - Provide updates on progress after each AV	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	**Payroll Growth Assumption for Benchmark:** - Lesser of 3% and avg payroll growth of fire dept over the last 10 yrs
Big Spring Firemen's Relief & Retirement Fund	Fixed	30-yr rolling	2 (or 3 if annual) AVs showing fixed contrib rates < ADC benchmark by more than 2%	**Board will:** - Notify City, members and member assn - Request meeting with City/members to develop a 20-yr (at the latest) plan that will establish fixed contrib rates that will result in 100% funding over a 30-yr closed period - Provide updates on progress after each AV	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	**Payroll Growth Assumption for Benchmark:** - Lesser of 4.5% and avg payroll growth of fire dept over the last 10 yrs
Odessa Firemen's Relief & Retirement Fund	Fixed	30-yr rolling	2 (or 3 if annual) AVs showing fixed contrib rates < ADC benchmark by more than 2%	**Board will:** - Notify City and member assn - Request meeting with City/members to develop a 20-yr plan (at the latest) that will establish fixed contrib rates that will result in 100% funding over a 30-yr closed period - Provide updates on progress after each AV	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	**Payroll Growth Assumption for Benchmark:** - Lesser of 3% and avg payroll growth of fire dept over the last 10 yrs

		Benchmark and Actions Resulting			Additional Components			
System Name	**Contribution Type**	**ADC Benchmark Am Pd**	**Condition(s) that Trigger Actions**	**Actions Resulting from Trigger**	**Risk Sharing**	**Contribution Change Parameters**	**Benefit Change Parameters**	**Additional Amortization Policy Provisions**
Orange Firemen's Relief & Retirement Fund	Fixed	30-yr rolling	2 (or 3 if annual) AVs showing fixed contrib rates < ADC benchmark by more than 2%	**Board will:** - Notify City and member assn - Request meeting with City/members to develop a 20-yr plan (at the latest) that will establish fixed contrib rates that will result in 100% funding over a 30-yr closed period - Provide updates on progress after each AV	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	**Payroll Growth Assumption for Benchmark:** - Lesser of 3% and avg payroll growth of fire dept
San Angelo Firemen's Relief & Retirement Fund	Fixed	30-yr rolling	2 (or 3 if annual) AVs showing fixed contrib rates < ADC benchmark by more than 2%	**Board will:** - Notify City and member assn - Request meeting with City/members to develop a 20-yr plan (at the latest) that will establish fixed contrib rates that will result in 100% funding over a 30-yr closed period - Provide updates on progress after each AV	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	**Payroll Growth Assumption for Benchmark:** - Lesser of 3% and avg payroll growth of fire dept over the last 10 yrs
Wichita Falls Firemen's Relief & Retirement Fund	TMRS Linked	30-yr rolling	2 AVs showing fixed contrib rates < ADC benchmark by more than 2%	**Board will:** - Notify City and member assn - Request meeting with City/members to develop a 20-yr plan (at the latest) that will establish fixed contrib rates that will result in 100% funding over 30-yr closed pd - Provide updates on progress after each AV	None	Contribution changes as per TLFFRA statute[1]	Benefit changes as per TLFFRA statute[2]	**Payroll Growth Assumption for Benchmark:** - Lesser of 3% and avg payroll growth of fire dept
Austin Fire Fighters Relief & Retirement Fund	Fixed	30-yr rolling	3 AVs showing fixed contrib rates < ADC benchmark by more than 2%	**Board will:** - Notify City and member assn - Request meeting with City/members to develop a 20-yr plan (at the latest) that will establish fixed contrib rates that will result in 100% funding over 30-yr closed pd - Provide updates on progress after each AV	None	None	**Enhancements:** - Policy references that enhancements must meet the requirements of the fund's Benefit Improvement Policy **COLAs:** - Policy references COLA Adjustment Policy, which contains parameters to determine when COLAs may be provided	None
El Paso Firemen's & Policemen's Pension Fund	Fixed	40-yr rolling	2 AVs showing funding period > 40 yrs	**Board and City shall adhere to FSRP policy set forth in El Paso F&PPF Statute:** - City may increase contribution rate	**Contributions:** - Contribution changes (inc/dec) are proportional for employee and employer - If City rate inc/dec, member rate must change proportionately	**City/member contribution decreases may be considered if:** - 2 AVs showing funding pd < 25 yrs - Decrease cannot exceed what is necessary to amortize UAAL over a 25-yr period **City/member increases:** - Sum of contribution increase cannot exceed what is necessary to amortize UAAL over 40 yrs	**Enhancement may only occur if:** - Am pd is not increased	None
No Benchmark								
Texas Emergency Services Retirement System	Fixed	None	None	None	None	**Contributions:** - Members do not contribute - If am pd > 30 yrs, state contributions required and limited to 1/3 of all contributions made by the governing bodies of participating departments - Participating departments may contribute more if local and state contributions are inadequate to bring am pd below 30 yrs	**Enhancements:** - Prohibited if am period > 30 yrs **Reductions:** - Future benefit accruals if local and state contributions are inadequate to bring am pd below 30 yrs	None

[1] Per TLFFRA statute, City may change its rate by formal action by governing body, provided it does not reduce City contribution rate below minimum required TLFFRA rate. Members may change rate by majority member vote as recommended by the Board, after actuary approval.
[2] Per TLFFRA statute, any benefit changes must be approved by Fund's actuary and a majority of members.
[3] 31 years is the "Actuarially Sound Contribution" (ASC) rate per Section 811.006 of the Texas Government Code. As an example, 22.1 years was the average years of service at retirement for a service retiree in the ERS plan as of 8/31/17.

Summary of Funding Policies Received by Pension Review Board
Modified ADC Plans

System Name	Amortization Policy	Risk Sharing	Contribution Change Parameters	Benefit Change Parameters	Additional Provisions
	Components				
Closed Amortization Periods at/under 30 yrs					
JPS Pension Plan - Tarrant County Hospital District (THA)	Preferred range of 10-25 yrs, never to exceed 30-yr am pd	**Contribution changes may be:** - Phased in over a period not to exceed 5 yrs	None	**Benefit increases should not occur if:** - Resulting am pd exceeds 25 yrs	**Negative Amortization:** - Contributions should always be sufficient to pay normal cost plus interest on UAAL. Negative amortization is not permitted.
Retirement Plan for Anson General Hospital (THA)	Preferred range of 10-25 yrs, never to exceed 30-yr am pd	**Contribution changes may be:** - Phased in over a period not to exceed 5 yrs	None	**Benefit increases should not occur if:** - Resulting am pd exceeds 25 yrs	**Negative Amortization:** - Contributions should always be sufficient to pay normal cost plus interest on UAAL. Negative amortization is not permitted.
Retirement Plan for Citizens Medical Center (THA)	Preferred range of 10-25 yrs, never to exceed 30-yr am pd	**Contribution changes may be:** - Phased in over a period not to exceed 5 yrs	None	**Benefit increases should not occur if:** - Resulting am pd exceeds 25 yrs	**Negative Amortization:** - Contributions should always be sufficient to pay normal cost plus interest on UAAL. Negative amortization is not permitted.
Retirement Plan for Guadalupe Regional Medical Center (THA)	Preferred range of 10-25 yrs, never to exceed 30-yr am pd	**Contribution changes may be:** - Phased in over a period not to exceed 5 yrs	None	**Benefit increases should not occur if:** - Resulting am pd exceeds 25 yrs	**Negative Amortization:** - Contributions should always be sufficient to pay normal cost plus interest on UAAL. Negative amortization is not permitted.
Retirement Plan for Sweeny Community Hospital (THA)	Preferred range of 10-25 yrs, never to exceed 30-yr am pd	**Contribution changes may be:** - Phased in over a period not to exceed 5 yrs	None	**Benefit increases should not occur if:** - Resulting am pd exceeds 25 yrs	**Negative Amortization:** - Contributions should always be sufficient to pay normal cost plus interest on UAAL. Negative amortization is not permitted.
Capital MTA Retirement Plan for Bargaining Unit Employees	Greater of: - 19-yr closed am pd as of 1/1/2020 with 3% annual increases or $4M minus non-investment admin expenses incurred during the year	None	None	Plan is frozen and no benefit enhancements are being considered.	- Plan frozen as of 8/18/2020
Fort Worth Employees Retirement Fund	- 30-yr closed beginning 12/31/2018 - Goal of eliminating UAAL and attaining 100% funding by 12/31/2048	**Contributions:** - Increases split 60%/40% by City/members, capped at 2% of pay and 4% aggregate annually - If ADC benchmark < combined contribs 2 consecutive yrs, City Council may reduce contribs to the ADC (but not less), split 60%/40%	**City rate reduction considered only if:** - FR $\geq$ 120% - Member contribution reduced by same proportionate percentage - All members elig. for periodic COLA - Regular COLAs built into assumptions - Total contribution not < normal cost **City rate changed/member rates increased after:** - Actuary performs analysis of fiscal impact of proposed change - Majority of elig. members vote in favor; and - Approved by Board (if City called vote) or City Council (if Board called vote)	**COLAs may be granted to certain groups if:** - Am pd < 28 yrs **Benefit enhancements considered only if:** - Annual COLAs incorporated into funding assumptions for all members - FR > 120% after enhancement - ADC benchmark < City contribution	**Negative Amortization:** - Board's goal is to eliminate negative amortization as quickly as possible and ultimately maintain a contribution rate that expected to result in the reduction of the UAAL each year
Layered Closed Amortization Periods at/under 30 yrs					
Houston Firefighter's Retirement & Relief Fund	30-yr layered closed as of 7/1/2017	**Contributions:** A "target contribution rate," along with an associated min/max corridor, is established via a risk sharing valuation study (RSVS).	**Contributions:** - Contributions set by initial risk sharing valuation study unless rate falls outside of corridor.	**Benefits:** - Statutory corridor mechanism which allows for benefit changes if the plan's funded ratio and contribution rates reach certain thresholds.	- Per statute, if plan's FR falls below 65% any time after 6/30/2021, plan must establish separate cash balance plan for new hires
Houston Municipal Employees Pension System	30-yr layered closed as of 7/1/2017	**Contributions:** A "target contribution rate," along with an associated min/max corridor, is established via a risk sharing valuation study (RSVS).	**Contributions:** - Contributions set by initial risk sharing valuation study unless rate falls outside of corridor.	**Benefits:** - Statutory corridor mechanism which allows for benefit changes if the plan's funded ratio and contribution rates reach certain thresholds.	- Per statute, if plan's FR falls below 60% any time after 6/30/2027, plan must establish separate cash balance plan for new hires

Summary of Funding Policies Received by Pension Review Board
Modified ADC Plans

System Name	Components: Amortization Policy	Risk Sharing	Contribution Change Parameters	Benefit Change Parameters	Additional Provisions
Houston Police Officers' Pension System	30-yr layered closed as of 7/1/2017	**Contributions:** A "target contribution rate," along with an associated min/max corridor, is established via a risk sharing valuation study (RSVS).	**Contributions:** - Contributions set by initial risk sharing valuation study unless rate falls outside of corridor.	**Benefits:** - Statutory corridor mechanism which allows for benefit changes if the plan's funded ratio and contribution rates reach certain thresholds.	- Per statute, if plan's FR falls below 65% any time after 6/30/2021, plan must establish separate cash balance plan for new hires
Galveston Employee's Retirement Plan for Police	30-yr layered closed beginning 1/1/2019	**Contributions:** - Per Galveston Ret Plan for Police statute, beginning 1/1/2025, any increases will be split equally between members and City	**Reductions may only occur if:** - Am pd would not exceed 25 yrs	**Enhancements may only occur if:** - Am pd would not exceed 25 yrs	**Negative Amortization:** - Board's goal is to eliminate negative amortization as quickly as possible and ultimately maintain a contribution rate above the threshold that results in negative amortization
Rolling Amortization Periods					
Northwest Texas Healthcare System Retirement Plan	5-yr rolling	The UAAL measured in each annual actuarial valuation will be re-amortized over a 5-year period.	**Contribution Changes** Contributions may be reduced to provide a reasonable margin for adverse experience. A Partial ADC is permitted when the year-over-year ADC increase is greater than 25% and the funded ratio is over 105% after reduction. The shortfall will be amortized over a 10 year closed period.	None	None
Dallas Employees' Retirement Fund	- 30-yr rolling for valuations prior to retirement of POBs - After retirement of POBs, determined by DERF board in place at the time	None	**Contribution adjustments:** - Automatically occur for both members and City under Chapter 40A - City contributions capped at 36% of payroll	**Board supports enhancements only when:** - FR >= 100% after enhancements	None

Summary of Funding Policies Received by Pension Review Board
ADC Plans

System Name	Components Amortization Policy	Contribution Change Parameters	Benefit Change Parameters	Additional Provisions
Fully Funded				
Arlington Employees Deferred Income Plan	- Plan is over 100% funded and continues to pay ADC - Uses layers to amortize the cost of benefits over the expected remaining service of active employees	None	None	None
Closed Amortization Periods at/under 30 yrs				
Guadalupe-Blanco River Authority	10-yr closed period beginning 1/1/2019	Plan participants do not make contributions Supplemental contributions recommended when funds are available and deemed appropriate	**Benefit enhancements** evaluated on a case-by-case basis taking into consideration: - actuarial soundness, - its relationship to targeted funding ratio, - stress testing of performance in down market conditions	- Targets 110% funding of TPL - Frozen plan as of 12/31/2018 **Adverse experience:** - Could work with actuary to test effects of extending the closed am pd to mitigate contribution volatility
Lower Neches Valley Authority Employee Benefits Plan	10-yr closed	**Plan trustees will notify LNVA and consider reductions only when:** - 2 AVs showing actual contribution more than 2% over/under ADC - FR >= 105% and total contribution rate is not < normal cost. In such case, may consider reduction in employer contribution	None	None
Brazos River Authority Retirement Plan	- 20-yr closed period beginning 3/1/2012 - As of 3/1/2019, there are 13 years remaining	**Partial contribution reductions (i.e. deferral from the ADC) are permitted when:** - Year-over-year ADC contribution increase exceeds 25%. Shortfall amortized over 5-yr pd and added to the ADC beginning with next AV	None	- Plan closed to new members and frozen as of 9/30/2007
Dallas/Fort Worth Airport Board Retirement Plan	- 30-yr closed effective 1/1/2004 - Will be fully funded by 12/31/2034	None	None	None
Corpus Christi Regional Transportation Authority	15-yr closed effective 1/1/2019	None	**COLA only considerd if:** - FR $\geq$ 85% after COLA	None
Lower Colorado River Authority Retirement Plan	- 20-yr closed beginning 2020	None	None	- Closed plan to new hires effective 5/1/2012 **Adverse experience:** - Could work with actuary to test effects of extending the closed am pd to mitigate contribution volatility
Houston MTA Non-Union Pension Plan	- 30-yr closed effective 2013 - As of 2019, 24-yr period remaining	None	**Enhancements only considered if:** - Contributions meet or exceed the ADC	- Closed to new hires effective 9/30/2007
Houston MTA Workers Union Pension Plan	- 30-yr closed effective 2013 - As of 2019, 24-yr period remaining	None	**Enhancements only considered if:** - Contributions meet or exceed the ADC	- Closed to new hires effective 10/1/2012
Dallas County Hospital District Retirement Income Plan	- 25-yr closed period beginning 1/1/2019 - Intent that the FR will be 100% on/before 1/1/2044	None	None	None

Summary of Funding Policies Received by Pension Review Board
ADC Plans

System Name	Components: Amortization Policy	Contribution Change Parameters	Benefit Change Parameters	Additional Provisions
Denton Firemen's Relief & Retirement Fund	- 25-yr closed - City will maintain current contribution level of 18.5%. - Each yr, City's contribution level based on actuarial study which calculates rated needed to amortize UAAL over 25 yr closed pd	**City contributions:** - Not lowered based on actuarial experience unless am pd <= 20 yrs - Not < City's contribution to TMRS	**Benefit enhancements:** - May not be made during the term of the agreement	**Funding Policy adopted through Meet and Confer Agreement with City:** - 4 yr agreement as of 9/2019 **Contributions:** - Actuarial gains will be used to pay down UAAL rather than reducing contribution rate during the first 5 yrs
Layered Closed Amortization Periods at/Under 30 yrs				
Refugio County Memorial Hospital	- 7-yr layered closed	None	None	- Plan frozen as of 12/31/2011
Dallas/Fort Worth Airport Board DPS Retirement Plan	- 15-yr layered closed effective 1/1/2020 - Each subsequent AV a new closed 15-yr amortization base will be established for any unanticipated changes in the UAAL from prior yr	None	None	None
Plano Retirement Security Plan	- 15-yr layered closed effective 12/31/2019 - New amortization bases established and separately maintained for each AV on/after 12/31/2021 and amortized over closed 15-yr pd	**Contributions:** - If net amortization cost is negative, then City's contribution will not be less than normal cost - expected earnings on surplus assets (determined as % payroll) to preserve assets to offset adverse experience that may occur in a	None	None
Harris County Hospital District Pension Plan	20-yr layered closed	None	None	- Closed plan to new hires effective 1/1/2007
Dallas Police & Fire Pension System-Supplemental	- 20-yr closed as of 1/1/2020 - 10-yr amortization bases beginning 1/1/2021	**Contribution reductions may only occur if:** - Reduction does not increase am pd	**Granting COLA/Reduction of retirement age/ Reduction am pd of DROP annuities:** - Per statute criteria **Enhancements may only occur:** - If funding pd would not exceed 25 yrs after adoption	**Contributions/Benefits:** - Per statute, in 2024 an analysis will be conducted to asses the adequacy of the funding of the plan and, if necessary, changes may be made at that time
Retirement Plan for Employees of Brownsville Navigation District	- 20-yr layered closed - 15-yr amortization base for UAAL as of 1/1/2020 - 20-yr am pd base for actuarial gains/losses and assumption method	**Employee contribution increases may be considered if:** - ADC becomes unsustainable	**Benefit reductions may occur if:** - ADC becomes unsustainable	If the ADC becomes unsustainable, District may consider adjusting the funding policy by potentially extending the amortization periods
Nacogdoches County Hospital District Retirement Plan	- 20-yr layered closed - All other changes in UAAL amortized over 20-yr closed pd - Level dollar amortization method will not result in an am pd of > 25 yrs	None	**Benefit enhancements and COLAs:** - Are not anticipated to occur - Would only be granted if there would not be a substantial increase to the timeframe to full funding - Would result in a resetting of the am pd to 20 yrs	- Plan frozen as of 9/4/2017

Summary of Funding Policies Received by Pension Review Board
ADC Plans

	Components			
System Name	**Amortization Policy**	**Contribution Change Parameters**	**Benefit Change Parameters**	**Additional Provisions**
Texas County & District Retirement System	- 20-yr layered closed - Benefit enhancements amortized over 15-yr closed pd - All other changes in UAAL amortized over 20-yr closed pd	None	None	**Investment Surpluses:** - May be set aside to help offset future negative economic cycles and are not considered part of the plan's assets
Galveston Wharves Pension Plan	- 21-yr layered closed effective 1/1/2020 until ultimate 10-yr pd - Am pd base of lesser of avg expected remaining lifetime and 10 yrs for benefit inc for existing retirees	None	**COLAs only considered when:** - Plan is at least 80% funded	- Closed plan to new hires effective 1/1/2010
Texas Municipal Retirement System	- 25-yr layered closed beginning in 2015 - Amortization base for actuarial gains and losses ranging from 1 to 25 yrs - All new losses occurring after 1/1/2020 and benefit increases effective on/after 1/1/2021 amortized over max 20-yr pd	Contributions based on plan options selected within statutory guidelines	Benefits based on plan options selected within statutory guidelines	None
San Antonio Metropolitan Transit Retirement Plan	- 30-yr closed period beginning 10/1/2012 - As of 10/1/2019, there are 23 yrs remaining - New amortization bases established and separately maintained for each AV on/after 10/1/2027 and amortized over	None	None	- Plan closed to new members as of 7/1/2013
CPS Energy Pension Plan	- 30-yr layered closed effective 2017 - Will be fully funded by 2046	**Contributions:** - Any change requires approval of Employee Benefits Oversight Committee	**Enhancements:** - Factored into ADC calculation - Must be approved by Employee Benefits Oversight Committee	None
Fort Worth Employees' Retirement Fund Staff Plan	- 30-yr layered closed effective 12/31/2018 - Additional 30-yr closed period layers with level-dollar amortization payments for actuarial gains/losses for future years	**If FR < 80 and am pd > 28 for 2 calendar years, Board may consider:** - Increase in contribution rate (requires participant election with majority agreement) **If FR is > 120% and am pd < 5 yr for 2 calendar years, Board may consider (provided that the FR does not fall below 100% and am pd does not exceed 25 yrs after changes):** - reduction in contrib rate, after annual COLA incorporated in funding assumptions - adoption of temporary contribution holiday	**If FR < 80 and am pd > 28 for 2 calendar years, Board may consider:** - Adoption of benefit reductions, after annual COLA is incorporated in funding assumptions **If FR is > 120% and am pd < 5 yr for 2 calendar years, Board may consider (provided that the FR does not fall below 100% and am pd does not exceed 25 yrs after changes):** - adoption of benefit enhancements, after annual COLA incorporated in funding assumptions - adoption of 13th check	**If FR < 80 and am pd > 28 for 2 calendar years, Board may consider:** - Non-recurring lump sum cash infusion to attain 80% or higher funded status **If FR is ≥ 120% and am pd ≤ 5 yr for 2 calendar years, Board may consider (provided that the FR does not fall below 100% and am pd does not exceed 25 yrs after changes):** - Examination & possible action of de-risking plan
Port of Houston Authority Retirement Plan	- 30-yr layered closed - Amortization bases ranging from 5 to 30 yrs	None	None	- Plan closed to new hires effective 8/1/2012

Summary of Funding Policies Received by Pension Review Board
ADC Plans

System Name	Components			
	Amortization Policy	Contribution Change Parameters	Benefit Change Parameters	Additional Provisions
DART Employee's Defined Benefit Retirement Plan	- 30-yr layered closed pd, level dollar - Actuarial gains/losses amortized over 15-yr base - Assumption/method changes amortized over 30 yrs - Benefit changes amortized over 30 yrs	None	None	- Plan closed to new entrants - Funding Policy is reviewed at least once every 5 years (in connection with actuarial experience study)
Rolling Amortization Periods				
Capital MTA Retirement Plan for Administrative Employees	- 20-yr rolling	**Contribution changes may be recommended when:** - 2 AVS showing actual contribution > 2% over/under ADC	None	None
University Health System Pension Plan	- 24-yr closed (1/1/2020) to ultimate 20-yr open (1/1/2024)	None	None	None

APPENDIX D – FUNDING POLICY SUMMARY DOCUMENT

Summary of Funding Policy Trends

As of November 12, 2020

Texas Government Code Section 802.2011 requires all public retirement systems to **"adopt a written funding policy that details the governing body's plan for achieving a funded ratio that is equal to or greater than 100 percent."** The first funding policies were due from systems by February 1, 2020.

- **Funding policies received from 96 of 100 plans**
- **4 plans still have not sent funding policies:**

Colorado River Municipal Water District DB Retirement Plan[1]
Midland Firemen's Relief & Retirement Fund[1]
Northeast Medical Center Hospital Retirement Plan
University Park Firemen's Relief & Retirement Fund[1]

Summary of Funding Policies from Plans with Non-ADC Contribution Structures

Under a fixed-rate funding structure, the contribution rate is a set percentage of payroll specified in statute or ordinance or local bargaining agreements rather than the actuarially determined contribution (ADC). In this summary, **Non-ADC** plans include fixed-rate and other funding structures that do not receive the ADC. The PRB has received funding polices from 55 Non-ADC plans.

Joint Funding Policy Development with Sponsor

1 Non-ADC system developed the funding policy jointly with its sponsor, which was adopted by City Council and signed by the Mayor. At least 3 other systems worked with the sponsor to include risk-sharing elements supported by both parties.

Risk-Sharing

12 of 55 Non-ADC plans used risk-sharing elements within their funding policy, such as:

- Proportionate employer/employee contribution increases when benchmark not met
- Consideration/recommendation of benefit and additional contribution changes if proportionate increases insufficient
- Cost-of-living increases tied to investment returns

Contribution/Benefit Parameters

15 of 55 Non-ADC plans utilized parameters on contributions and/or benefit changes, such as:

- Considering contribution decreases/benefit enhancements only if funded ratio or amortization period maintains certain threshold after the action taken
- Reinstating previous benefit reductions prior to decreasing contribution rate
- Tying COLA to CPI

[1] Plan has been in contact with the PRB and has indicated that they are working towards completing this requirement.

ADC Benchmarking

Fifty of 55 funding policies from Non-ADC plans utilized ADC benchmarking, as presented in the table below. **Four of 55** Non-ADC plans use alternative approaches from utilizing an ADC benchmark, which are detailed in the following section.

Number of Plans	Benchmark Amortization Period	Total
CLOSED		
1	15-year	**22**
1	20-year	
1	25-year	
19	30-year	
LAYERED-CLOSED		
1	20-year	**8**
1	25-year	
5	30-year	
1	40-year	
CLOSED W/ ULTIMATE LAYERED-CLOSED BENCHMARK		
2	25-year to 15-year layered	**10**
2	25-year to 20-year layered	
1	30-year to 15-year layered	
2	30-year to 20-year layered	
2	35-year to 20-year layered	
1	35-year to 30-year layered	
OPEN/ROLLING		
1	10-year	**10**
7	30-year	
2	40-year	
Total Fixed Rate/Other Plans		**50**

ADC Benchmark Comparison: Conditions that Trigger Actions and Actions Resulting from Trigger

The following table summarizes the various actions resulting from ADC benchmark comparisons for the 55 Non-ADC plans that utilized benchmarking. Numbers represent the number of plans with the particular provision in their funding policy.

ADC Benchmarking		
If the ADC benchmark rate differs from the plan's contribution rate, the board will:		
3		With the City, develop plan of action to bring combined contribution to benchmark
2		Recommend additional sponsor contribution
12		Notify the sponsor and/or member association and:
	5	Consider or recommend contribution changes
	7	Request a meeting to develop a 20-yr plan to establish fixed contributions to achieve 100% funding over a 30-yr closed period
1		Take all appropriate measures to maintain a fiscally responsible fund
If the ADC benchmark differs from the plan's funding period, the board will:		
1		Work with sponsor to address contribution rate and/or plan modifications
10		Notify the sponsor and/or member association and work with the sponsor to consider modifications to benefits and/or contribution levels
3		Adhere to FSRP requirements in their governing statute, resulting in contribution increase
If the ADC benchmark differs from the plan's funding period or contribution rate, the board will:		
18		Notify the sponsor and/or member association and:
	17	May consider whether contribution rate increases and/or benefit formula reductions should be pursued
	1	Engage in planning as needed to ensure progress toward goals
50		**Total utilizing ADC benchmarking**
Alternative Benchmark		
3		The Board will request a contribution rate change in appropriations request if the funding period is greater than the benchmark
1		The Board will request a contribution change if the UAAL is not projected to decline
No Benchmark		
1		None
55		**Total Non-ADC plans**

Summary of Funding Policies from ADC and Modified ADC Plans

In this summary, **Modified ADC Plans** includes thirteen plans that contribute on an actuarially determined basis but may not receive the full ADC each year.

Risk-Sharing

12 of 41 ADC/Modified ADC plans used risk-sharing elements within their funding policy, such as:

- Proportionate employer/employee contribution increases
- A "target contribution rate," along with an associated min/max corridor, is established via a risk sharing valuation study (RSVS)

Contribution/Benefit Parameters

28 of 41 ADC/Modified ADC plans utilized parameters on contributions and/or benefit changes, such as:

- Considering contribution decreases/benefit enhancements only if funded ratio or amortization period maintains certain threshold after the action taken

Amortization Policy

The following table summarizes these plans' amortization policies.

Number of Plans	Amortization Period	Total
1	Fully Funded	41
17	Closed at/under 30 years	
19	Layered-Closed at/under 30 years	
4	Rolling at/under 30 years	

APPENDIX E – FUNDING POLICY AND FUNDING SOUNDNESS RESTORATION PLAN – LEGISLATIVE RECOMMENDATIONS

Pension Review Board
June 30, 2020

Funding Policy and Funding Soundness Restoration Plan Requirements – Issue Document

Background and Purpose:

At the May 7, 2020 PRB Actuarial Committee meeting, the Committee directed staff to review the FSRP statute for opportunities for improvement that could result in recommendations to the Legislature. The Committee also discussed the statutory funding policy requirement in depth and raised areas of potential improvement. Ideally, funding policies and funding restoration plans should work together to provide a clear path toward full funding (funding policy), and when negative experience impedes funding progress, provide a mechanism to get back on track (remediation/restoration plan). This document is intended to provide background on the current requirements, summarize the Committee's discussion, and suggest possible issues for improvement.

Timeline of Funding Measures in Texas

I. **Funding Soundness Restoration Plan (FSRP)** – In 2015, the 84th Legislature enacted HB 3310, which included the following.

- A public retirement system is required to notify its sponsoring entity if the system receives an AV indicating the system's **contributions were insufficient to amortize the unfunded actuarial accrued liability (UAAL) within 40 years**.
- If a system receives **several consecutive AVs showing that the system's amortization period exceeds 40 years,** the system's governing body and sponsoring entity must formulate an FSRP and submit the plan to the PRB.
- The joint FSRP must be designed to **achieve a contribution rate that will be sufficient to amortize the UAAL within 40 years not later than the 10th anniversary of the date on which the final version of an FSRP is agreed to**.

II. **PRB *Pension Funding Guidelines* update** – In 2017, the PRB updated the *Guidelines* (formerly *Guidelines for Actuarial Soundness*), **lowering the recommended maximum amortization period from 40 years to 30 years**, among other changes.

- Funding of the **unfunded actuarial accrued liability should be level or declining** as a percentage of payroll over the amortization period.
- The maximum amortization period was lowered to **30 years, with a preferred target range of 10-25 years**.
- Plans with amortization periods that exceed 30 years as of 06/30/2017 should seek to reduce their amortization period to 30 years or less as soon as practicable, but not later than 06/30/2025.

III. **Funding Policy** – In 2019, the 86th Legislature enacted SB 2224, which required all public retirement systems to **"adopt a written funding policy that details the governing body's plan for achieving a funded ratio that is equal to or greater than 100 percent."**

SUMMARY OF ACTUARIAL COMMITTEE MEETING: Funding Policy

Committee members noted that it had been shocking several years ago to find out that not all Texas plans had a funding policy, which is something that every plan should have. It was noted that great progress has been made since the PRB recommended that all plans develop a funding policy, which was enacted into law in the 86th Session.

Sponsor involvement

The Committee discussed the funding policy legislation and noted that one shortcoming was that it did not require the involvement of plan sponsors. One member stated that governance went beyond the plan board and staff and included the plan sponsor, such as the Legislature and city councils, and to get to an acceptable place, all stakeholders should participate in the development and approval of the funding policies. The Committee discussed how the funding policies that included sponsor involvement seemed to be stronger, more meaningful, and more robust than those without. **The Committee directed staff to develop a legislative recommendation to include plan sponsors in the funding policy requirement**.

Contribution Benchmarking

The Committee discussed the types of benchmarks utilized in the funding policies, including the use of rolling benchmarks by 13/54 plans. A member noted that a rolling benchmark was not designed to achieve 100% funding. Staff agreed that rolling benchmarks were not designed to achieve 100% funding, and stated that a lower rolling period, such as 5 years would not have negative amortization, but that the higher rolling periods would experience negative amortization. Staff added that if a plan's valuation showed an actual amortization period of 30-40 years on a rolling basis, staff would report an effective amortization period of infinite in the PRB actuarial valuation report based on the assumption that the plan would never be fully funded.

Staff also explained that the updated Actuarial Standard of Practice 4 (ASOP 4) was likely to indicate that benchmarks with longer rolling amortization periods would not be considered reasonable. The Committee requested that staff contact the plans with rolling benchmarks to request additional clarification on how they planned to achieve full funding using such an approach.

The Committee also discussed the various actions outlined in funding policies as a result of not satisfying their stated benchmark comparison requirement over several valuations. Members raised concern that 8 funding policies would result in what was essentially a 50-year or longer plan, if one took into consideration the time it would take to hit the trigger and then develop and implement needed reforms.

SUMMARY OF ACTUARIAL COMMITTEE MEETING: Funding Soundness Restoration Plan (FSRP)

Staff Report

Staff provided a summary of the FSRP requirements under Sections 802.2015 and 802.2016 of the Texas Government Code, noting:

- The FSRP statute utilizes a 40-year amortization period threshold to require systems and their plan sponsors to jointly develop a plan designed to achieve a contribution rate sufficient to bring their amortization period under 40 years within a decade.
- Since the FSRP legislation in 2015, the PRB updated its *Pension Funding Guidelines* in 2017 and lowered the maximum amortization period threshold from 40 to 30 years, with the preferred target range of 10-25 years.
- Last session, bills were filed to bring the FSRP threshold to 30 years, in line with PRB *Pension Funding Guidelines.*
- Current ASOP 4 Exposure Draft indicates a 40-year rolling threshold would not be considered reasonable.
- **In summary, the 2015 FSRP legislation's 40-yr rolling amortization threshold no longer syncs well with the PRB *Pension Funding Guidelines* or the 2019 funding policy legislation, which requires plans to target a 100% funded ratio. In the future, it may not line up with actuarial standards of practice.**
- Many of the plans that have already completed FSRPs with their sponsors have already had to provide revised or even second-revised FSRPs because the changes made in the first plan were not enough to get them to the 40-year threshold.
- Other aspects of the FSRP process could be improved, building on the experience of plans and staff since 2015.

Committee Discussion

Lowering amortization period threshold

The Committee raised concerns that the current FSRP 40-year rolling threshold should be lowered to a more reasonable level. One member suggested recommending lowering it to 25 years to match the upper end of the target range in the *PRB Funding Guidelines*, noting that a 30-year amortization period made it difficult to make progress on the plan's funding level, noting that the Governmental Accounting Standards Board (GASB) established its funding guidelines when the workforce was much younger, but now the workforce is more mature.

One member noted that recommending a 25-year amortization period threshold could help plans avoid negative amortization, but also noted that a 25-year threshold would dramatically increase the number of plans that would be required to submit an FSRP. Another member stated that the legislative recommendation should focus on what is considered sound criteria for pension funding, not the number of systems that could become subject to the requirement.

The Committee discussed the importance of adequately funding Texas retirement systems now, especially considering the recent market decline and resultant revenue decline. A member stated that it is the Committee's responsibility to encourage the Board to urge the Legislature to establish more stringent statutes and to adopt policies that achieve greater accountability. **The Committee directed staff to prepare a report on issues concerning the implementation of the FSRP, including the amortization period threshold.**

Timing between first identified as at-risk and becoming subject to FSRP requirement

The Committee noted that statute required the FSRP to be formulated after two to three valuations, depending on the plan's valuation schedule. They discussed whether the time period between the first valuation not meeting the 40-year threshold and when the FSRP is required was too lengthy. For example, a system could experience actuarial problems and not be subject to the FSRP requirement for several years, during which time funding could deteriorate even further. A member noted that the current FSRP requirement can result in a 50-year plan because systems/sponsors are required to create a 10-year plan to reach a 40-year amortization period. **The Committee requested that staff recommend a shortened time period from the first problematic valuation to when the FSRP requirement is triggered.**

POTENTIAL POLICY ISSUES

Potential Issues for BOTH the Funding policy and FSRP Requirements

1. Funding policy and FSRP requirements are currently completely separate and do not tie together to form a continuum of funding support to plans and sponsors.

   - A well-designed process would require plans and sponsors to jointly develop a funding policy and then, if the policy objectives were not met after a reasonable period, would require a funding restoration plan to get back on track.
   - The FSRP process would be used strategically, with the ultimate goal of restoring the original funding policy objectives. If the FSRP process failed to produce the necessary results, statute could require the funding policy to be strengthened, among other actions.

Potential Issues for Funding Policy Requirement

2. Plan sponsors are not required to be involved in the development process.

   - In the FSRP requirement, the sponsor and system share the responsibility for fixing the plan's issues.
   - Including the sponsor in the development of the original funding plan, not just when funding levels become unsound, should strengthen the funding policy and reduce the future need for an FSRP.

3. Rolling amortization periods were not designed to achieve 100% funding.

   - Rolling amortization periods do not provide a clear path to reducing the unfunded liability and rolling periods above 20 years generally cause a plan to experience negative amortization.
   - The PRB already considers most rolling amortization periods reported in actuarial valuations as infinite.
   - ASOP 4 is likely to indicate that benchmarks with rolling amortization periods that result in negative amortization are not reasonable.

Potential Issues for FSRP Requirement

4. A rolling 40-year amortization period threshold is no longer reasonable.

   - The CCA White Paper recommends a layered, fixed period amortization depending on the source of the UAAL, with a 25-yr max.
   - SOA Blue Ribbon Panel recommends gains/losses to be amortized over a period of no more than 15-20 years.

- GFOA recommends using a closed period never to exceed 25 years, but to fall between 15-20 years.
- PRB *Pension Funding Guidelines* utilize a 30-year threshold, with a preferred period of 10-25 years.
- ASOP 4 Second Exposure Draft states that each amortization base must either have payments that fully pay off the balance within a reasonable timeframe; or reduce the unfunded balance by a reasonable amount each year.

5. Time period between the first AV over the threshold and when the FSRP is triggered can be lengthy.

- The FSRP requirement is triggered after three consecutive annual AVs, or two consecutive AVs if the systems conduct the valuations every two or three years, which could allow funding problems to grow considerably worse between valuations.[1]

6. Some FSRPs rely on future actions that may/may not happen.

- Staff seeks clarification as to what extent future actions may be incorporated in FSRPs.
- For example, can an FSRP include a benefit change that has not yet been voted on by members; feature contribution increases not yet approved by the sponsor; or rely on increases in active plan population that are already included in existing amortization period calculations?

7. Supporting documentation requirements are unclear.

- Staff seeks clarification regarding what evidence must be provided to show that the FSRP meets the amortization period requirement. For example, does an analysis of individual pieces of the changes and assurance from the system and/or plan actuary that the combined impact will achieve the necessary amortization period suffice, or must the FSRP contain an analysis of the combined impact of all changes?
- The FSRP must "be developed by the public retirement system and the associated governmental entity."[2] Staff seeks clarification regarding whether the communication must include an acknowledgement (i.e. a signature) by the sponsor if the system is the only party making a change (e.g., an increase in employee contributions only).

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[1] Government Code Section 802.2015(c)
[2] Government Code Section 802.2015(e)(1)

8. Preparing a revised FSRP does not ensure a plan is back on track towards the original FSRP goal.

   - Statute calls for a revised FSRP if the original is not adhered to. To date, several systems have been required to formulate revised FSRPs, and some are on their second revised FSRP.
   - There are no consequences in place to prevent perpetual revised FSRPs, which means a plan may never achieve the minimum amortization period threshold.

9. FSRP deadlines do not prevent substantial delays or speak to the time period over which a revised FSRP must achieve results.

   - The bill author clarified the deadline to formulate an FSRP is 6 months from the adoption of the AV that triggers the formulation requirement. This deadline is not currently in statute.
   - Plans and sponsors subject to the FSRP have missed the 6-month FSRP formulation deadline, sometimes by several years. Statute does not address how to handle late FSRPs, which requires striking a balance between allowing time for the development of a thorough joint plan but also preventing extremely delayed FSRPs. Also, when does the 10-year period for achieving results begin in instances when an FSRP is not adopted within 6 months of the triggering AV?
   - Staff seeks clarification on whether the 10-year deadline resets if a system and its sponsor must formulate a revised FSRP.

10. Progress updates and criteria for determining adherence to the FSRP require clarification.

   - Statute requires systems and sponsors that formulate an FSRP to report "any updates of progress made by the entities toward improved actuarial soundness" to the PRB every two years.
   - A revised FSRP must be formulated if the "system's amortization period exceeds 40 years and the previously formulated FSRP has not been adhered to."[3]
   - Staff seeks clarification as to what the 2-year progress updates should include and what indicates the prior FSRP has been "adhered to." What evidence should the system provide to illustrate that the required 40-year amortization period is still expected to be achieved by the original deadline? Does a plan's actuarial valuation provide enough evidence?

[3] Government Code Section 802.2015(d)(2)

PRB Legislative Recommendations
Funding Policy and Funding Soundness Restoration Plan

Funding policy and FSRP requirements are currently separate and do not tie together to form a continuum of funding support to plans and sponsors. The funding policy requirement, enacted in 2019, requires plans to adopt a funding policy targeting full funding. The FSRP statute, enacted in 2015, requires plans and their sponsors to adopt a remediation plan if the unfunded liability cannot be amortized over 40 or fewer years.

Now that plans have funding policies, they have long-term plans to achieve full funding. However, the remediation plan requirement for plans that face serious funding shortfalls operates independently of the newer funding policy mandate and does not require plans to target full funding over a closed period in line with *PRB Funding Guidelines*.

Ideally, funding policies and funding restoration plans should work together to provide a clear path toward full funding (funding policy), and when negative experience impedes funding progress, provide a mechanism to get back on track (restoration plan). To provide an effective continuum of funding support for Texas pension plans, the FSRP, which is designed to quickly shore up dramatic funding problems, should tie back to the funding policy, which is designed to prevent funding deficiencies.

The Actuarial Committee is recommending the following for Board approval, incorporating comments and input from public retirement systems, their consultants, and other stakeholders, to improve current funding policy and funding soundness restoration plan statutory requirements.

Potential Change to Funding Policy Requirements

1. **Sponsor involvement.** Add the sponsor to the funding policy requirement so that both the pension board and plan sponsor have ownership in the plan to achieve full funding rather than only in the remediation plan once funding problems require immediate action. Specifically, require the plan and sponsor to jointly develop the funding policy.

Potential Changes to FSRP Requirements

2. Increase sponsor accountability and tie funding policy and FSRP together

Funding policy revision. Incorporate the funding policy upon trigger of FSRP. If an FSRP were triggered, the plan and sponsor would be required to adopt an FSRP and revise the funding policy together to ensure both parties are involved in long-term improvement. For FSRP plans, the revised funding policy should include a detailed plan to share the cost of unexpected actuarial losses that could derail progress toward the FSRP goal.

Sponsor adoption. Require the sponsor's governing body (e.g., city council) to adopt the FSRP through resolution to ensure full sponsor involvement and ownership.

3. Update threshold, target and trigger

Lower threshold and target to 30 years. Bring the FSRP threshold and target in line with *PRB Guidelines* and other standard-setting bodies by changing 40 years to 30 years (*PRB Guidelines* upper bound).

Tiered trigger and phase in of lower threshold. (Effective 9/1/2025) Trigger the FSRP requirement <u>immediately</u> for:

a. plans that receive an AV with the amortization period **over 40 years**; and
b. plans that receive an AV with an amortization period **between 30 - 40 years and a funded ratio lower than 65%**.

For plans that receive an AV with an amortization period **between 30 - 40 years and a funded ratio of 65% or above**, the FSRP is triggered after three consecutive annual AVs, or two consecutive AVs if the systems conduct the valuations every two or three years. 30-year amortization period target would not be expected to be achieved until 9/1/2025.

Credit for reforms already made. (Effective 9/1/2025) Plans (and sponsors) that receive an AV with an amortization period between 30 – 40 years should not become subject to the FSRP requirement if:

- they are implementing an FSRP formulated prior to 9/1/2025; or
- they are implementing a contribution rate structure that utilizes, or will ultimately utilize, the ADC; **and**
- the AV indicates they are on a path towards full funding.

4. Update timelines and consequences if original FSRP is not working

Timeframe for developing FSRP. Allow **2 years**, rather than 6 months, for the completion of the FSRP, but also require progress updates at 1 year and at 18 months. Progress updates should include a draft plan or changes under consideration.

Future actions. Clarify that FSRPs <u>may not</u> include items requiring future action such as votes of the membership and that the FSRP must memorialize actions taken. FSRPs may include contribution schedules for future increases.

Shorter implementation timeframe. Remove 10-year period to reach target and require plans to achieve 30 years or less no later than 2 years from the triggering valuation.

Failure to achieve FSRP goal. If a plan and sponsor become subject to a second FSRP within a period of 10 years from adoption of the first FSRP, the second FSRP and revised funding policy shall include stricter requirements for funding restoration, such as:

a. risk-sharing mechanisms;
b. an ADC-based contribution structure;
c. adjustable benefit or contribution mechanisms;
d. a lower amortization period target: 10-25 years (per the PRB *Funding Guidelines)*

5. Update required documentation

- Require FSRPs to provide an aggregate analysis of multiple changes specifically showing how the combined impact of the changes in the FSRP would result in meeting the statutory requirements. The analysis must include an actuarial projection that shows the unfunded liability decreasing to zero within the required time period. The plan and sponsor should share the cost of the analysis.
- Clarify that any assumptions must be made in accordance with ASOPs.

APPENDIX F – INVESTMENT PERFORMANCE REPORT

Investment Performance Report

NOVEMBER 2020

TEXAS PENSION
REVIEW BOARD

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EXECUTIVE SUMMARY

The 86th Texas Legislature set a "a new level of disclosure standards" with the passage of Senate Bill (SB) 322, making it "easier for the Texas Pension Review Board [PRB] to make apples-to-apples comparisons of the investment health of the public pension plans."[1] The new law significantly improved transparency via enhanced investment fee disclosures and investment performance evaluations. These evaluations were required of systems with assets of at least $30 million and were designed to provide comprehensive analysis of the retirement system's investment process that covers all asset classes.

The PRB issued guidance to help systems comply with the new requirements, and the Investment Committee and Board reviewed the evaluations over many months and several public meetings. Overall, the PRB found that the breadth and depth of information in the evaluations coupled with the enhanced investment fee disclosures provides systems and stakeholders a unique opportunity to learn from the practices of peers and ultimately raises the bar of investment practices in Texas.

Texas Government Code §802.109 requires the PRB to submit an investment performance report to the governor and legislative leadership offices that compiles and summarize information received in the evaluations. This report contains aggregate analysis of the evaluations, summaries of each individual evaluation and resources including a compilation of references from the evaluations to help systems access best practices and relevant benchmarking resources.

Key Recommendations from the Evaluations

Texas Government Code §802.109 required the evaluations to include five specific components of review. If there was an overarching theme across the evaluations, it was the importance of investment fee review and documentation. Fee-related issues were a focus in four of the five areas of evaluation. In response to a need identified by evaluators, the PRB plans to publish a Texas-specific investment fee benchmarking resource once the enhanced fee disclosures required by SB 322 are fully implemented. Key recommendations in each statutory area were as follows:

- Investment Policy Statement (IPS): Systems should review the IPS annually, comprehensive investment fee review must be completed regularly, and investment fee policies should be documented in the IPS.
- Asset Allocation: Systems should take a holistic approach to the asset allocation process that considers both the assets and the liabilities that the trust is designed to support.
- Investment Fees: Systems should use industry and peer benchmarks when reviewing investment fees. Fee transparency, disclosing direct and indirect fees as well as reviewing net-of-fee performance is of utmost importance. Passive investments should also be considered to help reduce fees overall or offset higher fees from active and alternative investments.
- Governance: Systems should define roles and responsibilities more clearly, especially investment fee responsibilities, as they are crucial for proper oversight of any investment program.
- Investment Manager Selection and Monitoring: Systems should document investment manager hiring and firing criteria more clearly in the IPS, and net-of-fee metrics must be used to measure performance. The rationale for hiring and firing decisions should also be well documented.

[1] https://www.pionline.com/print/texas-peek-over-shoulders-public-funds

PRB Legislative Recommendations

After its analysis of the first round of evaluations, the PRB has identified opportunities where modifications to the statute may provide additional clarity to systems in future evaluations and enhance the transparency and objectivity of the evaluations for all stakeholders. Taking inspiration from some of the best evaluation reports, the PRB recommends the following statutory changes:

1. Require evaluations to detail how the evaluator determined the need, or lack thereof, for any recommendations. Requiring evaluations to provide detail both when a recommendation is made and when no recommendation is deemed necessary, would enhance understanding of the investment decision-making process and help foster informed decision-making. Approximately one-third of the evaluations lacked both recommendations for improvement and an explanation how or why existing practices are appropriate, adequate and/or effective. The PRB worked with those systems and many elected to submit updates to include additional detail in their evaluations.
2. Require systems to acknowledge review and formally comment on the evaluation before final publication. In some cases, it is not clear whether systems have reviewed the evaluation and considered the recommended changes. Requiring a substantially complete draft of the report be submitted to the pension system's board prior to publication would allow the board the opportunity to submit a written response to the firm acknowledging receipt and making comments or noting any anticipated changes in response to the report's findings. This would give stakeholders insight into the impact of the evaluation on the system's practices.
3. Review and consider the feasibility of whether an independent firm conducting the evaluation should be a different firm from the one that helped the system develop its existing investment policies, procedures, and practices. Current law permits the system's current investment consultant to perform the evaluations, if the firm does not directly or indirectly manage investments of the retirement system. Of the 55 evaluations received, the majority (40) were performed by the existing investment consultant, while 15 were performed by an independent third party. Almost all third-party evaluations provided at least one recommendation, usually many more, and provided additional outside analysis of the investment consultants role in the investment program. A third-party evaluation presents an opportunity for an additional expert perspective and full analysis of current investment processes, encompassing the work of the current investment consultant, which is not possible otherwise.
4. Require evaluators to identify its qualifications and potential conflicts-of-interest; codifying existing PRB informal guidance. While the PRB's informal guidance suggests that evaluations make specific disclosures, some evaluations did not clearly identify what firm performed the evaluation, the qualifications of the evaluator, or the role the evaluator played in developing the policies and practices under review. This makes it more difficult for members, taxpayers and other stakeholders to assess the evaluation's efficacy. The evaluations should be required to include disclosures about the evaluator, including the evaluator's qualifications and the nature of their relationship with the retirement system and the work being performed.

OVERVIEW

The 86th Legislature enacted Senate Bill 322, which added Texas Government Code §802.109, concerning an investment practices and performance evaluation (IPPE). The statute requires public retirement systems with assets of at least $30 million to select an independent firm with substantial experience to evaluate the appropriateness, adequacy, and effectiveness of the system's investment practices and performance and to make recommendations for improving its investment policies, procedures, and practices. The law also requires the PRB to compile and summarize the evaluations and submit an *Investment Performance Report* to the Legislature and Governor in its biennial report.

Per statute, each evaluation must include:

- an analysis of any investment policy or strategic investment plan adopted by the retirement system and the retirement system's compliance with that policy or plan;
- a detailed review of the retirement system's investment asset allocation;
- a review of the appropriateness of investment fees and commissions paid by the retirement system;
- a review of the retirement system's governance processes related to investment activities;
- and a review of the retirement system's investment manager selection and monitoring process.

The first evaluation must be a comprehensive analysis of the retirement system's investment program that covers all asset classes, while subsequent evaluations may select particular asset classes on which to focus.

Implementation

Upon enactment of the bill, the PRB sent notification to the systems to inform them of the new requirement. The PRB also worked with stakeholders and held several Actuarial Committee and Board meetings to provide informal guidance to help systems identify the types of information an evaluation may include. The guidance featured questions that could be used by systems and their evaluators to ensure thorough review of the five components detailed in statute. The guidance was distributed to public retirement systems and made available on the PRB website. (Appendix 1)

Compliance

The first evaluations were to be completed by May 1, 2020 and were due to the PRB from systems by June 1, 2020.[2] Of the 100 public retirement systems in Texas, the PRB expected 56 evaluations covering 62 plans that met the $30 million threshold.[3] Fifty-three of the 56 expected evaluations were received and included in this report. Also included were two additional evaluations received from systems just under the $30 million threshold, bringing the total evaluations included in this report to 55.

---

[2] Systems subject to the evaluation were notified that the PRB would work with them on any pandemic-related delays.

[3] Several trusts serve multiple plans, in which case only one evaluation of the trust's investment practices is necessary.

The three systems that have not completed evaluations have reported the following to the PRB:

System	Communicated Issue
Corpus Christi Regional Transportation Authority	The System indicated it was experiencing a COVID-related delay but hopes to complete evaluation by the end of the year.
Midland Firemen's Relief & Retirement Fund	The System indicated it was working on the evaluation but did not provide an expected completion date.
Nacogdoches County Hospital District Retirement Plan	The System indicated it was experiencing a COVID-related delay but did not provide an expected completion date.

PRB ANALYSIS OF EVALUATIONS

S.B. 322 was enacted specifically to "increase transparency, strengthen oversight, and protect retirement systems from self-inflicted investment catastrophes that jeopardize their members' benefits."[4] The PRB believes the investment practices and performance evaluation (evaluation) provides an invaluable opportunity for a strategic-level review of the practices and policies of Texas pension systems. With public retirement systems managing net assets of approximately $282 billion and serving over 2.8 million members, this is something Texas needs to ensure is done right. Even systems employing leading investment practices can benefit from a new, expert perspective on their existing processes.

The comprehensive evaluation required in the initial evaluation, when done well, moves the needle on the transparency by offering a complete picture of a retirement system's investment operations in a digestible format accessible to stakeholders interested in learning more. The evaluations provide a window into a system's investment program that can be very difficult to obtain without wading through numerous documents and following a board's ongoing discussions.

An additional benefit is the PRB can identify and compile best practices, industry standards and benchmarks from about the evaluations to provide these resources to systems. Giving smaller systems, in particular, an opportunity to access resources they might not have known about.

Overall, both the breadth and depth of information resulting from the evaluations allow all stakeholders an opportunity to learn from the practices of others and ultimately raises the bar of existing practice in Texas. The initial comprehensive evaluations, and the more focused future evaluations, will help systems continue to refine their practices and represent a new tool for communicating those improvements and educating stakeholders. This can best be accomplished when systems embrace the process and treat it as an important educational resource for the benefit of all stakeholders, rather than another box to be checked.

Overview of Evaluations Received

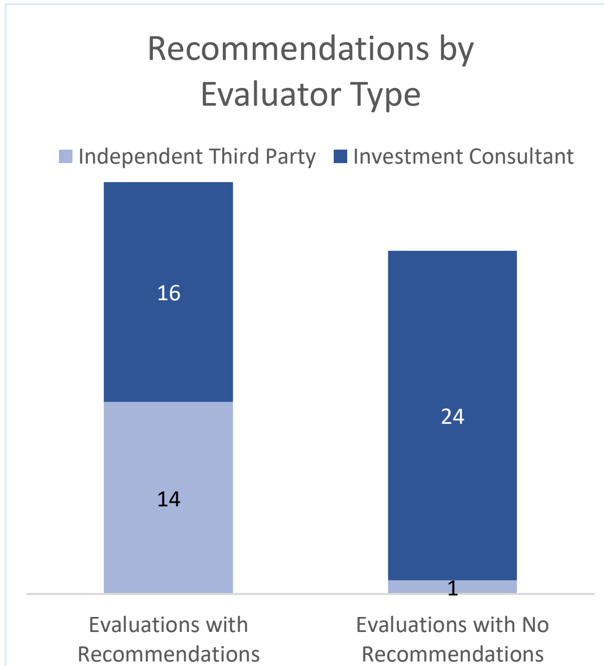
The PRB examined each of the 55 evaluations received from Texas pension systems. While the evaluations varied significantly in both format and level of detail, overall, they were informative and provided insight into the practices currently employed by Texas systems, as well as the challenges they face. The evaluations indicated that systems generally follow industry best practices in most areas. None

[4] https://capitol.texas.gov/tlodocs/86R/analysis/pdf/SB00322F.pdf

of the evaluations stated a critical concern for systems overall practices and their ability to continue operating.

Many evaluations included detailed discussions of critical investment practices such as asset and liability management, manager performance review, and expense analysis using net-of-fee metrics. The PRB believes these expanded explanations will be very helpful for trustees, stakeholders and other retirement systems to learn from best-in-class practices utilized by peer systems.

As noted above, Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the system, if the firm does not directly or indirectly manage investments. Of the 55 evaluations received, 40 were performed by the system's current investment consultant, while 15 were conducted by an independent third party.[5] In total, 20 different firms completed one evaluation, 9 firms completed 2 or 3 evaluations, and 1 firm completed 12 evaluations.



Approximately half of the evaluations included recommendations for either policy enhancements or updates to become fully in line with leading practices. The remaining evaluations did not include any recommendations for improvement, but several provided supporting details explaining how existing policies are in line with best practices, and therefore, why no recommendations were made.

Almost all the independent third-party evaluations included at least one recommendation for improvement, which can be contrasted with less than half of evaluations conducted by the investment consultant. This does not necessarily indicate independent 3rd parties completed more thorough evaluations; several evaluations conducted by current investment consultants were extremely thorough, highly educational and provided clear justifications for the continuation of existing practices. However, the data clearly show independent evaluators were more likely to include recommendations for improvement.

With over half of the evaluations containing recommendations for improvement, it is evident that Texas investment programs will improve from these evaluations. Furthermore, several systems took an additional step and approved recommended changes during the evaluation process, while other systems are currently discussing changes to their policies.

Recommendations Made by Evaluators

The PRB identified over 200 recommendations in 30 of the 55 evaluations. (Appendix 2) The recommendations covered a variety of practices across all sections of the statute. To summarize the information, the PRB examined the recommendations and grouped them into broad categories. While there are not necessarily clear lines delineating the categories, most evaluations were organized

[5] One of the independent third-party evaluations was completed by the system's contracted plan administrator.

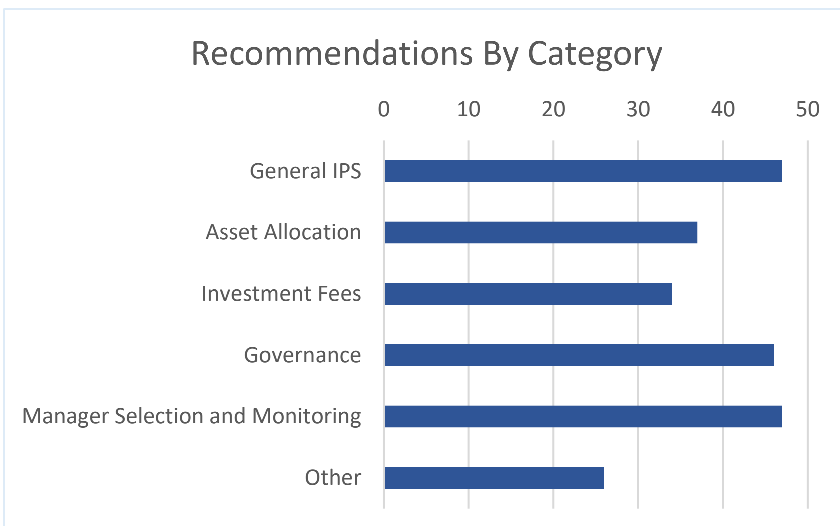
according to the 5 subsections of Texas Government Code §802.109(a), and therefore the recommendations could generally be grouped on that basis. A small subset of recommendations covered areas that did not fit as well within these 5 categories and are identified as “other” in the following graph.

§802.109(a) states each evaluation must include:

1) an analysis of any **investment policy** or strategic investment plan adopted by the retirement system and the retirement system's compliance with that policy or plan;
2) a detailed review of the retirement system's investment **asset allocation**;
3) a review of the appropriateness of **investment fees and commissions** paid by the retirement system;
4) a review of the retirement system's **governance processes** related to investment activities; and
5) a review of the retirement system's **investment manager selection and monitoring** process.

Key Practices Identified by Evaluators

The PRB identified the following policies from common recommendations made in the evaluations or discussed as important best practices. The following graph shows how many recommendations were made in each of the 5 categories.[6]



1. Investment Policy Statement (IPS)

Annual IPS Review

One the top five recommendations in the evaluations was to review the IPS annually. The IPS could be considered the most important guiding document of an investment program, and as such, must be kept up to date with current practice.

[6] Many recommendations were broad or could easily categorized in multiple ways. For example, recommendations regarding the IPS were included in General IPS unless they were specific to a practice in another category.

GFOA Guidelines

> "GFOA recommends that defined benefit plans establish and adhere to a formal investment policy to regulate and monitor the system's investment program. Such a policy should be viewed as a long-term governing document. The formal investment policy should be adopted by the governing board(s) and should be reviewed at least annually and updated as deemed appropriate."[7]

Comprehensive Investment Fee Review and Written Fee Policies

A common recommendation made by the evaluators was for systems to review all investment expenses regularly and document their investment fee policies within the IPS. For example, one evaluation pointed out that "the responsibility to periodically report, analyze and benchmark total Plan fees" is "separate from the duty to monitor individual managers' net-of-fee performance, as custodial and transaction fees and costs can be an important part of aggregate Plan fees."[8] In line with this recommendation, several evaluations conducted or referred to a Trade Cost Analysis that was done to ensure transaction costs were assessed as part of the system's fee review.[9] Net-of-fee performance metrics are discussed later in this report.

> *"The Board should review the IPS at least annually to ensure that all required actions are being implemented or make necessary change to the IPS to reflect the actual process."*
>
> *-City of El Paso Employees Retirement Trust IPPE*

Another evaluation recommended the system "include language in the IPS pertaining to monitoring and reporting of fees; the investment management fees in particular."[10]

According to GFOA and the CFA Institute's *Primer for Investment Trustees*, a written investment fee policy should "establish guidelines that identify the actions the defined benefits plan should take in negotiating investment fees." [11, 12] Fee policies should also specify how (using measurable criteria) and at what intervals investment management expenses will be reviewed to assess the competitiveness of fees for the services provided.

The following are industry standards that identify the importance of competitive investment fees and indicate investment fees are something that systems can actively work to improve that benefits fund performance and creates strategic advantages.

CFA Institute Primer for Investment Trustees

> "You will exercise little influence over the outcome of most aspects of the Fund's investment program. Markets move in ways that are inherently unpredictable. A key element of the Fund's investment performance over which you actually do exert considerable control, however, is the

[7] https://www.gfoa.org/materials/investment-policies-for-defined-benefit-plans
[8] San Angelo Firemen's Relief & Retirement Fund IPPE
[9] System evaluations that examined TCAs: COAERS, ERS, TMRS, TRS
[10] Guadalupe-Blanco River Authority IPPE Recommendation
[11] https://www.cfainstitute.org/-/media/documents/book/rf-publication/2017/rf-v2017-n3-1.ashx
[12] https://www.gfoa.org/materials/investment-fee-guidelines-for-external-management-of

issue of fees and expenses. As an investment trustee, you have the responsibility for seeing that the Fund's investments are managed in the most cost-effective manner possible."[13]

GFOA Investment Fee Guidelines

"Establish guidelines that identify the actions the defined benefits plan should take in negotiating investment fees. The importance of competitive fees should be ranked among the other factors being analyzed when selecting investment managers, including:

1. Demonstrated manager track records, proven investment talent, repeatable investment processes, competitive and strategic investment advantages, and other qualitative factors.
2. The fees, investment process, and historical performance of active managers, which can be expected to have higher fee structures than those of passive managers. This information will allow the fund to compare an active manager's net performance against an index return over an entire market cycle.
3. The appropriateness of the fees (for either an active or passive manager), given the expectation of future investment returns/performance. Future returns are uncertain, while fees often can be determined in advance. When one manager charges greater fees than another for a comparable investment strategy, analyze the manager's track record and additional services offered to determine whether the additional cost is justifiable and necessary."[14]

The following provides an example of a strong improvement made by a system as a result of a recommendation from their evaluation.

Evaluation recommendation:

"CCR's recommendation is that The Plan adopt policies and processes by which it periodically, but no less frequently than annually, documents both direct and indirect fees and compensation paid to all managers, brokers, mutual funds, and consultant(s). At the renewal of any Investment Manager agreements, it would be prudent to require an annual accounting by each manager of all direct and indirect remuneration received during the calendar year."

System's actionable improvement:

"The Plan has rectified several opportunities for improvement relating to the monitoring of expenses by assigning the responsibility to monitor all fees to a Fiduciary Consultant, and independent consultant/vendor who will annually assess total Plan fees and benchmark for reasonableness."

- San Angelo Firemen's Relief & Retirement Fund IPPE

The evaluations also identified various fee benchmarking resources useful in creating policies for investment fees. The PRB compiled these resources for easy reference. (Appendix 3)

[13] https://www.cfainstitute.org/-/media/documents/book/rf-publication/2017/rf-v2017-n3-1.ashx
[14] https://www.gfoa.org/materials/investment-fee-guidelines-for-external-management-of

2. Asset Allocation Development and Risk Analysis

The evaluations shed light on several of the most important analyses systems should perform regularly to ensure their asset allocation is appropriate. Almost half of the evaluations discussed performing an Asset/Liability Study (A/L Study) and all but one evaluation discussed performing an Asset Allocation Study. Unfortunately, these terms are not well defined and therefore encompassed a wide range of analyses in actual practice. However, broadly speaking, an A/L Study considers both the assets and liabilities, while an Asset Allocation Study focuses on an asset-only approach. Stress tests were often mentioned as a critical tool that could be done as part of either the A/L Study or an Asset Allocation Study.

STRESS TESTING

Stress testing can be done as part of an asset-liability analysis or an asset-only analysis to show the potential outcomes if expected rates of return are not met.

One evaluation detailed how stress testing was performed in its Asset Allocation Study, which included "asset only stress tests that look at the impact to the Plan's investments, as well as stressed scenarios from an asset/liability perspective." Examples provided included the following:

Asset only: Max drawdown, worst quarter, scenario analysis (financial crisis, dot-com crash, sovereign debt crisis, bond crisis, etc.), distribution of forward- and backward-looking returns.

Asset/liability (30-year forward-looking analysis): projected funded ratio including worst-case scenario (95th percentile), annual liquidity needs including worst-case scenario, liquidity in a worst-case scenario.

Asset-Liability Analysis

One issue that many of the evaluations were very clear about was the need to take a holistic approach to the asset allocation process that considers both the assets and the liabilities the trust is designed to support. Evaluators emphasized the importance of balancing the need for growth with maintaining an appropriate level of assets to meet plan liabilities. This discussion covered several factors, summarized as follows.

Cash flows. The difference between expected inflows (contributions, dividends, interest, etc.) and outflows (distributions and expenses) are an important factor in the necessary allocation. For example, a plan with higher net outflows would need to maintain a higher amount devoted to investments that have lower price volatility and/or a stable income stream to meet liquidity requirements and to avoid selling assets in a down market. Conversely, higher net inflows provide a plan with flexibility to potentially have a higher allocation in less liquid growth-oriented investments.

Nature of liabilities. The underlying nature of the liabilities should be considered when determining the allocation. For example, the consultant and Board must consider the increase in distributions from year to year not only from new retirees, but also the impact of COLAs. The possibility of lump sum DROP and PROP distributions also needs to be considered given the potential for large, unexpected withdrawals. The nature of these liabilities may warrant the need for shifting to more stable, income-oriented investments and sacrificing the potential for higher growth.

Funding levels. First, the funded status of a plan may have an impact on the overall asset allocation. It is reasonable to expect a severely underfunded plan to have a different asset allocation than a plan that is overfunded.

Asset allocation also impacts funding metrics, and evaluators discussed the need for the investment consultants, actuaries and trustees to work directly together to "review the potential impacts of varying investment asset allocation policies on the key actuarial and liability metrics. For public pension funds, asset/liability studies are a critical tool to examine how well alternative investment strategies (different asset allocations) impact the key long-term actuarial circumstances, including funded status and contribution requirements."[15]

One evaluator indicated that the system follows best practice by considering its liabilities when developing the asset allocation, stating that the "target allocation is ultimately driven by the liabilities of the System including expected cash flow and liquidity needs. The primary method for analyzing the projected liabilities in the context of asset allocation is through an Asset/Liability Study."[16]

Asset-liability studies "are the only standard analysis that evaluates several components of a plan's key financial drivers including the Investment Policy, Contribution Policy and Benefit Policy."[15] The objective is to determine the appropriate risk and return targets when selecting a target allocation by better understanding plan liabilities. This is done by modelling assets and liabilities against various changes to the three policy variables (investments, contributions and benefits) over time. Performing these studies every 3-5 years or after a material change to assumptions is recommended.

> *"It is prevailing practice among ERS' peers to conduct an asset liability study every 3-5 years, but asset allocation studies can be more frequent."*
> *-Employees Retirement System IPPE*

Asset-Only Analysis

While some systems and/or evaluators used the term Asset Allocation Study to include both asset-only and asset-liability analysis, the more common approach was to use the phrase Asset Allocation Study to mean an asset-only analysis. One evaluator specifically distinguished between the two, suggesting the "asset allocation study" should be clarified to mean an asset-only study and included in the IPS as such. As noted above, the evaluations highlighted a wide range of asset-only analysis. When used in conjunction with asset-liability analysis, asset-only analysis is commonly incorporated as a simpler, more flexible analysis to be used more frequently (e.g., annual review of the reasonableness of current target ranges or as part of asset-only stress testing) but is also used when discussing how to select a single portfolio after asset-liability

> *"The IPS states that an asset-liability study should be conducted at least every five years (industry standard) to determine the long-term targets and that annually, the targets are to be reviewed for reasonableness in relation to significant economic and market changes or to changes in the Fund's long-term goals and objectives. For clarity, this annual review should be defined in the IPS as an asset allocation (or asset-only) study."*
> *-San Antonio Fire & Police Pension Fund IPPE*

[15] Austin Police Retirement System IPPE
[16] Texas Municipal Retirement System IPPE

analysis "narrows the potential range of outcomes."[17]

Alternatively, even when an A/L study is mentioned, it is not necessarily used as the guiding tool for developing a system's asset allocation. Many evaluations indicated the primary method of asset allocation development and risk analysis was an asset-only risk assessment model focused on investment risk (such as standard deviation, Sharpe ratio, etc.), rather than a holistic analysis that considered both the assets and the liabilities the trust is designed to support. As noted in one evaluation, "The value of an asset-liability analysis is that it simultaneously considers the assets, liabilities, future funding, and their interaction with one another within a holistic framework. This is why we believe such analysis is so crucial for the long-term viability of a benefit program, so that the plan sponsors are aware of potential future risks and have considered them as part of the strategic asset allocation process."[18]

3. Investment Fees and Commissions

Several important themes were highlighted in the fees section of the evaluation, including issues related to evaluating and comparing fees as well as strategies for minimizing them. The evaluations also stressed the need for systems to review investment performance on a net-of-fee basis, which is discussed in the Investment Manager Selection and Monitoring section of this report.

Investment Fee Benchmarking

The evaluations consistently commented on the importance of utilizing quality benchmark comparisons. Industry and peer benchmarks were a common focus in many evaluations, which encouraged their use, as better data fosters better decisions. (Appendix Item 3)

> *"Monitoring gross and net of fee aggregate performance on a quarterly basis for all investments in the Plan's portfolio would improve opportunities for fiduciaries to assess the net value add for each manager, including privately traded strategies.* ***Including benchmarks and peer group analyses will enhance the Plan's monitoring processes. Monitoring net performance relative to peers is best practice****."*
>
> *-CPS Energy IPPE*

Investment Fee Transparency

In addition to creating the evaluation requirement, Senate Bill 322 (86R) also significantly enhanced fee transparency reporting in Texas. Over the past decade, public retirement systems have increased their allocation to alternative investments while at the same time raising concerns that expenses for alternative investments are opaque and greater fee transparency in this asset class is desired. The new law requires Texas public retirement systems to list, by asset class, all direct and indirect commissions and fees paid by the retirement system during the system's previous fiscal year for the sale, purchase or management of system assets.

[17] Texas Municipal Retirement System IPPE
[18] Teacher Retirement System IPPE

Just as the legislature acknowledged these improvements are necessary to help address the concerns, many evaluations identify the importance of clearly understanding investment fees. Recommendations were made to improve disclosures of both direct and indirect fees to better review and understand investment performance. The improved fee disclosures provide the additional benefit of improved transparency. Improved investment fee disclosures will also improve investment fee expense reporting for fund-of-fund type investments. The PRB believes this enhanced reporting requirement will materially improve systems investment fee reporting and provide a push to the investment industry for improving investment fee transparency.

> *"Fees netted from fund investments were not included in the reported investment expense. An analysis of investment management fees netted from returns, profit share/carried interest from alternative investments, expenses related to cash (if any) and expenses related to real estate, is needed and would enhance the System's monitoring and oversight of the System."*
>
> *-CPS Energy IPPE*

Use of Passive Investment Strategies

Passive investing is identified by both industry standards and multiple systems' investment beliefs as a strategy for improving performance net-of-fees. Passive investing aims to track or match the performance of a market index in a way that minimizes both tracking error and fees. Using passive investments allows a system to either reduce fees overall or offset the higher fees associated with active and alternative investments. Passive investments have the additional benefit of being less complex, allowing a System to focus its attention where it is most needed.

Several evaluations identify GFOA as an industry standard in multiple sections. Item 2 from the *Investment Fee Guidelines* identifies "pursuing low-cost passive index investment strategies" as one way to minimize fees.

GFOA Investment Fee Guidelines

"Defined benefit plans, such as pension and other post-employment benefits, seek to achieve the highest risk-adjusted net return, which includes the cost of investment management. Plans can use a combination of approaches to minimize fees for fixed income and public equity management, including:

1. Achieving economies of scale with a particular investment manager;
2. **Pursuing low-cost passive index investment strategies;** and
3. Using competitive selection processes that make fee negotiation an important factor in the procurement decision."[18]

Examples

Several evaluations provided either useful examples or detailed investment beliefs explaining why systems use passive investments. The examples selected below provide a look at IPS language, actions taken by systems and investment beliefs found in either the IPS or a supporting document.

[19] https://www.gfoa.org/materials/investment-fee-guidelines-for-external-management-of

City of Austin Employee Retirement System (COAERS)

According to the IPPE, COAERS uses passive investments as the default position and only uses active management where creating alpha is likely. This results in generally lower investment fees which can improve the likelihood of achieving their investment return objectives.

"COAERS has a clear set of investment beliefs which favor the use of passive management as a default, with active management only used wherever the expected likelihood of outperformance is high. These characteristics will inherently lead to lower fees in general, but even the fees paid to passive managers are below industry average; this translates to fee savings and a significant "head start" in return expectations for the System."[20]

Dallas Police & Fire Pension Combined Plan (DPFP)[21]

The DPFP's evaluation provided an example from its IPS that shows how a system can include passive investing language in its core investment beliefs.

Dallas Police & Fire Pension Combined Plan
IPS, Section 4 Core Beliefs and Long-term Acknowledgements, subsection c: "1. The opportunity for active manager risk-adjusted outperformance (alpha) is not uniformly distributed across asset classes or investment managers' strategies 2. Active strategies are preferred when there is strong conviction that they can be expected to add alpha, net of fees 3. Passive strategies should be considered if alpha expectations are unattractive."

Houston Police Officers Pension System

HPOPS, based on their investment philosophy, has created a portfolio that is majority invested in passive investments. The portfolio is approximately 59% passive investments with 40% in actively managed investments and 1% in cash. Even with the use of higher fee alternative investments, the investment management fees incurred in 2019 totaled 14.6 basis points. The previous year's fees were higher at approximately 25 basis points primarily because of more expensive hedge fund strategies that have now been removed from the portfolio.

"Philosophically, HPOPS believes excess returns produced by active management to be fleeting and difficult to identify in advance. They further recognize the behavioral biases faced by most investors that often lead to hiring a manager at the peak of cyclical performance and terminating at the trough. For these reasons, the Plan utilizes predominantly passive exposure in its public markets investment portfolio, obtained through a combination of index funds, ETFs, and futures positions."[22]

[20] City of Austin Employee Retirement System IPPE
[21] Dallas Police & Fire Pension Combined Plan IPPE
[22] Houston Police Officers Pension System IPPE

Irving Firemen's Relief & Retirement Fund

Irving Fire provides an example of how effective passive investments can be at providing cost savings.

Based on a recommendation from the consultant prior to the evaluation, the system is significantly increasing its allocation to passive investments. The system is increasing its passive exposure from approximately 1% to a target of 45-50% in multiple investments areas that are commonly identified as efficient markets. The consultant estimates total fund investment fees will decrease from an effective fee of 0.98% to 0.61% once the transition is complete.

Date	% in Passive
June 30, 2019	1
December 31, 2019	13
March 31, 2020	30
Long term expected target[23]	45-50

4. Governance Processes

Roles and Responsibilities

Clearly defined roles and responsibilities are an important aspect of managing an investment program and are identified by multiple sources as a key component of a well-constructed IPS. A thorough IPS that fully details the roles and responsibilities for all key positions that serve the system will be less prone to operational issues and will aid trustees in understanding the expectations of each role. Clearly articulated roles and responsibilities ensure continuity. For example, if the investment consultant was responsible for fee review in addition to assisting with investment manager selection but is replaced by a consultant that only offers investment manager selection services, then a system can easily see that fee review duties will need to be assigned to someone else.

> *The IPS should be updated to add roles and responsibilities of all parties involved in oversight of Plan investments, investment fee monitoring process, along with fund selection and monitoring criteria.*
>
> *-Galveston Employees Retirement Fund IPPE*

CFA Institute

"Institutional investors often have boards of trustees (or similar structures) with oversight responsibility for asset management as well as having professional staff responsible for day-to-day management and execution of board-approved strategies. Their roles and responsibilities should be identified in the IPS."[24]

Almost 10% of all recommendations called for improving the clarity of roles and responsibilities in the IPS. These recommendations identified approximately 15 different roles or responsibilities that should be further documented in the IPS. Most of the recommendations suggested clarifying or adding a

[23] Not a formal target but a Meketa assumption based on the expectation that 100% of investment grade bonds, 100% of short-term investment grade bonds, 100% of TIPS, and 100% of Treasuries will be passive, along with anywhere from 25% to 33% of the public equity exposure.
[24] https://www.cfainstitute.org/-/media/documents/article/position-paper/investment-policy-statement-institutional-investors.ashx

definition for a specific role and the responsibilities associated with it. In addition to defining a role in the IPS, recommendations also called for establishing the frequency of tasks required under each role and clear metrics for performance review. Clearly identifying who is responsible for investment fee review was the most common recommendation representing approximately half of the recommendations regarding roles and responsibilities.

Clear roles and responsibilities also aid in a board's delegation process by clearly outlining who is authorized to perform which duties. It is important to remember that, "although the Board maintains oversight of the investment of Trust, the Board performs its fiduciary responsibility to invest the Trust through delegation of authority … for execution of the investment strategy according to this Policy."[25]

"We recommend that the 2021 IPS is updated to include: 1) the fiduciary duties and responsibilities of the investment related vendors"

-Odessa Firefighters' Relief & Retirement Fund IPPE

"We believe the IPS could be enhanced by adding a section articulating the duties of the investment consultant and actuary."

-JPS Pension Plan - Tarrant County Hospital District IPPE

"The role of Staff could be more clearly outlined in the IPS and/or Operating Procedures."

-Austin Fire Fighters Relief & Retirement Fund IPPE

5. Investment Manager Selection and Monitoring

Recommendations related to investment manager selection and monitoring focus on two main topics: improving performance benchmarking policies and strengthening the manager hiring and firing process, including related documentation.

Net-of-fee Performance Benchmarking

Evaluators emphasized the need for systems to review investment performance on a net-of-fee basis. The recommendations for including net-of-fee information generally identified that systems were either receiving only gross-of-fee performance metrics or were inconsistent in their use of net-of-fee information.

Tracking performance net-of-fees is an important part of assessing the benefit of active strategies in particular. Without proper data to justify an active investment, systems could be allocating capital to active investments that would be better suited for another active manager or a passive strategy. When choosing actively managed over passive investments, systems need to ensure that they are receiving performance net-of-fees that justifies that selection.

Monitoring performance net-of-fees is best practice but most importantly it provides a clear metric for understanding actual performance of an investment. Not understanding the impact of fees on the performance of an investment can be detrimental to an investment program. Properly managing fees is identified in many evaluations as one way to create advantages for a system in achieving their investment objectives. "The CFA Institute and GFOA do mandate monitoring and reporting procedures be outlined somewhere in the IPS. The IPS should specify that performance reporting include net of investment management fee data."[26]

[25] Employees Retirement System IPPE
[26] Employees Retirement System IPPE

Investment Manager Hiring and Firing Policies

One of the most common recommendations is to improve the investment manager hiring and firing process. The recommendations focused on explicitly stating the selection and performance review criteria within the IPS and documenting all hiring and firing decisions with a clear rationale.

Most evaluations identify that systems use their expert investment consultants to assist in investment manager searches. Because systems rely on their investment consultants, specific practices were sometimes not included in the IPS and including more specifics in the IPS is one way for systems to improve.

Both the CFA Institute and GFOA provide guidelines, have best practices and recommend careful consideration of the procedures related to investment managers.

"We recommend the System formally documents the rationale for all hiring and firing decisions."
- Irving Firemen's Relief & Retirement Fund IPPE

"Add quantifiable criteria for measuring investment manager performance, to include appropriate metrics and time periods (e.g. investment returns in comparison to the managers relevant benchmark index as well as peer group universes over trailing time periods of 1-, 3- and 5-years), as well as specific criteria for putting an investment manager on 'Watch' and/or terminating an investment manager."
-Guadalupe-Blanco River Authority IPPE

CFA Institute Primer for Investment Trustees

"Once the rates of return for the managers' accounts, the asset classes, and the total Fund are determined, attention naturally turns to whether those returns are good or bad. To assess the "goodness" of a rate of return, we need a standard or benchmark with which to compare the result. Although there may be many candidates for a benchmark, we believe that the most informative assessment of investment performance occurs when the benchmark has certain basic properties. The benchmark should be the following:

- Unambiguous—the benchmark should be clearly understood by all parties involved in the investment program.
- Investable—the benchmark should represent an investable alternative; that is, the trustees could choose to hold the benchmark rather than hire the particular manager.
- Measurable—the benchmark's rate of return should be readily calculable.
- Appropriate—the benchmark should reflect the manager's typical risk characteristics and area of expertise.
- Specified in advance—the benchmark must be specified prior to the evaluation period and known to all interested parties.
- "Owned"—the benchmark should be acknowledged and accepted as an appropriate accountability standard by the party responsible for the performance.

Benchmarks that possess these properties provide the investment committee with a fair standard to use in assessing an account's performance."[27]

[27] https://www.cfainstitute.org/-/media/documents/book/rf-publication/2017/rf-v2017-n3-1.ashx

One evaluation outlines a similar approach utilizing a helpful mnemonic. “Most traditional public markets investment strategies can typically find benchmarks that meet the SAMURAI criteria, but it becomes more difficult with alternative investment strategies.”[28]

Without having clear unambiguous, measurable and specific goals it is difficult to effectively manage. Therefore, having clear objectives and criteria for investment managers is important. If the goals and criteria used to evaluate an investment manager are ambiguous it makes assessing the true value add to the system more difficult. Clear objectives can also help align investment managers to the same goals as systems.

- (S)PECIFIED IN ADVANCE
- (A)PPROPRIATE
- (M)EASURABLE
- (U)NAMBIGUOUS
- (R)EFLECTIVE
- (A)CCOUNTABLE
- (I)NVESTABLE

LEGISLATIVE RECOMMENDATIONS

After the first comprehensive evaluations were completed in 2020, the PRB identified opportunities where some modifications to the statute may prove beneficial. Broadly, the PRB identified areas to refine the evaluation process and clarify the material that is included in an evaluation. These changes will help enhance transparency and strengthen investment practices, benefitting plan members, taxpayers, and local governments.

The Investment Committee is recommending the following for Board approval:

1. Require evaluations to detail how the evaluator determined the need, or lack thereof, for any recommendations.

Goal. To evaluate the appropriateness, adequacy, and effectiveness of the retirement system's investment practices and performance and to make recommendations for improving the retirement system's investment policies, procedures, and practices.

Issue. It would be helpful to the systems if the existing law were clearer regarding which aspects of the evaluation should be communicated and how. In general, evaluations received included at least a high-level description of the existing “investment policies, procedures, and practices.” When a recommendation was made, most evaluators justified the recommendation with an explanation where the existing approach fell short. However, when no recommendation was made, not all evaluators provided an explanation as to why existing practices are appropriate, adequate and/or effective.

Recommendation. Require evaluations to provide detail both when a recommendation is made and when no recommendation is deemed necessary, to enhance understanding of the investment decision-making process and help foster informed decision-making.

2. Require a formal review-and-comment process prior to publication of evaluation reports.

Goal. Evaluations are intended to offer an independent analysis of the pension system’s practices and policies; ideally, they will prompt a thoughtful review of the system’s practices and promote positive change, as appropriate.

[28] Lower Colorado River Authority Retirement Plan IPPE

Issue. In some cases, it is unclear whether systems have reviewed the evaluation and considered the recommended changes. In contrast, §802.1012(g) of the Texas Government Code requires a formal review-and-comment process for actuarial audits of certain retirement systems, making clear that the system has reviewed the results.

Recommendation. Statute should require a formal review-and-comment process for evaluation reports, modeled after the actuarial audit requirements outlined in Texas Government Code §802.1012(g). It would include:

- Requiring a substantially complete draft of the IPPE be submitted to the pension system's board prior to publication, providing an opportunity for discussion and clarification.
- Allowing the board, the opportunity to submit a written response to the firm acknowledging receipt and making comments or noting any anticipated changes in response to the report's findings.
- Including the response from the board in the final published evaluation, giving stakeholders insight into the impact of the evaluation on the system's practices.

3. Review and consider the feasibility of whether an independent firm conducting the evaluation should be a different firm from the one that helped the system develop its existing investment policies, procedures, and practices.

Goal. Under existing law, evaluations are to be conducted by an "independent firm," which aims to provide a new perspective on the system's practices. Current law allows the firm selected to have an existing relationship with the pension system.

Issue. More than half of the evaluations were conducted by the system's current investment consultant—the firm that likely helped the system develop its existing investment policies, procedures, and practices. Investment Committee members noted, and the data appear to suggest, existing consultants may be less likely to identify areas for improvement if they were directly involved in the development of the existing practice.

Recommendation. A third-party consultant presents an opportunity for a full analysis of current investment processes, encompassing the work of the current investment consultant, which is not possible otherwise. The Legislature should consider the feasibility of precluding a firm that advised or advises the system on its investment policies, procedures, and practices from conducting the evaluation of those policies.

4. Require evaluators to identify its qualifications and potential conflicts-of-interest; codifying existing PRB informal guidance.

Goal. The current evaluation requirement was designed to allow for a fresh look at the investment practices and policies of pension systems to identify opportunities for improvement.

Issue. While the PRB's informal guidance suggests that evaluations make specific disclosures, some evaluations did not clearly identify what firm performed the evaluation, the qualifications of the evaluator, or certain potential conflicts-of-interest. This makes it more difficult for members, taxpayers and other stakeholders to assess the evaluation's efficacy.

Recommendation. IPPEs should contain certain disclosures about the evaluator, including:

- The evaluator's qualifications;
- The nature of any relationship between the evaluator and the plan, and an acknowledgement of potential conflicts-of-interest due to any existing relationship;
- Identification of any remuneration received by the evaluator;
- Acknowledgement the firm is not directly or indirectly managing investments.

APPENDICES

Appendix 1 – Guidance for Investment Practices and Performance Evaluations

TEXAS PENSION REVIEW BOARD

Guidance for Investment Practices and Performance Evaluations

As required by Senate Bill 322 (86R)

(Adopted October 17, 2019)

Texas Government Code §802.109 requires Texas public retirement systems with at least $30 million in assets to complete an Investment Practices and Performance Evaluation. The Pension Review Board (PRB) is providing this informal guidance to assist systems in defining the scope and content of the evaluation.

The following provides guidance on the different areas required by statute to be reviewed by the independent firm performing the evaluation. The PRB recognizes that evaluations should and will vary significantly based on the specific characteristics of each system's size, governance structure, and investment program. Therefore, this guidance is intended to inform systems and their stakeholders on the basic aspects of the evaluations and associated reports and is not an exhaustive list of all items that should be reviewed.

A thorough evaluation would include the following elements:

1) Identify and review existing investment policies, procedures, and practices. This should include any formally established policies (e.g. Investment Policy Statement) as well any informal procedures and practices used to carry out the investment activities of the system. It is not necessary to review past policies, procedures, and practices that are no longer applicable unless they are deemed helpful to understand current policy or practice.
2) Compare the existing policies and procedures to industry best practices.
3) Generally, assess whether the board, internal staff, and external consultants are adhering to the established policies.
4) Identify the strengths and weaknesses of the current policies, procedures, and practices and make recommendations for improvement.
5) Include a detailed description of the criteria considered and methodology used to perform the evaluation, including an explanation of any metrics used and associated calculations.

Applicability

Systems with assets of **at least $100 million** must complete an evaluation **once every 3 years**.[i] Systems with assets of **at least $30 million but less than $100 million** must complete an evaluation **once every 6 years**. Systems with assets **less than $30 million** are **not required**, but are encouraged, to conduct an evaluation.

Deadlines

A report of the first evaluation must be filed with the governing body of the system **not later than May 1, 2020**.

Reports of subsequent evaluations must be filed with the governing body of the system not later than May 1 of the applicable year. Each report is **due to the PRB not later than 31 days after** the date the governing body of a public retirement system receives it.

Independent Firm

*(a) … A public retirement system shall select an **independent firm** with substantial experience in evaluating institutional investment practices and performance…*

*(c) Provides that a public retirement system, in selecting an **independent firm** to conduct the evaluation described by Subsection (a):*

> *(1) subject to Subdivision (2), is authorized to select a firm regardless of whether the firm has an existing relationship with the retirement system; and*
>
> *(2) is **prohibited** from selecting a firm that **directly or indirectly manages investments** of the retirement system.*

Directly or Indirectly Managing Investments

A firm is considered to be directly or indirectly managing investments if the firm, a subsidiary, or its parent company, has assets of the system under management, or is solely responsible for selecting or terminating investment managers.

Restriction on Performing the Evaluation

If a firm is identified as directly or indirectly managing investments of the system, the firm is not considered an independent firm and is not eligible to perform the evaluation.

Disclosure by Independent Firm

The evaluation should include the following disclosures by the independent firm:

1) a summary outlining the qualifications of the firm;
2) a statement indicating the nature of any existing relationship between the firm and the system being evaluated;
3) a list of the types of remuneration received by the firm from sources other than the retirement system for services provided to the system; and
4) a statement acknowledging that the firm, or its related entities, is not involved in directly or indirectly managing investments of the system.

Components of Evaluation

This section provides suggested questions and topics for consideration under each of the five areas required to be covered in each evaluation.[ii] The questions below are intended to help systems identify the types of information an evaluation may include. Additionally, these questions may be helpful to systems that will use a request for proposal (RFP) to select a firm to perform the evaluation.

Each evaluation must include:
*(1) an analysis of any **investment policy or strategic investment plan** adopted by the retirement system and the retirement system 's compliance with that policy or plan;*

- Does the system have a written investment policy statement (IPS)?
- Are the roles and responsibilities of those involved in governance, investing, consulting, monitoring and custody clearly outlined?
- Is the policy carefully designed to meet the real needs and objectives of the retirement plan? Is it integrated with any existing funding or benefit policies? (i.e. does the policy take into account the current funded status of the plan, the specific liquidity needs associated with the difference between expected short-term inflows and outflows, the underlying nature of the liabilities being supported [e.g. pay-based vs. flat $ benefit, automatic COLAs, DROP, etc.])
- Is the policy written so clearly and explicitly that anyone could manage a portfolio and conform to the desired intentions?
- Does the policy follow industry best practices? If not, what are the differences?
- Does the IPS contain measurable outcomes for managers? Does the IPS outline over what time periods performance is to be considered?
- Is there evidence that the system is following its IPS? Is there evidence that the system is not following its IPS?
- What practices are being followed that are not in, or are counter to, written investment policies and procedures?
- Are stated investment objectives being met?
- Will the retirement fund be able to sustain a commitment to the policies under stress test scenarios, including those based on the capital markets that have actually been experienced over the past ten, twenty, or thirty years?
- Will the investment managers be able to maintain fidelity to the policy under the same scenarios?
- Will the policy achieve the stated investment objectives under the same scenarios?
- How often is the policy reviewed and/or updated? When was the most recent substantial change to the policy and why was this change made?

Resources

PRB - Developing an Investment Policy

GFOA - A Guide for Establishing A Pension Investment Policy

CFA - A Primer for Investment Trustees

(2) a detailed review of the retirement system 's ***investment asset allocation****, including:*
(A) the process for determining target allocations;

- Does the system have a formal and/or written policy for determining and evaluating its asset allocation? Is the system following this policy?
- If no formal policy exists, what is occurring in practice?
- Who is responsible for making the decisions regarding strategic asset allocation?
- How is the system's overall risk tolerance expressed and measured? What methodology is used to determine and evaluate the strategic asset allocation?
- How often is the strategic asset allocation reviewed?
- Do the system's investment consultants and actuaries communicate regarding their respective future expectations?
- How does the current assumed rate of return used for discounting plan liabilities factor into the discussion and decision-making associated with setting the asset allocation? Is the actuarial expected return on assets a function of the asset allocation or has the asset allocation been chosen to meet the desired actuarial expected return on assets?
- Is the asset allocation approach used by the system based on a specific methodology? Is this methodology prudent, recognized as best practice, and consistently applied?
- Does the system implement a tactical asset allocation? If so, what methodology is used to determine the tactical asset allocation? Who is responsible for making decisions regarding the tactical asset allocation?
- How does the asset allocation compare to peer systems?

(B) the expected risk and expected rate of return, categorized by asset class;

- What are the strategic and tactical allocations?
- What is the expected risk and expected rate of return of each asset class?
- How is this risk measured and how are the expected rates of return determined? What is the time horizon?
- What mix of assets is necessary to achieve the plan's investment return and risk objectives?
- What consideration is given to active vs. passive management?
- Is the approach used by the system to formulate asset allocation strategies sound, consistent with best practices, and does it result in a well-diversified portfolio?
- How often are the strategic and tactical allocations reviewed?

(C) the appropriateness of selection and valuation methodologies of alternative and illiquid assets; and

- How are alternative and illiquid assets selected, measured and evaluated?

- Are the system's alternative investments appropriate given its size and level of investment expertise? Does the IPS outline the specific types of alternative and illiquid investments allowed, as well as the maximum allocation allowable?
- What valuation methodologies are used to measure alternative and illiquid assets? What alternative valuation methodologies exist and what makes the chosen method most appropriate?

(D) future cash flow and liquidity needs;

- What are the plan's anticipated future cash flow and liquidity needs? Is this based on an open or closed group projection?
- When was the last time an asset-liability study was performed?
- How are system-specific issues incorporated in the asset allocation process? What is the current funded status of the plan and what impact does it have? What changes should be considered when the plan is severely underfunded, approaching full funding, or in a surplus? How does the difference between expected short-term inflows (contributions, dividends, interest, etc.) and outflows (distributions and expenses) impact the allocation? How does the underlying nature of the liabilities impact the allocation (e.g. pay-based vs. flat $ benefit, automatic COLAs, DROP, etc.)?
- What types of stress testing are incorporated in the process?

Resources

GFOA – Asset Allocation for Defined Benefit Plans

CFA – A Primer for Investment Trustees

*(3) a review of the **appropriateness of investment fees and commissions paid** by the retirement system;*

- Do the system's policies describe the management and monitoring of direct and indirect compensation paid to investment managers and other service providers? What direct and indirect investment fees and commissions are paid by the system?
- Who is responsible for monitoring and reporting fees to the board? Is this responsibility clearly defined in the system's investment policies?
- Are all forms of manager compensation included in reported fees?
- How do these fees compare to peer group and industry averages for similar services? How are the fee benchmarks determined?
- Does the system have appropriate policies and procedures in place to account for and control investment expenses and other asset management fees?
- What other fees are incurred by the system that are not directly related to the management of the portfolio?
- How often are the fees reviewed for reasonableness?
- Is an attorney reviewing any investment fee arrangements for alternative investments?

Resources

GFOA - Investment Fee Guidelines for External Management of Defined Benefit Plans

[CFA - A Primer for Investment Trustees]

(4) a review of the retirement system 's ***governance processes related to investment activities****, including investment decision-making processes, delegation of investment authority, and board investment expertise and education;*

Transparency

- Does the system have a written governance policy statement outlining the governance structure? Is it a stand-alone document or part of the IPS?
- Are all investment-related policy statements easily accessible by the plan members and the public (e.g. posted to system website)?
- How often are board meetings? What are the primary topics of discussion? How much time, detail, and discussion are devoted to investment issues?
- Are meeting agendas and minutes available to the public? How detailed are the minutes?

Investment Knowledge/Expertise

- What are the backgrounds of the board members? Are there any investment-related educational requirements for board members?
- What training is provided and/or required of new board members? How frequently are board members provided investment-related education?
- What are the minimum ethics, governance, and investment education requirements? Have all board members satisfied these minimum requirements?
- Does the system apply adequate policies and/or procedures to help ensure that all board members understand their fiduciary responsibilities?
- What is the investment management model (i.e. internal vs. external investment managers)?
- Does the board receive impartial investment advice and guidance?
- How frequently is an RFP issued for investment consultant services?

Accountability

- How is the leadership of the board and committee(s), if any, selected?
- Who is responsible for making decisions regarding investments, including manager selection and asset allocation? How is authority allocated between the full board, a portion of the board (e.g. an investment committee), and internal staff members and/or outside consultants? Does the IPS clearly outline this information? Is the board consistent in its use of this structure/delegation of authority?
- Does the system have policies in place to review the effectiveness of its investment program, including the roles of the board, internal staff and outside consultants?
- Is the current governance structure striking a good balance between risk and efficiency?
- What controls are in place to ensure policies are being followed?
- How is overall portfolio performance monitored by the board?
- How often are the investment governance processes reviewed for continued appropriateness?

Resources

NASRA - Public Pension Governance

PEW - Making State Pension Investments More Transparent

CFA - Investment Governance for Fiduciaries

CFA - A Primer for Investment Trustees

(5) a review of the retirement system 's ***investment manager selection and monitoring process****.*

- Who is responsible for selecting investment managers?
- How are the managers identified as potential candidates?
- What are the selection criteria for including potential candidates?
- What are the selection criteria when deciding between multiple candidates?
- How does the selection process address ethical considerations and potential conflicts of interest for both investment managers and board members?
- Who is responsible for developing and/or reviewing investment consultant and/or manager contracts?
- What is the process for monitoring individual and overall fund performance?
- Who is responsible for measuring the performance?
- What benchmarks are used to evaluate performance?
- What types of performance evaluation reports are provided to the board? Are they provided in a digestible format accessible to trustees with differing levels of investment knowledge/expertise?
- How frequently is net-of-fee and gross-of-fee investment manager performance reviewed? Is net-of-fee and gross-of-fee manager performance compared against benchmarks and/or peers?
- What is the process for determining when an investment manager should be replaced?
- How is individual performance evaluation integrated with other investment decisions such as asset allocation and investment risk decisions?

Resources

GFOA - Investment Fee Guidelines for External Management of Defined Benefit Plans

GFOA - Selecting Third-Party Investment Professionals for Pension Fund Assets

CFA - A Primer for Investment Trustees

[i] The Houston Firefighters Relief & Retirement Fund, the Houston Municipal Employees Pension System, and the Houston Police Officers' Pension System may submit the investment evaluation reports in Vernon's Civil Statutes to satisfy the requirements of §802.109.

[ii] The first evaluation "must be a comprehensive analysis of the retirement system's investment program that covers all asset classes" while subsequent evaluations "may select particular asset classes on which to focus."

Appendix 2 – Summary of Investment Practices and Performance Evaluation Recommendations

Appendix 2

Summary of Investment Practices and Performance Evaluation Recommendations

Number of Recommendations	Governance Recommendations	Total
OPERATIONAL PRACTICE		
10	Annual IPS and/or system review	**21**
2	Issue RFP at least once every 3-5 years for Investment Consultant	
1	Review RFP process and its potential impact on delays/missing investment opportunities	
1	Conduct more frequent AVs	
1	Quarterly board meetings should formally review underperforming investment managers	
1	Increase board continuity	
1	Limit and stagger committee member terms	
1	Fund counsel reviews all legal contracts	
1	Review investing core beliefs anytime significant investment changes occur	
1	Create an implementation policy to assist in documentation of policies/procedures	
1	IPS should always be under review	
DOCUMENTATION		
3	Develop a written governance policy	**9**
2	Improve descriptions of existing policies and responsibilities	
1	Document existing governance practice	
1	Document purpose, function, membership, and possible actions of all committees	
1	Develop an ethics policy specifically dedicated to the Plan and those charged with overseeing it.	
1	Include ESG-related and internal management considerations in the IPS	
TRAINING		
3	Ensure training stays up to date	**7**
2	Develop materials specifically for new board members	
2	Document training requirements or practice in IPS	
TRANSPARENCY		
4	Post additional documents to the website	**7**
2	Maintain a focus on transparency	
1	Modernize website	

OTHER		
1	Improve plan adherence by adjusting policies exceeding best practice to align more with best practices	**2**
1	State in IPS the frequency of investment consultant RFP process	
Total Governance Recommendations		**46**

Number of Recommendations	Manager Selection and Monitoring Recommendations	Total
INVESTMENT MANAGER HIRING AND FIRING PROCESS		
12	Include the selection criteria in the IPS as well as document rationale for all hiring and firing decisions	**16**
1	Refine the manager selection criteria so that it places less emphasis on past performance	
1	Simplify the process description, providing high-level guidelines for flexibility with specificity where necessary	
1	Add a conflict-of-interest policy when selecting investment managers	
1	Discuss investment manager selection criteria	
BENCHMARKING OR PERFORMANCE MEASURES		
5	Include net- and gross-of-fee returns relative to benchmark and peers in each quarterly report	**11**
3	Add specific measurable criteria for monitoring performance to the IPS	
1	Create a performance metric and reporting requirement for non-public securities	
1	Additional qualitative information should be included in the manager performance review summary	
1	Add a process for comparing total portfolio and investment managers' risk adjusted returns to peers and benchmark	
ADD POLICIES OR PROCEDURE		
2	Add formal investment manager review process, criteria, and procedures	**8**
2	Prepare adequate documentation to ensure/demonstrate process has been followed	
2	Add a watch list policy	
1	Document existing policy on how performance is measured	
1	Add a policy documenting proxy voting rationale	
OTHER		
4	Update policy language regarding reporting/reviewing for investment managers	**12**
1	IPS should specify that performance reporting include net of investment management fee	

1	Investment performance reports should be quarterly with monthly flash reports	
1	Separate reporting requirement by asset class instead of consultant or investment manager	
1	Add policy language defining a reporting or valuation process for less liquid or illiquid securities	
1	Revisit the watch list for alternative	
1	Review Private Equity performance benchmarking to IPS policy	
1	Standardize investment monitoring processes across all asset classes	
1	Generalize watch list language to avoid being overly prescriptive	
Total Manager Selection and Monitoring Recommendations		**47**

Number of Recommendations	Investment Fee Recommendations	Total
IPS GUIDELINES		
10	Add language to document various processes regarding the reconciliation and payment of fees or the level of detail recorded for direct and indirect compensation	**12**
1	Adhere to existing policies	
1	Expand investment fee study policy to provide more specifics on who is responsible, the frequency and metrics	
REPORTING		
2	Trade cost analysis summarizing explicit and implicit trading expenses	**7**
1	Management fees netted from returns	
1	Profit share/carried interest from alternative investments	
1	Expenses related to cash (if any)	
1	Expenses related to real estate	
1	Reconciling actual payments with negotiated rates	
1	Disaggregating research and securities brokerage costs	
1	Document the results of its provider service and fee review at least annually	
1	Tracking the difference between negotiated rates and “headline rates” charged to smaller investors as fee savings	
FEE REDUCTIONS		
4	Include (more) passive investment, where appropriate	**6**

1	Seek no fee or discounted fee arrangements	
1	Maintain passive investment allocation, where appropriate	
OTHER		
4	"Remaining diligent" comments	
2	Benchmark fees against peer group or industry averages	
1	Understand that overall portfolio fees are influenced by size and asset allocation	**9**
1	Consider an evaluation metric for securities brokerage vendors based on execution skill	
1	Review vendor contracts regularly for cost saving improvements	
Total Investment Fee Recommendations		**34**

Number of Recommendations	General IPS Recommendations	Total
ROLES AND RESPONSIBILITIES		
6	Define who conducts fee review and reporting	
3	Define Investment Consultant responsibilities	
2	All parties involved in oversight of Plan investments, investment fee monitoring process, along with fund selection and monitoring criteria	
2	Define Actuary responsibilities	
2	Define CIO/Executive Director role	
2	Define Fiduciary Duty	
1	Define Broker/Dealer	
1	Define custodian responsibilities	**24**
1	Define Specialty Consultants role	
1	Define Fund Administrator responsibilities	
1	Define Legal's responsibilities	
1	Define reporting requirements for Investment Managers	
1	Define who selects Investment Managers	
1	Define who sets benchmarks	
1	Define Staffs role	

1	Update Investment Committees responsibilities to include assigned tasks	
1	Define who is responsible for notifying managers of “unusually large liquidity needs” by the system and explain responsibility	
IPS LANGUAGE		
2	Add language to better reflect alternative investments and their unique aspects	**15**
2	Language discussing funding and liquidity needs in reference to systems liabilities	
2	Include a discussion of risk in the IPS	
1	Language to meet or exceed the Fund’s actuarial assumed rate of return over the long term	
1	Language explaining investment beliefs	
1	Language explaining Emerging Manager program definition and scope	
1	Language discussing funded status	
1	Update IPS target allocation to match current allocation in practice	
1	Define mandatory reporting expectations to the board	
1	Language around plan expenses	
1	Language on IPS and governance review frequency	
1	Language should also be added to address that investments into mutual funds, exchange-traded funds or comingled investment trusts that may not follow the investment stipulations of the Statement of Investment Policy	
OTHER		
4	Cleanup or remove IPS language	**8**
1	Continue simplifying the IPS	
1	Finalize the update to Investment Beliefs and Fee Policy	
1	Improve the IPS with more explicit and measurable details	
1	Generalize policy language to avoid being overly prescriptive	
Total General IPS Recommendations		**47**

Number of Recommendations	Asset Allocation Recommendations	Total
UPDATE IPS ALLOCATION SECTION		
11	Document existing practice or recommend potential changes for determining and evaluating the asset allocation	**24**
5	Provides specific language changes to be more specific regarding rebalancing ranges and guidelines	
1	Define a more precise definition but more flexible with the timing of asset allocation studies	
1	Include general language regarding diversification	
1	Add language for informal annual reviews of capital markets to improve flexibility of investments	
1	Add language defining maximum allocation to illiquid investments	
1	Add language to review of the expected return assumptions, expected risk assumptions, portfolio standard deviation and peer group rankings at least annually or more frequently if needed	
1	Add language in IPS to define annual review as an asset allocation (or asset-only) study	
1	Including language specific to commingled funds stating the guidelines in the prospectus or similar governing document will prevail	
1	Clarify policy language regarding “readily marketable securities”	
OTHER TOPICS		
6	Recommending specific changes or to consider investments	**13**
2	Avoid large changes in the strategic asset allocation too frequently	
1	Continue deep dive reviews of all asset classes annually	
1	Update the asset allocation study	
1	Review the strategic asset allocation annually	
1	Review the strategic asset allocation biennially or more frequently if needed based on market assumptions	
1	Incorporating the target allocation weights and ranges, along with preferred benchmark, into an appendix.	
Total Asset Allocation Recommendations		**37**

Number of Recommendations	Other Topics	Total
	LIQUIDITY OR CASHFLOW CONCERNS	
6	Contribution levels and/or negative non-investment cash flow concerns	**10**
3	Make enhancements to liquidity reporting or management	
1	Add language discussing plan liquidity risk and every three years provide a comprehensive report	
	OTHER TOPICS	
5	Complete an asset/liability study or study considerations	**16**
3	Consider potential plan design changes	
2	Develop/foster capital market assumptions with the investment consultant and actuary working closely	
2	Perform an experience study and make changes to assumptions as needed	
1	Different investment managers should attend board meetings semi-annually to provide updates	
1	Complete an asset allocation study every 3-5 years	
1	Utilize the expertise of investment consultants to ensure alternative assets are properly valued and managed	
1	Allow managers to select most efficient way to obtain their foreign currency hedge	
	Total Other Topics	**26**

Appendix 3 – Investment Practices and Performance Evaluation – Standards, Resources and Benchmarks

Appendix 3
Investment Practices and Performance Evaluation
Standards, Resources and Benchmarks

Section	Resource
Investment Policy Statement	CFA Institute (CFAI) Government Finance Officers Association (GFOA) Center for Fiduciary Studies Uniform Management of Public Employee Retirement Systems Act, 1997 (UMPERS) Industry Peers
Investment Asset Allocation	CFAI GFOA UMPERS National Association of State Retirement Administrators (NASRA) Association of Public Pension Fund Auditors Industry Peers
Investment Fees	CFAI GFOA UMPERS National Conference of Public Employee Retirement Systems (NCPERS) Pew Trusts Greenwich Associates Center for Retirement Research Public Plan Data CEM Benchmarking (CEM) eVestment Alliance Universe Morningstar Independent Trade Cost Analysis (If applicable)
Governance	CFAI GFOA Center for Fiduciary Studies CEM UMPERS Industry Peers
Manager Selection and Monitoring	CFAI GFOA UMPERS CFA Institute Global Investment Performance Standards (GIPS®) Industry Peers

Appendix 4 – Individual Plan Summaries of the Investment Practices and Performance Evaluations

The following pages contain summaries of evaluations received by the Pension Review Board (PRB). Links to the individual plan evaluations can be found at the end of each summary or on the PRB website here.

Under Section 802.109(i) of the Texas Government Code, the PRB's report must "compile and summarize" the information received. There is no mandate for the PRB to perform independent analyses of any data presented or to assess whether plan practices align with industry standards. The PRB has therefore focused on identifying and reproducing key excerpts from each report, along with significant recommendations, to provide a quick reference for policymakers. All material included in the excerpt tables is provided verbatim. The PRB Analysis section calls attention to certain highlights of an evaluation, noting unique aspects that may distinguish it from other evaluations received.

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Investment Practices and Performance Evaluations performed by Independent Third Party

Capital MTA Retirement Plan for Administrative Employees

PRB Analysis of Evaluation

Plan Assets: [1] $37,816,175
Evaluator: Gallagher Benefit Services, Inc.
Evaluator Disclosures: [2]
Relationship: Independent 3rd Party (Technical Advisor to System)
Investment Discretion: None

The evaluation describes the Fund's existing policies and procedures, providing detailed descriptions in several areas. However, it does not offer any recommendations for improvement and is unclear as to why the evaluator determined the lack of need for any recommendations. It should be noted that the evaluation was completed by a 3rd-party firm, which allowed for an enhanced independent review of the investment practices, including the investment consultant's role.

The evaluation concludes:

"Capital Metropolitan Transportation Authority has a comprehensive investment management process, based on fiduciary best practices, implemented by a team of internal and external professionals. This has directly translated into an investment solution with above average long-term returns, below average fees, and efficient administration."

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The objectives of the Plan have been established in conjunction with a comprehensive review of the current and projected financial requirements of the plan. An Investment Policy Statement has been approved, updated and reviewed annually to reflect these objectives. Maintaining a high level of contributions and achieving the stated investment results are the critical elements in achieving the plan goals. The Committee recognizes that in order to achieve the plan's long-term investment objectives the plan must assume some investment risk. Since no investment is guaranteed, the Committee also realizes there will be periods of time where the plan may not meet its investment objectives. In establishing the risk tolerances of the IPS, the ability to withstand short and intermediate term variability were considered. The target rate of return for the Plan has been based upon current forward-looking capital market assumptions and is lower than the actual long-term rates of return historically experienced for each asset class in the IPS. Based on the target allocation, expected returns are 6.40% annually with a one-year downside return of -13.0% and a 95% degree of certainty. There is a 48% chance returns will exceed 6.75% in any one year based on the modeling. The Committee realizes that market performance varies and that the target rate of return may not be meaningful during some periods.

Investment Asset Allocation
The Committee believes that the Plan's risk and liquidity posture are, in large part, a function of asset class mix. The Committee has reviewed the long-term performance characteristics of various asset classes, focusing on balancing the risks and rewards of market behavior.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

When necessary and/or available, cash inflows/outflows will be deployed in a manner consistent with the strategic asset allocation of the Plan. If there are no cash flows, the allocation of the Plan will be reviewed quarterly. There are numerous measures used to measure risk and risk adjusted returns. All are reviewed and reported on quarterly. Benchmarking data relative to policy and peer groups is part of this analysis. Portfolio statistics include Beta, Standard Deviation, Downside Risk, Residual Risk, Tracking Error, Information Ratio, Treynor and Sortino Ratio, as well as Alpha, Sharpe Ratio, Up and Down-Market Capture rates. These statistics are provided at a manager and portfolio level.

Investment Fees
Fee transparency has been one of the industry best practices the committee has been focused on for years. Several years ago, a Fee Policy Statement was implemented to articulate the committee's views on the matter. Fund fees are benchmarked quarterly as part of our reviews. Overall fees are benchmarked to the TPRB database of similarly size plans. Our advisory fees are benchmarked to an Ann Schleck database of advisor service models. We have renegotiated platform fees numerous times in the past through RFP's and interim negotiations as plan assets have grown.

Governance
The Committee has established by-laws for the selection, orientation and training of its members. Ongoing responsibilities are articulated in the IPS. Every 5 to 7 years we are required to run a Request for Proposal (RFP) for both the investment advisor and the Plan recordkeeper. Those were conducted in 2006, 2013 and 2019.

Investment Manager Selection and Monitoring
The Committee, with the assistance of the Consultant, will select appropriate money managers to manage the Plan assets. Managers must meet … minimum criteria. The Committee, with the assistance of the Consultant, may also select appropriate mutual funds to manage a portion of the Plan's assets. Mutual funds must meet … minimum criteria. Investment performance will be reviewed at least annually to determine the continued feasibility of achieving the investment objectives and the appropriateness of the IPS for achieving those objectives. All IPS criteria monitoring is reported to the committee quarterly as part of the review process. All criteria are reported relative to peer groups and indices at a manager and portfolio level.

Full Investment Practices and Performance Evaluation

City of El Paso Employees Retirement Trust

PRB Analysis of Evaluation

Plan Assets:[1] $806,623,991

Evaluator: Asset Consulting Group (ACG)

Evaluator Disclosures:[2]

Relationship: Independent 3rd Party

Investment Discretion: None

The evaluation provides a summary report, along with detailed information and simplified "report cards" in several sections, which make it very easy to quickly view the evaluator's assessments and areas for potential improvement. The evaluation makes great use of infographics to present data in a digestible format, and in many cases, in comparison to peers or benchmarks. It should be noted that the evaluation was completed by a 3rd-party firm, which allowed for an enhanced independent review of the investment practices, including the investment consultant's role.

Particularly noteworthy is the evaluator's analysis of the Trust's strategic asset allocation, which provides a comparison of the current asset mix to three alternatives that could potentially improve returns, reduce risk, or both. This should provide value to the trustees as they consider future changes to the allocation.

The analysis of investment fees is also particularly useful. It compares the fees associated with the existing portfolio's funds to a universe of peer funds. This provides transparency to stakeholders regarding the Trust's fees both in total and for its individual investments in general, but also in comparison to the universe of investment options for each asset class.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The IPS is thoroughly written and all nine major key components are included. Overall, compliance with the IPS is adequate. We surveyed all the investment managers in the portfolio and found that not all managers with separate accounts were providing an annual trading cost analysis report as outlined in the IPS. **Recommendations:** - Consider including a process for the comparison of the total portfolio and investment managers' risk-adjusted returns to both peers and the benchmark index. - The Board should review the IPS at least annually to ensure that all required actions are being implemented or make necessary changes to the IPS to reflect the actual process. - Consider documenting the evaluation of risk adjusted returns for the total fund and investment managers relative to relevant peer groups and the benchmark index.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Asset Allocation
The Board of Trustees conducted an asset liability study in 2019 and selected target allocations for each asset class as a result of the study. The current portfolio is well-diversified with allocations to all major asset classes. Using ACG's capital markets assumptions, the strategic target has an estimated median expected return of 6.9% per year over the next ten years. This is in line with Callan's projections for the strategic target, a median expected return of 7.0% per year. Annual cash flow needs are estimated to be approximately 8% of the value of the portfolio based on the last two fiscal year end values. The portfolio appears to be in a reasonable position to provide for future cash flow needs. The portfolio is invested within the strategic allocation outlined in the IPS and all portfolio managers are adhering to their investment mandates.

Investment Fees
The estimated weighted average investment management fee of 63 basis points is slightly above median, but below the top quartile (highest fees) when compared to similarly structured institutional portfolios. The weighted average management fee is above the least expensive quartile, but below median when compared to similarly structured institutional portfolios. Most of the underlying investment managers' fees are in-line with or less expensive than the median manager in their respective universes. Excluding managers in liquidation, only three managers rank above median (most expensive) in management fees against their peer universe.

Governance
Overall, the current governance structure and review process in place appear to be in line with industry standards. The IPS clearly outlines the responsibilities and duties of the Trust as well as each party of interest. The Board of Trustees delegates to an Investment Committee which considers issues related to the investment of Fund assets and which makes recommendations to the Board. The investment decision making process and delegation of investment authority are appropriately documented within the IPS. Review of the November 14th meeting minutes and asset/liability study supports that the current documented process is being properly followed. The Board voted to adopt the State Pension Review Board's minimum educational training requirements for both Trustees and System Administrators. Trustees appear to have reasonable access to education resources through self-pace training as well as other resources circulated.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Appropriate documentation tracking the progress of the Trustees and the Administrator was also provided. Education requirements appear adequate for the Board and Administrators.

Performance and investment objectives are reviewed by an independent third party.

Investment Manager Selection and Monitoring
The investment mandates detailed for each manager and their asset class is properly detailed in the IPS. Managers are meeting their expectations and investing within the constraints outlined in the IPS. Managers with performance concerns are undergoing periodic reviews and the watch list is actively monitored. The Private Equity benchmark on the performance report differs from what is documented in the IPS (the Russell 3000 Index vs Russell 3000 Index +3%). In addition, the Private Equity peer group comparison does not appear to be populating on the reports and is footnoted as of 9/30/2017. For investment managers with separate accounts, an annual trading cost analysis report shall be provided. No investment managers are currently providing an annual trading cost analysis report. [The IPS states] Investment managers with separate accounts shall forward to the Board annually a summarization of all proxy voting and rationale. Investment managers with separate accounts provide summarization of proxy voting to the Board, however, rationale is not provided. **Recommendations:** - There is one current asset class, Private Equity, with different performance benchmarking than what is instructed in the IPS. Consider reviewing the current direction. - Trading cost analysis and proxy voting instructions detailed in the IPS should be reviewed each year to ensure compliance with the IPS.

Full Investment Practices and Performance Evaluation

CPS Energy Pension Plan

PRB Analysis of Evaluation

Plan Assets:[1] $1,779,033,857

Evaluator: Champion Capital Research, Inc. (CCR)

Evaluator Disclosures:[2]

Relationship: Independent 3rd Party

Investment Discretion: None

The evaluation provides helpful explanations and includes useful comparisons to industry practices to make specific recommendations for improvement to the System's policies. The evaluation clearly identifies and discusses if a recommendation resulted in changes made by the System. It should be noted that the evaluation was completed by a 3rd-party firm, which allowed for an enhanced independent review of the investment practices.

The evaluation commends the Plan's robust fee assessment process while also identifying areas for improvement.

The evaluation indicates the System's asset allocation process is consistent with best practice but given the current capital market assumptions and asset allocation, it is unlikely to be able to achieve the assumed actuarial rate of return of 7.25%. The System is expected to complete an experience study in 2020, which would include an assumption discussion.

The evaluation concludes that the plan will have no issues implementing best practices because "the Plan is vigilant in its compliance with both its governance and investment policies and procedures." It also notes that all opportunities for improvement were discussed in detail and are being considered by the System for future revisions.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The Plan's Statement of Governance ("SoG") is thoughtful and comprehensive as it relates to the duties and responsibilities of the Board, the Employee Benefits Oversight Committee ("EBOC"), the President & CEO, and the Administrative Committee. The Investment Policy Statement ("IPS") further defines the roles and responsibilities of the Trustees, Administrative Committee members and investment managers. Neither of these documents outline the roles and responsibilities of the Actuary, Custodian or the Investment Consultant. With respect to conforming to fiduciary best practices, the Plan's IPS and SoG do not express specific selection, due diligence and monitoring criteria. In practice, the Plan appears to implement monitoring practices that are good practices. However, without explicit criteria documented in the IPS, the portfolio management process is vulnerable to inconsistency and repeatability throughout generations of fiduciaries. **Strengths:** – The Plan is vigilant in its compliance with both its governance and investment policies and procedures, thus, CCR believes the Plan will have no difficulty improving and implementing "best practice" monitoring processes and IPS criteria. **Recommendations:** – While the roles and responsibilities related to the external Investment Consultant are included in the agreement with the consultant, we suggested they also be included in in the IPS.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

- Discussions of liquidity and liabilities in the IPS [are] in general terms, but without specifics. One way to satisfy this OFI might be to add language to IPS suggesting: "Within 30 days after the end of each calendar quarter, a review will be made of: (a) the specific liquidity needs over the next four quarters: (b) the nature of all liabilities; and (c) the current funded status of the Plan." The results of such review shall then be shared with the appropriate committees.
- Generally, the policy is clear and anyone could manage a portfolio and conform to the desired intentions. CCR suggested more explicit and measurable language could be helpful.
- We suggest the addition of roles and responsibilities for investment consultant, and objective, measurable criteria for due diligence, selection, monitoring and replacement for Investment Consultant, investment managers, service providers, and asset allocation processes and decisions.
- Although not required by the IPS, CPS Energy staff has a practice of evaluating asset allocation weekly. CCR recommends the Plan's IPS include language to align with actual practices.

Investment Asset Allocation
Wilshire, the Investment Consultant, and Milliman, the Actuary, have an open dialogue regarding capital market assumptions, liquidity needs, future funded ratios, and other researched analyses conducted on behalf of the Plan. Both Wilshire and Milliman deliver to the Plan a set of capital market assumptions. The two vendors compare and contrast these data. Milliman indicated that most often, the Plan adopts Wilshire's data. Given the expected capital market assumptions and current asset allocation, it is unreasonable to expect to achieve the actuarial rate of return of 7.25%. An Experience Study is expected to be completed in 2020 and assumption discussions are planned for mid-year 2020, for inclusion in the next actuarial valuation. Both Milliman (Actuary) and Wilshire (Investment Consultant) have stressed the assets and liabilities and informed the client of the risks associated under different interest rate and economic scenarios. Results are analyzed and used for the determination of changes in asset allocation. Importantly, these stress test results are used in serious discussions regarding the impact a different – lower – discount rate might have on the future funding status of the Plan.

Investment Fees
While the framework exists, policies are not explicit with respect to the monitoring of direct fees and expenses, including but not limited to investment management, custodial, consulting, and trading fees and expenses. The Plan's procedures exist with respect to indirect fee assessment, but policies and monitoring of these procedures are incomplete. Wilshire, the Investment Consultant, reports investment management fees periodically, but peer analyses of negotiated investment management fees are absent. The IPS could delegate to vendors and service providers the responsibility to report

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

periodically fees and expenses and to opine regarding peer group median fees and expenses for like services. CPS Energy staff would then have total fees and expenses readily available for annual reporting and benchmark analyses. The reasonableness of fees can be assessed only by ensuring a comparison of the Plan's total fees and expenses to comparable entities total fees and expenses.

Strengths:

- The Plan's SoG provides a good "framework" for ensuring the appropriate policies and procedures in place to account for and control for investment expenses and other asset management fees. CCR found that the Plan's processes are robust with respect to assessing fees and expenses.

Recommendations:

- CCR's recommendation is that the Plan adopt policies and processes by which it periodically, but no less frequently than annually, documents both direct and indirect fees and compensation paid to all managers, brokers, real estate investments, mutual funds, and consultant(s). Any profit share or carried interest from alternatives/real estate should be documented. At the renewal of all manager agreements, it would be prudent to require an annual accounting by each manager of all direct and indirect remuneration received during the calendar year. This would make it easier for Wilshire, the Investment Consultant, and therefore the Plan to aggregate all fees and expenses, benchmark for reasonableness, as well as hold all managers to a fiduciary requirement to report accurately direct and indirect remuneration received.
- An analysis of investment management fees netted from returns, profit share/carried interest from alternative investments, expenses related to cash (if any) and expenses related to real estate, is needed and would enhance the Plan's monitoring and oversight of the Plan.

CCR recommended the IPS be updated to include specific monitoring procedures of all direct and indirect expenses paid by the Plan, and that a periodic, consistent monitoring process be followed for the accounting of all direct and indirect investment fees and expenses.

Governance

The IPS and SoG clearly define responsibilities for the Board, the EBOC and the Administrative Committee with respect to governance, investing, monitoring and custody clearing roles and responsibilities. Although some responsibilities are included in the Investment Consultant Agreement, the IPS and SoG do not explicitly define the role and responsibilities of the Investment Consultant, which assists with asset allocation, manager searches, performance reporting, and monitoring. The Administrative Committee retains responsibility for manager selection and monitoring, but delegates investment management to individual managers.

While the Plan's Board agendas and minutes are on the Plan's web site, Plan-related issues are infrequently brought to the routine Board meetings. Two of the Board members serve on the EBOC and they provide a summary of EBOC meetings to the full Board. The EBOC meets at least twice a year (in 2019 the EBOC met four times). The SoG requires that members of the Administrative Committee receive all applicable and timely minimum training

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

and continuing education consistent with the Administrative Committee members' role and standard of care, including, but not limited to, Tex. Local Gov't Code section 172.007 risk pool training (for those involved on group benefits) and Texas Pension Review Board fiduciary duty training, or as otherwise required by law or the Plan's policy.

Strengths:

- CCR finds the Plan's decision-making processes, delegation of authority and investment education and expertise among the Board, EBOC, and Administrative Committee to be robust, prudent, and consistent.

Recommendations:

- Implement a policy to review all vendor contracts and agreements once every three years, which is best practice.

Investment Manager Selection and Monitoring
While not established formally in the IPS, the Investment Consultant assumes the role of determining the potential candidates for investment manager selection. While the Investment Consultant has its internal selection methodology that appears to be consistently applied, the specific criteria are not transparently displayed in the IPS, which is best practice. Monitoring gross and net of fee aggregate performance on a quarterly basis for all investments in the Plan's portfolio would improve opportunities for fiduciaries to assess the net value add for each manager, including privately traded strategies. Including benchmarks and peer group analyses will enhance the Plan's monitoring processes. Monitoring net performance relative to peers is best practice. **Recommendations:** – Include specific selection and monitoring criteria for the selection and termination of investment managers [in its IPS]. – We also suggested adding objective, measurable criteria for due diligence, selection and monitoring of investments, investment consultant and investment managers. – Fiduciary best practice would be to include both net and gross of fee relative to benchmark and peers in each quarterly report.

Full Investment Practices and Performance Evaluation

Dallas County Hospital District Retirement Income Plan

PRB Analysis of Evaluation

Plan Assets:[1] $1,173,298,000

Evaluator: Anodos

Evaluator Disclosures:[2]

Relationship: Independent 3rd Party

Investment Discretion: None

The evaluation provides a thorough review of the governing policies, procedures and practices of the Plan, while offering easy-to-understand explanations of its findings and recommendations. It should be noted that the evaluation was completed by a 3rd-party firm, which allowed for an enhanced independent review of the investment practices.

The evaluation includes an explanation of its methodology, tying each section of its report back to the applicable section of the Texas Government Code; and a summary of recommendations that discusses the recommendation, rationale and any supporting industry standard in support of the recommendation.

Especially noteworthy is the evaluation's review of the Plan's governance policy, which was highly detailed and thorough, with specific opportunities for improvements. The review offers a useful viewpoint that other plans can draw from for their own policies.

The evaluation further notes that while several suggestions for improvements have been made, in general the policies for managing the portfolio are clear and explicit.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The IPS is organized consistent with the "best practices" identified by the CFA Institute, GFOA, NCPERS and TPRB, including (1) investment principles, (2) objectives (3) approved allocation, (4) manager selection process, and (5) monitoring functions and key performance indicators. There are a very few instances in the Investment Practices and Performance Report (IPPR) where Anodos offered suggestions where the policy might be improved, but these suggestions are the exception rather than the rule. There is substantial evidence that the system is following its own policies memorialized within the IPS. **Recommendations:** - The staff is primarily responsible for recommending amendments and revisions to the Investment Policy Statement. Specifically, the policy directs, "Parkland staff shall provide recommendations to the Investment Committee and the Budget and Finance Committee regarding potential revisions to this Policy on at least an annual basis" (IPS, p. 5). We recommend that this policy be removed because it is duplicative with the Investment Consultant's responsibility to do the same work (see IPS, p. 4). We would neither expect nor recommend that Staff be excluded from the IPS review and revision process. However, we believe the Investment Consultant is best qualified to initiate this work each year. If this policy is removed and the Investment Consultant is the responsible party for initiating the IPS review, the frequency of the review should be identified.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Asset Allocation
The governing body (the B&FC) is responsible for establishing the strategic asset allocation based on recommendations of the Investment Committee, Staff and the Investment Consultant. The expected risk is expressed as the standard deviation of the portfolio and is measured against that of the Policy Index (blended benchmark consistent with the approved allocation) and peer group systems. The approved allocation, which is reviewed annually, is based on the capital market assumptions (projected risk and return by asset classes) developed by the Investment Consultant and compared to the capital market expectations of the Actuary (Milliman). The methodology used for the development of the approved allocation is based on long established and prudent methodologies including (1) capital market expectations, (2) inflation assumptions, (3) consideration of the economic environment, and (4) a long-term investment horizon. No expressed policy on passive management has been made. In practice, passive management is used for the US Large Cap asset class only, and active management is used in all other asset classes. Active investment managers are expected to exceed their policy benchmark after fees and be within the upper 50% of peer group managers over 5-year periods. Of the eight active investment managers, five have met or exceeded these objectives and three have not. [The Plan has] a well-diversified portfolio [and] has no “alternative” investments, namely, hedge funds or private equity. The most recent Asset Liability Study was conducted in 2017. That study found, “The Plan is slightly cash flow positive over the next decade.” The projected contributions in each of the next 10 years exceeds the projected disbursements by approximately ~$5m per year. There is no policy defining the maximum level of illiquidity acceptable within the Plan, though there are several policies that indicate a preference for liquidity. Because this plan is over 25% underfunded ,the Plan has taken the following steps: (1) developed a funding policy that includes, but is not limited to, achieving a goal of full funding within a defined period of time (not less than 30 years), (2) increased contributions being made to the Plan, (3) reduced return assumptions for future plan years, and (4) fully amortizing the unfunded liability within a period of 25 years. **Recommendations:** - We recommend defining the maximum allocation of the Plan that may be invested in illiquid assets. This policy would include (1) a statement affirming an expectation that an illiquidity premium exists, (2) the maximum allocation of illiquid assets that will be allowed in the Plan and (3) how illiquidity will be defined and measured. - [The IPS requires] Investment Managers… be notified if an unusually large liquidity need is anticipated. We recommend the policy identify the party responsible for its implementation and an explanation of how “unusually large liquidity needs” is defined and tracked. - We expect that the rationale for requiring “readily marketable securities” for the Domestic Equities asset class was adopted to ensure that a consistent pricing mechanism existed so that other policies related to the tracking of investment managers’ risk, return and market values could be followed. Alternatively, it is possible that the “readily marketable securities” requirement for Domestic Equities could have also – or alternatively – been adopted to ensure that this asset class met an unstated liquidity preference by the governing body. Given the ambiguity of this policy, we recommend that the Investment Committee clarify whether the policy relates to a liquidity preference, consistent pricing data, or both.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Fees
There is only one governance policy related to investment costs. In our view, this fundamental duty of care deserves more guidance than the current policy offers. According to the fee study $1.087m is paid in both direct and indirect compensation to investment managers which is equivalent to 0.42%. Callan's report concludes that this fee is below the average for funds of similar size. **Recommendation:** - We recommend expanding this policy to identify (1) who is responsible for conducting this fee study, (2) with what frequency the study is to be conducted and (3) the identification of the factors that are to be considered when conducting this study such as indirect costs, peer group fees, incentive compensation, etc.

Governance
A competitive RFP process for investment consulting services was conducted in 2013 when Callan was originally hired and then again in 2017 when Callan was rehired for a second 5-year contract that is scheduled to terminate in 2021. The B&FC is the ultimate governing body for the Plan. The Investment Committee, seated with five experienced investment professionals, serves in an advisory capacity to the B&FC. Staff and the Investment Consultant conduct the administrative, monitoring and reporting functions that serve the Investment Committee and B&FC. The IPS is clear on those authorities and duties that have been retained and those that have been delegated by the B&FC. In summary, authority rests exclusively with the B&FC. Apart from rebalancing responsibility, which has been delegated to staff within clear guidelines, the B&FC has not delegated any authority to any party. Monitoring responsibilities have been delegated to the Investment Committee, Staff and Investment Consultant. But each of these parties has no authority to act upon the observations they offer the B&FC. **Recommendations:** - Based on staff's input provided on 2/28/2020, the IPS should be modified to subordinate the staff's opinion regarding the performance of the Investment Managers to that of the Investment Consultant and the Investment Committee who are arguably better qualified to opine on this issue. - We recommend establishing the (1) responsible party, (2) frequency, and (3) format of the staff's evaluation of the Investment Consultant and Investment Managers. (The format may be a simple statement in the minutes noting a review of the Investment Consultant's and Investment Managers' performance.) - We recommend that a policy be established which establishes the frequency that an open and competitive search of investment consultant will be conducted.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Manager Selection and Monitoring
Authority for selecting investment managers rests with the B&FC based on advice and analysis offered by the Investment Committee, Staff and the Investment Consultant. The performance of the total Fund and the individual investment managers is calculated using time-weighted rate of return, both gross of fee and net of fee, and is compared to defined key performance indicators – benchmarks, indexes, peer groups, and targeted returns. Gross of fee and net of fee performance is presented quarterly and is compared to appropriate benchmarks and peer groups. **Recommendations:** - If a clear "illiquidity policy" is established as we suggested above, the restrictions in Section IV Paragraphs A-D of the IPS can and should be removed. - We recommend that the IPS be modified to remove all references to rolling performance periods and replaced with the prior 5-year performance period.

Full Investment Practices and Performance Evaluation

Dallas Employees' Retirement Fund

PRB Analysis of Evaluation

Plan Assets:[1] $3,658,088,000

Evaluator: Milliman

Evaluator Disclosures:[2]

Relationship: Independent 3rd Party

Investment Discretion: None

The evaluation offers a brief summary of the Fund's practices and performance, with some details in specific areas. It should be noted that the evaluation was completed by a 3rd-party firm, which allowed for an enhanced independent review of the investment practices, including the investment consultant's role.

The evaluation touches on the System's annual asset liability study and stress testing that are identified as best practices. The evaluation further notes the System's use of net-of-fees benchmarks for monitoring manager performance exceeds best practices. The evaluation in multiple areas compares practices implemented by the system to either peers or best practices but does not identify what is considered best practice.

The evaluation includes recommendations for the System to continue existing practice, or makes broad, general recommendations.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The IPS is written clearly so existing as well as newly appointed or elected Trustees will find it helpful as an ongoing tool for evaluating the Fund's investment program, consistent with best practices. "Discussion Sheets" in the Board materials provide an example of the Fund following its IPS. We found the ERF's IPS is consistent with other plans and best practices. **Recommendation:** - Maintain current rigorous reviews of the ERF's performance, providers and consultants.

Investment Asset Allocation
The ERF has a formal asset allocation policy defined within the IPS. An asset allocation study is conducted annually, incorporating current capital market assumptions and the Investment Consultant's current views on the market. We found these assumptions to be in-line with peers. The changes in the assumed rate of return are reflected in the Actuary's modeling each year when the actuarial valuation is updated. The ERF maintains a strategic asset allocation that is monitored and rebalanced as needed. The ERF's asset allocation is appropriate for a plan their size and is consistent with best practices. The inputs for the asset allocation modeling are reasonable and the approach used by the system to develop the expected returns and asset mix is disciplined and reviewed regularly. It is consistent with best practices, and results in a well-diversified portfolio appropriate for the plan's size.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Strengths:

- The ERF's frequent evaluation of expected returns is an example of a Fund procedure that exceeds best practices.
- The ERF's annual Asset Liability Study is an example of a Fund procedure that exceeds best practices.
- The ERF's Staff has extensive experience with alternative asset investing, both with ERF and prior to joining the ERF. The Staff is actively engaged in monitoring the alternatives and makes a concentrated effort to stay current with industry trends, products, and strategies.

Investment Fees

The ERF has a disciplined and detailed evaluation procedure to measure, reconcile, and benchmark fees. All fees are transparent and reconciled with service agreements. The ERF does not use commission recapture or directed trades. Manager fees as well as trading and commissions are reported monthly and evaluated formally each quarter. Fees deemed to be outside of acceptable variances are flagged, questioned, and reconciled.

The report compares ERF's practices in this area with the industry standard, as defined by peer practices.

Strengths:

- The ERF's discipline around fees is very thorough and we consider these Fund procedures to be beyond what we see with best practices.

Governance

The ERF's Code of Ethics (this "Code") covers the Board and Staff and addresses topics such as travel, gifts, prohibited transactions, and conflicts of interests. This Code also covers the ERF's consultants, advisors, vendors, employees, and other fiduciaries of the ERF. This Code is read and enforced together with the code of ethics found in Chapter 12A of the Dallas City Code and the travel policy adopted by the Board for itself and its Staff. Meeting agendas, minutes, and report materials are easily available to the Board and the public online. The ERF's governance policy and transparency of practices is adequate for a plan of its size and is consistent with best practices.

Recommendations:

- Adjust training and education requirements as needed to stay abreast of evolving investment strategies in a very dynamic global environment.
- Maintain a focus on transparency.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Manager Selection and Monitoring
Managers are selected by issuing an RFP for each asset class. Working with the Investment Consultant, Staff will recommend candidates for due diligence visits for Board approval. After conducting due diligence, Staff then recommends finalist candidates to present to the Board. Once hired, managers are required to meet with the Board as needed, typically once every two years. The ERF reviews performance monthly, examining both gross and net returns compared to index benchmarks and alpha-adjusted benchmarks. Quarterly, the ERF examines managers compared to peer groups, net of fees, attributing returns to sector, timing, and manager skill. The manager selection and monitoring process is consistent with the IPS and in-line with industry standards. **Strengths:** - The use of net-of-alpha benchmarks in the IPS and monitor reports are an example of the ERF's processes being above standard best practices.

Full Investment Practices and Performance Evaluation

Denton Firemen's Relief & Retirement Fund

PRB Analysis of Evaluation

Plan Assets:[1] $103,815,795
Evaluator: Gary Calmes, PLLC
Evaluator Disclosures:[2]
Relationship: Plan Administrator
Investment Discretion: None

The evaluation utilizes a question and answer format describing the system policies and practices in a short and direct manner but includes detail to help support the conclusions. It also includes a helpful summary of its primary conclusions at the end of the document.

The evaluation concludes the funds policies and practices are in-line with best practices and its approach can be a model for others, stating "DFRRF's solid investment choices, lowering of its actuarial rate of return, and no debt practice for real estate investments make it a benchmark for other funds."

The evaluation indicates the System has elected to use a more conservative assumed rate of return than required, noting "the assumed rate of return was lowered by the Board to 6.75% from 7%, although the rate of return was lowered, the allocation was not changed. The rate was lowered to take a more conservative approach to future plan performance and liability."

The evaluation also highlights the stability of its board as an area of strength, noting "two citizen members have been on the Board for over ten years. The Board has seen little turnover in the past 10 years including the firefighter members/officers."

The evaluation was completed by the System's current third-party plan administrator which is identified as a financial services firm that provides "tax and financial planning services as well as, consulting services for institutional clients." The evaluation states the "firm's principal is a CPA, CFP®, and Investment Advisor Representative."

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The policy is reviewed on an as needed basis. The Investment Policy was last update February 20, 2020. We found the fund to be very solid with good policies and practices. The DFRRF's solid investment choices, lowering of its actuarial rate of return, and no debt practice for real estate investments make it a benchmark for other funds. **Strengths:** - The policy is clearly written, and objectives stated in such a way for anyone to manage the portfolio. - The Fund has consistently met its goals over the history of the Plan. The Plan holds 12% of its assets in illiquid assets. The fund contains no debt on any of its assets.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Asset Allocation
The system does not have a written policy for determining the asset allocation, the investment policy does include an allocation requirement. The Fund uses no formal stress testing model. All decisions are made at the Board level, based on qualitative discussion not quantitative. In 2015 the assumed rate of return was lowered by the Board to 6.75% from 7%, although the rate of return was lowered, the allocation was not changed. The last review would be the 12/31/2019 actuarial study and the 12/31/2019 annual audit. The Fund does not perform a formal separate asset-liability study. **Strengths:** - The rate was lowered to take a more conservative approach to future plan performance and liability. - The long-term performance of the fund has been sufficient to meet the needs of the fund as well as maintain an amortization period of less than 20 years.

Investment Fees
The investment consultant monitors and reports investment fees to the board. The fees are approved by the Board and paid separately and not withdrawn by the advisor. The Board is responsible for the monitoring of all other fees incurred by the plan. **Strengths:** - DFRRF remains one of the lower cost funds in TLFFRA.

Governance
The IPS does not specifically identify Board policies and procedures. As it relates to risk, the roles and responsibilities of each party involved in the management of the plan is clearly defined in the IPS. In short, the Board is responsible for developing the investment objectives of the plan, hiring of all parties, allocating assets, review of investment results and investment policy. This structure is very common throughout the industry and serves as a good system of checks and balances. **Strengths:** - DFRRF's strongest area is its stable environment including long term Board members. The two citizen members have been on the Board for over ten years. The Board has seen little turnover in the past 10 years including the firefighter members/officers. The current investment advisor has been with the plan since 2018, the previous advisor managed the plan for approximately 30 years. The investment advisor is not a

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

large firm but an individual, which means the consistent nature has not changed. The current advisor also worked with the previous advisor for two years before taking over.

Investment Manager Selection and Monitoring
The Board is ultimately responsible for measuring the performance of the plan with the advisor's input. The manager reports to the Board on a monthly basis, if performance were to not meet actuarial rates of return over a long period the Board would review the manager for replacement. **Strengths:** - Performance is reviewed based on gross-of-fee monthly and net-of-fee during the annual audit. **Recommendation:** - One area we would recommend the Board review is the process by which investments are presented to the Board. The investment advisor presents investment opportunities to the Board, but there does not exist a matrix by which these are chosen. We do not recommend a change in policy but at a minimum discussion as to why and how various investments are chosen.

Full Investment Practices and Performance Evaluation

Galveston Employee’s Retirement Fund

PRB Analysis of Evaluation

Plan Assets:[1] $57,497,906	
Evaluator: Roland Criss	
Evaluator Disclosures:[2]	
Relationship: Independent 3rd Party	
Investment Discretion: None	

The evaluation clearly details the evaluation process as well as documents the sources used to determine what "constitutes generally accepted principles, standards, and best practices of fiduciary conduct as regards managing investment matters in a public setting." The findings are concise and recommendations for improvements easily understandable, with additional details provided as part of the appendix. It should be noted that the evaluation was completed by a 3rd-party firm, which allowed for an enhanced independent review of the investment practices, including the investment consultant's role.

The evaluation is unique in its reliance on the Uniform Management of Public Employee Retirement Systems Act ("UMPERS") as the basis for its evaluation. It notes that UMPERS "modernizes, clarifies, and standardizes the rules governing the investment and management of public retirement Systems' assets. It provides legal mandates that permit public employee retirement Systems to invest their funds in the most productive and secure manner. Public retirement Systems become trusts operated under rules of prudent investment subject to a fiduciary standard of care."

In general, the evaluation concludes the systems practices are largely in-line with best practices but identifies several areas for improvement as well as the urgency with which the improvements should be addressed. The System notified the PRB that all recommended changes/areas of improvement have been enacted during or subsequent to the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The prudent investment expert standard requires retirement Plan fiduciaries to make choices from a broad range of investment options in order to effectively diversify their Plan's assets accounts. Policy guidelines, therefore, are essential and must be adhered to by the fund managers and advisors to whom implementation of policy is delegated. During our work we examined the Plan's investment policy against fourteen internal control steps presented by the Evaluation methodology. One opportunity for improvement ("OFI") emerged that includes four steps. Step 1.2 Roles and responsibilities of those involved in governance, investing, consulting, monitoring and custody are clearly outlined. Step 1.3 The IPS is carefully designed to meet the real needs and objectives of the retirement Plan. It is integrated with any existing funding or benefit policies. Step 1.5 The structure of the IPS adheres to industry best practices. Step 1.8 The IPS contains measurable outcomes for managers and includes the time periods in which performance is to be considered.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Recommendation:

The IPS should be updated to add roles and responsibilities of all parties involved in oversight of Plan investments, investment fee monitoring process, along with fund selection and monitoring criteria.

Investment Asset Allocation

In order to provide a clear picture of the Plan's alignment with asset allocation best practices, we tested the Plan's approach against twenty-five activities. Those activities are grouped within five components of the asset allocation discipline and include the following: *Determine Target Allocations; Expected Risk and Expected Rate of Return; Selection & Valuation Methodologies of Alternative and Illiquid Assets; and Future Cash Flow and Liquidity Needs.*

We concluded that no OFI's exist that if addressed would significantly enhance the process used to manage the Plan's investment asset allocation activities. The board should continue to monitor the assets on a quarterly basis.

Investment Fees

While investment fees are reviewed quarterly by the Plan's investment consultant against the Plan's peers, there is no defined method for determining if the Plan's investment related fees are reasonable. The Board also receives financial statements each meeting, which include all other plan-related fees, such as administrative, actuarial, and financial audit.

SB322 includes fee benchmarking language, however, there is currently no available fee benchmark for Texas-based public pension funds. Considering the frequency of the Board's meetings and the substance of its reviews of service agreements and fees, it is our opinion that the Board is fulfilling its duty to monitor and control plan expenses.

We concluded that five [of eleven] steps exist in the approach the Plan uses for monitoring and controlling investment related fees.

Recommendation:

- We recommend that the Board document the results of its provider service and fee review at least annually. Additionally, the results of the review should provide a determination that the fees are reasonable.
- The IPS should be updated to add roles and responsibilities of all parties involved in … investment fee monitoring process.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Governance
Prior to the Evaluation, the Board did not possess an internal controls checklist from which to validate its practices with its policies. Subsequently, the Plan Administrator developed an internal controls checklist based on the Plan's current operations. **Recommendation:** - We recommend that the Board adopt the internal controls checklist and annually assess the Plan's operations.

Investment Manager Selection and Monitoring
Due diligence is the heart and soul of investment manager selection. A good due diligence process objectively whittles down the universe of available managers to just those who meet high standards for inclusion in a retirement Plan's portfolio. The objectives of investment manager due diligence are first examined using quantitative data to evaluate funds against set benchmarks and in relation to peers. In addition to quantitative analysis, fiduciaries should consider applying qualitative factors, which can help detect organizational instability. Any organizational instability, over time, usually leads to a manager's underperformance. We identified one step (individuals responsible for selecting investment managers are identified in the IPS) [that needed improvement] in the Plan's process for selecting Investment Managers. **Recommendation:** - The IPS should be updated to add roles and responsibilities of all parties involved … with fund selection and monitoring criteria.

Full Investment Practices and Performance Evaluation

Guadalupe-Blanco River Authority

PRB Analysis of Evaluation

Plan Assets:[1] $33,392,523

Evaluator: Consequent Capital Management

Evaluator Disclosures:[2]

Relationship: Independent 3rd Party

Investment Discretion: None

The evaluation included numerous, detailed recommendations that will be valuable as the plan considers opportunities for improvement. The evaluation also provides a useful summary that covers best practices used by the System in each section. It should be noted that the evaluation was completed by a 3rd-party firm, which allowed for an enhanced independent review of the investment practices.

The evaluation's assessment of the Plan's IPS notes that while it has not been updated since 2011, it is still broadly consistent with best practices. Nonetheless, the evaluation includes recommendations for additional updates and improvement. The evaluator notes that while the actuary and the investment consultant communicate, "there is a material difference in the underlying return expectations."

Additionally, the document used detailed portfolio data to note a potential opportunity: by making some modifications to the Plan's asset allocation, it may be possible for the Plan to increase the total portfolio's annualized expected return while maintaining the same level of risk.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
Guadalupe-Blanco River Authority (GBRA) does have a written investment policy containing procedures that broadly conforms with industry practices which are written clearly and explicitly so as to facilitate management and compliance of the portfolio with desired intentions and objectives. The policy has been designed to address achievement of objectives and incorporate investment-related procedures and protocol pertaining to policy objectives, roles and responsibilities, investment objectives, asset allocation, investment manager guidelines, and investment manager communication and service requirements. However, the policy was adopted in July 2011 and has not been updated in almost 9 years. As such, the policy, in our view, requires updating to be more in line with best practices. **Strengths:** – Based on our independent review of the Plan's investment practices and performance criteria, it is in our opinion that the investment practices, governance, investment activities and methodologies are suitable and in line as compared with best practices of public pension plans. **Recommendations:** – Incorporate language into the IPS, that we believe is in line with best practices of public pension plans: – Review investment policy annually. – Receiving investment performance reports quarterly from the Investment. – Add quantifiable criteria for measuring investment manager performance, to include appropriate metrics and time periods (e.g. investment returns in comparison to the managers relevant benchmark index as well as peer group universes over trailing time periods

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

of 1-, 3- and 5-years), as well as specific criteria for putting an investment manager on 'Watch' and/or terminating an investment manager.
  - Add monitoring of investment management fees.
  - Incorporate language in the IPS that explicitly defines two criteria for the evaluation of GBRA's asset allocation. The first criterion would measure the asset allocation's actual return compared to its stated expected investment return objective over an evaluation period of a market cycle, which is typically 5 to 7 years. The second criterion would evaluate the ranking of the GBRA's investment returns in a universe of similar public pension plans over 1-, 3- and 5-year trailing time periods. While the investment returns of GBRA and the rest of the universe would include both the effects of the asset allocations as well as manager-selection effects, this criterion would still be a good proxy because extensive academic research has shown that asset allocation accounts for over 90% of a plan's total return.
  - Add language to properly reflect the alternative investments universe and classify various alternative strategies and sub-strategies under a single Alternative Investments category; need to add language for real estate, private debt, private equity, hedge funds, and real assets (e.g. timber, infrastructure, etc.).
- Update actuarial assumed rate of return in policy.
- Current Target Allocation needs to be included as Schedule A of the IPS; the Target Allocation in Schedule A of the IPS is not current.

Investment Asset Allocation

GBRA relies on the expertise of its investment consultant, which undertakes the analysis for the Plan's strategic asset allocation. Simulations run in the asset allocation analysis provide a quantification of downside investment returns. A discussion and review of these simulations help shape the Committee's view of its risk tolerance. The investment consultant periodically presents the results of their analysis, together with recommendations, to the Retirement and Benefit Committee, which then makes the final decision in implementing an asset allocation deemed appropriate in meeting the needs and objectives of GBRA. The investment consultant monitors and facilitates maintenance of asset allocation targets and ranges via rebalancing.

Strengths:

- This decision-making approach for strategic asset allocations is standard industry practice and in line with best practices for retirement plans engaging non-discretionary investment consultant services.

Recommendations:

- Generally, the time frame for reviewing strategic asset allocations is once a year, and this would be a recommended change for GBRA's consideration.
- GBRA's actuary and investment consultant should work in coordination utilizing reasonable assumption inputs to craft an appropriate asset allocation to achieve funding objectives in a risk prudent manner particularly considering the Plan's recent frozen status.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

- It is critically important to have consistency in the expected returns between the investment consultant and the actuary. The actuarial required rate of return should be specified based on just the long-term required rate of return for GBRA to meet its projected liabilities. In other words, there should not be any asset class expected return assumptions made by the actuary that result in the actuarial required rate of return.
- It is imperative at the onset of the Plan's relationship with an alternative asset manager that GBRA, with assistance from the investment consultant, ensure that underlying funds' NAV is computed based on strategy-appropriate accounting/valuation practices for each type of alternative asset and that reputable independent, third-party administrators, custodians and auditors are retained by each underlying alternative manager. GBRA should be sure to rely on their investment consultant to assist in this endeavor.
- When implementing asset allocation consider passive investment vehicles in asset classes where median returns of active managers within a peer universe are not expected to generate excess returns over an appropriate benchmark index (e.g. U.S. large cap equity).

Investment Fees

GBRA does maintain a funding policy that addresses the sources of funding for costs associated with the management and oversight of the defined benefit plan but neither the funding policy nor the investment policy address the monitoring of direct and/or indirect compensation paid to investment managers. GBRA currently relies on the expertise of their investment consultant to review, negotiate, and monitor investment expenses and asset management fees. However, there does not appear to be a formal protocol for the review of investment fees currently in place.

Recommendations:

- Incorporate language into the IPS pertaining to the party responsible for monitoring and periodically reviewing fees (e.g. annually).
- Require that quarterly performance reporting include information on median investment fees for asset class universes applicable to the Plan portfolio for comparison purposes. Inquire about investment fees for any investment manager with fees above median peer universe, particularly traditional long-only strategies within the equity and fixed income asset classes.

Governance

GBRA currently maintains a standard and practical governance structure with a well-defined delineation of responsibilities incorporated in the investment policy that addresses the roles and responsibilities of the parties that are associated with the management and oversight of the Plan. The number of members (7) on the Retirement and Benefit Committee is an appropriate number and the mix of board and employee members also helps to facilitate efficient and effective management and oversight.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Strengths:

- The quarterly meeting schedule is in line with industry best practices and facilitates compliance with policy and regulatory requirements.

Recommendations:

- Consider posting investment performance reports and investment policy statement to "Transparency" webpage to enhance transparency.
- Develop on-boarding procedures, protocols, and materials to assist new board and committee members in understanding management of the retirement plan as well as their fiduciary responsibilities and regulatory requirements. In general, develop reasonable, manageable, cost-effective, and time appropriate materials and requirements such as development of trustee handbooks followed up with attestation to review of the selected materials to ensure compliance and accountability while enhancing knowledge of fiduciary duties.
- As it pertains to board and committee training, consider:
  - Requiring investment consultant to coordinate annual investment manager roundtables of existing investment managers
  - Requiring investment consultant to conduct 1–2 investment-related education workshops per year
- Pertaining to the Retirement and Benefit Committee, consider placing appropriate term limits on assigned board members and employee representatives and stagger the terms of the committee members to facilitate continuity.
- Best practices recommend issuing an investment consultant RFP every 3–5 years.

In general, best practices recommend developing written governance policies and reviewing those policies annually.

Investment Manager Selection and Monitoring

The Retirement and Benefit committee utilizes the services of an institutional investment consultant that provides the research, analysis, and potential candidates for selection by the committee as well as the ongoing monitoring of investment managers, in both traditional long-only and alternative investments, currently managing assets for GBRA. The committee follows a repeatable process, including presentations by finalist firms, which allows for the efficient and effective selection of investment managers. Quarterly meetings to discuss investment performance is considered best practice.

As it pertains specifically to alternative investments, GBRA utilizes the services of the investment consultant to identify suitable alternative investment strategies, perform due diligence on prospective strategies, and facilitate the manager selection process while also monitoring the Plan's alternative investments. The process of selecting a new alternative manager/strategy culminates in a search report and mandatory presentations by finalist firms. The research and selection process is in line with the industry standards, comprised of specified research steps, including mandatory on-site visits.

Currently, the alternative investment strategies utilized by the Plan are appropriate, given the overall goal of reducing the Plan's volatility and adding diversification.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Strengths:

– GBRA's approach is standard industry practice and in line with best practices for public retirement plans engaging the services of a non-discretionary investment consultant.

Recommendation:

– Consider establishing conflict of interest rules pertaining to committee members when selecting investment managers.

Full Investment Practices and Performance Evaluation

Houston Firefighters’ Relief & Retirement Fund

PRB Analysis of Evaluation

Plan Assets:[1] $4,237,692,080
Evaluator: Global Sovereign Advisors
Evaluator Disclosures:[2]
Relationship: Independent 3rd Party
Investment Discretion: None

As allowed by Texas Government Code §802.109, the evaluation was prepared in accordance with the Houston Firefighters' Relief & Retirement Fund's governing statute.

The evaluation provides a general overview of each of the eight subject areas identified for review in the pertinent statute. It should be noted that the evaluation was completed by a 3rd-party firm, which allowed for an enhanced independent review of the investment practices.

The evaluation indicates the "structure of the portfolio exemplifies industry best practice," noting "HFRRF deploys a variety of investment strategies ranging from active to passive depending upon the investment's place along the market efficiency spectrum" to take advantage of lower fees at one end and less efficient markets at the other.

The evaluation concludes, "The procedures and documentation provided by HFRRF evidence a systematic approach to safeguarding and increasing the value of the portfolio."

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The Fund has a dedicated Investment Compliance Officer who ensures that all relevant policies are complied with. The fund provided clear documentation regarding current investments, including the full agenda for the November 2019 Investment Committee Meeting of the whole Board of Trustees. The documentation described monthly investment actions and private equity and/or real estate commitments taken since the previous monthly meeting. Clear charts showing the relative risk/return characteristics of the Fund were provided to the Investment Committee and the agenda included an opportunity to hear comments from the public. The monthly Investment Committee meeting is somewhat more frequent than other funds, affording enhanced oversight and dialogue among the participants. The inclusion of time during the meeting to receive comments from the general public broadens the communications, transparency and oversight of the Fund. The breadth, frequency and detail of the reports was deemed to be in keeping with industry best practices. As for the ethics policies, including policies concerning insider trading, the policies appear to be appropriate and consistent with best practices.

Investment Asset Allocation
The Investment Compliance Officer monitors the Fund's asset allocation periodically to ensure that it remains in conformity with the Investment Policy Statement (IPS). From our discussions with the Investment Compliance Officer, custodian, and Chief Investment Officer, we believe the asset allocation is given close attention.

[1] As of 6/30/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

The Fund has a detailed process to project future cash flows and the CIO is actively engaged in making sure cash is replenished in time. In addition, for Private Investments, the Fund periodically conducts a pacing study to ensure future cash flow needs (capital calls and distributions) including in stressed scenarios are quantified. Long term risks and the Fund's risk appetite are reflected in IPS and the policy benchmark selection. The Fund reevaluates long term risks and risk appetite by conducting ALM studies periodically. Short term risks are managed by Tactical Asset Allocation within the risk tolerance, which is again reflected in IPS by tactical ranges and the risk budget.

HFRRF employs a prudent mix of investment approaches, with publicly traded stocks either in low cost index funds or in commingled funds with respected fund managers. The structure of the portfolio exemplifies industry best practice. HFRRF deploys a variety of investment strategies ranging from active to passive depending upon the investment's place along the market efficiency spectrum.

Strengths:

- Overall, the closely monitored portfolio, with allocations to a prudent blend of active and passive funds, provides adequate diversification for the long term.

Recommendation:

- Noting the material level of real estate funds and private equity investments, GSA would recommend an independent verification of asset values every two or three years rather than always accepting the valuations stated by the General Partners. It should be noted that GSA has been recommending the independent valuation approach to other significant pension funds, but this is not yet a widely accepted practice.

Investment Fees

Costs are carefully managed by HFRRF. As reported in the fiscal year 2015 - 2018 annual reports of the Houston Firefighters' Relief and Retirement Fund, there has been a significant reduction in the percentage of fees paid to outside fund managers and to the custodian bank. Management's success in negotiating such significant cost reductions will benefit the Fund regardless of market conditions and will strengthen HFRRF's negotiating position as a fair, yet cost-conscious investor.

The Fund has achieved significant cost savings in brokerage fees and management fees over the past several years, by shifting most publicly traded equity investments into index funds or commingled funds with sophisticated large-scale investment firms such as Blackrock, Schroders, KKR and Mellon Capital. To reduce the fees for private equity investments, HFRRF has made earlier and larger commitments to fewer managers, allowing the Fund to qualify for volume discounts.

Management of the fund emphasized that their strategy is to optimize management fees on a continuous basis, balancing risk, and performance with the nature of each investment.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Strengths:

- Higher fee arrangements are limited to classes of investments where more active management approaches can enhance returns.

Governance
Section Not Required Per Governing Statute The Fund has a dedicated Investment Compliance Officer who ensures that all relevant policies are complied with, including regular vetting of the asset allocation.

Investment Manager Selection and Monitoring
The Fund carefully vets managers and, on a quarterly basis, provides the Investment Committee with a report detailing each manager's investment performance and cash flow activity, including fees and expenses. Additionally, the Fund provides a report from the Trust Universe Comparisons Service, as prepared independently by Wilshire. This is in keeping with industry best practices. Industry standard benchmarks are used where appropriate to gauge the performance of investment managers. The benchmark data are licensed and maintained by the independent custodian that also produces the performance reports.

Full Investment Practices and Performance Evaluation

Houston MTA Non-Union Pension Plan

PRB Analysis of Evaluation

Plan Assets:[1] $1186,645,413
Evaluator: Smart Management Services, Inc.
Evaluator Disclosures:[2]
Relationship: Independent 3rd Party
Investment Discretion: None

The evaluation provides detailed explanations outlining the evaluation methodology used and supporting arguments for the conclusions drawn. It should be noted that the evaluation was completed by a 3rd-party firm, which allowed for an enhanced independent review of the investment practices.

The report references outside sources for best practices, and the explanations provided outline those best practices and how they compare to the system's current practices. In particular, the evaluator noted that the IPS's inclusion of a funding plan meets the pertinent GFOA best practice.

The evaluation notes the System has both a lower assumed rate of return and more conservative asset allocation than peer systems.

The evaluation also indicates both the System's pension committee and the board responsible for managing the Union plan meet together to share expertise between members of both groups.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
SMS reviewed the Metropolitan Transit Authority Transport Non-Union Pension Plan's Investment Policy Statement (IPS) dated November 2019 against the Government Finance Officers Association (GFOA) Checklist for Investment Policies. The Plan had the elements contained in the Checklist including the elements of a Statement of Purpose in the Funding Policy; Roles and Responsibilities; Asset Allocation; Investment Guidelines; and Reporting/Performance Monitoring. The IPS begins with a Purpose and Policy Objectives and Delineation of Responsibilities. It incorporates a Funding Policy "to provide a roadmap to fully fund its long-term obligations and to help the plan achieve the three fundamental goals of public pension funding: benefit security, contribution stability, and intergenerational equity". The IPS clearly delineates roles and responsibilities of those involved in governance, investing, consulting, monitoring and custody. The responsibility for decisions rests with the Board/Committee. The procedures and requirements for Investment Consultants and Investment Managers are included. The IPS is reviewed annually and when material changes occur with the asset allocation framework. The last substantial change to the IPS occurred during the 3rd quarter of 2016 in tandem with the approval of the new asset allocation. **Strengths:** – [The System's] IPS includes a Funding Policy that meets the GFOA Best Practice for Core Elements of a Funding Policy. – There is evidence that the system is in compliance with its IPS because Marquette [the Plan's investment consultant] advises the Board/Committee by reporting on compliance with the IPS.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Asset Allocation
Although there is no written policy for determining and evaluating the System's asset allocation, the System's practice is similar to the GFOA Best Practice for Asset Allocation for Defined Benefit Plans. In practice, the Board/Committee uses information from the actuarial valuation and works with the Marquette, its Investment Consultant, to determine the system's target allocation. The asset allocation was developed over a six-month period and was discussed over three Board/Committee meetings. Marquette's asset allocation studies evaluate potential client portfolios under a variety of macroeconomic environments, which directly impact the performance of asset classes. The studies are built to analyze features of portfolio construction, including liquidity, rebalancing, and net cash flow. Their asset allocation studies offer an analysis that formulates effective portfolios to achieve the Plan's goals. The System is much more conservative than their peers. Further, the System's investment return assumption is lower than most peer plans. The portfolio will be less likely to outperform because the asset allocation is chosen to meet the desired actuarial expected rate of return. The Plan's anticipated future cash flow and liquidity needs are developed as a part of the annual actuarial valuation as they are preparing the actuarily determined contribution. The actuarial valuation addresses the anticipated cash flow and liquidity needs. The Plan is closed to new participants. **Strengths:** – These [stress] tests show that the Plan's long-term objectives are reasonable and are expected to be achieved over the long term. **Recommendations:** – We have recommended the System include in its IPS a written policy for determining and evaluating the asset allocation similar ro the GFOA recommendation. – We recommend that the Board/Committee add a discussion of risk to the IPS. – We recommend the System consider having an Asset/Liability study performed after assessing the benefits of these studies for closed plans.

Investment Fees
Per the IPS, the Plan Administrator is charged with negotiating written contracts with the Investment Managers that include fees and approving all Investment Manager, Custodian, and Investment Consultant fees. The Investment Consultant is an active participant in the process of negotiating fees, as well as seeking the lowest-cost account structure. Marquette reports investment fees in their reports in both expense ratios and hard dollars. They compare actuals versus industry averages to ensure they are continually at the appropriate level. In their performance reports, they include a comparison, by asset class, between the Plan's asset management fees and the industry average. A review of their Fee Schedule, in the December 2019

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Board/Committee Report, shows the expense ratios are .25% compared to the 2019 Marquette Associates Investment Management Fee Study-Industry Median of .33%.

SMS observed the Board/Committee discussing and approving a Fee Proposal Recommendation from Marquette on a fee discount proposed by one of the Funds in the February 2020 Board meeting.

Strengths:

- The fees paid by the Plan are lower than industry averages.

Governance

The System does not have a written governance policy statement outlining the governance structure; however, the IPS outlines some of the governance structure by including the roles and responsibilities of the Board/Committee, staff, and external participants in oversight and control of the System. The GFOA, NASRA, AFSCME, CFA and NCPERS all are providing recommendations to systems to develop a governance framework.

Regarding transparency, the IPS and investment related processes are not accessible by the public via ridemetro.org or other electronic means. Notice of Board/Committee meetings is posted and included on the intranet under Coming Events. Meeting agendas and minutes are not available to the public.

The Board/Committee of the Non-Union Plan has seven (7) members. The members have strong educational backgrounds. Four (4) of the members are employed by METRO, the remaining three (3) work in the private sector. All of the METRO representatives have a long-term association with METRO, and they maintain high-level positions. Many of the Board/Committee members have strong financial backgrounds (including portfolio management); some of which hold positions in financial and/or investment area.

Strengths:

- The System has an Ethics and Conflicts of Interest Policy. The Policy includes all of the recommended areas to be covered under Ethical and Fiduciary Conduct in the American Federation of State, County and Municipal Employees, AFL-CIO (AFSCME) Best Practices Policies for Trustees and Pension Systems except for Prohibitions of Campaign Contributions. The Policy includes a Code of Ethics; General Standards of Conduct; Fiduciary Duties; Conflicts of Interest; Prohibited Transactions and Interests; Disclosure; Confidential Information (Privacy); Nepotism; Gifts; and Training. Information included is follows the PRB Model Ethics Policy.
- The Non-Union Committee’s and the Union Board’s usual practice is to meet together, so expertise of Non-Union members is available to Union members and vice versa.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Recommendations:

- We recommend the Board/Committee make additional information available to the public. At a minimum, this information should include the Investment Policy Statement, meeting agendas, and the Non-Union one-page Flash Report from Marquette.
- We recommend the System document its Guidelines for Selection of External Investment Professionals.
- We recommend the System develop, at a minimum, a governance framework. The development of a Governance Manual might be considered over time in association with the costs of development.

Investment Manager Selection and Monitoring
The Investment Consultant has the responsibility for searching for and screening potential Investment Managers. In conjunction with the Plan, Marquette develops the criteria for the selection process based on the circumstances and allocation preferences. Marquette's research analysts will then identify candidates who best meet these criteria. The System does have a Procurement Guideline for Investment Management Services "Garcia Rule" – Emerging Managers which documents that the Plan shall solicit bids, proposals, offers or other provision of service from at least one Emerging Manager as defined in the Guideline. [Marquette's] asset class analysts use both quantitative and qualitative criteria when evaluating Investment Managers. Investment Managers are continuously monitored, and Marquette strives to be proactive about making recommendations to downgrade and eventually terminate Investment Managers that have performance, guideline, personnel, or organizational issues. On at least a quarterly basis, Marquette notifies the Board/Committee of any changes to the status of the Investment Managers and the reasons why the status needs to be changed.

Full Investment Practices and Performance Evaluation

Houston MTA Workers Union Pension Plan

PRB Analysis of Evaluation

Plan Assets:[1] $294,885,562

Evaluator: Smart Management Services, Inc.

Evaluator Disclosures:[2]

Relationship: Independent 3rd Party

Investment Discretion: None

The evaluation provides detailed explanations outlining the evaluation methodology used and supporting arguments for the conclusions drawn. It should be noted that the evaluation was completed by a 3rd-party firm, which allowed for an enhanced independent review of the investment practices.

The report references outside sources for best practices, and the explanations provided outline those best practices and how they compare to the system's current practices. In particular, the evaluator noted that the IPS's inclusion of a funding plan meets the pertinent GFOA best practice.

The evaluation notes the System has both a lower assumed rate of return and more conservative asset allocation than peer systems.

The evaluation also indicates both the System's board and the committee responsible for managing the Non-Union plan meet together to share expertise between members of both groups.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
SMS reviewed the Metropolitan Transit Authority Transport Workers Union Pension Plan, Local 260, AFL-CIO's (the System or the Plan) Investment Policy Statement (IPS) dated November 2019 against the Government Finance Officers Association (GFOA) Checklist for Investment Policies. The Plan had the elements contained in the Checklist including the elements of a Statement of Purpose in the Funding Policy; Roles and Responsibilities; Asset Allocation; Investment Guidelines; and Reporting/Performance Monitoring. The IPS begins with a Purpose and Policy Objectives and Delineation of Responsibilities. It incorporates a Funding Policy "to provide a roadmap to fully fund its long-term obligations and to help the plan achieve the three fundamental goals of public pension funding: benefit security, contribution stability, and intergenerational equity". The IPS clearly delineates roles and responsibilities of those involved in governance, investing, consulting, monitoring and custody. The responsibility for decisions rests with the Board. The procedures and requirements for Investment Consultants and Investment Managers are included. The IPS is reviewed annually and when material changes occur with the asset allocation framework. The last substantial change to the IPS occurred during the 3rd quarter of 2016 in tandem with the approval of the new asset allocation. **Strengths:** – [The System's] IPS includes a Funding Policy that meets the GFOA Best Practice for Core Elements of a Funding Policy. – There is evidence that the system is in compliance with its IPS because Marquette [the Plan's investment consultant] advises the Board by reporting on compliance with the IPS.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Asset Allocation
Although there is no written policy for determining and evaluating the System's asset allocation, the System's practice is similar to the GFOA Best Practice for Asset Allocation for Defined Benefit Plans. In practice, the Board uses information from the actuarial valuation and works with the Marquette, its Investment Consultant, to determine the system's target allocation. The asset allocation was developed over a six-month period and was discussed over three Board meetings. Marquette's asset allocation studies evaluate potential client portfolios under a variety of macroeconomic environments, which directly impact the performance of asset classes. The studies are built to analyze features of portfolio construction, including liquidity, rebalancing, and net cash flow. Their asset allocation studies offer an analysis that formulates effective portfolios to achieve the Plan's goals. The System is much more conservative than their peers. Further, the System's investment return assumption is lower than most peer plans. The portfolio will be less likely to outperform because the asset allocation is chosen to meet the desired actuarial expected rate of return. The Plan's anticipated future cash flow and liquidity needs are developed as a part of the annual actuarial valuation as they are preparing the actuarily determined contribution. The actuarial valuation addresses the anticipated cash flow and liquidity needs. The Plan is closed to new participants. **Strengths:** – These [stress] tests show that the Plan's long-term objectives are reasonable and are expected to be achieved over the long term. **Recommendations:** – We have recommended the System include in its IPS a written policy for determining and evaluating the asset allocation similar to the GFOA recommendation. – We recommend that the Board add a discussion of risk to the IPS. – We recommend the System consider having an Asset/Liability study performed after assessing the benefits of these studies for closed plans.

Investment Fees
Per the IPS, the Plan Administrator is charged with negotiating written contracts with the Investment Managers that include fees and approving all Investment Manager, Custodian, and Investment Consultant fees. The Investment Consultant is an active participant in the process of negotiating fees, as well as seeking the lowest-cost account structure. Marquette reports investment fees in their reports in both expense ratios and hard dollars. They compare actuals versus industry averages to ensure they are continually at the appropriate level. In their performance reports, they include a comparison, by asset class, between the Plan's asset management fees and the industry average. A review of their Fee Schedule, in the December 2019 Board Report, shows the expense ratios are .30% compared to the 2019 Marquette Associates Investment Management Fee Study-Industry Median of .38%.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

SMS observed the Board discussing and approving a Fee Proposal Recommendation from Marquette on a fee discount proposed by one of the Funds in the February 2020 Board meeting.

Strengths:

- The fees paid by the Plan are lower than industry averages.

Governance
The System does not have a written governance policy statement outlining the governance structure; however, the IPS outlines some of the governance structure by including the roles and responsibilities of the Board, staff, and external participants in oversight and control of the System. The GFOA, NASRA, AFSCME, CFA and NCPERS all are providing recommendations to systems to develop a governance framework. Regarding transparency, the IPS and investment related processes are not accessible by the public via ridemetro.org or other electronic means. Notice of Board meetings is posted and included on the intranet under Coming Events. Meeting agendas and minutes are not available to the public. The Plan Document sets the Board of Trustees at four (4) members. Two of whom shall be appointed by the Union and designated as Union Representatives the Chief Executive Officer of the Metropolitan Transit Authority appoints two (2) members designated as Company Representatives. The four (4) trustees collectively have one hundred twenty (120) years of employment with METRO. In general, the background of the Union Board includes financial and human resource (benefits) experience, leadership skills, specialized union representation training and problem resolution, contract negotiation, and decision-making talents. **Strengths:** – The System has an Ethics and Conflicts of Interest Policy. The Policy includes all of the recommended areas to be covered under Ethical and Fiduciary Conduct in the American Federation of State, County and Municipal Employees, AFL-CIO (AFSCME) Best Practices Policies for Trustees and Pension Systems except for Prohibitions of Campaign Contributions. The Policy includes a Code of Ethics; General Standards of Conduct; Fiduciary Duties; Conflicts of Interest; Prohibited Transactions and Interests; Disclosure; Confidential Information (Privacy); Nepotism; Gifts; and Training. Information included is follows the PRB Model Ethics Policy. – The Union Board's and the Non-Union Committee's usual practice is to meet together, so expertise of Non-Union members is available to Union members and vice versa. **Recommendations:** – We recommend the Board make additional information available to the public. At a minimum, this information should include the Investment Policy Statement, meeting agendas, and the Union one-page Flash Report from Marquette. – We recommend the System document its Guidelines for Selection of External Investment Professionals.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

- We recommend the System develop, at a minimum, a governance framework. The development of a Governance Manual might be considered over time in association with the costs of development.

Investment Manager Selection and Monitoring
The Investment Consultant has the responsibility for searching for and screening potential Investment Managers. In conjunction with the Plan, Marquette develops the criteria for the selection process based on the circumstances and allocation preferences. Marquette's research analysts will then identify candidates who best meet these criteria. The System does have a Procurement Guideline for Investment Management Services "Garcia Rule" – Emerging Managers which documents that the Plan shall solicit bids, proposals, offers or other provision of service from at least one Emerging Manager as defined in the Guideline. [Marquette's] asset class analysts use both quantitative and qualitative criteria when evaluating Investment Managers. Investment Managers are continuously monitored, and Marquette strives to be proactive about making recommendations to downgrade and eventually terminate Investment Managers that have performance, guideline, personnel, or organizational issues. On at least a quarterly basis, Marquette notifies the Board of any changes to the status of the Investment Managers and the reasons why the status needs to be changed.

Full Investment Practices and Performance Evaluation

Houston Police Officers' Pension System

PRB Analysis of Evaluation

Plan Assets:[1] $5,674,647,000

Evaluator: Verus

Evaluator Disclosures:[2]

Relationship: Independent 3rd Party

Investment Discretion: None

As allowed by Texas Government Code §802.109, the evaluation was prepared in accordance with the Houston Police Officers' Pension System's governing statute.

The evaluation provides useful explanations and comparison to leading practices for important topics that ultimately improve the understanding of the system. It should be noted that the evaluation was completed by a 3rd-party firm, which allowed for an enhanced independent review of the investment practices.

The evaluator concludes that "HPOPS is a well-managed plan with a disciplined governance structure, a strong and ethical culture, clear decision-making processes, and a reasonable investment strategy."

The evaluation highlights the System was able to lower investment fees because of a relatively large exposure to passive investments compared to its peers. The evaluator also explains that the system is somewhat unique relative to many of its peers in that it does not utilize a general consultant to assist with program implementation, but comments that this aspect has not hindered long-term performance.

The report includes an explanation and analysis of the fund's liquidity using a liquidity coverage ratio (LCR), which can be a useful approach for other systems. The evaluation details that the system's "risk and return objectives are to achieve its actuarial investment rate, currently set at 7.0% net of fees and expenses."

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
We found HPOPS takes compliance very seriously, and in most cases, we found that HPOPS closely follows the letter and spirit of its policies. Upon review, we found HPOPS's Ethics Policy to be thorough and comprehensive with sufficient requirements to effectively monitor compliance. We found no critical-path practices which we believe would imperil the health and solvency of the Plan. We found HPOPS to be somewhat unique relative to many of its peers in that they do not utilize a general consultant to assist with program implementation. However, this has not hindered their long-term performance, which places them in the top decile among their public fund peers over the long-term. **Strengths:** In our view, HPOPS is a well-managed plan with a disciplined governance structure, a strong and ethical culture, clear decision-making processes, and a reasonable investment strategy.

[1] As of 6/30/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Recommendations:

- Remove language related to avoidance of large losses, as this is an unrealistic expectation in the public markets equity portfolio.
- The use of the word "permanently" in this guideline [IPS Section 407.11.G – Currency hedging targets] implies a level of hedge ratio stability that has not existed in practice. To remedy this, change the verbiage to state the 50% hedge ratio is a "target" that Staff can adjust within the allowable range.
- Conduct a thorough review of Appendix G to confirm continued relevance of specific requirements and the design and implementation of supporting documentation to demonstrate compliance with updated version (e.g., interview guide, meeting notes template). Solution may be different for traditional and alternative managers.
- Change phrase "without assuming additional risk" to "without assuming excessive additional risk".
- Conduct a thorough review of Appendix E to confirm continued relevance of specific requirements and the design and implementation of supporting documentation to demonstrate compliance with updated version (e.g., process checklist, RFI/RFP template, comparative assessment report template). Solution may be different for traditional and alternative managers.

Investment Asset Allocation

HPOPS' risk and return objectives are to achieve its actuarial investment rate, currently set at 7.0% net of fees and expenses, within the risk parameters established by the Board. HPOPS follows a specific and disciplined process to determine the strategic asset allocation targets for the investment portfolio. Staff conducts scenario analysis on the policy portfolio against historical market conditions in addition to stress testing high and low capital market assumptions as additional lenses through which to judge the reasonableness of strategic asset allocation. The asset allocation is reviewed frequently in light of current and expected market conditions.

HPOPS' current allocation is tilted toward heavier equity exposure and lower fixed income exposure than its peers, which has served it well as higher risk exposures have been steadily increasing since the Global Financial Crisis. Based on these performance metrics, HPOPS actual allocation as implemented has been highly effective in meeting its return objectives over most historical periods and showing strong performance relative to its peers.

Philosophically, HPOPS believes excess returns produced by active management to be fleeting and difficult to identify in advance. They further recognize the behavioral biases faced by most investors that often lead to hiring a manager at the peak of cyclical performance and terminating at the trough. For these reasons, the Plan utilizes predominantly passive exposure in its public markets investment portfolio, obtained through a combination of index funds, ETFs, and futures positions.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Strengths:

- Our analysis based on cash flow projections provided by HPOPS, shows that even under extreme market conditions, the Plan maintains sufficient liquidity to cover net cash outflows.

Investment Fees

Because of HPOPS' heavy usage of passively managed investment strategies, fees are low compared to peers. In our experience, we find a fee load of approximately 40 -60 basis points, not including private markets, to be reasonable for mid-sized plans with a typical mix of active and passive investments, and HPOPS' fees are well below this level. In 2017, HPOPS commissioned a study by CEM Benchmarking to conduct a thorough review of the Plan's investment management cost. available. The 2017 study conducted by CEM Benchmarking stated that HPOPS' all-in fee load was slightly higher than the average of similarly sized plans in its database. We believe this observation results from the impact of HPOPS' higher allocation to low-cost passive strategies being largely offset by its higher usage of high-cost alternative strategies.

- In aggregate, we find HPOPS' fee structure to be reasonable and appropriate given its investment strategy.

Governance

Section Not Required Per Governing Statute

In our view, HPOPS is a well-managed plan with a disciplined governance structure, a strong and ethical culture, clear decision-making processes, and a reasonable investment strategy. We found no critical-path practices which we believe would imperil the health and solvency of the Plan.

Investment Manager Selection and Monitoring

HPOPS has developed robust processes for assessing manager suitability for hire (Appendix E) and for conducting periodic on-site due diligence after a manager has been hired (Appendix G), which are described in detail in the Investment Policy Statement. In addition, HPOPS' Investment Staff monitors each manager on an ongoing basis, utilizing a performance report that is reviewed with the Investment Committee and the Board of Trustees on a monthly basis.

Because HPOPS utilizes mostly passive management for its public markets investments, the opportunities to follow the above-described process have been limited. One example occurred in 2013, when the Plan was seeking an "Alternative Beta" manager to help diversify portfolio risk. Based on our

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

review of search documents, this search was not conducted in strict compliance with Investment Policy. Further, in our view actively managed traditional investments, and alternatives each require different approaches to due diligence, including varying degrees of rigor. HPOPS' established search process does not explicitly address these differences.

HPOPS utilizes a combination of benchmarking approaches to help measure the ongoing effectiveness of its investment program. We believe these benchmarks are broadly appropriate. We further believe additional useful information could be obtained by comparing each fund to a relevant peer universe of actively managed strategies. Through discussions with Staff, we confirmed that annual meetings occur as mandated but that the reviews are unstructured and not well documented.

Recommendations:

- Specify separate requirements for active and passive traditional investments, as well as for alternative investments.
- Simplify the process description, providing high-level guidelines for flexibility with specificity on required rigor only where necessary. For example, it may not be necessary to have candidate managers complete an RFP for every search, but it may be necessary to obtain Investment Committee and Board approval every time.
- Prepare adequate documentation to ensure/demonstrate process has been followed.
- Include peer rankings in periodic performance reports, as appropriate.
- Clarify the level of due diligence required by type of investment.
- Reduce the specificity of the coverage topics in Appendix G to provide Staff with flexibility.
- Prepare adequate documentation to ensure/demonstrate process has been followed.

Full Investment Practices and Performance Evaluation

Lower Colorado River Authority Retirement Plan

PRB Analysis of Evaluation

Plan Assets:[1] $429,878,000

Evaluator: Verus

Evaluator Disclosures:[2]

Relationship: Independent 3rd party

Investment Discretion: None

The evaluation provides useful explanations and comparison to leading practices for important topics that ultimately improve the understanding of the System. It should be noted that the evaluation was completed by a 3rd-party firm, which allowed for an enhanced independent review of the investment practices.

The evaluation provides detailed analysis of both the asset allocation and liquidity of the System using multiple tables and graphs to explain their conclusions.

The evaluation concluded the System's investment portfolio to be more conservative than its policy benchmark leading to less risk and lower return. The evaluator notes this will likely mean "the Plan may have difficulty meeting its 7.25% return objective over the next 10 years with the strategic asset allocation as currently implemented." The very thorough liquidity review of the System noted the System had ample liquidity and suggested adding illiquid assets with a higher rate of return.

The evaluator indicates the existing active/passive structure is working but encourages increasing the amount of passive investments.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
Compliance was determined to be demonstrated via discussion with staff and/or review of supporting documentation, as appropriate. **Strengths:** – We found no areas of non-compliance with the Plan's major investment policy provisions **Recommendations:** – Adding a dedicated section to specifically address roles & responsibilities of all plan fiduciaries – Adding a dedicated section explaining the investment philosophy of the board to guide future decision making. Coverage areas could include topics such as active vs passive management, simplicity vs complexity, use of illiquidity premium, patience vs action, tactical asset allocation, etc. – Adding a dedicated section describing the investment manager due diligence process. – Customize asset allocation ranges for each asset class, rather than +/- 10% for all. – Removing 5% allocation to global fixed income, as it appears to be incorporated into domestic fixed income allocation. – Allowing managers to select most efficient way to obtain their foreign currency hedge, rather than limiting them to using only forward contracts. – Including language specific to commingled funds stating the guidelines in the prospectus or similar governing document will prevail. – Incorporating the target allocation weights and ranges, along with preferred benchmark, into an appendix.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Asset Allocation

Asset allocation is broadly recognized as the primary tool institutional investors have at their disposal to meet return objective within a pre-determined risk tolerance. The Plan's risk and return objectives are to achieve its actuarial investment rate, currently set at 7.25% net of fees and expenses.

Relative to peers, the Plan's current allocation is tilted toward heavier non-US equity and hedge fund exposure and lighter on fixed income. Based on these analysis, LCRA's asset allocation for the next 10 years is expected to return an average of 5.3%, which is below the 7.25% target. The Plan has generally underperformed its policy benchmark and median peer, which appears to be the result of the investment portfolio being positioned more conservatively than the policy benchmark and median peer, leading to less risk and return in a secularly strong equity bull market. In aggregate our analysis indicates that even under extreme market conditions, the Plan maintains sufficient liquidity to cover net cash outflows. This implies the Plan may be able to utilize illiquid assets in its strategic allocation to increase the expected return of the investment portfolio, despite high negative cashflow and the closed status of the plan.

Strengths:

- We believe the Plan's approach to developing its asset allocation is reasonable, robust, and disciplined.

Recommendation:

- The Plan may be able to utilize illiquid assets in its strategic allocation to increase the expected return of the investment portfolio.
- We find the Plan's current active/passive structure to be reasonable, but we nevertheless encourage consideration of an increased share of passive investments in the portfolio.

Investment Fees

To assess the Plan's management fee structure, we utilized data from the Callan Institute 2019 Investment Management Fee Study. The Plan compares favorably to the universe median in most cases.

Hedge fund fees have been gradually coming down due to increased competition and disappointing performance generally, but by that historical measure, the Plan compares favorably.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Governance
During our interviews, we developed a keen sense of the seriousness with which the Board of Trustees views the importance of their duty to the Plan and its participants. In addition to a culture that encourages generally ethical behavior, the Board of Trustees mandates and verifies that each of its members completes Minimum Educational Training curriculum required by the Texas Pension Review Board, a portion of which is dedicated to Ethics. Also, Board members are expected to follow the Code of Ethics defined in the LCRA Employee Policy Manual. **Strengths:** – Based on our observations, we believe the current Board behaves ethically and responsibly in the fulfillment of its fiduciary duty. **Recommendation:** – One potential improvement opportunity is to develop an ethics policy specifically dedicated to the Plan and those charged with overseeing it.

Investment Manager Selection and Monitoring
With the help of the investment consultant, the Plan deploys a robust process for assessing manager suitability when hiring managers and for monitoring managers once they have been hired. The plan's process for conducting manager searches contains the following steps: Identify need; identify list of qualified candidates; conduct preliminary evaluation and create short-list of preferred managers; review short list with board; interview finalists; conduct on-site due diligence, as appropriate; and select and implement. The investment consultant is responsible for tracking manager performance and presenting a summary to the Board on a quarterly basis. This summary consists of historical periodic returns versus a representative benchmark and peer group, a set of portfolio characteristics, and a strategy overview. **Recommendations:** – Clearly codify the process for hiring managers into the Statement of Investment Policies and Objectives – We recommend additional qualitative information be incorporated into the current manager summary (e.g., style map positioning over time, asset growth over time, investment team personnel turnover) to provide additional insights into performance expectations and/or identify areas for further investigation.

Full Investment Practices and Performance Evaluation

Plano Retirement Security Plan

PRB Analysis of Evaluation

Plan Assets:[1] $167,755,102
Evaluator: Milliman
Evaluator Disclosures:[2]
Relationship: Independent 3rd Party
Investment Discretion: None

The evaluation offers a brief summary of the Fund's practices and performance, with some details in specific areas. It should be noted that the evaluation was completed by a 3rd-party firm, which allowed for an enhanced independent review of the investment practices.

The evaluation provides a helpful "evaluation summary" outlining conclusions and recommendations.

The evaluation provides comparisons of System practices to peers in a few sections and best practices in all sections but does not reference an outside source or clearly identify what constitutes best practice. The evaluation concludes that the System's policies and procedures are generally in -line with best practices and includes recommendations for the System to continue existing practice, or makes broad, general recommendations.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement

Plano RSP has a written investment policy statement for the overall plan as well as sub-asset classes. It is clearly customized for Plano RSP. The IPS is reviewed periodically and updated as needed to reflect changes in investment objective, policies and managers. Plano RSP has a formal Funding Policy incorporated within the IPS. The funding policy integrates the actuarial valuation with plan assets and provides a process for monitoring the Plan's funding progress.

Strengths:

- The IPS is written clearly allowing existing and newly appointed or elected trustees to quickly understand its value as an ongoing tool for evaluating the RSP's investment program using consistent methods and best practices.
- The Plano RSP Investment Policy Statement is consistent with other plans and best practices.
- In our review of the Plano RSP processes, procedures and documentation we found no clear deviances from industry standards or prescribed norms for similar plans.
- Maintain current reviews of the Plan's performance, providers, and consultants.

Investment Asset Allocation

Plano RSP is well funded and has a formal asset allocation policy defined within the IPS. Through the utilization of asset allocation studies, the investment consultant makes recommendations to the Board for approval. In the asset allocation study, Plano RSP will consider new asset classes and their contribution to increasing or stabilizing return and it's impact on Plano RSP's overall risk and standard deviation. An asset allocation study is conducted periodically (every 3-5 years), incorporating current capital market assumptions and the consultant's current views on the market. Plano RSP has a target

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

strategic allocation of 65% Equity, 10% Core Real Estate and 25% Fixed Income. Plano RSP is implementing it's strategy using both active and passive management. Plano RSP's return and risk expectations used in the asset allocation process are stress tested under different scenarios as well as 5th and 95th percentile measurements.

The Plano RSP asset allocation study examines multiple rolling and calendar year risk and return metrics and does not expect any stresses due to expected cash flows or liquidity needs.

Strengths:

- Plano RSP's asset allocation is appropriate for a plan their size and is consistent with best practices.
- Plano RSP's policy for future cash flow and liquidity needs is adequate for their plan's size and consistent with best practices.
- The Capital Market Assumptions are reasonable and consistent with best practices, and results in a well-diversified portfolio appropriate for the plan's size.

Investment Fees

Plano RSP has a disciplined quarterly process to measure and benchmark fees. All but one of the managers is a mutual fund and the expense ratios are examined each quarter. Plano RSP does not use commission recapture or directed trades. The Real Estate manager is a pooled collective trust with a consistent expense ratio similar to mutual funds. The current expense ratio is in-line with its peer universe.

Strengths:

- Plano RSP's fees are appropriate for their plan's size and consistent with best practices.

Governance

Plano RSP has manager guidelines related to asset classes. The Plan is covered under the City of Plano's Ethics/Standards of Conduct policy under the City of Plano Policies and Procedures 200.001. Meeting agendas, minutes and report materials are easily available to the board and the public online. Board members as well as staff attend conferences and other educational opportunities and will frequently report back on what they learn.

Strengths:

- Many of the board members have professional investment experience.
- Plano RSP's current governance structure strikes a good balance between risk and efficiency and is consistent with best practices.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Recommendations:

- Adjust training and education requirements as needed to stay abreast of evolving investment strategies in a very dynamic global environment.

Investment Manager Selection and Monitoring
Investment manager guidelines are defined in the IPS. The guidelines outline objectives, benchmarks, allowed asset types, and expected returns, net of fees. Investment managers are selected for investment by the RSP by reviewing search material developed and presented by the Investment Consultant. Typically, at least three prospective managers are reviewed and discussed for each manager search. Plano RSP reviews performance quarterly, examining both gross returns when the portfolio is managed gross (collective trust) and net returns compared to net universes for mutual funds. They also use index benchmarks which have no fees. **Strengths:** – The manager selection and monitoring process and fee review is consistent with the investment policy and in-line with industry standards.

Full Investment Practices and Performance Evaluation

San Angelo Firemen’s Relief and Retirement Fund

PRB Analysis of Evaluation

Plan Assets[1] $71,680,768

Evaluator: Champion Capital Research (CCR)

Evaluator Disclosures[2]

Relationship: Independent 3rd party

Investment Discretion: None

The evaluation provides helpful explanations and includes useful comparisons to industry practices to make specific recommendations for improvement to the System's policies. The evaluation clearly identified and discussed if a recommendation resulted in changes made by the System, which demonstrates the effectiveness of the evaluation. It should be noted that the evaluation was completed by a 3rd-party firm, which allowed for an enhanced independent review of the investment practices.

While the evaluation notes the System's investment policy statement (IPS) is a thoughtful document, multiple recommendations were made to enhance the IPS, including the recommendation to delineate the roles and responsibilities of the fiduciary consultant, actuary, custodian, and investment manager to align with best practices.

The system adopted a revised IPS in May 2020 as a result of this evaluation that addresses most, if not all, of the recommendations made by the evaluation. It is referred to as the "May 2020 IPS" throughout the excerpts below.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
CCR completed an analysis of San Angelo Firemen's Relief and Retirement Fund's (SAFRRF) investment governance policies that have been adopted and assessed the system's compliance with these policies. The Plan's Investment Policy Statement ("IPS") is a thoughtful document. During the process of this review, the Plan recognized its IPS would benefit from a review and update and swiftly agreed to implement policies that would conform to "best practices". The Plan's previous IPS described sufficiently the roles and responsibilities of the Board of Trustees ("The Board") but was silent regarding other fiduciaries and vendors. **Strengths:** - Because the Plan is currently vigilant in its compliance with both its investment policies, we believe The Plan will have no difficulty improving and implementing the new IPS resulting in fiduciary excellence. **Recommendation:** - The May 2020 IPS has been improved to include a description of the roles and responsibilities of the Fiduciary Consultant, the Actuary, and the Custodian, and to improve the description of those of the Investment Manager.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Asset Allocation
The Plan's methodology for determining its target allocations, while not elucidated in policies is the result of the Investment Managers investment advice. The process used by The Plan resulted in a sufficiently diverse asset allocation. The IPS is silent concerning capital market assumption, and the Plan's procedures silent concerning a periodic update of capital market assumptions. Cash flow and liquidity needs are addressed periodically by the Board. The Plan recognizes the opportunity to solicit asset allocation advice from experts in addition to their Investment Manager. While the Board and Investment Manager(s) do not stress test the portfolio, CCR completed a stress test of the Plan's broad asset allocation in order to address responses for this report. **Recommendation:** - The opportunity to engage a fiduciary consultant who can opine regarding asset allocation, active vs. passive management, as well as capital market assumptions and expectations are addressed the Plan's May 2020 IPS.

Investment Fees
CCR completed a thorough and complete analysis of The Plan's investment fees, expenses, and commissions paid during 2019. CCR found that the fees were high relative to its peers. CCR found that the Plan was not receiving sufficiently impartial governance and investment advice. The Plan recognized that its IPS was silent concerning the responsibility to periodically report, analyze, and benchmark total fees. **Recommendations:** - It is CCR's recommendation that the Plan adopt policies and processes by which it periodically, but no less frequently than annually, documents both direct and indirect fees and compensation paid to all managers, brokers, mutual funds, and consultant(s). - At the renewal of any Investment Manager agreements, it would be prudent to require an annual accounting by each manager of all direct and indirect remuneration received during the calendar year. This would make it easier for the Board to aggregate all fees and expenses, benchmark for reasonableness, as well as hold all managers to a fiduciary requirement to report accurately remuneration received.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Governance
CCR completed an analysis of The Plan's governance and investment processes, delegation of investment authority, and board investment expertise and education. It is best practice to evaluate the services and agreements with all service providers at least once every three years. CCR finds The Plan's decision-making processes, delegation of authority and investment education and expertise among the Board, to be robust, prudent, and consistent. **Strengths:** - CCR believe that the time spent on investment related issues is consistent with prudent practices. **Recommendation:** - Best practices require that vendor contracts be evaluated every three years.

Investment Manager Selection and Monitoring
While there are several opportunities for improvement in this part of the report, so many of them have been remedied as a result of the acceptance of the May 2020 IPS. The investment manager selection and monitoring process now include "best practice" criteria by which to evaluate the performance of a manager. In summary, The Plan recognized that its "previous" IPS should be improved to satisfy best practices with respect to manager selection and monitoring. The Plan reviewed proposed monitoring criteria and language and agreed to implement into its May 2020 IPS. **Recommendations:** - The process for determining when an investment manager should be replaced was undefined until May 2020 IPS. - Fiduciary best practices include monitoring both net and gross of fee relative to benchmark in each quarterly report.

Full Investment Practices and Performance Evaluation

Investment Practices and Performance Evaluations performed by Investment Consultant

Abilene Firemen's Relief & Retirement Fund

An evaluation was provided to the PRB. Following feedback from the PRB Investment Committee, the Fund is working with their evaluator to make updates and has indicated a new report is expected to be provided in the near future.

Amarillo Firemen’s Relief & Retirement Fund

PRB Analysis of Evaluation

The evaluation identifies the policies and practices the system follows and concludes they are largely in-line with best practices. The evaluation noted that the pension board engaged the investment consultant to perform a "Risk Posture Assessment" in February 2019 to evaluate the system's risk appetite. As a result of the assessment, additional asset classes were added to the portfolio, but the board chose not to add alternative investments.

Plan Assets:[1] $193,539,560

Evaluator: Alpha Consulting Group of Wells Fargo Advisors

Evaluator Disclosures:[2]

Relationship: Investment consultant

Investment Discretion: None

In general, the statements describing the system policies and practices provide minimal commentary, explanation or comparison to peers. For example, the evaluation states that the asset allocation is reviewed every year to ensure the allocation is in line with the expected return but does not elaborate on the process used to review the asset allocation.

Other notable aspects identified in the evaluation are as follows:

- The asset allocation is crafted to achieve the expected return.
- The system primarily uses active vs. passive managers, which the evaluator notes "have been successful in beating their underlying indexes."
- The evaluation also notes that active manager performance is only compared to benchmarks gross-of-fees, not net-of-fees.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement

The Investment Policy is to be reviewed at least annually for its appropriateness. Roles and responsibilities are covered for the Board of Trustees (Board), Investment Managers, Custodian and Investment Consultant. In the Policy, Amarillo Fire is to meet three of their four investment goals over time (not less than three years).

The Policy does not take into consideration the current funded status, but it does include the contribution amounts for the City and the participants. The Policy follows industry best practices, but it does not include language about fees.

Recommendations:

- Language should be added to address that investments into mutual funds, exchange-traded funds or comingled investment trusts that may not follow the investment stipulations of the Statement of Investment Policy.
- It is recommended that language is added to the Statement of Investment Policy regarding the evaluation of Plan expenses.

[1] As of 12/31/2019
[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Asset Allocation
The Board reviews the asset allocation every year or so and in February 2019 engaged the Investment Consultant to do a Risk Posture Assessment to ensure the System's appetite for risk matches their ability to take risk. The System's asset allocation is crafted to achieve the expected rate of return which is a product of the Investment Consultant and Actuary working together to make sure the expected return is reasonable given current market conditions. The System does use tactical allocations but currently does not use alternative investments which differs from other Plans of similar size. The System primarily uses active managers and has limited exposure to passive investments. **Strengths:** - Risk Posture Assessment, Asset Allocation Study conducted in 2019.

Investment Fees
The System currently does not have a written policy covering fees. The reasonableness of fees is determined by a 3rd party, Abel Noser, engaged by the Board to provide analysis of the commissions paid. The System has reviewed the cost of the investment managers and other service providers such as the Investment Consultant, Custodian and Legal Advisors.

Governance
The Board does not have a stand-alone governance policy, but the Board does follow the recommendations of the PRB and TLFFRA guidelines.

Investment Manager Selection and Monitoring
The Board in consultation with the Investment Consultant is responsible for selecting and retaining investment managers. The Investment Consultant will present to the Board investment managers that are recommended by the consultants Global Manager Research (GMR) analysts. GMR analyzes investment managers using qualitative and quantitative data. When the Board is comparing multiple managers, they will provide an emphasis on managers with attractive risk-adjusted returns, who protect assets in down-markets and have consistent returns. Conflicts of interest for both investment managers and Board members are considered when evaluating managers. - Performance is reviewed quarterly

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

- Overall Plan level and individual investment manager performance is covered - Metrics such as standard deviation, beta and Sharpe ratio are used - Performance is reviewed gross-of-fee (no net-of-fees since the benchmark indexes do not include investment cost).

Full Investment Practices and Performance Evaluation

Austin Fire Fighters Relief & Retirement Fund

PRB Analysis of Evaluation

Plan Assets:[1] $1,029,892,806

Evaluator: Meketa

Evaluator Disclosures:[2]

Relationship: Investment consultant

Investment Discretion: None

The evaluation offers a balanced approach to both summarizing key aspects of the System while also going into more detail where necessary. The evaluation provides helpful summary points for each section and recommendations are well-supported with details and comparison to leading practices.

The evaluation notes that the System's investment performance has benefitted from its approach to adopt and stick to a long-term strategic asset allocation. This is likely attributable, at least in part, to the uncommon requirement that IPS changes must be approved in three consecutive board meetings. The evaluation states that the System is "better funded than most public pension plans (and has minimal net annual cash outflows) which allows it to invest more in private equity than most peers."

The evaluation also highlights the System's use of passive investments. This focus on passive investments is seen across sections, emphasizing how this strategy impacts returns and reduces overall investment costs.

The evaluation's discussion on governance was also strong. It provided detailed descriptions of how the board operates, how it makes decisions, and how trustees improve their effectiveness in their roles.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
Changes to the IPS must be approved in three consecutive board meetings. It is our understanding this rule was adopted over 10 years ago to avoid making frequent changes to the policy document. In addition to the IPS, Austin Fire has "Operating Procedures" that provide direction and governance pertaining to the day-to-day investment of the portfolio. The Operating Procedures are not subject to the three consecutive meeting requirement. **Strengths:** - The IPS is well thought-out and in line with industry standards - The IPS covers Fund level items and is not overly prohibitive or prescriptive - It is consistent with guidance from the CFA Institute - Roles and responsibilities of all key parties involved are clearly outlined (Board of Trustees, Investment Consultant, Investment Managers, Custodian Bank) except for the role of Staff - The document is written in "plain-English" and is easy for a layperson to understand - It is our opinion that the Board of Trustees and Staff will be able to stay committed to the guidance detailed in the IPS during a stressed or prolonged market scenario.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Recommendation:

- The role of Staff could be more clearly outlined in the IPS and/or Operating Procedures

Investment Asset Allocation

According to the IPS, *"the Board will review its asset allocation targets and ranges at least annually or sooner if warranted by a material event in either the liability structure of the plan or the capital markets."* Minimal tactical decisions have been implemented over the past five years.

According to the IPS: *"The Board intends to monitor and control investment costs at every level of the fund through the following: Where appropriate, passive portfolios will be used to minimize management fees and portfolio turnover."* Austin Fire had approximately 82% in active strategies and 18% in passive strategies as of December 31, 2019. Excluding private market asset classes, 26% of the public market exposure is passive. This exposure has been rather steady over the last five years.

The current exposure to alternative investments is average to above average relative to industry averages for peer plans around the $1 billion asset size. Based on an average fund value of $1 billion the fund is expected to have average net cash outflow of approximately 1.4% per year for the next three years. ($13.6 mm⁄$1,000 mm = 1.4%)

Strengths:

- Austin fire has done a great job of adopting a long-term strategic asset allocation and sticking to it. We believe its long-term performance has benefited from the Board's restraint in not overly tinkering with allocation changes
- In our opinion, the approach Austin fire takes to formulate asset allocation is sound, consistent with best practices, and leads to a well-diversified portfolio.
- The analysis, thought, and conversation by the Board that accompanies each new private market investment is very robust and thorough, which we believe has led to good decision making
- The current asset allocation targets are consistent with peer systems of similar size. The fund is better funded than most public pension plans (and has minimal net annual cash flows) which allows it to invest more in private equity than most peers
- The target asset allocation is well diversified and built with a global perspective in mind given the globally investable universe
- Austin Fire's approach to passive management is consistent with industry best practices (e.g. passive is used in efficient asset classes)
- Austin Fire's minimal net cash outflows put the Fund in a much better position to withstand market corrections than other public pension with more significant net cash flows

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Recommendations:

- We recommend the Board continues to remain patient with its approach to asset allocation
- We recommend the Board and Staff closely monitor contribution levels and expected net out flows
- We recommend Austin fire consider adjusting actuarial valuation assumptions as necessary based on the outcomes and advice of the actuary upon conclusion of the experience study expected in 2020
- We recommend the Board continues to use future return projections (and the advice of the actuary and consultant) when evaluating and setting its actuarial return target

Investment Fees

According to the IPS, "The Board intends to monitor and control investment costs at every level of the fund through the following: professional fees will be negotiated whenever possible. Where appropriate, passive portfolios will be used to minimize management fees and portfolio turnover. The fund may enter into performance-based fees with specific managers. If possible, assets will be transferred in-kind during manager transitions and fund restructurings to eliminate unnecessary turnover expenses. Managers will be instructed to appropriately minimize brokerage and execution costs."

Based on our analysis, we estimate Austin fire paid a blended average fee of approximately 0.64% in calendar year 2019 to investment managers. This is above the industry average of 0.60% (according to the latest available NCPERS survey conducted). The biggest source of fees was in private real estate, private equity and international equity. For private markets managers [the] calculation does not take into consideration performance fees [or] the underlying fee each fund of funds pays to the underlying managers.

Strengths:

- Austin Fire has done a good job of identifying public market's managers with competitive fees.
- Austin Fire's use of passive index funds has helped reduce overall costs for the fund.
- The private markets related fees are expensive but not surprising, nor outside the norm for fund of funds.
- At approximately $1 billion in assets, Austin fire is large enough to build a diversified direct program of private equity investments (if it wished) or continue with fund of funds.
- The commissions paid appear reasonable and in-line with industry norms.

Recommendations:

- We recommend Austin fire maintains its passive exposure in efficient market classes
- We recommend that Staff, the Board, and the Consultant all remain diligent in monitoring fees.
- We recommend Austin fire staff document its internal process for fee reconciliation and payment in a formal procedure document or memo.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

- The Trustees may want to explore more direct investments in private markets to reduce overall costs relative to fund of funds. Doing so would result in additional advisory costs which would likely (but not guaranteed) be less than FOF fees.

Governance
The website is simple and easy to navigate. The Board of Trustees has investment authority. Any action by the Board requires a majority vote. Rebalancing recommendations are approved by the Board upon recommendation from the Consultant. Staff is authorized to implement the rebalancing efforts after Board approval. Most investment decisions are based on the recommendation of the Consultant, with extensive conversation among Board members prior to approval. The Board of Trustees frequently debates the pros-and-cons of each investment decision in open public meetings. All investments are managed by external investment managers. Most investment related decisions are accompanied by thoughtful conversation among the Board members and Consultant. There is very little (to no) “rubber stamping.” The agenda for each investment meeting is set by the pension Administrator in consultation with the Consultant. The Consultant keeps a running “roadmap” that is shared with the Board. It sets the stage for the direction of the fund over the coming 2-3 meetings. Some of the Board members have significant investment expertise across asset classes from their time on the Board, attendance at industry conferences and active commitment to learning. The Board members routinely participate in the TEXPERs conferences as well as other national pension conferences (e.g. NCPERS). **Strengths:** - The website is in a state of evolution. We are pleased to see progress. - The separation of board meeting vs. investment meeting is very productive for sound decision making and allocation of time and resources. - Flexibility exists for investment matters to be discussed at the monthly board (non-investment meetings) as needed. This has been helpful a number of times of the past few years. - Board discretion on all investment actions (i.e. not granting investment authority to staff) is common for a $1 billion pension with limited staff that mostly focuses on administering the plan (i.e. not dedicated to investments). - Austin Fire’s Board members work extremely well together. The small size of the board (and continuity) has helped with sound decision making and ultimately greatly benefited the participants in our opinion.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Manager Selection and Monitoring
The consultant leads the evaluation process on manager selection. Meketa has a process where it continuously monitors and reviews investment managers in the industry. From this work, Meketa creates a "bullpen" of high conviction products that have been thoroughly vetted through Meketa's multi-phase process. Policy benchmarks for each asset class and the total fund are included in the operating procedures and quarterly performance reports. The Consultant makes recommendations on which benchmarks are appropriate. Individual manager benchmarks are determined based on each investment strategy's mandate and will generally, but not always, match the recommended benchmark identified by the investment manager. The Consultant is primarily responsible for monitoring the performance of the investment managers and reporting to the Board. The Consultant conducts periodic meetings, conference calls, and constant oversight of the investment managers. The Consultant and the Board discuss individual strategies in more depth, as warranted. **Strengths:** - Performance monitoring and benchmarking is in-line with industry best practices. - Manager selection and evaluation is in-line with industry best practices. **Recommendation:** - We recommend Austin Fire formally documents the rationale for all hiring and firing decisions.

Full Investment Practices and Performance Evaluation

Austin Police Retirement System

PRB Analysis of Evaluation

Plan Assets:[1] $857,839,229
Evaluator: AndCo
Evaluator Disclosures:[2]
Relationship: Investment Consultant
Investment Discretion: None

The evaluation provides both a review of policy practices and clearly documents the sources used as comparative best practices, while also providing detailed explanations where appropriate, specifically the helpful explanations outlining the asset allocation process and the general governance decision-making process.

The evaluator notes that the existing investment consultant makes recommendations for improvement proactively and are already incorporated in the existing practices, therefore only general recommendations for "APRS to maintain its robust processes to both review the current investment portfolio while also seeking to identify new investments that can improve the System's long term expected risk and return while maintaining liquidity to meet its benefit obligations" are made in this evaluation.

The evaluation identifies the benefits to conducting asset liability studies noting that "through a comprehensive discussion over the asset/liability study results clients can have a clearer understanding of practical plan investment expectations." The evaluator highlights the collaborative effort between the investment consultant, actuary and trustees when performing these studies stating "Asset/liability studies are the only standard analysis that evaluate several components of a Plan's key financial drivers including the Investment Policy, Contribution Policy and Benefit Policy."

The evaluation also expands on the investment manager best practices including both selection and monitoring. It details the qualitative and quantitative aspects the System considers when assessing manager performance and how these factors match industry standards.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
AndCo analyzed the System's IPS and the Board's compliance with the IPS. AndCo, as an independent, professional investment consulting firm, has determined that the System's IPS, and the Board's compliance with the IPS, is appropriate and comparable the structure of an effective investment policy statement as laid out by the CFA Institute (ELEMENTS OF AN INVESTMENT POLICY STATEMENT FOR INSTITUTIONAL INVESTORS, Copyright 2010 by the CFA Institute). **Strengths:** – Maintain its ongoing annual review of the investment policy statement and continue to work with the investment consultant in an ongoing effort to improve the investment policy to maintain alignment with industry best practices.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Asset Allocation

The System's process for determining asset allocation targets is executed and implemented through strategic asset allocation studies that contain a variety of potential asset allocation targets for the Board's consideration. The specific asset classes included in each strategic asset allocation study, as well as the potential mixes under the Board's consideration will include both asset classes currently in the System's portfolio as well as other asset classes that may be suitable for inclusion. In addition to return objectives and risk-tolerance contained in the strategic asset allocation study, the System also considers its ongoing liquidity needs and the maintenance of an appropriate level of diversification in the portfolio when determining the appropriate asset allocation targets for the System. The System's cash flow and liquidity needs are reviewed by the Board each quarter as part of the investment consultant's quarterly performance review.
 	
We believe a robust asset/liability study helps the consultant and Board review asset allocation mixes to determine those allocation strategies which could potentially best serve to protect or increase funding levels, while providing adequate liquidity for benefit payments and minimizing associated risks. AndCo believes that through a comprehensive discussion over the asset/liability study results clients can have a clearer understanding of practical plan investment expectations.
 	
AndCo reviewed the System's processes for asset allocation including target determination, expected risk and return, selection and valuation methodologies for alternative and illiquid assets, as well as cash flow and liquidity needs. While different approaches exist, AndCo, as an independent, professional investment consulting firm, has determined that the System's processes are appropriate and comparable with what AndCo considers best practice, industry standards.
 	
Strengths:
– AndCo anticipates that System asset allocation studies and asset liability studies will be developed and reviewed every three to five years which is in accordance with what AndCo views as best practice in the industry and across its client base.
– AndCo recommends that the System
    – Maintain its long-term asset allocation structure and tolerance ranges.
    – Maintain its existing asset class diversification and its willingness to explore and implement new asset classes as opportunities arise.
    – Continue to pursue institutional quality, diversified options within its alternative asset allocations with reasonable fee structures.
    – Continue to work with the Consultant to rebalance the portfolio actively to provide any needed cash flow and maintain its long-term target allocations.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Fees
The fees for the System's portfolio contained in the most recent quarterly investment review reflect a cost of 0.49%. Based on the 2019 NCPERS Public Retirement Systems Study, published on January 22, 2020, the average fee for the survey's 155 state and local government pension respondents was 0.55%. It is important to note the System also considers fees an important part of the decision-making process and evaluates the potential fee impact for each new investment manager and strategy considered for inclusion in the System's portfolio. The System considers the current fee of 0.49% reasonable and appropriate for its portfolio. AndCo reviewed the fees paid to administer the System's portfolio and the underlying investment manager fees. While high or low fees do not guarantee failure or success for an investment portfolio, AndCo, as an independent, professional investment consulting firm, has determined that the System's fees are appropriate as evidenced to the comparison of national plans in the 2019 NCPERS public Retirement Systems Study. No changes are recommended at this time.

Governance
The System's IPS contains clear definitions of the Board's responsibilities as well as the role of the Board's professional advisors in assisting the Board in fulfilling its fiduciary duties to the System with respect to the investment of assets. Direct investment authority for the System's assets lies with the Board. As such, all decisions regarding the System's portfolio including return objectives, risk tolerance, investment guidelines, asset allocation targets and manager selection and retention reside with the Board. AndCo reviewed the System's governance processes related to investment activities, investment decision-making, delegation of investment authority, and education. While different governance structures exist around investment decision-making, delegation of investment authority, and education, AndCo, as an independent, professional investment consulting firm, has determined that the System's processes are appropriate. No changes are recommended at this time.

Investment Manager Selection and Monitoring
The investment manager selection process for the System is conducted in collaboration with the System's investment consultant. While the investment consultant may make recommendations regarding investment strategies, the ultimate decision to select a specific strategy for inclusion in the System's portfolio resides with the Board. AndCo works with the System to make ongoing quantitative and qualitative assessments of managers to gauge their success and failure. Putting a manager on watch or recommending termination is determined by the severity of the quantitative and/or qualitative issues.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Strengths:

- AndCo believes that the System is in accordance with the process best practices laid out by the GFOA for selecting third party investment professionals for pension fund assets.
- All performance calculations supplied by the consultant to the Board meet the guidelines of the CFA institute
- Performance reports present time weighted rates of return as well as dollar weighted returns for private investments as directed by the CFA Institute.
- AndCo believes that the manager selection process in place at the Austin Police Retirement System is robust and is in accordance with industry best practices. AndCo employs a similar search and selection across its national public fund client base.
- AndCo recommends that the System maintain its investment process for investment manager search and selection which relies on its investment consultant, investment committee, and board in selecting new investment managers for use within the pension fund's investment portfolio.

Full Investment Practices and Performance Evaluation

Beaumont Firemen's Relief & Retirement Fund

PRB Analysis of Evaluation

Plan Assets:[1] $105,769,426
Evaluator: AndCo
Evaluator Disclosures:[2]
Relationship: Investment Consultant
Investment Discretion: None

The evaluation provides both a review of policy practices and clearly documents the sources used as comparative best practices, while also providing detailed explanations where appropriate.

The evaluator notes that the existing investment consultant makes recommendations for improvement proactively and are already incorporated in the existing practices, therefore only general recommendations for the System "to maintain its robust processes to both review the current investment portfolio while also seeking to identify new investments that can improve the Fund's long term expected risk and return while maintaining liquidity to meet its benefit obligations" are made in this evaluation.

The evaluation notes the cashflow will be negative for the foreseeable future and "a meaningful portion of the Fund's investable assets are PROP balances that may leave the Fund unexpectedly," so there is a need for higher allocations to "public, liquid assets"

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement

We analyzed the System's IPS and the Board's compliance with the IPS. While different IPS structures exist, AndCo, as an independent, professional investment consulting firm, has determined that the System's IPS, and the Board's compliance with the IPS, is appropriate and comparable with what AndCo considers best practice, industry standards, and comparable to the structure of an effective investment policy statement as laid out by the CFA Institute (ELEMENTS OF AN INVESTMENT POLICY STATEMENT FOR INSTITUTIONAL INVESTORS, Copyright 2010 by the CFA Institute).
Strengths:
– AndCo recommends the Fund
  – Maintain its ongoing review of the IPS. We feel that reviewing the policy statement annually is a strong practice and should be continued.
  – Continue to track the changes to the investment policy and report them in a clear and transparent manner.

Investment Asset Allocation
The Fund's process for determining asset allocation targets is executed and implemented through frequent and thorough discussions between the Board and the investment consultant. Each year, the Board's investment consultant uses a combination of 10- to 15-year forward-looking asset class return assumptions, risk and correlation assumptions, historical asset class return and risk data, and a long-term (50+ years) building block return methodology to determine a target allocation that the investment consultant believes will have the highest probability of achieving the Fund's return objectives. Any changes to the Fund's strategic asset allocation targets and ranges are then recommended to the Board for consideration.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

The Fund's cash flow and liquidity needs are reviewed by the Board each quarter as part of the investment consultant's quarterly performance review. This review includes discussions regarding the current, expected, and known timing variances of future contributions to, and withdrawals from, the Fund. Based on the Fund's current expectation that cash flow (net contributions less withdrawals) will be negative for the foreseeable future without a change in the contribution rate and the fact that a meaningful portion of the Fund's investable assets are PROP balances that may leave the Fund unexpectedly, the portfolio has been positioned to include higher allocations to public, liquid assets.

Strengths:

- AndCo recommends that the Board
  - Continue regular asset allocation reviews with its investment consultant.
  - Maintain its policy of educating themselves on new asset classes that could be beneficial to the investment portfolio.
  - Continue to work with the Consultant to actively rebalance the portfolio to provide the required liquidity levels and maintain its long-term target allocations.

Investment Fees

The fees for the Fund’s portfolio contained in the most recent quarterly investment review reflect a cost of 0.42%. Based on the 2019 NCPERS Public Retirement Systems Study, published on January 22, 2020, the average fee for the survey's 155 state and local government pension respondents was 0.55%. It is important to note the Fund also considers fees an important part of the decision-making process and evaluates the potential fee impact for each new investment manager and strategy considered for inclusion in the Fund's portfolio. The Fund considers the current fee of 0.42% reasonable and appropriate for its portfolio.

We reviewed the fees paid to administer the Fund's portfolio and the underlying investment manager fees. While high or low fees do not guarantee failure or success for an investment portfolio, AndCo, as an independent, professional investment consulting firm, has determined that the Fund's fees are appropriate and comparable with what AndCo considers best practice, industry standards. No changes are recommended at this time.

Governance

The Fund's IPS contains clear definitions of the Board's responsibilities as well as the role of the Board's professional advisors in assisting the Board in fulfilling its fiduciary duties to the Fund with respect to the investment of assets. Direct investment authority for the Fund's assets lies with the Board. As such, all decisions regarding the Fund's portfolio including return objectives, risk tolerance, investment guidelines, asset allocation targets and manager selection and retention reside with the Board.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

We reviewed the Fund's governance processes related to investment activities, investment decision-making, delegation of investment authority, and education. While different governance structures exist around investment decision-making, delegation of investment authority, and education, AndCo, as an independent, professional investment consulting firm, has determined that the Fund's processes are appropriate and comparable with what AndCo considers best practice, industry standards. No changes are recommended at this time.

Investment Manager Selection and Monitoring

The investment manager selection process for the System is conducted in collaboration with the Fund’s investment consultant. While the investment consultant may make recommendations regarding investment strategies, the ultimate decision to select a specific strategy for inclusion in the Fund’s portfolio resides with the Board.

The investment consultant's reports highlight portfolio and investment manager performance and risk relative to the various performance measurement standards established in the IPS. The criteria established in the IPS tracks managers on both a qualitative and quantitative basis. Strategies that repeatedly fail to meet these standards will be placed on a watch list or terminated. The criteria are not designed to remove the decision process from the Board, but rather are intended to add objectivity and enhanced scrutiny on managers who are underperforming the criteria contained in the IPS. While the investment consultant may make recommendations regarding the continued retention or termination of an investment strategy in the Fund's portfolio, the ultimate decision to retain or terminate an investment strategy (within the bindings of the strategy's agreement) resides with the Board.

Strengths:

- AndCo recommends that the Fund maintain its investment process for investment manager search and selection which relies on its investment consultant and Board in selecting new investment managers for use within the Fund's investment portfolio.

Full Investment Practices and Performance Evaluation

City of Austin Employees' Retirement System

PRB Analysis of Evaluation

Plan Assets:[1] $2,928,033,076
Evaluator: RVK
Evaluator Disclosures:[2]
Relationship: Investment consultant
Investment Discretion: None

The evaluation is well-balanced in its summarizing of information in easily understandable graphics, while also providing detailed explanations where appropriate, specifically, the helpful explanations of the asset allocation and investment manager selection processes. The evaluation models transparency by clearly identifying the internal documentation, third-party analyses and benchmarking sources used in the thorough review.

The evaluation provides details from the System's 2018 Asset Liability (A/L) Study, including the expected impact under different assumptions resulting from the funding gap. Specifically, the evaluation notes the A/L study illustrated the **"large gap between System assets and liabilities cannot be closed without significant changes to contribution policy due to increasing System liabilities."**

The evaluation highlights that "COAERS' investment decision making process and governance structure have been carefully constructed to reflect stated investment beliefs" and "broadly reflects comprehensive implementation of best practices." It emphasizes "the separation of policy from implementation is an important and attractive characteristic of the COAERS investment program."

The evaluation identifies COAERS' investment manager selection process as "unique and differentiated" and one that "provides tangible and intangible benefits that a more common process followed by many peers may not afford, such as the demonstrated ability to negotiate lower fees and the avoidance of performance chasing behavior." It continues to note that while there are areas for potential improvement, "the current process and documentation thereof is best-in-class within the public pension universe."

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
COAERS' investment program is governed by two distinct policies—the Investment Policy Statement ("IPS") and Investment Implementation Policy ("IIP")—which together serve as overarching program documents detailing the objectives and guidelines used for the management of System assets. The Board of Trustees (the "Board") review both of these documents at least annually, with more frequent approvals conducted as necessary after first passing through the Investment Committee when Investment Staff and/or Investment Consultant introduce proposed language updates. Within the past year these documents have been updated, reviewed in detail, and approved twice to reflect improvements in clarity with respect to oversight responsibility of the System's assets by way of increased transparency into processes relating to such items as strategic long-term goals, rebalancing ranges, etc. "It is in our opinion that both documents reflect best in class industry standards related to both policy language and governance related to implementing said policies." The language contained within the IIP allows for the Board to establish a set of overarching governance with respect to manager interaction, while simultaneously ensuring that the Investment Staff has authority to act on the Board's behalf in a manner that is mutually agreed upon.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Strengths:

- RVK believes the COAERS IPS is consistent with industry best practices, representing clearly defined language aimed at providing the Board governance standards when instituting their investment program.
- RVK believes the COAERS IIP is consistent with industry best practices, representing a clear extension of the IPS, aimed at providing the Board further implementation details when instituting their investment program.

Investment Asset Allocation

The efforts from the Board, Investment Committee, and Investment Staff show a thoughtful approach to the selection of the Strategic Target Allocation, with particular emphasis on the 2018 Asset/Liability study. From this analysis, COAERS was able to narrow the potential range of outcomes and create a set of target allocations applying reasonable judgement and its own investment beliefs throughout the process. The current COAERS target portfolio represents one that is liquid, transparent, and flexible, with a slightly above average risk tolerance compared to public pension peers. The process to reach the current target allocation took place over multiple meetings and continues to be refined as appropriate with each new analysis performed.

COAERS’ target allocation is ultimately driven by the liabilities of the System including expected cash flow and liquidity needs. The primary method for analyzing the projected liabilities in the context of asset allocation is through an Asset/Liability (“A/L”) Study. These studies are the primary basis for informing appropriate risk levels and any large shifts in target allocation, though smaller changes can occur in between A/L studies based on changes to market environment, capital markets assumptions, and the needs of the System.

Using the A/L Study as a guide, Investment Staff and the Investment Consultant perform detailed analyses on current allocations and potential target allocations. Analyses regularly performed include, but are not limited to, long-term risk and return characteristics, correlation and diversification relationships between asset classes, Monte Carlo simulations over the short and long-term, stress testing, and liquidity analysis.

Based on the results from the A/L study conducted in May 2018, COAERS elected to adopt a predominantly liquid portfolio with an above average risk and return profile. However, the results of the study did not support taking on large amounts of risk in an attempt to close the funding gap due to limitations of the contribution policy. The large gap between System assets and liabilities cannot be closed without significant changes to contribution policy due to increasing System liabilities. In order to bring the System to full funding, an increase of 30%, the System assets would need to return over 8% each year across a 20-year period.

Recommendation:

- Consider policy language defining a reporting and/or valuation process for less liquid and illiquid investments. As of December 31, 2019, COAERS does not have exposure to investment vehicles which would be considered less liquid or illiquid. However, with the future addition of private

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

infrastructure and potentially other private real estate, it may be beneficial to have a stated policy in place surrounding securities or vehicles with liquidity provisions. The policy language may include verbiage to detail the process by which these assets will be reported by the custodian bank, Investment Consultant, and investment managers. Additionally, it is important to consider how these assets may be accounted for with "stale" or "lagged" valuations.

Investment Fees
The overall aggregate level of investment fees and commissions paid by COAERS is lower than many retirement system peers. Additionally, there is a strong emphasis on transparency which accurately represents the philosophy and overall set of investment beliefs adopted by the Board. With very few exceptions, fees paid to individual managers are among the lowest in the industry for each mandate and are a testament to the diligence and contracting processes currently in place. While there are a select few mandates within the portfolio where fees or commissions appear modestly above industry median, it is important to note that these are also areas in which COAERS is receiving a differentiated level of active performance in a manner consistent with the Board's adopted investment beliefs. As such, higher fees in these areas may be warranted as overall net of fees performance remains attractive. RVK spent considerable time analyzing the fees paid to individual investment managers currently in the COAERS portfolio. This analysis included confirmation of fee schedules through interactions with each investment manager, careful review of relevant terms found in investment management agreements ("IMA"), comparison to similar mandates, as well as a comprehensive peer group fee analysis. Each investment manager was ranked against an appropriate eVestment peer group based on mandate type and overall asset size. The overwhelming majority of effective fees paid by COAERS to investment managers fall well below the industry median for each respective mandate. COAERS, like many of their public peers, periodically engages a third-party to evaluate the System's total fee structure which is presented and discussed with the Board. The peer rankings and results of this benchmarking report are largely a function of asset allocation, use of alternatives and active management, and manager fee negotiations. COAERS has taken a thoughtful approach within all of these areas and continues to be an industry leader in controlling and managing investment fees, effectively deploying a small overall fee budget and thus ranking favorably among peers. **Strengths:** - COAERS has been highly successful in negotiating attractive fees with its managers, and that its investment beliefs favor the use of passive management as a default, with active management only used wherever the expected likelihood of outperformance is high. - While not critical to the analysis, it is notable than a small number of agreements between COAERS and its managers contain performance-based or incentive-based fees. As these fees are generally predicated on some form of outperformance over a specified benchmark, we believe this can help align interests between parties and ultimately provide more attractive outcomes for COAERS.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Governance

Through a review of past and current policies, charters, and meeting materials, it is clear the COAERS investment decision making process and governance structure have been carefully constructed to reflect stated investment beliefs and are in line with industry best practices. Notably, the separation of policy from implementation is an important and attractive characteristic of the COAERS investment program. Additionally, the ongoing education through formal training and meeting materials appear to satisfy certain requirements within Texas, while also providing Trustees with meaningful and important information critical to the management of System assets. Delegation of authority among Board, Committees, Executive and Investment Staff, and Investment Consultant are also clearly defined, with sound reasoning and a structure which allows for some degree of flexibility necessary to manage a successful investment program.

Strengths:

- The COAERS Implementation Policy is a sound and appropriately detailed manual expressing how the Board wishes the implementation of the investment program to be accomplished. Not all boards of trustees in the US have adopted the simultaneous development and use of an Investment Policy as well as a more granular, process-oriented Implementation Policy.
- Our review of the governance structure under which COAERS operates indicates a substantial degree of clarity regarding the delegation of authority to make and provide advice on investment decisions.
- We would further observe that it is likely the education provided to the Board and IC exceeds the educational efforts of many public pension plans in the US, in addition to meeting PRB requirements.

Investment Manager Selection and Monitoring

The COAERS investment manager selection and monitoring process is well-defined and thoughtful in its approach. The COAERS Investment Staff diligently follows the policies and procedures as described and has made notable efforts in the improvement of their own due diligence efforts. Their unique and differentiated approach to manager selection, termed the "Premier List", provides tangible and intangible benefits that a more common process followed by many peers may not afford, such as the demonstrated ability to negotiate lower fees and the avoidance of performance chasing behavior. While we do note areas for potential improvement, we believe the current process and documentation thereof is best-in-class within the public pension universe and commend the COAERS Board, Investment Committee, and Investment Staff on their efforts in the creation of a successful manager selection and monitoring program.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

It is also important to note that the IIP clearly mentions the requirement to review components of the managers' performance that are less apparent and often operational in nature. These include proxy voting, commissions, and indirect exposure to brokerage firms. Importantly, the current language relating to the Watch List does not require termination of a manager over a given time period, but is taken on a "case-by-case" basis.

Strengths:

- COAERS takes a unique and differentiated approach to manager selection, opting for a less regimented search process for each mandate under consideration. In contrast to the more traditional approach to screening the existing universe of candidates within a particular asset class only when a need is identified, the "Premier List" is an ongoing process. While such an approach to manager selection is not common among its peers, RVK believes it does provide COAERS with many advantages, including:
    - Less reliance on backward-looking performance metrics, as typical search documents rely heavily on point-in-time analyses that tend to lead to performance chasing.
    - Better relationships with potential managers over longer time horizons, allowing Investment Staff to leverage knowledge and other resources available to them.
    - Reduced implementation lag; if a manager is already on the Premier List, the time from decision making to implementation is significantly reduced as contracts and mandates are pre-negotiated.
    - More downward pressure on fees and service from existing and potential managers; as managers know they can quickly be replaced – or not ever receive an active mandate – it is more likely to receive lower fees and better service in order to entice COAERS.

Recommendations:

- Consider the addition of a formal manager review policy with a more specific timeframe.
- Suggests clarifying language in two areas: 1) The Watch List section; some of the current language surrounding the monitoring of performance could be perceived as an "if, then" scenario; and 2) The Reporting Requirements section, which should specify that the requirements only apply to managers with a live mandate (or, reporting on all managers on the Premier List should be provided to the Board).
- Consider the addition of performance metrics for non-public securities and/or vehicles, as the data and metrics can be substantially different from those of public markets.

Full Investment Practices and Performance Evaluation

Corpus Christi Fire Fighters’ Retirement System

PRB Analysis of Evaluation

Plan Assets:[1] $157,587,141

Evaluator: UBS Financial Services, Inc.

Evaluator Disclosures:[2]

Relationship: Investment consultant

Investment Discretion: None

The evaluation concludes that the Plan is following industry best practices and provides useful details in support. In particular, the evaluation includes data on the expected risk and return of the System's current portfolio and detail on the investment manager RFP process.

The evaluation included several "considerations," some of which are reflected as recommendations below. Some of the considerations in the evaluation also provide more context as to actions that the Board and investment consultant are doing currently. Specifically, the evaluation notes that updates are being made to improve the IPS based on a recent review.

The evaluator notes that two sections in the Governance category have been provided by the System for inclusion in the report, but those items were not evaluated or verified by the consultant. Additionally, the retirement system requested to add the following clarification to this statement: "These sections include Transparency: a description of the regular public monthly meetings of the Board of Trustees, some of which the evaluator does not attend; Investment Knowledge/Expertise: a description of the completion by the Board of Trustees of applicable education requirements, which the evaluator did not audit to confirm; and Accountability: a description of the allocation of authority between the trustees, internal staff and investment consultant, some of which occurs administratively and in meetings which the evaluator does not attend.

The evaluation consists of two separate documents; the initial report dated May 1, 2020 and a supplemental report dated October 12, 2020. The excerpts included in the tables below are a combination of both documents.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The System's current Investment Policy Statement (IPS) was adopted on July 18, 2019. Developing and the ongoing management of an IPS is an iterative process. [The investment consultant has] worked with Corpus Christi to develop and periodically update their IPS. The current IPS is constructed to cover all areas of the Fund's oversight and management of Fund investments. The intent is to highlight how decisions are made such that outsiders or new Trustees will understand the processes in management and decision making. The IPS is designed to meet the real needs and objectives of the retirement plan. However, it is not integrated with any existing funding or benefit policies. The Investment Policy does not take into account the current funded status of the plan, the specific liquidity needs associated with the difference between expected short-term inflows and outflows, the underlying nature of the liabilities being supported (e.g. pay-based vs. flat $ benefit, automatic COLAs, DROP, etc.) The Plan conducts an asset/liability valuation every two years. As of the Actuarial Valuation for December 31,2018, the Plan assumes a 7.5% annual investment rate of return, has an amortization period of 29.8 years and has a funded ratio of 60.2%.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

The IPS and the Board's review procedures are sufficient based on [the evaluator's] experience working with similar clients at UBS. When and where applicable, the Board and [the investment consultant] have reviewed the IPS, its policies, and procedures, to determine what areas, if any, need improvement, and have developed and executed plans to implement the same.

Recommendations:

- Although review and revisions are made to the IPS on a regular and recurring basis, the Board will consider specifically stating that the Investment Policy should be reviewed biennially or more often as necessary to meet investment objectives.
- Clarifications, enhancements, additions and or revisions to the Investment Policy Statement should always be under review and consideration.
- State the approximate current funding status in the IPS and update when reviewed. Consider the cost/benefit of a comprehensive Asset Liability Study provided by a third-party advisor with expertise in this area.

Investment Asset Allocation

The Board of Trustees and their investment consultant review the asset allocation on a quarterly basis using the IPS as the foundational guide and performance results as an affirmation of the decisions made. The process used to develop and review the Retirement System's asset allocation combines the Board's strategic investment objectives, anticipated investment returns, spending policy, and risk tolerance with UBS' proprietary Capital Market Assumptions (CMAs), which include estimated forward-looking return, risk as measured by standard deviation and correlation assumptions among various asset classes. The strategic returns in the UBS CMAs consider returns over a full business cycle.

The current assumed rate of return used for discounting plan liabilities usually does not factor into the decision making associated with setting the asset allocation. In practice, the asset allocation has no bearing on the assumed rate of return used for discounting plan liabilities.

The IPS does not specifically define risk for the individual investment managers. The IPS states that assets shall be managed on a risk-adjusted basis to maintain value after inflation with consideration of returns, costs, spending and liquidity. The Board of Trustees and consultant quarterly review the portfolio allocation for asset rebalancing to adjust asset allocations to comply with strategic levels indicated in the IPS. Systematic portfolio rebalancing augments asset allocation by keeping the portfolio from drifting from target minimums and maximums. Together, asset allocation and rebalancing help establish and adhere to a long-term investment strategy and avoid "style drift."

To date, the investment asset allocation is aligned with the guidelines as set forth in the IPS. The Retirement System is also following industry best practices regarding the establishment and evaluation of the asset allocation.

Strengths:

- Continue to foster communication between the actuary and consultant regarding actuarial assumptions and asset allocation decision-making.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Recommendations:

- To specifically state in the Investment Policy that the asset allocation will be reviewed at least biennially or more often if the Retirement System's strategic objectives, anticipated investment returns, spending policy or risk tolerance changes or if consultant determines that such a review is needed based upon changes in consultant's capital market assumptions.
- To specifically provide in the IPS for a review of the expected return assumptions, expected risk assumptions, portfolio standard deviation and peer group rankings at least annually or more often if consultant determines that such a review is needed based upon changes in consultant's capital market assumptions.
- Incorporate language in the IPS that directs the asset allocation targets to be utilized when liquidity events occur.

Investment Fees
Investment manager fees are reviewed on a regular basis by UBS and the Board for appropriateness based on its impact on investment performance. On a quarterly basis, the Board of Trustees reviews a fee analysis report for each of the investment managers in the portfolio. UBS does not review trading commissions incurred as a result of trading by the Retirement System’s investment managers and does not review any other fees associated with the Retirement System. The consultant will assist the Board in reviewing the fee analysis reports when requested. Legal counsel reviews all investment manager contracts and negotiates on behalf of the Retirement System. The IPS states the Board of Trustees will review and where possible control all plan expenses. On a quarterly basis, the Board of Trustees reviews a fee analysis report for each of the investment managers in the portfolio. The report is prepared by the Plan Administrator of the Retirement System.

Governance
The Board and UBS meet quarterly to discuss all matters relating to the investment portfolio. Current Board members include board members appropriately appointed or elected, including investment financial advisors and a certified public accountant. All the Trustees satisfy applicable educational requirements. All professionals on the Board also meet their own profession certification requirements. In addition to these requirements, the Trustees also attend other pension educational conferences, forums and seminars. The professional makeup of the Board of Trustees provides impartial guidance and support to assist in investment discussions and decisions. The Board of Trustees has adopted a Code of Ethics Policy which lists ethical responsibilities consistent with the Trustees' fiduciary responsibility, along with a number of professional responsibilities. The Code of Ethics also includes a number of conflict-of-interest requirements.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Recommendation:

- To specifically provide in the Investment Policy for a review biennially or more often as necessary to meet investment objectives and review investment governance processes for appropriateness.

Investment Manager Selection and Monitoring
The Board of Trustees with the advice and recommendation of the consultant select investment managers. The Board of Trustees engage the services of the investment consultant to aid in the selection of managers for the Retirement System by performing due diligence, narrowing the broad universe of managers to a more manageable group, and recommending a select set of specific managers for each asset class for the Board's final selection. A number of minimum criteria and parameters are described in the IPS for the selection of the investment manager. Responsibilities of the investment manager are described in the IPS including investment manager reporting and evaluation, asset monitoring, communication and information. The IPS also outlines the ethical considerations and potential conflicts of interest for the investment managers. [The investment consultant] reviews and evaluates Corpus Christi's performance through the lens of the goals as defined in [the system's] IPS as well as through the perspective of a Capital Markets Overview that will put manager performance into perspective with the overall markets. The customized performance report is one of [the primary tools used for evaluation. The risk measure is derived from calculating the variance of returns, and is typically depicted as the standard deviation of returns. Additional risk measures may include portfolio beta, R-squared, Sharpe ratio and upmarket/down-market analyses. **Recommendation:** – Formalize in the Investment Policy Statement the criteria when a manager is to be under "watch" due to any event, transaction, or other variable in the manager's investment performance or structure.

Full Investment Practices and Performance Evaluation

Dallas Area Rapid Transit Retirement Plan

PRB Analysis of Evaluation

Plan Assets:[1] $185,584,000

Evaluator: CBIZ Investment Advisory Services

Evaluator Disclosures:[2]

Relationship: Investment consultant

Investment Discretion: None

The evaluation provides brief explanations outlining the System's processes and supporting arguments for the conclusions drawn, with detailed explanations of several topics related to managing the System's assets. The explanation provides insight into the System's practices as well as outlining the considerations and philosophies that guide the investment consultant.

Specifically, the evaluation provides context around the asset allocation studies that helped guide the System in "a conservative management philosophy of the Pension Plan by utilizing a lower return expectation" of 6.75%. It also puts the $51 million unfunded liability into perspective by referencing "the DART 2019 operating budget is $544 million and the total DART budget is in excess of $1 billion" which is a useful comparison.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The DART Statement of Investment Objectives and Guidelines were last updated in January of 2020. They are frequently reviewed and have had two additional updates in the last five years. The guidelines cover purpose, objectives and guidelines for the Plan and all external vendors. It further discusses the Committee's expectations for all these parties. Within the Statement of Investment Objectives and Guidelines, a plan funding philosophy is delineated, liquidity requirements are discussed, and permissible asset allocation ranges, as well as current strategic targets by asset class are defined.

Investment Asset Allocation
Two types of meetings bring together our research staff in a formal setting – a "Level 4" meeting, which is the final stage of our investment manager due diligence process, and our Quarterly Asset Allocation Strategy meetings. The purpose of these quarterly allocation meetings is to update, if necessary, our forward-looking total return profiles for both liquid and illiquid asset classes, using a moving 3-year and 10-year horizon, respectively. In the asset allocation study approved in early 2016, a schedule was constructed to have a reasonable probability of achieving a fully funded plan by the year 2036. At the time of the study, a new funding target of $10 million per year was adopted by the Committee and has been agreed to each subsequent year. This $10 million funding level has been consistently larger than the actuarial required contribution. For example the current annual required contribution is $6.6 million. At year-end 2019, the expected market value from the original glide path was $171.3 million. As a result of both overfunding and strong markets, the actual market value at December 31, 2019 was $192.3 million. The actuarial expected return assumption is 6.75%.

[1] As of 9/30/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

In addition to traditional MVO, Morningstar Direct provides liability-driven optimization, and includes multiple models to develop and test capital market input assumptions (return, volatility, correlation), including Monte Carlo Simulation, Black-Litterman, CAPM and historical analysis.

Strengths:

- DART's plan has a 12.8 year effective amortization period which is in the top 25% of Texas public plans

Recommendation:

- With the current market dislocation, and the last full asset allocation review, including funding path analysis, finalized in 2016, an updated asset allocation study to be performed within the next year.

Investment Fees

Fees are negotiated for improvement where possible and represent a factor during the manager selection process, the monitoring of those fees is less robust once the manager is hired.

For separate account allocations fee schedules are reviewed versus listed fee schedules and the investment consultant will attempt to negotiate a lower rate, if possible. Passive products are utilized and fees were also compared as a factor in determining the selection.

Recommendation:

- We would recommend that benchmarking data be added into the quarterly report to compare the existing fees where applicable with industry averages for the respective investment categories.

Governance

The construction and responsibilities of the Retirement Committee ("Committee") are described in the Plan documents. The Committee consists of two elected employee members who are Plan participants, the CFO, a member of the Board and a member appointed by the President of DART. Members serve 4 year terms and can be reelected or reappointed. The Committee meets six to eleven times per year. Contracts with external parties are generally taken to bid every three to five years except custodial services, which is less frequent.

Formal Committee meetings occur 6 to 11 times per year. Minutes are taken at each meeting and the minutes are approved and adopted at each subsequent meeting. Within the corporate structure of DART normal attendance at the Committee meetings include representatives from human resources, treasury, and legal. Additionally, the external investment consultant normally attends along with one different external investment manager at most meetings. The external auditor and actuary normal attend one meeting per year. This allows for the direct implementation of approved actions

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

as well as reporting on the normal course of business. This process provides the Committee the support function needed to carry out their fiduciary responsibilities.

Investment Manager Selection and Monitoring
In implementing asset allocation changes or manager replacements the Committee will instruct the consultant to begin a search. The basic for traditional searches performed by the consulting firm is below: - Manager Sourcing | Initial Screening - Initial Review - On-site | In-depth Evaluation - Final approval Process In addition to our RAB four step process, we use a combination approach to balancing our internal research resources with complimentary external research resources. Our team believes that there is no substitute for performing proprietary due diligence on the managers that we consider for inclusion in our clients' portfolios. Our Research Advisory Board and Investment Committee are comprised of experienced research and investment professionals who perform initial and ongoing due diligence on hundreds of managers across the full spectrum of both traditional and alternative strategies. In addition to our own robust due diligence process, we have agreements in place to access due diligence provided by certain third party firms including Envestnet|PMC and Morningstar. We believe that the additional due diligence these firms provide is a meaningful complement to our own proprietary research. To monitor, the consultant provides detailed quarterly reports and abbreviated monthly reports. In the quarterly reports, they review compliance to asset allocation ranges, performance versus listed benchmarks, total fund performance versus goals, peer group rankings by the investment manager and by fund, sector concentration, security concentration, country exposure, and credit quality detail. This is reported net of investment fees.

Full Investment Practices and Performance Evaluation

Dallas Police & Fire Pension System

PRB Analysis of Evaluation

Plan Assets:[1] $2,041,914,130
Evaluator: Meketa
Evaluator Disclosures:[2]
Relationship: Investment consultant
Investment Discretion: None

The evaluation offers a balanced approach to both summarizing key aspects of the System while also going into more detail where necessary. The evaluation provides helpful summary points for each section and recommendations are well-supported with details and comparison to leading practices.

The evaluation provides and explains a recent 2018 stress test that influenced the actions of the Board. In response to the analysis, the Board adopted a Safety Reserve portfolio and is following a risk-based implementation plan designed to minimize the potential impact of a severe near-term market correction.

The evaluation also addresses the unique situation that the System has with its rebalancing effort for its illiquid and alternative investments and recommends increasing passive exposure.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement

The Investment Policy Statement (IPS) was reviewed by Dallas Police & Fire Pension (DPFP) Staff, the Investment Advisory Committee (IAC), investment consultant, and the Board.

Strengths:

- The IPS is well-thought-out and in-line (or better) than industry standards
- It is consistent with guidance from the CFA Institute
- Roles and responsibilities of all key parties involved are clearly outlined (Board of Trustees, Investment Advisory Committee, Executive Director, Investment Staff, Consultants, Investment Managers, Custodian)
- The document is written in "plain-English" and easy for a layperson to understand
- There is no evidence of any known compliance violations with the IPS at this time

Recommendations:

- The "Core Beliefs and Long-Term Acknowledgments" is thoughtful and should be reviewed at any time significant investment changes are considered. It offers good guidance without being overly prescriptive or prohibitive.
- DPFP Staff and the Consultant should continue to conduct an annual review of the IPS.

[1] As of 12/31/2018
[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Asset Allocation
According to the IPS, "a formal asset allocation study will be conducted as directed by the Board, but at least every three years. Asset allocation targets will be reviewed annually for reasonableness in relation to significant economic and market changes or to changes in the investment objectives. Minimal tactical decisions have been implemented in the past two years. According to the IPS "the Strategic asset allocation determines the risk reward profile of the portfolio and thus drives overall portfolio performance and volatility." DPFP has been 100% active over the recent history. DPFP recently funded its first passive mandate (on a temporary basis). DPFP requires a 2/3 approval of the Board for any new investments in alternative assets. DPFP does not plan to make any illiquid or alternative investments for the foreseeable future as it works to rebalance its portfolio to the new policy asset allocation. DPFP has a significantly lower target weight to illiquid investments (relative to current exposure) and has been working hard over the past few years to reduce its exposure. To be proactive DPFP has been tracking the computation pay relative to the city's hiring plan because if hiring and pensionable compensation do not keep pace with projections less contributions will go into DPFP starting in 2025 after the contribution floor is lifted. Meketa (with data from DPFP's actuary) modeled different asset-liability scenarios in 2018 based on different contribution rates. **Strengths:** - DPFP staff and Board recognize their current exposure is very different from policy weights and have been working very hard to shift the portfolio (out of illiquid investments). - DPFP's current approach to asset allocation (2018) is thorough and robust. - It is on par (or better) than industry standards. - In our opinion, the approach DPFP takes to formulate asset allocation is sound, consistent with best practices, and leads to a well-diversified portfolio. - Current DPFP Staff is doing a commendable job with a very challenging situation, as it works to liquidate private market investments at the best possible price. - DPFP's Board of Trustees' acknowledgment and understanding of the plan's funded status and cash flow situation were crucial data points that helped guide the overriding theme of the most recent asset allocation decision-making process. - As noted previously, the Consultant conducted significant stress testing surrounding the anticipated liabilities of DPFP and the impact of not earning the plan's actuarial return. - In response to the analysis, the Board adopted a Safety Reserve portfolio and is following a risk-based implementation plan designed to minimize the potential impact of a severe near-term market correction.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Recommendations:

- The Board consider increasing passive exposure in efficient asset classes where the likelihood of risk-adjusted outperformance, net of fees, is lowest. A recent survey of similar-sized public pension plans showed that the average passive exposure is 18% of total plan assets.
- DPFP Staff should continue its process of working with the Board and external advisors to prudently exit illiquid investments to the extent possible.
- The Board should remain patient with asset allocation as the portfolio is transitioned and doesn't feel obligated to conduct comprehensive asset allocation overhaul every year. (Surveys have shown many large state plans are moving towards once every three - five years).
- The Board and Staff should closely monitor contribution levels and maintain a constructive and open dialogue with the City.
- If (based on the actuary's advice) it becomes likely that DPFP is not on track to meet targets by 2024, we encourage the Board to act as soon as reasonably possible to discuss and implement additional plan design changes to avoid delaying and compounding any known shortfalls.
- DPFP consider adjusting actuarial valuation assumptions as necessary based on the outcomes and advice of the actuary upon the conclusion of the experience study expected in 2020.

Investment Fees

Fees that are paid via invoice are reviewed by the appropriate DPFP analyst based on the assigned asset class coverage. According to conversations with Staff, the analyst will typically calculate the expected quarterly fee via an excel spreadsheet and reconcile with what is billed by the investment manager. DPFP Staff keeps an excel sheet with all investment related fees paid (direct investment management fees, incentive fees, commissions, custodian fees, investment consultant fees, legal related investment fees). DPFP Staff and Consultant monitor investment manager fees and appropriateness relative to similar investment strategies.

In total, nine of the eleven public markets managers charge less than the median manager for their respective peer groups. Of the two that were more expensive than median, DPFP restructured one of those fee arrangements to a performance-based fee within the past year. DPFP paid a blended average fee of 0.74% bps in calendar year 2018. This is above the industry average of 0.60% (according to the latest available NCPERS survey conducted).

Strengths:

- DPFP has done a good job of identifying public market managers with competitive fees.
- DPFP's process for reconciling and paying fees appears in-line with industry standards.
- DPFP's tracking and monitoring of fees appear in-line with industry standards.
- The transparency and disclosure of fees in the annual CAFR are clear and unambiguous.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Recommendations:

- Passive strategies could reduce overall investment-related fees for DPFP fees.
- We recommend continued efforts on seeking no fee or discounted fee arrangements on private market investments that enter extension periods.
- We recommend DPFP staff document its internal process for fee reconciliation and payment in a formal procedure document or memo.

Governance

Most investment related decisions are accompanied by spirited debate between Trustees, Staff and Consultant. The IAC meetings are still in a development phase. All positions on the IAC were recently filled in 4Q19. Its roles and responsibilities are detailed in the IPS but its interplay with the broader Board of Trustees is still yet to be applied in practice. There is very little (to no) “rubber stamping.” Monthly meetings are required. DPFP’s meeting frequency is standard for public pension meetings. We have conducted surveys of large public pension plans and found that many are moving towards less frequent meetings but more in depth (lengthy) meetings.

Strengths:

- DPFP’s website and transparency are better than most similar-sized public pension plans.
- DPFP’s Staff is appropriately following the rebalancing protocol and does a great job of conveying all rebalance recommendations with appropriate supporting data and rationale.
- DPFP’s board members are more sophisticated and knowledgeable than most similar-sized public pension plans.
- The Board composition appears sufficiently diversified in terms of subject matter expertise.
- The meeting minutes (posted to the website) are sufficiently detailed to get a good sense of the discussion and decisions conducted at a meeting.
- They are also published in a reasonable amount of time following each meeting (typically within 30 days).

Recommendations:

- To the extent possible, we would like to see increased continuity of Trustees on the Board.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Manager Selection and Monitoring

Meketa has a process where it continuously monitors and reviews investment managers in the industry. From this work, Meketa creates a "bullpen" of high conviction products that have been thoroughly vetted through Meketa's multi-phase process. According to the IPS, each hiring recommendation will include information on Investment Manager's organization, key people, investment process, philosophy, past performance, future expectations, risks, proper time horizon for evaluation, comparative measures such as benchmarks and peer groups, role within the relevant asset class and expected costs. While no active managers have been hired during Meketa's tenure as DPFP's current consultant, the Consultant typically produces a "search document" that compares and contrasts eligible strategies on the basis of firm ownership/structure, investment teams, investment philosophies, processes/risk management, performance, fees, and strengths & weaknesses.

The Consultant produces a quarterly performance report that is shared with Staff, Board of Trustees, and IAC. DPFP Staff and investment consultant are primarily responsible for monitoring the performance of the investment managers and reporting to the Board of Trustees and IAC.

Strengths:

- The evaluation process for new investment manager hires is untested in its current form but appears adequate (as written on paper) and in-line with industry best practices.
- DPFP Staff is very knowledgeable and informed on the investment activities of its individual investments and investment managers
- Performance monitoring and benchmarking are in-line with industry best practices.
- Evaluation (and thoughtful discussion) by DPFP Staff on performance drivers and considerations for the need for any portfolio adjustments are measured, well thought out, and more complete than typical for similar-sized pension plans.

Recommendations:

- We recommend Staff continue to prepare deep-dive reviews into each asset class to cover the entire portfolio in each calendar year.
- We recommend DPFP formally documents the rationale for all hiring and firing decisions.

Full Investment Practices and Performance Evaluation

Dallas/Fort Worth Airport Board

An evaluation was provided to the PRB. Following feedback from the PRB Investment Committee, the Fund is working with their evaluator to make updates and has indicated a new report is expected to be provided in the near future.

El Paso Firemen & Policemen's Pension Fund

PRB Analysis of Evaluation

Plan Assets:[1]

Fire: $645,011,835
Police: $935,185,893

Evaluator: AndCo

Evaluator Disclosures:[2]

Relationship: Investment Consultant

Investment Discretion: None

The evaluation provides both a review of policy practices and clearly documents the sources used as comparative best practices, while also providing detailed explanations where appropriate, specifically the asset allocation and investment manager selection and monitoring practices that are critical to the success of the Fund.

The evaluator notes that the existing investment consultant makes recommendations for improvement proactively and are already incorporated in the existing practices, therefore only general recommendations for the System "to maintain its robust processes to both review the current investment portfolio while also seeking to identify new investments that can improve the System's long term expected risk and return while maintaining liquidity to meet its benefit obligations" are made in this evaluation.

The evaluation notes that System recently underwent a comprehensive asset allocation review beginning in 2019 when the current investment consultant was hired, resulting in "revisions to the Fund's investment policy statement, investment manager changes, and the addition of new asset classes. The changes implemented by the Fund have improved the risk/return profile of the Fund while also increasing portfolio diversification."

The evaluation identifies the benefits to conducting asset liability studies noting that "through a comprehensive discussion over the asset/liability study results clients can have a clearer understanding of practical plan investment expectations." The evaluator highlights the collaborative effort between the investment consultant, actuary and trustees when performing these studies stating "Asset/liability studies are the only standard analysis that evaluate several components of a Plan's key financial drivers including the Investment Policy, Contribution Policy and Benefit Policy."

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
While different IPS structures exist, AndCo, as an independent, professional investment consulting firm, has determined that the System's IPS, and the Board's compliance with the I PS, is appropriate and comparable with what AndCo considers best practice, industry standards, and comparable to the structure of an effective investment policy statement as laid out by the CFA Institute *(ELEMENTS OF AN INVESTMENT POLICY STA TEMENT FOR INSTITUTIONAL INVESTORS, Copyright 2010 by the CFA Institute).* **Strengths:** – Maintain its ongoing annual review of the IPS. We believe that a periodic review of the investment policy statement is a strong practice for the Fund and should be continued. – AndCo recommends that the Fund continue to track the changes to the investment policy and report them in a clear and transparent manner.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Asset Allocation

The Fund's process for determining asset allocation targets is executed and implemented through strategic asset allocation studies that contain a variety of potential asset allocation targets for the Board's consideration. AndCo works directly with the System's Actuary and Trustees to incorporate the System's specific liability circumstances and projections to review the potential impacts of varying investment asset allocation policies on the key actuarial and liability metrics. For public pension funds, asset/liability studies are a critical tool to examine how well alternative investment strategies (differing asset allocations) impact the key long-term actuarial circumstances, including funded status and contribution requirements. As public pension funds value their liabilities using a static discount rate that represents an expectation of the System's long-term investment return, this assumed rate of return, along with specific cash flow, and liquidity circumstances drives the formulation of an appropriate asset allocation policy.
 	
We believe a robust asset/liability study helps the consultant and Board review asset allocation mixes to determine those allocation strategies which could potentially best serve to protect or increase funding levels, while providing adequate liquidity for benefit payments and minimizing associated risks. AndCo believes that through a comprehensive discussion over the asset/liability study results clients can have a clearer understanding of practical plan investment expectations.
 	
The Fund's cash flow and liquidity needs are reviewed by the Board each quarter as part of the investment consultant's quarterly performance review. This review includes discussions regarding the current, expected, and known timing variances of future contributions to, and withdrawals from, the Fund. The traditional portfolio has adequate liquidity to meet current cash flow needs. The Fund's pacing models are also reviewed regularly by staff, the Investment Committee, the Board, and the investment consultant to ensure liquidity needs are appropriately addressed.
 	
Strengths:
– AndCo recommends that the Fund
    – Maintain its long-term asset allocation structure and tolerance ranges.
    – Continue the process of active review. Asset allocation studies and asset liability studies are being developed and reviewed every three to five years which is in line with what AndCo views as best practice in the industry and across its client base.
    – Continue regular asset allocation reviews with its investment consultant.
    – Maintain its policy of continuing education on new asset classes that could be beneficial to the investment portfolio
    – Continue to work with the Consultant to actively rebalance the portfolio to provide the required liquidity levels and maintain its long-term target allocations

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Fees
We reviewed the fees paid to administer the Fund's portfolio and the underlying investment manager fees. While high or low fees do not guarantee failure or success for an investment portfolio, AndCo, as an independent, professional investment consulting firm, has determined that the Fund's fees are appropriate and comparable with what AndCo considers best practice industry standards. No changes are recommended at this time.

Governance
The Fund's IPS contains clear definitions of the Board's responsibilities as well as the role of the Board's professional advisors and investment staff in assisting the Board in fulfilling its fiduciary duties to the Fund with respect to the investment of assets. Direct investment authority for the Fund's assets lies with the Board. As such, all decisions regarding the Fund's portfolio including return objectives, risk tolerance, investment guidelines, asset allocation targets and manager selection and retention reside with the Board. We reviewed the Fund's governance processes related to investment activities, investment decision-making, delegation of investment authority, and education. While different governance structures exist around investment decision-making, delegation of investment authority, and education, AndCo, as an independent, professional investment consulting firm, has determined that the Fund's processes are appropriate and comparable with what AndCo considers best practice, industry standards. **Strengths:** – AndCo recommends the Fund continue to follow the IPS, engage investment experts as appropriate, and continue to seek ongoing educational opportunities consistent with Texas Administrative Code, Chapter 607

Investment Manager Selection and Monitoring
The investment manager selection process for the Fund is conducted in collaboration with the Fund's investment consultant and Investment Committee. Whether a specific investment strategy review is directed by the Board, staff, or the strategy idea comes from the investment consultant's research group, all potential investment strategies must go through the consulting firm's due diligence process and subsequently be presented and approved by the investment consultant's Investment Policy Committee before being shown as potential strategies for the Board to consider for the Fund's portfolio. Candidates are vetted by the consultant's research group to identify the best and most appropriate managers for the System in each investable asset class.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Strengths:

- AndCo feels that the manager selection process in place at the Fund is robust and is in line with industry best practices. AndCo employs a similar search and selection across its national public fund client base.
- AndCo feels that the Fund is in line with the best practices laid out by the GFOA for selecting third party investment professionals for pension fund assets.
- All performance calculations supplied by the consultant to the Board meet the guidelines of the CFA institute
- AndCo recommends that the Fund maintain its investment process for investment manager search and selection which relies on its investment consultant, staff, and Board in selecting new investment managers for use within the Fund's investment portfolio.

Full Investment Practices and Performance Evaluation

Employees Retirement System of Texas

PRB Analysis of Evaluation

The evaluation covers the Employee Retirement System of Texas (ERS), the Judicial Retirement System of Texas Plan Two (JRS II) and the Law Enforcement & Custodial Officer Supplemental Retirement Plan (LECOSRF) (collectively referred to as "ERS" or "the System".) It includes detailed and useful explanations that help stakeholders understand how ERS operates as well as provide insight into effective best practices. This evaluation is an example of what a highly useful evaluation can look like.

The evaluation also provides a meaningful look into the potential impact of continued underfunding by reviewing both a cash flow analysis and an Asset Liability Management (ALM) study. The combination of these two forms of analysis led the evaluator to make a critical recommendation, **"The Plan and its stakeholders must find a sustainable way to address the overriding issue and biggest risk to the System becoming insolvent: a $1.2 billion annual cash flow shortfall."**

Plan Assets[1]

ERS: $27,351,224,157
JRS II: $456,192,249
LECOSRF: $943,662,645

Evaluator: NEPC

Evaluator Disclosures[2]

Relationship: Investment consultant

Investment Discretion: None

Additionally, the evaluation engaged a third-party expert to conduct a Trade Cost Analysis (TCA). While such an analysis is not necessary for most systems, it demonstrates the thoroughness of the evaluation conducted. The TCA, along with a review of its findings, helps to better understand the commissions paid by the System.

The evaluation also included a unique recommendation for staff to review the impact of the statutorily required RFP process for public equity investment managers. More specifically, the evaluator suggested reviewing if this formal RFP process has resulted in missed investment opportunities. However, it was noted that any potential changes to this process would likely require legislative approval.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The most recent version of the IPS was approved by the ERS Board on May 22nd, 2019. The IPS was heavily revised during calendar year 2018 to streamline the document, clarify accountability, and sharpen the focus on higher level policy, organizational structure and investment beliefs. The goal was to mold the IPS into a document that clarifies the strategic purpose and provides flexibility for tactical implementation. The ERS IPS is generally consistent with elements recommended by GFOA, the CFA Institute and the NEPC IPS template. One important difference between the ERS IPS and those of its peers is that ERS' performance objectives do not refer to achieving or exceeding the actuarial assumed rate of return in the stated performance objectives. The IPS rather states the Trust's performance objective "is to obtain overall investment returns over rolling five-year periods in excess of the adopted benchmark, and to achieve investment results commensurate to the amount of active risk (tracking error or other appropriate risk measurement metric) assumed."

[1] As of 8/31/2019
[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Strengths:

- The ERS IPS compares favorably with the investment policy statements examined from the peer group of similar investors. ERS' IPS is ahead of many of its peers in the thorough and detailed treatment of governance. In addition to clarity in definition of roles and responsibilities, the Plan's IPS also provides additional detail on processes such as proxy voting, scrutinized investments, and securities litigation.

Recommendations:

- ERS should pursue a comprehensive review of funding policy to help ensure the retirement security of Plan participants and beneficiaries. We do note that funding for the plan is outside of the direct control of ERS.
- Adding language that includes meeting or exceeding the Fund's actuarial assumed rate of return over the long term.
- The definition of an asset allocation study be more precise and that the timing of such studies be more flexible.
- Regarding the Plan's rebalancing process and policy, NEPC advises ERS to document the frequency of rebalancing, transaction cost considerations, and whether asset classes are to be rebalanced to mid-range or target. This documentation may either reside in the IPS or in the operating procedures for relevant asset classes.
- NEPC suggests to move the current Table 3 of Chapter IV (Asset Class Allocations and Ranges) into the IPS appendix.
- NEPC has several suggestions regarding items to be reported to the Board. The CFA Institute and GFOA do mandate monitoring and reporting procedures be outlined somewhere in the IPS.
  - The IPS should specify that performance reporting include net of investment management fee data. At least once every three years, NEPC recommends a trade cost analysis report to the Board that summarizes explicit commissions as well as implicit costs of trade execution.
  - NEPC also recommends a comprehensive annual report on liquidity risk. This goes beyond the current language on page 22 that states "Staff prudently and actively manages liquidity within the other asset classes and specifically reports back to the Board in the case of private market asset classes in quarterly asset class reporting".
- Additionally, as part of prevailing practice for this section, the evaluation suggests the Plan consider inclusion of a "Watch" list policy and process.

Investment Asset Allocation

ERS has developed a clear process that allows for routine setting, monitoring, and review of both the asset allocation of the portfolio and the assets and liabilities of ERS. This process is consistent with prevailing practice among peer public pension funds. The IPS states that the "single most important decision the Board makes is the long-term asset allocation decision. Staff is tasked with implementation though prudent and sound strategic decision."

As with most other public pension funds, ERS relies on its General Consultant to provide capital market forecasts for expected returns, volatilities and correlations among the asset classes. The asset class assumptions are formally prepared annually but may be revised during the year should significant shifts occur within the capital markets. The IPS outlines the asset classes that ERS can invest in, including the benchmarks for each asset class and the

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

role that each asset class plays in the Trust's portfolio. This makes it clear to the reader how to measure the performance of the asset classes according to the benchmarks and according to the role that the asset classes play in the portfolio.

Based on current expectations and assumptions, ERS is expected to remain solvent until the year 2075, after which the funding would revert to a pay as you go status.

Strengths:

- ERS has developed a detailed asset allocation and asset liability review process. The approach is robust and sufficiently detailed to maximize effectiveness.

Recommendations:

- As expected returns for capital market assumptions are trending downward, ERS and its stakeholders should devise a comprehensive plan to address the persistent contribution shortfall.
- The Plan and its stakeholders must find a sustainable way to address the overriding issue and biggest risk to the System becoming insolvent: a $1.2 billion annual cash flow shortfall.
- The purpose, functions, membership, and possible actions of [the Valuation Committee] should be formalized.
- Consider a central resource to manage liquidity risk. We suggest this process be managed by a collaboration of the Director of Fixed Income and the Risk Committee. The process should monitor liquidity risk in light of scenario stress tests and regular reports to the IAC and Board on at least an annual basis.
- We recommend … adding language for an informal review of capital market outlook on an annual basis to improve flexibility for ERS to respond on the margins to rapidly changing market environment.

Investment Fees

The direct and indirect fees and commissions paid by the System include fees that are paid by the System and fees that are netted against returns. The System pays management fees, performance/carried interest, and brokerage fees. Additionally, the System pays custodian fees, security lending agent fees, investment consultant fees, internal staff salaries and investment banking fees. Fees charged to the System are reported annually in the CAFR and should encompass all forms of manager compensation. According to the policies and procedures provided, fees are checked for reasonableness monthly for external advisors for public equity, and on a quarterly basis for private markets.

NEPC engaged a third-party expert, Elkins/McSherry (a unit of State Street Corp.) to produce an independent Trade Cost Analysis. ERS Internal Management compares favorably to the total cost of the universe[, which is a compilation of actual trade data from Elkins/McSherry customers]. Of note, when principal traded is significant in size the cost savings is high. Only three of eleven portfolios are more expensive versus the universe. Within these

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

portfolios the market impact costs are driving the performance while commissions are notably lower than the universe. Portfolio savings is being driven by lower commissions ranging from approximately 3 basis points (0.03%) to 8 basis points (0.08%) in savings.

Strengths:

- As compared to plans of similar size and investment programs the expenses are reasonable and represent a significant cost savings when considering asset size and prevailing investment management fees that external investment managers may charge. Given that ERS currently manages approximately 54% of assets internally (greater than $15 billion), we believe that significant savings are being accrued as compared to attainable investment management fee structures externally.

Recommendations:

- The management and monitoring of direct and indirect compensation paid to investment managers and other service providers should be more clearly defined in the IPS or other policies that state what should be presented to the Board on an at least annual basis.
- An annual review of investment fees should include a fee analysis based on peer group or industry averages for the relevant asset classes in aggregate as well as by investment strategy type. A strategy level fee analysis will allow for a deeper look into terms and scale- based savings of the investment program. We also recommend a fee analysis that incorporates performance outcomes. We recommend that the analysis include an evaluation of internal investment management cost versus similar external investment manager costs.
- Consider adding an evaluation metric for securities brokerage vendors based on execution skill. Execution skill should be measured using a appropriate benchmark for each broker that incorporating metric on trading efficiency and impact on performance.
- Consider disaggregating research and securities brokerage costs as it may be difficult to measure the value of research and ensure best execution.
- Consider memorializing through policy or guidelines the business model of securities brokerage, how performance is measured ensuring incorporation of broker quantitative analysis and performance outcomes.
- ERS should consider formalizing [the responsibility for monitoring and reporting fees to the Board of Trustees] as doing so may provide additional incentive for staff to negotiate better fees with their investment managers.
- The Fixed Income Program Guidelines should define broker/dealer relationships and the governance of those relationships.
- An additional aspect to consider is that given ERS' size, it has the potential to negotiate better rates than the "headline" rates charged to smaller (in AUM) investors. The difference between ERS' rates and headline rates can be considered fee savings and this should be tracked systematically. This is currently tracked by the private equity team and reported to the Board and IAC, however this can likely be done across the private markets and public markets asset classes.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Governance
ERS has established a governance structure that includes a Board of Trustees, which delegates authority to the Executive Director, Investment Advisory Committee, Asset Class Investment Committees, Investment Staff, Compliance Staff, and to external vendors hired by the Board including Investment Consultants, a Retirement Actuary, a Custodian, External Advisors and Emerging Managers. As stated in ERS' IPS, the ERS Board is responsible for formulating, adopting, and overseeing the investment policies of the Trust. Although the Board maintains oversight of the investment of Trust, the Board performs its fiduciary responsibility to invest the Trust through delegation of authority to the ERS Investment Staff for execution of the investment strategy according to this Policy. The Board views adherence to the Investment Policy and the Investment Compliance function as important components of the investment process and to achieving the overall objectives of the Trust. Staff are responsible for ensuring that investment activities comply with this Policy. **Strengths:** - The presence of an Investment Advisory Committee (IAC) is a governance component that NEPC believes is above the level of prevailing practice among U.S. public pension plans. The IAC assists the Board in carrying out its fiduciary duties about the investment of the Trust and related duties. - ERS does an excellent job of illustrating a roadmap of how decisions are made at ERS. **Recommendation:** - It may be useful for ERS Texas to explicitly define the role of the Chief Investment Officer in the Governance section of the IPS. Currently, the CIO is referenced in terms of supervisory authority over the Investment Staff.

Investment Manager Selection and Monitoring
ERS' IPS states that the Board is responsible for making long-term asset allocation decisions and that ERS Staff is tasked with implementation through prudent and sound strategic decisions. Staff is responsible for selecting investment managers with the Board providing an oversight role, supported by recommendations from Staff, independent external advisors that are appointed by the Board (Investment Advisory Committee) and consultants hired by the Board. The IPS describes the Board's investment philosophy. This guides the Board's asset allocation decisions as well as informs Staff as to the Board's priorities when making investment recommendations. These philosophy statements are taken into consideration in the asset class program guidelines and asset class standard operating procedure ("SOP") documents that were reviewed. The IPS states that Staff and the General Plan Investment Consultant will "monitor the performance of each investment strategy quarterly, while retaining a long-term focus." The IPS lists several factors that Staff should look out for as being possible triggers for recommending termination.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Performance is monitored on an ongoing basis at the asset class level and at the Trust level. It is reviewed through regularly scheduled meetings of Investment Staff, Investment Directors and the Risk Committee. It is reported to the Board monthly and quarterly through reporting and Board Meeting presentations. Gross and Net of fee performance is provided monthly in the monthly Investment Summary reports provided to the Board.

Recommendations:

- Reviewing the Investment Monitoring Processes in the SOP documents and formulating a standard that can apply to all asset classes should be considered.
- Reviewing whether the current RFP process for public equity investment managers has caused ERS to miss investment opportunities and to measure missed investment returns. This recommendation is tied to the observation in Section 1 that Procurement constraints may hamper ERS' operational flexibility.

Full Investment Practices and Performance Evaluation

Fort Worth Employees' Retirement Fund

PRB Analysis of Evaluation

Plan Assets:[1] $2,312,863,285

Evaluator: RVK

Evaluator Disclosures:[2]

Relationship: Investment consultant

Investment Discretion: None

The evaluation is well-balanced in its summarizing of information in easily understandable graphics, while also providing detailed explanations where appropriate, specifically, the helpful explanations of the asset allocation and investment manager selection processes. The evaluation models transparency by clearly identifying the internal documentation, third-party analyses and benchmarking sources used in the thorough review.

The evaluation provides helpful details from the Fund's September 2015 Asset Liability Study and recommends a new study, which the Fund plans to complete in 2021. The details and explanations provided are extremely useful in understanding the key factors influencing the Fund. One item of particular note is a caution against using an even more aggressive asset allocation to close the funding gap, as high expected return and high expected risk approaches bring with them increased risk of large declines in the value of the Plan."

There is also a thorough review of investment fees, which reveals that the Fund pays somewhat more than its peers. The evaluation identifies the use of alternative investments "designed to create a smoother return pattern … rather than a lack of effort to control fees" as the primary cause for the difference. It also notes, "FWERF has been successful in negotiating attractive fees with its public investment managers. The process for investment manager selection … has likely created significant efficiencies in this area."

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The FWERF's investment program is governed by the Investment Policy Statement, which serves as the overarching program document detailing the guidelines for overall management of Fund assets. The IPS clearly articulates the delegation of authority, expectations for each party involved, as well as applicable guidelines and performance benchmarks for the investment portfolio. The Board reviews this document at least annually, making updates based on recommendations from the Investment Consultant(s), Investment Staff, as well as feedback from the Investment Committee. The current IPS follows industry standards and is well articulated in its purpose, structure, and overall mission. We do believe there may be room for incremental improvement through the creation of an implementation policy, but would not classify this as a shortfall of the current structure. **Recommendation:** - RVK does recommend the Board consider developing an Investment Implementation Policy ("IIP") document as a complement to the IPS. The IIP is meant to expand on the IPS, providing more details on specifics relating to operational components of the Fund, contracting terms, individual mandates, etc., all of which are crucial to the success of the overall program.

[1] As of 9/30/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Asset Allocation
The efforts from the Board, Investment Committee, Investment Staff, and Investment Consultant are evident throughout the asset allocation process, with a particular focus on creating a blend of assets which attempts to best match the Fund's unique liability structure. The last asset/liability study was performed in 2014; since that time, contribution and benefit policies – as well as capital market expectations – have changed materially, warranting a new asset/liability study. Based on our understanding, the Board has agreed to begin this process later in 2020 to ensure the updated actuarial valuation is included in the analysis. **Recommendation:** - Consider Performing Updated Asset Liability Study. It is RVK's understanding the Board is planning to complete this study later in 2020, once an updated valuation has been performed by the Fund's actuary and approved by the Board.

Investment Fees
The reasonableness of fees can be demonstrated by the comparison to similar sized mandates in the public markets, plus the emphasis on performance-based fees in alternatives. While the overall level of fees may be higher than some public pension peers, that is due to the asset allocation decision made in attempt to create a smoother return pattern through the use of alternatives, rather than a lack of effort to control fees for each manager. We also note that the use of trade cost analysis providers has become less common in the public pension universe, meaning the FWERF is likely part of the majority in its choice not to undertake this effort consistently. However, should a more thorough analysis of commissions paid be required by future reports relating to Code 802.109, it is likely the FWERF should consider hiring a third party trade cost analysis vendor. **Strengths:** - FWERF's use of specialty consultants has likely led to better pricing power than would be otherwise possible.

Governance
Through our review of approved policies and charters, along with meeting materials and Board education, it is clear the FWERF's investment decision making process and governance structure is in line with other public pensions of similar size. We also understand the Board underwent a more detailed governance review with a third-party consultant, which may result in material changes to a variety of processes, policies, and responsibilities. For the purpose of this report, we focused on the current structure, noting our belief that it is well documented and articulated, with clear delegation and reporting lines.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Strengths:

- The Investment Policy is quite specific – more than some public funds in our experience – in setting for both general and quantitative objectives for fund performance.
- The Board's processes and requirements for monitoring both fund performance and that of all entities involved in investment decision-making is thorough.
- The Board's policy is unusually clear in the delineation of investments that are either prohibited (e.g., crypto-currencies) or limited (derivatives). This level of clarity provides both guidance to investment managers and protection to the Fund.

Investment Manager Selection and Monitoring
The FWERF's investment manager selection and monitoring process varies depending on the asset class in question, but is well defined for each. The IPS outlines expectations and guidelines for both public and private asset classes, but allows for ample flexibility in sourcing and monitoring managers. The ongoing due diligence process of the Investment Staff is notable, further strengthened by the use of outside Investment Consultants, some of which are tasked with a single asset class. We do note that other forms of investment manager selection processes are available and worth consideration, specifically the idea of a "premier list" or manager "bench," but believe those could be long-term changes to governance structure and would require additional education to the Board before adoption.

Recommendations:

- Consider the addition of details surrounding a formal review process for managers. The current practice has been in place and functioning well for many years, but could be documented either in the IPS or a new "implementation policy" as previously recommended.
- Consider the separation of reporting requirements by asset class, rather than by consultant. Different asset classes require different forms of reporting and level of detail. The current language indirectly implies that asset classes will line up directly with General and Specialized Consultants, which may not always be the case.
- Revisit Watch List language for alternative asset classes. Many alternatives – namely anything with a capital call structure – should have a different form of performance measurement, which would also require unique language for inclusion or removal from the Watch List.

Full Investment Practices and Performance Evaluation

Galveston Firefighter's Relief & Retirement Fund

PRB Analysis of Evaluation

Plan Assets:[1] $57,497,906

Evaluator: Roland Criss

Evaluator Disclosures:[2]

Relationship: Independent 3rd Party

Investment Discretion: None

The evaluation clearly details the evaluation process as well as documents the sources used to determine what "constitutes generally accepted principles, standards, and best practices of fiduciary conduct as regards managing investment matters in a public setting." The findings are concise and recommendations for improvements easily understandable, with additional details provided as part of the appendix. It should be noted that the evaluation was completed by a 3rd-party firm, which allowed for an enhanced independent review of the investment practices, including the investment consultant's role.

The evaluation is unique in its reliance on the Uniform Management of Public Employee Retirement Systems Act ("UMPERS") as the basis for its evaluation. It notes that UMPERS "modernizes, clarifies, and standardizes the rules governing the investment and management of public retirement Systems' assets. It provides legal mandates that permit public employee retirement Systems to invest their funds in the most productive and secure manner. Public retirement Systems become trusts operated under rules of prudent investment subject to a fiduciary standard of care."

In general, the evaluation concludes the systems practices are largely in-line with best practices but identifies several areas for improvement as well as the urgency with which the improvements should be addressed. The System notified the PRB that all recommended changes/areas of improvement have been enacted during or subsequent to the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The prudent investment expert standard requires retirement Plan fiduciaries to make choices from a broad range of investment options in order to effectively diversify their Plan's assets accounts. Policy guidelines, therefore, are essential and must be adhered to by the fund managers and advisors to whom implementation of policy is delegated. During our work we examined the Plan's investment policy against fourteen internal control steps presented by the Evaluation methodology. One opportunity for improvement ("OFI") emerged that includes four steps. Step 1.2 Roles and responsibilities of those involved in governance, investing, consulting, monitoring and custody are clearly outlined. Step 1.3 The IPS is carefully designed to meet the real needs and objectives of the retirement Plan. It is integrated with any existing funding or benefit policies. Step 1.5 The structure of the IPS adheres to industry best practices. Step 1.8 The IPS contains measurable outcomes for managers and includes the time periods in which performance is to be considered.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Recommendation:

The IPS should be updated to add roles and responsibilities of all parties involved in oversight of Plan investments, investment fee monitoring process, along with fund selection and monitoring criteria.

Investment Asset Allocation
In order to provide a clear picture of the Plan's alignment with asset allocation best practices, we tested the Plan's approach against twenty-five activities. Those activities are grouped within five components of the asset allocation discipline and include the following: *Determine Target Allocations; Expected Risk and Expected Rate of Return; Selection & Valuation Methodologies of Alternative and Illiquid Assets; and Future Cash Flow and Liquidity Needs.* We concluded that no OFI's exist that if addressed would significantly enhance the process used to manage the Plan's investment asset allocation activities. The board should continue to monitor the assets on a quarterly basis.

Investment Fees
While investment fees are reviewed quarterly by the Plan's investment consultant against the Plan's peers, there is no defined method for determining if the Plan's investment related fees are reasonable. The Board also receives financial statements each meeting, which include all other plan-related fees, such as administrative, actuarial, and financial audit. SB322 includes fee benchmarking language, however, there is currently no available fee benchmark for Texas-based public pension funds. Considering the frequency of the Board's meetings and the substance of its reviews of service agreements and fees, it is our opinion that the Board is fulfilling its duty to monitor and control plan expenses. We concluded that five [of eleven] steps exist in the approach the Plan uses for monitoring and controlling investment related fees. **Recommendation:** - We recommend that the Board document the results of its provider service and fee review at least annually. Additionally, the results of the review should provide a determination that the fees are reasonable. - The IPS should be updated to add roles and responsibilities of all parties involved in … investment fee monitoring process.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Governance
Prior to the Evaluation, the Board did not possess an internal controls checklist from which to validate its practices with its policies. Subsequently, the Plan Administrator developed an internal controls checklist based on the Plan's current operations. **Recommendation:** - We recommend that the Board adopt the internal controls checklist and annually assess the Plan's operations.

Investment Manager Selection and Monitoring
Due diligence is the heart and soul of investment manager selection. A good due diligence process objectively whittles down the universe of available managers to just those who meet high standards for inclusion in a retirement Plan's portfolio. The objectives of investment manager due diligence are first examined using quantitative data to evaluate funds against set benchmarks and in relation to peers. In addition to quantitative analysis, fiduciaries should consider applying qualitative factors, which can help detect organizational instability. Any organizational instability, over time, usually leads to a manager's underperformance. We identified one step (individuals responsible for selecting investment managers are identified in the IPS) [that needed improvement] in the Plan's process for selecting Investment Managers. **Recommendation:** - The IPS should be updated to add roles and responsibilities of all parties involved … with fund selection and monitoring criteria.

Full Investment Practices and Performance Evaluation

Harlingen Firemen's Relief & Retirement Fund

An evaluation was provided to the PRB. Following feedback from the PRB Investment Committee, the Fund is working with their evaluator to make updates and has indicated a new report is expected to be provided in the near future.

Harris County Hospital District Pension Plan

An evaluation was provided to the PRB. Following feedback from the PRB Investment Committee, the Fund is working with their evaluator to make updates and has indicated a new report is expected to be provided in the near future.

Houston Municipal Employees Pension System

An evaluation was provided to the PRB. Following feedback from the PRB Investment Committee, the Fund is working with their evaluator to make updates and has indicated a new report is expected to be provided in the near future.

Irving Firemen’s Relief and Retirement Fund

PRB Analysis of Evaluation

Plan Assets:[1] $195,301,301
Evaluator: Meketa
Evaluator Disclosures:[2]
Relationship: Investment consultant
Investment Discretion: None

The evaluation offers a balanced approach, summarizing key aspects of the Fund while also going into more detail where appropriate. Each section contains summarized analysis that describes what the Fund is doing well and supports recommendations made in the evaluation.

The evaluation included a detailed timeline of the most recent allocation review and adoption process, which was very helpful. It also noted that Irving Fire has been increasing passive investments based on investment consultant recommendations and provides details showing the changes in passive allocation. This contributed to fee savings, which are detailed in the investment fee section. The evaluator recommended formalizing the fee monitoring processes.

Irving Fire has also faced cash flow issues as a result of its DROP program; the evaluator recommended, and the System has made, changes to the program to better align it with the Plan's long-term financial needs.

The System notified the PRB the recommended switch away from the City's website to the System's website has been completed.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement

The IPS covers Fund level items but also manager guidelines (e.g. concentration limitations, sector constraints, etc). The most recent review occurred in February 2020. The Consultant presented a red-lined version to the Board for review and discussion. The Board approved the recommended changes at the next Board meeting in March 2020.

Strengths:

- The IPS is well thought-out and in line with industry standards.
- It is consistent with guidance from the CFA Institute.
- Roles and responsibilities of all key parties involved are clearly outlined (Board of Trustees, Staff, Investment Consultant, Investment Managers, Custodian Bank).
- The document is written in "plain-English" and easy for a layperson to understand.
- There is no evidence of any known compliance violations with the IPS at this time.
- It is our opinion that the Board of Trustees and Staff will be able to stay committed to the guidance detailed in the IPS during a stressed or prolonged market scenario.
- Overall: The existing Investment Policy Statement appears appropriate, adequate, and effective in our opinion.

[1] As of 12/31/2018

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Recommendation:

- In the most recent annual review, the Consultant and Board streamlined and simplified the IPS in many sections. The Consultant would like to see continued simplification, as the document is intended to be high-level and not overly prescriptive.

Investment Asset Allocation

The most recent significant asset allocation review was conducted over most of 2019. The [asset allocation review] included a DROP analysis with a number of assumptions and modeled scenarios to assist the Trustees in re-designing the DROP program. The analysis showed that a decrease in the DROP rate, or conversion to a variable rate structure tied to the performance of the overall Fund, would likely be beneficial to the stability of the Fund. The Consultant (and the majority of investment research) advocates the importance of a long term strategic asset allocation approach. According to the Actuary: "accumulated DROP balances are a significant portion of the Fund assets. Due to the nature of the DROP provisions, it is extremely difficult to estimate the total benefit payments in any given year."

Irving Fire has been actively increasing its use of passive exposure based on the recommendation of the Consultant. Exposure to alternate investments has decreased and we expect that trend to continue based on the new asset allocation policy target.

Over the course of the past year, Foster and Foster [Actuary] has prepared a number of special projection actuarial analysis to identify plan design changes.

Strengths:

- In our opinion, the approach Irving Fire takes to formulate asset allocation is sound, consistent with best practices, and will lead to a well-diversified portfolio. At the time of this report production, Irving Fire was still in a transition phase as it rebalanced to the new target asset allocation in accordance with the rebalance plan created by its Consultant.
- Given the size of the Fund, the negative net cash outflows for benefit payments and DROP payments, and the uncertainty surrounding plan design changes, we are pleased the Board has adopted a more conservative asset allocation policy with significantly less illiquid alternative investments.
- Irving Fire's approach to passive management is consistent with industry best practices (e.g. passive is used in efficient asset classes).
- We are pleased with the Board's decision to reduce the actuarial assumed rate of return over the past few years. The current rate is in line with industry medians.

Recommendations:

- We recommend the Board continues to follow its rebalance plan to the new asset allocation policy.
- We recommend the Board and Staff closely monitor contribution levels, DROP withdrawals and expected net out flows.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

- We recommend Irving Fire consider adjusting actuarial valuation assumptions as necessary based on the outcomes and advice of the actuary. The Fund will likely need to increase contributions, cut benefits, change the DROP program, or all of the above.
- We recommend the Fund conducts an Actuarial Valuation Report every year (rather than every two years).
- We recommend making changes to the DROP program to better align it with the long-term solvency of the Fund. Options to consider include (non-exhaustive list): reduce the DROP crediting rate, adopt a variable rate that is tied to the returns of the Fund, place limitations on the amount of DROP assets that can be redeemed from the Fund in any given month.

Investment Fees

The overall process is not documented in any written formal policy.

In October 2019, the Consultant prepared a portfolio Transition Plan with recommendations to eliminate many high fee strategies and increase the use of low cost passive index funds. The Consultant predicts the total Fund level investment fees (inclusive of investment management fees, custodian fees and consultant fees) for Irving Fire will decrease from 0.98% effective fee to 0.61% effective fee once the transition is complete.

The private markets related fees are expensive but not surprising, nor outside the norm for fund of funds. The use of fund of funds adds a double layer of cost to Irving Fire. Based on our analysis, we estimate Irving Fire paid a blended average fee of approximately 0.78% of Fund assets in calendar year 2019 to investment managers. This is above the industry average of 0.60% (according to recent NCPERS survey conducted).

Strengths:

- Irving Fire's increased use of passive index funds will help reduce overall costs for the Fund.
- The commissions paid appear reasonable and in-line with industry norms.
- When hired in June 2019, the Consultant and the Board made a conscious effort to reduce investment management fees going forward.

Recommendations:

- We recommend Irving Fire continues to increase its passive exposure in efficient market classes.
- We recommend that Staff, the Board, and the Consultant all remain diligent in monitoring fees.
- We recommend Irving Fire staff document its internal process for fee reconciliation and payment in a formal policy document.
- We recommend Fund counsel reviews all legal contracts when the Fund hires a new vendor or investment strategy.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Governance

Irving Fire's board meeting frequency is standard for public pension meetings. We have conducted surveys of large public pension plans and found that many are moving towards less frequent meetings but more in depth (lengthy) meetings. The number of items on each Agenda is frequently longer than we see from other public pension clients.

The information on the City website is very out of date. The list of Trustees is not accurate and there are reports dating back to 2015 that are inferred to be current or up-to-date.The Irving Firemen's Relief & Retirement Fund is currently (April 2020) in the process of building its own website. Historically, and currently, the Fund has a web page on the City of Irving website.

Strengths:

– Irving Fire's board members appear to work well together. The size of the board is average (to small) relative to other pension plans. Generally we have observed better decision making, and less infighting, with small boards.

Recommendations:

– Recommend switching to the new website soon or updating the out of date City website.
– Recommend posting all policies on the website.

Investment Manager Selection and Monitoring

[The] Board of Trustees, with the advice and recommendation of the Consultant[, selects the investment managers]. A number of minimum criteria is listed in the IPS for consideration when the Board is considering hiring an investment manager. The criteria is rules based in nature (e.g. must be registered investment advisor, must be registered to do business in Texas, must provide ADV, etc.). Broadly, Meketa has a process where it continuously monitors and reviews investment managers in the industry. From this work, Meketa creates a "bullpen" of high conviction products that have been thoroughly vetted through Meketa's multi-phase process.

Meketa has a process where it continuously monitors and reviews investment managers in the industry. From this work, Meketa creates a "bullpen" of high conviction products that have been thoroughly vetted through Meketa's multi-phase process. The Consultant produces a quarterly performance report that is shared with Staff and the Board of Trustees. The Consultant is primarily responsible for monitoring the performance of the investment managers and reporting to the Board.

Strengths:

– Performance monitoring and benchmarking is in-line with industry best practices.

Recommendation:

– We recommend Irving Fire formally documents the rationale for all hiring and firing decisions.

Full Investment Practices and Performance Evaluation

Irving Supplemental Benefit Plan

An evaluation was provided to the PRB. Following feedback from the PRB Investment Committee, the Fund is working with their evaluator to make updates and has indicated a new report is expected to be provided in the near future.

Killen Firemen’s Relief and Retirement Fund

An evaluation was provided to the PRB. Following feedback from the PRB Investment Committee, the Fund is working with their evaluator to make updates and has indicated a new report is expected to be provided in the near future.

Laredo Firefighters Retirement System

PRB Analysis of Evaluation

Plan Assets:[1] $158,998,242

Evaluator: FEG Investment Advisors (FEG)

Evaluator Disclosures:[2]

Relationship: Investment consultant

Investment Discretion: None

The evaluation provides a thorough background of the System and its current practices, which support the document's recommendations. The evaluation provides helpful summary findings for each section and detailed explanations where appropriate, including the source of what is used to define industry practice.

The evaluation identifies the System has hired the Center for Fiduciary Excellence to review the System's IPS and is working towards obtaining CEFEX certification.

The evaluation's analysis of the determination of its asset allocation as well as the System's ability to achieve its assumed rate of return is particularly noteworthy. The evaluator states that "only portfolios with expected returns greater than the assumed rate-of-return are considered by the Board for further evaluation." The evaluation further indicates that "forward looking asset class returns have not been great enough to create a portfolio with a prudent level of risk" and given FEG's 2020 capital market assumptions "there is not an asset allocation that can meet the System's 7.5% assumed rate-of-return without taking outsized positions in risky asset classes."

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
FEG Investment Advisors undertook a thorough evaluation of the System's Investment Policy Statement (IPS) and affirms the System is in compliance with the policies defined within the document. Additionally, the System hires the Center for Fiduciary Excellence (CEFEX) to review the System's IPS. **Overview of Findings:** – Investment return objectives are not being met, but it is not because of a poorly written IPS or the failure to adhere to the policies. – The IPS establishes formal yet flexible investment guidelines and investment structure for managing the System's assets; structure includes various asset classes, investment management styles, asset allocation, and acceptable ranges expected to produce an appropriate level of overall diversification and total investment return over the investment time horizon, in order to incorporate prudent risk parameters, appropriate asset guidelines and realistic return goals. – The IPS provides a framework for regular constructive communication between the Board, the Staff, and the System's providers of investment services. **Strengths:** – While the System's IPS has not yet received CEFEX certification, it is the intention of the Board to do so. – The IPS is written clearly and explicitly and we believe anyone could manage the portfolio and conform to the desired intentions.

[1] As of 9/30/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

- The statement establishes formal criteria to select, monitor, evaluate, and compare the performance results achieved by each investment manager on a regular basis.

Recommendations:

- Better integrate the IPS with funding and benefit policies. The IPS is written as a stand-alone document with little consideration for the Plan's funding ratio and liquidity needs. There is no reference to the nature of the System's liabilities.
- While the IPS creates a framework for reviewing investment managers who underperform benchmarks, there is little evidence the System is following the framework. It is recommended the System dedicate a portion of a Trustee meeting each quarter to formally review underperforming investment managers and take actions as defined in the IPS.

Investment Asset Allocation

The System's Investment Policy Statement defines the process for determining and evaluating its asset allocation. While it is the Board that ultimately establishes asset allocation ranges and investment guidelines, the investment consultant is tasked with making recommendations as to the appropriate target portfolio weightings among the various major asset classes (e.g., stocks, bonds, and cash) within the System. The System's strategic asset allocation is reviewed annually, although it does not change every year.

Overview of Findings:

- The System's IPS does not clearly define risk at the total portfolio level. The portfolio is to be diversified to "minimize the risk of large losses". As a part of the asset allocation process, the investment consultant is to "incorporate prudent risk parameters", but no specific risk criteria are established.
- There is no evidence the investment consultant and actuary communicate regarding their respective future asset class expectations. However, the current assumed rate-of-return, is integral to the strategic asset allocation process. The current assumed rate-of-return is used as the starting point in development of the strategic asset allocation. Theoretically, only portfolios with expected returns greater than the assumed rate-of-return are considered by the Board for further evaluation.
- In recent years, forward looking asset class returns have not been great enough to create a portfolio with a prudent level of risk.
- The System does not implement a tactical asset allocation.
- The System's asset allocation is similar to the average TLFFRA member but does have a slightly smaller allocation to fixed income and a slightly larger allocation to real assets.
- Given FEG's 2020 capital market assumptions, there is not an asset allocation that can meet the System's 7.5% assumed rate-of-return without taking outsized positions in risky asset classes such as emerging markets equity, energy infrastructure, or various private capital strategies.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

While these asset classes are a part of the System's asset allocation, they are not significant enough to raise the overall expected return greater than 7.5%.

Recommendations:

- The System should clearly define a risk tolerance and better use risk parameters in developing its asset allocation. The current asset allocation was chosen because it had a high probability of meeting the System's assumed rate-of-return.
- The System should use risk metrics beyond standard deviation in assessing the overall risk of the asset allocation.

Investment Fees

The Laredo Firefighters Retirement System places great emphasis on monitoring investment fees. However, the System recognizes its mission is to provide benefits to its members and their beneficiaries, requiring a 7.5% required rate-of-return, net of fees. In seeking this return, the System has chosen to invest in many actively managed investment portfolios, some of which can have above average investment fees. The System's Board has historically chosen investments based on the highest expected net-of-fees return, not the lowest fee. The IPS outlines both the Board's and the Investment Consultants role in monitoring fees and what is required to be reviewed and reported.

Recommendation:

- Ensure investment returns are clearly stated gross or net of fees. The current investment performance evaluation report has a blend of both gross and net of fees returns.

Governance

The System has a number of governance policies separate from policies embedded within the Investment Policy Statement. These policies cover long term Board goals, elections, funding, gifts, attendance, travel and expense reimbursement. Additional policies cover non-endorsements, non-participation in entities employed the System, and a separate code of ethics. Collectively, these documents, along with adherence to Texas Pension Review Board and Texas Local Fire Fighters Retirement Act requirements and guidance, create a strong governance structure. The System is transparent in all activities. Board meetings are open to public and the public is invited to make comments at each meeting.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Strengths:

- The IPS clearly defines portfolio measurement, including appropriate benchmarks and procedures for investments failing to meet IPS defined performance goals.

Recommendation:

- In addition to the PRB MET Program, new Trustees should meet with the investment consultant in their first year of service for investment training. This training can be basic or more advanced depending on the investment expertise of the Trustee. The consultant can also educate the Trustee on the current portfolio, its expected return and risk, how it was constructed, and any manager specific issues.

Investment Manager Selection and Monitoring

Investment managers are selected by the Board of Trustees, with guidance from the investment consultant. To reduce conflicts of interest between the investment consultant and investment managers, the Investment Policy Statement clearly defines a manager selection criterion. This includes an eleven-step screening process to eliminate from consideration managers who are not "institutional" in quality (i.e. lack of track record, experience of managers, assets under management, and various performance metrics).

Performance measurement is driven by the investment consultant. Following industry return calculation guidelines, the investment consultant calculates the returns of all investment managers, asset class composites, and the overall investment portfolio on a monthly basis. Working with the Board, and defined in the IPS, each manager, asset class, and the overall portfolio are compared to appropriate benchmark indexes. The investment results are published and presented to the Board quarterly.

Recommendation:

- Refine the manager selection criteria so that it places less emphasis on past performance. The current criteria would like prefer managers "at the top of the game" versus those who have recently underperformed. Manager performance is often not consistent period to period and the System should seek to avoid hiring last year's winners.

Full Investment Practices and Performance Evaluation

Longview Firemen’s Relief & Retirement Fund

PRB Analysis of Evaluation

The evaluation answers the questions provided in the PRB's informal *Guidance for Investment Practices and Performance Evaluation*, providing detailed descriptions in several areas. However, it does not offer any recommendations for improvement and is unclear as to why the evaluator determined the lack of need for any recommendations.

Plan Assets:[1] $45,779,786

Evaluator: Robert Harrell, Inc

Evaluator Disclosures:[2]

Relationship: Investment consultant

Investment Discretion: None

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The current IPS does not take into account liabilities or liquidity needs. There is no language regarding re balancing or criteria for hiring/firing an external manager. There is evidence that the system has been adhering to the asset allocation in the IPS, though there is not manager termination language in the IPS. The system practices semi-annual re balancing and terminating managers when their trailing three-year risk adjusted peer group ranking falls below the 75th percentile, which is not a written investment policy and procedure. The IPS is reviewed annually in the first quarter. The most recent substantial change was January 1, 2018 which updated the assumed rate of return and inflation after the latest actuarial study.

Investment Asset Allocation
The Board reviews the asset allocation study annually in the first quarter meeting. Monte Carlo simulations are used to determine and evaluate the strategic asset allocation. The actuarial expected rates of return are a major factor in determining the asset allocation. The asset allocation is based on sound modern portfolio theory, which is prudent and consistently applied. The system uses trailing returns to October of 2008 to give them a better idea of how a given asset will behave over an entire economic cycle. They do not attempt to predict the future with capital market "assumptions". Every year there is an actuarial study which includes asset growth projections with the growth in the projected liabilities given cash flow projections, DROPS, etc. The only system-specific issues incorporated in the asset allocation are the liquidity needs of the system and the funded ratio. The actuarial study has a much larger impact on the asset allocation. **Strengths:** - The approach used by the system to formulate asset allocation strategies is sound and consistent with best practices. - The portfolio is stress-tested annually to get a sense of the potential worst-case scenarios (2 standard deviations from the LT mean).

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Fees
The system's policies do not specifically describe how compensation to managers is monitored, though there are never any indirect fees paid to an investment manager or consultant. It is the responsibility of the consultant to present all fees to the Board on an annual basis. Manager fees are all within one standard deviation from the average. The Board keeps a very sharp eye on fees, but they are not specifically addressed in the IPS.

Governance
[The System is subject to] Texas Local Fire Fighters Retirement Act (6243E of Vernon's Civil Statues). The board meets monthly. The primary topics of discussion are the minutes from previous meetings, finances, benefit payments, expenses, etc. There is no set time for discussion. Action items are detailed to the extent of the motion made.

Investment Manager Selection and Monitoring
Portfolio performance is monitored monthly by the administrator and through quarterly reports provided by the Consultant. The consultant brings the [investment manager] recommendations to the Board. The Board is responsible for selecting investment managers. A group of managers is first identified by their respective beta exposures. The risk-adjusted Alpha is calculated for the group, and they are ranked. Other parameters are used to eliminate certain candidates, and a short list is compiled. For those managers deemed suitable for further examination, a questionnaire is submitted to the managers. Their quantifiable characteristics are debated or confirmed with the managers. Many qualitative factors also go into an evaluation of an investment management organization. From a historical performance perspective, the returns furnished by the manager are scrutinized by RHI's analysts before any reports are generated. As important as how a manger is hired, many trustees want to know under what conditions a manger is terminated. In short, we begin to seriously consider terminating a manager when his/her alpha production on a relative basis has fallen below the 75th percentile rank (1st being the highest alpha rank) over the trailing three-year period. We are not suggesting that a plan wait three years to terminate a manager, only that the magnitude of the recent under performance is best measured at the trailing three-year mark.

Full Investment Practices and Performance Evaluation

Lubbock Fire Pension Fund

PRB Analysis of Evaluation

The evaluation describes the Fund's existing policies and procedures, and reports key data on the Fund's asset allocation analysis and investment fees. While the evaluation provides details regarding some of the existing plan practices and summarizes what the evaluator considers key elements for an IPS, it does not offer any recommendations for improvement and is unclear as to why the evaluator determined the lack of need for any recommendations.

The evaluation concludes that "the Board has the necessary policies and procedures in place to implement the investment program for the Pension Plan."

Plan Assets:[1] $211,548,454

Evaluator: J.H. Ellwood & Associates, Inc.

Evaluator Disclosures:[2]

Relationship: Investment consultant

Investment Discretion: None

The evaluation also specificaly states the System "does not commission asset/liability studies."

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The Board utilizes a two document approach for investment governance. The Investment Policy Statement ("IPS") addresses the overall policies, procedures, responsibilities and monitoring for the Plan's investments and is long-term in nature. The Investment Strategy Document ("ISD") specifies current goals and implementation of the longer-term IPS. Both the IPS and ISD are reviewed annually. Fewer changes are expected in the long term IPS while the ISD tends to evolve to reflect current Board thinking. The IPS and ISD were evaluated relative to best industry practices. The asset allocation strategy is broadly defined in the IPS which discusses the desire to reflect, and be consistent with, the long-term Investment Objectives. The IPS asset class ranges are broad and reflect the long-term investment goals, the risk tolerances of the Board, the liquidity needs of the Plan and any legal or regulatory constraints on the investment program. By design the ISD includes more specific asset allocation targets and tighter constraints. Both are reviewed annually as part of the Board's governance calendar through an asset allocation analysis performed by the Plan's consultant. The ISD also includes the specific liquidity amounts as determined by the Plan Administrator, given the Plan has experienced net cash outflows for several years.

Investment Asset Allocation
The asset allocation targets for the Plan's investment program are guided by the target rate of return, the risk tolerance of the Board, and the liquidity and regulatory constraints on the investments. The Plan's investment consultant assists by providing an annual asset allocation analysis. The analysis is based on mean-variance optimization and includes all asset classes available to the Plan and also includes appropriate limits on high volatility and/or illiquid investments. The Plan's illiquid private equity, private credit and most of the private real estate are held within commingled funds. The investment

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

managers for each of the private commingled investments determine the valuation methodologies. Each fund is audited by an independent auditing firm annually. The current liquidity target in the ISD is $2 million. A minimum and maximum amount of liquid assets are set with procedures in place for adding or subtracting from liquid holdings.

The Board does not commission asset/liability studies.

Investment Fees
Ellwood reviewed the fees of each investment firm and product in the Plan's investment program. The only separately managed account is with a fixed income manager so the plan pays no direct commissions.

Governance
The IPS lists governance duties, along with other duties, for the Board, Staff, Investment Consultant, and other related parties. The Board does not delegate investment authority. The Board follows an annual governance calendar. Formal investment evaluations are presented each calendar quarter with updates reviewed on off quarter months. Each spring, the consultant provides an asset allocation analysis to determine if the asset allocation is expected to meet LFPF's targets or whether the allocation and/or targets may need adjustment. The Board members are active in both TEXPERS and TLFFRA which provide educational and informational seminars each year. Non-firefighter Board members have been selected based on their relevant knowledge which can be investment, legal or pension related. All but one Board member are long-time fiduciaries of the Plan.

Investment Manager Selection and Monitoring
The Board has retained the services of an investment consultant to assist in investment implementation and monitoring. The selected investment consultant is independent from any investment manager, broker/dealer, custodian or any other source of conflicts. The investment consultant assists the Board in the development of the investment structure based on the targeted asset allocation selected. Once the Board has made an educated decision on structure, the investment consultant identifies candidate firms/products to utilize. The Board does not use a rigid "scoring method" to evaluate investment managers. These methods tend to place higher importance on factors that can be easily quantified. Board members objectively evaluate both the quantitative factors and qualitative factors with equal rigor when evaluating investment managers.

Full Investment Practices and Performance Evaluation

McAllen Firemen’s Relief & Retirement Fund

PRB Analysis of Evaluation

The evaluation provides brief explanations outlining the System's processes and supporting arguments for the conclusions drawn, with detailed explanations of several topics related to managing the System's assets. The explanation provides insight into the System's practices as well as outlining the considerations and philosophies that guide the investment consultant.

The evaluation concludes, "McAllen's investment processes, governance, investment actions, and investment procedures are reasonable and aligned with industry best practices in comparison to other public pension plans."

Plan Assets:[1] $53,972,127

Evaluator: CBIZ Investment Advisory Services

Evaluator Disclosures:[2]

Relationship: Investment consultant

Investment Discretion: None

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
McAllen does have an IPS that has been constructed to suit the requirements and objectives of the Plan. It includes the necessary processes and procedures needed in order to address investment related issues. It is written in a plain and straightforward manner so that each affiliated party's responsibilities are easily understood and the administration, requirements, and objectives of the Plan can be more efficiently achieved. It has been the standard practice of the Board and the investment consultant to review the IPS every two to three years to ensure its ongoing efficacy. Although the IPS is referred to regularly for questions pertaining to the oversight and management of the Plan, it was observed that the last formal review of the IPS took place during 2017. The IPS was last amended and restated as of August 25, 2017. **Recommendations:** - It is CBIZ's recommendation to review the IPS formally on a more consistent basis. CBIZ recommends reviewing the IPS biennially, going forward.

Investment Asset Allocation
CBIZ RPS is responsible for and performs analysis of the Plan's strategic asset allocation on a continual basis. This is accomplished through the preparation and review of monthly and quarterly performance reporting. In general, the Plan's assets remain allocated according to the approved ranges and targets. However, when opportunities are created within the markets, for example, an extreme widening of credit spreads in high yield fixed income, the investment consultant advises the Board of the market conditions and presents options for how to tactically adjust the asset allocation of the Plan in order to take advantage of the opportunity. Historically, the Board has been both nimble and judicious in its approach to taking these actions. Over time, it has resulted in good performance for the Plan. Since the inception of the relationship with the investment consultant), the Plan has exceeded its actuarial assumed rate of return of 7.5%.

[1] As of 9/30/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Specifically pertaining to formal asset allocation studies, CBIZ RPS, as the investment consultant, has the responsibility for preparing and presenting them. Although the Plan has achieved returns in excess of its actuarial assumed rate of return, it was observed that the last formal asset allocation study was performed more than five years ago.

Recommendations:

- It is CBIZ RPS recommendation to prepare formal asset allocation studies for presentation to the Board on an interval of three to five years, or if substantial changes to the Plan or actuarial changes occur.

Investment Fees

The CBIZ RPS investment consultant for McAllen negotiates fees for traditional, long-only separate account strategies and alternatives managers. The goal is to reduce the fees paid by the Plan by as much as possible. Additionally, when recommending a mutual fund, the consultant recommends the share class with the lowest expense ratio available, at the time of investment. At times, because of CBIZ RPS' relationships with investment managers, it is able to get minimum investment amounts waived so that McAllen can invest in a share class with a lower expense ratio. Because of the overall size of CBIZ RPS' assets under advisement, oftentimes when allocating to different managers/strategies, the team is able to negotiate and secure lower fees and better terms for its clients than the standard, published fee schedules and terms. McAllen has benefitted from this in the past. The consultant monitors fees on an ongoing basis via quarterly reporting.

Within the quarterly report, an Expense Summary page is included. This is for the Board's and investment consultant's use in monitoring the fees being paid to the investment managers entrusted with the Plan's assets.

Recommendations:

- It is CBIZ RPS' recommendation to include the peer universe median fees/expense ratios for the asset classes in which they are available, for comparative purposes, in the quarterly reports going forward.

Governance

McAllen's present governance framework is well-established and well-defined in the IPS. Each party's roles and responsibilities are clearly and concisely defined.

In addition to the three firefighters who are Board members, the City's Director of Finance, the City Manager, the City's former Deputy Finance Director

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

(now retired), and the at-large citizen, who is a financial advisor for Edward Jones, are Board members. In addition to their own personal experiences in providing oversight to the Plan, the Board members attend the TEXPERS and TLFFRA conferences on a regular basis, keeping themselves informed and educated on all issues and best practices pertaining to public pension plans, including governance. CBIZ RPS confirmed with the Board chairman that McAllen submitted two filings in 2019, with details on the Board members meeting their continuing education requirements.

Upon reviewing the information available to it and through participating in the monitoring and management of the Plan with the Board, it is the opinion of CBIZ RPS that the Board is engaged in a reasonable governance approach for the Plan.

Investment Manager Selection and Monitoring
As delegated in the IPS, the Board has the responsibility of evaluating and selecting investment managers and the investment consultant has the responsibility of screening and recommending investment managers. Monitoring of the investment managers is an ongoing process that is carried out as [described in detail in the evaluation]. As required in the IPS, managers do attend quarterly meetings, as requested. **Recommendations:** - It is the recommendation of CBIZ RPS to have a different manager in attendance at least semiannually to provide an update to the Board.

Full Investment Practices and Performance Evaluation

Odessa Firefighters' Relief & Retirement Fund

PRB Analysis of Evaluation

Plan Assets:[1] $44,811,154

Evaluator: Southeastern Advisory Services (SEAS)

Evaluator Disclosures:[2]

Relationship: Investment consultant

Investment Discretion: None

The evaluation provides a helpful summary of the findings and recommendations for each section, as well as specific answers to each of the questions included in the PRB's guidance.

The evaluation also includes a discussion of the System's recent transition from a single asset manager who also served as the investment consultant and custodian to an independent investment consultant. This process began in 2019, prior to the passage of SB 322, and resulted in a number of changes to existing processes that were completed prior to the evaluation. The evaluator notes, "During this two-year process the OFRRF Board made tremendous progress towards improving its fiduciary oversight." The result is only a few additional recommendations within the evaluation, which relate mostly to formalizing existing practice by including it in the Plan's Investment Policy Statement (IPS), which is expected to occur in 2021.

For example, the evaluation notes the Fund's robust policy and practice of measuring all fees/compensation, consistent with PRB guidance, but recommends that policy be formalized by adding it to the IPS. The evaluation also notes that the Fund does not have a formal policy in place for evaluating potential investment manager candidates, including minimum requirements or formal selection criteria; the evaluation recommends identifying formal criteria for consideration and adopting a formal policy.

The evaluation highlights that the plan is severely underfunded and will experience consistent liquidity needs/outflows at least over the next decade and that the System's board is working hard to identify funding solutions. It further states that cashflow and liquidity needs are considered when asset allocation is stress tested for best and worst outcomes.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The Plan's IPS is clear in describing the purpose and investment objectives, how asset managers are to be benchmarked and evaluated, and how rebalancing is to be accomplished. The IPS thoughtfully explains the investment managers' responsibilities, however it is silent regarding the roles and responsibilities of other investment related fiduciaries and vendors. The IPS is also silent on identification of the criteria used to evaluate future target investment managers. The current IPS does not consider the funded status, cash flows and liabilities. While the Board has a stringent process in place to track fees that is consistent with SB 322, this practice is not articulated in the IPS. **Recommendation:** - We recommend that the 2021 IPS is updated to include: 1) the fiduciary duties and responsibilities of the investment related vendors 2) consideration of the funded status, liabilities, and cash flows 3) the criteria to be utilized in manager selection 4) the existing practice for the measurement and disclosure of plan fees.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Asset Allocation
OFRRF has a practice of reviewing capital market assumptions annually and conducting strategic asset allocation studies periodically. The analyses include, portfolio optimization, stress testing and loss evaluation (Value at Risk). Formal allocation studies have also considered the inclusion of outside asset classes not currently utilized by the plan. Also considered are the cash flows of the plan and its tolerance for illiquid investments. The process used by the plan has resulted in fully diversified asset mix, including active management, passive strategies and alternative investments. The plan's policies for asset allocation studies are deemed prudent and consistent with best practices. **Recommendation:** - The plan's policies for asset allocation studies are deemed prudent and consistent with best practices [identified by the CFA institutes codes, guidelines, and standards or those defined by the Center for Fiduciary Studies.] While there is a constructive practice in place, there is no formal policy stating the frequency for these reviews. We recommend that the 202I IPS include the current practice and frequency for reviewing the investment asset allocation.

Investment Fees
OFRRF maintains a comprehensive fee disclosure in its quarterly performance reporting. This reporting evaluates direct fees, indirect fees and the fees paid to outside investment related vendors including the custodian and investment consultant. The Plan's reporting also captures any commissions and other fees. Investment performance is measured both gross and net of fees. We also found the total investment expenses percentage to be acceptable based peer group expense comparison. **Strengths:** - The reporting of fees is comprehensive, updated quarterly and, in our opinion, consistent with PRB guidance and SB322. We found the plan's fees to be reasonable and competitive relative to peers.

Governance
SEAS evaluated the Plan's governance and investment processes, delegation of investment authority, Board investment expertise, and trustee education. The Board complies with Texas Chapter 607 for Minimum Educational Training (MET) requirements for trustees.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Strengths:

- We found the Plan's governance practices robust and evidence of diligence in fulfilling its role of fiduciary.

Recommendations:

- We recommend that the Plan review vendor contracts regularly to ensure cost savings and possible improvements over time.
- We also recommend formalizing current practice for trustee education and periodic vendor review into a written Plan policy.

Investment Manager Selection and Monitoring
There is not a formal Board policy in place for evaluating potential investment manager candidates, including minimum requirements or formal selection criteria. The Plan has a robust process for monitoring manager performances including benchmarking and peer groups; as well as clearly defined criteria for reviewing and replacing investment managers. The performance reporting is "digestible" with clear lines of performance accountability. We found the practice of quarterly investment review to be rigorous. **Recommendation:** - Identify formal criteria for consideration of future asset managers with minimum standards for potential candidates including GIPS, ethical considerations, and potential conflicts of interest.

Full Investment Practices and Performance Evaluation

Port Arthur Firemen’s Relief and Retirement Fund

An evaluation was provided to the PRB. Following feedback from the PRB Investment Committee, the Fund is working with their evaluator to make updates and has indicated a new report is expected to be provided in the near future.

Port of Houston Authority Retirement Plan

An evaluation was provided to the PRB. Following feedback from the PRB Investment Committee, the Fund is working with their evaluator to make updates and has indicated a new report is expected to be provided in the near future.

San Antonio Fire & Police Pension Fund

PRB Analysis of Evaluation

Plan Assets:[1] $3,408,689,000

Evaluator: NEPC

Evaluator Disclosures:[2]

Relationship: Investment consultant

Investment Discretion: None

The evaluation provides a thorough review of the Fund's practices. In each subject area, it describes the review process and standard of comparison (i.e. industry standards or best practices) followed by the findings and enhancement recommendations. This structure allows the reader to follow-along with the evaluator's work as they build to findings and recommendations, providing clear explanations for the conclusions.

The review of cash flow and liquidity needs was particularly helpful. The evaluator reviews the 2020 Asset-Liability Study (ALM), noting its use of scenario analysis to highlight the potential impact of shifting economic and market regimes on the Fund. It notes that while the Fund's funded ratio was expected to remain constant for the next decade, it was expected to experience negative cash flow of -2% over that period, which is not uncommon for mature pension plans.

The evaluation notes the System's Funding Policy is separate from the IPS suggesting, at a minimum, it should be incorporated by reference, which can be followed by other pension plans as a good practice.

It is also noteworthy that while NEPS finds "SAFPPF's policies, procedures and practices to be appropriate, adequate and effective when compared to industry prevailing practice," the evaluator offers additional areas for enhancing existing practice, which demonstrates the strength of the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The IPS is generally consistent with the following elements recommended by GFOA, the CFA Institute and the NEPC IPS template outlined in the evaluation. Going back through SAFPPF Board Meeting minutes, we can see that the Plan is following the IPS in terms of pursuit of objectives, delegation of authority, decision making process, as well as the frequency and detail of monthly, quarterly, annual and other periodic reporting to the Board. As SAFPPF's General Investment Consultant, NEPC has directly observed, that the Board is adhering to the governance and compliance guidelines set forth in the IPS. SAFPPF has a thorough and thoughtful IPS. However, improvements should be considered in the next IPS review cycle for the sake of additional clarity, accountability and efficiency. **Recommendations:** - The IPS states that an asset-liability study should be conducted at least every five years (industry standard) to determine the long-term targets and that annually, the targets are to be reviewed for reasonableness in relation to significant economic and market changes or to changes in the Fund's long-term goals and objectives. For clarity, this annual review should be defined in the IPS as an asset allocation (or asset-only) study. - NEPC recommends adding language to the Roles and Responsibilities section of the IPS, to explicitly define the role of the Executive Director.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

- SAFPPF utilizes a General Consultant, as well as one or more Specialty Consultants across alternative asset classes and the emerging manager program. NEPC recommends language be added to the Roles and Responsibilities section of the IPS to clarify the use of Specialty Consultants.
- SAFPPF has developed an Emerging Manager program with a dedicated level of assets and policy statement. For clarity, NEPC recommends language be added to the IPS that provides a broad definition and scope of the program.
- The Funding Policy is not directly articulated within the IPS. Instead SAFPPF has a separate Funding Policy document that is currently being revised. In our review we've found that it is not uncommon for public funds to have a separate Funding Policy and as such, recommend that this document be incorporated by reference into the IPS.

Investment Asset Allocation

SAFPPF has developed a clear process that allows for routine setting, monitoring, and review of both the asset allocation of the portfolio and the assets and liabilities of the SAFPPF. This process is consistent with prevailing practice among peer public pension funds. SAFPPF has developed a detailed asset allocation and asset liability review process. The approach is robust and sufficiently detailed to maximize effectiveness.

Having reviewed SAFPPF's most recent IPS, asset allocation study, and strategic plans for alternative asset classes, we find that the methodology for concluding that alternative investments were appropriate was sound given the Plan's size and expertise of staff and specialty consultants.

The Asset-Liability Study (ALM) done in March 2020, used scenario analysis to highlight the impact of shifting economic and market regimes on the Plan and its target asset allocation. Key findings from the study showed the fund had a projected funded status of 87.2%, as of January 1, 2020 and is projected to maintain this funded ratio over the next 10 years, despite potential investment return headwinds and level contribution rates creating an uneven path as both assets and liabilities are projected to grow at an average rate of 4.1% over the next 10 years.

Recommendations:

- We recommend, as noted in Section 1, adding language for an informal review of capital market outlook on an annual basis to improve flexibility for SAFPPF to respond on the margins to rapidly changing market environments. This annual review may find cause for the Fund to consider minor changes to its asset mix more frequently than every five years. Frequent asset allocation changes, however, are not meant to be a tactical tool. Significant changes to the strategic asset allocation should not be made without careful consideration and are not expected to occur every year.
- The IPS does not specify a process around the valuation or confirmation of alternative assets valuations. NEPC recommends that language be added to the IPS that codifies the above process for valuing alternative assets.
- As SAFPPF continues to build out its alternative asset programs, NEPC recommends that the Plan add language to the IPS that addresses liquidity risk, and that periodically (every three years) requires a comprehensive report on the liquidity of the Fund.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Fees
The direct and indirect fees and commissions paid by the Fund include fees that are paid by the Fund and fees that are netted against returns. The Board, Staff and Investment Consultants place an emphasis on fee savings in a variety of ways, including negotiations with managers during the selection process, leveraging existing relationships (e.g., fee break for certain asset levels), as well as leveraging their size and standing in the industry (both the Consultants and the Fund). Analysis shows that fees across equities are below the median, while fixed income fees are slightly above the median, for the respective broad universes being used for comparison. **Strength:** - It should be noted that differences between SAFPPF's investment structure and that of the broad universes don't allow for an exact comparison, but in general we find SAFPPF's fees to be appropriate and within industry standards. **Recommendations:** - The IPS states that the Investment Committee is to monitor and control investment expenses. This language should be expanded to clearly define what type of report or analysis should be presented to the Board on at least an annual basis. - The annual review of investment fees should include a fee analysis based on peer group or industry averages for the relevant asset classes in aggregate as well as by investment strategy type.

Governance
NEPC compared the governance structure of SAFPPF against governance information publicly available on the websites of the Texas Public Fund Pension peers with a focus on some key elements of governance such as: - Roles – clearly defined, separation of duties, authority and responsibility (Evaluation confirms and provides details on the roles) - Policy – investment policy statement, funding policy, standards of conduct, etc. (Evaluation describes the key aspects of the fund IPS) - Education – experience, expertise, continuing education (Education and Training is sufficient) - Operations – Board operations, committee structures, meeting frequency - Reporting – frequency of reports (e.g., monthly/quarterly), monitoring of investments, etc. **Recommendation:** - SAFPPF Investment Committee members are tasked with on-site due diligence trips and evaluations to provide review and oversight of any potential new investments for the Plan. NEPC recommends that this process be codified under the Roles and Responsibilities section of the IPS.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Manager Selection and Monitoring
When reviewing SAFPPF's investment manager selection and monitoring process, NEPC was looking for processes that exhibited the following: - A consistent and comprehensive process which describes the steps for investment selection and monitoring - Addresses ethics and conflicts of interest that may present themselves - And a monitoring process that strives to hold investment managers accountable to the agreements they made with the Fund NEPC also reviewed the recommended resource provided by the Government Finance Officers' Association regarding "Selecting Third-Party Investment Professionals for Pension Fund Assets". While this resource was useful and comprehensive, NEPC recognizes that there is some understandable variability in investment manager selection and monitoring process between asset classes. **Strength:** - In general, SAFPPF has thorough policies and processes in place with regards to investment manager selection and monitoring.

Full Investment Practices and Performance Evaluation

San Antonio Metropolitan Transit Retirement Plan

PRB Analysis of Evaluation

Plan Assets:[1] $303,012,956
Evaluator: Dahab Associates
Evaluator Disclosures:[2]
Relationship: Investment Consultant
Investment Discretion: None

The evaluation describes the Plan's existing policies and procedures, providing detailed descriptions in several areas. While the report does not reference outside sources for best practices, the explanations generally suggest what the evaluator considers best practice and how it compares to the Plan's current practices.

The evaluator notes that the Plan considers liabilities when creating an asset allocation, particularly because the plan is closed to new participants. The evaluation states, "Over time the asset allocation would migrate to a more conservative posture as the membership of the Plan shifts more to pay status and fewer contributions are made into the Plan. On a periodic basis we would conduct asset allocations to monitor this changing condition."

The evaluation also expands on the investment manager practices including both selection and monitoring. It details the qualitative and quantitative aspects the Plan considers when assessing manager performance and provides specific peer metrics including industry standard benchmarks they subscribe to.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
During our review, we determined that the roles and responsibilities for those entities involved with the Plan were clearly outlined. We found that the format of the IPS, broken into eight sections was easy to understand and that the document was designed to meet the needs and objectives of the Plan. The IPS has an explicit actuarial rate of return and defines the objectives needed to achieve this return. **Strength:** – Our process follows our consulting philosophy of emphasizing planning, not reacting. This philosophy encourages our clients to prepare both short and long-term investment programs based on analysis of cash flow projections.

Investment Asset Allocation
Our approach to an asset allocation begins with the construction of a mathematical model of the liability stream and simulation of the returns that various asset combinations would achieve over time. Data specific to each client including: the Plan's time horizon, liquidity needs, funding status, the appropriate level of risk, and legal or regulatory constraints are used to generate possible outcomes for various asset allocations. From the results produced by our model, we select three or four that we feel would most likely help the Plan achieve its goals. The Board then decides from amongst those recommended allocations. Additional estimates of mean return, risk, correlation, and alpha are required for each asset class included in the study.

[1] As of 9/30/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Our analysis determined that the Plan would likely still achieve better returns, while maintaining a similar risk profile with the elimination of the global tactical asset allocation mandate. The assets were reallocated across a few of the existing mandates in the portfolio; this resulted in the Plan being more streamlined and reduced fees. Because we believe asset allocation is critical to a Plan's performance, we typically perform a comprehensive asset allocation study every two to five years. We establish a sound strategic asset allocation and use it as a reference point, with periodic rebalancing. We are skeptical of most tactical asset allocation strategies because we believe that market timing does not work; however, during periods of significant dislocation, we adhere to best practices and, if warranted, rebalance the portfolio closer to the target allocation.

Investment Fees
VIA Metropolitan Transit's IPS describes the management and monitoring of direct and indirect compensation paid to investment managers. Although the IPS is silent on the ongoing monitoring and reporting of the fees, it is implicit in the responsibilities to the Board that the Consultant provides this oversight. We track all forms of compensation paid to the managers and provide that information to the Board.

Governance
The Board has endeavored to maintain a high level of transparency as it relates to the investments of the Plan. The governance structure of the Plan is in the IPS. The monthly Board meetings are in a public forum and agendas and minutes are available to the public. The 11 members of the Board are appointed to staggered two-year terms by the following entities: San Antonio City Council (appoint five), Bexar County Commissioners Court (appoint three), and the Suburban Mayors (appoint two). Although the Board relies on the impartial advice of the Investment Consultant, a service provider that is bid out every five years, the Board has the final approval on investment decisions made for the Plan.

Investment Manager Selection and Monitoring
Dahab Associates assist the Board in the selection, retention and hiring of managers. We adhere to a selection process that prevents conflicts of interest. Manager performance is one of the more important factors in evaluating potential managers for our clients' portfolios. For both searches and performance reporting, we compare a manager's performance not only to an appropriate benchmark, but also to a universe of other actively managed portfolios of similar style. Investment performance is presented in the context of a universe with rankings to allow the Board to determine the success of the investment strategy. The comparative universes are selected to provide fair, objective measures of performance. For instance, the entire portfolio will be measured against a universe that only contains other Public funds. Additionally, each of the managers will be compared against styles and market capitalization. Style universes assist in determining style integrity and success relative to peers. For performance measurement and peer universe rankings, we subscribe to Investment Metrics (IM). We typically will recommend utilizing industry standard benchmarks to clients. At times

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

managers fall short of expectations and changes are recommended; however, we strive to avoid too much manager turnover. Manager turnover has been correlated with Plan underperformance. **Strengths:** – Returns are always shown on a gross of fee and net of fee basis

Full Investment Practices and Performance Evaluation

Teacher Retirement System of Texas

PRB Analysis of Evaluation

Plan Assets:[1] $157,978,199,075

Evaluator: Aon Hewitt Investment Consulting (AHIC)

Evaluator Disclosures:[2]

Relationship: Investment consultant[3]

Investment Discretion: None

The evaluation provides a detailed review of both policies and practices used in TRS's investment program. The evaluation enhances transparency by clearly identifying the policies, summarizing information in an easily digestible format, explaining the conclusions and often providing additional context from key decision-makers.

The evaluation provides helpful discussion regarding the System's governance processes, including highlighting the TRS board includes appointed members with financial expertise, and the System incorporates robust trustee training. The evaluation further notes the "trustees cannot be expected to perform all of the duties required to properly manage the massive size of public pension fund assets. What they can do, as TRS has done, is appropriately delegate those responsibilities to those who have the required expertise, clearly delineate the scope and parameters of those delegations, and monitor and demand accountability."

The evaluation identifies the asset allocation and risk management processes as "leading-edge." The asset-liability analysis and stress testing "simultaneously considers the assets, liabilities, future funding, and their interaction with one another within a holistic framework," including under a variety of worst-case scenarios.

Finally, the evaluator also states noteworthy actions taken by TRS include "the concerted effort to drive the investment industry towards increased transparency and reduced investment management fees." TRS's efforts to improve industry best practices are not only a benefit to TRS stakeholders but to all Texas plans.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The Plan has an IPS document that was last reviewed in September of 2019 and is reviewed on a biennial basis. The document provides a thorough, yet succinct overview of the roles and responsibilities for each applicable group associated with investment decisions and oversight. The TRS IPS document is quite comprehensive. Overall, we think the level of detail and the readability of the document is appropriate given the context of TRS – that of a large and sophisticated institutional investor. Additionally, based on our review we believe the IPS follows best practice. Based on our review of the meeting minutes, board reports, and interviews, we believe the IPS and other policies are being followed. Additionally, TRS has an independent compliance team which performs ongoing oversight to ensure that the IPS is being followed. The IPS contains measurable outcomes for the Plan as well as the underlying asset classes. The document contains measurable risk/return outcomes for investment managers. As detailed in the report, the Plan has been successful in meeting its stated objectives over the trailing 10-year period.

[1] As of 8/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

[3] A separate group within AHIC ("Fiduciary Services Practice") is providing this Evaluation at TRS' request

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Additionally, the current policy would have provided desirable returns relative to the stated performance objectives if it were implemented 20 years ago.

Strengths:

- Two noteworthy practices include the ongoing review of investment related policies and the concerted effort to drive the investment industry towards increased transparency and reduced investment management fees.

Investment Asset Allocation

The Board articulates a process for how they will determine and evaluate the asset allocation of the Plan within the IPS (occurring every 5 years). Based on our review of the most recent evaluation they are following this process. The strategic asset allocation development process (which includes asset liability analysis and stress testing) occurring in practice is robust, and we believe represents a leading-edge practice. The system's overall risk tolerance is expressed and measured in many ways. The Board has determined that its asset allocation represents the appropriate risk positioning to achieve the objectives of the Plan over time. That risk positioning is managed through the Plan's tracking error targets and asset allocation ranges, which have been adopted within the Plan's IPS.

The Board's investment consultant and actuary communicate regarding their respective future return expectations. The process for deriving the strategic asset allocation of the Plan considers the actuarial discount rate, and the ability to achieve that assumption through the returns offered in the capital markets. The actuarial discount rate is a part of the mosaic of information considered by the Board when selecting the strategic allocation that will most efficiently allow the Plan to meet its obligations. The assets of the Plan are well diversified with modest use of passive management.

We believe the process to determine the asset allocation of the Plan is robust, and there is nothing in our analysis that would position us to say that a different asset allocation would be better positioned to meet the investment return and risk objectives of the Plan.

Strengths:

- We believe the size of TRS, the duration of its liabilities, the depth of the Investment Management Division ("IMD"), and the support of the Board give it a competitive advantage in achieving alpha in the alternative investment space.
- We believe IMD is well positioned relative to other similarly sized institutional investors to capture the benefits of alternative investing.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Fees

The Plan dedicates the appropriate amount of review and reporting on investment fees and commissions. The Plan does not have a written policy with regards to rules for fee negotiations. Based on our conversations with the system's Investment Management Division (IMD), this is due to the unique nature of each investment and how fees are structured and negotiated. IMD stressed during our interactions that they strive for the lowest fees possible with each investment opportunity. A written policy on rules for fee negotiations is uncommon across peer institutional investors.

IMD maintains procedures for the payment of management and incentive fees. The procedure document outlines the process for receiving, reconciling, paying, and documenting the payment of management and incentive fees. Fees are reported to the Board in multiple ways, including its Annual Budget Exercise, Investment Cost Effectiveness Analysis survey ("CEM Benchmarking Report"), monthly Transparency reports, the annual CAFR, and as part of the annual audit. The CEM Benchmarking Report is the industry standard for objective fee benchmarking relative to peer institutions. The December 31, 2018 report found that the investment costs of the Plan were slightly higher (0.038%) than the CEM benchmarked costs.

Governance

Overall, we found TRS to have extensive and detailed documentation of its governance related to the investment-decision making process. The IPS and Board Bylaws are detailed and follow best practices by clearly articulating roles and responsibilities and clarity regarding what authority has been retained by the Board and what has been delegated.

The makeup of the Board includes a requirement that certain appointed members have demonstrated financial expertise, who have worked in private business or industry, and who have broad investment experience, preferably in the investment of funds. The onboarding training provided to new Trustee is in line with best practices and covers a multitude of topics. The Trustees have continual training and education provided by a variety of sources, including annual fiduciary training and ongoing investment education. We found that Trustees clearly understand and embrace their fiduciary responsibilities and have properly engaged outside Advisors to assist them in their decision-making process.

We believe the degree of delegation exercised by the TRS Board is appropriate and in line with comparable peers and best practices given the size and complexity of TRS. We believe the governance structure is in line with best practices of a fund the size and complexity of TRS.

Strengths:

- We found TRS to be leading-edge in terms of its transparency, exceeding that of many public retirement systems [as it broadcasts open portions of its Board and committee meetings online and maintains past broadcastings of the meetings on TRS site. In addition to posting board agendas and minutes, TRS posts Board Meeting Packets (going back to 2013) with all supporting materials. TRS also posts Trustee biographies, a listing of Board Committees and Officers, Board of Trustee Ethics Policy, Board of Trustees External Communication Policy, and the Board Meeting Calendar.]

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

- We found TRS to have extensive and detailed documentation of its governance related to the investment-decision making process. The IPS and Board Bylaws are detailed and follow best practices by clearly articulating roles and responsibilities and clarity regarding what authority has been retained by the Board and what has been delegated.
- New Board members go through rigorous orientation provided by TRS staff, which is typically a two-day orientation with tours of TRS divisions and follow up by TRS staff. The Board orientation booklet is robust and follows best practices, with clear, unambiguous language and guidance.

The Board establishes policy and ensures appropriate monitoring, reporting, and accountability of its policies. Staff is able to appropriately implement the Board's directives within the parameters set by the Board. The policies, procedures, practices, and interviewees' commentaries all support a strong, stable governance framework for TRS to fulfill its mission and purpose.

Investment Manager Selection and Monitoring

It is ultimately the responsibility of IMD to review, consider, and authorize proposed investments and external manager selection (within the guidelines set forth in the Plan's IPS). For public market, private market, and risk parity candidates, teams will utilize all their available resources to come up with a list of potentials managers that warrant further due diligence; the process for further screening the list of potential managers is robust. TRS General Counsel works diligently with the Attorney General's Office to ensure the System retains firms with the required expertise with respect to investment-related transactional reviews.

Investment management fees are considered when reviewing investment performance. All investment results reported to the Board by the investment consultant and IMD are net of external investment management fees and gross of the IMD Operating Budget (this is consistent with peers). The CEM Benchmarking Report provides a thorough review of the investment expenses of the Plan as well as the net of fee investment results of the Plan relative to peers.

As part of the IPS, the Board has established tracking error targets and maximums. In implementing the strategic asset allocation IMD monitors forward looking and historical tracking error of the underlying investment managers as well as compliance with the Plan's risk targets. To the extent that an investment mandate contributes active risk levels inconsistent with its historic trend or expectation, the strategy is flagged for further review and consideration. The risk team works to manage and monitor forward looking risk positions based on trend history and the interaction between the different investment mandates and asset classes.

Strengths:

- To help ensure all investment decisions and recommendations are free of potential conflicts of interest, external investment managers must complete an Investment Integrity Disclosure (form included in the IPS). The disclosure reports whether a Placement Agent has been involved and any political contribution or Placement Fee. The disclosure also reports the relationship of the recipients to the Placement Agent, Texas Elected Official, or Candidate.

Full Investment Practices and Performance Evaluation

Temple Firemen’s Relief & Retirement Fund

PRB Analysis of Evaluation

Plan Assets:[1] $43,569,953
Evaluator: CAPTRUST
Evaluator Disclosures:[2]
Relationship: Investment Consultant
Investment Discretion: None

The evaluation provides an overall review of the system and its practices while detailing specifics of the asset allocation and investment manager selection and monitoring processes.

The evaluation notes the determination of the asset allocation is "the result of an iterative exchange between the Board, the consultant, and the actuaries. Allocations are the result of a combination of quantitative modeling (portfolio optimization) and qualitative overlays (appropriate asset classes differ by plan)." Risk management is also identified as a "Key" part of the process. However, the evaluation cautions the "actuarial assumed rate of return is 7.75% which may be difficult to achieve regardless of asset allocation strategy."

The evaluation also provides a thorough review of the investment manager selection and monitoring process, outlining both the investment consultant's process and the System's philosophy. Overall, the evaluation includes explanations that provide insight into the System's practices, but it offers little descriptive commentary on how they compare to best practices.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The IPS clearly indicates the processes necessary for anyone to manage the portfolio. The investment policy follows industry best practices. The roles and responsibilities are clearly defined, the risk and return objectives are identified, and the investment philosophy and asset allocation policy are clearly stated. There is clear evidence that the system is following its IPS. As of 12/31/2019, the portfolio has outperformed the benchmark by 10 basis points since the inception of the CAPTRUST relationship (6.27% vs. 6.17%) and by 38 basis points over the last three years (9.35% vs. 8.97%). The actuarial assumed rate of return is 7.75% which may be difficult to achieve regardless of asset allocation strategy. Overall, it appears the portfolio has performed well over the long-term and investment goals are being met. As part of each asset allocation study, CAPTRUST conducts a historical simulation using benchmark indexes to examine how the proposed portfolios would have actually performed across time. This analysis is utilized when constructing the permissible ranges with respect to the strategic asset allocation chosen by the Board. As such, the policy has been constructed with enough flexibility to weather severe market downturns.

Investment Asset Allocation
When determining and evaluating the strategic asset allocation, a proactive and regimented process is conducted. The asset allocation is the result of an iterative exchange between the Board, the consultant, and the actuaries. Allocations are the result of a combination of quantitative modeling (portfolio optimization) and qualitative overlays (appropriate asset classes differ by plan).

[1] As of 9/30/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

When constructing defined benefit plan allocations, a considerable amount of time is spent evaluating the liabilities of the plan and importance is placed on ways to de-risk plan allocations - from reducing portfolio volatility to reducing contribution volatility. Several optimizers are utilized, and philosophical views are expressed when constraining portfolio optimizations. Risk management is a key part of this process. Plan-specifics are considered including cash flow and other accounting / financial considerations surrounding the plan as well as a macro view on the role the plan plays now and the Board's intention going forward.

In conjunction with the consultant, the Board models, and ultimately develops, an acceptable asset allocation strategy that will control risk to the funded ratio while achieving a reasonable return. The Board remains cognizant of the expected return on assets utilized for accounting purposes but the long-term benefit to participants takes precedence in terms of setting the asset allocation.

Strengths:

- The system utilizes an investment consultant to formulate asset allocation strategies which is common throughout the industry. CAPTRUST (as consultant) utilizes best practices in the determination of suitable asset allocation recommendations. The methodologies implemented by CAPTRUST and the resulting asset allocation in place have resulted in a well-diversified portfolio across several different asset classes and investment managers.

Recommendation:

The IPS identifies the maximum allowable allocation to Alternatives and the investment types permitted for alternatives. Although, the IPS could be improved in that area by furthering clarifying which Alternatives are permitted and prohibited.

Investment Fees
The IPS does not directly address the system's policies and procedures with respect to direct and indirect compensation paid to managers. The investment consultant monitors and reports investment fees to the board. This is clearly stated in the IPS. The net expense ratio includes all forms of manager compensation. The system has appropriate policies in place to account for and control fees. The Board selects managers after their own evaluation and the investment consultant is responsible for monitoring and further evaluation of the managers selected. Investment fees are monitored on an ongoing basis by the investment consultant. Administrative and custody fees are monitored on a quarterly basis and reviewed and assessed every 5 years per contract.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Governance
The governance policy is outlined in Vernon’s Civil Statutes in accordance with the Texas Constitution. all investment-related policy statements are accessible to the plan members via the system website. However, the documents are accessible only to the plan members and not the general public. Meetings are held monthly, and the agendas and minutes are available to the public. The IPS clearly defines the responsibilities of all parties involved. The Board is responsible for clearly identifying specific responsibilities between members. As it relates to risk, the roles and responsibilities of each party involved in the management of the plan is clearly defined in the IPS. In short, the Board is responsible for developing the investment objectives of the plan, hiring of all parties, allocating assets, review of investment results and investment policy. The consultant assists the Board with these responsibilities, but ultimate approval resides with the Board. Lastly, the investment managers are directly responsible for the management of the plan’s assets. This structure is very common throughout the industry and serves as a good system of checks and balances.

Investment Manager Selection and Monitoring
The investment consultant serves as a co-fiduciary to the plan and recommends investment managers to the board. Ultimately, the board is responsible for approval of the investment managers. Since manager selection is foremost about forward-looking views and investment recommendations, CAPTRUST is committed to the qualitative assessment of investment managers. CAPTRUST believes that understanding a manager’s firm and its people is critical to the assessment of investment capabilities. CAPTRUST presents to the Board each quarter the performance of the plan relative to the pre-specified benchmarks and peer groups but it is the Board’s responsibility to interpret the performance. Performance is always evaluated on a net-of-fee basis. Every quarter, CAPTRUST’s (as consultant) investment research team issues an opinion – in Good Standing, Marked for Review, or consider for termination - on all managers. In addition to their standard quarterly process, when circumstances require a more immediate response, CAPTRUST does not wait for the end of a quarter to relay their views and potential actions. Intra-quarter recommendations may be based upon due diligence findings, manager departures, strategy shifts, or other material events.

Full Investment Practices and Performance Evaluation

Texarkana Firemen’s Relief & Retirement Fund

PRB Analysis of Evaluation

Plan Assets:[1] $36,402,489

Evaluator: Champion Capital Research, Inc.

Evaluator Disclosures:[2]

Relationship: Investment Consultant

Investment Discretion: None

The evaluation identifies the policies and practices the system follows and concludes they are largely in-line with best practices. Best practices and benchmarks considered are clearly identified and helpful justifications are provided. Further, the primary findings and recommendations were summarized in a clear and concise manner.

The evaluation found the System's policies to be "thorough and complete" but did identify several opportunities for improvement. All opportunities for improvement identified during the evaluation were incorporated in a revised Investment Policy Statement adopted during the evaluation process in April 2020.

The evaluation also notes that several policies included in the IPS were not being consistently followed. However, according to the evaluator, these policies exceed best practice therefore the evaluator recommends removal to "improve upon its adherence to policies."

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The CCR Team found the Plan's policies to be thorough and complete. In other words, CCR Team found no nonconformities ("NC") with the Plan's IPS. However, CCR determined there existed several opportunities for improvement ("OFI"). These were identified and communicated to Board. All OFIs were remedied during the consulting engagement with CCR and thus there are no further recommendations. The only IPS objective that is not consistently met is meeting the 7.75% actuarial rate of return. Given expectations for capital market returns, this is to be expected. **Strengths:** – With respect to the analysis of investment policies, Texarkana's current investment policies are broadly consistent with "best practices". These best practices are defined and practiced by the Center for Fiduciary Studies. **Recommendations:** – Texarkana added a fund administrator whose roles and responsibilities were not defined in current policies. Texarkana added language to its IPS to improve their policies. – Because the Fund Administrator has money movement and Board meeting roles and responsibilities, the absence of the explicit language left gaps in the Fund's policies. CCR and Texarkana discussed this opportunity for improvement ("OFI") and added language to its IPS to improve their policies.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

- With respect to the adherence to existing policies, we found that Texarkana could improve upon its adherence to policies and should remove policies that were above and beyond best practices. The demands of the former IPS that were in excess of best practices were [discussed in detail with the System] and thus removed from the April 2020 IPS.
  - For example, the former IPS indicated a fixed income monitoring procedure that was periodically being implemented. The IPS was more stringent than "best practice" in this regard. Thus, the IPS was modified to concur with regular procedures.
  - The IPS states that the "Consultant work directly with the Actuary to assist the Board in assessing an asset allocation and asset-liability study no less than once every five years to review asset classes, risk-return assumptions, and correlations of returns." This is not done, nor is it expected to be a regular process for Texarkana. Thus, the language was removed.
  - The Purpose of the IPS included 1.) monitor quarterly in detail the contribution of decisions made by managers, vendors, and all fiduciaries. This "attribution" analysis is above "best practices" and was not being implemented. Given the Board's quantifiable criteria used for monitoring investment manager performance, the "attribution" policy was removed.

Investment Asset Allocation

Individual fund managers risk metrics are reviewed monthly and quarterly and measured by Sharpe ratio. However, the Plan's aggregate risk tolerance was not expressed in its policies. In the Plan's May 2020 IPS, portfolio risk is referenced by a standard deviation statistic and the resultant expected range of returns is stated, so that the Board recognizes the "large loss" potential of the portfolio. In practice the asset allocation has no bearing on the assumed rate of return used for discounting plan liabilities.

The Plan's asset allocation is not a derivation of a mean variance optimized portfolio nor simulated Monte Carlo portfolio. However, the Plan's asset allocation is sufficiently diverse, and annual adjustments to the Plan's asset allocation is thoughtful of the expected cash flow needs of the Plan. Given the expected capital market assumptions it is unreasonable to expect to achieve the actuarial rate of return of 7.75% using a broadly diverse asset allocation and today's capital market assumptions.

Investment Fees

The CCR team found that the system's IPS does not describe the monitoring of direct and indirect compensation paid to investment managers and other service providers. The Plan's IPS implemented in May 2020 requires the Board to direct the Consultant to assess and report annually the aggregate direct and indirect investment fees and commissions paid by [the System].

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

As part of the Plan's monthly monitoring, mutual fund investment fees are assessed and reviewed for reasonableness, in that the MF managers fees will not fall withing the most expensive quartile relative to peers. Quarterly, the MF and SMA management fees are assessed for reasonableness in the same way.

Recommendations:

- It is recommended for Texarkana to ensure its Investment Consultant monitor all explicit and implicit fees and expenses for all vendors, by requiring an annual report from each manager regarding any and all remuneration received as a result of doing business with Texarkana.
- Additionally, the Consultant is responsible to report to the Board annually its assessment of the reasonableness of these fees.

Governance

CCR finds Texarkana's decision-making processes, delegation of authority and investment education and expertise among the Board to be robust, prudent, and consistent. Best practices require Texarkana evaluate all vendor contracts every three years. With respect to monitoring, any outstanding OFIs in this section have been addressed and rectified in the previous section.

The Plan's investment related education requirements have historically and are currently in compliance with TLFFRA/statue requirements as well as the Texas Pension Review Board recommendations and requirements.

Strengths:

- The annual review of the Plan's IPS helps to ensure policies are being followed.

Recommendation:

- It is best practice to evaluate the services and agreements with all service providers at least once every three years.

Investment Manager Selection and Monitoring

Texarkana uses specific quantifiable criteria in the monthly and quarterly monitoring of its investment managers. Texarkana's Board relied on the quarterly gross of fee and net of fee performance relative to benchmarks to assess the performance of its investment managers.

The overall performance of the portfolio is monitored by three independent entities. One the Fund Administrator follows a TEXPERs actuary's recommendation regarding the computation of aggregate fund performance. Second, the Consultant monitors aggregate fund performance. Finally,

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

the Investment Manager, Westwood, monitors its aggregate fund performance in addition to Consultant and Fund Administrator. **Strengths:** – Texarkana's Board relies on the monthly net of fee and gross of fee relative to peers and benchmarks.

Full Investment Practices and Performance Evaluation

Texas County & District Retirement System

PRB Analysis of Evaluation

Plan Assets:[1] $33,833,510,529

Evaluator: Cliffwater LLC

Evaluator Disclosures:[2]

Relationship: Investment consultant

Investment Discretion: None

The evaluation includes useful comparisons to industry practices to explain how TCDRS's investment program operates. The evaluation offers detailed explanations across each subject area, including the use of data and understandable tables as appropriate.

For example, the evaluation provides a detailed discussion of the System's asset allocation. It was noted that TCDRS is approximately net cash neutral due to its savings-based plan and actuarially determined contribution structure so it can handle a higher level of illiquidity. Given its uniqueness, the System's asset allocation policy is more comparable to a large endowment with a lower exposure to public stocks and bonds and a higher exposure to private equity, hedge funds, and credit investments.

The evaluation shows that TCDRS has developed robust governance processes and parameters for investment manager selection and monitoring. The evaluation also highlights the unique measures in place to manage risk associated with investment volatility and the investment return assumption, including a $1 billion reserves fund (as of Dec. 31, 2018).

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The Policy is intended to allow for sufficient flexibility to capture investment opportunities yet provide parameters to ensure prudence and care in the management of the investment program. The Policy documents TCDRS' investment objectives, policies, guidelines and procedures. It also outlines the duties and responsibilities and provides guidance to the fiduciaries of the System including the Board of Trustees, individual members of the Board ("Trustees"), the Investment Officer, staff professionals, investment consultants, performance measurement analysts, external investment managers, custodians, securities lending agents and others who exercise discretionary authority or control over the management or disposition of System assets. In addition, the policy states the standards and disciplines adopted so that trustees can effectively evaluate the performance of TCDRS staff, investment managers, investment consultants and others. The IPS serves as compliance with TCDRS Act, which requires that the Board of Trustees (the Board) establish written investment objectives concerning the investment assets of TCDRS. The IPS is reviewed quarterly and is modified, as appropriate, at the Board's discretion.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Asset Allocation
The primary means through which the Board ensures that the System achieves the System Investment Objective is through an asset allocation plan. This is documented in the IPS and is updated on an annual basis. The asset allocation is integrated with the overall System Investment Objective (SIO), which is to attain an 8% annualized return net-of-fees over a long-term (30 years or more). Periodically, the Board reviews and evaluates the SIO, considering, among other things, TCDRS benefit design, expected future returns and risk on invested assets, employer cost volatility and future expected cash flows as the System matures. Due to its unique construct, the TCDR asset allocation differs from the typical state pension plan and is more comparable to a large endowment. Unlike the typical public defined benefit pension plan that relies on annual contributions approved by the respective contributing body, TCDRS is a savings plan whereby any shortfall/excess versus the 8% annual crediting rate is automatically amortized into the participating system's annual rate reset. Additionally, unlike most state pensions that are in a net cash outflow situation, TCDRS is approximately net cash flow neutral such that TCDRS can withstand a higher level of illiquidity than a typical state pension plan. Given these circumstances, TCDRS has maintained an asset allocation policy more comparable to a large endowment, focusing on return generation while balancing risk through diversification. As such, there is a lower exposure to public stocks and bonds with a higher exposure to private equity, hedge funds and credit investments. The asset allocation process uses capital market assumptions (expected return, risk, correlation) for each asset class. The covariance matrix, along with appropriate constraints, are used to develop an efficient frontier of asset mixes that maximize return at differing risk levels. This is standard in the industry and the System has consistently applied this process since diversifying out of the 100% bond portfolio in 1995. Each alternative investment category has their own set of investment guidelines and performance measurement standards that are detailed in the attached IPS.

Investment Fees
TCDRS reports all investment returns "net of fees". Because of this, the investment results reported on tcdrs.org and in publication and financial reports are the actual values available for TCDRS use. TCDRS is focused on ensuring that their resources will be expended in the asset classes where there is a higher probability of consistent manager outperformance or where index funds are not available (e.g. alternative investments). TCDRS collects and reviews all fees and expenses annually. TCDRS provides full transparency on fees by reporting both management and carried interest fees on tcdrs.org and in their annual financial report. TCDRS staff, external legal counsel and consultants work together to minimize the amount of fees that TCDRS ultimately pays with the goal of ensuring that each set of legal documents encapsulates the previously noted objectives. To further minimize fees, TCDRS focuses its size and economies of scale with respect to investment structuring such as having customized separate accounts, negotiating "most-favored nations clauses", negotiating relationship discounts, getting GP ownership stakes if seeding new investment strategies, etc.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Governance
The Board governs using the Policy Governance model and has a Board of Trustees' Policy Manual that outlines the strategic goals of the organization and clearly defines the roles, responsibilities and limitations of the board, executives and staff. In addition, the board maintains a written investment policy statement that documents TCDRS' investment objectives, policies, guidelines and procedures; outlines the duties and responsibilities; and provides guidance to the fiduciaries of the System. The Board monitors the effectiveness of the investment program, considers any needed changes to the investment policy, reviews governance processes and monitors performance on a quarterly basis. All board-hired contracts, including the investment consultant, are reviewed annually as part of the governance policy process with an in-depth contract review conducted every four years.

Investment Manager Selection and Monitoring
The Board is ultimately responsible for selection of investment managers to manage the portfolios within the asset classes. However, the Investment Officer and appropriate investment consultants will assist the Board in the selection process. TCDRS is focused on ensuring that TCDRS resources (e.g., investment management fees, personnel time, etc.) will be expended in the asset classes where there is a higher probability of consistent manager outperformance or where index funds are not available (e.g., alternative investments). Given this, the entire TCDRS US equity exposure is in index funds, over 40% of the developed non-US equity exposure is in index funds and 10% of emerging markets exposure is in index funds. For the public markets, active management is used in global equity, core fixed income, MLPs, REITs, and credit. **When choosing alternative investment vehicles the following criteria are considered:** - Quality and stability of the firm and investment team; - Previous investment track record of the investment vehicle manager; - Proposed investment strategy; - Ability of investment vehicle manager to demonstrate capability to generate superior returns; - Operational capabilities; - Legal and economic terms governing the partnership or other vehicle; - Alignment of interests; and - TCDRS portfolio fit The Board retains a performance measurement analyst to report performance of the System's investments based upon a total return using time-weighted rate of return calculations, calculated on a monthly basis on a gross and net of fee basis. The Board formally reviews these reports on a quarterly basis.

Full Investment Practices and Performance Evaluation

Texas Emergency Services Retirement System

PRB Analysis of Evaluation

Plan Assets:[1] $115,155,476
Evaluator: AndCo
Evaluator Disclosures:[2]
Relationship: Investment Consultant
Investment Discretion: None

The evaluation provides both a review of policy practices and clearly documents the sources used as comparative best practices, while also providing detailed explanations where appropriate, specifically the asset allocation and the general governance decision-making process.

The evaluator notes that the existing investment consultant makes recommendations for improvement proactively and are already incorporated in the existing practices, therefore only general recommendations for the System "to maintain its robust processes to both review the current investment portfolio while also seeking to identify new investments that can improve the System's long term expected risk and return while maintaining liquidity to meet its benefit obligations" are made in this evaluation.

The evaluation indicates the System has made numerous changes since engaging the current investment consultant in 2017, including investment policy statement revisions, investment manager changes and asset class additions which have "resulted in improved overall investment performance."

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
We analyzed the System's IPS and the Board's compliance with the IPS. AndCo, as an independent, professional investment consulting firm, has determined that the System's IPS, and the Board's compliance with the IPS, is appropriate and comparable the structure of an effective investment policy statement as laid out by the CFA Institute (ELEMENTS OF AN INVESTMENT POLICY STATEMENT FOR INSTITUTIONAL INVESTORS, Copyright 2010 by the CFA Institute). **Strengths:** – AndCo recommends the System maintain its ongoing review of the investment policy statement. We feel that including the policy statement in each quarter's board packet for review is a strong practice and should be continued. – AndCo recommends that the System continue to track the changes to the investment policy and report them in a clear and transparent manner.

Investment Asset Allocation
The System's process for determining asset allocation targets is executed and implemented through strategic asset allocation studies conducted by the System's investment consultant. The specific asset classes included in each strategic asset allocation study will include both asset classes currently in the System's portfolio as well as other asset classes that may be suitable for inclusion. AndCo works directly with the System's Actuary and Trustees to incorporate the System's specific liability circumstances and projections to review the potential impacts of varying investment asset allocation policies

[1] As of 8/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

on the key actuarial and liability metrics. For public pension funds, asset/liability studies are a critical tool to examine how well alternative investment strategies (differing asset allocations) impact the key long-term actuarial circumstances, including funded status and contribution requirements.

We believe a robust asset/liability study helps the consultant and Board review asset allocation mixes to determine those allocation strategies which could potentially best serve to protect or increase funding levels, while providing adequate liquidity for benefit payments and minimizing associated risks. AndCo believes that through a comprehensive discussion over the asset/liability study results clients can have a clearer understanding of practical plan investment expectations.

A comparison of the System's asset allocation vs public fund peers … reflects that the System's overall asset allocations are in line with public fund peers. The only area that was not represented in the asset allocation at 8/31/19 was international fixed income. Exposure to this area was added in 2020.

Strengths:

- AndCo recommends that the System
  - Maintain its long-term asset allocation structure and tolerance ranges. To this point the System has been responsive when presented with recommendations for expanding the asset classes in use within the portfolio.
  - Continue the process of active review. Asset allocation studies and asset liability studies are being developed and reviewed every three to five years which is in line with what AndCo views as best practice in the industry and across its client base.
  - Maintain its investment process for investment manager search and selection which relies on its investment consultant, investment committee, and board in selecting new investment managers for use within the pension fund's investment portfolio.
  - Continue to work with the Consultant to actively rebalance the portfolio to provided needed cash flow and maintain its long term target allocations.
- AndCo recommends that the board and its investment committee
  - Continue regular asset allocation reviews with its investment consultant.
  - Maintain its policy of educating themselves on new asset classes that could be beneficial to the investment portfolio.

Recommendation:

- It has been recommended that the board eliminate the allocation to MLPs going forward, this was completed in 2020.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Fees
The fees for the System's portfolio contained in the most recent quarterly investment review reflect a cost of 0.62%. Based on the 2019 NCPERS Public Retirement Systems Study, published on January 22, 2020, the average fee for the survey's 155 state and local government pension respondents was 0.55%. It is important to note the System also considers fees an important part of the decision-making process and evaluates the potential fee impact for each new investment manager and strategy considered for inclusion in the System's portfolio. The System considers the current fee of 0.62% reasonable and appropriate for its portfolio. We reviewed the fees paid to administer the System's portfolio and the underlying investment manager fees. AndCo, as an independent, professional investment consulting firm, has determined that the System's fees are appropriate as evidenced to the comparison of national plans in the 2019 NCPERS public Retirement Systems Study. No changes are recommended at this time.

Governance
The System's IPS contains clear definitions of the Board's responsibilities as well as the role of the Board's professional advisors in assisting the Board in fulfilling its fiduciary duties to the System with respect to the investment of assets. Direct investment authority for the System's assets lies with the Board. As such, all decisions regarding the System's portfolio including return objectives, risk tolerance, investment guidelines, asset allocation targets and manager selection and retention reside with the Board. In working with the System AndCo has found the staff and the trustees to be actively engaged in oversight of the investment portfolio. All investment decisions and allocation decisions have been made in the best interest of the System. We reviewed the System's governance processes related to investment activities, investment decision-making, delegation of investment authority, and education. AndCo, as an independent, professional investment consulting firm, has determined that the System's processes are appropriate. No changes are recommended at this time.

Investment Manager Selection and Monitoring
The investment manager selection process for the Fund is conducted in collaboration with the Fund's investment consultant and Investment Committee. Whether a specific investment strategy review is directed by the Board, staff, or the strategy idea comes from the investment consultant's research group, all potential investment strategies must go through the consulting firm's due diligence process and subsequently be presented and approved by the investment consultant's Investment Policy Committee before being shown as potential strategies for the Board to consider for the Fund's portfolio. Candidates are vetted by the consultant's research group to identify the best and most appropriate managers for the System in each investable asset class.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Strengths:

- All performance calculations supplied by the consultant to the board meet the guidelines of the CFA institute.
- AndCo feels that the manager selection process in place at TESRS isrobust and is in line with industry best practices. AndCo employs a similar search and selection across its national public fund client base. In addition, AndCo feels that the System is in line with the process best practices laid out by the GFOA for selecting third party investment professionals for pension fund assets.
- AndCo recommends that the System maintain its investment process for investment manager search and selection which relies on its investment consultant, investment committee, and board in selecting new investment managers for use within the pension fund's investment portfolio.

Full Investment Practices and Performance Evaluation

Texas Municipal Retirement System

PRB Analysis of Evaluation

Plan Assets:[1] $31,813,811,275

Evaluator: RVK

Evaluator Disclosures:[2]

Relationship: Investment consultant

Investment Discretion: None

The evaluation is well-balanced in its summarizing of information in easily understandable graphics, while also providing detailed explanations where appropriate, specifically, the helpful explanations of the asset allocation and investment manager selection processes. The evaluation models transparency by clearly identifying the internal documentation, third-party analyses and benchmarking sources used in the thorough review.

The evaluator indicates that the System follows best practice by considering its liabilities when developing the asset allocation, stating, "TMRS' target allocation is ultimately driven by the liabilities of the System including expected cash flow and liquidity needs. The primary method for analyzing the projected liabilities in the context of asset allocation is through an Asset/Liability ("A/L") Study." The evaluation then provides a highly useful review of the asset allocation process and, specifically, how the 2019 A/L Study was used. Future cash flow and funding needs are also addressed.

The evaluation also provides a thorough review of the investment fee structure and highlights the staff's unique annual process for reviewing manager fees. Finally, the evaluator presents an overview of how the System's investment beliefs and practices have resulted in fee savings.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
TMRS' investment program is governed by the Investment Policy Statement ("IPS") including the Investment Committee Charter, supported by the Internal Procedures, which together serve as overarching program documents detailing the objectives and guidelines used for the management of System assets. The Board of Trustees (the "Board") reviews the IPS at least annually, with the other documents maintained and managed by Executive and Senior Investment Staff. RVK finds all three documents to be clear, thoughtful, and comprehensive. The recent changes to the delegation model are also in line with what we consider to be best practices for management of System assets. RVK believes TMRS' IPS is consistent with industry best practices, representing clearly defined language aimed at providing the Board governance standards when instituting their investment program. In RVK's experience and reading of the Board meeting minutes, the Board has reviewed, edited where necessary, and approved changes at least on an annual basis over the last three years. **Strengths:** - RVK believes TMRS' Investment Department Internal Procedures are an example of industry best practice, representing clear and transparent processes for implementation of the System's investment program. **Recommendation:** - Finalize the System's Investment Beliefs and Fee Policy. Both items are crucial in the ongoing management of System assets and will assist all stakeholders in future decision-making processes.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Asset Allocation
The efforts from the Board and Investment Staff show a thoughtful approach to the selection of the Strategic Target Allocation, with particular emphasis on the 2019 Asset/Liability study. From this analysis, TMRS was able to narrow the potential range of outcomes and create a set of target allocations applying reasonable judgement and its own investment beliefs throughout the process. The current TMRS target portfolio represents one that is diversified, with ample opportunity for growth without sacrificing material downside protection. The process to reach the current target allocation took place over multiple Board meetings and continues to be refined as appropriate with each new analysis performed. TMRS' target allocation is ultimately driven by the liabilities of the System including expected cash flow and liquidity needs. The primary method for analyzing the projected liabilities in the context of asset allocation is through an Asset/Liability ("A/L") Study. Using the A/L Study as a guide, Investment Staff and the Investment Consultant perform detailed analyses on current allocations and potential target allocations. Analyses regularly performed include, but are not limited to, long-term risk and return characteristics, correlation and diversification relationships between asset classes, Monte Carlo simulations over the short and long-term, stress testing, and liquidity analysis. Based on the results from the A/L study conducted in 2019, TMRS elected to continue to implement a well-diversified investment portfolio. The study acknowledges the System's need to take on risk to achieve a return that can support the current level of annual pension funding. However, the study also cautions against adopting an overly aggressive asset allocation, as high expected return and high expected risk approaches bring with them increased risk of large declines in the value of the Plan. **Recommendation:** - Consider the inclusion of a broader set of potential portfolios in each asset/liability study. The recent asset/liability study has numerous portfolios modeled, but the overall dispersion of outcomes was relatively small; the Board may benefit from seeing more varied risk and return characteristics in the future.

Investment Fees
The overall aggregate level of investment fees and commissions paid by TMRS is below market for its asset allocation, meaning its implementation has been successful in managing costs. With very few exceptions, fees paid to individual managers are among the lowest in the industry for each mandate and are a testament to the diligence and contracting processes currently in place. While there are several mandates within the portfolio where fees or commissions appear modestly above industry median, it is important to note that these are also areas in which TMRS is receiving a differentiated level of active performance in a manner consistent with the Board and Staff's stance on use of active management. As such, higher fees in these areas may be warranted as overall net of fees performance remains attractive.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

TMRS has been successful in negotiating attractive fees with its public investment managers. The process for investment manager selection, more thoroughly explained in Section 5 of this report, has likely created significant efficiencies in this area.

Strengths:

- During RVK's review of fees paid to investment managers, the TMRS Investment Staff provided extensive supporting documentation for review. This documentation is part of a larger annual process in place involving the collection, aggregation, and review of manager fees. This process is somewhat unique and RVK believes it is a positive differentiator compared to many peers.
- RVK believes TMRS has taken a thoughtful approach within its implementation, leading to lower than market cost for the total portfolio and a majority of the underlying asset classes. In addition, TMRS continues to further its efforts with fee transparency and management, through a Fee Policy section in its pending Strategic Plan.

Governance

Through a review of past and current policies, charters, and meeting materials, it is clear the TMRS investment decision-making process and governance structure have been carefully constructed to reflect industry best practices. Notably, the separation of policy from procedures is an important and attractive characteristic of the TMRS investment program. Additionally, the ongoing education through formal training and meeting materials appear to satisfy certain requirements within Texas, while also providing Trustees with meaningful and important information critical to the management of System assets. Delegation of authority among Board, Executive and Investment Staff, and Investment Consultant are also clearly defined, with sound reasoning and a structure which allows for some degree of flexibility necessary to manage a successful investment program.

Strengths:

- Our review revealed an unusually comprehensive and detailed documentation of the TMRS' [governance and decision-making framework] … in a level of detail that in our experience is beyond the norm encountered in public funds nationally. In both their comprehensiveness and depth, we believe [TMRS's governance and decision-making framework] are a strong illustration of best practices.

Recommendation:

- We note there is currently no mention of ESG-related considerations or internal management and believe both items could be included in the future.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Manager Selection and Monitoring
The TMRS investment manager selection and monitoring process is well-defined and thoughtful in its approach. The TMRS Investment Staff diligently follows the policies and procedures as described and has made notable efforts in the improvement of their own due diligence efforts. The unique and differentiated approach to manager selection in both public and private markets, provides tangible and intangible benefits that a more common process followed by many peers may not afford, such as the demonstrated ability to negotiate lower fees and the avoidance of performance chasing behavior. While there are always areas to consider improvement, we believe the current process and documentation thereof is best-in-class within the public pension universe and commend the TMRS Board and Investment Staff on their efforts in the creation of a successful manager selection and monitoring program. **Strengths:** - RVK has found that the investment manager selection and monitoring process is well constructed and more thorough than many of those currently in place with other asset owners of similar size [and] allows TMRS to be a leader in this field. **Recommendation:** - Consider the adoption of mandatory reporting expectations by consultants and asset class directors to the Board in the IPS. While TMRS is currently receiving detailed and adequate reporting from each consultant, it is important to document expectations for continuity and governance purposes.

Full Investment Practices and Performance Evaluation

THA Master Trust for Member Hospitals

PRB Analysis of Evaluation

Plan Assets:[1]

JPS: $312,711,970
Citizens: $114,454,921
Guadalupe: $83,831,094

Evaluator: Aon Hewitt Investment Consulting (AHIC)

Evaluator Disclosures:[2]

Relationship: Investment consultant[3]

Investment Discretion: None

The evaluation covers the Texas Hospital Association (THA) Master Trust for Member Hospitals, which includes 3 public retirement systems subject to the requirements of Texas Government Code §802.109 (JPS Pension Plan - Tarrant County Hospital District [JPS], Retirement Plan for Citizens Medical Center [Citizens] and Retirement Plan for Guadalupe Regional Medical Center [Guadalupe]) as well as a number of other, smaller, public retirement systems.

The evaluation provides a good balance by clearly identifying the policies, summarizing information in an easily digestible format and explaining the conclusions in detail, where appropriate.

Within Texas, THA is unique in its design given the assets are pooled and invested similar to a multi-employer plan but the participating plans can have significantly disparate benefit structures. The evaluation, therefore, provides a detailed review of existing policies and practices utilized by THA at the trust level, but does not provide a comprehensive analysis at the "plan" level. It does however, indicate "that THA has taken strides to allow each Plan Sponsor to customize the investment program to meet its respective needs and objectives."

The evaluation concludes that across all areas evaluated THA is following or demonstrating best practices but continues to make recommendations for improvement. The evaluation notes several of the recommended changes were made following the evaluation but prior to the publication of the final report.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The IPS generally followed best practice prior to our review and following the implementation of our modest recommendations we consider the document to be in-line with best practice. The document is written sufficiently clear that anyone could manage the portfolio and generally conform to the desired intentions of the Board. The IPS includes investment objectives for the Plan and individual managers, with manager level benchmarks articulated within the performance reporting materials. Given the circumstances of THA as an outsourced administrator, the process for designing the IPS and funding policy to meet the needs and objectives of each Plan Sponsor is an important element. It is clear that THA has taken strides to allow each Plan Sponsor to customize the investment program to meet its respective needs and objectives. The Board of Trustees (Board) has created four asset mix options that can be utilized by participating defined benefit plans (Plan Sponsors). Plan Sponsors select from the four asset mixes based on annual recommendations provided by THA's actuary and investment consultant.

[1] As of 9/30/2019, 2/29/2020 and 12/31/2019, respectively
[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.
[3] A separate group within AHIC ("Fiduciary Services Practice") is providing this Evaluation at the Plan's request

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Recommendations:

- We believe the IPS could be enhanced by
  - adding language elaborating on the fiduciary duty to the underlying participants of the plans.
  - adding a section articulating the duties of the investment consultant and actuary. Following the completion of our analysis and prior to the distribution of our final report, THA added language to its IPS outlining the responsibilities of the consultant and the actuary.
  - adding descriptive language on who sets benchmarks, timing for their review, and the rationale for their selection.
  - the inclusion of high-level language on the importance of diversification and how the Board thought about the benefits of diversification when selecting the asset allocation of the mixes.
  - including more definitive rebalancing ranges and guidelines.
  - including a more descriptive timeline of the cycle for reporting on key metrics associated with the governance of the Plan
- We believe the IPS should include language articulating the process and timing associated with determining the appropriate asset allocation for each asset mix.

Investment Asset Allocation

The THA Board selects the strategic asset allocation of the asset mixes that are intended to represent the range of risk that would be desired by Plan Sponsors. THA then works in conjunction with the actuary and the investment consultant to recommend the appropriate asset mix to each Plan Sponsor. The Plan Sponsor then evaluates the recommendation, in conjunction with their own risk preference, and selects an appropriate asset mix.

The asset allocation of the offered mixes are evaluated on an ongoing basis, with the most recent review occurring in December of 2019. These reviews typically occur due to changes in the capital markets or based on conversations with the Plan Sponsors. At the time we performed our review, THA did not have a formal and/or written policy for determining and evaluating its asset allocation. Following the completion of our analysis and prior to the distribution of our final report, THA added language to its IPS outlining the timing and high-level analysis which will be performed as part of the process for evaluating the target allocation for the offered mixes.

Given THA's role as an outsourced administrator of defined benefit plans, performing an asset-liability study is not applicable. THA performs portfolio projections and analysis including stress testing to determine the allocation of the asset mixes. THA is following common practice in its process for establishing and evaluating asset allocation.

Recommendations:

- We believe the Plan could benefit from continued evaluation on how alternative investments could be utilized for diversification purposes but

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

continue to meet the required liquidity needs of the Plan Sponsors.

- We believe the Plan could benefit from continued consideration of further diversifying into developed and emerging international markets.

Investment Fees
THA does not have a written investment management fee policy. However, investment management fees are compared to peer universes and provided to the Board on a quarterly basis. This type of policy is not common across peer institutional investors. The Plan's investment management fees compare favorably at the Plan level as well as by individual investment strategy. On a quarterly basis, the Plan's investment consultant provides analysis which compares the investment expense of each investment mandate against that of a peer group. Investment management fees are reviewed for reasonableness on a quarterly basis. The financials of the Plan are also provided to the Board for review on a quarterly basis.

Governance
The IPS outlines the roles and responsibilities of the investment decision making processes for the trustees and investment managers. The Master Trust document outlines plan administration, funding, investment of the trust, powers and fiduciaries responsibilities, and delegation to investment managers. THA designated the Successor Trustee Board (STB) to act as trustee for the Master Trust and to fulfill the purposes of the Trust. The Successor Trustee Board is currently composed of seven appointed members. The Trustees are senior executive officers from the plan sponsor and THA. The Successor Board meets on a quarterly basis. The Trustees receive meeting agendas and board materials in advance of the meetings. There are detailed minutes of each meeting which are approved at the next quarterly meeting. The assigned investment consultants from AHIC provide quarterly investment updates and legal counsel provides legal reports and fiduciary guidance to the Trustees. **Strengths:** - The use of a Board Charter is a recognized governance best practice and can assist the Plan in formally documenting its already demonstrated best practices of efficient and effective structure, meetings, and oversight of the Plan. **Recommendation:** - While the IPS and Master Trust Document generally outline the governance of the investment-decision making process, we recommend adoption of a Board Charter (or bylaws or comparable document) for the Successor Board.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Manager Selection and Monitoring
The Board's investment consultant produces recommendations for manager selection. The managers presented to the Board for review are all Buy rated by the investment consultant's investment manager research team. The ultimate selection among multiple Buy rated candidates is at the discretion of the Board based on it's review of the consultant's diligence reports, discussions with the consultant, and the Board's own experience. The process performed by the consultant for identifying, further screening, ongoing diligence, and termination of investment managers is robust and is outlined in detail within the report. The Plan's investment consultant is responsible for measuring and reporting net of fee investment performance. We believe that the performance reports are appropriately formatted and presented to allow Trustees of all investment acumen and expertise to evaluate the investment success associated with the implementation of the investment policy. Given the complex nature of the topic, the additional opportunity to discuss the reports with the Board's investment consultant further alleviates any concern that the reports are overly complex.

Full Investment Practices and Performance Evaluation

The Woodlands Firefighters' Retirement System

An evaluation was provided to the PRB. Following feedback from the PRB Investment Committee, the Fund is working with their evaluator to make updates and has indicated a new report is expected to be provided in the near future.

Tyler Firefighters’ Relief and Retirement Fund

An evaluation was provided to the PRB. Following feedback from the PRB Investment Committee, the Fund is working with their evaluator to make updates and has indicated a new report is expected to be provided in the near future.

University Health System Pension Plan

PRB Analysis of Evaluation

Plan Assets:[1] $436,563,397

Evaluator: Callan

Evaluator Disclosures:[2]

Relationship: Investment consultant

Investment Discretion: None

The evaluation provides extensive explanations outlining the evaluation methodology used and supporting arguments for the conclusions drawn. The evaluation also provides a useful summary matrix that covers both the recommendations and important practices for each section.

The evaluation notes the Pension Trust's asset allocation withstood challenging market conditions while achieving its target rate of return. It also describes the Pension Trust's asset-liability evaluation process, which it defines as aligned with best practice and provides a peer comparison of the asset allocation.

The evaluation recommends the board consider adopting PRB's MET requirements as part of a formal continuing education requirements policy and identifies under the established bylaws "the tenure of several trustees is approaching or exceeds the stated term limit."

Th evaluation concludes the System's "investment policy, asset allocation, investment fees and commissions, governance process, and manager search and monitoring procedures appear sufficient with no material issues at this time."

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The University Health System Pension Trust (the "Pension Trust") maintains a written Investment Policy Statement (the "IPS") that includes the following five components: 1. roles and responsibilities; 2. investment objectives; 3. statement of investment policy; 4. administrative and review procedures; and 5. investment guidelines. Compliance with the IPS appears adequate. The IPS is clearly and thoroughly written and serves as an effective guide that offers an objective course of action to be followed during periods of market disruption when emotional responses might otherwise motivate less prudent actions. **Strengths:** – The Pension Trust's investment policy, asset allocation, investment fees and commissions, governance process, and manager search and monitoring procedures appear sufficient with no material issues at this time. **Recommendations:** – Consider reviewing the IPS at least annually to ensure that it continues to be appropriate in accordance with changes to the Pension Trust and the capital market environment. – Consider adding a description of the roles and responsibilities of the Custodian, Actuary and Legal Counsel to the IPS.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Asset Allocation
Strategic asset allocation is reviewed every three to five years. The last asset-liability study was completed in 2017. The asset-liability study is used to test the current asset allocation target (and its accompanying expected return and risk) against the current rate environment, growth in liabilities, and market risks, and then compares that allocation to alternate asset mixes with higher and lower levels of risk and return. **Strengths:** – The Pension Trust is a well-diversified portfolio which has withstood challenging market conditions while achieving the target rate of return on assets. – The asset-liability evaluation process is aligned with industry best practices. – The Board has not maintained a higher expected rate of return in order to reduce the plan's liabilities. – The Board has been committed to the long-term obligations assumed by the Pension Trust. Both the history of contributions and the time dedicated by the Board to evaluate and invest the assets of the Pension Trust reflect this fact.

Investment Fees
The Pension Trust maintains appropriate policies & procedures to account for and control investment expenses. The Board conducts an investment management fee review every three years. The last fee review was completed in 2019. Investment management fees are reasonable in comparison to industry peers. The Pension Trust employs one separate account investment manager that generates commissions. In 2019, the total commission dollars and cents-per-share reported were $57,921 and $0.04, respectively. Total commissions generated appear reasonable and aligned with industry norms. **Strengths:** – Investment management fees are reasonable in comparison to industry peers. – Total commissions generated appear reasonable and aligned with industry norms.

Governance
The Pension Trust is administered by a Board of Trustees, approved by the System's Board of Managers, and consists of nine professionals. Two Trustees are appointed from System Administrative Staff, two Trustees are appointed from the System Board of Managers, and five Trustees are appointed who

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

either reside or work in Bexar County. The University Health System Pension Bylaws state that Trustees may not serve more than four consecutive four-year terms, or more than sixteen years. The tenure of several trustees is approaching or exceeds the stated term limit.

Strengths:

- Investment decisions are thoroughly vetted and reviewed by all Trustees, and decisions are made in a prudent fashion.
- The qualifications & career experience of the leadership team and Board is considered high relative to industry peers.
- All investment decisions are thoroughly documented and summarized in meeting minutes.

Recommendation:

- Consider adopting the Texas Pension Review Board's educational training requirements and drafting a "Continuing Educational Requirements" policy summarizing the hours of education required and method to report compliance.

Investment Manager Selection and Monitoring
The Board utilizes a process for investment manager selection that embodies the principles of procedural due diligence. Accordingly, when selecting investment managers, the Board employs a competitive search process. Compliance with the selection process is satisfactory. The Board reviews both net-of-fee and gross-of-fee manager performance on a quarterly basis relative to benchmarks and peers. The quarterly monitoring process includes both quantitative and qualitative criteria and appears adequate. All Trustees are required to disclose any actual or potential conflict of interest and refrain from voting or using his or her influence on the manager selection and monitoring process, if a conflict exists. The conflict of interest policy is reasonable. **Strengths:** – The Board reviews both net- and gross-of-fee manager performance on a quarterly basis relative to benchmarks and peers.

Full Investment Practices and Performance Evaluation

Wichita Falls Firemen's Relief & Retirement Fund

PRB Analysis of Evaluation

The evaluation describes the Fund's existing policies and procedures, providing detailed descriptions in several areas. The evaluation does not offer any recommendations for improvement, concluding the policies and procedures are appropriate and compatible with industry standards, but it is unclear how these are defined.

Plan Assets:[1] $52,877,954

Evaluator: AndCo

Evaluator Disclosures:[2]

Relationship: Investment Consultant

Investment Discretion: None

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

Investment Policy Statement
The IPS outlines the objectives and risk tolerance of the Fund as well as the various management and administration responsibilities related to the management of the Fund's investment portfolio. The IPS defines that the Board of Trustees ("Board") is responsible for making decisions regarding the Fund's investment portfolio. All recommendations for actions in the investment portfolio are reported to and voted on by the Board. The Board has hired an outside investment consultant to assist the Board in their decisions regarding the Fund's IPS, strategic asset allocation, manager selection, ongoing manager evaluation, and IPS compliance monitoring. The Board generally reviews the Fund's IPS at least annually. The last review took place in March of 2020 where changes were implemented to reflect the restructuring of the fixed income portfolio. The Board also monitors compliance to the System's current IPS during each quarterly performance review with the investment consultant. We analyzed the Fund's IPS and the Board's compliance with the IPS. While different IPS structures exist, AndCo, as an independent, professional investment consulting firm, has determined that the Fund's IPS, and the Commission's compliance with the IPS, is appropriate and comparable with what AndCo considers best practice, industry standards. No changes are recommended at this time.

Investment Asset Allocation
The Fund's process for determining asset allocation targets is executed and implemented through frequent and thorough discussions between the Board and the investment consultant. Each year, the Board's investment consultant uses a combination of 10- to 15-year forward looking asset class return assumptions, risk and correlation assumptions, historical asset class return and risk data, and a long-term (50+ years) building block return methodology to determine a target allocation that the investment consultant believes will have the highest probability of achieving the Fund's return objectives. Any changes to the Fund's strategic asset allocation targets and ranges are then recommended to the Board for consideration. This was last reviewed in March 2020.

[1] As of 12/31/2019

[2] Texas Government Code §802.109 authorizes the selection of a firm that has an existing relationship with the System, as long as the firm does not directly or indirectly manage investments. PRB's informal *Guidance for Investment Practices and Performance Evaluation* recommends this information be disclosed in the evaluation.

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

We reviewed the System's processes for asset allocation including; target determination, expected risk and return, selection and valuation methodologies for alternative and illiquid assets, as well as cash flow and liquidity needs. While different approaches exist, AndCo, as an independent, professional investment consulting firm, has determined that the System's processes are appropriate and comparable with what AndCo considers best practice, industry standards. No changes are recommended at this time.

Investment Fees
The Board reviews the fees (stated in both dollars and basis points) paid to administer the Fund's portfolio on a quarterly basis for each of its underlying investment managers and strategies in the quarterly investment review prepared and presented by the investment consultant. The fees for the Fund's portfolio contained in the most recent quarterly investment review reflect a cost of 0.54%. Based on the 2019 NCPERS Public Retirement Systems Study, published on January 22, 2020, the average fee for the survey's 155 state and local government pension respondents was 0.55%. It is important to note the Fund also considers fees an important part of the decision making process and evaluates the potential fee impact for each new investment manager and strategy considered for inclusion in the Fund's portfolio. The Fund considers the current fee of 0.54% reasonable and appropriate for its portfolio. We reviewed the fees paid to administer the Fund's portfolio and the underlying investment manager fees. While high or low fees do not guarantee failure or success for an investment portfolio, AndCo, as an independent, professional investment consulting firm, has determined that the Fund's fees are appropriate and comparable with what AndCo considers best practice, industry standards. No changes are recommended at this time.

Governance
The Fund's IPS contains clear definitions of the Board's responsibilities as well as the role of the Board's professional advisors in assisting the Board in fulfilling its fiduciary duties to the Fund with respect to the investment of assets. Direct investment authority for the Fund's assets lies with the Board. As such, all decisions regarding the Fund's portfolio including return objectives, risk tolerance, investment guidelines, asset allocation targets and manager selection and retention reside with the Board. The Board utilizes an investment consultant to assist with setting the Fund's strategic policy and asset allocation targets, as well as investment manager strategy evaluation and selection. The investment consultant is a fiduciary to the System. In addition, all comingled fund investment managers must be fiduciaries to the fund that they manage in which the Fund has invested. The Fund does not perform any portfolio management functions internally. We reviewed the Fund's governance processes related to investment activities, investment decision-making, delegation of investment authority, and education. While different governance structures exist around investment decision-making, delegation of investment authority, and education, AndCo,

The following table presents excerpts from each section of the evaluation including any recommendations for improvement made by the evaluator.

as an independent, professional investment consulting firm, has determined that the Fund's processes are appropriate and comparable with what AndCo considers best practice, industry standards. No changes are recommended at this time.

Investment Manager Selection and Monitoring
The investment manager selection process for the Fund is conducted in collaboration with the Fund's investment consultant. Whether a specific investment strategy review is directed by the Board or the strategy idea comes from the investment consultant's research group, all potential investment strategies must go through the consulting firm's due diligence process and subsequently be presented and approved by the investment consultant's Investment Policy Committee before being shown as potential strategies for the Board to consider for the Fund's portfolio. The ongoing monitoring of investment managers and strategies is also done collaboratively with the Board and the investment consultant on an ongoing basis (as needed between meetings) and through quarterly Board meetings that the investment consultant attends. The investment consultant prepares summary monthly performance reports and more comprehensive quarterly investment reviews for presentation to, and discussion with, the Board during these quarterly meetings. We reviewed the Fund's investment manager selection and monitoring process. While different approaches to manager selection and monitoring exist, AndCo, as an independent, professional investment consulting firm, has determined that the Fund's selection and monitoring of investment managers are appropriate and comparable with what AndCo considers best practice, industry standards. No changes are recommended at this time.

Full Investment Practices and Performance Evaluation

APPENDIX G – ASSET CLASS CATEGORIZATION GUIDE

TEXAS PENSION REVIEW BOARD

2020 Asset Class Categorization Guide

The purpose of this document is to further clarify the asset classes for the investment fees and commissions reporting requirements established by §802.103(a)(3) of the Texas Government Code and 40 TAC Chapter 609. The examples listed are not exhaustive. For investment products containing investments in more than one asset class, fees must be reported according to the corresponding asset class (e.g., a balanced fund comprised of 60% public equities and 40% fixed income).

1. Cash

Cash and cash equivalents are short-term, highly liquid investments that are readily convertible to known amounts of cash and near their maturity date. Examples include Treasury bills, commercial paper, and money market funds.

2. Fixed Income

Fixed income generally comprises debt securities such as municipal or corporate bonds that provide returns in the form of fixed, periodic payments (e.g. interest or coupon payments) and the return of principal at maturity. Other examples include private debt, Treasury Inflation-Protected Securities (TIPS), US Treasury securities, fixed income mutual funds and mortgage-backed securities.

3. Public Equity

Equity securities are shares representing an ownership interest in a corporation. Examples of equities include domestic, international, and emerging market stocks, as well as equity mutual funds.

4. Real Assets

Real assets are physical assets. They can include natural resources, commodities, and real estate investments such as real estate investment trusts (REITs), private real estate funds and direct investment in property.

5. Alternative/Other

Investments that do not fit into any of the categories above may be classified as an alternative or other investment. Some alternative investments may include private equity, hedge funds, derivatives and venture capital. All investments in this class must be listed by type in a footnote or table.

APPENDIX H – INVESTMENT EXPENSE REPORTING TEMPLATE

Template for SB 322 Investment Expense Reporting in Annual Financial Reports

Instructions: This spreadsheet includes tables to assist public retirement systems with investment expense reporting in their **annual financial reports** as required by Texas Government Code §802.103. The *Direct and Indirect Fees and Commissions* table is intended to assist systems with reporting investment management fees, brokerage fees/commissions, and profit share, as defined by §815.3015(a)(2) of the Texas Government Code. The shaded columns/rows contain built-in formulas to assist with the calculation of total expenses. The Asset Class Categorization Guide, which may be found on the *References* tab, may be used as a reference regarding how investment types should be classified.

The *Total Investment Expenses* table is provided to help systems report total investment expenses, including investment services, as defined by 40 TAC, §609.105(9). Additionally, the *Alternative/Other* and *Investment Managers* tables are provided to help systems to list investments categorized as alternative/other, as required by 40 TAC, §609.111(i), and the names of investment managers engaged by the system, per Government Code §802.103(a)(4).

An example of this investment expense reporting may be found on the Example tab. Systems are not required to use this format or template to comply with the requirements of Texas Government Code §802.103.

<u>Please be sure to include required investment expense information in the system's annual financial report. It is not necessary to provide a completed template to the PRB</u>.

Direct and Indirect Fees and Commissions

ASSET CLASS	MANAGEMENT FEES PAID FROM TRUST	MANAGEMENT FEES NETTED FROM RETURNS	TOTAL INVESTMENT MANAGEMENT FEES (Management Fees Netted from Returns + Management Fees Paid From Trust)	BROKERAGE FEES/COMMISSIONS	PROFIT SHARE/CARRIED INTEREST	TOTAL DIRECT AND INDIRECT FEES AND COMMISSIONS (Management Fees + Brokerage Fees/Commissions + Profit Share)
Cash	$ -	$ -	$ -	$ -	$ -	**$ -**
Public Equity	$ -	$ -	$ -	$ -	$ -	**$ -**
Fixed Income	$ -	$ -	$ -	$ -	$ -	**$ -**
Real Assets	$ -	$ -	$ -	$ -	$ -	**$ -**
Alternative/Other	$ -	$ -	$ -	$ -	$ -	**$ -**
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Alternative/Other

List of Alternative/Other Investments*

Investment Managers

List of Investment Manager Names*

Total Investment Expenses

Total Direct and Indirect Fees and Commissions	**$ -**
Investment Services	
Custodial	$ -
Research	$ -
Investment Consulting	$ -
Legal	$ -
Total	**$ -**
Total Investment Expenses (Total Direct and Indirect Fees and Commissions + Investment Services)	$ -

*The tables may be used by systems to report investments categorized as Alternative/Other, as required by 40 TAC, §609.111(i), as well as include the names of investment managers engaged by the system, per Government Code §802.103(a)(4). If further space is required, additional rows may be used.

SB 322 Investment Expense Reporting in Annual Financial Reports - *Example*

Instructions: This spreadsheet includes tables to assist public retirement systems with investment expense reporting in their **annual financial reports** as required by Texas Government Code §802.103. The *Direct and Indirect Fees and Commissions* table is intended to assist systems with reporting investment management fees, brokerage fees/commissions, and profit share, as defined by §815.3015(a)(2) of the Texas Government Code. The shaded columns/rows contain built-in formulas to assist with the calculation of total expenses. The Asset Class Categorization Guide, which may be found on the References tab, may be used as a reference regarding how investment types should be classified.

The *Total Investment Expenses* table is provided to help systems report total investment expenses, including investment services, as defined by 40 TAC, §609.105(9). Additionally, the *Alternative/Other* and *Investment Managers* tables are provided to help systems to list investments categorized as alternative/other, as required by 40 TAC, §609.111(i), and the names of investment managers engaged by the system, per Government Code §802.103(a)(4).

Systems are not required to use this format or template to comply with the requirements of Texas Government Code §802.103.

Please be sure to include required investment expense information in the system's annual financial report. It is not necessary to provide a completed template to the PRB.

Direct and Indirect Fees and Commissions

ASSET CLASS	MANAGEMENT FEES PAID FROM TRUST	MANAGEMENT FEES NETTED FROM RETURNS	TOTAL INVESTMENT MANAGEMENT FEES (Management Fees Netted from Returns + Management Fees Paid From Trust)	BROKERAGE FEES/COMMISSIONS	PROFIT SHARE/CARRIED INTEREST	TOTAL DIRECT AND INDIRECT FEES AND COMMISSIONS (Management Fees + Brokerage Fees/Commissions + Profit Share)
Cash	$ 1,150	$ -	$ 1,150	$ -	$ -	**$ 1,150**
Public Equity	$ 5,860	$ 9,830	$ 15,690	$ 20,100	$ -	**$ 35,790**
Fixed Income	$ 3,460	$ 6,720	$ 10,180	$ -	$ -	**$ 10,180**
Real Assets	$ -	$ -	$ -	$ -	$ -	**$ -**
Alternative/Other	$ -	$ 5,260	$ 5,260	$ -	$ 45,100	**$ 50,360**
TOTAL	**$ 10,470**	**$ 21,810**	**$ 32,280**	**$ 20,100**	**$ 45,100**	**$ 97,480**

Alternative/Other

List of Alternative/Other Investments*
Private Equity
Hedge Funds
Commodities

Investment Managers

List of Investment Manager Names*
XYZ Capital Management
Sample Investments, LLC

Total Investment Expenses

Total Direct and Indirect Fees and Commissions	**$ 97,480**
Investment Services	
Custodial	$ 8,820
Research	$ 5,810
Investment Consulting	$ 10,330
Legal	$ 5,640
Total	**$ 30,600**
	$ 128,080

2020 Asset Class Categorization Guide

The purpose of this document is to further clarify the asset classes for the investment fees and commissions reporting requirements established by §802.103(a)(3) of the Texas Government Code and 40 TAC Chapter 609. The examples listed are not exhaustive. For investment products containing investments in more than one asset class, fees must be reported according to the corresponding asset class (e.g., a balanced fund comprised of 60% public equities and 40% fixed income).

Cash

Cash and cash equivalents such as money market securities are very liquid and stable (that is, they have very low volatility).

Fixed Income

Fixed income generally comprises debt securities such as municipal or corporate bonds that provide returns in the form of fixed, periodic payments (e.g. interest or coupon payments) and the return of principal at maturity. Other examples include private debt, Treasury Inflation-Protected Securities (TIPS), US Treasury securities held for longer than one year, fixed income mutual funds and mortgage-backed securities.

Public Equity

Equity securities are shares representing an ownership interest in a corporation. Examples of equities include domestic, international, and emerging market stocks, as well as equity mutual funds.

Real Assets

Real assets are physical assets. They can include natural resources, commodities, and real estate investments such as real estate investment trusts (REITs), private real estate funds and direct investment in property.

Alternative/Other

Investments that do not fit into any of the categories above may be classified as an alternative or other investment. Some alternative investments may include private equity, hedge funds, derivatives and venture capital. All investments in this class must be listed by type in a footnote or table.

Additional References:
Click here to view 40 TAC, Chapter 609
Click here to view Texas Government Code §802.1

APPENDIX I – FSRP STATUS REPORT

TEXAS PENSION REVIEW BOARD

Systems Immediately Subject to FSRP Formulation Requirement

The FSRP requirement is triggered for retirement systems that have had amortization periods over 40 years for three consecutive annual actuarial valuations, or two consecutive actuarial valuations if the systems conduct the valuations every two or three years.

Systems Immediately Subject to an FSRP Formulation Requirement							
Retirement System	Am Period	Date of AV	Am Period	Date of AV	Am Period	Date of AV	FSRP Due Date
Irving Firemen's Relief & Retirement Fund – Revised FSRP[1,2]	63.4	1/1/2014	46.5	12/31/2015	Infinite	12/31/2017	4/2019
Midland Firemen's Relief & Retirement Fund – Revised FSRP[1]	59.1	1/1/2014	44.7	12/31/2015	Infinite	12/31/2017	8/2019
Longview Firemen's Relief & Retirement Fund	50.7	12/31/2016	40.2	12/31/2017	Infinite	12/31/2018	2/2020
Orange Firemen's Relief & Retirement Fund – Second Revised FSRP[1]	58.2	1/1/2015	69.3	1/1/2017	Infinite	1/1/2019	4/2020
Marshall Firemen's Relief & Retirement Fund – Revised FSRP[1]	43.2	12/31/2014	56.4	12/31/2016	59.0	12/31/2018	5/2020
Beaumont Firemen's Relief & Retirement Fund	39.1	12/31/2014	104.0	12/31/2016	Infinite	12/31/2018	7/2020
Dallas Employees' Retirement Fund – Revised FSRP[1]	47.0	12/31/2017	46.0	12/31/2018	65.0	12/31/2019	1/2021
Plainview Firemen's Relief & Retirement Fund	31.6	12/31/2015	44.8	12/31/2017	79.7	12/31/2019	3/2021

[1] Texas Government Code Section 802.2015(d) requires systems to formulate a revised FSRP if the system conducts an actuarial valuation showing that the system's amortization period exceeds 40 years, and the previously formulated FSRP has not been adhered to.

[2] A Revised FSRP has been received from the system but an actuarial analysis of the changes made has not yet been confirmed by the PRB.

Systems at Risk of FSRP Formulation Requirement

These at-risk systems' most recent actuarial valuation shows an amortization period that exceeds 40 years but does not yet trigger the FSRP requirement.

Systems at Risk of an FSRP - Not Yet Subject to FSRP Requirement							
Retirement System	Am Period	Date of AV	Am Period	Date of AV	Am Period	Date of AV	FSRP Due Date
Atlanta Firemen’s Relief & Retirement Fund	36.2	12/31/2014	28.4	12/31/2016	Infinite	12/31/2018	N/A
Austin Employees’ Retirement System	30.0	12/31/2017	32.0	12/31/2018	40.0	12/31/2019	N/A
Austin Police Retirement System	35.0	12/31/2017	Infinite	12/31/2018	Infinite	12/31/2019	N/A
Cleburne Firemen’s Relief & Retirement Fund	27.3	12/31/2014	28.8	12/31/2016	48.6	12/31/2018	N/A
Conroe Fire Fighter’s Retirement Fund	31.4	12/31/2015	39.0	12/31/2017	Infinite	12/31/2018	N/A
Laredo Firefighters Retirement System	29.8	9/30/2014	28.0	9/30/2016	43.0	9/30/2018	N/A
McAllen Firemen's Relief & Retirement Fund	29.0	10/1/2014	33.4[1]	10/1/2016	Infinite	10/1/2018	N/A
Sweetwater Firemen's Relief & Retirement Fund[2]	58.8	12/31/2014	27.5	12/31/2016	63.3	12/31/2018	N/A
Texas City Firemen’s Relief & Retirement Fund	31.6	12/31/2014	28.0	12/31/2016	41.1	12/31/2018	N/A
Texarkana Firemen’s Relief and Retirement Fund	16.3	12/31/2015	15.0	12/31/2017	58.3	12/31/2019	N/A

[1] Reflects an increase in employee contribution from 11% to 12% effective April 9, 2018.
[2] Sweetwater previously completed an FSRP successfully.

Progress Report on Previously Submitted FSRPs

The following systems have previously formulated an FSRP. The table below outlines their progress towards the FSRP requirement.

Systems Still Working Towards Meeting the 40-Year Amortization Period Requirement						
	FSRP Trigger		Current Progress[1]			
Retirement System	Am Period	Date	Am Period	Date	Goal Year[2]	Update Required
Greenville Firemen's Relief & Retirement Fund – Revised FSRP	70.4	12/31/2014	40.7	12/31/2018	2026	9/2021
Fort Worth Employees' Retirement Fund	72.5	12/31/2015	43.0	12/31/2019	2026	5/2021
Wichita Falls Firemen's Relief & Retirement Fund – Revised FSRP	Infinite	1/1/2015	43.3	1/1/2020	2026	8/2021

[1] Based on the most recent actuarial valuation or FSRP.
[2] The year in which a system must reach an amortization period of 40 years or less.

Previously Completed FSRP Requirement Systems

The following table is a list of all systems that have submitted an FSRP that has lowered their amortization period below 40 years in a subsequent actuarial valuation.

Systems that Have Submitted Post-FSRP Actuarial Valuations Showing Amortization Period Below 40 Years					
	FSRP Trigger		Completed Progress[1]		
Retirement System	Am Period	Date	Am Period	Date	Goal Year[2]
Dallas Police & Fire Pension System (Combined Plan)	44.0	1/1/2017	38.0[3]	1/1/2019	2027
Galveston Employees' Retirement Plan for Police	55.1	1/1/2014	35.3	1/1/2018	2026
Galveston Firefighter's Relief & Retirement Fund – Revised FSRP	50.2	1/1/2014	26.8	12/31/2017	2026
Harlingen Firemen's Relief & Retirement Fund – Revised FSRP	59.1	9/30/2017	38.0	9/30/2019	2026
Lufkin Firemen's Relief & Retirement Fund	40.6	12/31/2014	33.1	12/31/2016	2026
Odessa Firefighters' Relief & Retirement Fund – Revised FSRP	77.5	1/1/2019	37.5	1/1/2020	2026
Sweetwater Firemen's Relief & Retirement Fund	58.8	12/31/2014	27.5	12/31/2016	2026
University Park Firemen's Relief & Retirement Fund – Revised FSRP	53.7	1/1/2015	28.8	12/31/2018	2026

[1] Based on the valuation in which the system completed its FSRP requirement.
[2] The year in which a system was expected to reach an amortization period of 40 years or less.
[3] The amortization period reflects a payroll projection based upon the City of Dallas' Hiring Plan which has yet to materialize, a concern that was noted by the system's actuary in its latest actuarial valuation.

APPENDIX J – FSRP SUMMARY

Summary of FSRPs Received

Retirement System	Date Received	AV Effective Date[1]	Amortization Period	Changes			Comments
				Employee Contributions	Employer Contributions	Other	
Irving Firemen's Relief & Retirement Fund - Revised FSRP[2,3]	11/18/2020	12/31/2017	Infinite	N/A	Old: 16.75% New: 20.25%	• Lowered assumed rate of return from 8.25% to 7%. • Lowered payroll growth assumption from 4.25% to 2.75%. • Lowered the interest rate on the DROP to 3.3% • Members no longer receive interest on their DROP account when they leave the department. • Final average salary raised from 3 years to 5 years. • New Benefit Tier (members hired after 1/1/2021): Multiplier is 3% for first 21 years. FAS is highest 60 months. Normal retirement is 54/20.	City contributions will be increased effective 1/1/2021.
University Park Firemen's Relief and Retirement Fund - Revised FSRP[3]	1/22/2020	12/31/2016	Infinite	N/A	Old: 21.52% New: Closed 30-yr ADC beginning October 1, 2017	• Employer contributing a biennially recalculated ADC rate. • Plan is closed and new hires are required to participate in TMRS.	
Odessa Firemen's Relief and Retirement Fund - Revised FSRP[3]	12/19/2019	1/1/2019	77.5	Old: 18.00% New: 16.00%	Old: 20.00% New: 26.00%	• Lowered the assumed rate of investment return from 7.75% to 7.5%	
Wichita Falls Firemen's Relief and Retirement Fund - Revised FSRP[3]	8/23/2019	1/1/2018	Infinite	N/A	N/A	• Added a cap on the maximum accrued benefit of $100,000 per year • Changed the final average salary period from 3 years to 5 years for all members • Amended the normal form of annuity payment from a 66 2/3% Joint & Survivor Annuity to a Life Only Annuity • Contingency plans to lower amortization period below 40 years if future valuations show amortization periods greater than 40 years	
Harlingen Firemen's Relief and Retirement Fund - Revised FSRP[3]	6/6/2019	9/30/2017	59.1	N/A	Old: 15.00% New: 17.00%	• New Benefit Tier (members hired after 4/1/19): Benefit Formula equal to 2.50% x Final Average Salary (FAS) x Years of Credited Service (YCS). FAS = highest 60-month average salary. The maximum benefit for this tier is 70% of a member's FAS. • Reduced longevity benefit in original tier from $65 per YCS over 20 years to $50 per YCS over 20 years for service after 4/30/19. The benefit changes also include a cap on longevity service benefits with no additional benefit after 30 YCS.	

Summary of FSRPs Received

Retirement System	Date Received	AV Effective Date[1]	Amortization Period	Changes: Employee Contributions	Changes: Employer Contributions	Changes: Other	Comments
Fort Worth Employee's Retirement Fund	4/11/2019	12/31/2015	72.5	*General*[4]*:* Old: 8.25% New: 9.35% *Police:* Old: 8.73% 2019: 10.53% 2020: 12.53% 2021: 13.13% *Fire:* Old: 8.25% 2019: 10.05% 2020: 12.05%	*General & Fire:* Old: 19.74% New: 24.24% *Police:* Old: 20.46% New: 24.96%	• Eliminated automatic COLA and established a Variable COLA for certain Tier I members • Eliminated future accruals of major medical and excess sick leave toward service and Final Average Compensation • Added overtime in the calculation of member contributions • Extended maximum DROP period to six years • Established certain automatic risk-sharing contribution increases when plan funding is not meeting funding requirements.	City Code targets full funding by 12/31/2048. Beginning in 2022, automatic risk-sharing splits contribution increases above the calculated ADC with 60% attributed to the employer and 40% attributed to the employee, subject to caps. If ADC continues to exceed maximum allowable contribution, additional benefit reductions must be considered.
Galveston Firefighter's Relief & Retirement Fund - REVISED FSRP[3]	5/28/2018	12/31/2016	Infinite	Old: 16.00% New: 3/1/18: 17.00% 10/1/18: 18.00%	Old: 14.00% New: 17.00% + $1 million one-time lump sum	Discontinued automatic COLA for firefighters not yet retired; effective March 1, 2018.	
Marshall Firemen's Relief & Retirement Fund	4/19/2018	12/31/2016	56.4	N/A	Old: 19.05% New: 19.80%	For members hired after 12/31/2018: - Increased retirement age from 50 to 53 - Increased vesting period from 10 to 20 years	The FSRP also assumes city contributions will be made as of 12/31/2018 for unfilled vacancies that existed throughout the year.
Orange Firemen's Relief & Retirement Fund - REVISED FSRP[3]	2/15/2018	1/1/2017	69.3	Old: 12.00% New: 12.50%	Old: 14.00% New: 14.50%	N/A	In addition to the FSRP employee contribution increase, the FSRP's amortization period calculation recognized the 2017 actual return of 17.88%.
Greenville Firemen's Relief & Retirement Fund - REVISED FSRP[3]	1/19/2018	12/31/2016	55.0	N/A	Old: 17.30% New: 19.30%	N/A	The City provided a letter with analysis from its actuary to show the impact of the increase in city contributions.
Dallas Police & Fire Pension System - Combined Plan	7/24/2017	1/1/2016	Infinite	Old: 8.50% New: 13.50%	Old: 27.50% New: 34.50% + $13 million annually with a floor until 2024	- Ended DROP interest & COLA credit, instated maximum DROP period of 10 years, & annuitized DROP balances as of 9/1/2017 - Decreased normal retirement benefit multiplier, increased retirement age & increased final average salary period for service after 9/1/2017 - Increased age of early retirement & decreased benefit multiplier for service after 9/1/2017 - Ended supplemental retirement benefit for retirees not receiving it before 9/1/2017 - Decreased vesting period of members hired on or after 3/1/2011 - Decreased maximum benefit from 96% to 90% of computational pay for members hired before 3/1/2011 - Suspended COLA until plan is at least 70% funded	All changes listed are from H.B. 3158 signed by the Governor on May 31, 2017. The bill went into effect on September 1, 2017.

Summary of FSRPs Received

Retirement System	Date Received	AV Effective Date[1]	Amortization Period	Changes: Employee Contributions	Changes: Employer Contributions	Changes: Other	Comments
Dallas Employees' Retirement Fund	7/20/2017	12/31/2015	Infinite	N/A	N/A	For members hired after 12/31/2016: - Decreased normal retirement benefit multiplier, increased retirement age & increased final average salary period - Increased age/service needed early retirement eligibility (Rule of 80 with full actuarial reduction) - Removed unreduced pension benefit under a joint and one-half survivor option - Removed $125 monthly health supplement - COLA is capped at a maximum of 3%	The system sent the PRB an AV with projections based on the changes made through city referendum.
Galveston Employees Retirement Plan for Police	11/8/2016	1/1/2014	55.1	N/A	Old: 12.00% New: 12.83% or 12.00% + $1.83M lump sum	Old: 50% @ 5 YOS graded 10%/year New: 100% Cliff @ 10 YOS (new hires only)	FSRP review takes into account analysis provided in the 1/1/2015 and 1/1/2016 actuarial valuations including the 47.1 year amortization period reported as of 1/1/2016
Irving Firemen's Relief & Retirement Fund	11/1/2016	1/1/2014	97.0	Old: 12.00% New: 13.00%	Old: 15.65% New: 16.75%	Employer increased staffing during 2016	FSRP review takes into account analysis provided in the 12/31/2015 actuarial valuation including post-valuation events through December 2016 resulting in a 33.0 year amortization period
Greenville Firemen's Relief & Retirement Fund	10/31/2016	12/31/2014	70.4	Old: 15.30% New: 16.30%	Old: 16.30% New: 16.80%	N/A	
Harlingen Firemen's Relief & Retirement Fund	10/31/2016	12/31/2015	Infinite	Old: 13.00% New: 15.00%	Old: 13.00% New: 15.00%	N/A	
Midland Firemen's Relief & Retirement Fund	10/31/2016	1/1/2014	59.1	N/A	Old: 21.70% New: 21.20%	Employer increased staffing during 2016	FSRP review takes into account analysis provided in the 12/31/2015 actuarial valuation including post-valuation events resulting in a 39.8 year amortization period
Sweetwater Firemen's Relief & Retirement Fund	10/31/2016	12/31/2014	58.8	Old: 16.00% New: 17.00%	Old: 18.00% New: 18.00%	N/A	
Odessa Firemen's' Relief and Retirement Fund	10/27/2016	1/1/2015	Infinite	Old: 15.00% New: 18.00%	Old: 16.00% New: 20.00%	Decrease future accruals for all members, eliminate DROP for less than 20 YOS, eliminate interest crediting on DROP accounts, implement actuarial soundness requirement for 13th check	FSRP review takes into account December 2016 member vote and associated analysis provided by the actuary
University Park Firemen's Relief & Retirement Fund	10/26/2016	1/1/2015	53.7	N/A	N/A	N/A	No action is necessary to meet required FSRP deadline based on the projections provided by the actuary
Wichita Falls Firemen's Relief & Retirement Fund	10/26/2016	1/1/2015	105.9	Old: 12.00% New: 13.00%	N/A	Introduced reduced benefit tier for new hires, will increase frequency of actuarial valuations to annual, engaged investment consultant to provide thorough analysis and recommendations, analyzed further plan changes should the amortization period continue to remain above 40 years	FSRP review takes into account analysis provided in the 1/1/2016 actuarial valuation and subsequent analysis provided by the actuary

Summary of FSRPs Received

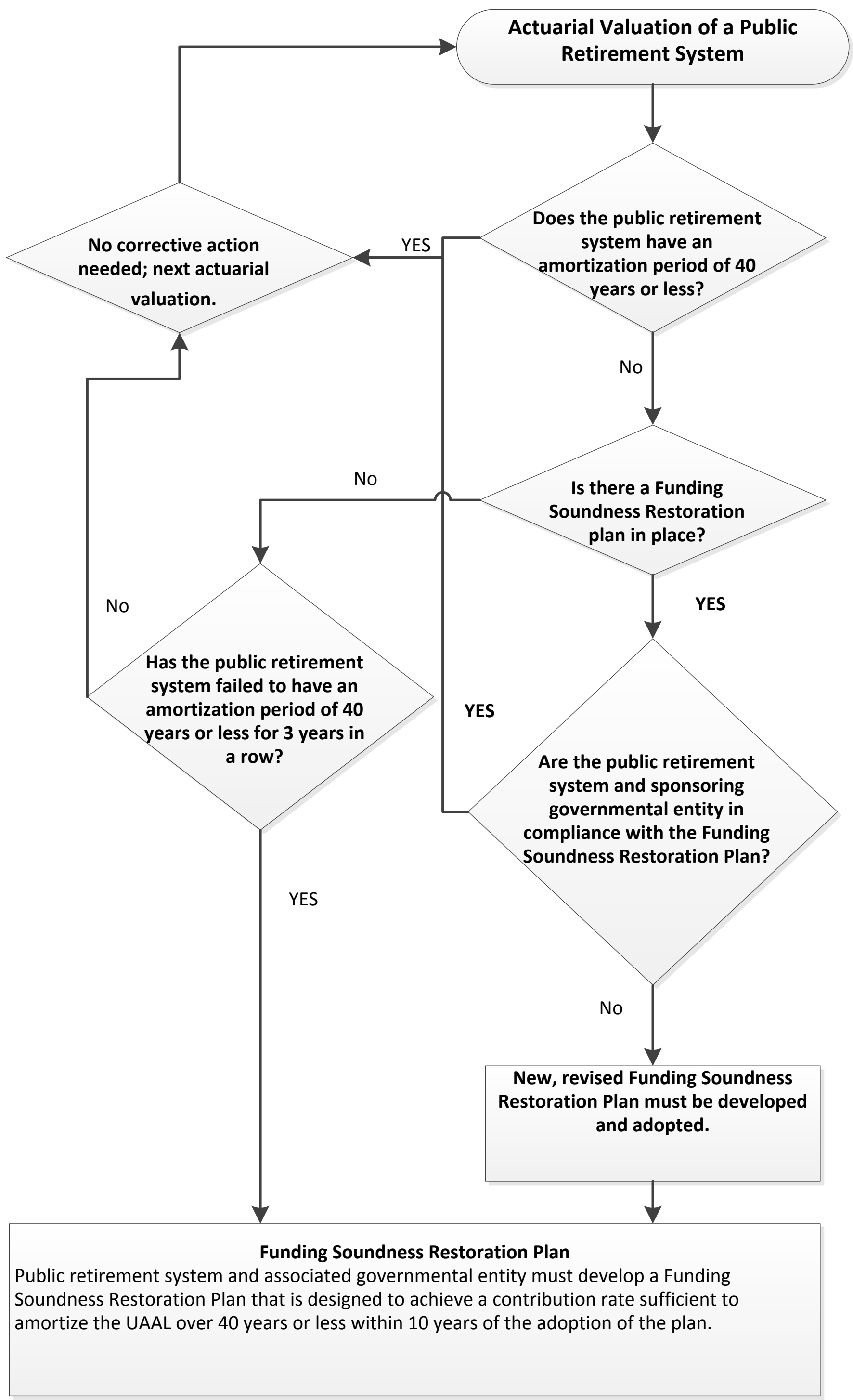
Retirement System	Date Received	AV Effective Date[1]	Amortization Period	Changes: Employee Contributions	Changes: Employer Contributions	Changes: Other	Comments
Orange Firemen's Relief & Retirement Fund	10/19/2016	1/1/2015	58.2	Old: 11.00% New: 12.00%	Old: 14.00% New: 15.00%	N/A	FSRP review takes into account analysis provided in the 1/1/2015 actuarial valuation regarding the post-valuation plan changes
Galveston Firefighter's Relief & Retirement Fund	9/29/2016	1/1/2014	50.2	N/A	N/A	Employer increased staffing	FSRP review takes into account analysis provided in the 12/31/2015 actuarial valuation including the 47.0 year amortization period reported as of 1/1/2016
Lufkin Firemen's Relief & Retirement Fund	8/10/2016	12/31/2014	40.6	Old: 13.2% New: 14.2%	Old: 21.92% New: 23.02%	Retirement eligibility increased from age 52 to age 55 for new hires	

[1] Actuarial valuation that triggered the funding soundness restoration plan requirement.
[2] The Revised FSRP has been received from the system but an actuarial analysis of the changes made has not yet been confirmed by the PRB.
[3] Texas Government Code Section 802.2015(d) requires plans to formulate a revised FSRP if the system conducts an actuarial valuation showing that the system's amortization period exceeds 40 years, and the previously formulated FSRP has not been adhered to.
[4] For Group I general employees, .07% is additionally contributed until the earlier of retirement, termination, or service after June 2019 equals years of service earned prior to October 2013.

APPENDIX K – FSRP FLOWCHART

Funding Soundness Restoration Plan

Flowchart



APPENDIX L – SUMMARY OF REPORTING REQUIREMENTS FOR TEXAS PUBLIC RETIREMENT SYSTEMS

TEXAS PENSION REVIEW BOARD

Summary of Reporting Requirements for Texas Public Retirement Systems

Public retirement systems shall adhere to the various reporting requirement provisions of the Texas Government Code as summarized below.

Actuarial/Financial Reporting Requirements

Annual Reports

Annual Financial Report: Defined benefit plans must file an annual financial report, including the financial statements and schedules examined in the most recent audit performed in accordance with generally accepted auditing standards, a statement of opinion by the CPA stating whether or not the statements are presented fairly and in accordance with GAAP, **and effective June 2019**, the names of all investment managers engaged by the retirement system and a listing of all direct and indirect commissions and fees paid during the previous fiscal year for sale, purchase, or management of assets. See Gov't Code §802.102 & §802.103.

Membership Report: Defined benefit plans must file an annual report of total membership of active employees and persons receiving a benefit. See Gov't Code §802.104 and 40 TAC, Chapter 605, Form *PRB-200*.

Investment Returns and Assumptions Report: Defined benefit plans must file a report containing investment returns and actuarial assumptions. See Gov't Code §802.108 and 40 TAC, Chapter 605, Form *PRB-1000 Instructions* & Form *PRB-1000*.

Due within 210 days after end of previous fiscal year

- Financial Report
- Membership Report
- Investment Returns and Assumptions Report

FISCAL YEAR 2019 DUE DATE CALENDAR FOR ANNUAL FINANCIAL REPORT, MEMBERSHIP REPORT, AND INVESTMENT RETURNS & ASSUMPTIONS REPORT						
Plans receive reminders and enforcement notices on the 1st and 15th of applicable months. If the 1st and 15th fall on a state holiday or weekend, then they are sent on the following business day. The non-compliance date is the day on which the PRB is required to include the system's name on the list of non-compliant public retirement systems posted on the PRB website.						
FY End Date	**Due Date**	**60-Day Reminder**	**15-Day Reminder**	**15-Day Enforcement**	**45-Day Enforcement**	**Non-Compliance**
February 28, 2019	September 27, 2019	August 1, 2019	September 15, 2019	October 15, 2019	November 15, 2019	December 1, 2019
March 31, 2019	October 28, 2019	September 1, 2019	October 15, 2019	November 15, 2019	December 15, 2019	January 1, 2020
June 30, 2019	January 27, 2020	December 1, 2019	January 15, 2020	February 15, 2020	March 15, 2020	April 1, 2020
July 31, 2019	February 27, 2020	January 1, 2020	February 15, 2020	March 15, 2020	April 15, 2020	May 1, 2020
August 31, 2019	March 29, 2020	February 1, 2020	March 15, 2020	April 15, 2020	May 15, 2020	June 1, 2020
September 30, 2019	April 28, 2020	March 1, 2020	April 15, 2020	May 15, 2020	June 15, 2020	July 1, 2020
October 31, 2019	May 29, 2020	April 1, 2020	May 15, 2020	June 15, 2020	July 15, 2020	August 1, 2020
December 31, 2019	July 29, 2020	June 1, 2020	July 15, 2020	August 15, 2020	September 15, 2020	October 1, 2020

Other Reports

Actuarial Valuation: Defined benefit plans must have an actuarial valuation prepared by a certified actuary, at least once every three years, which includes a recommended contribution rate needed for the system to achieve and maintain an amortization period that does not exceed 30 years. See Gov't Code §802.101.

Due upon adoption by the system

Actuarial Experience Study: Defined benefit plans with an asset value of **at least $100 million** must conduct an actuarial experience study once every five years. See Gov't Code §802.1014.

Due within 30 days of adoption by the system

Audits by Governmental Entity: Defined benefit plans with an asset value of **at least $100 million** must allow the governmental entity to conduct an audit by an independent actuary every five years of the actuarial valuations, studies, and reports of a public retirement system most recently prepared for the retirement system as required by Section §802.101 or other law under Title 8 of the Gov't Code or under Title 109, Revised Statutes. See Gov't Code §802.1012.[1]

Due within 30 days of receipt by the governmental entity

Funding Soundness Restoration Plan (FSRP): If a defined benefit plan's **amortization period exceeds 40 years** over a few valuations, the public retirement system and its associated governmental entity shall formulate a Funding Soundness Restoration Plan. The FSRP must be completed within 6 months of the adoption of the valuation which triggered the requirement.[2] The system shall report any updates of progress made by the entities toward improved actuarial soundness to the PRB every two years. See Gov't Code §802.2015 and §802.2016.[3]

Funding Policy: Defined benefit plans are required to adopt a written funding policy detailing the governing body's plan for achieving a funded ratio that is equal to or greater than 100% and provide the PRB with subsequently adopted changes within 31 days. See Gov't Code §802.2011 and *PRB Informal Guidance*.

Investment Practices and Performance Report: Defined benefit plans are required to select an independent firm to evaluate their investment practices and performance and make recommendations for improvement. The evaluation must be completed once every 3 years if the retirement system holds assets totaling **at least $100 million** or more; or once every 6 years if the retirement system holds assets totaling **at least $30 million but less than $100 million**. Retirement systems holding assets **less than $30 million** are not required to perform the evaluation. See Gov't Code §802.109 and *PRB Informal Guidance*.

Due within 31 days of adoption/receipt by the system

- FSRP
- Funding Policy (**First policy due to the PRB by Feb. 1, 2020**).
- Investment Practices and Performance Report (**First report due to the PRB by June 1, 2020**).

[1] The Employees Retirement System of Texas, Judicial Retirement System of Texas Plan Two, Teacher Retirement System of Texas, Texas County and District Retirement System, and the Texas Municipal Retirement System are exempt from this report.
[2] Representative Dennis Paul's clarification letter: https://www.prb.state.tx.us/txpen/wp-content/uploads/2016/10/Rep-Paul-Letter-FSRP.pdf
[3] The Employees Retirement System of Texas, Judicial Retirement System of Texas Plan Two, Teacher Retirement System of Texas, Texas County and District Retirement System, and the Texas Municipal Retirement System are exempt from this report.

Investment Policy: Defined benefit plans are required to develop and adopt a written investment policy and maintain a copy of the policy for review at its main office. See Gov't Code §802.202(d).

Due within 90 days of adoption/amendment

Summary Plan Description: All public retirement systems are required to file and maintain a copy of the system's summary plan description. See Gov't Code §802.106 and 40 TAC, Chapter 605, Form *PRB-200*.

Report any changes within 30 days

Registration: All public retirement systems are required to register with the PRB within **90 days** after the plan's creation date. See Gov't Code §802.105 and 40 TAC, Chapter 605, Form *PRB-100*.

Minimum Educational Training (MET) Program Reporting Requirements

Required Reports

Trustee and System Administrator Information: Defined benefit plans must provide the PRB with basic information regarding their trustees and system administrator at the plan's creation; and report any changes thereafter. See 40 TAC, Chapter 607, Form *PRB-150*.

Report any changes within 30 days

Minimum Education Training Program Form: Defined benefit plans must provide the PRB with a report of training completed by trustees and system administrator. See 40 TAC, Chapter 607, Form *PRB-2000*.

Due September 1

Training completed between Aug. 1 of the previous year and July 31 of the current year.

Optional Forms for Certain Systems

Exemption for Certain System Administrators: Systems may apply for an exemption from the system administrator training requirement if the system has designated an outside entity (bank or financial institution) as the system administrator, or if the system does not have an administrator that meets the statutory definition and affirms that a trustee performs this role and will be subject to the training. In both cases, submit a certification letter for exemption of certain system administrators. See Gov't Code §801.001(3) and §802.001(4) and 40 TAC, Chapter 607, Form *Certification Letter for Exemption of Certain System Administrators*.

Sponsor Accreditation: Systems may apply to become an accredited sponsor, using the sponsor approval application, to be able to offer credit for in-house training, often provided by staff or outside consultants. The in-house training must meet the same standards as training offered by all sponsors. See 40 TAC, Chapter 607, Form *Sponsor Accreditation Application*.

Individual Course Approval: The individual course approval application may be used by a system trustee or administrator who wishes to attend an MET activity from an unaccredited sponsor. The application must be submitted at least 30 days in advance of the activity. The application may also be used by a system that is not an accredited sponsor but seeks MET credit for in-house training provided to its trustees and/or administrator. See 40 TAC, Chapter 607, Form *Individual Course Approval Application*.

Other Reporting Requirements

Internet Posting of Reports and Information

If a retirement system maintains its own website, the system shall prominently post on its website its system administrator's contact information and reports and registration information submitted to the PRB. If a system does not have its own website, it has the option to post the information on its sponsoring entity's website or on a state agency website, such as the PRB. The PRB will help systems without a website comply with these requirements through its agency website. See Gov't Code §802.107.

Exemptions

Plans exempt from reporting to the Pension Review Board: Volunteer firefighter retirement systems organized under the Texas Local Fire Fighter's Retirement Act (TLFFRA) and defined contribution plans are only subject to the registration, summary plan description, and internet posting requirements of the Government Code. These systems are exempt from all the other reporting requirements. See Gov't Code §802.002 (c) & (d).

Plans exempt from registering and reporting to the Pension Review Board: Plans offering only worker's compensation; plans administered by the federal government; Individual Retirement Account (IRA); plans claiming 401(d), 403(b), or 457(b) tax status under the Internal Revenue Code; and plans administered by life insurance companies. See Gov't Code §802.001.

To obtain the various PRB Reporting Forms referenced in this document; informal guidance, and memorandums outlining updated reporting requirements for retirement systems please click here.

With questions or for additional information, please feel free to contact the PRB at 512-463-1736/800-213-9425 or prb@prb.texas.gov.

DISCLAIMER: Every care is taken to make sure the content and information in this document is accurate and up to date. However, this document should not be treated as a legal reference or a complete statement of the laws or administrative rules of the Pension Review Board. In any conflict between the information contained in this document and Texas Laws or administrative rules, the laws and administrative rules shall prevail.

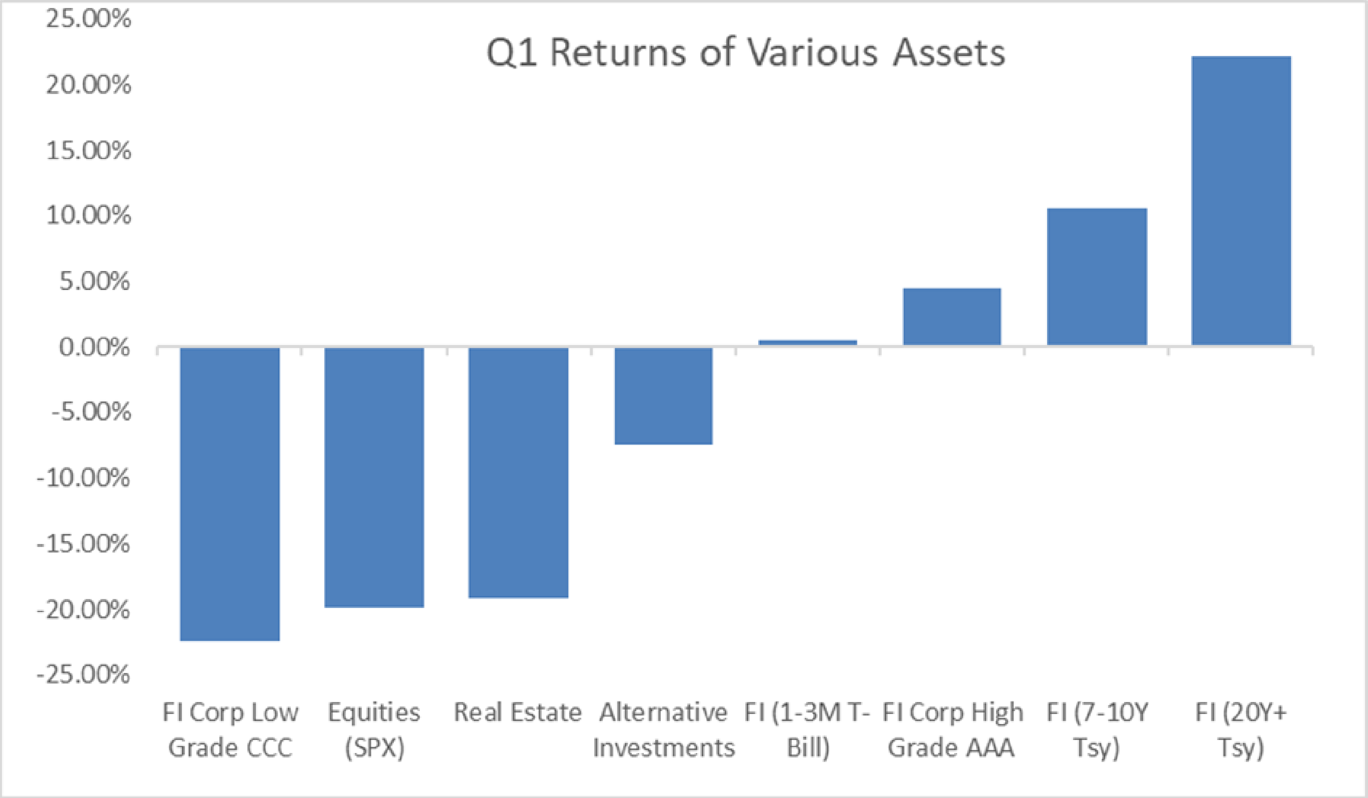
Appendix M – PRB Investment Report – Potential COVID-19 Market Impacts (May 2020)

Texas Pension Review Board Investment Report

Potential COVID-19 Market Impacts

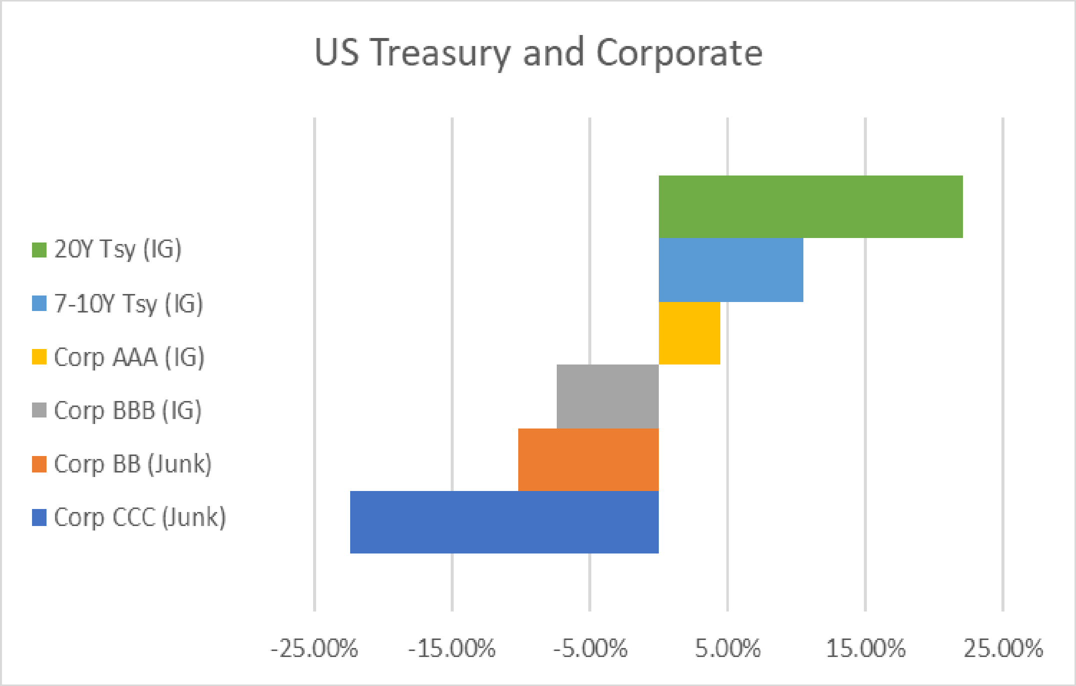
Market Overview

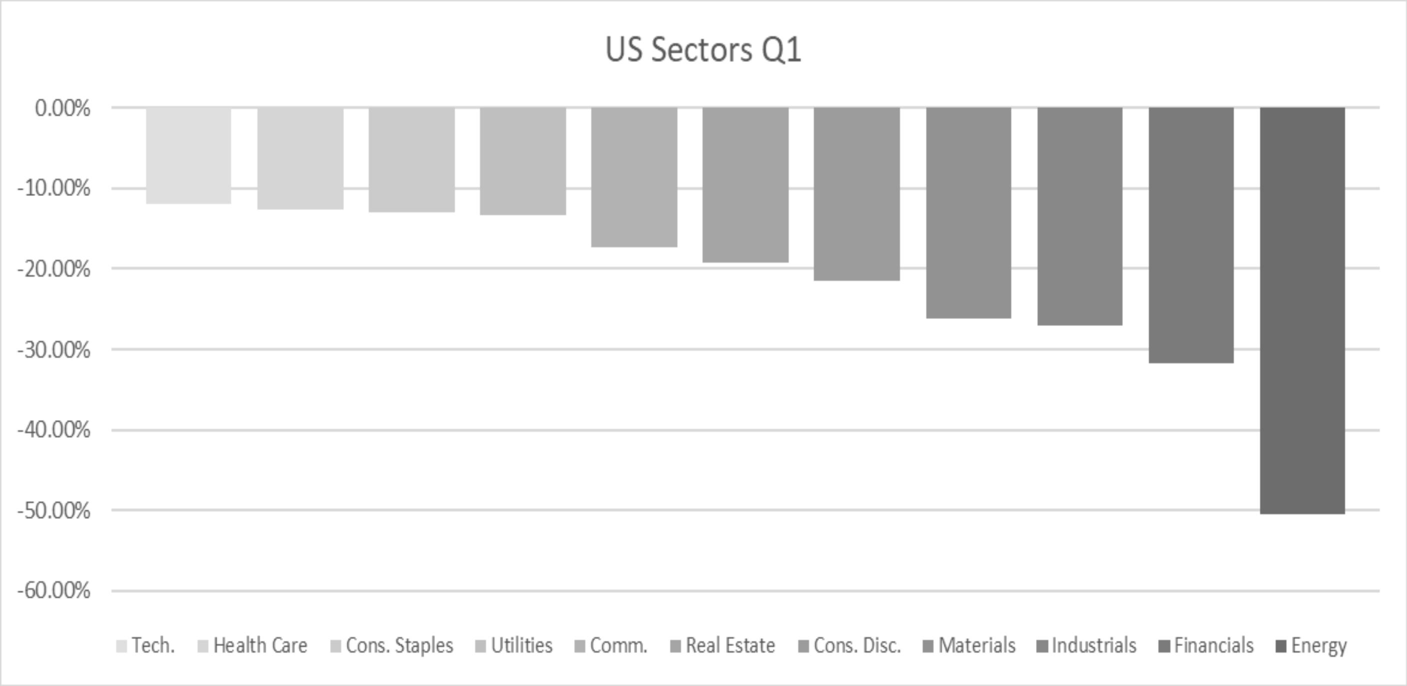
- The first quarter of 2020 was a period of record highs and the fastest decline into a bear market in history
- The extreme volatility in the market has given pension assets a real-life stress test



 Source: Koyfin

Market Overview

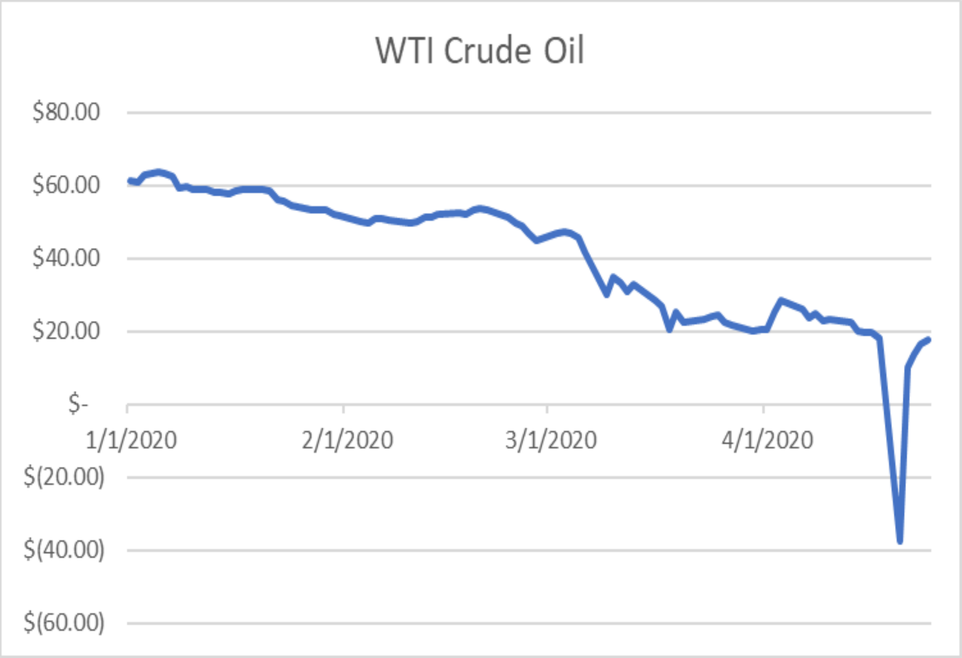


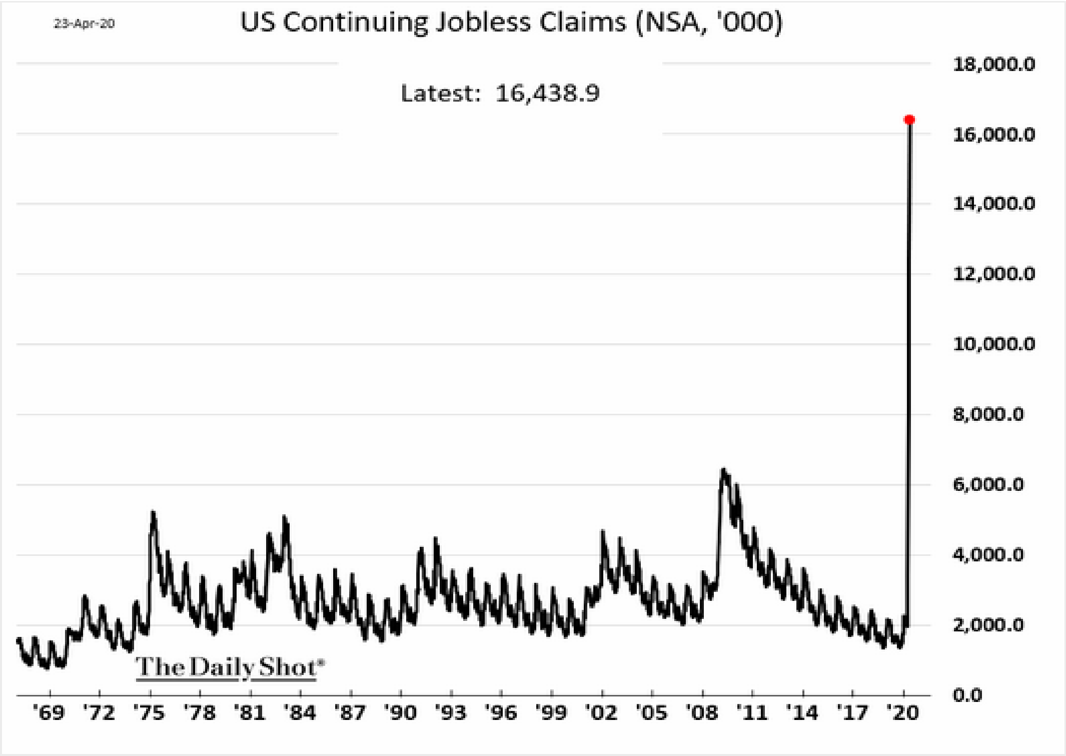


- Markets have seen a flight to quality
- The energy sector was the most impacted as oil prices have fallen drastically from previous years

 Source: Koyfin

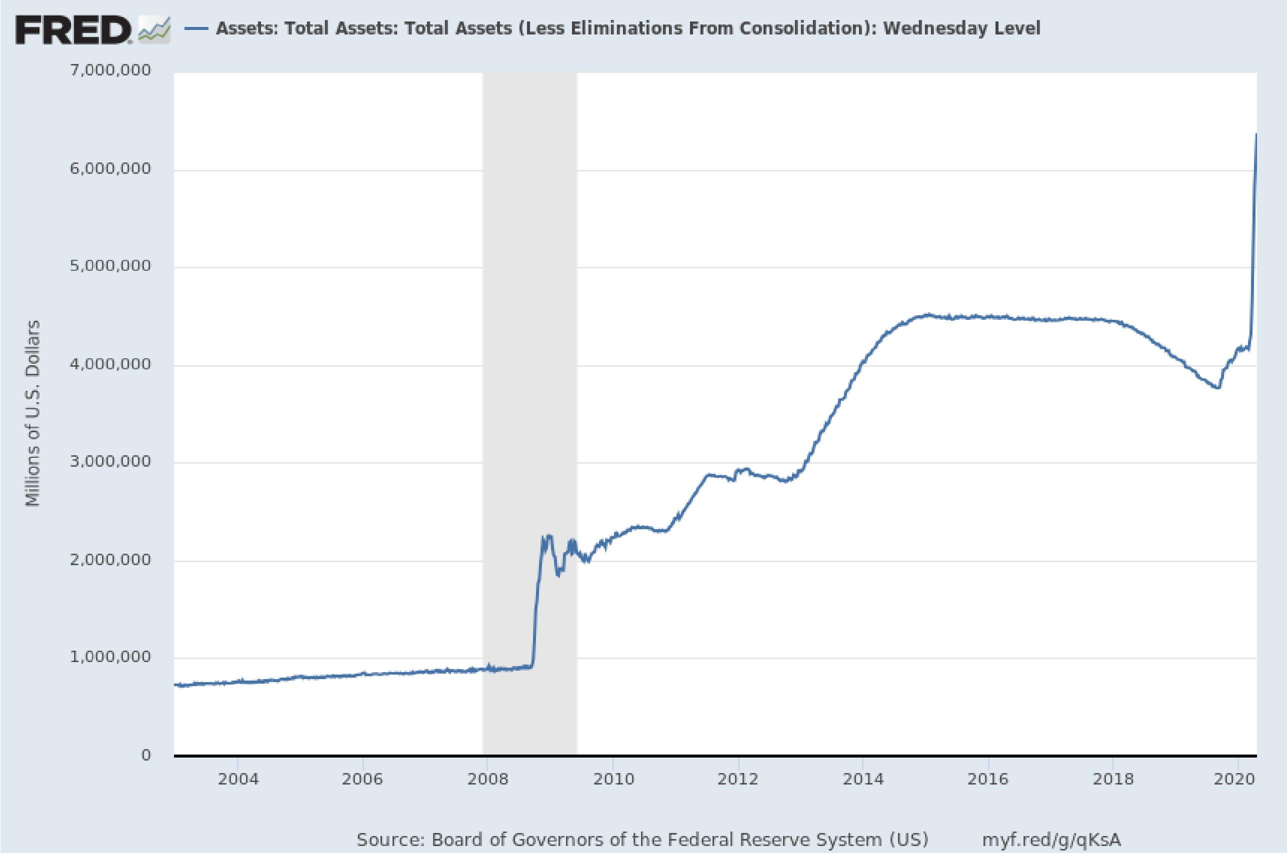
Market Overview

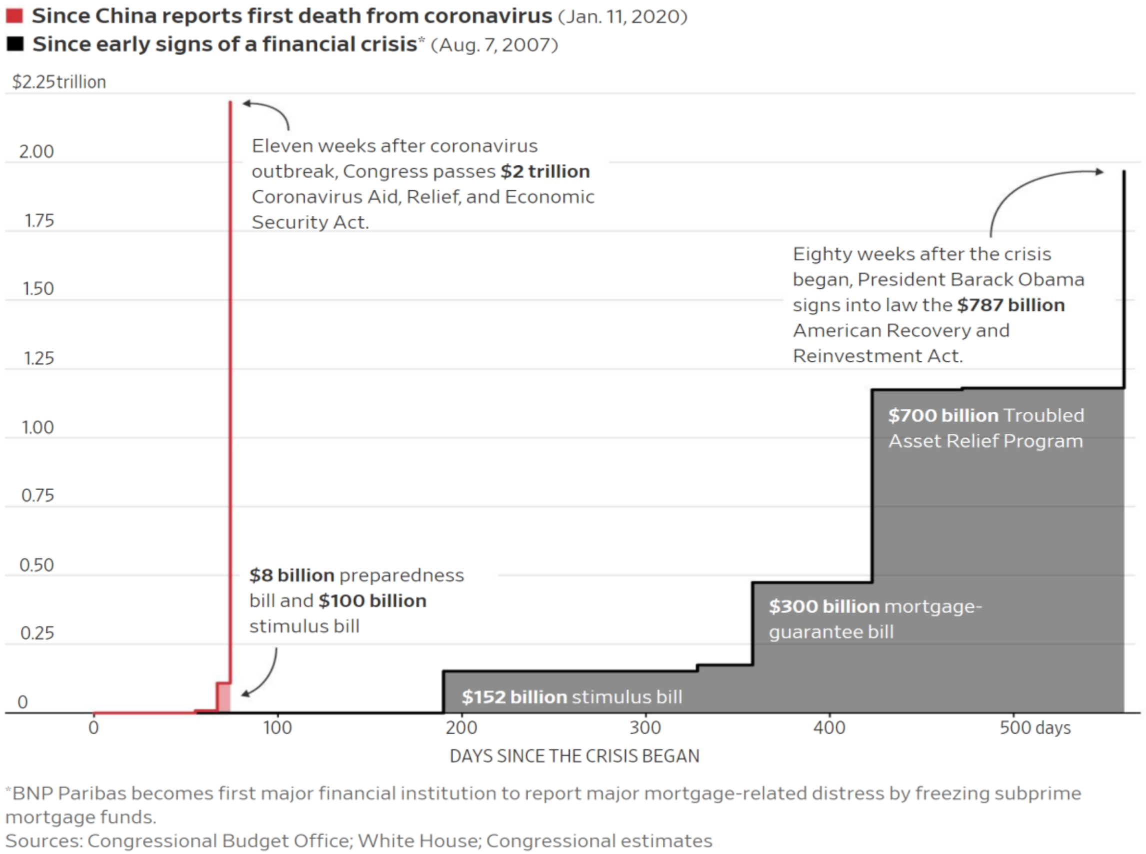




- Never before seen negative oil prices
- Initial jobless claims over the past 6 weeks total over 26 million and continuing claims exceeding 16 million

Government and Federal Reserve Intervention

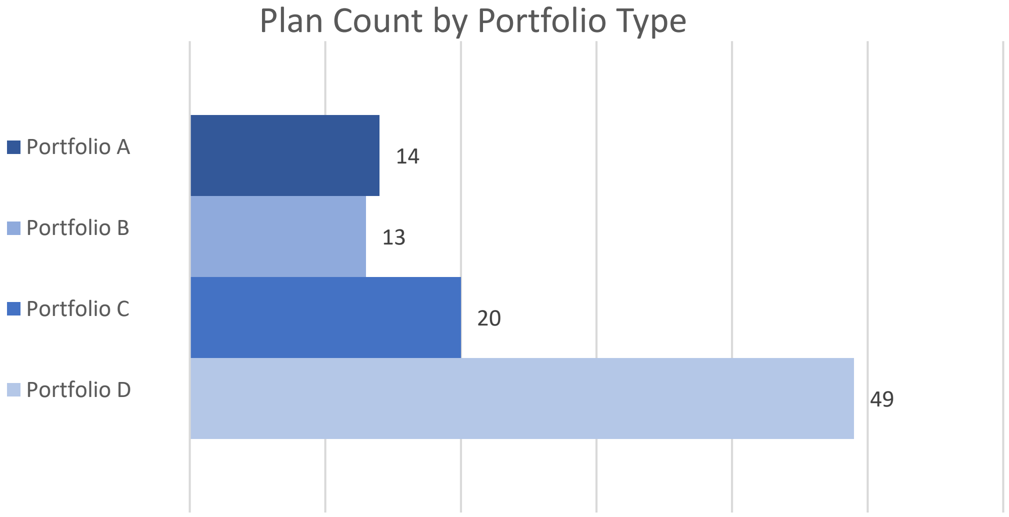




- US government providing over $2 trillion in aid
- Federal Reserve providing market support through quantitative easing, interest rate cuts

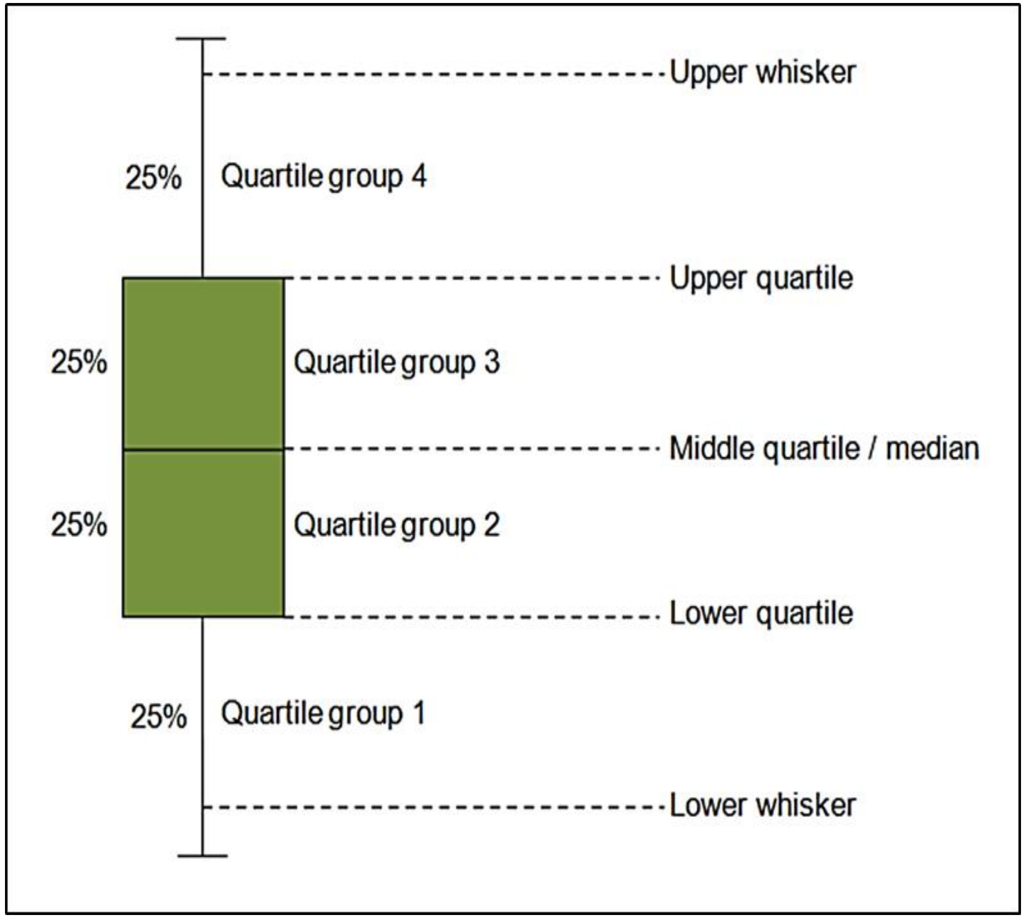
Asset Allocations of Texas Pension Plans

	Equity	Fixed Income	Real Estate	Alternative Investments	Cash
Portfolio A	X	X			X
Portfolio B	X	X	X		X
Portfolio C	X	X		X	X
Portfolio D	X	X	X	X	X



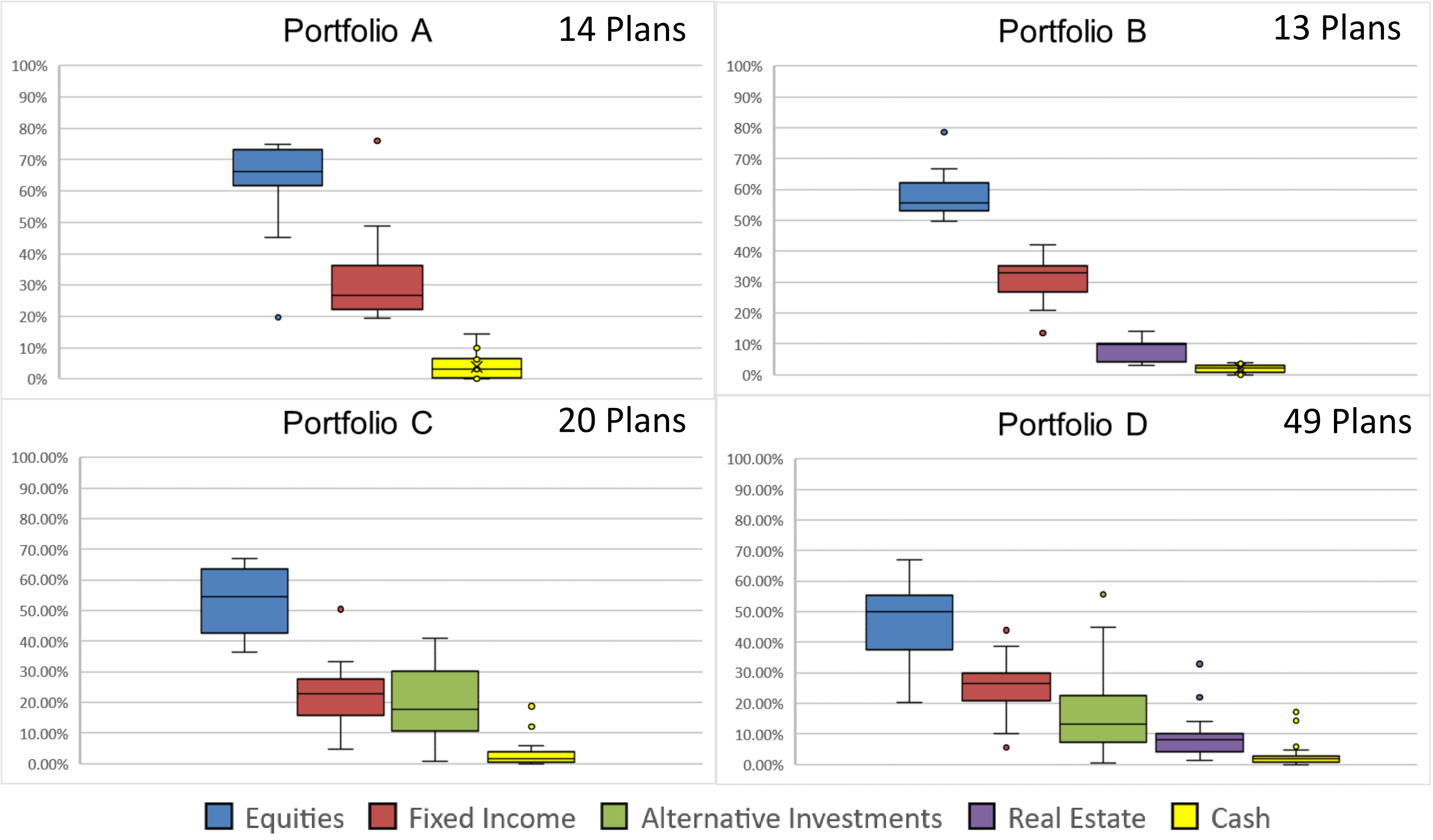
- 4 primary portfolio types using the PRB broad asset class categorizations

- Box and Whiskers graph will be used to show allocation variance within portfolio types

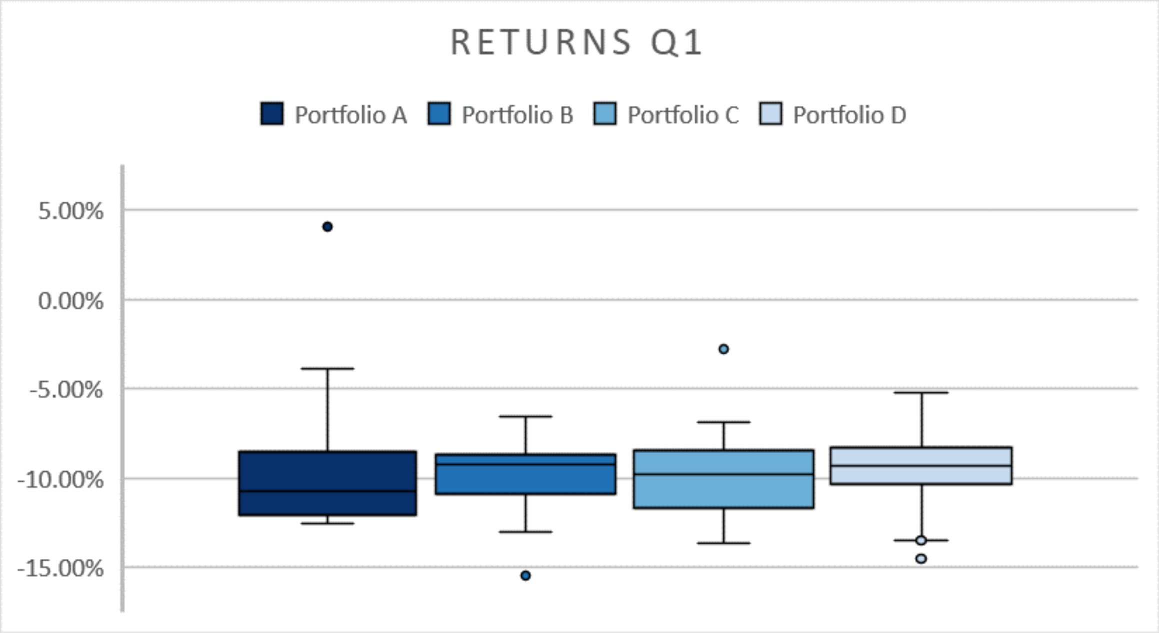


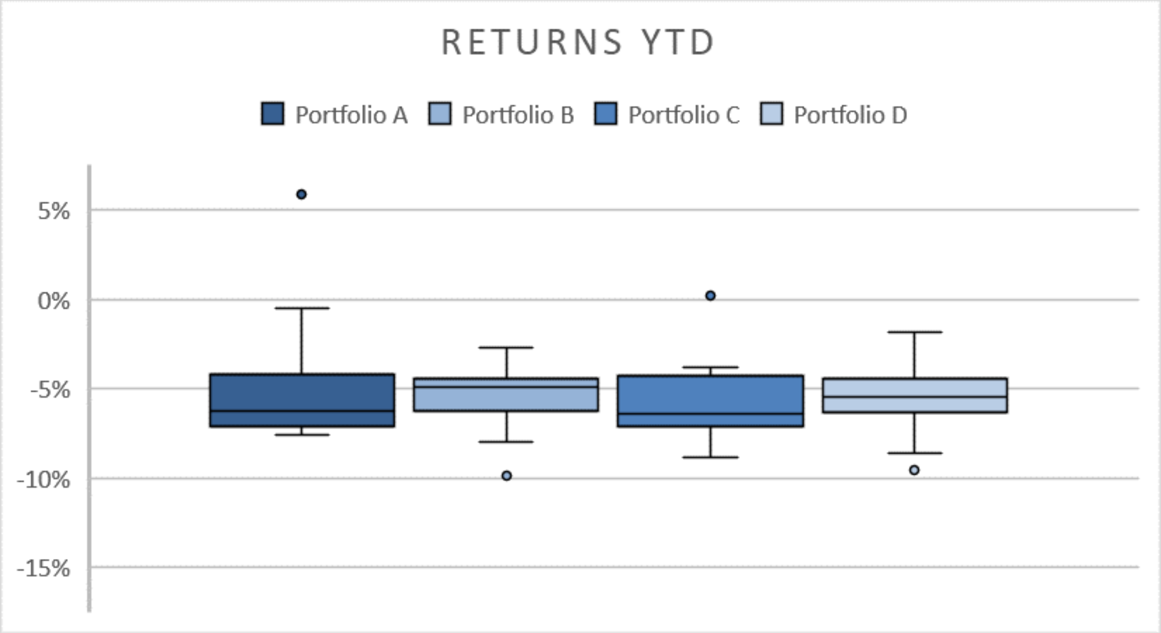
Asset Allocations of Texas Pension Plans

- Fixed income allocations are generally close to a 20-30% allocation
- If plans are invested in Real Estate, allocations typically range from 5-10%
- Plans appear to pull from Equity allocations as they add to Real Estate or Alternative Investments



Return Estimates Q1 and YTD





- PRB estimates put the majority of plans close to a -10% drawdown for Q1 2020
- Ex. Q1 TRS reported ~-8.3% v PRB estimate ~-8.7%

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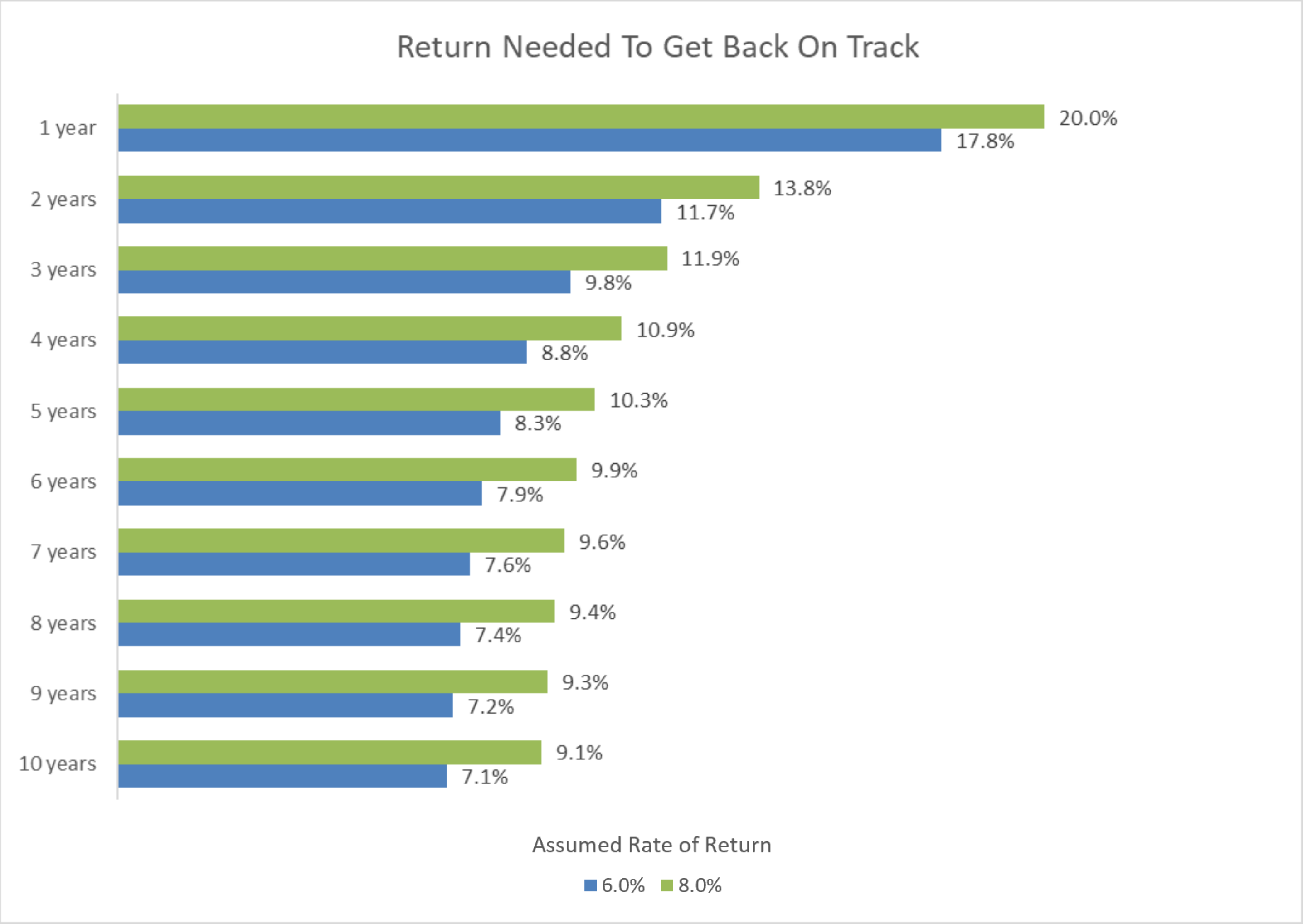
YTD as of 4/23/2020, return estimates use broad benchmarks/investments in estimating returns

From Q1 Forward

- Assumes -10% drawdown for plans in Q1 2020
- Plans will need to consistently exceed their return assumptions in order to not be impacted by recent events



APPENDIX N – PRB ACTUARIAL REPORT – POTENTIAL COVID-19 ACTUARIAL IMPACTS (MAY 2020)

Texas Pension Review Board Actuarial Report

Potential COVID-19 Actuarial Impacts

Potential Short and Long-term Actuarial Impacts

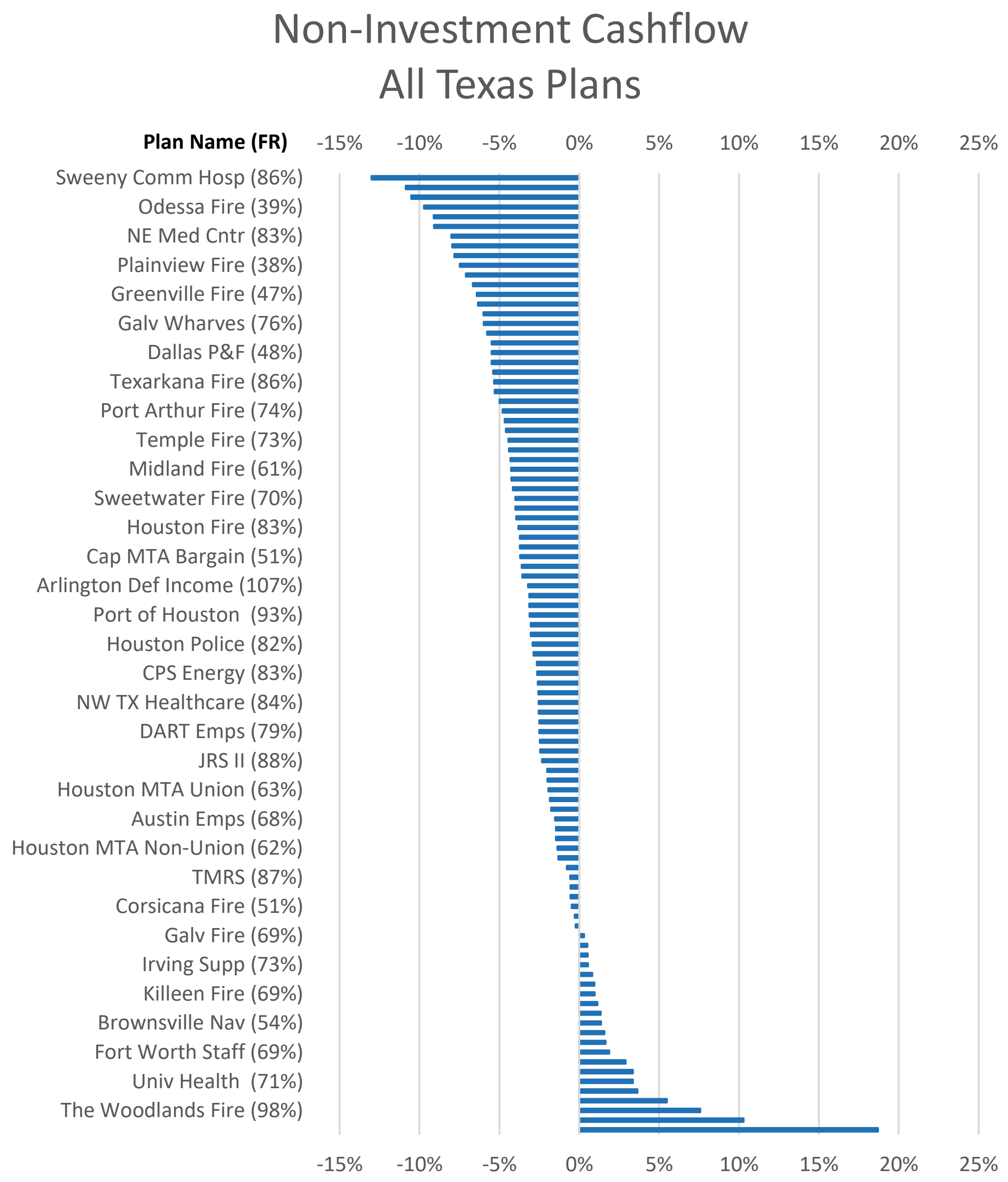
- Short-term considerations
  - Near term cash-flow and liquidity issues
  - Metrics to identify plans most at-risk
- Longer-term considerations
  - Metrics to assess and compare UAAL and contribution volatility
  - Legislative requirements
  - Plan sponsor considerations

Liquidity Metrics

- **Non-investment cashflow** is the ratio of all non-investment inflows and outflows during the year expressed as a % of net assets as of the end of the year. In other words, the difference between contributions and benefits payments during the year.

- **A negative value indicates the plan must rely on investment income and/or must sell assets to pay benefits in any given year.**

- The **liquidity ratio** considers not only non-investment cash flows during the year but also includes cash-on-hand at the end of the year.



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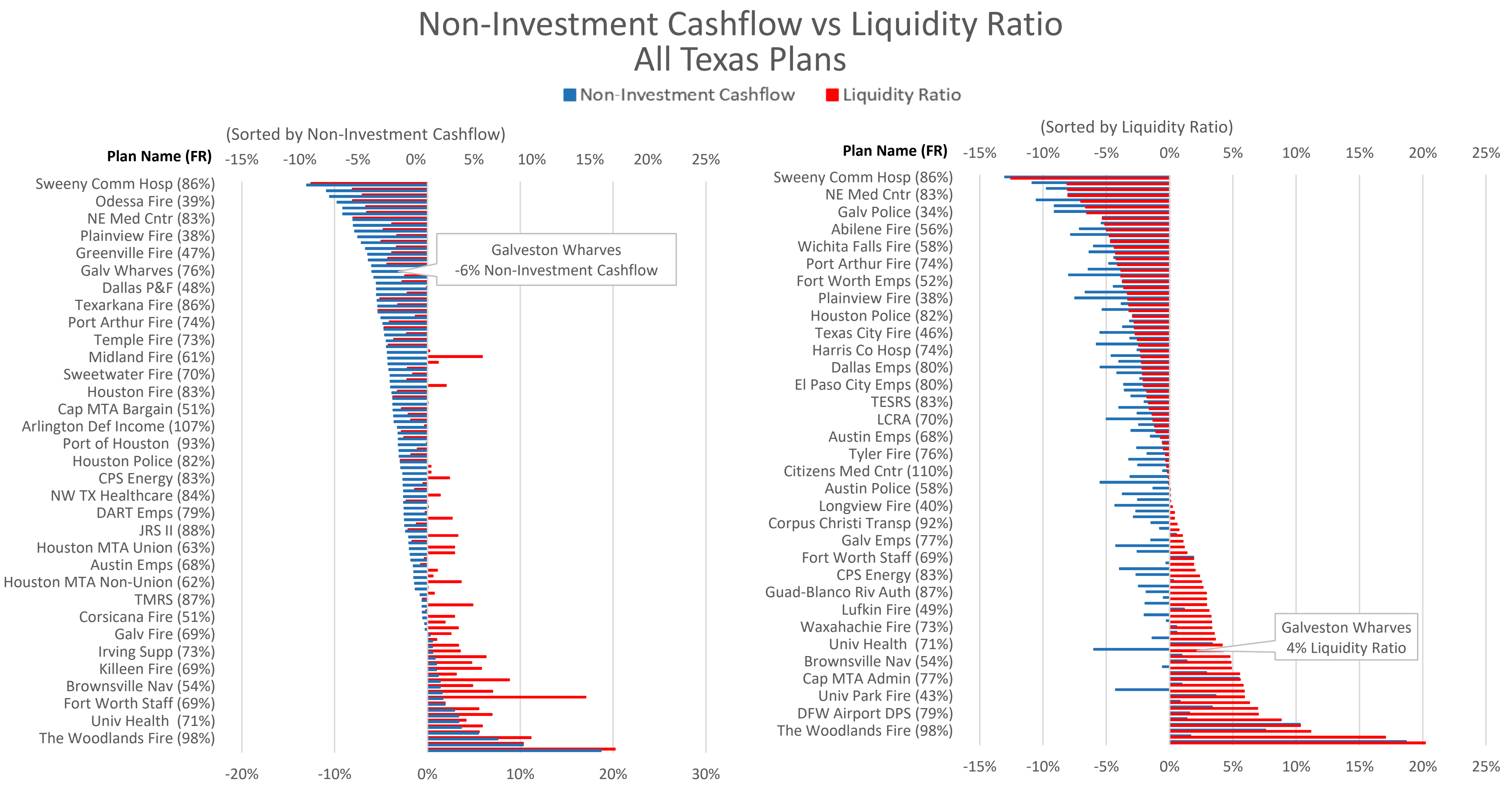
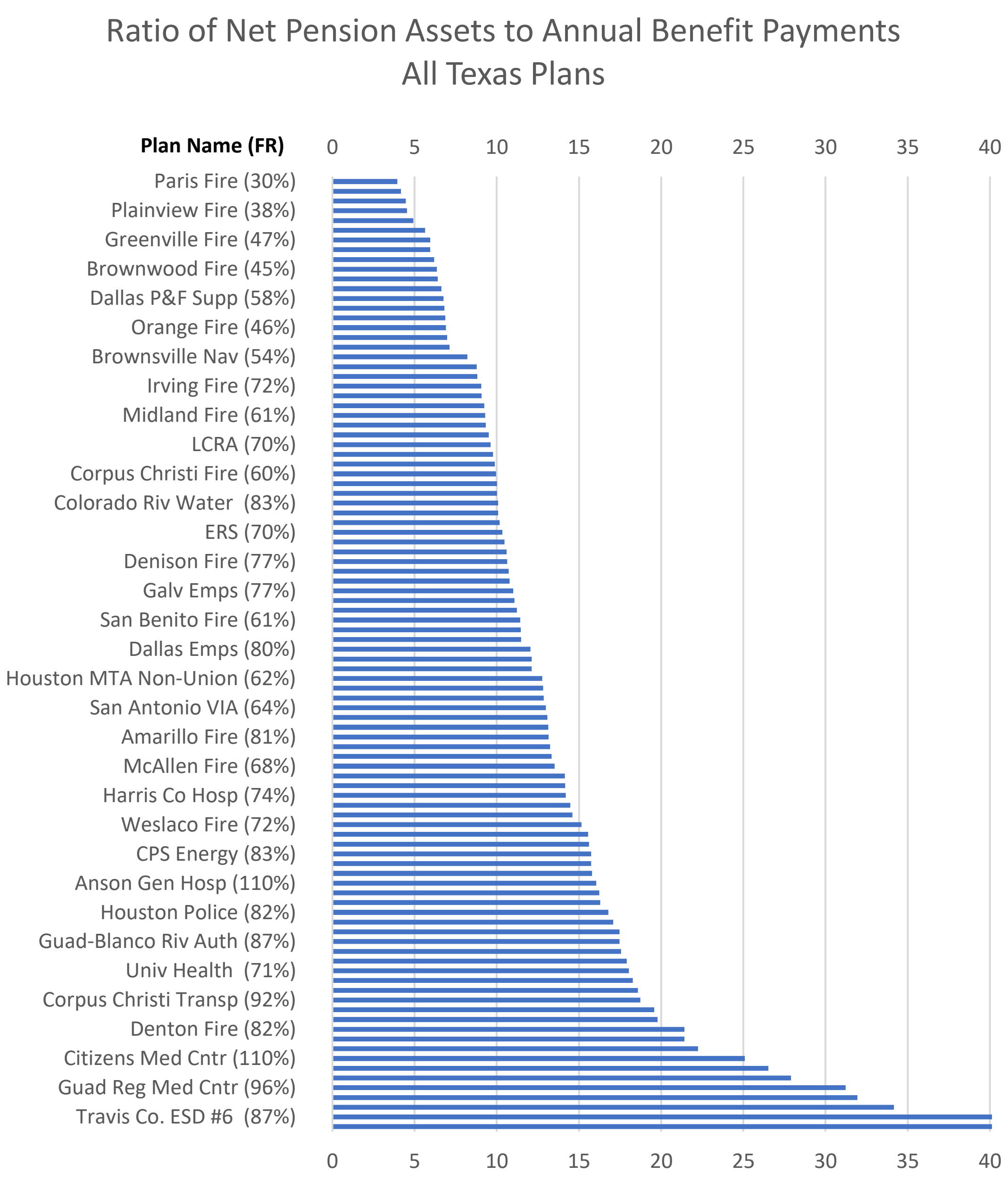
Liquidity Metrics



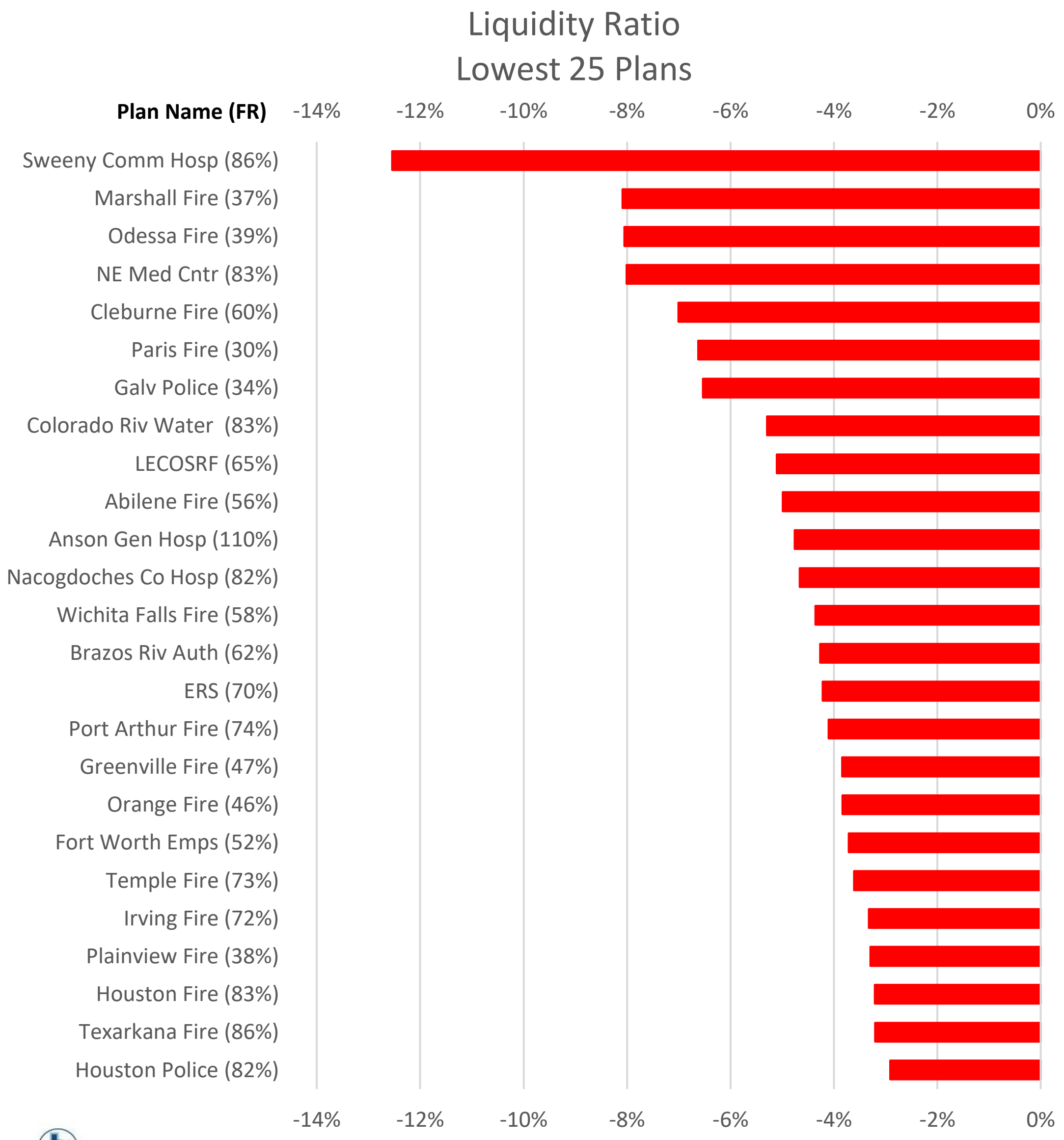
Liquidity Metrics

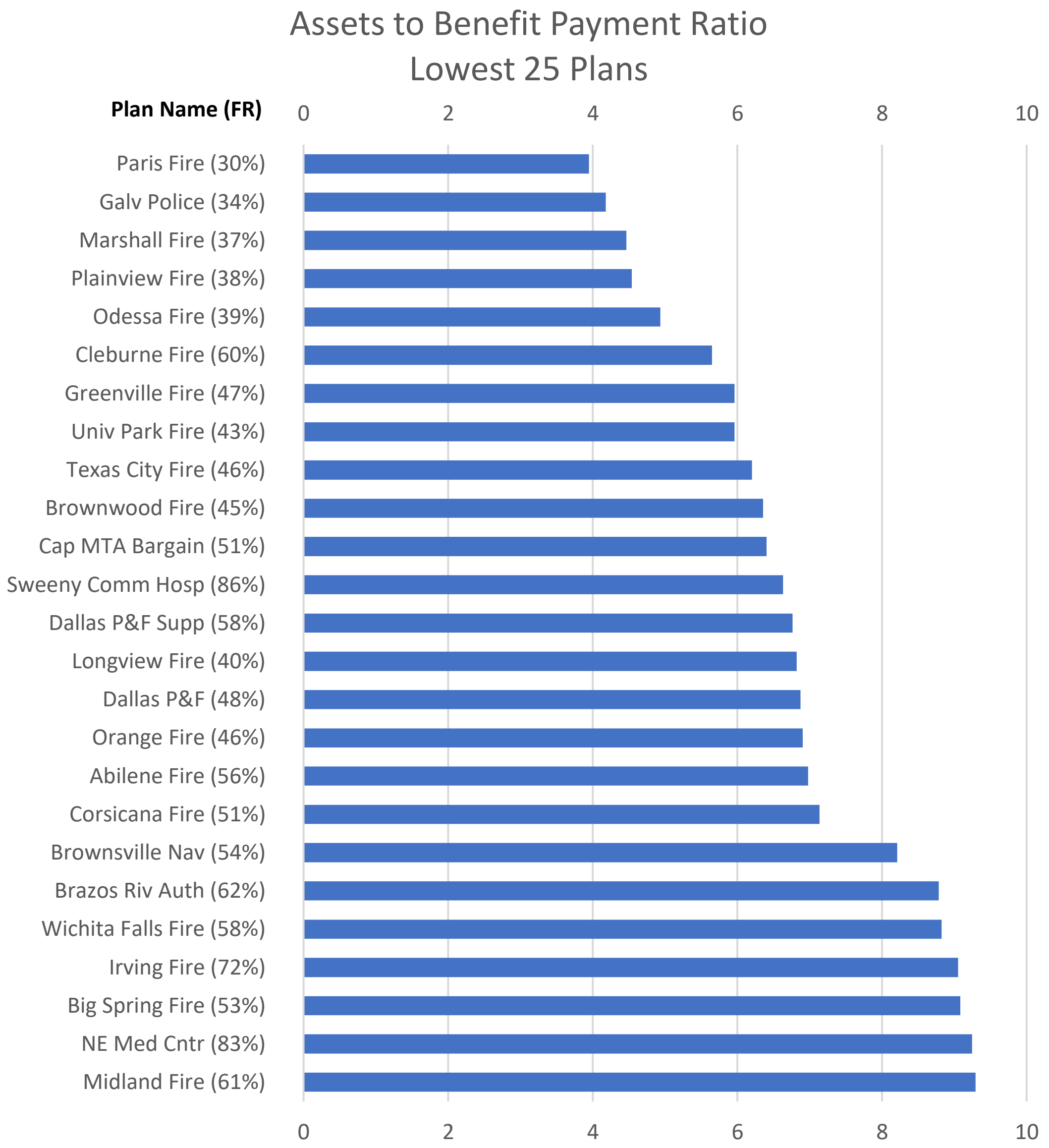
- The **ratio of assets to benefit payments** compares the current value of a plan's assets to the annual benefit payments.

- In other words, it measures how many years of benefit payments can be made, assuming no change in benefit payments and no new contributions or investment income.



Liquidity Metrics





UAAL Volatility Metrics

- **Asset Leverage Ratio (ALR)** = MVA / Payroll
- **Liability Leverage Ratio (LLR)** = Accrued Liability / Payroll

  - Direct measures of the leverage in a plan's UAAL relative to payroll.

    Example: A plan with an ALR of 4 that experiences a 10% decline in assets will see UAAL increase by an additional 40% of payroll. i.e. If UAAL as a % of payroll was 200% prior to the 10% asset loss, UAAL as a % of payroll would grow to 240%.

  - Also provides relative sensitivity and directional comparisons of the contribution requirements for plans.

    Example: A plan with an LLR of 8 will see 4x the increase in the required contribution as a plan with an LLR of 2, for a similar percentage increase in liability.

- **Duration** measures the sensitivity of the accrued liability to a change in the interest rate.
  Example: A duration of 10 indicates the plan's AAL will increase by 10% for every 1% reduction in the discount rate.

Contribution Benchmarks

- Recommended Contribution - Contribution needed for the system to achieve and maintain an amortization period that does not exceed 30 years, as reported by the system in accordance with Texas Code §802.101(a).

- UL% Tread Water Cost - Minimum contribution necessary to avoid an increase in the UAAL as a % of payroll.

- UL$ Tread Water Cost - Minimum contribution necessary to avoid an increase in the UAAL as a dollar amount.

Legislative Requirements

- FSRP requirements
- Other triggers

Plan Sponsor Considerations

- Decline in revenues
- Balance sheet impact
- Credit ratings

APPENDIX O – INTENSIVE ACTUARIAL REVIEW OF ODESSA FIREMEN'S RELIEF AND RETIREMENT FUND

Intensive Actuarial Review:

Odessa Firemen's Relief and Retirement Fund

October 2019

PENSION REVIEW BOARD

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Executive Summary

Introduction

This intensive review of Odessa Firemen's Relief and Retirement Fund ("Odessa Fire" or "the Fund") is intended to assist the Fund's board of trustees and the City of Odessa ("the City") in assessing the Fund's ability to meet its long-term pension obligation.

Odessa Fire and the City have recently made contribution increases, benefit cuts, and actuarial and investment assumption changes, but the changes have not been enough to put the Fund on a solid path to sustainability. The Pension Review Board (PRB) encourages the Fund and the City to review this report carefully and jointly adopt both short- and long-term plans to address these risks. The PRB can provide technical assistance in formulating the plan.

Overview

Odessa Fire is currently projected to run out of assets within the next 25 years. Because benefits were not prefunded, current contributions are being used to pay benefits, like in a pay-as-you-go pension structure. Current contributions, however, are barely covering half of annual benefit payments, so the Fund is also tapping into its investment income to make up the difference. Using contributions and investment returns to pay current benefits robs the Fund of the advantages of compound interest that prefunding offers.

These practices have resulted in liability growth close to 10% per year, while assets have increased less than 2% per year, despite the past decade's strong bull market. Diverting investment income to make benefit payments affects the Fund like an oil leak in an automobile engine: the car's owner can keep adding oil, but the problem will persist until the leak is plugged. Even worse, Odessa Fire's growing benefit payments will eventually drain the Fund's assets completely unless measures are taken to plug the hole.

Another consequence of not prefunding benefits is that highly liquid assets are needed to make benefit payments, as evidenced by the Fund's extremely low non-investment cash flow rates. However, the current asset allocation is heavily weighted towards equities and alternatives implying a long-term investment horizon which the Fund does not have the luxury of relying on.

Constantly underfunding a plan places the benefits of both retirees and active members at significant risk and/or places the burden of paying for services already rendered on future generations of taxpayers and employees through contribution increases or reduction of future benefits.

Conclusion

To plug the immediate leak in the system, Odessa Fire and the City should work together to determine the best balance between increased contributions and benefit reductions. To help the City and the Fund consider funding options, the PRB has developed projections including both contribution increases and a one-time cash infusion. For the longer term, a strong funding policy should be adopted to restore and preserve fiscal health. The Fund should also monitor investment managers' performance against benchmarks; adopt an asset allocation plan; and review the Fund's professional advisors regularly.

Background

Texas Government Code Section 801.202(2) requires the Pension Review Board (PRB) to conduct intensive studies of potential or existing problems that threaten the actuarial soundness of or inhibit an equitable distribution of benefits in one or more public retirement systems. The PRB identified the following key metrics, in addition to amortization period, to determine and prioritize retirement systems for intensive actuarial review. The PRB selected Odessa Firemen's Relief and Retirement Fund ("Odessa Fire" or "the Fund") for review based on the 2018 actuarial valuation data shown below and at the request of the City of Odessa. Unless otherwise noted, the following metrics were calculated as of January 1, 2018.

Amort. Period (Years)	Funded Ratio	UAAL as % of Payroll	Assumed Rate of Return	Payroll Growth Rate	Actual Cont. as % of ADC[1]	Non-Investment Cash Flow as % of FNP	DROP as % of FNP
47.1	43.08%	510.60%	7.75%	3.50%	81.31%	-11.16%	4.54%

Contribution and cash flow data are from the Fund's 12/31/2017 financial audit.

Plan Profile (2018 AV)

Actuarial Accrued Liability: $106,469,004

Market Value of Assets: $45,718,416

Normal Cost: 14.93% of payroll

Contributions: 18.00% employee
20.00% employer

Membership: 165 active
182 annuitants

Social Security Participation: Yes

At the time the Fund was selected for review:

- Its funded ratio of 43.08% was the sixth lowest in the state.
- Its non-investment cash flow as a percent of FNP was the second lowest in the state.
- Its UAAL as a percent of payroll was the fourth highest in the state.
- Actual contribution as a percent of actuarially determined contribution (ADC) was the 17th lowest in the state and the third lowest in its peer group.[2]

[1] For plans whose contributions are a fixed rate, based on statutory or contractual requirements, the ADC for this purpose is the contribution needed to fund the benefits accrued in the current year and maintain an amortization period that does not exceed 30 years, as required to be reported under Texas Government Code §802.101(a).

[2] See Appendix for peer group information.

Key Findings

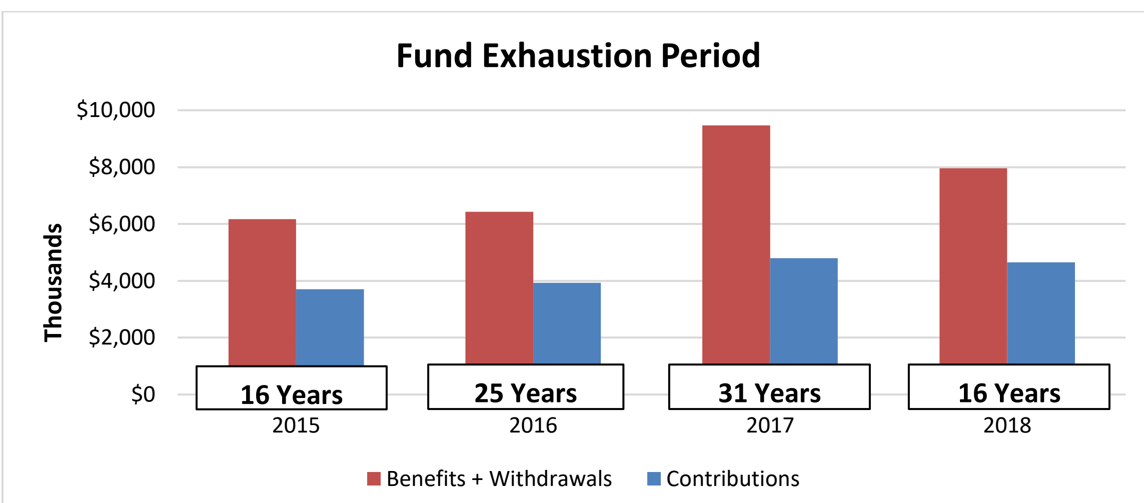
Odessa Fire should be recognized for making several significant changes in recent years in an attempt to address the long-term funding challenges it faces. In their 2016 Funding Soundness Restoration Plan (FSRP), the Fund and City reduced benefits for all employees, on a prospective basis, and increased both the City and employee contributions. To address lagging investment performance, the board took proactive steps to transition to a new investment consultant. In addition, the Fund has taken steps to improve internal data control processes.

However, the changes made in the FSRP have not been sufficient to keep the Fund on a steady path towards paying off its unfunded liability in less than 40 years (or the 30 years recommended by PRB Guidelines). The PRB has identified several specific areas of concern that warrant the Fund and City's careful consideration.

Fund Exhaustion in 16 Years

The various risks faced by a pension fund all boil down to one relatively simple question, "Will there be enough money to pay benefits when due?" The Governmental Accounting Standards Board (GASB) requires single-employer defined benefit pension plans to compare projections of the pension plan's assets to projected benefit payments and identify the year when projected assets will no longer be sufficient to cover 100% of the projected benefit payments, if such date exists.[3] In other words, this projected date, sometimes called the Fund's exhaustion or depletion date, is the date the Fund is expected to run out of money, potentially leaving retirees vulnerable to not receiving promised benefits.

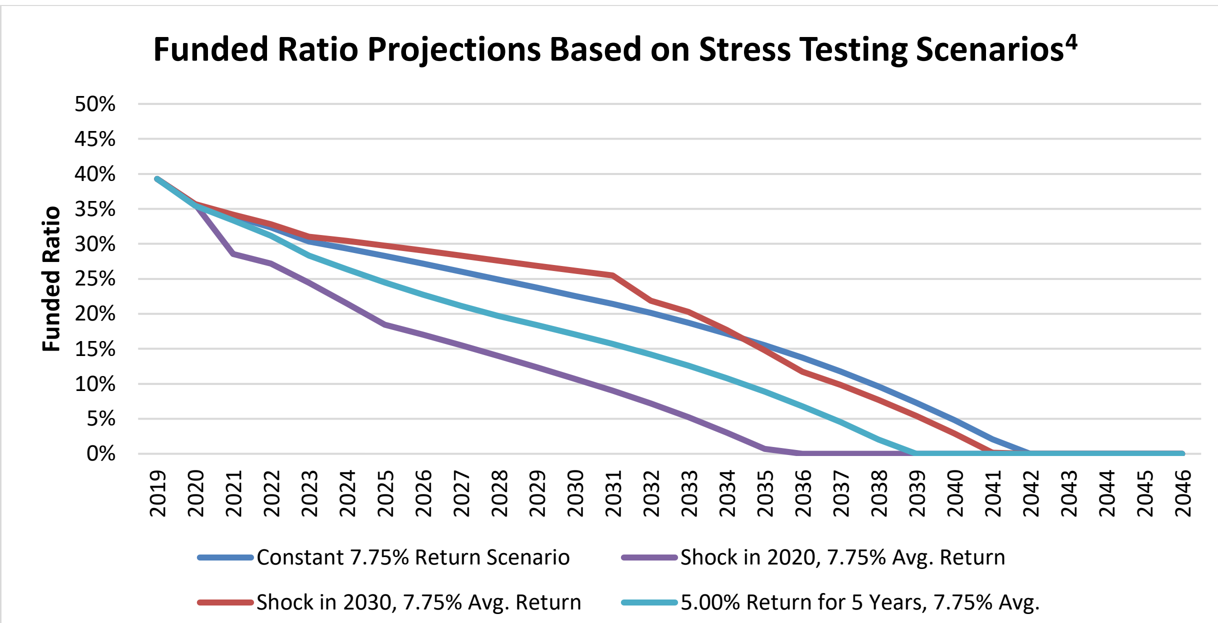
Odessa Fire has reported an exhaustion date every year since this requirement has been in effect (beginning with the 12/31/2015 annual financial report). This date improved somewhat following the 2016 plan changes made in accordance with the FSRP but returned to an alarming 16 years as of 12/31/2018.



[3] Statement No. 68 of the Governmental Accounting Standards Board

It is important to recognize that this projection does not include contributions expected to finance the benefits of new members hired after the valuation date. However, the PRB estimates that including those contributions would only postpone the exhaustion date by 5-10 years. While this projection does not guarantee that the Fund's assets will deplete in 16 (or 25) years, it should raise red flags that all stakeholders should take very seriously.

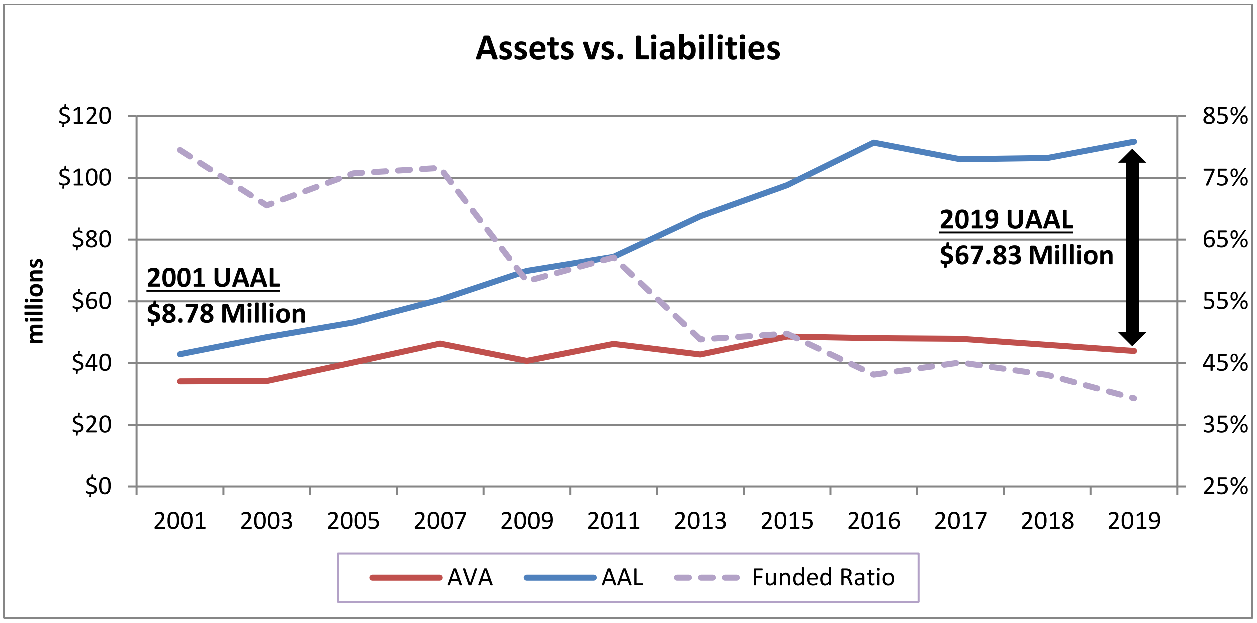
As part of this review, the PRB conducted some limited stress testing to help Odessa Fire trustees better understand how well the Fund would stand up to different market conditions. Even in scenarios where the assumed rate of return is achieved over a 30-year period, but the Fund experiences either a single negative investment shock or a short period of returns below the actuarial assumption, assets are expected to deplete sooner than under the simple constant 7.75% return in all years. The chart below shows several investment return scenarios where the average rate of return is 7.75% over the 30-year period of 2019 - 2048. The scenarios are: 1) a constant 7.75%, 2) a negative "shock" of -20% in 2020 with above average returns of 8.71% in all other years, 3) a negative shock of -20% in 2030 with above average returns of 8.71% in all other years, and 4) 5% for 5 years (2019-2023), followed by above-average returns of 8.30%.



Assets Relatively Flat Since 2001

Since 2001, Odessa Fire's unfunded actuarial accrued liability (UAAL) has grown by nearly $60 million. The Fund's actuarial value of assets (AVA) has remained relatively flat over the same time period, averaging a 1.6% annual growth rate while liabilities were growing at more than 10% per year until the 2016 FSRP changes.

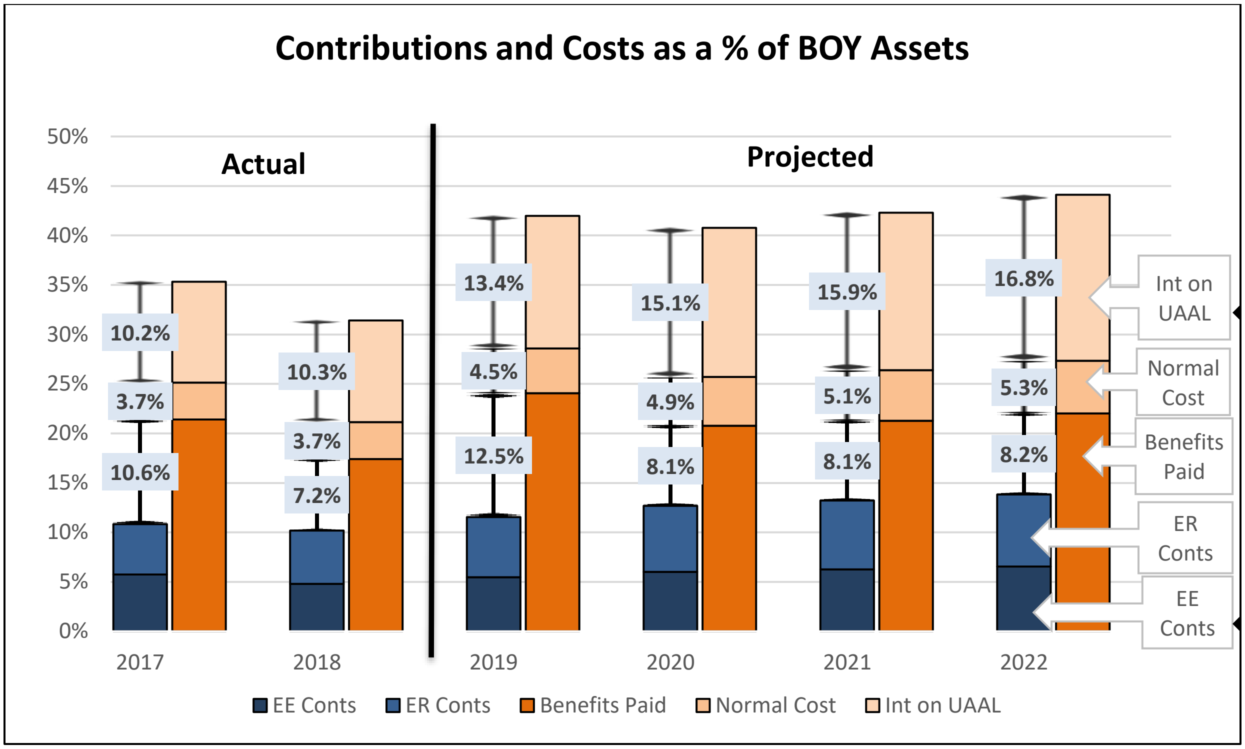
[4] Projections were calculated using expected salaries, projected actuarial accrued liability, and expected benefit payments provided by the Fund's actuary.



The stagnant asset level appears to be largely attributable to benefit payments significantly higher than contributions, the effect of which is compounded given the low funded ratio of the past decade. In the 2018 annual financial report, the auditor noted the Fund's contribution arrangement (2018 total contributions received of $4,655,268) was only enough to cover roughly 60% of the total benefit disbursements ($7,958,420) and stated, "As the Plan matures, we expect this gap to widen and then stabilize."[5]

The gap between contributions received and benefits paid puts a large onus on investments to make up the remaining assets needed to pay benefits due, much less cover the normal cost, the interest accrued on the unfunded liability, and make progress towards decreasing the UAAL to put the Fund on a path to full funding. As evidenced in the chart below, the investment return needed just to pay benefits in recent years was near or higher than the assumed return and is only projected to get higher as total assets decrease. This means that in the years in which the Fund experiences positive asset returns, at least some, if not all, of the investment gains would be needed to pay benefits rather than grow the assets. In years in which losses are experienced, assets would have to be sold at the worst time to cover benefit payments, further exacerbating the loss.

[5] Odessa Firefighters' Relief and Retirement Fund Financial Statements and Independent Auditor's Report, December 31, 2018 and 2017, page 1.



Asset Allocation Process

According to the Fund and based on a review of the current and previous investment policy statements, the board does not have an asset allocation plan nor does it engage in any strategic asset allocation review. The board is relying primarily on the investment consultant to recommend and set the Fund's strategic asset allocation. This approach does not follow the industry best practices. The Government Finance Officers Association (GFOA) recommends retirement systems establish an asset allocation plan within their overall investment policy.[7] The first step to develop an asset allocation should be for the board of trustees, in consultation with the investment consultant, to conduct a thorough assessment of the Fund's funding goals, risk tolerance, investment horizon, and liquidity needs.[8,9]

Odessa Fire's asset allocation process appears to be based on an asset-only model with an expected long-term investment horizon which may not adequately consider the funding status and liquidity needs associated with the Fund's liabilities. Further, the focus appears to be on achieving a predetermined overall target rate of return, currently set as 7.75%. The IPS does not discuss how risk is measured, nor what constitutes a reasonable level of risk given the Fund's near-term liquidity needs to pay out benefits.

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[7] *Asset Allocation for Defined Benefit Plans*, Government Finance Officers Association, October 2009, https://www.gfoa.org/asset-allocation-defined-benefit-plans.
[8] *Pension Investing: Fundamentals and Best Practices,* Nicholas Greifer, Government Finance Officers Association, https://www.gfoa.org/sites/default/files/PensionInvesting_FundamentalsAndBestPractices.pdf
[9] *A Primer for Investment Trustees: Understanding Investment Committee Responsibilities, Jeffery Bailey and Thomas Richards, CFA Institute Research Foundation,* https://www.cfainstitute.org/-/media/documents/book/rf-publication/2017/rf-v2017-n3-1.ashx

On the surface, this makes it seem like the asset allocation is being structured to meet the pre-determined assumed rate of return, rather than the assumed rate of return being calculated as a function of a fund-appropriate asset allocation.

If the Fund were in a stronger financial position, this approach might not raise significant concern. However, given the reported exhaustion period, lack of any asset growth for nearly two decades, and projected negative cash flow illustrating a high likelihood of the need for greater liquidity, the lack of consideration given to these pressing issues does raise alarm.

Revised Funding Soundness Restoration Plan

Odessa Fire's 2016 FSRP changes lowered the Fund's amortization period from infinite (as of 1/1/2016) to 46.5 years (as of 1/1/2017). Higher amortization periods are more sensitive to even small actuarial losses. Thus, even though only 20% of the asset losses experienced in 2018 are reflected in the calculation due to asset smoothing, the Fund's amortization rose to 77.5 years as of its 1/1/2019 valuation.

The FSRP, despite attempting to address the long-term funding challenges, is therefore already insufficient to achieve the 40-year amortization period by the target date (2026). Texas Government Code §802.2015(d) requires the Fund to work with the City of Odessa to develop a revised FSRP before the end of November 2019.[10]

[10] Texas Government Code §802.2015

Analysis/Recommendations

Funding Options

As of the January 1, 2019 actuarial valuation, Odessa Fire's UAAL was $67,827,402 and would take approximately 77.5 years to amortize, assuming all assumptions are met. Based on amortization period projections provided by the Fund's actuary, the PRB estimates a reduction in UAAL of approximately $7.2 million would bring the Fund back in compliance with current FSRP requirements and achieve an amortization period of 40 years by the target date (end of 2026). The UAAL would need to be reduced by approximately $18.3 million to bring the projected funding period within the *PRB Pension Funding Guidelines* preferred maximum of 30 years.[11, 12]

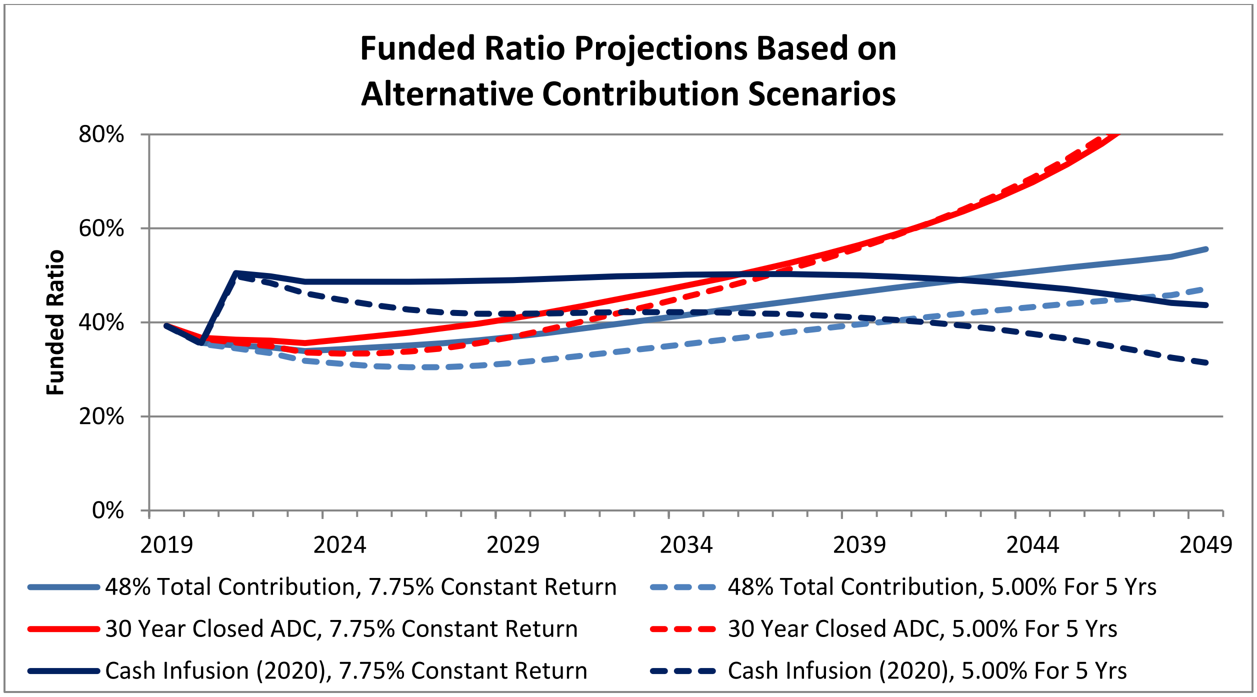
To shore up funding, Odessa Fire and the City should work together to determine the best balance between increased contributions and benefit reductions. However, it should be noted that a reduction in future benefit accruals will have virtually no impact on near-term cash outflows and the threat of a potential asset exhaustion date. Thus, certain actions which may achieve compliance with state law, may not properly address the risks faced by the Fund. Given Odessa Fire's current funding level, an increase in contributions over the near term is likely needed to stabilize the Fund.

Multiple options exist for adjusting contributions to the Fund. For example, contribution increases from the City, the employees, or both could be utilized alone or in combination with a one-time cash infusion. To help the City and the Fund begin to consider options for how to remedy the funding shortfall, the PRB developed some projections based on different contribution scenarios.

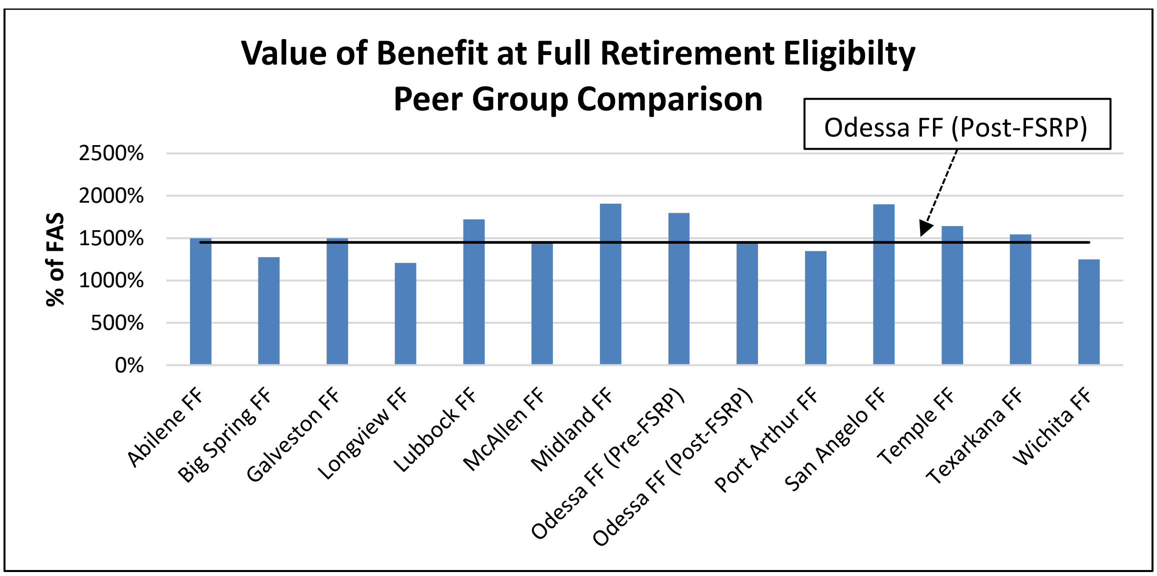
The following graph illustrates three potential options as examples: increasing the total contribution rate from 38% to 48% beginning in 2020; basing the total contribution on a 30-year closed ADC rate; or leaving the contribution arrangement as it currently is but assuming a significant one-time cash infusion of $18.3 million to the Fund during the 2020 fiscal year. The alternative contribution scenarios are shown using two different investment scenarios to illustrate how each scenario reacts to changing market conditions: 1) a constant 7.75% (solid line) and 2) 5% for 5 years (2019-2023), followed by above-average returns of 8.30% (dotted line). In all three scenarios, the Fund avoids depleting its actuarial assets for at least 30 years.

[11] These estimates are based solely on information provided in conjunction with the 1/1/2019 actuarial valuation and identify the minimum necessary to comply with state law and PRB guidelines. They do not take into account the open group projection analysis used in other areas of this review.

[12] *Pension Funding Guidelines*, Texas Pension Review Board, 30 June 2017, https://www.prb.texas.gov/txpen/wp-content/uploads/2017/03/Funding-Guidelines.pdf



While further benefit reductions will not help in the near term, they should still be considered for the long term. To help both the City and the Fund understand how current benefit levels compare to peer systems, the graph below depicts the present value of benefits at full retirement eligibility (as a percent of final average salary), both before and after the 2016 FSRP changes, in comparison with its peers.[13] Prior to the changes made in the 2016 FSRP, the Fund's value of benefit was the third highest amongst its peers but fell below the peer group average after the benefit changes.



[13] For this graph, Odessa Fire's peers are defined as other defined benefit TLFFRA plans that have a similar amount of actuarial assets, within roughly $15 million of Odessa Fire's assets, or are located relatively close geographically. Please refer to the Peer Group Value of Benefits Comparison in the appendix for more details.

When developing the revised FSRP, the Fund and the City are encouraged to think beyond the 40-year amortization period requirement and develop a strong funding policy. The goals of a funding policy are threefold: establish clear and concrete funding objectives, set boundaries on what is allowable for actuarial calculations, and develop plans for both positive and negative experiences. The funding policy should strive to balance the three primary pension funding goals so that member benefits are secure; employers are afforded some level of contribution predictability from year to year; and liabilities are managed so that future taxpayers are not burdened with costs associated with a previous generation's service. For more detail, please see the PRB's *January 2019 Interim Study: Funding Policies for Fixed-Rate Pension Plans.*[14]

The Fund should use the new funding policy requirement in Senate Bill 2224 (86R) and the revised FSRP process as an opportunity to work with the City of Odessa to address both the short- and long-term challenges faced by the Fund before funding levels deteriorate further.[15]

Investment Practices and Governance

As noted above, the Fund identified concerns with their previous investment consultant and took proactive steps resulting in hiring a new consultant. This is a positive sign that the Fund is closely monitoring the performance of its advisors and is willing to take action if deemed necessary. However, the PRB has further concerns regarding the overall asset allocation and investment decision-making process.

The Fund should consider taking the following steps to continue to improve its investment governance and to gain a better understanding of the specific risks the Fund faces associated with its significant negative cash flow and potential future asset depletion.

Asset Allocation Plan

Implement GFOA's recommendation to establish an asset allocation plan within the overall investment policy.[16] This provides the board a framework to create and continually monitor its asset allocation.

Asset-Liability Study

Perform asset-liability studies, which model future asset and liability cash flows under various scenarios, to identify if the asset allocation is sufficient to support the future benefit payment stream. These studies can be utilized from time to time to assist the Fund in evaluating its asset allocation and investment risks.

Stress Testing

Stress testing should be a regular part of reviewing portfolio performance, and should be used as a gauge to help assess and manage the level of risk. The Society of Actuaries Blue Ribbon Panel on Public Pension

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[14] *Interim Study: Funding Policies for Fixed-Rate Pension Plans,* Texas Pension Review Board, January 2019, https://www.prb.texas.gov/txpen/wp-content/uploads/2019/02/Funding-Policy-Paper.pdf

[15] SB 2224, 86th Texas Legislature, Regular Session, 2019, https://capitol.texas.gov/tlodocs/86R/billtext/html/SB02224F.htm

[16] *Asset Allocation for Defined Benefit Plans*, Government Finance Officers Association, October 2009, https://www.gfoa.org/asset-allocation-defined-benefit-plans.

Plan Funding recommends the use of stress testing as a means to measure investment and contribution risks over a 30-year period.[17]

Investment Practices and Performance Evaluation

Texas Government Code §802.109 (SB 322, 86R) requires certain Texas retirement systems to complete an Investment Practices and Performance Evaluation by May 1, 2020.[18] This new requirement will further help current trustees, plan members, and other stakeholders gain a better understanding of current investment policies, procedures, and practices as well as how they compare against both their peers and industry best practices. This will be particularly helpful for Odessa Fire given the concerns raised in this review related to investment governance.

Review of Professional Advisor Performance

As previously noted, the board of trustees recently hired a new investment consultant after reviewing the previous consultant and determining they were not receiving sufficient value for the cost of services. The Fund should be commended for this important step.

Best practice suggests RFPs should be issued for all outside services at regular, pre-determined intervals to continuously evaluate the level of service being provided.[19] The board is encouraged to review all professional advisors on a regular basis, either through internal performance review or by hiring an independent, third-party reviewer. For example, in the 2015 actuarial valuation, it was noted that the previous actuary was not fully valuing the cost-of-living adjustment. An actuarial audit, in which a second actuary reviews or audits the work of the Fund's actuary, may have discovered this and included a recommendation to fully value this benefit.

[17] Society of Actuaries. Report of the Blue Ribbon Panel on Public Pension Plan Funding. Schaumburg, Illinois. Feb 2014.

[18] SB 322, 86th Texas Legislature, Regular Session, 2019, https://capitol.texas.gov/tlodocs/86R/billtext/html/SB00322F.htm

[19] Procuring Actuarial Services, Government Finance Officers Association, October 2012, https://www.gfoa.org/procuring-actuarial-services

Appendix

Key Metrics

Metric	Amortization period (47.1 years)
What it measures	Approximately how long it would take to fully fund the unfunded actuarial accrued liability (UAAL) based on the current funding policy.
Why it is important	Given the Fund's current assumptions, an amortization period above 17 years indicates the contributions to the Fund in the coming year are less than the interest accumulated for that same period and therefore the total UAAL is expected to grow over the near term. In addition, for a plan that contributes on a fixed-rate basis such as Odessa Fire, the higher the amortization period, the more sensitive it is to small changes in the UAAL.
Peer comparison	Odessa Fire currently ranks second highest amongst its peer TLFFRA plans (TLFFRA plans within a market value of assets of $15 million and plans with a close proximity to the city).

Metric	Funded ratio (43.08%)
What it measures	The percent of a fund's actuarially accrued liabilities covered by its actuarial value of assets.
Why it is important	The lower the funded ratio, the fewer assets a fund has to pay its current and future benefit payments.
Peer comparison	Odessa Fire's funded ratio is the lowest in its peer group and one of the lowest in the state.

Metric	UAAL as a percent of payroll (510.6%)
What it measures	The size of a plan's unfunded liability compared to the annual payroll of its active members.
Why it is important	Provides a way to compare plans of various sizes and expresses the outstanding "pension debt" relative to current personnel costs.
Peer comparison	The Fund's UAAL as a percent of payroll is the fourth highest in the State of Texas.

Metric	Assumed rate of return (7.75%)
What it measures	The estimated annual rate of return on the Fund's assets.
Why it is important	If actual future returns are lower than the assumed rate of return, future contributions will need to increase significantly, especially for a poorly funded plan. Odessa Fire's assumed rate of return is 7.75%, while its actual ten-year investment rate of return for the period ending December 31, 2017 was only 3.76%.
Peer comparison	Odessa Fire's assumed rate of return is higher than the national average of 7.27%.[20]

Metric	Payroll growth rate (3.50%)
What it measures	The estimated annual growth in the total payroll of active members contributing into the Fund.
Why it is important	Contributions are calculated as a percent of active members' pay and are back-loaded based on the expected growth in total payroll. If payroll does not increase at this rate, actual contributions will not meet those expected in the Fund's actuarial valuations. Given the Fund's inactive and active liabilities are not fully funded; contributions below expected levels will have serious consequences on the Fund's long-term solvency.
Peer comparison	The Fund's payroll growth rate of 3.50% percent is average for its peer group.

Metric	Actual contributions as a percent of actuarially determined contributions (81.31%)
What it measures	Whether the current employer contributions have met a theoretical minimum threshold.[21]
Why it is important	The employer's portion of the contribution is less than 82% of the amount needed to fund the Fund on a rolling 30-year amortization period. The PRB's 2014 Study of the Financial Health of Texas Public Retirement Systems found that plans that have consistently received adequate funding are in a better position to meet their long-term obligations.
Peer comparison	This is the third largest shortfall percentage in its peer group.

[20] NASRA Issue Brief: Public Pension Plan Investment Return Assumptions. February 2019.

[21] The theoretical minimum threshold, or actuarially determined contribution (ADC), is a target or recommended contribution "to the Fund as determined by the actuary using a contribution allocation procedure," as defined in Actuarial Standards of Practice No 4. If contributions to the Fund are made as a fixed rate based on statutory or contractual requirements, the ADC for this purpose is the contribution needed to fund the benefits accrued in the current year and maintain an amortization period that does not exceed 30 years, as required to be reported under Texas Government Code §802.101(a).

Metric	Non-investment cash flow as a percent of fiduciary net position (-11.16%)
What it measures	Non-investment cash flow shows how much the Fund is receiving through contributions in relation to its outflows: benefit payments, withdrawals and expenses.
Why it is important	Viewing this metric as a percent of total net assets (or fiduciary net position (FNP)), in conjunction with the funded ratio and recognition of the relative maturity of a plan, provides information about the stability of a plan's funding arrangement.
Peer comparison	Odessa Fire's non-investment cash flow as a percent of FNP is the second lowest in the State. If this trend continues, the Fund could face the potential risk of needing to liquidate a portion of existing assets to pay current benefits and/or expenses.

Plan Summary

The Odessa Firemen's Relief and Retirement Fund ("Odessa Fire" or "the Fund") is established in the Texas Local Fire Fighter's Retirement Act (TLFFRA). TLFFRA provides general guidelines for fund management, but leaves administration, plan design, contributions, and specific investments to the discretion of the board of trustees. Odessa Fire, as with all TLFFRA systems, is entirely locally funded.

Benefits

Retirement Eligibility	Frozen Benefit – Age 50 with 20 Years of Creditable Service Post 2016 Benefit – Age 55 with 25 Years of Creditable Service
Vesting	Frozen Benefit –20 Years of Service Post 2016 Benefit –20 Years of Service, with full benefits payable at 25 years of service.
Benefit Formula	Frozen Benefit – Final Average Salary x 3.6% x Years of creditable service plus a longevity benefit equal to $107 per month for each year of creditable service in excess of 20 years (prior to 12/31/2016) Post 2016 Benefit – Final Average Salary x 2.88% x Years of creditable service after 12/31/2016, <= 25 years.
Final Average Salary (FAS)	Frozen Benefit - Highest 5 years within final 10 years of credited service prior to 12/31/2016. Post 2016 Benefit - Final 5 years
COLA	1% applied to frozen benefit only for members hired prior to 1/31/2013, payable each January 1. Ad hoc for members who do not meet requirements for automatic COLA, 1% of monthly frozen benefit provided the Fund's investment performance is not less than a rolling 5-year average of 8.50%.
Retirement Benefit Options	3 DROP Options, must have completed 20 years of Credited Service as of 12/31/2016 for eligibility: 1. Regular DROP, 3 yr. max. 4% interest (on benefit credits only and must be participating in DROP prior to 1/1/2017) and employee contributions credited. 2. Retro DROP, 3 yr. max, employee contributions credited, no interest. 3. Immediate DROP - a partial lump sum option.
Social Security	Yes

Contributions

As of the January 1, 2018 actuarial valuation, active members of Odessa Fire contribute 18% of pay while the City of Odessa contributes 20% of pay.

Membership

Total Active Members	Retired Members	Terminated	Total Members	Active-to-Annuitant Ratio
160	186	18	364	0.86

TLFFRA Board Structure

Active Members	3 - Members of the retirement system; elected by fund members. Three-year terms.
Sponsor Government	1 - Mayor or designated representative, or the political subdivision's Chief Operating Officer or designated representative. 1 - Chief Financial Officer of the political subdivision, or designated representative. Terms correspond to term of office.
Taxpayer, Not Affiliated With Fund/Sponsor Govt.	2 - Residents of the State of Texas, must not be officers/employees of the political subdivision; elected by other board of trustee members. Two-year terms.

Contribution and Benefit Decision-Making

TLFFRA authorizes members of the retirement systems to determine their contribution rates by voting. The statute requires cities to make contributions at the same rate paid by employees or 12 percent, whichever is smaller. TLFFRA also allows a city to contribute at a higher rate than employees do through a change in city ordinance.

TLFFRA allows the board of trustees to make decisions to modify the benefits (increases and reductions). However, a proposed addition or change must be approved by the actuary and a majority of participating plan members. Benefit changes cannot deprive a member, retiree or beneficiary of the right to receive vested accrued benefits.

Asset Allocation

Asset Allocation (as of 12/31/2018)					
Asset Class	**Equities**	**Fixed Income**	**Alternatives**	**Real Estate**	**Other***
Current Allocation	59.73%	19.02%	9.07%	6.84%	5.35%
Target Allocation	65.00%	25.00%	0.00%	10.00%	0.00%

*Other includes capital assets, receivables and cash

Investment Returns

Rates of Return (as of 12/31/2018)			
Time Period	**1-year**	**3-year**	**10-year**
Gross Return	-6.00%	6.00%	N/A
Net Return	-7.00%	5.00%	7.02%

Expense Breakdown

Fiscal Year ending 12/31/2018	
Fiduciary Net Position (FNP)	$39,242,633
Investment Expenses	$190,488
Investment Expenses % of FNP	0.49%
Administrative Expenses	$321,902
Administrative Expenses % of FNP	0.82%

Historical Trends

To conduct an intensive review of risks associated with the long-term funding of a pension Fund, it is important to analyze trends in multiple metrics. A plan with an asset level lower than its accrued liability has insufficient funds to cover benefits. A plan can experience an increase in unfunded liability due to various factors, including insufficient investment returns, inadequate contributions and inaccurate or overly aggressive assumptions. Hence, a single metric cannot effectively capture the different drivers contributing to the increase of a plan's unfunded pension obligation. This section analyzes historical trends in various metrics identified by the PRB and makes comparisons to understand the sources of growth in unfunded liability for Odessa Fire.

Odessa Fire's funded status has been steadily declining since 2000. Numerous factors have contributed to this deterioration, including inadequate contributions, investment returns being lower than the chosen assumption, increased benefit payments, and the inclusion of DROP accounts accruing interest.

Assets and Liabilities

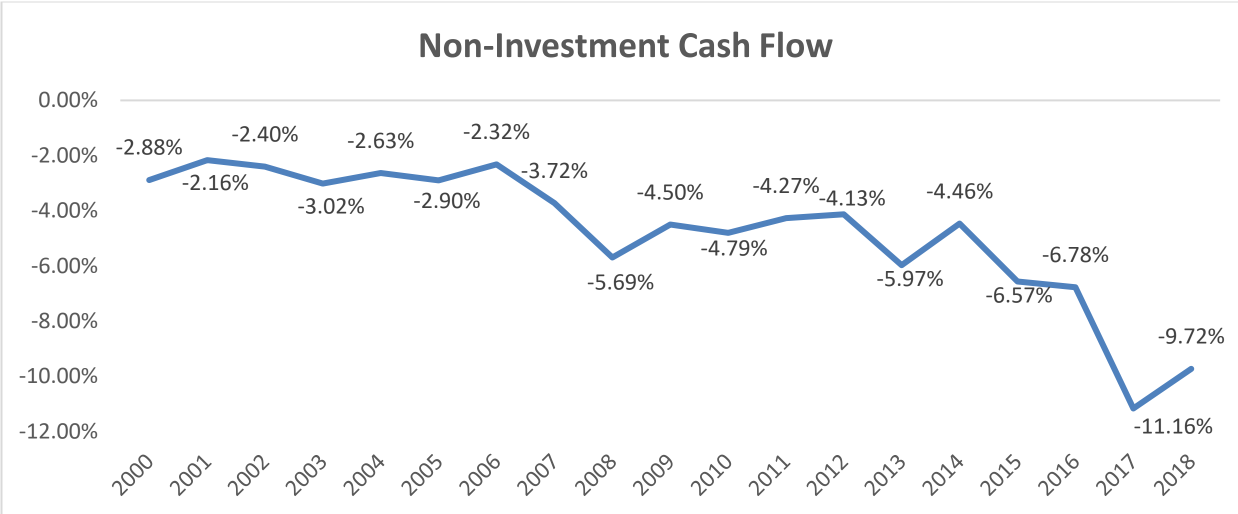
Funding Trends Funded Ratio, Assets, Liabilities and Year over Year Growth									
Valuation Year	2007	2009	2011	2013	2015	2016	2017	2018	2019
Funded Ratio	76.59%	58.28%	62.09%	48.82%	49.75%	43.12%	45.12%	43.08%	39.29%
Am Period (years)	38	Infinite	71	Infinite	Infinite	Infinite	46.5	47.1	77.5
UAAL (in millions)	$14.16	$29.13	$28.19	$44.83	$49.09	$63.35	$58.20	$60.60	$67.83
AVA (in millions)	$46.43	$40.70	$46.17	$42.76	$48.59	$48.03	$47.85	$45.87	$43.89
AVA Growth (YoY)	7.35%	-6.29%	6.51%	-3.77%	6.60%	-0.58%	-0.19%	-2.09%	-2.18%
AAL (in millions)	$60.50	$69.83	$74.36	$87.59	$97.68	$111.38	$106.05	$106.47	$111.71
AAL Growth (YoY)	6.75%	7.43%	3.19%	8.53%	5.60%	6.78%	-2.42%	0.2%	2.43%

Odessa Fire's actuarial accrued liability (AAL) nearly doubled between 2007 and 2019. During the same time period, the actuarial value of assets (AVA) declined. The Fund was 77% funded in 2000 but fell to below 40% in 2019.

Cash Flow

Odessa Fire had the second lowest non-investment cash flow in the State of Texas in 2017. The large drop in 2017 was primarily caused by larger than normal DROP distributions. Total contributions have grown on average by 7% annually since 2009 but are being outpaced by the average growth in yearly benefit disbursements of 8%. Benefit disbursements and contribution refunds are nearly double the amount of contributions the Fund receives.

A negative non-investment cash flow is not abnormal for mature defined benefit pension plans. However, a cash flow percentage this low is likely to be a drag on potential investment returns because a plan must either invest in a higher proportion of income-producing investments, which traditionally provide lower returns, or must liquidate existing assets to pay out current benefits and/or expenses.


Non-Investment Cash Flow
0.00%
-2.00%
-4.00%
-6.00%
-8.00%
-10.00%
-12.00%
-2.88%
-2.16%
-2.40%
-3.02%
-2.63%
-2.90%
-2.32%
-3.72%
-5.69%
-4.50%
-4.79%
-4.27%
-4.13%
-5.97%
-4.46%
-6.57%
-6.78%
-11.16%
-9.72%
2000
2001
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Peer Group Key Metric Comparison

		Funding Val Metrics						Fiscal Year End Metrics			
Peer Group Plans	MVA	Am Period Date	Am Period	Funded Ratio	UAAL as % of Payroll	Assumed Interest	Payroll Growth	FYE	Actual Cont. as % of ADC	DROP as % of FNP	Non-Investment Cash Flow as % of FNP
Midland Firemen's Relief & Retirement Fund	$ 89,754,731	12/31/2015	44.7	65.78%	264.77%	8.00%	4.50%	12/31/2016	89.77%	0.32%	-2.44%
Abilene Firemen's Relief & Retirement Fund	$ 57,127,453	10/1/2017	31.9	55.69%	341.79%	8.00%	4.00%	9/30/2017	97.77%	0.34%	-4.77%
Wichita Falls Firemen's Relief & Retirement Fund	$ 51,447,622	1/1/2018	Infinite	57.70%	316.54%	7.75%	4.00%	12/31/2017	63.05%	N/A	-5.31%
Port Arthur Firemen's Relief & Retirement Fund	$ 49,890,603	12/31/2015	18.3	77.97%	160.73%	8.00%	4.00%	12/31/2017	100.07%	N/A	-2.01%
McAllen Firemen's Relief & Retirement Fund	$ 49,459,309	10/1/2016	41.4	69.11%	187.25%	7.75%	4.00%	9/30/2017	89.78%	N/A	-2.19%
Odessa Firemen's Relief & Retirement Fund	**$ 45,717,250**	**1/1/2018**	**47.1**	**43.08%**	**510.60%**	**7.75%**	**3.50%**	**12/31/2017**	**81.31%**	**4.54%**	**-11.16%**
Galveston Firefighter's Relief & Retirement Fund	$ 44,651,640	12/31/2017	26.8	69.16%	248.42%	7.75%	3.00%	12/31/2017	63.67%	N/A	-4.75%
Longview Firemen's Relief & Retirement Fund	$ 44,353,523	12/31/2017	40.2	46.05%	389.47%	8.00%	3.00%	12/31/2017	81.60%	0.00%	-5.56%
Temple Firemen's Relief & Retirement Fund	$ 44,243,769	9/30/2016	28.4	75.12%	164.97%	7.75%	3.75%	9/30/2018	95.60%	N/A	-4.44%
Killeen Firefighters' Relief & Retirement Fund	$ 43,947,221	9/30/2016	22.8	69.74%	114.49%	7.75%	3.25%	9/30/2017	95.94%	N/A	-0.29%
Texarkana Firemen's Relief & Retirement Fund	$ 34,819,005	12/31/2017	15.0	86.32%	123.72%	7.75%	3.25%	12/31/2017	101.88%	N/A	-3.61%

Peer Group Sponsor Funding Comparison

Peer Group Plans	General Fund Expenditures (GFE)	EOY GF Bal	UAAL	Expected Employer Contributions	ADC	30-yr Shortfall	30-Y SF % of ADC	30-Y SF % of GFE
Midland Firemen's Relief & Retirement Fund	$ 119,672,568	$ 84,781,426	$ 58,952,399	$ 3,609,935	$ 5,180,744	$ 1,570,809	30.32%	1.31%
Abilene Firemen's Relief & Retirement Fund	$ 86,557,678	$ 28,228,036	$ 47,286,729	$ 2,663,240	$ 2,761,469	$ 98,229	3.56%	0.11%
Wichita Falls Firemen's Relief & Retirement Fund	$ 75,116,308	$ 18,302,309	$ 37,628,438	$ 1,525,133	$ 2,321,579	$ 796,446	34.31%	1.06%
Port Arthur Firemen's Relief & Retirement Fund	$ 56,688,967	$ 24,633,956	$ 16,966,441	$ 1,307,126	N/A	No Shortfall	N/A	N/A
McAllen Firemen's Relief & Retirement Fund	$ 108,224,906	$ 52,747,641	$ 21,571,433	$ 1,497,603	$ 1,668,099	$ 170,496	10.22%	0.16%
Odessa Firemen's Relief & Retirement Fund	**$ 96,559,369**	**$ 25,859,030**	**$ 60,600,337**	**$ 2,373,699**	**$ 2,987,300**	**$ 613,601**	**20.54%**	**0.64%**
Galveston Firefighter's Relief & Retirement Fund	$ 46,926,941	$ 19,821,390	$ 19,767,545	$ 1,352,717	N/A	No Shortfall	N/A	N/A
Longview Firemen's Relief & Retirement Fund	$ 59,460,750	$ 19,184,004	$ 50,377,694	$ 2,360,600	$ 2,815,904	$ 455,304	16.17%	0.77%
Temple Firemen's Relief & Retirement Fund	$ 71,640,414	$ 27,779,728	$ 16,392,673	$ 1,380,104	N/A	No Shortfall	N/A	N/A
Killeen Firefighters' Relief & Retirement Fund	$ 76,891,477	$ 22,315,018	$ 18,990,872	$ 1,878,929	$ 2,020,571	$ 141,642	7.01%	0.18%
Texarkana Firemen's Relief & Retirement Fund	$ 32,041,049	$ 14,114,855	$ 5,584,452	$ 880,171	N/A	No Shortfall	N/A	N/A

Peer Group Expense Comparison

Peer Group Plans	10 yr. return (Net)[22]	Active/ Annuitants	Average Benefit	NPL	Admin Expenses	Admin Exp as % of Assets	Investment Expenses	Inv Exp as % of Assets	Other Expenses	Total Expenses	Exp as % of Assets
Midland Firemen's Relief & Retirement Fund	3.97%	1.26	$ 49,417	$ 58,207,074	$ 145,324	0.16%	$ 735,812	0.82%	$134,245	$ 1,015,381	1.13%
Abilene Firemen's Relief & Retirement Fund	4.40%	0.94	$ 41,351	$ 52,087,861	$ 38,825	0.07%	$ 224,051	0.39%	-	$ 262,876	0.46%
Wichita Falls Firemen's Relief & Retirement Fund	5.81%	1.15	$ 32,947	$ 70,486,203	$ 157,958	0.31%	$ 198,290	0.39%	-	$ 356,248	0.69%
Port Arthur Firemen's Relief & Retirement Fund	5.98%	1.42	$ 46,802	$ 12,214,539	$ 59,039	0.12%	$ 47,624	0.10%	-	$ 106,663	0.21%
McAllen Firemen's Relief & Retirement Fund	4.17%	1.65	$ 33,865	$ 25,632,406	$ 33,822	0.07%	$ 295,831	0.60%	-	$ 329,653	0.67%
Odessa Firemen's Relief & Retirement Fund	**3.76%**	**0.91**	**$ 52,055**	**$ 92,884,709**	**$ 204,605**	**0.45%**	$ 218,069	**0.48%**	**-**	**$ 422,674**	**0.92%**
Galveston Firefighter's Relief & Retirement Fund	5.30%	1.59	$ 12,259	$ 12,508,868	$ 133,006	0.30%	$ 102,848	0.23%	-	$ 235,854	0.53%
Longview Firemen's Relief & Retirement Fund	3.17%	1.19	$ 42,251	$46,871,450	$ 97,453	0.22%	$ 176,452	0.40%	-	$ 273,905	0.62%
Temple Firemen's Relief & Retirement Fund	4.17%	1.32	$ 48,054	$ 16,382,826	$ 47,886	0.11%	$ 105,167	0.24%	-	$ 153,053	0.35%
Killeen Firefighters' Relief & Retirement Fund	4.30%	3.13	$ 35,937	$ 16,319,951	$ 96,351	0.22%	$ 54,185	0.12%	-	$ 150,536	0.34%
Texarkana Firemen's Relief & Retirement Fund	5.73%	1.12	$ 31,216	$ 6,016,096	$ 60,495	0.17%	$ 232,794	0.67%	-	$ 293,289	0.84%

[22] All 10-year returns are as of the respective plan's 2017 fiscal year.

Peer Group Value of Benefits Comparison

Peer Group Plans	Retirement Age	YCS	(a) Multiplier as % of FAS	Normal Form of Payment	COLA	Social Security?	(b) Annuity Factor[23]	(a)*(b) PVFB as % of FAS
Abilene Firemen's Relief & Retirement Fund	50	20	60.00%	Life Annuity with 2/3 continued to surviving spouse (J&2/3)	None	No	24.9775	1498.65%
Big Spring Firemen's Relief & Retirement Fund	50	20	51.00%	Life Annuity with 2/3 continued to surviving spouse (J&2/3)	None	No	24.9775	1273.85%
Galveston Firefighter's Relief & Retirement Fund	50	20	60.00%	Life Annuity with 2/3 continued to surviving spouse (J&2/3)	None	No	24.9775	1498.65%
Longview Firemen's Relief & Retirement Fund	55	20	60.00%	Life Annuity	None	No	20.1329	1207.97%
Lubbock Fire Pension Fund	50	20	68.92%	Life Annuity with 2/3 continued to surviving spouse (J&2/3)	None	No	24.9775	1721.45%
McAllen Firemen's Relief & Retirement Fund	50	20	58.00%	Life Annuity with 2/3 continued to surviving spouse (J&2/3)	None	Yes	24.9775	1448.70%
Midland Firemen's Relief & Retirement Fund	50	20	75.00%	Life Annuity with 75% continued to surviving spouse (J&75%)	None	No	25.3996	1904.97%
Odessa Firemen's Relief & Retirement Fund (Pre-FSRP)	**50**	**20**	**72.00%**	**Life Annuity with 2/3 continued to surviving spouse (J&2/3)**	**None**	**Yes**	**24.9775**	**1798.38%**
Odessa Firemen's Relief & Retirement Fund (Post-FSRP)	**55**	**25**	**72.00%**	**Life Annuity**	**None**	**Yes**	**20.1329**	**1449.57%**
Port Arthur Firemen's Relief & Retirement Fund	50	20	54.00%	Life Annuity with 2/3 continued to surviving spouse (J&2/3)	None	No	24.9775	1348.79%
San Angelo Firemen's Relief & Retirement Fund	50	20	66.00%	Life Annuity with 72% continued to surviving spouse (J&72%)	1.2% after age 65	No	28.7490	1897.43%
Temple Firemen's Relief & Retirement Fund	50	20	65.75%	Life Annuity with 2/3 continued to surviving spouse (J&2/3)	None	No	24.9775	1642.27%
Texarkana Firemen's Relief & Retirement Fund	50	20	61.80%	Life Annuity with 2/3 continued to surviving spouse (J&2/3)	None	No	24.9775	1543.61%
Wichita Falls Firemen's Relief & Retirement Fund	55	20	50.00%	Life Annuity with 2/3 continued to surviving spouse (J&2/3)	None	Yes	24.9775	1248.88%

[23] Calculated using 2.5% interest rate, male members with spouses 2 years younger, and RP 2006 Healthy Annuitant mortality with fully generational projection using scale MP2018.

Comments from Odessa Firemen's Relief and Retirement Fund

OFRRF
Odessa Firefighters Relief & Retirement Fund

VIA EMAIL September 6, 2019

Texas Pension Review Board
P.O. Box 13498
Austin, TX 78711-3498

Re: Odessa Firefighters' Relief and Retirement Fund
Intensive Actuarial Review Response

To Whom It May Concern:

Texas Government Code Section 801.202(2) requires the Pension Review Board (PRB) to conduct intensive studies of potential or existing problems that threaten the actuarial soundness of or inhibit an equitable distribution of benefits in one or more public retirement systems. The Odessa Firefighter's Relief & Retirement Fund was made aware of our selection on May 16, 2019, at the request of the City of Odessa.

Based on these requirements, we are writing to respond to the Pension Review Board's (PRB) draft of the Intensive Actuarial Review that was done on behalf of the Odessa Firefighters' Relief and Retirement Fund (Fund). The contents of the remainder of this letter and its attachments will illustrate to the PRB the steps that the Fund has made in the previous months, and years, to improve actuarial soundness and comment on or correct any data needing review.

Upon initial review of the draft it appears we did not receive the full report with pages 20 and 21 missing, or possibly it was just mis-numbered.

Plan Summary

On page 16 of the draft report, Plan Summary – there are two discrepancies worth noting. First, under vesting: post 2016 benefit vesting is twenty (20) years of service, with full benefits payable at twenty-five (25) years of service. Secondly, is the Social Security notation: the No should be Yes. All current members of the Odessa Firefighter's Relief & Retirement Fund pay into Social Security. It should be noted that the City of Odessa recently approved the construction of a new fire station that will produce new active members creating payroll and contribution growth which will directly assist the funding of the plan. The plan's actuary has been made aware of this information and has discussed the impact of it in their portion of the response.

Attachments

Attached to this letter is response and correspondence from the Fund's investment consultant, Jeff Swanson, and actuary, Brad Heinrichs, in relation to the Intensive Actuarial Review draft.

It is clear in both Foster & Foster and Southeastern's response that the Fund has taken extraordinary measures over the past several years to improve and restore actuarial soundness. Much consideration has been given to all aspects of the Fund by the Board of Trustees, Actuary, and Investment Consultant. The Fund is in current, and continuous, conversation with the City of Odessa to improve the funding status.

If you have any questions, please do not hesitate to contact us.

Respectfully submitted,

Travis Jones - Chairman

September 5, 2019

Board of Trustees
Odessa Firefighters'
Relief and Retirement Fund
1921 E. 37th St, Suite C
Odessa, TX 79762

Re: Pension Review Board (PRB) Intensive Actuarial Review

Dear Board:

Foster & Foster has reviewed the Intensive Actuarial Review of your fund and have several comments that we would like for you to pass along to the PRB. First, I think the review was well-done given the amount of information that the PRB had at its disposal, and in general do not dispute the math used in the additional calculations performed by the PRB. We believe, however, that some additional commentary should be included to help properly frame the entire picture as to what has occurred or will occur in the future with this Fund. For purposes of organizing my thoughts into a beneficial format, we will separate our comments into the following three (3) categories: Fund Status as of December 2015, Board Actions Since 2015, and Future Projections/Solutions.

Fund Status as of December 2015

Foster & Foster was engaged to become the Fund's actuary in December of 2015 and was asked to quickly complete the January 1, 2015 Actuarial Report. The most recent actuarial valuation had been completed as of January 1, 2013. A paraphrased summary of results and the assumptions that we inherited are as follows:

Assumed Rate of Return:	8.25% (down from 8.50% in the 2011 valuation)
Payroll Growth Rate:	4.50%
Salary Increases:	4.50%
Amortization Period:	Infinite
Funded Ratio:	49.7%
% of Accrued PVB to Total:	77.4%
Total Normal Cost Rate:	18.7%
City Contribution Rate:	16.0%
Member Contribution Rate:	15.0%
Number of Active Firefighters:	163
Number of Actives 2003:	164
Number of Money Managers:	1
Number of Inv. Consultants:	0

Our initial comments to the Board were as follows:

1) We are concerned about the assumptions being used to develop the funded status, adequacy of the contributions, and amortization period. As you can see from the statistics on the prior page, three of the major assumptions were rather aggressive relative to those used by our other 350 public plans, or by most other public funds that exist across the country. In our initial review, it did not appear that the plan had been coming close to meeting those assumptions for as far back as we could see. We recommended (and the Board approved) an Experience Study.

2) Even if those assumptions were reasonable, the funded ratio was extremely low and the amortization period was infinite, which clearly means that an infusion of cash or a reduction of benefits was desperately needed.

3) We were troubled that 77.4% of the total present value of benefits had already been accrued. This indicated to us only 22.6% of the total PVB is "in play," or, said differently, less than one-fourth (1/4) of the total liability could be lowered by a reduction in benefits. Additionally, the employees are already paying for a majority (15% of the 18.7%) of their annual accrual of benefits, based on the inherited assumptions.

Board Actions Since 2015

The Board approved and we delivered an Experience Study on July 19, 2016. As we feared, the results of the Study showed that the picture was quite a bit worse than the Board had previously been led to believe. Using a 7.75% Assumed Rate of Return (which we continue to feel remains on the aggressive end of the spectrum) and a 3.5% payroll growth assumption (also still somewhat aggressive), along with changes to salary scales, retirement rates, withdrawal rates, and disability rates, the Fund was 14.5% of pay away on an annual basis from achieving a 40-year amortization. The Fund was 25.4% of annual payroll away from achieving a 20-year amortization.

Clearly, adjustments needed to be made, and the Board immediately made the following actions:

1) Began by approving all of the assumption changes outlined in our Experience Study.
2) Voted to begin performing annual actuarial valuations instead of bi-annual, to better monitor their funded status and amortization period.
3) Engaged our firm to perform an actuarial analysis of multiple benefit reduction/contribution increase scenarios.
4) Conducted meetings with All of the members (with the actuary and the City Manager present) to provide information about the status of the Fund and to inform them that benefit reductions or contribution increases were imminent.

The results of the 1/1/2016 Actuarial Valuation using the new assumptions showed that the 40-year funding cost was 47.0%, which meant that the Fund was 16.0% of annual payroll away from a 40-year amortization, and not the 14.5% as illustrated in the Experience Study based upon the 1/1/2015 valuation.

By the end of 2016, the Board/City/Members agreed to substantial benefit reductions as well as to increase contributions. At that time, under our guidance, the Board filed a Funding Soundness Restoration Plan with the PRB. The 1/1/2017 Actuarial Valuation showed the impact of the benefit changes and contribution rate increases. The stats were as follows:

Assumed Rate of Return:	7.75% (down from 8.25% in the 2015 valuation)
Payroll Growth Rate:	3.50% (down from 4.5% in the 2015 valuation)
Salary Increases:	6.40% (up from 4.5% in the 2015 valuation)
Amortization Period:	46.5 (previously infinite)
Funded Ratio:	45.1% (up from 41.8%)
% of Accrued PVB to Total:	84.6% (up from 77.9%)
Total Normal Cost Rate:	15.1% (down from 21.6%)
City Contribution Rate:	20.0% (up from 16.0%)
Member Contribution Rate:	18.0% (up from 15.0%)
Number of Active Firefighters:	161
Number of Actives 2003:	164
Number of Money Managers:	1
Number of Inv. Consultants:	0

As you can see above, these changes were substantial. Many representatives from other TLFFRA funds viewed these changes to be drastic. Both the Members and the City shared the pain caused by these changes.

The 2018 Actuarial Valuation prompted the Board to make further changes. They did not sit idle, since their objective is to obtain an acceptable amortization period and for this Fund to be sustainable over the long term. Upon receiving the 2018 Valuation, the Board decided to make some changes to the way it handles its investments. They hired Southeastern Advisors, an investment consulting firm, to provide them with an analysis and opinion as to how they were currently invested relative to their goal of achieving a 7.75% Assumed Rate of Return. While we will leave the technical details to Mr. Swanson, the Fund's Consultant, the Board made several changes to its money management process. At a minimum, they hired new managers and a new custodian. We are told that their ability to achieve a 7.75% return assumption is much greater now, and at less risk, than what was previously possible.

Unfortunately, the market took a major downturn at the end of 2018, causing nearly all pension funds across the country to sustain major investment losses. These losses were manifested in Odessa's 1/1/2019 Actuarial Valuation, shown in the statistics below:

Assumed Rate of Return:	7.75%
Payroll Growth Rate:	3.50%
Salary Increases:	6.40%
Amortization Period:	77.5
Funded Ratio:	39.3%
% of Accrued PVB to Total:	83.6%
Total Normal Cost Rate:	14.9%
City Contribution Rate:	20.0%
Member Contribution Rate:	18.0%
Number of Active Firefighters:	160
Number of Actives 2003:	164
Number of Money Managers:	10+
Number of Inv. Consultants:	1

The 40-year funding cost for this Fund is currently 42.75%, which is 4.75% more per year than what is currently being contributed.

Future Projections

Since the 1/1/2019 Actuarial Valuation, the stock market has erased the losses it sustained at the end of 2018, and the Fund is on more stable ground. If we were to update the previous valuation with today's assets, we believe that you would see numbers like those inherent in the 2018 valuation, with an amortization period in the mid 40's.

It is our opinion that future benefit cuts are not a good idea, in spite of the Fund's current funded status, for the following reasons:

1) With 84% of the total PVB already accrued, benefit reductions for current members would make very little difference in the overall result. In other words, there isn't much meat left on the bone.

2) The Members contribute 18% of pay, and their Normal Cost is less than 15% of pay. This means that the Members are paying 3.1% more for their benefit than what they are earning.

3) As illustrated nicely in the Intensive Review, the pension benefits provided to Odessa Firefighters are now worse than those Fire Departments that Odessa competes with for talent. Specifically, neighboring cities like Midland and San Angelo now have larger benefits than Odessa. Furthermore, what is not inherent in the Peer Value Benefits Comparison is that Odessa Firefighters now pay much more for their lower benefits than their peers. This issue is currently causing retention problems within the Odessa Fire department.

4) **Help is on the way!** It is our understanding that the City has agreed to add another fire station, and the department size is expected to grow from the 160 actives shown in the 2019 valuation to approximately 210 over the next three years. These future Members will bring along at least an additional few million dollars in extra annual payroll, which would add an approximate $700,000 of additional annual contributions to help pay down the Unfunded Liability. This $700,000 would represent over 5% of current payroll, which would bring the Fund in line with a 40-year amortization.

The Board has requested that Foster & Foster perform a special actuarial analysis to estimate the impact of the changes to the size of the Fire department that will be occurring over the next few years in conjunction with the strong investment performance thus far in 2019. The results of this analysis will be completed and ready for discussion with a Foster & Foster representative in attendance at the scheduled September 19, 2019 PRB meeting. We feel that the result of this analysis will illustrate that no further action is currently needed in the form of a revised Funding Soundess Restoration Plan.

In conclusion, we feel that the Board has acted swiftly to make positive changes to their Plan. We intend to continue to work with the Board and its Investment Consultant to monitor experience as it pertains to the actuarial assumptions and make recommendations for change when necessary. The Board also intends to work closely with the City of Odessa to make sure that the Plan is adequately funded and is sustainable and capable of paying benefits for all current and future retirees.

Respectfully submitted,

Bradley R. Heinrichs, FSA, EA, MAAA

Drew D. Ballard, EA, MAAA

SOUTHEASTERN ADVISORY SERVICES, INC.
Registered Investment Advisor

September 5, 2019

Board of Trustees
Odessa Firefighters'
Relief and Retirement Fund
1921 E. 37th Street, Suite C
Odessa, TX 79762

Re: Pension Review Board (PRB) Intensive Actuarial Review

Dear Board:

Southeastern Advisory Services has reviewed the Intensive Actuarial Review and would like to address each of the items that are raised regarding the investment program. I would like to start by commending the Board for their commitment and diligence and in making significant progress with the assets. I believe the PRB response is reasonable and I understand the logic behind their conclusions. The comments below are offered to assist to assist you in understanding the work and recommendations we have provided thus far.

Background

The Board hired their former manager in 2013 to manage all assets of the Fund. Southeastern has had a working relationship with this manager for many years. This manager was well known for its Large Cap Domestic Value Equity product. However, we were not aware of any other institutional clients using this firm as the sole manager where they also provide total portfolio management and asset allocation. Our firm had also evaluated the firm's other product offerings periodically through the years. Based on our research, we have never approved or recommended any of the other specialty products from this manager.

Upon review of the legacy Investment Policy Statement (IPS), risk allocations, and the individual manager's products, we developed the following general concerns:

- Concentration of assets with a single firm using internal products.
- The IPS document was authored by the asset manager.
- Overly aggressive IPS allocations given the Fund's cash outflows.
- Target allocation to public equity significantly higher than any of our public fund clients.
- The allocation to international equity of 24% was the highest that we have seen.
- The allocation to emerging market equity of 10% is higher than any public fund that we advise.
- Specialty strategies (MLP/REIT/Converts) generally had not added value to the Fund.
- High management fees for institutional balanced asset management.

Following our analysis of the investment portfolios for the fiscal year ending 12/31/18, we became uncomfortable with the Fund's asset performance and the level of risk taken. We noted the following specific concerns:

- The FYE 12/31/18 loss of -6.5% ranked #88 in the Wilshire Public Fund Universe.
- During the 4Q18 market correction, the loss of -10% ranked #90 in the Wilshire Pubic Fund Universe.
- For the three years ending 12/31/18, the standard deviation ranked #94 in the Wilshire Public Fund Universe.
- While we found that asset manager's flagship product had merit, the other internal specialty products were generally not compelling.

After sharing our findings with the Board, it was determined that first action should be to identify new assets manager(s). In order to do so, it would be necessary to revise the IPS and identify an appropriate target index. In doing so we provided target portfolio analysis including asset allocation modeling. We also provided a comparison of capital market assumptions to the current assumed rate of return. These comparisons were used to identify a base-line allocation summarized as follows:

- 65% weighting to public equity- the most common equity target amongst our public fund clients.
- 25% weighting to fixed income- consistent with the median in the Wilshire Public Fund Universe.
- 10% weighting to international equity- consistent with the median in the Wilshire Public Fund Universe.
- Deletion of the specialty segment and the addition of private real estate.

The Board then spent the first half of 2019, revising the investment policy, identifying and hiring an independent custodian and selecting target managers/funds. The revised IPS was adopted on May 30, 2019.

PRB Specific Concerns

The Board has relied on Southeastern to provide the base-line allocation. We agree with the PRB that the Board should have an asset allocation plan and engage in a strategic asset allocation review. We also agree that this follows industry best practices. In our judgement however, we determined that moving the assets to new management with responsible risk allocations was the priority. The Board is now in an excellent position to conduct an asset allocation study that can often be a multi-quarter process. Southeastern acknowledges the Fund's negative cash flow and funded status and will provide a comprehensive asset allocation study that considers these factors in the coming quarters.

Southeastern does not rely on asset-only models when developing strategic asset allocation reviews. Our intention in setting the base-line allocation was not an effort to achieve the predetermined overall target returns of 7.75%. The base-line allocation was determined to be one that, in our judgement, was a responsible starting point from which to allocate the assets and to later conduct a comprehensive review. As an aside, we consult with every client each year on the reasonableness of the assumed rate of return and have been advocates for reducing these assumptions for many years.

Regarding the IPS, we believe risk is best measured by standard deviation. The new IPS does explain that the volatility of the total portfolio is expected to be similar to the target index. Our reporting measures this and scores each client's risk profile to their peers in the Wilshire Pubic Fund Universe. I believe that the asset allocation study will provide the answer to what constitutes a reasonable level of risk given the Fund's near-term liquidity needs. Once this study is completed, we are, of course, in favor of adding this into the IPS document.

In summary, we have been on retainer with the Odessa Fire for the past three quarters. In this short time, the Board has taken decisive action to address the risks and hopefully to improve future investment performance. I understand the Fund's unique challenges, the PRB's concerns and acknowledge that we have more work to do. Southeastern is committed to assisting with the Board in every way possible to ensure a responsible and profitable investment program.

Sincerely,

Jeffrey D. Swanson

Jeffrey Swanson, Senior Consultant

John Small

John Small, President

ODESSA FIREFIGHTERS'
RELIEF AND RETIREMENT FUND

Actuarial Projection Analysis
September 17, 2019

FOSTER & FOSTER
ACTUARIES AND CONSULTANTS

FOSTER & FOSTER
ACTUARIES AND CONSULTANTS

September 17, 2019

Board of Trustees
Odessa Firefighters'
Relief and Retirement Fund
1921 E. 37th St, Suite B
Odessa, TX 79762

Re: Projection Analysis

Dear Board:

As requested, we have performed a special actuarial projection analysis to estimate the amortization period and City funding costs in the coming years under various scenarios. As you are aware, the Texas Pension Review Board (PRB) recently submitted a preliminary draft of their intensive actuarial review of the Odessa Firemen's Relief and Retirement Fund (Fund). Included in this review are comments from the PRB that the recent benefit reductions combined with the contribution increases from the members and the City, as included in the Funding Soundness Restoration Plan (FSRP), are not sufficient to achieve a 40-year amortization period by the target date of 2026. The PRB has deemed the Fund out of compliance with their original FSRP and stated that a revised FSRP must be submitted on or before November 30, 2019.

As you know, the stock market saw a significant decline in the fourth quarter of the 2018 calendar year (the S&P500 decreased from around 2,914 to 2,507; about 14%), resulting in significant asset losses to the Fund. Since the actuarial valuation is performed based on a measurement date of January 1st of each year, the asset values used for the valuation were captured following this decline, which increased the amortization period significantly in the 2019 actuarial valuation. The asset losses realized in the fourth quarter of 2018 were quickly recouped at the beginning of 2019 (the S&P500 rose from 2,507 to above 2,914 by the end of April) and the Fund is currently realizing strong investment returns thus far in 2019. As of the date of this letter, the S&P is around 3,000, approximately 20% higher than its value on January 1st. The Fund's investment consultant has estimated that the Fund's 2019 year-to-date return is approximately 13% (net of fees). This analysis will take into account this investment performance when estimating the actuarial funding metrics beyond 2019.

Also, based on prior conversations with the Board and the City, it is our understanding that the City Council has approved a plan to build a new fire station in the City which will increase the department size significantly in the next few years. This analysis will illustrate the estimated actuarial impact that the increased active membership will have on the Fund. As requested, the body of this letter provides the Board with actuarial projection results based on the following:

Scenario 1: Baseline projection – future experience in line with current actuarial assumptions and no growth in active membership

Scenario 2: Same as Scenario 1 but assuming an actual investment return (net of expenses) in calendar 2019 of 13% based on most recent return information as provided by the Fund's investment consultant

Scenario 3: Same as Scenario 2 but reflecting expected increase in active membership from 160 firefighters on January 1, 2019 to 180 active firefighters in 2020 and 2021 and 210 firefighters from 2022 and beyond (the anticipated completion date of the new fire station).

We feel the results of this analysis will provide valuable information for the upcoming meeting with the PRB later this week. Prior to discussing results of each scenario, it is important to first review the various assumptions that have been utilized to estimate future assets and liabilities, as well as the resulting estimated amortization period.

Assumptions Utilized for Projection

When reviewing the estimated results presented in this analysis, please keep in mind the following:

- The liability projections were based upon census data as of the January 1, 2019 actuarial valuation. Additionally, we relied upon actuarial assumptions, methods, asset information, and plan provisions set forth in the January 1, 2019 actuarial valuation report.

- Under Scenario 1, the market value of assets were assumed to earn 7.75% per year, net of all expenses, beginning January 1, 2019. This is the respective assumption currently used for valuation purposes. Under Scenarios 2 and 3, the market value of assets were assumed to earn 13.0% in calendar 2019, and 7.75% per year in all subsequent years.

- Under Scenarios 1 and 2, the active population was assumed to be constant, meaning that as active members are projected to terminate or retire, they will be replaced with new members. Under Scenario 3, based on direction from the Board, the active population was assumed to be as follows:

Year Beginning January 1	Active Population
2019	160
2020-2021	180
2022+	210

- Based on recent experience, the following demographics were used for populating new entrants into the Fund:

Weighting Factor	Hire Age	Beginning Salary (2019)	Percent Male
20%	19-20	$48,432	95%
30%	22-23	$48,432	95%
20%	25-26	$48,432	95%
15%	28-29	$48,432	95%
15%	31-32	$48,432	95%

- Unless otherwise stated, future mortality, disability, turnover, retirement, payroll, and wage increases were all assumed to occur in accordance with the actuarial assumptions outlined in the January 1, 2019 actuarial valuation report.

Future actuarial measurements may differ significantly from the current measurements presented in this report for a variety of reasons including: changes in applicable laws, changes in plan provisions or contribution rates, changes in assumptions, or plan experience differing from expectations.

It is important to remember that the ultimate cost of your retirement plan is independent of any actuarial assumptions or methods utilized. This cost will be the sum of the benefits paid from the fund and expenses incurred, less any net investment gains received.

Results Discussion

Scenario 1 – Baseline Projection

Scenario 1 represents a projection of the Fund's asset and liabilities such that future experience is in-line with the current actuarial assumptions in all future years with a constant active membership size of 160 firefighters. The PRB states in its intensive actuarial review that based on similar parameters, the Fund's assets are expected to be depleted within 16 years based on an analysis prescribed by the Governmental Accounting Standards Board (GASB). The PRB review acknowledges that the GASB analysis does not include contributions expected to finance benefits of new members hired after the valuation date and estimated that including such contributions would only postpone the asset depletion date by 5-10 years.

Based on our Scenario 1 projection analysis, we estimate that the Fund's assets will be depleted sometime in calendar year 2044, consistent with the PRB's estimates. This may come as a surprise to the Board since the most recent actuarial valuation resulted in an amortization period of 77.5 years which would indicate that the Fund would eventually be 100% funded and never run out of money. It is important to understand that the amortization period of 77.5 years was based on the smoothed actuarial value of assets as of the valuation date which was about $4.6 million higher than the market value of assets, meaning that the Fund has $4.6 million in deferred investment losses that have not yet been recognized in the actuarial value.

As noted on page 5 of our January 1, 2019 actuarial valuation report, if the actuarial smoothing technique was removed and the market value of assets was used, the amortization period would be infinite. In fact, based on our scenario 1 projection analysis, the amortization period is expected to reach an infinite level in 2020 as a portion of the deferred investment losses are recognized.

These results should be areas of concern for the interested stakeholders but are also the basis for performing this analysis to demonstrate the expected impact of scenarios 2 and 3 on the Fund. We have included an exhibit following this letter that shows a number of important figures under each scenario.

Scenario 2 – 13% Investment Return in Calendar 2019

As previously mentioned, the actuarial valuation was performed at a time following a significant stock market decline in the final quarter of calendar 2018. Since that time, the S&P500 has rebounded (and more) from the losses sustained during that quarter and has increased approximately 20% so far in calendar 2019. Based on information provided by your investment consultant, the Fund has realized a return of approximately 13% (net of fees) year-to-date, surpassing the 7.75% return assumption.

Based on the valuation timing and the market bounce back, we felt it would be valuable information in advance of the PRB meeting to estimate the actuarial impact of the 2019 investment gains realized thus far. As mentioned above, the baseline projection resulted in an estimated asset depletion in the year 2044.

If we were to assume the Fund achieves a 13% market value return in 2019, the estimated asset depletion date would extend from 2044 to 2048. It is important to point out that, due to the current level of deferred investment losses, the Fund's amortization period is still expected to be at an infinite level following recognition of those asset losses even with the anticipated favorable market return in 2019.

Scenario 3 – 13% Investment Return in Calendar 2019; Active Membership Growth

It is our understanding that the City has approved measures that will finance the construction of a brand-new fire station (as well as updating an existing one) that will result in significant growth to the Odessa Fire department. We have also been told that there are currently around 180 firefighters on the active payroll (up from 160 as of January 1st) with the expectation that seven (7) new firefighters will be hired before the end of 2019. Based on this information and the estimated completion date of the new fire station, scenario 3 reflects an increasing department size from 160 active firefighters as of January 1, 2019 to 180 actives in 2020 and 2021 and 210 actives in 2022 and beyond.

The Board's main question to us was "What impact will this have on the Fund and its amortization period?"

As shown on the table below, the impact is significant, and the expected department growth has the effect of lowering the amortization period to a level that should satisfy the PRB. There are two major components to consider under scenario 3 that are driving the actuarial projection results in a manner that results in an amortization period that is below 40 years.

First, the current payroll growth assumption used in the actuarial valuation is 3.5% per year. If the active membership size grows from 160 actives in 2019 to around 210 in 2022, this represents over a 30% increase in the active workforce and a similar growth in the covered payroll. This significant increase in covered payroll means a significant increase in expected contributions to the Fund (the City contributes 20% of payroll and the members contribute 18%) which results in a substantial increase in cash available to pay off the unfunded actuarial accrued liability.

Also, we have determined that the Normal Cost rate (the annual cost of benefit accruals) for new entrants is approximately 13.25% of salary but they are required to contribute 18% of their paychecks. This means that the influx of new entrants expected in the next several years will not only be funding their benefit accruals but will also be contributing around 4.75% (18.00% minus 13.25%) of their annual pay to help pay down the existing unfunded liability.

Below, we have included a table that shows the estimated amortization period over the next ten (10) years based on our scenario 3 analysis. As you can see, the amortization period drops significantly in the year 2022 when the active membership is estimated to reach 210 firefighters. It is important to note that the amortization period is estimated to be below 40 years (39.8) by the FSRP target date of 2026. Also, unlike the results of scenarios 1 and 2, the Fund is not expected to run out of money based on the estimates of scenario 3.

January 1	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Amortization Period	77.5	64.6	65.3	43.5	43.5	41.9	41.0	39.8	38.4	37.1

Conclusion

As stated in our comments as a response to the PRB's intensive actuarial review, we feel their review was well-done given the information available to them and in general do not dispute the math used in their additional calculations. We also feel that the economic outlook of the Fund has changed considerably since completion of the January 1, 2019 actuarial valuation, as outlined in scenarios 2 and 3 of this analysis.

Due to the strong investment performance thus far in 2019, and the expected increase in the size of the Odessa Fire department, we believe the results of this analysis show that no further action is necessary and the current Funding Soundness Restoration Plan is still viable and valid. Please refer to the exhibits included at the end of this report.

It is important to understand that future actuarial measurements may differ significantly from the current measurements presented in this report for a variety of reasons including: changes in applicable laws, changes in plan provisions or contribution rates, changes in assumptions, or plan experience differing from expectations.

The undersigned is familiar with the immediate and long-term aspects of pension valuations, and meets the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein.

Respectfully submitted,

FOSTER & FOSTER INC.

By: ______________________________
Bradley R. Heinrichs, FSA, EA, MAAA

By: ______________________________
Drew D. Ballard, EA, MAAA

Exhibits

Scenario 1 -- Estimated Baseline Projection

Valuation Year	Covered Payroll	Contributions	Asset Return	Actuarial Asset Value	UAAL	Funded Ratio	Amortization Period	City 40-Year Cost
2019	11,919,000	4,704,000	7.75%	43,887,000	67,827,000	39.3%	77.5	24.8%
2020	12,406,000	4,824,000	7.75%	39,877,000	73,080,000	35.3%	Infinite	25.8%
2021	12,849,000	4,960,000	7.75%	38,462,000	76,935,000	33.3%	Infinite	26.3%
2022	13,358,000	5,135,000	7.75%	37,254,000	80,858,000	31.5%	Infinite	26.6%
2023	13,763,000	5,285,000	7.75%	34,933,000	85,296,000	29.1%	Infinite	27.3%
2024	14,201,000	5,485,000	7.75%	34,476,000	88,750,000	28.0%	Infinite	27.6%
2025	14,651,000	5,696,000	7.75%	33,911,000	92,331,000	26.9%	Infinite	27.8%
2026	15,201,000	5,849,000	7.75%	32,580,000	96,093,000	25.3%	Infinite	27.9%
2027	15,771,000	6,029,000	7.75%	31,363,000	99,792,000	23.9%	Infinite	27.9%
2028	16,330,000	6,210,000	7.75%	30,006,000	103,673,000	22.5%	Infinite	28.0%

Scenario 2 -- Estimated -- 13% Investment Return in Calendar 2019

Valuation Year	Covered Payroll	Contributions	Asset Return	Actuarial Asset Value	UAAL	Funded Ratio	Amortization Period	City 40-Year Cost
2019	11,919,000	4,704,000	13.00%	43,887,000	67,827,000	39.3%	77.5	24.8%
2020	12,405,000	4,824,000	7.75%	40,263,000	72,694,000	35.6%	Infinite	25.6%
2021	12,849,000	4,960,000	7.75%	39,383,000	76,014,000	34.1%	Infinite	25.9%
2022	13,358,000	5,135,000	7.75%	38,721,000	79,391,000	32.8%	141.1	26.0%
2023	13,763,000	5,285,000	7.75%	36,959,000	83,270,000	30.7%	Infinite	26.6%
2024	14,201,000	5,485,000	7.75%	37,074,000	86,151,000	30.1%	Infinite	26.6%
2025	14,651,000	5,696,000	7.75%	36,711,000	89,531,000	29.1%	Infinite	26.8%
2026	15,201,000	5,849,000	7.75%	35,597,000	93,077,000	27.7%	Infinite	26.9%
2027	15,771,000	6,029,000	7.75%	34,613,000	96,541,000	26.4%	Infinite	26.9%
2028	16,330,000	6,210,000	7.75%	33,508,000	100,170,000	25.1%	Infinite	26.9%

Scenario 3 -- Estimated -- 13% Investment Return in Calendar 2019; Active Membership Growth

Valuation Year	Covered Payroll	Contributions	Asset Return	Actuarial Asset Value	UAAL	Funded Ratio	Amortization Period	City 40-Year Cost
2019	11,919,000	4,704,000	13.00%	43,887,000	67,827,000	39.3%	77.5	24.8%
2020	13,403,000	5,203,000	7.75%	40,263,000	72,694,000	35.6%	64.6	23.5%
2021	13,939,000	5,375,000	7.75%	39,776,000	75,775,000	34.4%	65.3	23.6%
2022	16,122,000	6,185,000	7.75%	39,557,000	78,871,000	33.4%	43.5	20.8%
2023	16,754,000	6,422,000	7.75%	38,915,000	82,046,000	32.2%	43.5	20.8%
2024	17,399,000	6,700,000	7.75%	40,280,000	84,114,000	32.4%	41.9	20.5%
2025	18,043,000	6,985,000	7.75%	41,303,000	86,565,000	32.3%	41.0	20.2%
2026	18,777,000	7,208,000	7.75%	41,730,000	89,062,000	31.9%	39.8	19.9%
2027	19,527,000	7,456,000	7.75%	42,439,000	91,352,000	31.7%	38.4	19.6%
2028	20,284,000	7,713,000	7.75%	43,261,000	93,673,000	31.6%	37.1	19.2%

APPENDIX P – INTENSIVE ACTUARIAL REVIEW OF PARIS FIREFIGHTERS' RELIEF AND RETIREMENT FUND

Intensive Actuarial Review:

Paris Firefighters' Relief and Retirement Fund

October 2019

Texas Pension Review Board

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Executive Summary

Introduction

This intensive actuarial review of Paris Firefighters' Relief and Retirement Fund ("Paris Fire" or "the Fund") is intended to assist the Fund's board of trustees and the City of Paris ("the City") in assessing the Fund's ability to meet its long-term pension obligation. The plan members and the City increased their contribution rates in 2018 from 15% to 16% and 12% to 14%, respectively. Despite these increases, the unfunded liability will continue to grow, and its low funded status will continue through the next decade.

The Pension Review Board (PRB) encourages the Fund and the City to review the findings and conclusions of this report carefully and jointly adopt a forward-looking plan to address these risks and guide the Fund towards a path of long-term sustainability. The PRB can provide technical assistance in formulating such a plan.

Overview

Paris Fire's actuarial value of assets (AVA) was lower in its latest valuation (12/31/2016) than it was in 2001, while the actuarial accrued liability has increased by more than 78% over the same time period. This has resulted in a **dramatic decrease in the funded ratio from 67.6% to 35.6%**. This underfunding can be primarily attributed to the fact that existing benefits are not funded and the contributions going into the Fund are not enough to pay current distributions, much less pre-fund future benefits or pay the interest on the existing unfunded benefit liability debt.

In fact, given the retiree (inactive member) portion of the accrued liability is less than 50% funded, in addition to using all contributions and investment income, the fund sold nearly $1.5 million in assets between 2001 and 2016 simply to pay benefits**. At 35.6% funded, Paris Fire is essentially a pay-as-you-go plan, as its assets are leaking out of the plan faster than its contributions and investment income can replace.** Spending down assets, rather than accumulating them, means that the Fund does not reap the advantage of compound interest available to traditional, pre-funded pension plans.

The Fund's board of trustees has been slow to react to its perilous situation, appearing to have focused primarily on maintaining a low amortization period rather than heeding other warning signs such as its declining funded ratio, low cash flow, and consistently underperforming its assumed investment return during a decade-long bull market. The board has not completed legislatively-mandated minimum training requirements designed to ensure fiduciaries of public pension funds are prepared to fulfill their duties.

Conclusion

Paris Fire should consider increasing contributions to address immediate funding demands in the short-term; developing a strong funding policy to alleviate the need for stopgap measures in the future; working with its actuaries and other consultants to ensure its investment assumption is not too aggressive; as well as reviewing its investment processes to generate needed improvement in asset returns.

In addition, there is also a need for a more hands-on approach to the plan's governance by its board. Completing minimum training requirements is just an initial step toward developing proactive leadership, which should also include seeking guidance from peer systems, additional educational opportunities, and asking questions of the Fund's professional advisors and reviewing their performance regularly.

Background

Texas Government Code Section 801.202(2) requires the PRB to conduct intensive studies of potential or existing problems that threaten the actuarial soundness of or inhibit an equitable distribution of benefits in one or more public retirement systems. The PRB identified a set of key metrics, in addition to amortization period, to determine and prioritize retirement systems for intensive actuarial review. After evaluating these metrics, the PRB selected Paris Firefighters' Relief and Retirement Fund ("Paris Fire" or "the Fund") for review. The following data points were calculated based on the Fund's December 31, 2016 actuarial valuation and December 31, 2017 annual financial report, the information available to the PRB at the time the Fund was selected for review in May 2019:

Amort. Period (Years)	Funded Ratio	UAAL as % of Payroll	Assumed Rate of Return	Payroll Growth Rate	Actual Cont. as % of ADC[1]	DROP as % of FNP	Non-Investment Cash Flow as % of FNP
41.9	35.64%	373.34%	7.50%	3.50%	80.16	N/A	-12.44%

Plan Profile

Actuarial Accrued Liability: $14,957,795

Market Value of Assets: $4,764,272

Normal Cost: 9.54% of payroll

Contributions: 16.00% employee
14.00% employer

Membership: 49 actives
41 annuitants

Social Security Participation: No

- Its **funded ratio** of 35.64% was the lowest in the state.
- The Fund's **non-investment cash flow as a percent of FNP** of -12.44% was also the lowest in the state.
- Its **UAAL as a percent of payroll** of 373.34% was the ninth highest in the state and the third highest among its peers.[2]
- **Actual contribution as a percent of its Actuarially Determined Contribution (ADC)** of 80.16% was one of the ten lowest in the state and the second lowest among peers.

Since selecting Paris Fire, the PRB received the Fund's 2018 annual financial report in June 2019. The data used in this review is from the December 31, 2016 actuarial valuation and December 31, 2018 annual financial report.

[1] For plans whose contributions are made as a fixed rate based on statutory or contractual requirements, the ADC for this purpose is the contribution needed to fund the benefits accrued in the current year and maintain an amortization period that does not exceed 30 years, as required to be reported under Texas Government Code §802.101(a).

[2] See Appendix for more detail on Paris Fire's peer group.

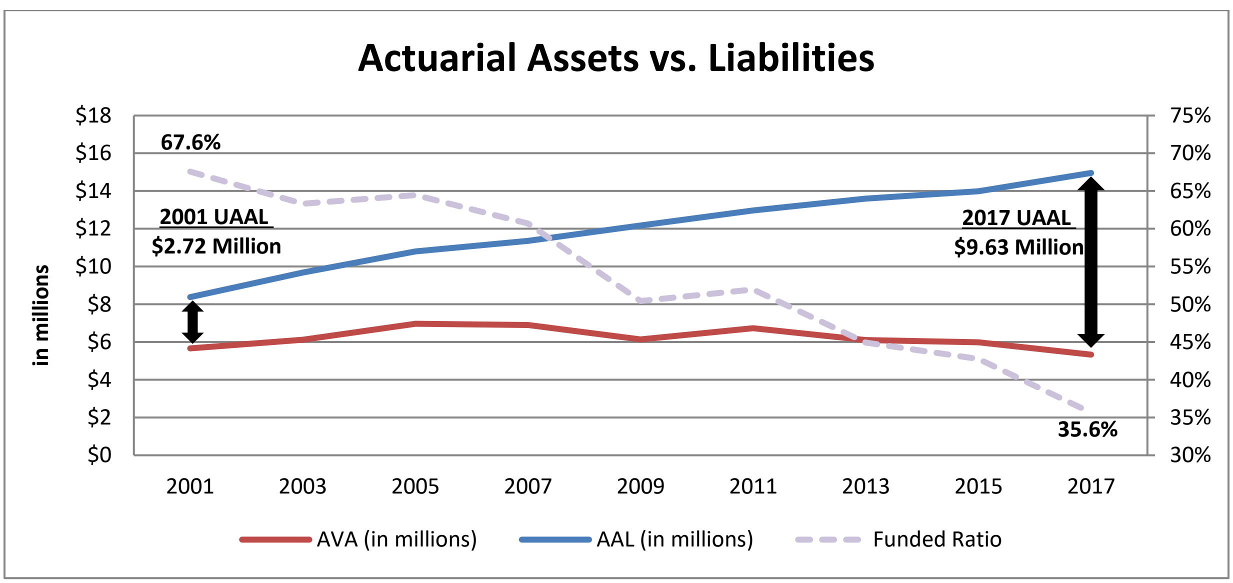
Risk Analysis

Paris Fire is one of the few Texas public retirement systems with a flat benefit design (which equates to $94 per month per year of service credit), which is typically less risky than the more common benefit structures based on final average salary (FAS) calculations. In a flat benefit structure, distributions are driven by growth in the retiree population and, unlike FAS-based benefit designs, are not impacted by payroll growth.

Despite its lower-risk benefit design, Paris Fire is experiencing significant financial stress. High distributions compared to contributions and investment experience consistently not meeting assumptions have caused a precipitous decline in funded ratio, and if not addressed, funding levels could continue to worsen in the coming years. Since 2007, Paris Fire has changed investment managers, and both the City and members have made contribution increases. However, in the short term, the Fund will require additional contributions to put it back on the path toward financial soundness. There is also a need for a more proactive approach to the plan's governance by its board to help sufficiently mitigate these risks.

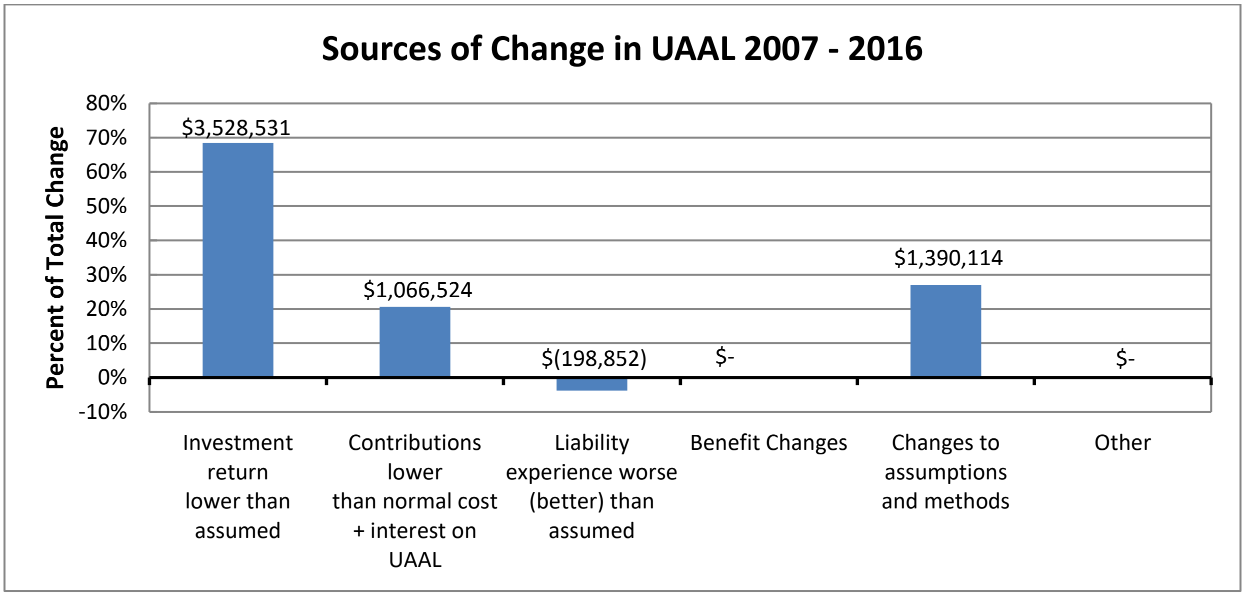
Funding Risk

Paris Fire's unfunded actuarial accrued liability (UAAL) has more than tripled since 2001, from $2.7 million to $9.6 million. As the Fund's actuarial accrued liability (AAL) has steadily climbed, its assets have stagnated, so much so that the projected 1/1/2019 AVA is more than 30% lower than its peak as of 1/1/2005. Paris Fire's funded ratio decreased from **60.7%** in 2007 to **35.6%** as of its December 31, 2016 actuarial valuation. This decrease in funding over the course of a decade is staggering, especially when considering that Standard & Poor's credit rating methodology considers a three-year average pension funded ratio of 60% or below as "weak."[3]



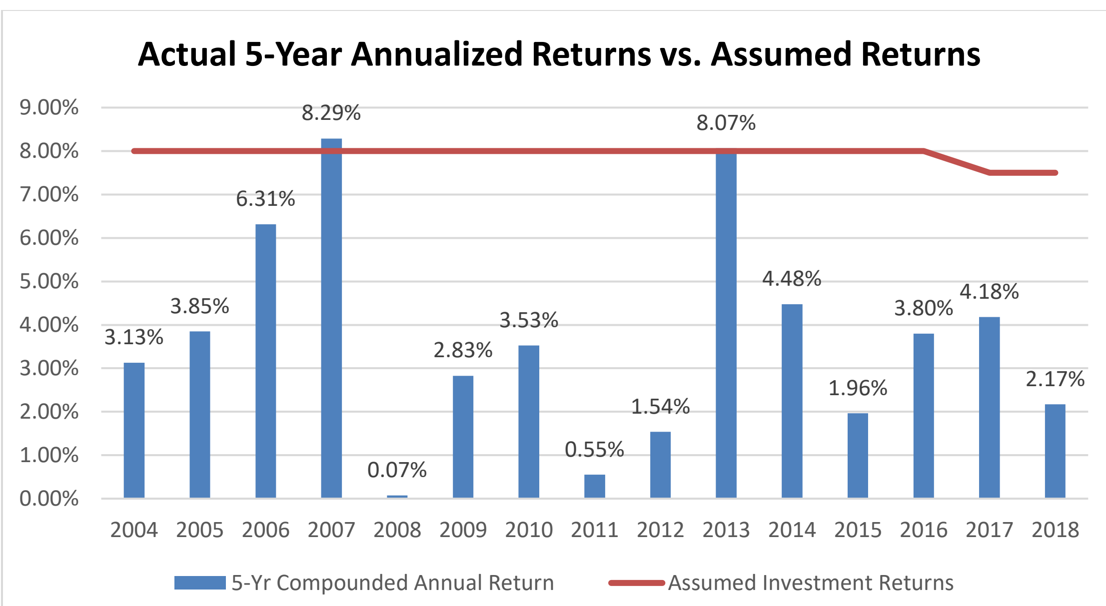
[3] *U.S. State Ratings Methodology*, Standard & Poor's, October 17, 2016.

Based on analysis of the causes of change in the UAAL, the Fund's inability to meet or exceed its assumed investment return was by far the greatest cause of the UAAL increase, as shown in the following graph. Insufficient contributions and adjustments to actuarial assumptions have also negatively impacted the UAAL, but insufficient investment returns have outpaced all other factors, combined.



Investment Return Experience vs. Assumptions

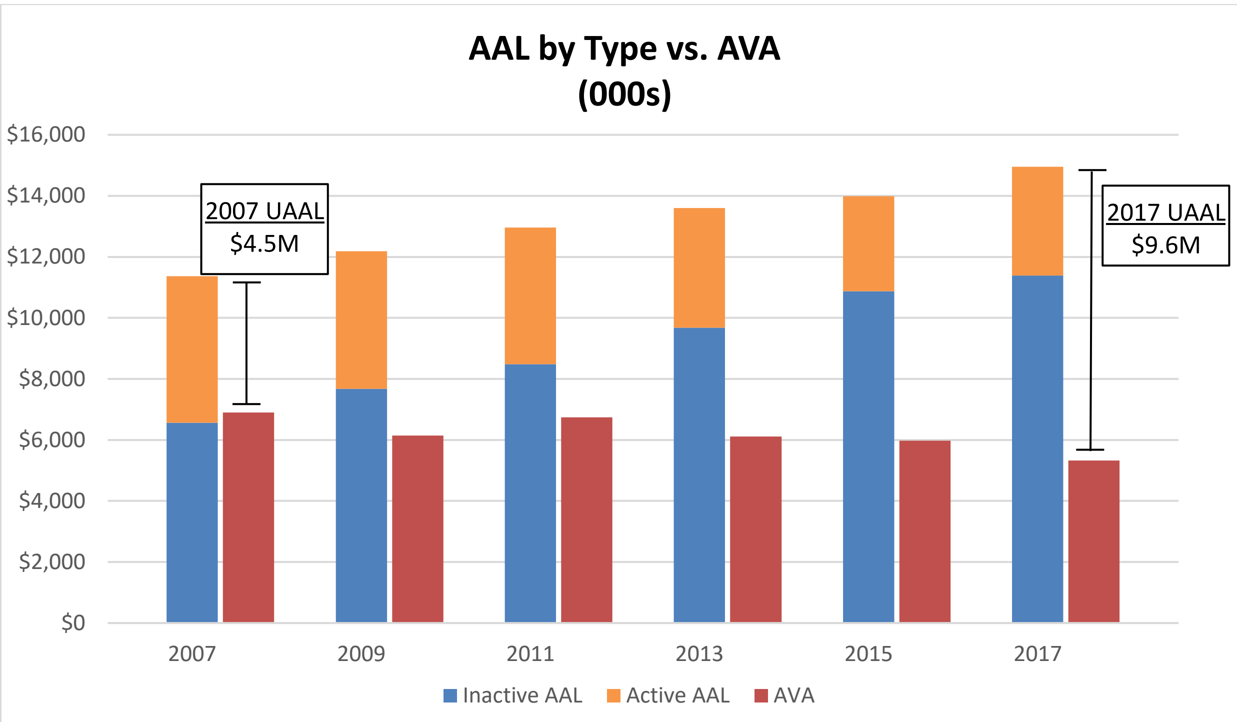
Over the time period for which data is available, Paris Fire's 5-year annualized returns fell well short of the assumed rate of return in all but two periods. Since 2008, the 5-year return has only surpassed the assumed rate once, with all other years less than 4.5%. The Fund's 10-year annualized returns are even worse, with not a single period ever reaching, much less surpassing, the assumed return.



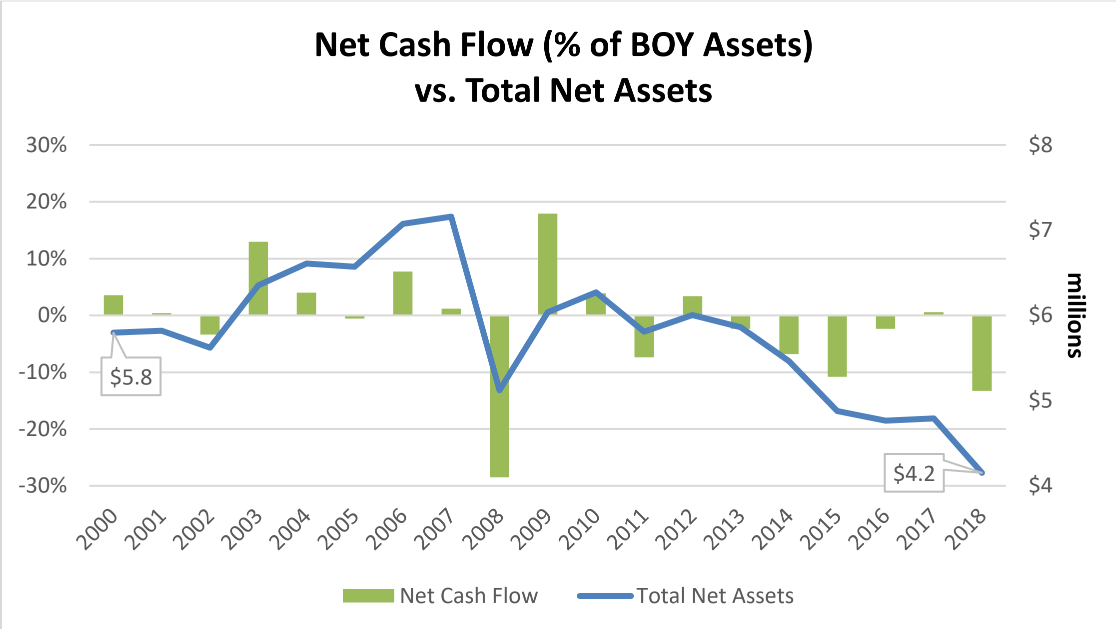
While not achieving the assumed rate of return is the largest factor causing the increase in unfunded liability, the graph shows that multi-year returns are still positive. This tells us that investment returns alone are not the cause of the rapid asset depletion mentioned above.

Cash Flow

The purpose of pre-funding a defined benefit plan is to build an asset balance sufficient to support benefit payments, which is why, negative non-investment cash flow is expected in a mature plan. In a well-funded plan, the combination of new contributions and investment growth are sufficient to pay benefits, fund new benefit accruals and pay down any outstanding unfunded actuarial accrued liability (UAAL). However, in the case of Paris Fire, where the retiree (inactive) portion of the AAL is less than 50 percent funded, **contributions and investment income are only being used to pay benefits.**

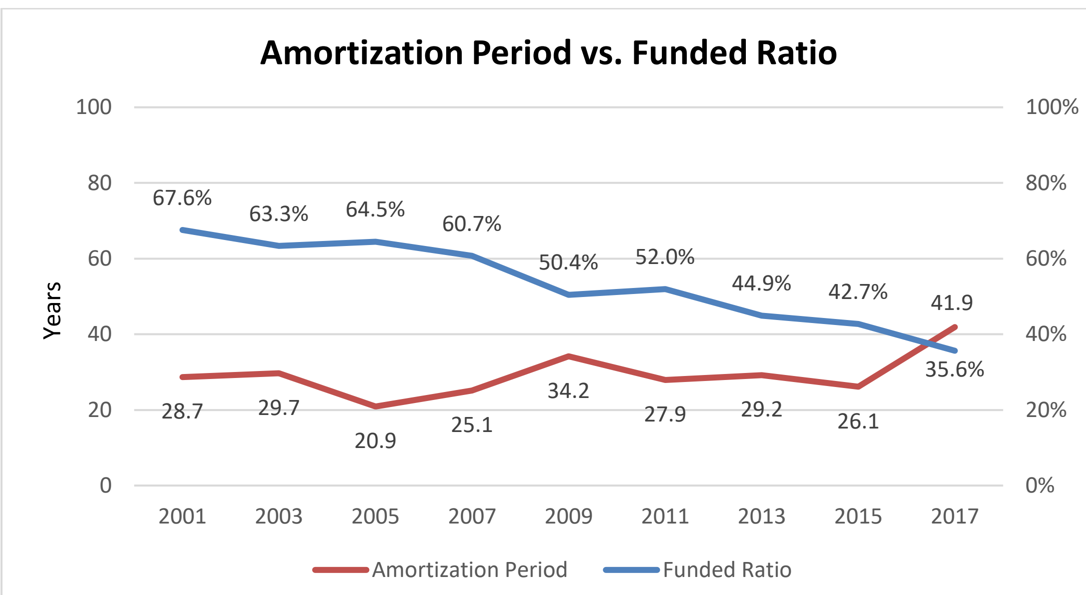


Not only is Paris Fire experiencing negative non-investment cash flow, its total net cash flow (contributions and investment income minus benefit payments, withdrawals and expenses) was negative, averaging -1.05% since 2001. **This means that in addition to using all contributions and investment income, the fund sold nearly $1.5 million in assets simply to pay benefits.**



Measuring Plan Health

Using amortization period as the sole measurement of fund health for the past decade would give a false impression of Paris Fire's financial well-being because its amortization period was less than 30 years for most of its recent history. However, a review of the long-term trend of Paris Fire's assets or funded ratio would have indicated the Fund was facing difficulties. **This is one of the reasons the PRB recommends a comprehensive review of multiple factors relating to a pension plan's long-term sustainability**, including funded ratio and cash flow, when assessing the condition of a pension plan.



Conclusions/Recommendations

Pre-funding a defined benefit plan, i.e. setting aside assets now for benefits that will be paid in the future, is necessary for a plan's ability to sustain itself over the long-term. Consistently underfunding a plan places the benefits of both retirees and active members at significant risk and/or places the burden of paying for services already rendered on future generations of taxpayers and employees through the reduction of future benefits or an increase in contributions.

Short- and Long-term Funding Options

The Fund currently cannot earn a high enough investment return on a regular basis to cover its benefit payments, normal cost and interest on the unfunded liability. To shore up funding, Paris Fire and the City should work together to determine the best balance between increased contributions and benefit reductions, even though Paris Fire already has a flat dollar benefit design. Given Paris Fire's current funding level, an increase in contributions over the near term is likely needed to stabilize the Fund.

For the long term, the Fund and the City are encouraged to develop a strong funding policy. The goals of a funding policy are threefold: establish clear and concrete funding objectives, set boundaries on what is allowable for actuarial calculations, and develop plans for both positive and negative experiences. The funding policy should strive to balance the three primary pension funding goals so that member benefits are secure; employers are afforded some level of contribution predictability from year to year; and liabilities are managed so that future taxpayers are not burdened with costs associated with a previous generation's service. For more detail, please see the PRB's *January 2019 Interim Study: Funding Policies for Fixed-Rate Pension Plans.*[4] The Fund should use the new funding policy requirement in Senate Bill 2224 (86R) as an opportunity to work with the City of Paris to address both the short- and long-term challenges faced by the Fund before funding levels deteriorate further.[5]

Governance Risk

Monitoring Investment Performance and Expenses

According to the investment policy statement (IPS), the Fund's board of trustees should "systematically and regularly monitor the Plan's investments to assure the objectives are being met and policy guidelines are being followed." The IPS requires the investment manager to provide performance reports to the board and make periodic presentations. However, Paris Fire was unable to explain how this information is used to monitor the investment manager's performance. The Fund's consultants responded to PRB inquiries regarding the board's performance monitoring. While the Fund appears to be engaged in some level of monitoring, it was not clear how closely the board is following its responsibilities outlined in the IPS to evaluate investment performance through a systematic, regular process.

Further, the quarterly investment performance reports provided by the Fund's investment manager show performance **gross** of investment fees while the equity benchmark is net of fees. Therefore, while the

[4] *Interim Study: Funding Policies for Fixed-Rate Pension Plans,* Texas Pension Review Board, January 2019, https://www.prb.texas.gov/txpen/wp-content/uploads/2019/02/Funding-Policy-Paper.pdf

[5] SB 2224, 86th Texas Legislature, Regular Session, 2019, https://capitol.texas.gov/tlodocs/86R/billtext/html/SB02224F.htm

performance reports appear to show investment performance beating the established benchmark, once investment fees are deducted, the total returns fall short of a straight passive investment approach in funds that track the chosen benchmarks. Also, the performance reports do not include a benchmark for specialty investments. Since the Fund's most recent asset breakdown shows nearly 20% of assets invested in this class, the board should consider adding relevant benchmarks corresponding to the assets in this class.

Time-weighted Returns[6] (as of 12/31/2018)	1-Year	3-Year	Since Sept. 2014
Total Gross Return	-5.81%	5.08%	3.81%
Total Net Return[7]	**-6.84%**	**4.28%**	**3.04%**
Benchmark (60% Equities (Net) / 40% Fixed Income)	-6.04%	5.06%	3.53%
Equities Gross Return	**-9.87%**	**6.16%**	**5.15%**
Benchmark (MSCI ACWI IMI Net)	-10.08%	6.49%	4.14%
Fixed Income Gross Return	**-0.96%**	**3.64%**	**2.11%**
Benchmark (Bloomberg Barclays U.S. Universal USD)	-0.25%	2.56%	2.22%
Specialty Gross Return	**-4.44%**	**3.74%**	**2.72%**

After the board determined that the previous investment manager was not producing returns on par with other TLFFRA systems, the Fund selected their current investment manager in the fall of 2014. Paris Fire continues to lag behind most of its TLFFRA peers in short- and long-term returns and currently pays one of the highest levels of investment expenses, as a percent of assets, in its peer group and across the state.[8] In 2017, **investment expenses as a percent of assets** were 0.91% and in 2018 increased to **1.03%**.

Board Education

Recognizing the importance of trustee training, the Legislature adopted the Minimum Education Training (MET) requirement for pension trustees in 2013. This program requires trustees to complete seven hours of training in core content areas such as investments, actuarial matters and governance, during the first year they begin service. After the first year of service, trustees are only required to complete four hours of continuing education in core or non-core areas every two years. The core is designed to cover the fundamental competencies of public pensions necessary for trustees to successfully discharge their duties. The non-core includes topics that go beyond the basics and are designed to allow trustees to gain further expertise in additional areas related to their duties.

As of the time of this review, only one Paris Fire trustee was compliant with these MET Program requirements. Only one of the other six trustees had completed the basic 7-hour core training. As a

[6] From Westwood Trust's Portfolio Performance Detail as of 12/31/2018, except where noted.
[7] Calculated by PRB. 2018 investment fees were 1.03% of assets; 3-year fee average was 0.80% of assets; and 4-year fee average was 0.77% of assets.
[8] See Appendix for more detail on Paris Fire's peer group.

comparison, in 2017, over 90% of TLFFRA systems were fully compliant with the MET Program requirements.

Conclusions/Recommendations

Monitoring Investments

Investment benchmarks should be regularly reviewed to see if they are appropriate and have been met or exceeded. The board should identify benchmarks for specialty investments and add those to the IPS to allow measurement of the performance of those assets.

Best practices include revisiting manager selection periodically, including evaluating performance, fees, and the value provided by the managers. The board should review whether its active management approach is providing returns in excess of the additional expense and may want to explore passive investment strategies for one or more asset classes. Additionally, the board should consider adding to the IPS specific actions to take if returns are not met over a market cycle, such as re-evaluating the investment goals, modifying the asset mix, revising manager composition, or a combination of these.

Since it is not expected that board members be investment experts, it is important that the information presented by consultants and managers allow trustees to easily assess investment performance. Paris Fire should ask its investment manager to report returns net of fees to more easily view the actual performance of the fund, particularly because investment expenses tend to be higher as a percentage of assets for smaller plans.

Finally, the board should consider engaging an independent third party to review its governance processes to assess how they compare against industry best practices. This type of review could include looking at the board's investment decision-making processes, delegation of authority, and board investment expertise to help identify potential improvements. Due to its small size, Paris Fire is not required to conduct the Investment Practices and Performance evaluation in Texas Government Code §802.109 (SB 322, 86R), but could benefit greatly from conducting even a limited-scope evaluation.

Board Member Education

Paris Fire's trustees should complete MET core training as soon as possible, which is provided online, free of cost by the PRB, and continue seeking opportunities for continuing education to keep their knowledge up to date.

Appendix

Key Metrics

Metric	Amortization period (41.9 years)
What it measures	Approximately how long it would take to fully fund the unfunded actuarial accrued liability (UAAL) based on the current funding policy.
Why it is important	Given the Plan's current assumptions, an amortization period greater than 18 years indicates that contributions to the Plan in the coming year are less than the interest accumulated for that same period, and therefore the total UAAL is expected to grow over the near term. In addition, for a plan that contributes on a fixed-rate basis such as Paris Fire, the higher the amortization period, the more sensitive it is to small changes in the UAAL.
Peer comparison	Paris Fire's amortization period is the fourth highest among its peers and is greater than the maximum PRB pension funding guideline of 30 years.

Metric	Funded ratio (35.64%)
What it measures	The percent of a fund's actuarially accrued liabilities covered by its actuarial value of assets.
Why it is important	The lower the funded ratio, the fewer assets a fund has to pay its current and future benefit payments.
Peer comparison	Paris Fire's 35.64% funded ratio is the lowest among its TLFFRA peer plans, and the lowest in the state of Texas.

Metric	UAAL as a percent of payroll (373.34%)
What it measures	The size of a plan's unfunded liability compared to the annual payroll of the active members.
Why it is important	Provides a way to compare plans of various sizes and expresses the outstanding "pension debt" relative to current personnel costs.
Peer comparison	The Fund's UAAL as a percent of payroll is the third highest in its peer group, and ninth highest in the state.

Metric	Assumed rate of return (7.50%)
What it measures	The estimated annual rate of return on the Fund's assets.
Why it is important	If actual future returns are lower than the assumed rate of return, future contributions will need to increase significantly, especially for a poorly funded plan. Paris Fire's assumed rate of return is 7.50%, while its actual ten-year investment rate of return for the period ending December 31, 2018 was 5.08%.
Peer comparison	Paris Fire has the third highest assumed rate of return in its peer group and the median of all plans in the state.

Metric	Payroll growth rate (3.50%)
What it measures	The estimated annual growth in the total payroll of active members contributing into the Fund.
Why it is important	Contributions are calculated as a percent of active members' pay and are back-loaded based on the expected growth in total payroll. If payroll does not increase at this rate, actual contributions will not meet those expected in the Fund's actuarial valuations. Persistent contributions below expected levels could have serious consequences on the Fund's long-term solvency.
Peer comparison	The Fund's payroll growth rate of 3.50% was the second highest payroll growth rate in its peer group of TLFFRA plans with similar asset size and higher than the state average.

Metric	Actual contributions as a percent of actuarially determined contributions (80.16%)
What it measures	Whether the current employer contributions have met a theoretical minimum threshold.[9]
Why it is important	The employer's portion of the contribution in 2017 was slightly greater than 80% of the amount needed to fund the plan on a rolling 30-year amortization period. The PRB's 2014 Study of the Financial Health of Texas Public Retirement Systems found that plans that have consistently received adequate funding are in a better position to meet their long-term obligations.
Peer comparison	This is was the second largest shortfall percentage in its peer group and one of the ten lowest in the state.

Metric	Non-investment cash flow as a percent of fiduciary net position (-12.44%)
What it measures	Non-investment cash flow shows how much the plan is receiving through contributions in relation to its outflows: benefit payments, withdrawals and expenses.
Why it is important	Viewing this metric as a percent of total net assets (or fiduciary net position (FNP)), in conjunction with the funded ratio and recognition of the relative maturity of the plan, provides information about the stability of a plan's funding arrangement.
Peer comparison	Paris Fire's non-investment cash flow as a percent of FNP as of 12/31/2017 was the lowest in the state.

[9] The theoretical minimum threshold, or actuarially determined contribution (ADC), is a target or recommended contribution "to the plan as determined by the actuary using a contribution allocation procedure," as defined in Actuarial Standards of Practice No 4. If contributions to the plan are made as a fixed rate based on statutory or contractual requirements, the ADC for this purpose is the contribution needed to fund the benefits accrued in the current year and maintain an amortization period that does not exceed 30 years, as required to be reported under Texas Government Code §802.101(a).

Plan Summary

The Paris Firefighter's Relief and Retirement Fund ("Paris Fire" or "the Fund") was established in 1941 under the Texas Local Fire Fighter's Retirement Act (TLFFRA). TLFFRA provides general guidelines for fund management, but leaves administration, plan design, contributions, and specific investments to the discretion of the board of trustees. Paris Fire, as with all TLFFRA systems, is entirely locally funded.

Benefits

Tiers	Tier 1: Service before 1/1/2004 Tier 2: Service on or after 1/1/2004
Retirement Eligibility	55 years of age; 20 years of service Or Rule of 80 with 20 years of service
Vesting	Fully vested after 10 years of service
Primary Benefit Formula	Tier 1: Monthly benefit = 2% x FAS before 1/1/2004 or $85.50 x years of service (< 3 years) AND $85.50 x years of service (> 3 years) OR $94 x years of service at retirement Tier 2: Monthly benefit = $94 x years of service at retirement Minimum service retirement benefit is $500 per month
Final Average Salary (FAS)	Tier 1: Highest five years; Tier 2: N/A
COLA	None
Retirement Benefit Options	2-year Retro DROP: Eligible once a member has satisfied Service Retirement requirements. DROP accumulation includes the sum of the monthly service retirement benefit the member would have received if had retired on the DROP determination date plus an amount equal to the member contributions to the fund while a DROP participant. No interest is credited on DROP accounts. DROP balance is distributed as a lump sum.
Participates in Social Security?	No

Contributions

As of October 1, 2018, active members of Paris fire contribute 16% of pay, while the City of Paris contributes 14% of pay.

Membership

Total Active Members	Total Annuitants	Terminated	Total Members	Active-to-Annuitant Ratio
49	41	6	96	1.20

TLFFRA Board Structure

Active Members	3 - Members of the retirement system; elected by fund members. Three-year terms.
Sponsor Government	1 - Mayor or designated representative, or the political subdivision's Chief Operating Officer or designated representative. 1 - Chief Financial Officer of the political subdivision, or designated representative. Terms correspond to term of office.
Taxpayer, Not Affiliated With Fund/Sponsor Govt.	2 - Residents of the State of Texas, must not be officers/employees of the political subdivision; elected by other board of trustees' members. Two-year terms.

Contribution and Benefit Decision-Making

TLFFRA authorizes members of the retirement systems to determine their contribution rates by voting. The statute requires cities to make contributions at the same rate paid by employees or 12%, whichever is smaller. TLFFRA also allows a city to contribute at a higher rate than employees do through a change in city ordinance.

TLFFRA gives the board the power to make decisions to modify the benefits (increases and reductions). However, a proposed addition or change must be approved by the actuary and a majority of participating plan members. Benefit changes cannot deprive a member, retiree or beneficiary of the right to receive vested accrued benefits.

Asset Allocation

Asset Allocation (as of 12/31/2018)					
Asset Class	Equities	Fixed Income	Alternatives	Real Estate	Other
Current Allocation	54.12%	33.79%	4.52%	4.09%	3.48%
Target Allocation	50.00%	30.00%	20.00%*		-

*Labeled as "Specialty" in Paris Fire's 2018 Investment Policy Statement, includes both Alternatives and Real Estate.

Investment Returns

Annualized Rolling Rates of Return (as of 12/31/2018)				
Time Period	1-year	3-year	10-year	Since 2000
Net Return	-7.20%	3.48%	5.08%	3.16%

Expense Breakdown

Plan Expenses (as of 12/31/2018)	
Fiduciary Net Position (FNP)	$4,152,311
Investment Expenses	$42,973
Investment Expenses % of FNP	1.03%
Administrative Expenses	$31,444
Administrative Expenses % of FNP	0.76%

Historical Trends

To conduct an intensive review of risks associated with the long-term funding of a pension Fund, it is important to analyze trends in multiple metrics. A plan with an asset level lower than its accrued liability has insufficient funds to cover benefits. A plan can experience an increase in unfunded liability due to various factors, including insufficient investment returns, inadequate contributions and inaccurate or overly aggressive assumptions. Hence, a single metric cannot effectively capture the different drivers contributing to the increase of a plan's unfunded pension obligation. This section analyzes historical trends in various metrics identified by the PRB and makes comparisons to understand the sources of growth in unfunded liability for Paris Fire.

Paris Fire's funded status has been steadily declining since 2001. Numerous factors have contributed to this deterioration, including investment returns being lower than the chosen assumption, increased benefit payments, and a fixed-rate funding structure. The following sections discuss these and other factors in detail.

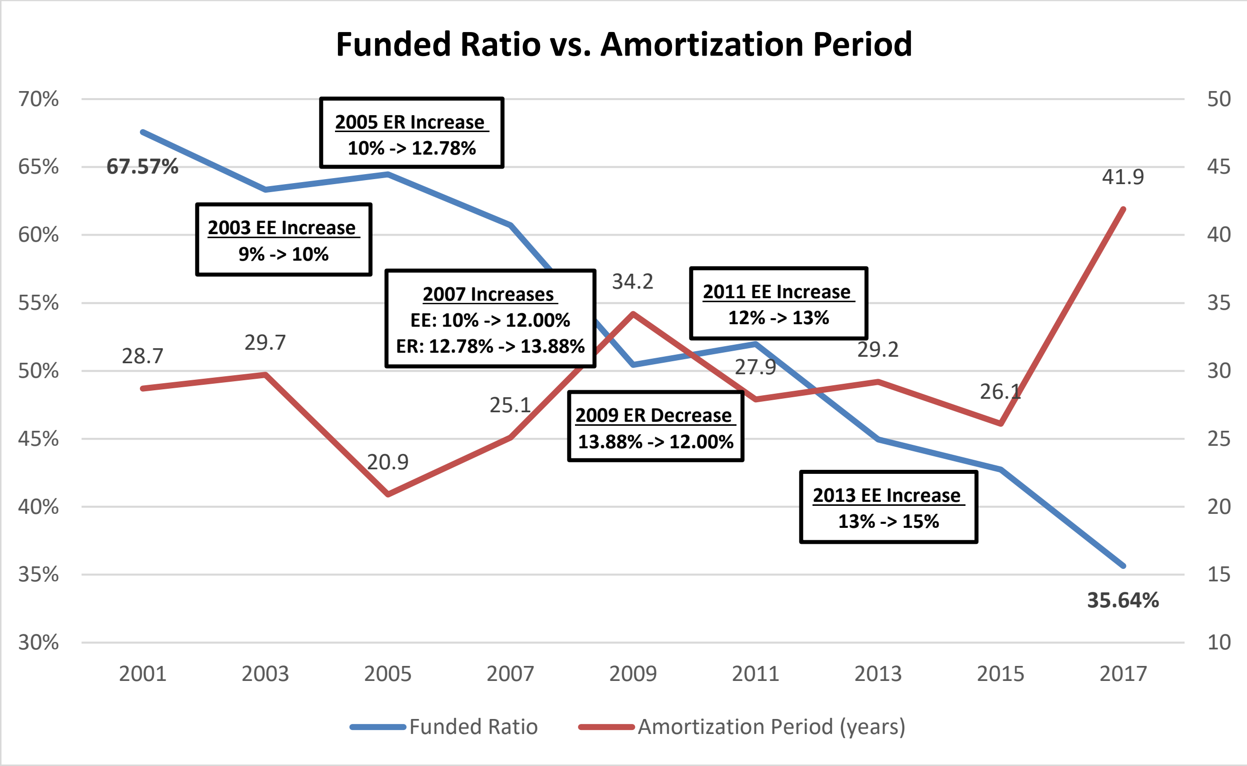
Assets and Liabilities

Funding Trends
Funded Ratio, Assets, Liabilities and Year over Year Growth

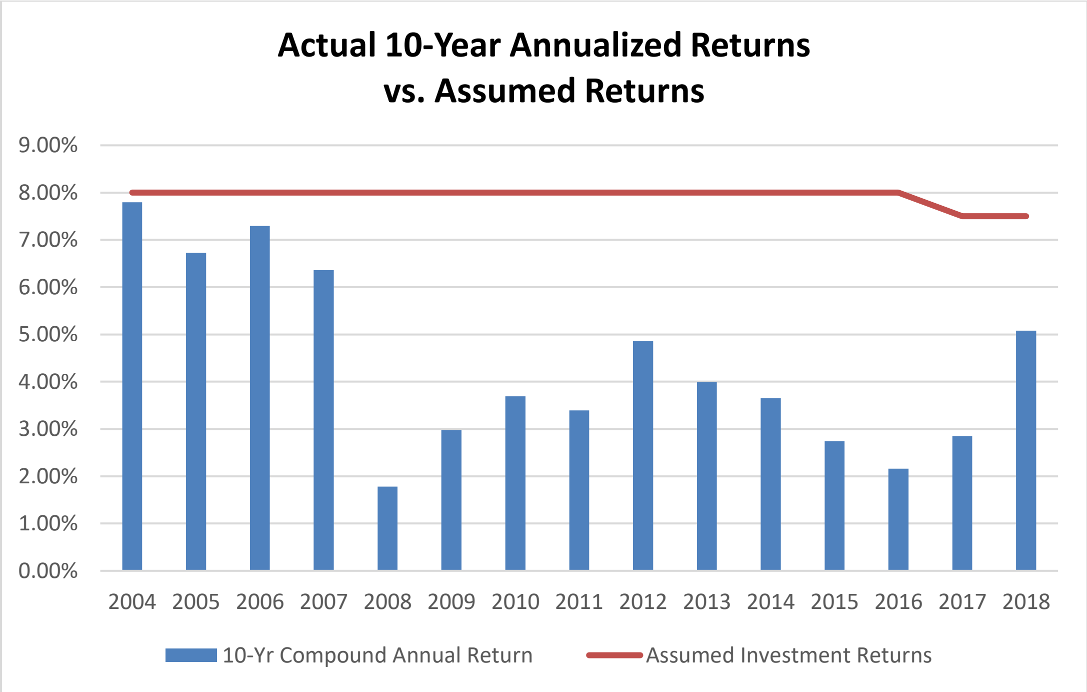
Valuation Year	2001	2003	2005	2007	2009	2011	2013	2015	2017
Funded Ratio	67.57%	63.33%	64.47%	60.70%	50.45%	51.96%	44.94%	42.74%	35.64%
Am Period (years)	28.7	29.7	20.9	25.1	34.2	27.9	29.2	26.1	41.9
UAAL (in millions)	$2.72	$3.55	$3.84	$4.47	$6.04	$6.23	$7.49	$8.01	$9.63
AVA (in millions)	$5.66	$6.13	$6.97	$6.90	$6.14	$6.74	$6.11	$5.98	$5.33
AVA Growth (YoY)	-	4.04%	6.63%	-0.48%	-5.64%	4.71%	-4.75%	-1.08%	-5.59%
AAL (in millions)	$8.38	$9.68	$10.81	$11.37	$12.18	$12.96	$13.60	$13.99	$14.96
AAL Growth (YoY)	-	7.46%	5.68%	2.56%	3.51%	3.17%	2.42%	1.43%	3.39%

The Fund's actuarial accrued liability (AAL) more than tripled between the beginning of 2001 and the beginning of 2017. During the same time period Paris Fire went from 70% funded and dropped to below 36% as of their latest valuation.

Funded Ratio vs. Amortization Period with Contribution History (2001 -2017)

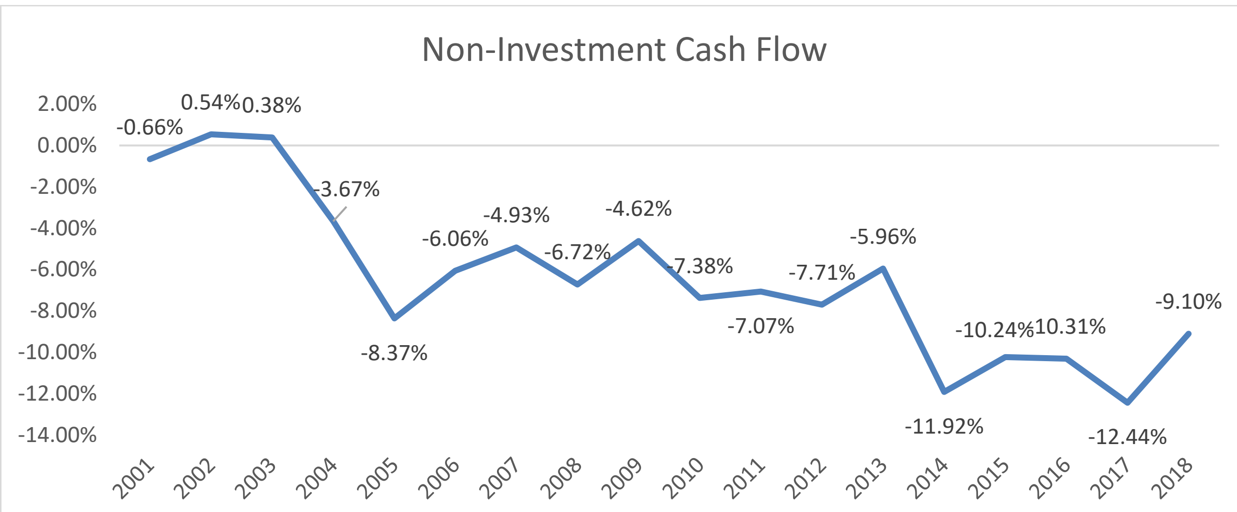


Investment Returns

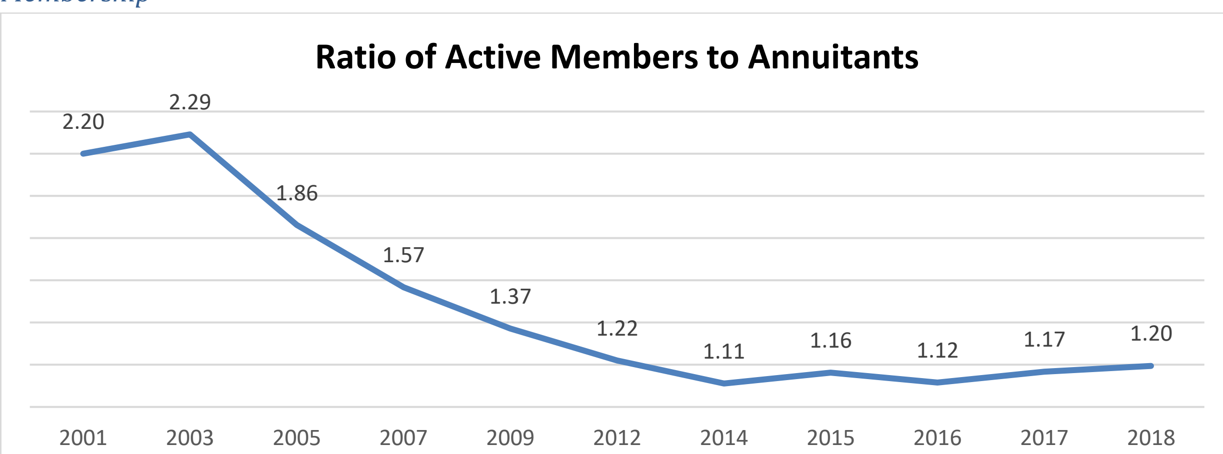


Cashflow

Outflows as a Percent of Total Net Assets (Reported over the Last Ten Years)										
Fiscal Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Benefit Payments	11.89%	14.07%	14.69%	16.85%	14.37%	19.92%	21.56%	21.59%	21.37%	24.55%
Withdrawals	0.80%	0.57%	0.56%	0.08%	1.22%	2.07%	2.16%	2.26%	4.72%	0.80%
Admin Expenses	1.11%	1.36%	1.64%	0.53%	0.25%	0.45%	0.13%	0.79%	0.78%	0.76%
Investment Expenses	-	-	-	1.08%	0.99%	1.09%	0.71%	0.69%	0.91%	1.03%
Other Expenses	0.42%	0.25%	0.07%	-	-	-	-	-	-	-
Total Expenses	1.53%	1.61%	1.72%	1.61%	1.25%	1.55%	0.84%	1.48%	1.69%	1.79%



Membership



Peer Group Key Metric Comparison

		Funding Valuation Metrics						Fiscal Year End Metrics			
Peer Group Plans	MVA	Am Period Date	Am Period	Funded Ratio	UAAL as % of Payroll	Assumed Interest	Payroll Growth	FYE	Actual Cont. as % of ADC	DROP as % of FNP	Non-Investment Cash Flow as % of FNP
Corsicana Firemen's Relief & Retirement Fund	$8,344,317	12/31/2016	28.9	53.14%	211.44%	7.00%	3.00%	12/31/2017	101.06%	N/A	-8.11%
Orange Firemen's Relief & Retirement Fund	$8,154,674	1/1/2017	69.3	49.86%	336.03%	7.75%	4.00%	12/31/2017	72.93%	N/A	-6.77%
Sweetwater Firemen's Relief & Retirement Fund	$7,826,879	12/31/2016	27.5	69.99%	229.12%	8.00%	4.00%	12/31/2017	100.00%	N/A	-4.07%
Marshall Firemen's Relief & Retirement Fund	$7,712,228	12/31/2016	56.4	42.02%	398.51%	7.75%	4.00%	12/31/2017	77.36%	4.40%	-2.90%
Plainview Firemen's Relief & Retirement Fund	$6,154,425	12/31/2017	44.8	37.67%	517.48%	7.50%	3.50%	12/31/2017	98.82%	N/A	-3.35%
Paris Firefighters' Relief & Retirement Fund[10]	**$4,764,272**	**12/31/2016**	**41.9**	**35.64%**	**373.34%**	**7.50%**	**3.50%**	**12/31/2017**	**80.16%**	**N/A**	**-12.44%**
Brownwood Firemen's Relief & Retirement Fund	$4,158,090	12/31/2017	38.6	45.03%	263.23%	7.25%	3.25%	12/31/2017	93.90%	N/A	-1.49%
Atlanta Firemen's Relief & Retirement Fund	$3,744,867	12/31/2016	28.4	82.13%	136.63%	7.40%	3.00%	12/31/2017	112.63%	N/A	-2.72%
San Benito Firemen Relief & Retirement Fund	$3,503,753	9/30/2017	21.8	60.68%	152.30%	7.50%	4.00%	9/30/2016	143.37%	N/A	-0.88%

[10] Paris Fire's contribution, DROP and cash flow data are from the Fund's 12/31/2017 annual financial report.

Peer Group Sponsor Funding Comparison[11]

Peer Group Plans	General Fund Expenditures (GFE)	EOY GF Bal	UAAL	Employer Contributions	ADC	30-yr Shortfall	30-Y SF % of ADC	30-Y SF % of GFE
Corsicana Firemen's Relief & Retirement Fund	$15,802,887	$5,342,213	$8,135,345	$554,105	$548,285	$0	0.00%	0.00%
Orange Firemen's Relief & Retirement Fund	$22,114,218	$7,805,235	$8,199,175	$333,259	$456,978	$123,719	27.07%	0.56%
Sweetwater Firemen's Relief & Retirement Fund	$8,733,810	$3,929,907	$3,617,210	$284,446	$284,446	$0	0.00%	0.00%
Marshall Firemen's Relief & Retirement Fund	$19,191,225	$5,563,323	$10,641,648	$516,808	$668,025	$151,217	22.64%	0.79%
Plainview Firemen's Relief & Retirement Fund	$13,359,607	$15,886,659	$10,290,086	$507,975	$600,643	$92,668	15.43%	0.69%
Paris Firefighters' Relief & Retirement Fund	**$24,912,768**	**$11,622,868**	**$9,626,478**	**$326,396**	**$407,179**	**$80,783**	**19.84%**	**0.32%**
Brownwood Firemen's Relief & Retirement Fund	$19,316,832	$3,038,924	$5,085,187	$369,559	$401,518	$31,959	7.96%	0.17%
Atlanta Firemen's Relief & Retirement Fund	$3,894,117	$1,746,351	$860,536	$93,096	$82,656	$0	0.00%	0.00%
San Benito Firemen Relief & Retirement Fund	$10,728,675	$6,526,547	$2,270,845	$163,218	$163,218	$0	0.00%	0.00%

[11] For comparison purposes, data in this table is from FY 2017 end-of-year reports which was available from all plans and sponsors.

Peer Group Benefit & Expense Comparison[12]

Peer Group Plans	10 yr. return (Net)	Active/ Annuitants	Average Benefit	Benefit Payments as a % of Assets	NPL	Admin Expenses	Investment Expenses	Total Expenses	Exp as % of Assets
Corsicana Firemen's Relief & Retirement Fund	3.40%	1.59	$41,473	17.11%	$8,448,213	$38,769	$98,332	$137,101	1.53%
Orange Firemen's Relief & Retirement Fund	4.60%	0.88	$25,865	12.04%	$7,604,038	$28,872	$97,461	$126,333	1.40%
Sweetwater Firemen's Relief & Retirement Fund	4.91%	1.04	$33,311	9.35%	$4,041,873	$35,021	$66,056	$101,077	1.18%
Marshall Firemen's Relief & Retirement Fund	5.22%	1.32	$28,764	12.48%	$10,956,082	$16,563	$64,001	$80,564	0.94%
Plainview Firemen's Relief & Retirement Fund	2.88%	0.92	$25,463	15.31%	$10,355,264	$20,975	$34,590	$55,565	0.90%
Paris Firefighters' Relief & Retirement Fund	**2.85%**	**1.17**	**$24,367**	**21.37%**	**$10,266,996**	**$37,553**	**$43,407**	**$80,960**	**1.69%**
Brownwood Firemen's Relief & Retirement Fund	4.34%	1.28	$20,716	12.46%	$4,875,482	$16,550	$44,910	$61,460	1.48%
Atlanta Firemen's Relief & Retirement Fund	4.83%	1.39	$12,762	5.54%	$895,803	$22,369	$36,271	$58,640	1.41%
San Benito Firemen Relief & Retirement Fund	1.78%	2.60	$23,625	6.18%	$2,234,136	$19,316	$64,393	$83,709	2.19%

[12] For comparison purposes, data in this table is from FY 2017 end-of-year reports except for San Benito Fire which contains FY 2018 end-of-year data due to discrepancies in their 2017 annual financial report.

Comments from Paris Firefighters' Relief and Retirement Fund

Paris Firefighters' Relief and Retirement Fund

September 9, 2019

Ms. Anumeh Kumar
Executive Director
Texas Pension Review Board
P.O. Box 13498
Austin, TX 78711-3498

RE: Intensive Actuarial Review – Draft Report

Dear Ms. Kumar:

Thank you for providing a preliminary draft of the Intensive Actuarial Review for the Paris Firefighters' Relief and Retirement Fund. The Board of Trustees has reviewed the report and has prepared the following response.

The review provides some troubling indicators of the health of the Fund. These results are not a surprise to the Board. The Board is committed to the long-term health and sustainability of the Fund so that the members will receive the benefits promised to them. While we feel that the Fund has instituted certain long-term solutions, we also recognize the need to develop a solution to shore up the Fund over the short term.

As the report points out, the Normal Cost is 9.54% of payroll. Employees currently contribute 16% of payroll, or 167.71% of the Normal Cost. The City contributes an additional 14% of payroll for a total contribution of 30% of payroll, or 314.47% of the Normal Cost. These contribution rates were recently increased from 15% of pay for the employees and 12% of pay for the City.

The report also points out that the benefit is a flat dollar benefit and is less risky when compared to pay based benefits. In addition, as pay increases over time the benefit will become more and more affordable when compared to the contribution rates.

Westwood Wealth Management has provided a separate response to any issues brought up by the review regarding the plan assets. Their response is provided by us as an attachment to this response.

For the reasons noted above and in Westwood's response, the Board is optimistic about the long-term direction of the Fund. However, we are also concerned about short-term issues which could prevent the Fund from realizing these benefits. Most troubling to the Board are the cashflow issues noted in the report. The Fund, the City, and our advisors are dedicated to working out a solution to these issues.

The review also points out a shortfall in trustee training and education. All Board members are dedicated to becoming compliant with Minimum Education Training requirements as soon as possible by utilizing the online training provided by the PRB and attending educational conferences, if feasible.

Thank you for considering this response. The Fund and City realize the need to work together to ensure the short- and long-term sustainability of the Fund. Any recommendations noted in the final report will be considered as we work to achieve this goal.

Sincerely,

Gene Anderson

Gene Anderson
Board Trustee
Finance Director, Paris, TX
Interim City Manager, Paris, TX

Governance Risk

Monitoring Investment Performance and Expenses

PRB draft comment: According to the investment policy statement (IPS), the Fund's Board of Trustees should "systematically and regularly monitor the Plan's investments to assure the objectives are being met and policy guidelines are being followed."

Westwood response: A review of the IPS highlights are presented in each meeting book and the investment manager confirms compliance or noncompliance in the meeting.

PRB draft comment:

Further, the quarterly investment performance reports provided by the Fund's investment manager show performance **gross** of investment fees while the equity benchmark is net of fees. Therefore, while the performance reports appear to show investment performance beating the established benchmark, once investment fees are included, the total returns fall short of a straight passive investment approach in funds that track the chosen benchmarks. Also, the performance reports do not include a benchmark for specialty investments. Since the Fund's most recent asset breakdown shows nearly 20% of assets invested in this class, the board should consider adding relevant benchmarks corresponding to the assets in this class.

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Benchmark (MSCI ACWI IMI Net)	-10.08%	6.49%	4.14%
Fixed Income Gross Return	**-0.96%**	**3.64%**	**2.11%**
Benchmark (Bloomberg Barclays U.S. Universal USD)	-0.25%	2.56%	2.22%
Specialty Gross Return	**-4.44%**	**3.74%**	**2.72%**

Westwood response: Not including Net of Fees performance in the 12.31.18 meeting review was an oversight. We typically show Net of Fees reporting along with Gross of Fees. Going forward, we will produce the report below: Total Fund Gross and Net vs. the Policy benchmark for pertinent periods. We will continue to show the Equities, Fixed Income and Specialty asset segments but not vs the equity or fixed income components of the Policy benchmark. The Specialty asset class (a third asset segment) does not have its own breakout of the two-part Policy Index; however, performance of each investment fund (including the funds included in the Specialty segment) is shown later in each meeting book vs. its relevant style index. The performance table above is intended to be a summary of the Total Fund.

FYI, the PRB's calculation is slightly off from the actual Net of Fees performance which is shown below.

Portfolio Performance Detail as of 12/31/2018

PARIS FIREFIGHTERS'

	1 Year	3 Year	Since Inception	Inception Date
Total	**-5.81%**	**5.08%**	**3.81%**	**09/30/2014**
Total Net of Fees	**-6.68%**	**4.20%**	**2.97%**	**09/30/2014**
60% ACWI IMI (Net)/ 40% BBG BC US Universal Index	-6.04%	5.06%	3.53%	09/30/2014
Equities	**-9.87%**	**6.16%**	**5.15%**	**09/30/2014**
Fixed Income	**-0.96%**	**3.64%**	**2.11%**	**09/30/2014**
Specialty	**-4.44%**	**3.74%**	**2.72%**	**09/30/2014**

PRB draft comment: After the board determined that the previous investment manager was not producing returns on par with other TLFFRA systems, the Fund selected their current investment manager in the fall of 2014. Paris Fire continues to lag behind most of its TLFFRA peers in short- and long-term returns and currently pays one of the highest levels of investment expenses, as a percent of assets, in its peer group and across the state.[8] In 2017, **investment expenses as a percent of assets** were 0.91% and in 2018 increased to **1.03%**.

Westwood response: Our fees are all-inclusive and are tiered based on assets under management. The investment expenses listed in the PRB Draft are incorrect. This was a flat calculation of fees billed in 2018: $42,973 divided by the 12.31.18 market value of $4,152,311 which does equal 1.03%. However, fees are calculated based on average daily market value. The market value as of 12.31.18 was much lower than the average market value throughout 2018. Blended fees for the account equate to ~ 0.91% of assets which is consistent with fees charged throughout our relationship.

Administrative costs were higher in years 2016 – 2018 because the fund hired an outside administrator with fees ~ $14,000 per year. They have since terminated that individual and are realizing the cost savings.

Conclusions/Recommendations

Monitoring Investments

PRB draft comment: Investment benchmarks should be regularly reviewed to see if they are appropriate and have been met or exceeded. The board should identify benchmarks for specialty investments and add those to the IPS to allow measurement of the performance of those assets.

Best practices include revisiting manager selection periodically, including evaluating performance, fees, and the value provided by the managers. The board should review whether its active management approach is providing returns in excess of the additional expense, and may want to explore passive investment strategies for one or more asset classes. Additionally, the board should consider adding to the IPS specific actions to take if returns are not met over a market cycle, such as re-evaluating the investment goals, modifying the asset mix, revising manager composition, or a combination of these.

Since it is not expected that board members be investment experts, it is important that the information presented by consultants and managers allow trustees to easily assess investment performance. Paris Fire should ask its investment manager to report returns net of fees to more easily view the actual performance of the fund, particularly because investment expenses tend to be higher as a percentage of assets for smaller plans.

Finally, the board should consider engaging an independent third party to review its governance processes to assess how they compare against industry best practices. This type of review could include looking at the board's investment decision-making processes, delegation of authority, and board investment expertise. help identify potential improvements. Due to its small size, Paris Fire is not required to conduct the Investment Practices and Performance evaluation in Texas Government Code §802.109 (SB 322, 86R), but could benefit greatly from conducting even a limited-scope evaluation

Westwood response: Our meeting materials include performance of the Total Fund as well as individual investment funds. We have updated our materials to include Net of Fees performance throughout our report. A copy of the September 12, 2019 meeting book will be forwarded to the PRB following the presentation to the Board.

WESTWOOD TRUST®

Portfolio Performance Detail as of 7/31/2019

PARIS FIREFIGHTERS'

	QTD	YTD	1 Year	3 Year	5 Year	7 Year	Since Inception	Inception Date
Total	**0.06%**	**13.01%**	**3.84%**	**6.82%**	**---**	**---**	**5.99%**	**09/30/2014**
Total Net of Fees	**-0.16%**	**12.24%**	**2.89%**	**5.85%**	**---**	**---**	**5.09%**	**09/30/2014**
60% ACWI IMI (Net)/40% BBG BC US Universal Index	0.30%	12.69%	4.80%	7.12%	---	---	5.68%	09/30/2014
Equities	**-0.08%**	**17.37%**	**2.46%**	**9.19%**	**---**	**---**	**8.03%**	**09/30/2014**
Fixed Income	**-0.04%**	**5.02%**	**4.15%**	**2.93%**	**---**	**---**	**2.89%**	**09/30/2014**
Specialty	**0.56%**	**13.84%**	**4.30%**	**5.58%**	**---**	**---**	**5.17%**	**09/30/2014**

Market values include accruals.

Past performance is not indicative of future results.

APPENDIX Q – PROGRESS UPDATES PROVIDED BY SYSTEMS SINCE INTENSIVE REVIEW PUBLICATION

Progress Updates Provided by Systems Since Intensive Review Publications

Intensive Review Date	Retirement System	Updates 2017-2018	Updates 2019-2020
January 2018	Greenville Firemen's Relief and Retirement Fund	• The Fund informed the PRB that an RFP had been issued for actuarial services	• City contributions increased from 19.3% to 21.3%.
January 2018	Galveston Employee's Retirement Plan for Police	• At the September 13 PRB Actuarial Committee meeting, both the City and the Plan provided the PRB with preliminary proposals for a funding policy that would include paying an actuarially determined contribution with a closed 30-year amortization period.	• Adopted a funding policy with an actuarially determined contribution based on a layered 30-yr period.
April 2018	Marshall Firemen's Relief and Retirement Fund	• Retirement eligibility age moved from 50 to 53 • 10-year vesting eliminated • .75% City contribution increase effective 1/01/2019 • City approved that contributions will be made to the fund at the end of the year for vacancies that exist throughout the year effective 12/31/2018.	• Beginning 1/1/2021, employee contributions increase from 14% to 16%.
April 2018	Beaumont Firemen's Relief and Retirement Fund	• No changes reported to the PRB	• Employee and City contributions will increase from 15.5% to 18% in steps until 2023.
October 2018	Orange Firemen's Relief and Retirement Fund	• Plan agreed to consult peer pension systems for possible guidelines or examples of governance policies to help develop a governance policy between the Fund and the City. • Plan agreed to request the actuary to explain benefit reduction proposals to the fund members. • Plan adopted a motion to craft a request for proposal (RFP) for investment consultant services.	• Changed investment consultant to lower costs. • Lowered payroll growth assumption from 4% to 2.5%. • Increased city and member contributions. • Actuary performed a benefit analysis on the impact of potential changes in Oct 2019.

Progress Updates Provided by Systems Since Intensive Review Publications

Intensive Review Date	Retirement System	Updates 2017-2018	Updates 2019-2020
October 2018	Longview Firemen's Relief and Retirement Fund	• Removed deployment pay from benefit calculation and contributions	• Assumed rate of return lowered from 8% to 7.5%. • City contributions increased from 18% to 19%.
October 2018	Irving Firemen's Relief and Retirement Fund	• Lowered assumed rate of return from 8.25% to 7.5%. • Lowered payroll growth assumption from 4.25% to 3.5%.	• Lowered assumed rate of return from 7.5% to 7%. • Lowered payroll growth assumption from 3.5% to 2.75%. • Lowered the interest rate on the DROP (currently: 3.3%, from: 6.25%). • Members no longer receive interest on their DROP account when they leave the department. • Final average salary raised from 3 years to 5 years. • Added a second-tier benefit. • City increased contributions from 16.75% to 20.25%.
October 2019	Odessa Firemen's Relief and Retirement Fund	N/A	• Increased City contributions from 20% to 26% and lowered the employee contributions from 18% to 16%. • Lowered assumed rate of return from 7.75% to 7.5%.
October 2019	Paris Firefighters Relief and Retirement Fund	N/A	• No changes reported to the PRB.

APPENDIX R – MET SPONSOR LIST

Texas Pension Review Board

MET Program
Accredited Sponsors & Individual Courses as of November 12, 2020

Accredited Sponsors

Alternative Investments Forum (AIF) (CE Only)
www.aifglobal.org

Board Smart (CE Only)
https://www.boardsmart.com

CFA Societies of Texas (CE Only)
www.cfasociety.org/texas/Pages/default.aspx

Chartered Alternative Investment Analyst (CAIA) Association (CE Only)
https://fundamentals.caia.org/#/login

Fi360 – Fiduciary Essentials (Core & CE)
www.championcr.com/education/

International Foundation of Employee Benefit Plans (IFEBP) (CE Only)
www.ifebp.org/retirement-pensions/Pages/default

National Conference of Public Employee Retirement Systems (NCPERS) (CE Only)
www.ncpers.org

Pension Review Board (Core & CE)
www.softchalkcloud.com/lesson/serve/Ud8eHX7nOQpv5Y/html

Robbins Geller Rudman & Dowd LLP (CE Only)
www.rgrdlaw.com

Texas Association of Public Employees Retirement Systems (Texpers) (Core & CE)
www.texpers.org

Texas Local Fire Fighters Retirement Act (TLFFRA) Educational Foundation (Core & CE)
www.tlffra.org

Pension Review Board
MET Program Accredited Sponsors & Individual Courses

Accredited Sponsors: Public Retirement Systems

City of Austin Employees' Retirement System (Core & CE)
www.coaers.org

Dallas Police & Fire Pension System (Core & CE)
www.dpfp.org

El Paso City Employees' Pension Fund (Core & CE)
www.eppension.org

Employees Retirement System of Texas (Core & CE)
www.ers.state.tx.us

Fort Worth Employees' Retirement Fund (CE Only)
www.fwretirement.org

HealthSHARE (Core & CE)
www.healthshare-tha.com

Houston Police Officers' Pension System (CE Only)
https://www.hpops.org/

Teacher Retirement System of Texas (CE Only)
www.trs.state.tx.us

Texas County and District Retirement System (Core & CE)
www.tcdrs.org

Texas Municipal Retirement System (Core & CE)
www.tmrs.org

Approved Individual Courses

Investment Foundations – CFA Institute (CE Only)
www.cfainstitute.org/programs/investmentfoundations/Pages/index.aspx

APPENDIX S – MET COMPLIANCE REPORT

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

This report contains METcompliance information reported to the PRB for Texas public retirement system trustees' and system administrators' most recently completed training cycle.

Compliant: has successfully completed previous training cycle
Not Compliant: has been not compliant in one or more previous training cycles
In Progress: working toward completion of first training cycle
Exempt: systems that have met the criteria for their system administrators to be exempt from MET requirements

Abilene Firemen's Relief & Retirement Fund		**62.5% Compliant**
Name	**Trustee Type**	**Compliance**
Baker Bryant	Active	Compliant
Cadon Barrett	Active	Compliant
Mike Rains	CFO	Compliant
Will McBride	Active	Compliant
Jack Rich	Citizen	Not Compliant
Mike Whalen	Citizen	Not Compliant
Weldon Hurt	Mayor Designee	Not Compliant
System Administrator:	Rodney Goodman	Compliant

Amarillo Firemen's Relief & Retirement Fund		**62.5% Compliant**
Name	**Trustee Type**	**Compliance**
Brandon Mason	Active	Compliant
Dean Frigo	Citizen	Compliant
Laura Storrs	Employer: Asst City Manager	Compliant
Chad Munkres	Active	In Progress
Arick Wray	Active	Not Compliant
Joseph Peterson	Mayor Designee	Not Compliant
Rodney Ruthart	Citizen	Not Compliant
System Administrator:	Debbie Reid	In Progress

Arlington Employees Deferred Income Plan		**100% Compliant**
Name	**Trustee Type**	**Compliance**
Don Crowson	Active	Compliant
Gilbert Perales	Active	Compliant
Gincy Thoppil	Active	Compliant
Lemuel Randolph	Active	Compliant
Mike Finley	Active	Compliant
Pete Jamieson	Retired	Compliant
Yoko Matsumoto	Active	Compliant
System Administrator:	Exempt	

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Atlanta Firemen's Relief & Retirement Fund		57% Compliant
Name	**Trustee Type**	**Compliance**
Daniel Camp	Active	Compliant
Randy Sanders	Citizen	Compliant
Ricky Draper	Active	Compliant
Travis Ransom	Mayor	Compliant
Alton Endsley	Citizen	Not Compliant
Danica Porter	CFO	Not Compliant
Mark Hill	Active	Not Compliant
System Administrator:	Exempt	

Austin Employees' Retirement System		100% Compliant
Name	**Trustee Type**	**Compliance**
Amy Hunter	Active	Compliant
Anthony Ross Sr.	Retiree Elected	Compliant
Chris Noak	Active Elected Member	Compliant
Ed Van Eenoo	City Manager Designee	Compliant
Eyna Canales-Zarate	Retired	Compliant
Frank Merriman	Citizen (appointed by City Council)	Compliant
J. Randall Spencer	Citizen- Board Appointed	Compliant
Leslie Pool	City Council Member	Compliant
Michael Benson	Active Elected Member	Compliant
Stephanie Beach	Citizen (appointed by City Council)	Compliant
Yuejiao Liu	Active	Compliant
System Administrator:	Chris Hanson	Compliant

Austin Fire Fighters Relief & Retirement Fund		100% Compliant
Name	**Trustee Type**	**Compliance**
Belinda Weaver	Secretary-Treasurer	Compliant
Brad Landi	Member	Compliant
Jeremy Burke	Fund Member	Compliant
Keith Johnson	Fund Member	Compliant
Steve Adler	Mayor	Compliant
System Administrator:	William Stefka	Compliant

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Austin Police Retirement System		**100% Compliant**
Name	**Trustee Type**	**Compliance**
Belinda Weaver	Employer	Compliant
Carl Zimmerman	Retired Member	Compliant
Chesley Wood	Citizen Member	Compliant
Ed Van Eenoo	Active	Compliant
Kathie Tovo	City Member	Compliant
Keith Harrison	Retired Member	Compliant
Thomas Hugonett	Active	Compliant
Tyler Link	Police Member	Compliant
Michael Cowden	Active	In Progress
Nick Moore	Active	In Progress
Sheldon "Scott" Askew	Active	In Progress
System Administrator:	Pattie Featherston	Compliant

Beaumont Firemen's Relief & Retirement Fund		**87.5% Compliant**
Name	**Trustee Type**	**Compliance**
Brian Hebert	Active	Compliant
Carl Whitehead, Jr.	Active	Compliant
Clint Cheshire	Active	Compliant
Kristin Ferguson	Mayor Designee	Compliant
Laura Clark	Citizen	Compliant
Todd Simoneaux	CFO	Compliant
Bill Darling	Citizen	Not Compliant
System Administrator:	Joni Hanley	Compliant

Big Spring Firemen's Relief & Retirement Fund		**87.5% Compliant**
Name	**Trustee Type**	**Compliance**
Cecil Cevallos	Citizen	Compliant
Chad Pederson	Active	Compliant
Chanley Delk	Active	Compliant
Don Moore	CFO	Compliant
Jake Sparks	Active	Compliant
Paul Brown	Citizen	Compliant
Todd Darden	Mayor Designee	Compliant
System Administrator:	Tom Ferguson	Not Compliant

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Brazos River Authority Retirement Plan		100% Compliant
Name	**Trustee Type**	**Compliance**
Ford Taylor	BRA Board Member	Compliant
Jeff Tallas	BRA Board Member	Compliant
John Luton	BRA Board Member	Compliant
Jen Henderson	BRA Board Member	In Progress
Royce Lesley	Board of Directors	In Progress
System Administrator:	David Thompson	Compliant

Brownwood Firemen's Relief & Retirement Fund		14.3% Compliant
Name	**Trustee Type**	**Compliance**
John Cadenhead	Active	In Progress
Carey Stewart	Citizen	Not Compliant
Joe Stieber	Active	Not Compliant
Melanie Larose	Mayor Designee	Not Compliant
Robert Myers	Citizen	Not Compliant
Walter Middleton	CFO	Not Compliant
William Campbell	Active	Not Compliant
System Administrator:	Exempt	

Capital MTA Retirement Plan for Administrative Employees		0% Compliant
Name	**Trustee Type**	**Compliance**
Donna Simmons	Active	Not Compliant
Elaine Timbes	Active	Not Compliant
Gerardo Castillo	Active	Not Compliant
John Hodges	Retired	Not Compliant
Lea Sandoz	Active	Not Compliant
System Administrator:	Exempt	

Capital MTA Retirement Plan for Bargaining Unit Employees		16.7% Compliant
Name	**Trustee Type**	**Compliance**
Kerri Butcher	Sponsor - Employer	Compliant
Brent Payne	Retiree - Bargaining Unit	Not Compliant
Donna Simmons	Employer	Not Compliant
Greg Talley	Active-Bargaining Unit	Not Compliant
Lawrence Prosser	Active - Bargaining Unit	Not Compliant
Michael "Kevin" Conlan	Sponsor - Employer	Not Compliant
System Administrator:	Exempt	

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Cleburne Firemen's Relief & Retirement Fund		**85.7% Compliant**
Name	**Trustee Type**	**Compliance**
Eddie Norton	Citizen	Compliant
Howard Lillagore	Active	Compliant
John Harrell	Active	Compliant
Sean Herren	Active	Compliant
Steve Polasek	Mayor Designee	Compliant
Troy Lestina	CFO	Compliant
Roger Trussell	Citizen	Not Compliant
System Administrator:	Exempt	

Colorado River Municipal Water District Defined Benefit Retirement Plan & Trust		**57% Compliant**
Name	**Trustee Type**	**Compliance**
Dan Hollman	Employer	Compliant
Jeff Knowles	Employer	Compliant
John Grant	Active	Compliant
John Womack	Active	Compliant
Clif Talbot	Employer	Not Compliant
Karla Oliva	Active	Not Compliant
Mireya Castilaw	Active	Not Compliant
System Administrator:	Exempt	

Conroe Fire Fighters' Retirement Fund		**42.8% Compliant**
Name	**Trustee Type**	**Compliance**
Marcus Winberry	Mayor Designee	Compliant
Steve Cottar	Active	Compliant
Tom Garvey	Active	Compliant
Cary Wortham	Citizen	Not Compliant
Joe Craig	Active	Not Compliant
Russell Moss	Citizen	Not Compliant
Steve Williams	CFO	Not Compliant
System Administrator:	Exempt	

Corpus Christi Fire Fighters' Retirement System		**100% Compliant**
Name	**Trustee Type**	**Compliance**
Constance Sanchez	CFO	Compliant
Darron Bergstrom	Citizen	Compliant
Javier Jasso	Active	Compliant
Laurelyn Pohlmeier	Citizen	Compliant
Matthew Wood	Active	Compliant
Michael Gilley	Active	Compliant
Penn Thomas	Mayor Designee	Compliant
System Administrator:	Gracie Flores	Compliant

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Corpus Christi Regional Transportation Authority		72.7% Compliant
Name	**Trustee Type**	**Compliance**
Anna Jimenez	Active	Compliant
Dan Leyendecker	Active	Compliant
Glenn Martin	Citizen	Compliant
Lynn Alison	Active	Compliant
Matthew Woolbright	Active	Compliant
Patricia Dominguez	Active	Compliant
Philip Skrobarczyk	Active	Compliant
Eloy Salazar	Active	In Progress
Anne Bauman	Active	Not Compliant
Edward Martinez	Citizen	Not Compliant
Michael Reeves	Citizen	Not Compliant
System Administrator:	Exempt	

Corsicana Firemen's Relief & Retirement Fund		42.8% Compliant
Name	**Trustee Type**	**Compliance**
Bobby Willingham	Citizen	Compliant
Connie Standridge	City Manager/Admin	Compliant
Kevin Putman	Active	Compliant
Brandy Harrison	Citizen	Not Compliant
Don Denbow	Mayor	Not Compliant
Johnny Pattison	Active	Not Compliant
Travis Ellington	Active	Not Compliant
System Administrator:	Exempt	

CPS Energy Pension Plan		100% Compliant
Name	**Trustee Type**	**Compliance**
Lois Emerson	Retired	Compliant
Paul Barham	Active	Compliant
Paul Escamilla	Active	Compliant
Paul White	Active	Compliant
Richard Medina	Active	Compliant
Jeffrey Kruse	Active	In Progress
Shannon R. Albert	Active	In Progress
System Administrator:	Shanna Wadsworth	Compliant

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Dallas County Hospital District Retirement Income Plan		**66.7% Compliant**
Name	**Trustee Type**	**Compliance**
Jeff Tillotson	Citizen	Compliant
Jesse Vallejo	Citizen	Compliant
Michael Williams	Active	Compliant
Natalie Sorrell	Citizen	Compliant
Paula Dobbs-Wiggins	Citizen	Compliant
Robert Martinez	Citizen	Compliant
Don O'Bannon	Active	In Progress
Lisa Sutter	Active	In Progress
Elizabeth Palacios	Active	Not Compliant
John Proctor	Active	Not Compliant
Ramon Migiuez	Active	Not Compliant
System Administrator:	J.D. Davis	Not Compliant

Dallas Employees' Retirement Fund		**85.7% Compliant**
Name	**Trustee Type**	**Compliance**
Carla Brewer	Active	Compliant
Henry Talavera	Citizen - Council Appointed	Compliant
Lee Kleinman	Citizen	Compliant
Mark Swann	City Auditor - Ex Officio	Compliant
Tina Richardson	Active	Compliant
John Jenkins	Active	Not Compliant
System Administrator:	Cheryl Alston	Compliant

Dallas Police & Fire Pension System-Combined Plan		**91.7% Compliant**
Name	**Trustee Type**	**Compliance**
Armando Garza	Active	Compliant
Gilbert Garcia	Non-Member-Elected	Compliant
Nicholas Merrick	Citizen Mayor-Appointed	Compliant
Robert French	Citizen (Elected Non-Member)	Compliant
Tina Hernandez-Patterson	Non-Member-Elected	Compliant
Allen Vaught	Mayoral Appointee	In Progress
Kenneth Haben	Retired - Police	In Progress
Mark Malveaux	Mayoral Appointee	In Progress
Michael Brown	Citizen	In Progress
Steve Idoux	Citizen	In Progress
William Quinn	Citizen Mayor-Appointed	Not Compliant
System Administrator:	Kelly Gottschalk	Compliant

Dallas/Fort Worth Airport Board DPS Retirement Plan		**75% Compliant**
Name	**Trustee Type**	**Compliance**
Ben Leal	Citizen	Compliant
Betsy Price	Active	Compliant
Henry Borbolla III	Active	Compliant
Mario Quintanilla	Citizen	Compliant
Raj Narayanan	Citizen	Compliant
Vernon Evans	Citizen	Compliant
William Meadows	Active	Compliant
Gloria Tarpley	Citizen	In Progress
Eddie Reeves	Citizen	Not Compliant
Eric Johnson	Dallas Mayor	Not Compliant
Matrice Elis-Kirk	Vice Chair	Not Compliant
System Administrator:	Linda Valdez-Thompson	In Progress

DART Employees' Defined Benefit Retirement Plan & Trust		**50% Compliant**
Name	**Trustee Type**	**Compliance**
Larry Knott	Active-Elected	Compliant
Nicole Fontayne-Bardowell	Active Employer	Compliant
Reginald Moore	Active-Elected	Compliant
David Leininger	Employer- Chairman Appointment	Not Compliant
Jesse Oliver	Employer- President Appointed	Not Compliant
Joseph Costello	Active Employer	Not Compliant
William Velasco	Chairman of the Board Appointee	Not Compliant
System Administrator:	Philip Perez	Compliant

Denison Firemen's Relief & Retirement Fund		**100% Compliant**
Name	**Trustee Type**	**Compliance**
Landon Lindsey	Active	Compliant
Lee Thornton	Citizen	Compliant
Renee Waggoner	CFO	Compliant
Seth Foltermann	Active	Compliant
Aaron Mallory	Active	In Progress
Janet Gott	Mayor	In Progress
System Administrator:	Raj Allada	Compliant

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Denton Firemen's Relief & Retirement Fund		75% Compliant
Name	**Trustee Type**	**Compliance**
Charlie Parker	Citizen	Compliant
David Reeder	Active	Compliant
Derek Oswald	Active	Compliant
Donald Manes	Active	Compliant
Richard Smith	Citizen	Compliant
David Gaines	Director of Finance	In Progress
Erik Clark	Mayor Appointee	Not Compliant
System Administrator:	Gary Calmes	Not Compliant

City of El Paso Employees Retirement Trust		100% Compliant
Name	**Trustee Type**	**Compliance**
Diana Nunez	Active Participant	Compliant
Isabel Salcido	City Representative	Compliant
Karl Rimkus	Active Participant	Compliant
Mario Hernandez	Active Participant	Compliant
Matt Kerr	Citizen	Compliant
Nicholas Costanzo	Retired	Compliant
Robert Studer	Active	Compliant
Sam Morgan	City Representative	Compliant
Tamara Gladkowski	Citizen	Compliant
System Administrator:	Robert Ash	Compliant

El Paso Firemen & Policemen’s Pension Fund		100% Compliant
Name	**Trustee Type**	**Compliance**
Daniel Roy	Trustee	Compliant
Gary Borsch	Citizen	Compliant
Jerry Armendariz	Active	Compliant
John Schneider	Active Police	Compliant
Lee Banks	Citizen	Compliant
Leila Melendez	Citizen	Compliant
Paul Thompson	Active Fire	Compliant
Ricci Carson	Active Fire	Compliant
Sean Shelton	Active Police	Compliant
Susanna Visconti	Citizen	Compliant
William Veliz	Citizen	Compliant
System Administrator:	Tyler Grossman	Compliant

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Employees Retirement System of Texas		**100% Compliant**
Name	**Trustee Type**	**Compliance**
Brian Barth	Elected Member	Compliant
Catherine Melvin	Elected Member	Compliant
Craig Hester	Appointed by Chief Justice	Compliant
Ilesa Daniels	Elected Member	Compliant
James Kee	Appointed by Speaker of the House	Compliant
System Administrator:	Porter Wilson	Compliant

Fort Worth Employees' Retirement Fund		**78.6% Compliant**
Name	**Trustee Type**	**Compliance**
Andrea Wright	Active Municipal	Compliant
Kevin Foster	Retired Police	Compliant
Loriane Coleman	Active Municipal	Compliant
Marsha Anderson	Retired General Employee	Compliant
Reginald Zeno	Trustee	Compliant
Steve Litke	Council Appointee	Compliant
Thomas Lewis	Retired Fire	Compliant
Todd Cox	Active Fire	Compliant
Jarod Cox	Council Appointee	Compliant
David (Lloyd) Cook	Active Police	In Progress
Bryan Barrett	Council Appointee	Not Compliant
James (Jim) Lacamp	Council Appointee	Not Compliant
Jesus Payan	Council Appointee	Not Compliant
System Administrator:	Benita Falls Harper	Compliant

Galveston Employees' Retirement Fund		**75% Compliant**
Name	**Trustee Type**	**Compliance**
Don Davison	Citizen	Compliant
Jeff Ammerman	Trustee	Compliant
Mike Loftin	Active	Compliant
Rodney Low	Trustee	Compliant
Lewis Rosen	Citizen	In Progress
James Patterson	Citizen	Not Compliant
Robert Simmons	Active	Not Compliant
System Administrator:	Jacque Vasquez	Compliant

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Galveston Employees' Retirement Plan for Police		88.9% Compliant
Name	**Trustee Type**	**Compliance**
Andre Mitchell	Active	Compliant
Daniel Buckley	Active	Compliant
Destin Sims	Active	Compliant
Hal Rochkind	Citizen	Compliant
Matthew Cauley	Active	Compliant
Mike Loftin	Council Appointment	Compliant
Richard Moore	Citizen	Compliant
Geoffrey Gainer	Active	Not Compliant
System Administrator:	Jacque Vasquez	Compliant

Galveston Firefighter's Relief & Retirement Fund		87.5% Compliant
Name	**Trustee Type**	**Compliance**
Carol Gaylord	Citizen	Compliant
Gary Staudt	Active	Compliant
John Ovalle	Citizen	Compliant
Travis Hill	Active	Compliant
Clint Wayne Brown	Mayor Rep	In Progress
James Kothmann	Active	In Progress
Mike Loftin	CFO	Not Compliant
System Administrator:	Rebecca Johnson	Compliant

Galveston Wharves Pension Plan		40% Compliant
Name	**Trustee Type**	**Compliance**
Dr. Craig Brown	Active	Compliant
Laura Camciouglu	Active	Compliant
Mark Murchison	CFO	Compliant
Rodger Rees	Active	Compliant
Albert Shannon	Active	Not Compliant
E.L."Ted" O'Rourke	Active	Not Compliant
Elizabeth Beeton	Active	Not Compliant
Harry Maxwell, Jr., CPA	Active	Not Compliant
Richard DeVries	Active	Not Compliant
Todd Sullivan	Active	Not Compliant
System Administrator:	Exempt	

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Greenville Firemen's Relief & Retirement Fund		57% Compliant
Name	**Trustee Type**	**Compliance**
Derek Sheets	Active	Compliant
Greg Parsons	Citizen	Compliant
Glenn Wieghat	Active	In Progress
Jay Pratt	Active	In Progress
David Dreiling	Mayor	Not Compliant
Howard Winans	Citizen	Not Compliant
Summer Spurlock	CFO	Not Compliant
System Administrator:	Exempt	

Guadalupe-Blanco River Authority		100% Compliant
Name	**Trustee Type**	**Compliance**
Anna Daniels	Employee	Compliant
Darel Ball	Active	Compliant
Kenneth Motl	Employer	Compliant
Lauren Willis	Active	Compliant
Ron Hermes	Employer	Compliant
Susan Hubbert	Active	Compliant
William Carbonara	Employer	Compliant
System Administrator:	Randy Staats	Compliant

Harlingen Firemen's Relief & Retirement Fund		100% Compliant
Name	**Trustee Type**	**Compliance**
Cirilo Rodriguez Jr.	Citizen	Compliant
Gabriel Gonzalez	Employer	Compliant
Gary Tipton	Active	Compliant
Mario Alvarado	Active	Compliant
Owen Flinn	Citizen	Compliant
Samuel Albritton	Active	Compliant
Robert Rodriguez	Employer	In Progress
System Administrator:	Nanette Fox	Compliant

Harris County Hospital District Pension Plan		90% Compliant
Name	**Trustee Type**	**Compliance**
Alicia Reyes	Active	Compliant
Andrea Caracostis	Active	Compliant
Anne Clutterbuck	Active	Compliant
Arthur Bracey	Active	Compliant
Elena Marks	Active	Compliant
Ewan Johnson	Active	Compliant
Lawrence Finder	Active	Compliant
Linda Morales	Active	Compliant
Kimberly Monday	Active	Not Compliant
System Administrator:	Michael Norby	Compliant

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Houston Firefighters' Relief & Retirement Fund		100% Compliant
Name	**Trustee Type**	**Compliance**
Albertino "AL" May	Citizen Member	Compliant
Arif Rasheed	City Treasurer Designee	Compliant
Brett Besselman	Active	Compliant
David Lantrip	Retired Firefighter	Compliant
David Riegor	Active	Compliant
Ernest Wotring	Mayor's Representative	Compliant
Gerard Daniels	Active	Compliant
Lisa Slagle	Citizen Member	Compliant
Pete Ng	Active	Compliant
Stephen Whitehead	Active	Compliant
System Administrator:	Ralph Marsh	Compliant

Houston MTA Non-Union Pension Plan		100% Compliant
Name	**Trustee Type**	**Compliance**
Arthur Smiley, III	Active	Compliant
Debbie Sechler	Active	Compliant
Heidi Davis	Citizen	Compliant
Jason Simpson	Citizen	Compliant
Marcus Smith	Citizen	Compliant
Reynaldo Reza	Citizen	Compliant
Sean Cagan	Active	Compliant
Thomas Jasien	Active	Compliant
System Administrator:	Daniel Weber	Compliant

Houston MTA Workers Union Pension Plan		100% Compliant
Name	**Trustee Type**	**Compliance**
Arthur Smiley, III	Active	Compliant
Auturo Jackson	Employer	Compliant
Debbie Sechler	Employer	Compliant
Horace Marves	Active	Compliant
John Bland	Retired	Compliant
J. Cruz Torres	Retired	In Progress
System Administrator:	Daniel Weber	Compliant

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Houston Municipal Employees Pension System		**100% Compliant**
Name	**Trustee Type**	**Compliance**
Adrian Patterson	City Council Appointee	Compliant
Barbara Chelette	Board Appointee	Compliant
David Donnelly	Mayoral Appointee	Compliant
Denise Castillo-Rhodes	City Council Appointee	Compliant
Edward Hamb II	Controller Appointee	Compliant
Lenard Polk	Active	Compliant
Lonnie Vara	Retired	Compliant
Roderick Newman	Retired	Compliant
Roy Sanchez	Active	Compliant
Sherry Mose	Active	Compliant
Rhonda Smith	Active	In Progress
System Administrator:	David Long	Compliant

Houston Police Officers' Pension System		**100% Compliant**
Name	**Trustee Type**	**Compliance**
David Coleman	Active	Compliant
Don Sanders	Mayor's Representative	Compliant
Dwayne Ready	Active	Compliant
George Guerrero	Active	Compliant
J. Scott Siscoe	Retired	Compliant
Melissa Dubowski	CFO Designee	Compliant
Terry Bratton	Retired	Compliant
System Administrator:	Patrick Franey	Compliant

Irving Firemen's Relief & Retirement Fund		**100% Compliant**
Name	**Trustee Type**	**Compliance**
Colvin Gibson	Citizen	Compliant
David Florance	Active	Compliant
Jeff Litchfield	CFO	Compliant
Jill McAdams	Active	Compliant
Micah Johnson	Active	Compliant
Tony Harvey	Active	Compliant
Kenneth Wallace	Citizen	In Progress
System Administrator:	Kelly Slater	Compliant

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Irving Supplemental Benefit Plan		70% Compliant
Name	**Trustee Type**	**Compliance**
Andrew Bah	Active	Compliant
Brad Duff	Active/Elected	Compliant
David Cardenas	Active/Elected	Compliant
Jeff Litchfield	Active/Appointed	Compliant
Jill McAdams	Active	Compliant
Kuruvilla Oommen	Active	Compliant
Teresa Adrian	Active	Compliant
Durenda Pena	Active	Not Compliant
Oscar Ward	Active/Elected	Not Compliant
System Administrator:	Robert Cascante-Diaz	Not Compliant

JPS Pension Plan - Tarrant County Hospital District		100% Compliant
Name	**Trustee Type**	**Compliance**
Ignacio Zamarron	Active	Compliant
John Graves	Active	Compliant
Mike Olson	Active	Compliant
Penny Wallace	Acitve	Compliant
Sam Schultz	Active	Compliant
Sharon Clark	Active	Compliant
Ted Matthews	Active	Compliant
System Administrator:	Lea Anne Porter	Compliant

Killeen Firemen's Relief & Retirement Fund		87.5% Compliant
Name	**Trustee Type**	**Compliance**
Gerald Pittman	Active	Compliant
Jerry Sutton	Citizen	Compliant
Jonathan Locke	CFO	Compliant
Otis Evans	Citizen	Compliant
Scotty Jones	Active	Compliant
Timothy Rabroker	Active	Compliant
Daniel Corbin	Mayor Designee	Not Compliant
System Administrator:	Jennifer Hanna	Compliant

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Laredo Firefighters Retirement System		71.4% Compliant
Name	**Trustee Type**	**Compliance**
Alberto Chapa	Active	Compliant
Jesus Esparza	CFO	Compliant
Louis Vaillancourt	Citizen	Compliant
Oscar Lopez	Mayor Appointee	Compliant
John Hourigan	Active	Not Compliant
Norberto Gonzalez	Active Firefighter	Not Compliant
System Administrator:	Jaime Jasso	Compliant

Longview Firemen's Relief & Retirement Fund		100% Compliant
Name	**Trustee Type**	**Compliance**
Andy Parker	Active	Compliant
Angela Coen	CFO	Compliant
Brian Jones	Active	Compliant
Kolby Beckham	Active	Compliant
Kristen Ishihara	Mayor Designee	Compliant
Maria Mills	Citizen	Compliant
Vickie Boggio	Citizen	In Progress
System Administrator:	Pam Randolph	Compliant

Lower Colorado River Authority Retirement Plan		100% Compliant
Name	**Trustee Type**	**Compliance**
Aimee Lerman	Employee Representative	Compliant
Charles Johnson	Board of Director Appointee	Compliant
Dale Jurecka	Employee Representative	Compliant
David Smith	GM Executive Appointee	Compliant
Jim Travis	CFO	Compliant
Raymond Gill Jr	Board of Director Appointee	Compliant
Stephen Kellicker	Employee Representative	Compliant
System Administrator:	Laura Flores	Compliant

Lower Neches Valley Authority Employees Benefit Plan		100% Compliant
Name	**Trustee Type**	**Compliance**
Nancy Conway	Active	Compliant
Scott Hall	Active	Compliant
Steve Lucas	Active	Compliant
System Administrator:	Annette Purington	Compliant

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Lubbock Fire Pension Fund		100% Compliant
Name	**Trustee Type**	**Compliance**
Blu Kostelich	CFO	Compliant
Cory McLaurin	Active	Compliant
Dub Wade	Citizen	Compliant
Kevin Ivy	Active	Compliant
Steve Exter	Mayor Designee	Compliant
Cade Holt	Active	In Progress
James Butcher	Retired	In Progress
System Administrator:	Krista Bailey	Compliant

Lufkin Firemen's Relief & Retirement Fund		100% Compliant
Name	**Trustee Type**	**Compliance**
Hilary Walker	Citizen	Compliant
Jimmy Ragsdale	Active	Compliant
John Thannisch	Citizen	Compliant
Levi Cole	Active	Compliant
William "Bill" Gates	Active	Compliant
Bruce Green	CFO	In Progress
Wes Taylor	Mayor's Designated Representative	In Progress
System Administrator:	Cristi Elmore	Compliant

Marshall Firemen's Relief & Retirement Fund		71.4% Compliant
Name	**Trustee Type**	**Compliance**
David Scholl	Citizen	Compliant
Mike Verhalen	Citizen	Compliant
Terri Brown	Citizen (City of Marshall Mayor)	Compliant
Glenna Williams	City Finance Director	In Progress
Scott Simmons	Active	In Progress
Joseph Dunagan	Active	Not Compliant
Joseph Hudson	Active	Not Compliant
System Administrator:	Exempt	

McAllen Firemen's Relief & Retirement Fund		100% Compliant
Name	**Trustee Type**	**Compliance**
Abel Leal	Citizen	Compliant
Javier Gutierrez	Active	Compliant
Jose Castillo	Citizen	Compliant
Leonard Dalhberg	Active	Compliant
Roel "Roy" Rodriguez	Mayor Designee	Compliant
Leocadio Mendoza	Active	In Progress
Sergio Villasana	CFO	In Progress
System Administrator:	Exempt	

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Midland Firemen's Relief & Retirement Fund		75% Compliant
Name	**Trustee Type**	**Compliance**
Brian McGary	Active	Compliant
David Stacy	Active	Compliant
James Martin	Active	Compliant
Mark Mason	Director of Finance	In Progress
Patrick Payton	Mayor	In Progress
Alan Meyers	Citizen	Not Compliant
Van Pearcy	Citizen	Not Compliant
System Administrator:	Shera Crow	Compliant

Nacogdoches County Hospital District Retirement Plan		100% Compliant
Name	**Trustee Type**	**Compliance**
Anita Kite	Active	Compliant
Farrar Bentley	Active	Compliant
Fred Groover	Active	Compliant
James Stockman, Jr.	Active	Compliant
Lisa King	Active	Compliant
Rhonda McCabe	Employer	Compliant
Ryan Head, MD	Active	Compliant
Sean Hightower	Active	Compliant
System Administrator:	Exempt	

Northeast Medical Center Hospital Retirement Plan		100% Compliant
Name	**Trustee Type**	**Compliance**
Roger Brown	Retirement Committee	In Progress
System Administrator:	Exempt	

Northwest Texas Healthcare System Retirement Plan		100% Compliant
Name	**Trustee Type**	**Compliance**
Mitchell Normand	HR Director	Compliant
System Administrator:	Debbie Reid	In Progress

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Odessa Firemen's Relief & Retirement Fund		100% Compliant
Name	**Trustee Type**	**Compliance**
Ben Marts	Active	Compliant
James "Jay" Kirk	Citizen	Compliant
Kathy McIntyre	Citizen	Compliant
Peggy Dean	Mayor Designee	Compliant
Seth Boles	CFO Designee	Compliant
Travis Jones	Active	Compliant
Erik Brown	Active	In Progress
System Administrator:	Jill Contreras	Compliant

Orange Firemen's Relief & Retirement Fund		44.4% Compliant
Name	**Trustee Type**	**Compliance**
Cheryl Zeto	CFO	Compliant
Donald Gravett	Active	Compliant
Jason Maddox	Active	Compliant
John Bilbo	Active	Compliant
John Tallant	Citizen	Not Compliant
Kenneth Parsons	Citizen	Not Compliant
Larry Spears	Mayor	Not Compliant
Walter Riedel	Citizen	Not Compliant
System Administrator:	Carol Wetherington	Not Compliant

Paris Firefighters' Relief & Retirement Fund		57% Compliant
Name	**Trustee Type**	**Compliance**
Austin Sugg	Active	Compliant
Bob Rast	Chair	Compliant
Casey Ressler	Citizen	Compliant
Sandy Collard	Mayor Designee	Compliant
Gene Anderson	CFO	Not Compliant
Kenny Dority	Citizen	Not Compliant
Thomas McMonigle	Vice Chair	Not Compliant
System Administrator:	Exempt	

Plainview Firemen's Relief & Retirement Fund		57% Compliant
Name	**Trustee Type**	**Compliance**
Michael Frizzell	Active	Compliant
Rachael Foster	Employer	Compliant
Sarianne Beversdorf	CFO	Compliant
Steve Martinez	Citizen	Compliant
Bobby Gipson	Active	Not Compliant
Kevin Whisenant	Citizen	Not Compliant
Randall "Shane" Rowell		Not Compliant
System Administrator:	Exempt	

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Plano Retirement Security Plan		**100% Compliant**
Name	**Trustee Type**	**Compliance**
Abby Owens	Active Employee	Compliant
Chris Biggerstaff	Active	Compliant
Karen Rhodes	Active	Compliant
Myra Conklin	Active	Compliant
Sean Sullivan	Citizen	Compliant
Jerry Smith	Retiree	In Progress
System Administrator:	Fannie Layer	Compliant

Port Arthur Firemen's Relief & Retirement Fund		**40% Compliant**
Name	**Trustee Type**	**Compliance**
Mercer Nessour	Active	Compliant
Bernard Brown	Citizen	Not Compliant
Dall Kole	Active	Not Compliant
Paul Washburn	Active	Not Compliant
System Administrator:	Debra Jones	Compliant

Port of Houston Authority Retirement Plan		**100% Compliant**
Name	**Trustee Type**	**Compliance**
Clyde Fitzgerald	Active	Compliant
Dean Corgey	Active	Compliant
Richard Campo	Active	Compliant
Roy Mease	Active	Compliant
Stephen DonCarlos	Active	Compliant
Wendolynn Cloonan	Active	Compliant
Cheryl Creuzot	Active	In Progress
System Administrator:	Roland Gonzalez	In Progress

Refugio County Memorial Hospital District Retirement Plan		**0% Compliant**
Name	**Trustee Type**	**Compliance**
Sandra Ermis	Active	Not Compliant
System Administrator:	Exempt	

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Retirement Plan for Employees of Brownsville Navigation District		20% Compliant
Name	**Trustee Type**	**Compliance**
Margie Recio	Active	In Progress
Eduardo Campirano	Active	Not Compliant
Jaime Martinez	Active	Not Compliant
John Wood	Employer - Elected Commissioner	Not Compliant
Lorena Hernandez	Active	Not Compliant
System Administrator:	Exempt	

San Angelo Firemen's Relief & Retirement Fund		44.4% Compliant
Name	**Trustee Type**	**Compliance**
Cory Word	Active	Compliant
Michael Anderson	Active	Compliant
Vincent Young	Active	Compliant
Ana Henderson	Citizen	Not Compliant
Brian Dunn	Mayor Designee	Not Compliant
Leslie Williams	Active	Not Compliant
Steve Cecil	Citizen	Not Compliant
Tina Dierschke	CFO	Not Compliant
System Administrator:	Ron Partusch	Compliant

San Antonio Fire & Police Pension Fund		100% Compliant
Name	**Trustee Type**	**Compliance**
Clayton Perry	City Council- Sponsor	Compliant
Dean Pearson	Active Fire	Compliant
Dr. Adriana Garcia	City Council Member	Compliant
Harry Griffin	Retired Police	Compliant
James Foster	Active Police	Compliant
Jim Smith	Active Police	Compliant
Justin Rodriguez	City Council	Compliant
Larry Reed	Retired Fire	Compliant
Vance Meade	Active Fire	Compliant
System Administrator:	Warren Schott	Compliant

San Antonio Metropolitan Transit Retirement Plan		**54.5% Compliant**
Name	**Trustee Type**	**Compliance**
Jordana Mathews		Compliant
Louis Cooper		Compliant
Marina Gavito		Compliant
Patricia Rodriguez	Active	Compliant
Robert "Bob" Comeaux	Active	Compliant
A David Marne	Active	Not Compliant
Akeem Brown		Not Compliant
Amanda Merck		Not Compliant
Ezra Johnson		Not Compliant
Hope Andrade	Active	Not Compliant
System Administrator:	Cathy Schnitzer	Compliant

San Benito Firemen Relief & Retirement Fund		**85.7% Compliant**
Name	**Trustee Type**	**Compliance**
Adan Gonzalez	Active	Compliant
Belen Pena	CFO	Compliant
Boris Esparza	Active	Compliant
Caleb Silva	Citizen	Compliant
Ida Martinez	Citizen	Compliant
Rafael Perez	Active	Not Compliant
System Administrator:	Ana Tinsley	Compliant

Sweetwater Firemen's Relief & Retirement Fund		**75% Compliant**
Name	**Trustee Type**	**Compliance**
Brad Payne	Active	Compliant
Gail Rose	Citizen	Compliant
Grant Madden	Mayor Designee	Compliant
Patty Torres	CFO	Compliant
Russell Reeves	Active	Compliant
Chris Kiser	Citizen	Not Compliant
Tad Baird	Active	Not Compliant
System Administrator:	Debra Jones	Compliant

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Teacher Retirement System of Texas		**100% Compliant**
Name	**Trustee Type**	**Compliance**
Christopher Moss	State Board of Education	Compliant
David Corpus	State Board of Education	Compliant
James Nance	Retiree	Compliant
Jarvis Hollingsworth	Direct Appointee	Compliant
John Elliott	Appointed by the Governor	Compliant
Michael Ball	Active	Compliant
Nanette Sissney	Active Public Education Position	Compliant
Robert Walls Jr.	Governor Direct Appointment	Compliant
System Administrator:	Brian Guthrie	Compliant

Temple Firemen's Relief & Retirement Fund		**87.5% Compliant**
Name	**Trustee Type**	**Compliance**
Blake Stapp	Citizen	Compliant
Bryan Daniel	CFO	Compliant
Daniel Meyer	Active	Compliant
Jason Haltom	Secretary	Compliant
Matthew Byrd	Active	Compliant
Patrick Kelly	Retired	Compliant
Randy Ramsey	Mayor Designee	Compliant
System Administrator:	Jessica Vanderveer	Not Compliant

Texarkana Firemen's Relief & Retirement Fund		**87.5% Compliant**
Name	**Trustee Type**	**Compliance**
Clay Roberts	Citizen	Compliant
Jodie Lee	CFO Designee	Compliant
Paul Lauck	Active	Compliant
Rick Wisdom	Mayor Designee	Compliant
Scott Daniel	Active	Compliant
Tim Martin	Active	Compliant
David Cook	Citizen	Not Compliant
System Administrator:	Debra Jones	Compliant

Texas City Firemen's Relief & Retirement Fund		**57% Compliant**
Name	**Trustee Type**	**Compliance**
Jennifer Price	CFO	Compliant
Joe Tumbleson	Active	Compliant
Michael Rusnak	Active	Compliant
Shane Martin	Retired	In Progress
Bob Senter	Citizen	Not Compliant
Matt Doyle	Mayor	Not Compliant
Royce Medina	Active	Not Compliant
System Administrator:	Exempt	

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

Texas County & District Retirement System		**100% Compliant**
Name	**Trustee Type**	**Compliance**
Bridget McDowell	Retired	Compliant
Chris Davis	Active	Compliant
Chris Hill	Active	Compliant
Deborah Hunt	Active	Compliant
Kara Sands	Active	Compliant
Mary Louise Nicholson	Active	Compliant
Robert "Bob" Willis	Active	Compliant
Robert Eckels	Retired	Compliant
Susan Fletcher	Active	Compliant
System Administrator:	Amy Bishop	Compliant

Texas Emergency Services Retirement System		**80% Compliant**
Name	**Trustee Type**	**Compliance**
Edward Keenan	Active Member	Compliant
Matthew Glaves	Retired	Compliant
Rod Ryalls	Active Member	Compliant
Stephanie Wagner	Investment	Compliant
Virginia "Jenny" Moore	Active	Compliant
Jerry Romero	Finance Member	In Progress
Nathan Douglas	Active	In Progress
Courtney Bechtol	Investment Advisor	Not Compliant
Pilar Rodriguez	Trustee	Not Compliant
System Administrator:	Kevin Deiters	Compliant

Texas Municipal Retirement System		**100% Compliant**
Name	**Trustee Type**	**Compliance**
Anali Alanis	Acitve	Compliant
Bill Philibert	Active	Compliant
David Landis	Active	Compliant
Jesus Garza	Active	Compliant
Juan "Johnny" Huizar	Active	In Progress
Robert "Bob" Scott	Active	In Progress
System Administrator:	David Wescoe	In Progress

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

The Woodlands Firefighters' Retirement System		75% Compliant
Name	**Trustee Type**	**Compliance**
Anthony Fasone	Citizen	Compliant
Doug Adams	Active	Compliant
Erik Secrest	Active	Compliant
Jeff Johnston	Active	Compliant
Susan Welbes	CFO	Compliant
Andrew Pitre	Citizen	Not Compliant
Monique Sharp	Mayor Designee	Not Compliant
System Administrator:	Jennifer Hanna	Compliant

Travis County ESD #6 Firefighter's Relief & Retirement Fund		37.5% Compliant
Name	**Trustee Type**	**Compliance**
Brad King	Active	Compliant
Scott Falltrick	Active	Compliant
Graham Taylor	Active	Not Compliant
Jeff Timlin	Citizen	Not Compliant
Jim DeWitt	CFO	Not Compliant
Paula Barr	Mayor Designee	Not Compliant
Rick White	Citizen	Not Compliant
System Administrator:	Ana Tinsley	Compliant

Tyler Firemen's Relief & Retirement Fund		100% Compliant
Name	**Trustee Type**	**Compliance**
Darren McCawley	Active	Compliant
James Mullicane	Active	Compliant
Keidric Trimble	CFO	Compliant
Kenny Vent	Active	Compliant
Leesa Hedge	Citizen	Compliant
Steve Kean	Mayor Designee	Compliant
Steve Roosth	Citizen	Compliant
System Administrator:	Exempt	

University Health System Pension Plan		11% Compliant
Name	**Trustee Type**	**Compliance**
Christopher Hurley	Active	Compliant
Carlos Resendez	Citizen	Not Compliant
David Wallace	Citizen	Not Compliant
Ira Smith	Board of Manager Volunteer	Not Compliant
Kevin Harris	Citizen	Not Compliant
Robert Engberg	Board of Manager Volunteer	Not Compliant
Steven Klaffke	Citizen	Not Compliant
Theresa Scepanski	Active	Not Compliant
System Administrator:	George Hernandez Jr	Not Compliant

Public Retirement System Compliance With Minimum Educational Training Requirements
Texas Pension Review Board

University Park Firemen's Relief & Retirement Fund		**42.8% Compliant**
Name	**Trustee Type**	**Compliance**
Brandon Ferguson	Active	Compliant
Dustin Lewis	Active	Compliant
Robert Abel	Active	Compliant
Ashley Cook	Citizen	Not Compliant
Civic Yip	Mayor Designee	Not Compliant
Mike Williams	Citizen	Not Compliant
Tom Tvardzik	CFO	Not Compliant
System Administrator:	Exempt	

Waxahachie Firemen's Relief & Retirement Fund		**85.7% Compliant**
Name	**Trustee Type**	**Compliance**
David Hill	Mayor Designee	Compliant
Gary Myers	Active	Compliant
John Tillery	Citizen	Compliant
Lee Stratham	Citizen	Compliant
Matt Dorsey	Active	Compliant
Scott Safford	Active	Compliant
Charles Harris	CFO	Not Compliant
System Administrator:	Exempt	

Weslaco Firemen's Relief & Retirement Fund		**75% Compliant**
Name	**Trustee Type**	**Compliance**
Charles Warren	Citizen	Compliant
David Cuellar	Active	Compliant
Florentino Vela	Active	Compliant
Fred Reyes	CFO Designee	Compliant
Jaime Hernandez	Active	Compliant
David Suarez	Mayor	Not Compliant
Jim Hiebert	Citizen	Not Compliant
System Administrator:	Debra Jones	Compliant

Wichita Falls Firemen's Relief & Retirement Fund		**87.5% Compliant**
Name	**Trustee Type**	**Compliance**
Jessica Williams	City Finance Officer	Compliant
John Luig	Citizen	Compliant
Michelle Riggins	Citizen	Compliant
Ray Wood	Active	Compliant
Travis Skelton	Active/Firefighter	Compliant
Trent Mays	Fire Fighter	Compliant
Stephen Santellana	Mayor	Not Compliant
System Administrator:	James Duncan	Compliant

APPENDIX T – SUMMARY OF PENSION LEGISLATION DURING THE 86TH LEGISLATIVE SESSION

TEXAS PENSION
REVIEW BOARD

Pension Bills of the 86th Legislative Session

Statewide Systems

Teacher Retirement System (TRS)

SB 500 (Supplemental Appropriations Act) – Additional Appropriations to TRS (Nelson)
Status: *Signed by the Governor 6/6/2019. Sections 83 and 84 (affecting TRS) became effective immediately.*

The bill provides additional State contributions to TRS from the Economic Stabilization Fund (ESF) to pay for the costs associated with SB 12 and HB 3 for the state fiscal biennium ending August 31, 2021. The bill adds additional appropriations of $263 million for the fiscal year ending August 31, 2020 and $261 million for the fiscal year ending August 31, 2021.

In addition, the bill provides a supplemental appropriation to TRS of $589 million from the ESF for the two-year period beginning on the effective date of the bill to provide a one-time additional payment to certain annuitants if TRS meets its statutory requirement of actuarial soundness.

SB 12 – Increasing Contributions to TRS (Huffman)
Status: *Signed by the Governor on 6/10/2019 and became effective immediately.*

Contributions: The bill increases the annual base employer contribution, supplemental employer contribution (for districts that do not participate in Social Security) and member contribution rates over the 2020-2025 fiscal years according to the table:

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025+
Employer	6.80%	7.50%	7.50%	7.75%	8.00%	8.25%	8.25%
Non-Social Security Employer	1.50%	1.50%	1.60%	1.70%	1.80%	1.90%	2.00%
Member	7.70%	7.70%	7.70%	8.00%	8.00%	8.25%	8.25%

13th Check: A one-time 13th check will be provided to certain annuitants, **capped at $2,000**. Retirees will receive the lesser amount of the amount of their monthly annuity check or $2,000 (paid for from the ESF as appropriated by SB 500).

HB 3 - Public School Finance (Huberty)
Status: *Signed by the Governor on 6/12/2019 and became effective immediately.*

This is the House's education bill encompassing several public school finance elements (allocating money to school based on attendance, etc.). **The bill provides pay raises to classroom teachers, librarians, school counselors, and nurses beginning in the 2019-2020 school year.** The bill does not explicitly change the benefit provisions of TRS, but the benefits paid from and contributions paid into TRS are based on the salaries of the individual members, and thus a significant change to the salary levels will have an impact on the financial position of TRS over the short term. Increased member contributions will slightly offset the impact of the increased liability.

Statewide Systems

TRS

HB 1612 – TRS Investments in Certain Hedge Funds (Murphy)
Status: *Signed by the Governor on 6/10/2019 and became effective immediately.*

The bill raises the cap for investments in hedge funds from 5% of the value of the total investment portfolio to **no more than 10%.**

HB 2629 – Deadlines to Appeal Administrative Decisions of TRS (Flynn)
Status: *Signed by the Governor on 6/10/2019 and will become effective 9/1/2019.*

The bill requires TRS to adhere to the same timeline when issuing a decision on an appeal that it requires of its members when dealing with hearings and appeals related to benefits. The bill requires the TRS board to adopt rules establishing deadlines for filing an appeal that give a member or retiree the same amount of time to file an appeal as TRS has to issue their decision.

HB 2820 – The Regulation of 403(b) Investments Available to Public School Employees (Flynn)
Status: *Signed by the Governor on 5/24/2019 and will become effective 9/1/2019.*

This bill eliminates dual regulation being conducted by TRS and other agencies by removing TRS's 403(b) product regulation responsibility.

SB 619 – Texas Retirement System Sunset Date Change (Birdwell, Buckingham, Hall, Nichols and Watson)
Status: *Signed by the Governor on 6/10/2019 and became effective immediately.*

TRS will be subject to Sunset review in 2021 (previously 2025). **TESRS** will be subject to Sunset review in 2029 (previously 2025).

Employees Retirement System (ERS)

SB 346 – Court Fees Allocated to LECOS (Zaffirini)
Status: *Filed without the Governor's Signature and will become effective 1/1/2020.*

This bill reallocates court fees to several organizations. The bill amends Local Government Code Section 133.102 to change court costs for various levels of convictions and reallocate the proceeds among several state agencies. The bill also reduces the minimum percentage that could be allocated to LECOSRF, a supplemental plan of the Employees Retirement System (ERS), from 11.1426% to 7.2674%.

Statewide Systems

ERS

HB 3522 – Death Benefits Payable by ERS (Murphy)
Status: *Signed by the Governor on 6/14/2019 and will become effective September 1, 2019, except Sections 1 and 2 will take effect January 1, 2020.*

This bill allows for a beneficiary receiving a member or retiree death benefit from ERS to assign part or all of the benefit to a funeral director or funeral establishment for services provided in connection with the member's or retiree's death.

SB 1598 – Hazardous Duty Pay for Texas Military Department Security Officers (Hall)
Status: *Signed by the Governor on 05/20/2019 and will become effective 9/1/2019.*

The bill amends Section 659.301 of the Texas Government Code to include security officers of the Texas Military Department among the state employees eligible to receive hazardous duty pay. Allowing the Texas Military Department's security officers to receive hazardous duty pay could affect their retirement benefit because the new pay is considered compensation for benefit calculation purposes.

Judicial Retirement System I (JRS I), Judicial Retirement System II (JRS II) and ERS Elected Class

HB 2384 – JRS I/II/ERS Elected Class Salary Restructure (Leach)
Status: *Signed by the Governor 6/14/2019 and will become effective 9/1/2019.*

The bill establishes a tiered service- and position-based salary structure for judges and tie the salaries of district attorneys to this structure.

JRS I: The bill amends the JRS I governing statute to base the calculation of future retirement benefits on 120% of the State base salary.

JRS II: For JRS II, members who retire on or after the effective date of the bill will have their pension calculated using the salary structure at the time the judge retires. No future adjustments to the annuity will be made once the judge retires. The bill increases JRS II active member contributions from 7.5% to 9.5% of pay for service after September 1, 2019.

ERS Elected Class: The bill amends ERS retirement benefits for elected class so that their pensions are based on the restructured definition of the base salary of a district court judge.

TCDRS: The bill increases the salary of a very small number of county judges.

Statewide Systems

Texas Municipal Retirement System (TMRS)

SB 1337 – TMRS Omnibus Bill (Huffman)

Status: *Signed by the Governor on 6/14/2019 and will become effective 1/1/2020.*

The bill makes several updates to the TMRS governing statute relating to credit in, benefits from, and administration of TMRS. Three main changes could potentially impact the actuarial results of the System:

Amortization periods. The bill clarifies that the maximum amortization period for a city's actuarial accrued liability is 30 years in all cases, while adding language to clarify the Board's authority concerning setting the actual funding policy.

Prior Service Credit (PSC). The bill decreases the minimum allowable PSC to 0% (from the current 10%) in certain situations and eliminates use of PSC in the ongoing Update Service Credit calculation for TMRS members receiving the 0% PSC.

Occupational Disability. The bill updates provisions relating to post-disability evaluations, most specifically removing any earnings tests.

Texas Emergency Services Retirement System (TESRS)

HB 3247 – TESRS Omnibus Bill (Martinez)

Status: *Signed by the Governor on 6/14/2019 and will become effective 9/1/19.*

In addition to making various administrative changes, the bill broadens the definition of "participating department" to include not-for-profit entities that perform emergency services and expands the definition of eligible members to include any person who performs emergency or support services as a volunteer or paid emergency employee for a participating department.

The bill also permits the TESRS Board of Trustees to adopt rules allowing a participating department to terminate participation from the System in "a manner that maintains an actuarially sound pension system."

SB 619 – Texas Retirement System Sunset Date Change (Birdwell, Buckingham, Hall, Nichols and Watson)

Status: *Signed by the Governor on 6/10/2019 and became effective immediately.*

TRS will be subject to Sunset review in 2021 (previously 2025). **TESRS** will be subject to Sunset review in 2029 (previously 2025).

Local Systems

Galveston Police Retirement System

HB 2763 - Galveston Police Retirement System (Flynn)
Status: *Signed by the Governor on 6/14/2019 and became effective immediately.*

Return Assumption. The Plan's assumed rate of return is set at 7% to be used in preparation of any actuarial valuation conducted on or after September 1, 2019 and before January 1, 2020. All subsequent rates of return adopted by the board shall be reviewed as part of each annual valuation.

Contributions. Employee contributions are set at a rate of 12% of pay, which reflects their current contribution rate, through 2024 but could be modified after 2025.

The City contribution is set to 18% of pay through 2024 but could be modified after 2025. The City contribution must be made not later than the 15th business day following the beginning of the City's fiscal year (October 1). Not later than December 31, the City is required to calculate the difference, if any, between actual payroll for the previous fiscal year, and the assumed payroll used to determine the amount the City contributed to the Plan, and contribute to the Plan the calculated difference multiplied by the City's contribution rate.

Funding Policy. The bill adds a funding mechanism to determine future contribution rates according to an actuarially determined contribution rate (ADCR). Beginning January 1, 2025, if the actuarial valuation recommended an ADCR that exceeded the aggregate (employee and City) contribution rate, the excess contribution will be split equally as a percentage of pay between the City and employee contribution rates. The ADCR is defined as a 30-year closed, layered amortization period.

Modification of benefits, member qualifications, benefit eligibility requirements, and contribution rates requires approval of six trustees. The board will not be able to lower or remove contributions and/or increase or add new benefits if, as a result, the amortization period of the Plan would be increased to a period that exceed 25 years. The board of trustees will not be able to modify the contribution rates set in statute before January 2025.

Governance. The bill increases the Plan's board composition to eight members, including the president of the municipality's police association (or the president's designee), three trustees elected by members of the Plan and four designated by various representatives of the City. The bill adds qualifications for trustees, which will require trustees to have financial, accounting, business, investment, budgeting, or actuarial experience; a bachelor's degree from an accredited institution of higher education; or be vetted to verify they are capable of performing the duties of a trustee. The trustees are required to undergo training in the laws governing the Plan's operations; the programs, functions, rules, and budget of the Plan; the scope and limitations on the rulemaking authority of the board; the results of the Plan's most recent actuarial valuation; and the laws applicable to a trustee in performing their duties.

General Pension Bills

SB 322 – Investment Performance Evaluations/Fee Disclosures (Huffman)
Status: *Signed by the Governor on 6/10/2019 and became effective immediately.*

Fee Disclosure

Public retirement systems are required to include in their annual financial report all direct and indirect commissions and fees paid by the retirement system for the sale, purchase, or management of the system's assets and to provide the names of the investment managers engaged by the retirement system.

Investment Practices and Performance Report

A public retirement system shall select an independent firm to evaluate the appropriateness, adequacy, and effectiveness of the retirement system's investment practices and performance and to make recommendations for improving the retirement system's investment policies, procedures, and practices.

Each evaluation must include:

- an analysis of any investment policy or strategic investment plan;
- a detailed review of the retirement system's asset allocation;
- a review of the appropriateness of investment fees and commissions paid by the retirement system;
- a review of the retirement system's governance processes related to investment activities; and
- a review of the retirement system's investment manager selection and monitoring process.

In selecting an independent firm to conduct the evaluation, a public retirement system may select a firm regardless of whether the firm has an existing relationship with the retirement system and **may not** select a firm that directly or indirectly manages investments of the system.

Systems >= $100M in assets must conduct investment performance evaluations once **every 3 years**.

Systems >= $30M in assets must conduct investment performance evaluations once **every 6 years**.

Systems < $30M in assets are not required to conduct these evaluations.

A report of the first evaluation must be filed with the governing body of the system not later than **May 1, 2020. The report is due to the PRB 31 days after the date the governing body of a public retirement system receives it**. The PRB will compile and summarize the reports and submit the information to the legislature in the agency's Biennial Report (due in November each even-numbered year).

The bill allows TRS to use this evaluation to satisfy the investment reporting requirements in its statute. It also allows Houston systems to submit the investment evaluations that are required in their own statutes to satisfy this requirement.

General Pension Bills

SB 1570 – Corrections Employees – Loss of Retirement (Flores)
Status: *Signed by the Governor on 6/10/2019 and became effective immediately.*

The bill adds Section 810.004 to the Texas Government Code to make certain corrections employees ineligible for a service retirement annuity if they are convicted of a qualified felony arising directly from the member's service. A qualified felony is defined as any felony involving an incarcerated member of a criminal street gang.

SB 2224 – Requiring Systems to Adopt Funding Policies (Huffman)
Status: *Signed by the Governor on 6/4/2019 and will become effective on 9/1/2019.*

All public retirement systems are required to adopt a funding policy by January 1, 2020 and submit a copy to their sponsor and the PRB. The funding policy must detail how the system intends to achieve or exceed a 100% funding ratio. There is no fiscal impact to the PRB.

APPENDIX U – FEBRUARY 13, 2019 PRESENTATION TO THE HOUSE COMMITTEE ON PENSIONS, INVESTMENTS, AND FINANCIAL SERVICES

Texas Pension Review Board

House Pensions, Investments, and Financial Services Committee

February 13, 2019

Pension Review Board

PRB Mission

- The PRB oversees all Texas **public retirement systems**, both state and local, to monitor their actuarial soundness and compliance with state law.
- The PRB's service population consists of the members, administrators and trustees of **346** individual public retirement systems, state and local government officials, and the general public.
- Of the 346 systems, 99 are actuarially funded defined benefit plans, for which total net assets are approximately **$281 billion**, and total membership is over **2.7 million** members.

Board Composition

Composed of **7** governor-appointed members, including:

- three members with a background in securities investment, pension administration, or pension law
- one member who is an actuary
- one member who is an expert in governmental finance
- one active member of a public retirement system
- one retired member of a public retirement system

Pension Review Board

Primary Duties

- Conduct a **continuing review** of all Texas public retirement systems
- Conduct **intensive studies** of potential or existing problems that threaten the actuarial soundness of public retirement systems
- Prepare **actuarial impact statements** for pending legislation
- Provide **information** and **technical assistance**
- Recommend **policies, practices, and legislation** to public retirement systems and governmental entities
- Develop and administer an **educational training program** for trustees and administrators of retirement systems

Major Agency Activities FY 2017 - 2018

- Recent PRB activities to help improve actuarial soundness of plans:
  - **Fostering transparency** for the public by developing an **online pension dashboard** to provide accessible current, historical, and comparative data on Texas defined benefit plans
  - **Proposing creative solutions** to pension underfunding by conducting **interim studies** to develop impactful recommendations to the 86th Legislature on the following topics: Funding Policies for Fixed-Rate Pension Plans and Pooling of Assets for Smaller Plans
  - **Monitoring pension fiscal health** for the Legislature by:
    - Conducting **intensive actuarial reviews** of 7 retirement systems facing potential risks that threaten long-term stability
    - **Closely tracking** the **implementation of pension bills** (Dallas & Houston) enacted last session and the funding shortfall currently facing **Fort Worth Employees' Retirement Fund**

PENSION REVIEW BOARD

Defined Benefit Plan Governance

Of the **99** actuarially funded defined benefit plans in Texas:

- 7 are **statewide** retirement systems, governed by the Texas Government Code.
- **17** are **major municipal** retirement systems including 14 systems enabled by state statute (Article 6243, Vernon's Civil Statutes) and three retirement systems created by city ordinance or charter (Dallas Employees, Galveston Employees, El Paso City Employees).
- **42** are **paid/part-paid firefighter** systems across the state, created under the Texas Local Firefighters Retirement Act (TLFFRA), Article 6243(e) of Vernon's Civil Statutes.
- **33** are local retirement systems offered by **other political entities** such as water districts, appraisal districts, or other special purpose districts, authorized by Chapter 810 of the Texas Government Code.

Key Actuarial Measures

- **Two measures** frequently used to assess a system's **financial health**: funded ratio and amortization period.
- **Funded Ratio:** It is the proportion of a system's accrued liabilities that are covered by the assets. It is the ratio of the assets to the liabilities (AVA/AAL).
- **Amortization Period (Am. Pd.):** The amortization period or funding period is the expected period of time for a system to pay off its unfunded liability (UAAL).

PENSION REVIEW BOARD

PRB Pension Funding Guidelines
(effective 6/30/17)

1. The funding of a pension plan should reflect all plan obligations and assets.
2. The allocation of the normal cost portion of the contributions should be level or declining as a percentage of payroll over all generations of taxpayers, and should be calculated under applicable actuarial standards.
3. Funding of the unfunded actuarial accrued liability should be level or declining as a percentage of payroll over the amortization period.
4. Actual contributions made to the plan should be sufficient to cover the normal cost and to amortize the unfunded actuarial accrued liability over as brief a period as possible, but **not to exceed 30 years, with 10-25 years being the preferable target range**.* For plans that use multiple amortization layers, the weighted average of all amortization period should not exceed 30 years.* Benefit increases should not be adopted if all plan changes being considered cause a material increase in the amortization period and if the resulting amortization period **exceeds 25 years**.
5. The choice of assumptions should be reasonable, and should comply with applicable actuarial standards.
6. Retirement systems should monitor, review, and report the impact of actual plan experience on actuarial assumptions at least once every five years.

*Plans with amortization periods that exceed 30 years as of 6/30/2017 should seek to reduce their amortization period to 30 years or less as soon as practicable, but not later than 6/30/2025.

Investment Return Assumption

- The average assumed rate of return for Texas retirement systems is currently **7.37%**. The national average is **7.36%** (NASRA, February 2018).
- In response to projected market conditions and actual plan experience, retirement systems across the country, including Texas, have **reduced their return assumptions** in recent years and we expect this trend to continue.
- The rate of return assumption is a **key economic assumption** that has an inverse correlation with the liability and short-term contribution requirements of a plan. A higher return assumption leads to a lower liability and contribution requirement and vice versa.
- **ERS** lowered its return assumption from **8%** to **7.5%**, and **TRS** lowered its return assumption from **8%** to **7.25%**.

Actuarial Valuation Report

Summary of Key Statistics

Assets and Liabilities

	Current Effective Date	Prior Effective Date
Funded Ratio	77.5%	79.1%
Market Value of Assets (MVA)	$ 281,240,399,927	$ 261,126,177,857
Actuarial Value of Assets (AVA)	$ 277,783,804,152	$ 262,723,012,268
Actuarial Accrued Liability (AAL)	$ 358,547,304,286	$ 331,935,611,061
Unfunded Actuarial Accrued Liability (UAAL = AAL - AVA)	$ 80,763,500,134	$ 69,212,598,793

Plan Amortization Periods

	Current Effective Date	Prior Effective Date
Infinite	6	5
>= 40 years, but not infinite	16	15
> 30 years, < 40 years	13	14
> 25 years, <= 30 years	18	23
>= 10 years, <= 25 years	30	29
> 0 years, < 10 years	9	7
0 years	7	3
Total Plans Registered	99	96

PENSION REVIEW BOARD

Actuarial Valuation Report

Summary of Key Statistics Continued

Plan Discount Rates

	Current Effective Date	Prior Effective Date
> 8.00%	0	2
8.00%	9	17
> 7.50%, < 8.00%	25	24
7.50%	20	22
> 7.00%, < 7.50%	19	12
7.00%	14	10
< 7.00%	12	9
Total Plans Registered	99	96

	Current Effective Date	Prior Effective Date
Mean	7.37%	7.49%
Standard Deviation	0.47%	0.48%
Median	7.50%	7.50%
Liability Weighted Mean	7.31%	7.73%
Liability Weighted Median	7.25%	8.00%

Pension Review Board

Actuarial Valuation Report

January 24, 2019

Plan Name	Plan Status (1)	Current Actuarial Valuation: Effective Date	Discount Rate	Effective Amort Period (2)	Funded Ratio %	Market Value of Assets (MVA)	Actuarial Value of Assets (AVA)	Unfunded Actuarial Accrued Liability (UAAL = AAL - AVA)	UAAL as % of Payroll	Prior Actuarial Valuation: Effective Date	Prior Effective Amort Period (2)	Funded Ratio %
Employees Retirement System of Texas	Active	8/31/2018	7.50%	Infinite	70.2	$ 27,753,334,784	$ 27,359,943,116	$ 11,629,320,446	169.13%	8/31/2017	Infinite	70.1
Fort Worth Employees' Retirement Fund	Active	12/31/2017	7.75%	Infinite	57.8	$ 2,323,717,570	$ 2,288,265,169	$ 1,668,459,190	362.26%	12/31/2016	Infinite	58.5
Law Enforcement & Custodial Officer Sup. Ret. Fund	Active	8/31/2018	7.50%	Infinite	65.6	$ 966,827,735	$ 953,054,283	$ 499,603,514	29.66%	8/31/2017	Infinite	66.0
Irving Firemen's Relief & Retirement Fund	Active	12/31/2017	7.50%	Infinite	71.6	$ 213,960,011	$ 207,493,775	$ 82,260,569	252.13%	12/31/2015	46.5	74.9
Wichita Falls Firemen's Relief & Retirement Fund	Active	1/1/2018	7.75%	Infinite	57.7	$ 51,317,643	$ 51,317,643	$ 37,628,438	316.54%	1/1/2017	49.4	62.5
University Park Firemen's Relief & Retirement Fund	Closed	12/31/2016	7.50%	Infinite	44.0	$ 9,448,371	$ 10,146,879	$ 12,936,513	387.63%	1/1/2015	53.7	45.8
Beaumont Firemen's Relief & Retirement Fund	Active	12/31/2016	8.00%	104.0	67.5	$ 102,435,664	$ 109,972,497	$ 52,869,076	274.69%	12/31/2014	39.1	72.7
Teacher Retirement System of Texas	Active	8/31/2018	7.25%	87.0	76.9	$ 154,568,901,833	$ 154,050,930,573	$ 46,165,375,254	102.69%	8/31/2017	32.2	80.5
Orange Firemen's Relief & Retirement Fund	Active	1/1/2017	7.75%	69.3	49.9	$ 8,154,674	$ 8,154,674	$ 8,199,175	336.03%	1/1/2015	58.2	57.4
Judicial Retirement System of Texas Plan Two	Active	8/31/2018	7.50%	69.0	91.7	$ 453,379,786	$ 447,077,710	$ 40,693,836	50.82%	8/31/2017	63.0	90.8
Harlingen Firemen's Relief & Retirement Fund	Active	9/30/2017	7.75%	59.1	66.1	$ 31,224,379	$ 31,224,379	$ 16,040,541	248.99%	12/31/2015	Infinite	63.1
Marshall Firemen's Relief & Retirement Fund	Active	12/31/2016	7.75%	56.4	42.0	$ 7,712,228	$ 7,712,228	$ 10,641,648	398.51%	12/31/2014	43.2	46.4
Cleburne Firemen's Relief & Retirement Fund	Active	12/31/2016	7.25%	49.6	65.4	$ 21,323,149	$ 22,290,500	$ 11,784,247	277.79%	12/31/2014	27.3	65.3
Odessa Firemen's Relief & Retirement Fund	Active	1/1/2018	7.75%	47.1	43.1	$ 45,718,416	$ 45,868,667	$ 60,600,337	510.60%	1/1/2017	46.5	45.1
Dallas Employees' Retirement Fund	Active	12/31/2017	7.75%	47.0	82.3	$ 3,601,612,000	$ 3,601,612,000	$ 776,232,000	184.26%	12/31/2016	47.0	80.4
Dallas Police & Fire Pension System-Combined Plan	Active	1/1/2018	7.25%	45.0	47.7	$ 2,103,345,471	$ 2,151,039,343	$ 2,354,397,842	680.39%	1/1/2017	44.0	49.4
Plainview Firemen's Relief & Retirement Fund	Active	12/31/2017	7.50%	44.8	37.7	$ 6,154,425	$ 6,219,603	$ 10,290,086	517.48%	12/31/2015	31.6	37.3
Midland Firemen's Relief & Retirement Fund	Active	12/31/2015	8.00%	44.7	65.8	$ 80,942,385	$ 87,000,390	$ 45,268,692	264.77%	1/1/2014	59.1	66.8
Amarillo Firemen's Relief & Retirement Fund	Active	12/31/2017	7.50%	43.5	81.5	$ 171,845,402	$ 165,443,481	$ 37,625,269	185.69%	12/31/2015	34.5	81.8
Paris Firefighters' Relief & Retirement Fund	Active	12/31/2016	7.50%	41.9	35.6	$ 4,764,272	$ 5,331,317	$ 9,626,478	373.34%	12/31/2014	26.1	42.7
McAllen Firemen's Relief & Retirement Fund	Active	10/1/2016	7.75%	41.4	69.1	$ 44,759,055	$ 48,260,416	$ 21,571,433	187.25%	10/1/2014	29.0	70.8
Longview Firemen's Relief & Retirement Fund	Active	12/31/2017	8.00%	40.2	46.1	$ 43,004,267	$ 43,004,267	$ 50,377,694	389.47%	12/31/2016	50.7	45.5
Conroe Fire Fighters' Retirement Fund	Active	12/31/2017	7.75%	39.0	62.0	$ 25,239,676	$ 25,874,512	$ 15,839,009	179.50%	12/31/2015	31.4	61.5
Brownwood Firemen's Relief & Retirement Fund	Active	12/31/2017	7.25%	38.6	45.0	$ 4,158,090	$ 4,165,427	$ 5,085,187	263.23%	12/31/2015	36.1	44.6
Greenville Firemen's Relief & Retirement Fund (3)	Active	12/31/2016	8.00%	38.0	47.7	$ 12,728,162	$ 13,695,526	$ 15,021,872	387.00%	12/31/2014	70.4	48.9
Big Spring Firemen's Relief & Retirement Fund	Active	1/1/2017	8.00%	36.2	54.9	$ 10,399,250	$ 11,033,641	$ 9,078,736	241.05%	1/1/2015	28.7	54.8
Galveston Employees' Retirement Plan for Police (4)	Active	1/1/2018	7.50%	35.5	39.3	$ 20,544,158	$ 20,791,726	$ 32,059,111	284.11%	1/1/2017	48.7	42.1
Austin Police Retirement System	Active	12/31/2017	7.70%	35.0	65.8	$ 769,474,743	$ 779,484,342	$ 405,532,952	236.47%	12/31/2016	27.3	66.2
Lubbock Fire Pension Fund	Active	12/31/2016	7.75%	33.5	72.6	$ 176,016,821	$ 194,664,263	$ 73,353,115	240.47%	1/1/2015	27.6	75.5

This report is a compilation of pension data reported by retirement systems in their most recent AVs, sorted by amortization period.

Pension Review Board

Actuarial Valuation Report

January 24, 2019

		Current Actuarial Valuation								Prior Actuarial Valuation		
Plan Name	**Plan Status (1)**	**Effective Date**	**Discount Rate**	**Effective Amort Period (2)**	**Funded Ratio %**	**Market Value of Assets (MVA)**	**Actuarial Value of Assets (AVA)**	**Unfunded Actuarial Accrued Liability (UAAL = AAL - AVA)**	**UAAL as % of Payroll**	**Effective Date**	**Prior Effective Amort Period (2)**	**Funded Ratio %**
Lufkin Firemen's Relief & Retirement Fund (5)	Active	12/31/2016	7.50%	33.1	46.7	$ 14,335,797	$ 15,146,513	$ 17,317,158	346.11%	12/31/2014	40.6	43.5
Irving Supplemental Benefit Plan	Active	1/1/2018	6.75%	32.0	72.5	$ 59,743,544	$ 60,464,787	$ 22,945,738	22.88%	1/1/2017	26.0	72.2
Fort Worth Employees' Retirement Fund Staff Plan	Active	12/31/2017	7.75%	32.0	77.2	$ 4,768,637	$ 4,533,706	$ 1,340,754	84.74%	12/31/2016	27.0	76.5
Abilene Firemen's Relief & Retirement Fund	Active	10/1/2017	8.00%	31.9	55.7	$ 57,456,309	$ 59,425,441	$ 47,286,729	341.79%	10/1/2015	31.5	56.6
San Angelo Firemen's Relief & Retirement Fund	Active	12/31/2017	7.90%	31.3	64.9	$ 66,618,737	$ 66,067,685	$ 35,702,196	291.10%	12/31/2015	38.5	65.7
El Paso Police Pension Fund	Active	1/1/2018	7.75%	30.5	78.3	$ 870,658,507	$ 843,966,894	$ 233,937,349	284.50%	1/1/2016	33.0	81.1
Houston Firefighters' Relief & Retirement Fund	Active	7/1/2017	7.00%	30.0	80.5	$ 4,025,090,000	$ 3,883,807,000	$ 943,914,000	349.94%	7/1/2016	31.0	80.6
Austin Employees' Retirement System	Active	12/31/2017	7.50%	30.0	68.3	$ 2,650,438,116	$ 2,592,460,631	$ 1,205,362,672	191.34%	12/31/2016	31.0	67.5
CPS Energy Pension Plan (6)	Active	1/1/2017	7.25%	30.0	80.8	$ 1,450,150,734	$ 1,500,740,708	$ 357,128,342	140.47%	1/1/2016	30.0	84.8
Port of Houston Authority Retirement Plan	Closed	8/1/2018	6.75%	30.0	98.4	$ 184,287,781	$ 184,287,781	$ 2,973,899	9.81%	8/1/2017	30.0	95.1
Houston Police Officers' Pension System	Active	7/1/2018	7.00%	29.0	79.4	$ 5,486,613,000	$ 5,128,835,000	$ 1,335,037,000	304.53%	7/1/2017	30.0	78.3
Houston Municipal Employees Pension System	Active	7/1/2018	7.00%	29.0	57.7	$ 2,988,864,000	$ 2,874,585,000	$ 2,107,423,000	335.41%	7/1/2017	30.0	56.4
Corsicana Firemen's Relief & Retirement Fund	Active	12/31/2016	7.00%	28.9	53.1	$ 8,344,317	$ 9,225,595	$ 8,135,345	211.44%	12/31/2014	24.2	53.5
Temple Firemen's Relief & Retirement Fund	Active	9/30/2016	7.75%	28.4	75.1	$ 39,838,918	$ 42,274,104	$ 14,003,032	164.97%	9/30/2014	23.0	77.2
Atlanta Firemen's Relief & Retirement Fund	Active	12/31/2016	7.40%	28.4	82.1	$ 3,744,867	$ 3,954,272	$ 860,536	136.63%	12/31/2014	36.2	81.9
El Paso Firemen's Pension Fund	Active	1/1/2018	7.75%	28.0	77.8	$ 601,790,721	$ 581,448,450	$ 166,117,632	265.17%	1/1/2016	26.0	79.2
University Health System Pension Plan	Active	1/1/2016	7.00%	28.0	66.4	$ 267,492,612	$ 284,433,717	$ 144,221,782	45.23%	1/1/2015	29.0	68.9
Laredo Firefighters Retirement System	Active	9/30/2016	7.90%	28.0	59.3	$ 126,305,204	$ 134,249,115	$ 87,733,185	263.00%	9/30/2014	29.8	59.7
Texas City Firemen's Relief & Retirement Fund	Active	12/31/2016	7.75%	28.0	50.4	$ 14,412,583	$ 15,853,841	$ 15,620,735	301.18%	12/31/2014	31.6	54.4
Sweetwater Firemen's Relief & Retirement Fund	Active	12/31/2016	8.00%	27.5	70.0	$ 7,826,879	$ 8,437,694	$ 3,617,210	229.12%	12/31/2014	58.8	69.0
Galveston Firefighter's Relief & Retirement Fund	Active	12/31/2017	7.75%	26.8	69.2	$ 44,651,640	$ 44,330,845	$ 19,767,545	248.42%	12/31/2016	Infinite	68.0
Dallas Co. Hospital Dist. Retirement Income Plan	Active	1/1/2018	7.25%	26.0	73.4	$ 972,042,912	$ 955,566,842	$ 346,043,801	54.70%	1/1/2017	27.0	73.8
Tyler Firemen's Relief & Retirement Fund	Active	12/31/2017	7.50%	25.5	76.2	$ 70,141,881	$ 69,570,894	$ 21,757,655	188.81%	12/31/2015	21.6	75.9
Waxahachie Firemen's Relief & Retirement Fund	Active	10/1/2016	7.00%	25.4	66.9	$ 14,201,159	$ 14,201,159	$ 7,039,421	164.84%	10/1/2014	24.3	68.9
Houston MTA Workers Union Pension Plan	Closed	1/1/2018	6.75%	25.0	66.3	$ 277,357,388	$ 267,444,642	$ 136,271,506	144.74%	1/1/2017	26.0	65.2
San Antonio Metropolitan Transit Retirement Plan	Active	10/1/2016	7.50%	25.0	63.0	$ 246,002,425	$ 245,943,565	$ 144,269,692	143.75%	10/1/2015	26.0	60.4
Houston MTA Non-Union Pension Plan	Active	1/1/2018	6.75%	25.0	65.6	$ 176,017,259	$ 171,626,913	$ 90,132,507	215.78%	1/1/2017	26.0	63.8
Texas Emergency Services Retirement System	Active	8/31/2018	7.75%	24.0	83.4	$ 115,863,894	$ 114,668,709	$ 22,845,636	N/A	8/31/2016	30.0	80.2
Galveston Wharves Pension Plan	Closed	1/1/2017	7.25%	24.0	73.3	$ 11,839,852	$ 11,839,852	$ 4,320,705	162.45%	1/1/2016	25.0	78.9

This report is a compilation of pension data reported by retirement systems in their most recent AVs, sorted by amortization period.

PENSION REVIEW BOARD

Actuarial Valuation Report

January 24, 2019

		Current Actuarial Valuation								Prior Actuarial Valuation		
Plan Name	Plan Status (1)	Effective Date	Discount Rate	Effective Amort Period (2)	Funded Ratio %	Market Value of Assets (MVA)	Actuarial Value of Assets (AVA)	Unfunded Actuarial Accrued Liability (UAAL = AAL - AVA)	UAAL as % of Payroll	Effective Date	Prior Effective Amort Period (2)	Funded Ratio %
Corpus Christi Fire Fighters' Retirement System	Active	12/31/2016	7.75%	23.1	62.1	$ 133,901,631	$ 141,141,270	$ 85,995,868	265.57%	12/31/2014	23.1	61.4
Killeen Firemen's Relief & Retirement Fund	Active	9/30/2016	7.75%	22.8	69.7	$ 35,342,830	$ 37,418,102	$ 16,234,675	114.49%	9/30/2014	29.5	66.5
San Benito Firemen Relief & Retirement Fund	Active	9/30/2017	7.50%	21.8	60.7	$ 3,503,753	$ 3,503,753	$ 2,270,845	152.30%	12/31/2015	21.7	60.5
Capital MTA Retirement Plan for Bargaining Unit Employees	Frozen	1/1/2018	7.25%	21.0	51.9	$ 33,199,580	$ 32,305,890	$ 29,935,904	N/A	1/1/2017	22.0	51.7
Capital MTA Retirement Plan for Administrative Employees (7)	Active	1/1/2017	6.75%	20.0	72.6	$ 23,811,865	$ 24,254,758	$ 9,145,527	39.56%	1/1/2016	20.0	77.1
Sweeny Community Hospital	Closed	1/1/2018	7.00%	20.0	85.8	$ 3,579,168	$ 3,365,560	$ 555,574	56.39%	1/1/2017	12.0	89.8
Employees of Brownsville Navigation District	Active	1/1/2017	6.17%	19.8	52.8	$ 4,344,648	$ 4,622,909	$ 4,132,058	102.83%	N/A	N/A	N/A
Lower Colorado River Authority Retirement Plan	Closed	1/1/2018	7.25%	19.0	74.0	$ 424,481,299	$ 431,262,582	$ 151,642,744	137.21%	1/1/2017	20.0	73.8
Texas Municipal Retirement System (8)	Active	12/31/2017	6.75%	18.8	87.4	$ 28,649,374,617	$ 27,813,135,331	$ 3,997,991,175	62.51%	12/31/2016	19.7	86.3
Port Arthur Firemen's Relief & Retirement Fund	Active	12/31/2015	8.00%	18.3	78.0	$ 43,469,930	$ 45,290,253	$ 12,792,922	160.73%	1/1/2014	17.0	77.4
El Paso City Employees' Pension Fund	Active	9/1/2016	7.50%	17.0	79.2	$ 723,103,443	$ 749,026,818	$ 196,745,280	125.85%	9/1/2014	11.0	77.1
Dallas/Fort Worth Airport Board Retirement Plan	Active	1/1/2018	7.25%	17.0	82.4	$ 494,836,396	$ 481,740,742	$ 102,655,640	189.77%	1/1/2017	18.0	80.3
Dallas/Fort Worth Airport Board DPS Retirement Plan	Active	1/1/2018	7.25%	17.0	77.7	$ 184,751,568	$ 179,918,008	$ 51,647,165	172.12%	1/1/2017	18.0	75.6
Austin Fire Fighters Relief & Retirement Fund	Active	12/31/2017	7.70%	17.0	88.3	$ 953,798,227	$ 916,931,534	$ 121,186,551	137.39%	12/31/2016	16.2	88.3
Harris County Hospital District Pension Plan (9)	Closed	1/1/2018	7.00%	16.9	75.5	$ 686,870,468	$ 662,693,501	$ 215,600,523	126.91%	1/1/2017	17.8	74.4
Denison Firemen's Relief & Retirement Fund	Active	12/31/2017	7.50%	15.8	77.3	$ 17,725,070	$ 17,524,049	$ 5,159,287	155.45%	12/31/2015	27.1	74.4
Texarkana Firemen's Relief & Retirement Fund	Active	12/31/2017	7.75%	15.0	86.3	$ 34,819,005	$ 35,250,649	$ 5,584,452	123.72%	12/31/2015	16.3	87.4
Denton Firemen's Relief & Retirement Fund	Active	12/31/2017	6.75%	14.6	82.1	$ 85,388,283	$ 84,410,626	$ 18,435,302	104.60%	12/31/2015	31.6	80.8
Weslaco Firemen's Relief & Retirement Fund	Active	9/30/2016	7.25%	14.1	68.5	$ 9,186,148	$ 9,440,473	$ 4,334,628	111.07%	9/30/2014	15.9	69.2
Brazos River Authority Retirement Plan	Frozen	3/1/2018	6.50%	14.0	66.4	$ 20,434,799	$ 20,867,108	$ 10,579,730	N/A	3/1/2017	15.0	68.2
DART Employees' Defined Benefit Retirement Plan & Trust	Closed	10/1/2016	6.75%	12.4	76.5	$ 168,333,813	$ 168,727,902	$ 51,734,500	279.10%	10/1/2014	30.0	74.3
Texas County & District Retirement System (8)	Active	12/31/2017	8.00%	12.3	89.1	$ 30,000,370,381	$ 28,975,651,686	$ 3,564,247,486	53.38%	12/31/2016	13.5	88.4
Galveston Employees' Retirement Fund	Active	12/31/2017	7.25%	11.6	79.6	$ 51,550,288	$ 50,978,100	$ 13,081,058	51.03%	12/31/2016	13.4	78.5
Dallas Police & Fire Pension System-Supplemental (7)	Active	1/1/2018	7.25%	10.0	51.5	$ 17,805,153	$ 17,805,153	$ 16,744,953	1742.77%	1/1/2017	10.0	52.9
Northeast Medical Center Hospital Retirement Plan (7)	Frozen	7/1/2017	7.50%	10.0	83.6	$ 9,578,580	$ 9,578,580	$ 1,875,840	N/A	7/1/2016	10.0	78.2
San Antonio Fire & Police Pension Fund	Active	1/1/2018	7.25%	9.9	90.3	$ 3,196,529,718	$ 3,196,529,718	$ 341,700,790	107.20%	1/1/2017	13.1	87.9
Nacogdoches County Hospital District Retirement Plan	Active	7/1/2015	7.25%	9.8	84.3	$ 45,399,274	$ 45,060,230	$ 8,399,156	27.94%	7/1/2014	20.0	82.7
Guadalupe-Blanco River Authority	Closed	1/1/2017	7.00%	8.7	84.9	$ 26,632,375	$ 29,165,967	$ 5,182,613	78.26%	1/1/2016	8.8	85.7
Colorado River Municipal Water Dist. Pension Trust (9)	Active	1/1/2018	6.25%	7.4	93.8	$ 10,060,151	$ 10,060,151	$ 670,995	17.70%	1/1/2017	9.1	89.9

This report is a compilation of pension data reported by retirement systems in their most recent AVs, sorted by amortization period.

PENSION REVIEW BOARD

Actuarial Valuation Report

January 24, 2019

		Current Actuarial Valuation								Prior Actuarial Valuation		
Plan Name	Plan Status (1)	Effective Date	Discount Rate	Effective Amort Period (2)	Funded Ratio %	Market Value of Assets (MVA)	Actuarial Value of Assets (AVA)	Unfunded Actuarial Accrued Liability (UAAL = AAL - AVA)	UAAL as % of Payroll	Effective Date	Prior Effective Amort Period (2)	Funded Ratio %
Corpus Christi Regional Transportation Authority	Active	1/1/2018	7.50%	6.0	98.3	$ 36,440,324	$ 36,440,324	$ 628,913	5.89%	1/1/2017	7.0	93.2
Northwest Texas Healthcare System Retirement Plan	Frozen	10/1/2016	7.50%	5.0	73.0	$ 19,960,895	$ 20,437,567	$ 7,556,760	N/A	10/1/2015	6.0	69.2
JPS Pension Plan - Tarrant County Hospital District	Active	10/1/2016	7.25%	4.8	93.6	$ 217,773,105	$ 216,601,199	$ 14,762,412	6.90%	N/A	N/A	N/A
Travis County ESD #6 Firefighter's Relief & Retirement Fund	Active	12/31/2017	7.00%	3.3	87.2	$ 19,688,064	$ 19,010,963	$ 2,790,432	48.27%	12/31/2015	5.8	71.6
Guadalupe Regional Medical Center	Active	1/1/2018	7.00%	3.0	98.4	$ 71,386,345	$ 68,044,619	$ 1,097,419	4.33%	1/1/2017	9.0	94.4
Plano Retirement Security Plan	Active	12/31/2017	7.00%	0.0	100.8	$ 148,516,307	$ 144,040,464	$ (1,131,618)	-0.77%	12/31/2015	19.0	99.2
Citizens Medical Center	Active	3/1/2018	7.25%	0.0	107.1	$ 105,550,707	$ 101,520,687	$ (6,752,729)	-12.15%	3/1/2017	17.0	99.5
The Woodlands Firefighters' Retirement System	Active	1/1/2018	7.00%	0.0	106.0	$ 32,217,888	$ 32,217,888	$ (1,819,206)	-15.28%	1/1/2017	2.7	98.6
Arlington Employees Deferred Income Plan	Active	7/1/2017	5.00%	0.0	108.0	$ 2,838,158	$ 2,838,158	$ (211,065)	-6.07%	7/1/2016	0.0	107.9
Refugio County Memorial Hospital District Retirement Plan	Frozen	11/1/2017	7.00%	0.0	111.1	$ 2,227,940	$ 2,227,940	$ (222,034)	-6.93%	11/1/2016	0.0	102.3
Anson General Hospital	Frozen	7/1/2016	7.50%	0.0	119.9	$ 1,853,797	$ 1,902,152	$ (315,345)	-111.63%	N/A	N/A	N/A
El Paso Firemen & Policemen's Pension Staff Plan	Active	1/1/2018	7.75%	0.0	113.1	$ 419,843	$ 397,086	$ (46,068)	-6.31%	1/1/2016	0.0	282.9
Grand Totals:					**77.5%**	**$ 281,240,399,927**	**$ 277,783,804,152**	**$ 80,763,500,134**				**79.1%**

Notes

(1) Plan status indicates whether a plan is active (admitting new hires), closed to new hires (but still accruing benefits), or frozen (not accruing benefits).

(2) The effective amortization period is the time it would take to theoretically eliminate the UAAL assuming no future gains or losses and taking into account both the plan's stated and historical contribution policy.

(3) Current amortization period reflects an employer contribution increase to 17.30% of payroll as of October 1, 2017 and an increase to 19.30% effective October 1, 2018.

(4) Current amortization period reflects an employer contribution increase to 14.83% of payroll as of February 17, 2018.

(5) This valuation reflects a 10-year reduction in the amortization period associated with a change in actuarial consulting firms. The new actuary and the PRB were unable to determine the reason for the reduction without more detailed information and discussion with the prior actuarial firm.

(6) Prior amortization period is based on an open amortization funding policy. The system has adopted a closed 30 year amortization funding policy effective January 1, 2017.

(7) Reported amortization period is based on an open amortization funding policy. The PRB is working with the plan to calculate an effective amortization period.

(8) Amortization period is calculated using system-wide aggregate UAAL and payroll amounts.

(9) Amortization period is calculated by the PRB.

PENSION REVIEW BOARD

Average Rates of Return

as of 2017 or 2018 Fiscal Year End

Average Actual Investment Returns					
Plan Type	**1-Year**	**3-Year**	**10-Year**	**Long-Term**	**Assumed Return**
Statewide	12.35%	7.63%	6.47%	8.13%	7.46%
Municipal	12.32%	6.17%	5.08%	7.91%	7.45%
Local Firefighter	13.09%	5.26%	4.58%	6.62%	7.61%
District/Supplemental	13.11%	6.42%	5.57%	6.80%	7.01%
All	12.94%	5.94%	5.10%	6.92%	7.37%

Actual returns obtained from the most recent fiscal year-end investment return and assumptions reports. Long-term return is 30 years or longest term available. All figures are net of fees. Assumed returns obtained from most recent actuarial valuation reports.

Assets - Liabilities Trends

In the last six years, the difference between assets and liabilities has steadily increased, from just under $50B in 2013 to almost $81B. The aggregate funded ratio was highest in 2013, but has slowly decreased through 2018.

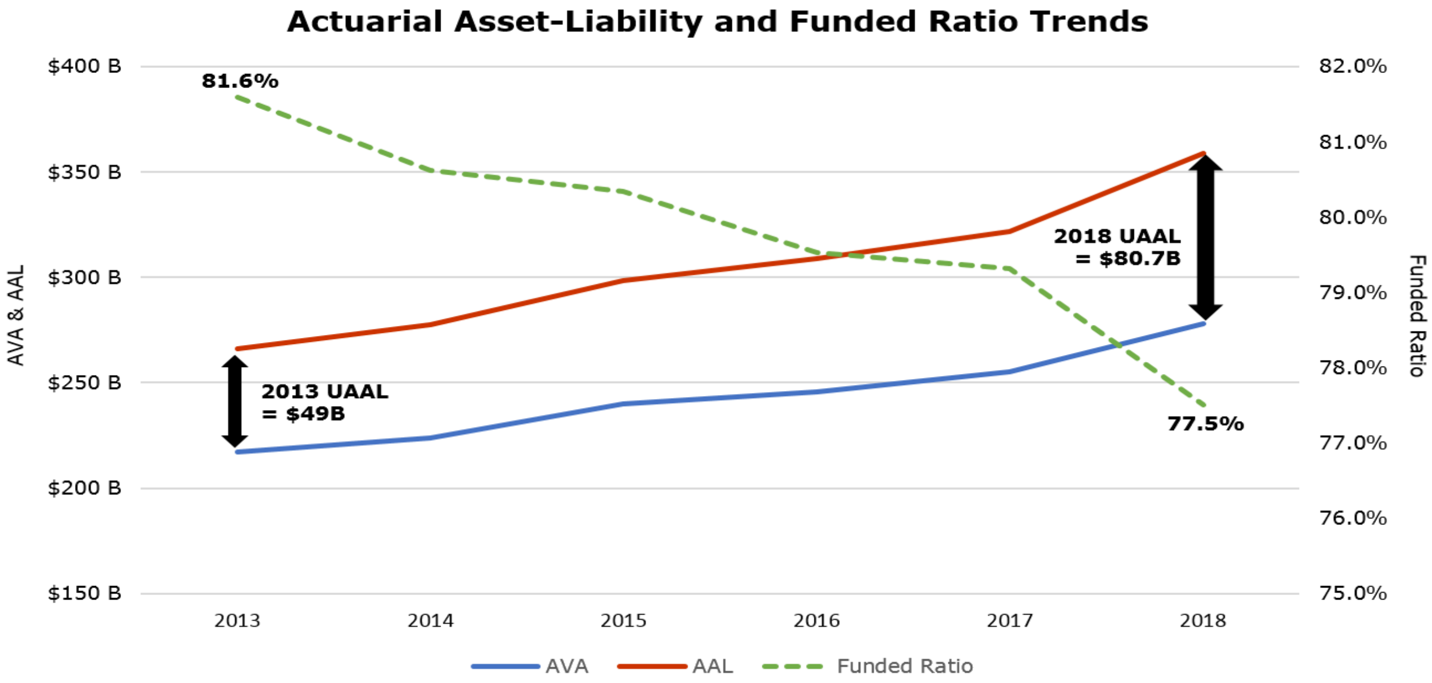


Chart utilizes information received by the PRB current through the dates listed.

Pension Review Board

Funding Soundness Restoration Plan

- Enacted as part of **H.B. 3310** by Representative Paul (84th)
- If a retirement system receives several consecutive valuations showing that the **system's amortization period exceeds 40 years**, the system's governing body and sponsoring entity must formulate a FSRP and submit the plan to the PRB.
- The FSRP must be sufficient to reduce the amortization period to 40 within **10 years**.
- Plans must report **updates** at least **every two years.**
- 15 systems have submitted FSRPs. Of those, 4 systems have reached amortization periods below 40, 7 systems are working toward 40, and 4 systems are required to develop a REVISED FSRP.
- One system, Fort Worth Employees' Retirement Fund, is currently working on its FSRP.

2018 Intensive Actuarial Reviews

January	April	October
Galveston Police Greenville Fire	Beaumont Fire Marshall Fire	Longview Fire Orange Fire Irving Fire

- Recommendations:
  - Adopt a funding policy that requires payment of an actuarially determined contribution, or at minimum, that fully funds the plan over a finite period of 30 years or less
  - Adopt a formal risk/cost-sharing framework with "guardrails" or trigger mechanisms that reduce uncertainty and guide stakeholders in how benefit and contribution levels will be modified under different economic conditions
  - Closely monitor investment performance including expenses and evaluate asset allocation decisions
  - Conduct an in-depth asset-liability study of potential risks associated with existing asset mix and liabilities they support. Perform scenario testing of large DROP/PROP withdrawals coupled with potential adverse investment experience
  - Regularly review actuarial assumptions against experience, making necessary changes

2018 Intensive Actuarial Reviews
Progress Updates

Intensive Review Date	Retirement System	Updates
January	Greenville Firemen’s Relief and Retirement Fund	▪ In October, the Fund informed the PRB that an RFP had been issued for actuarial services.
January	Galveston Employees’ Retirement Plan for Police	▪ At the September 13 PRB Actuarial Committee meeting, both the City and the Plan provided the PRB with preliminary proposals for a funding policy that would include paying an actuarially determined contribution with a closed 30-year amortization period.
April	Marshall Firemen’s Relief and Retirement Fund	▪ Retirement eligibility age moved from 50 to 53 ▪ 10-year vesting eliminated ▪ .75% City contribution increase effective 1/01/2019 ▪ City approved that contributions will be made to the fund at the end of the year for vacancies that exist throughout the year effective 12/31/2018.
April	Beaumont Firemen’s Relief and Retirement Fund	▪ No changes reported to PRB.
October	Orange Firemen’s Relief and Retirement Fund	▪ Plan agreed to consult peer pension systems for possible guidelines or examples of governance policies to help develop a governance policy between the Fund and the City. ▪ Plan agreed to request the actuary to explain benefit reduction proposals to the fund members. ▪ Plan adopted a motion to craft a request for proposal (RFP) for investment consultant services.
October	Longview Firemen’s Relief and Retirement Fund	▪ Removed deployment pay from benefit calculation and contributions.
October	Irving Firemen’s Relief and Retirement Fund	▪ No changes reported to PRB

Recent and Potential Pension Bills

- **Fort Worth**
  - Fort Worth City Council has passed a reform plan, but those changes are contingent on a vote of all members of the **Ft. Worth Employees' Retirement Fund**. If the vote fails, legislation may be filed.
- **Galveston**
  - In response to the PRB's 2018 Intensive Actuarial Review, the City of Galveston and the **Galveston Employees' Retirement Plan for Police** have been working towards a solution. If negotiations fail, legislation is likely.
- **Houston**
  - In 2017, the 85th Legislature created a **contribution corridor** for all 3 City of Houston pensions. The bill established **a statutory funding policy** that set a target city contribution rate based on the actuarially determined contribution (ADC) and developed a corridor around the target rate to keep costs contained.
- **Dallas**
  - The Dallas Police and Fire Pension System was at risk of imminent insolvency in 2017. The 85th Legislature revised its statute to increase employee and city **contributions**, modify the **benefit** structure, and improve **governance**.

Texas Public Pension Data Center

- The 85th Legislature appropriated funds for the PRB to develop the Texas Public Pension Data Center to provide an **online, searchable database** of public pension information.
- Over the 2017-2018 biennium, the agency worked to develop the dashboard which includes key actuarial and financial indicators of retirement system health over time, as well as demographic, benefit and governance information.
- The dashboard also offers the ability to compare those factors across multiple plans of similar size or type.

Home Plan Data Comparative Data Texas Public Pension Data Center

TEXAS PENSION REVIEW BOARD

Texas Public Pension Data Center

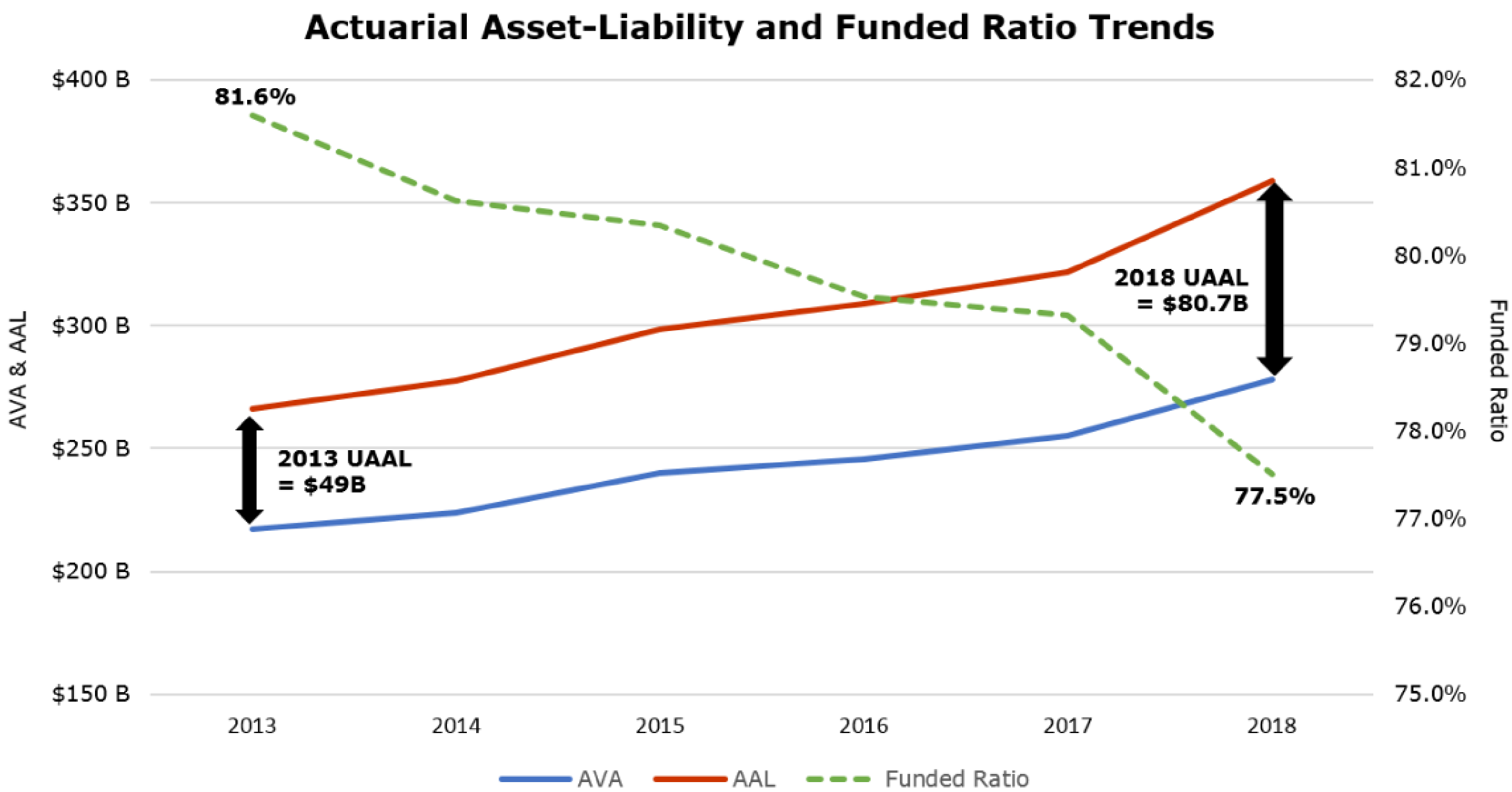
There are 99 actuarially funded defined benefit public pension plans registered with the PRB. The total membership of these public retirement systems is more than 2.6 million active and retired members, and the total net assets of the plans are approximately $271 billion. The 99 plans include:

- 7 statewide plans including 2 cash balance plans that municipalities, counties and districts may join
- 17 major municipal plans including 14 in state law and 3 in local ordinance
- 42 local firefighter plans organized under the Texas Local Firefighters Retirement Act
- 33 local plans administered by special purpose districts or as supplemental plans

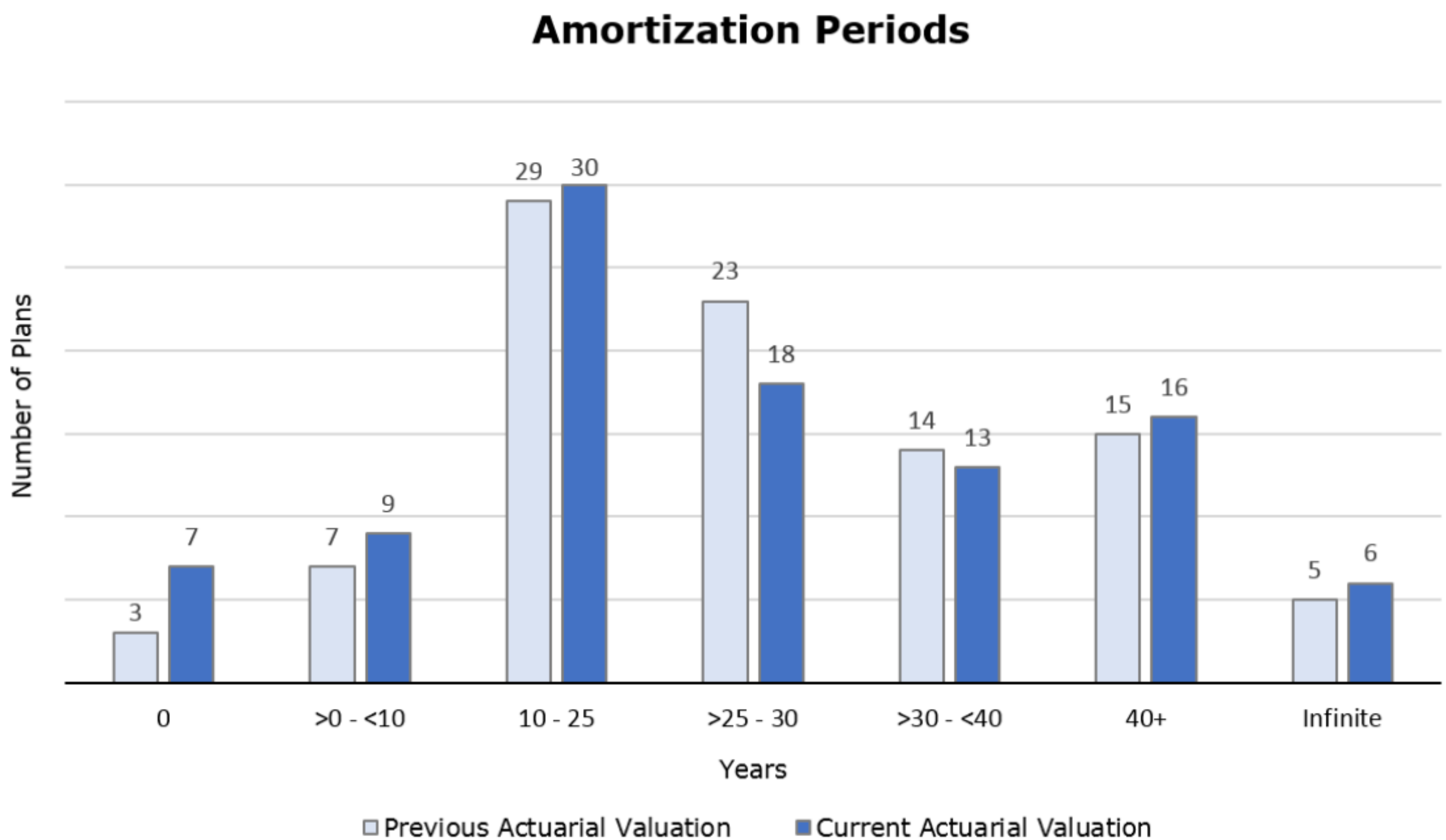
These retirement plans report data to the PRB in annual financial reports, actuarial valuations and other studies, and investment and membership reports. This data center presents the reported information by plan and comparatively by plan type and asset group. The following graphs summarize some of the key indicators of financial health for Texas public pensions in the aggregate.

Actuarial

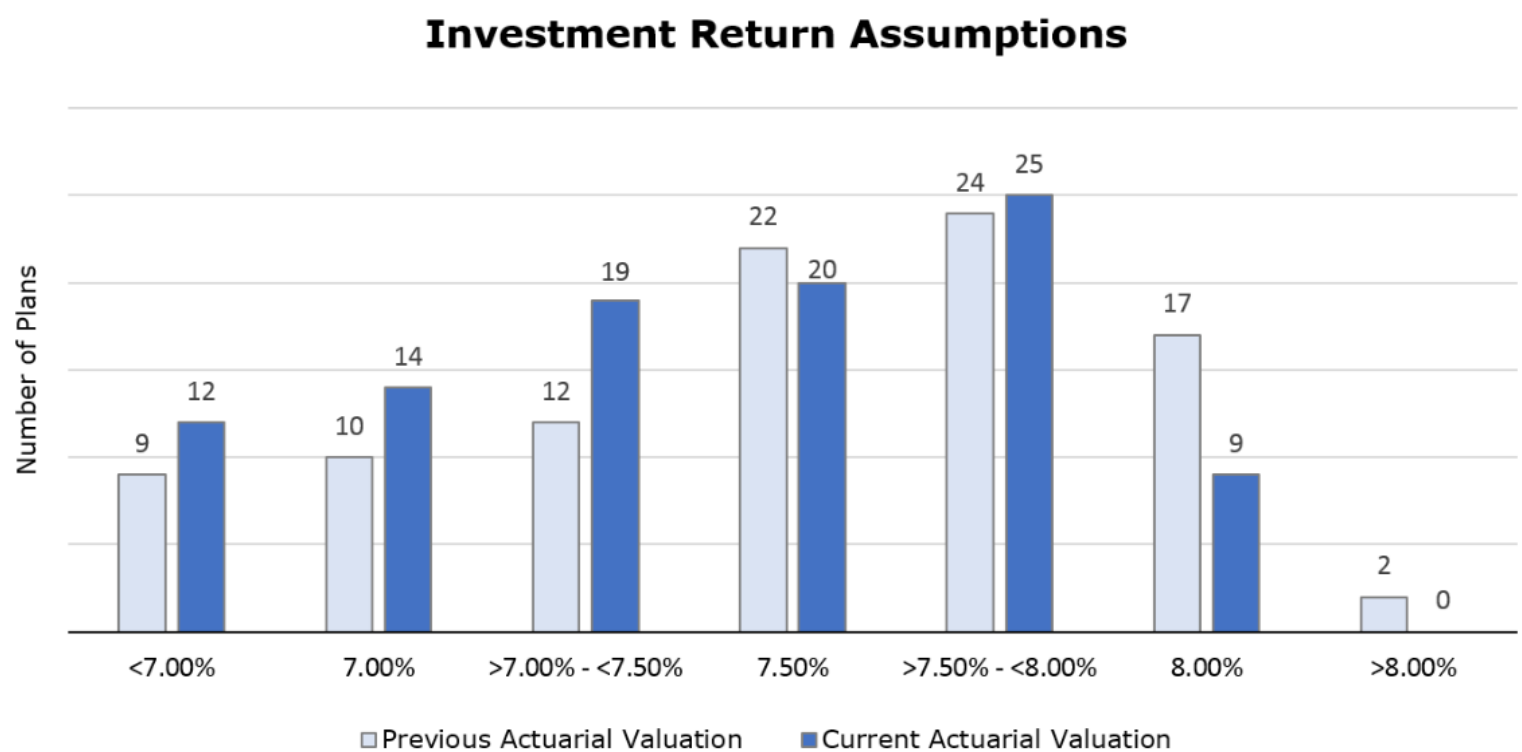
Since 2013, the overall unfunded accrued actuarial liability (UAAL), which is the difference between the actuarial value of assets (AVA) and accrued actuarial liability (AAL), has steadily increased. The aggregate funded ratio, in turn, has decreased over time.



A plan's amortization period is the time it would theoretically take to fully fund any unfunded liability (UAAL) or fully recognize a surplus. The PRB Pension Funding Guidelines establish a maximum amortization period of not more than 30 years with a preferred target range of 10 to 25 years. More than half of the plans have current amortization periods within 30 years.

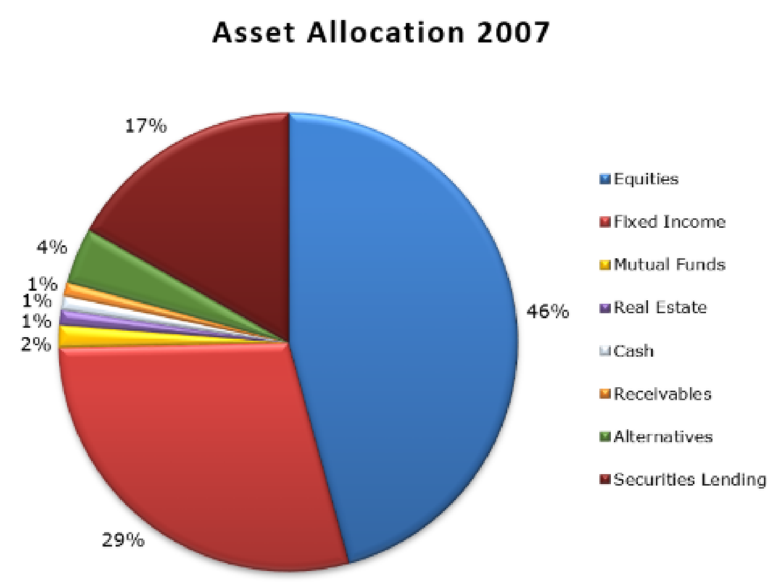


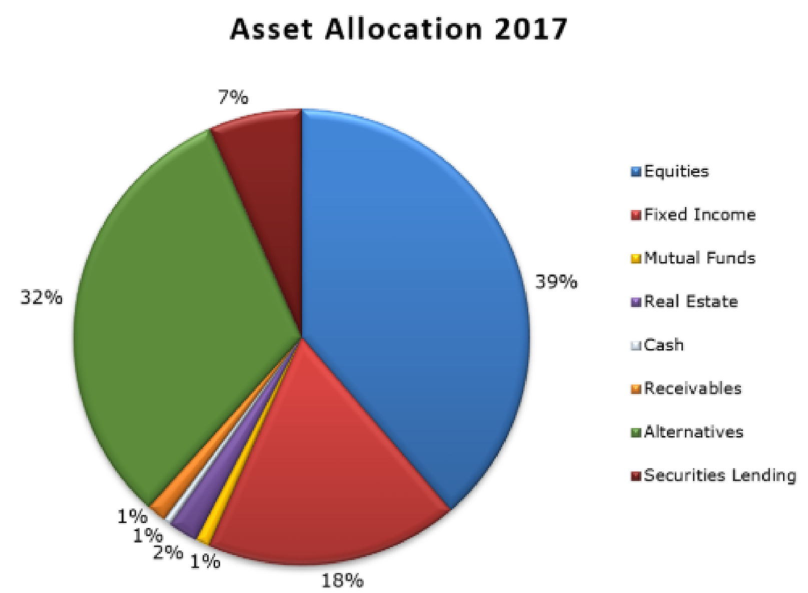
Amortization periods are reported in actuarial valuations, which are conducted by Texas plans at least every 3 years according to law. Amortization periods displayed are from the most recent and previous valuations received by the PRB as of December 2018.



Return assumptions are reported in actuarial valuations, which are conducted by Texas plans at least every 3 years according to law. Return assumptions displayed are from the most recent and previous valuations received by the PRB as of December 2018.

Plans' asset allocations changed between 2007 and 2017, most notably, in the growth of alternative investments from 4% of total assets in 2007 to 32% in 2017. Alternative investments generally include hedge funds, private equity, commodities, foreign currency, venture capital, derivatives, and other instruments.





Figures obtained from the most recent fiscal-year end annual financial reports and may differ from allocation targets in investment policy statements.

Home | Plan Data | Comparative Data | Texas Public Pension Data Center

Plan: Abilene Firemen's Relief & Retirement Fund

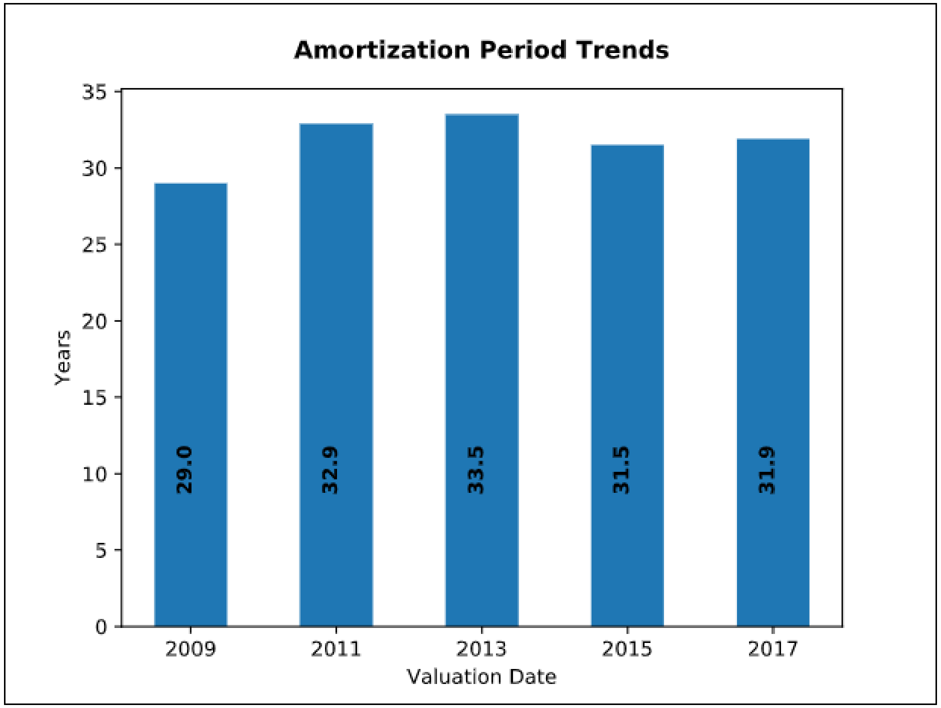
Abilene Firemen's Relief & Retirement Fund

Abilene Firemen's Relief & Retirement Fund was created under the Texas Local Fire Fighters Retirement Act (TLFFRA). The Act provides general guidelines for fund management, including some investment restrictions, but leaves administration, plan design, contributions, and specific investments to each system's local board. Systems operating under TLFFRA are entirely locally funded and each have their own local boards of trustees governed by state statute.

Membership	Total Net Assets	Social Security	Contributions	Contribution Type	Fiscal Year End
Active: 181 Annuitant: 191	$57,456,309	No	Employee: 13.20 % Employer: 19.25 %	Fixed	September

Actuarial

A retirement system's effective amortization period is defined by the PRB as the time it would theoretically take to fully fund the system's unfunded actuarial accrued liability (UAAL), if any exists. The effective amortization period assumes no future gains or losses and factors in both the plan's stated and historical contribution policy. The calculation is done at each actuarial valuation which is conducted every year or every two years. If no bar appears for a particular fiscal year, the amortization period is zero.



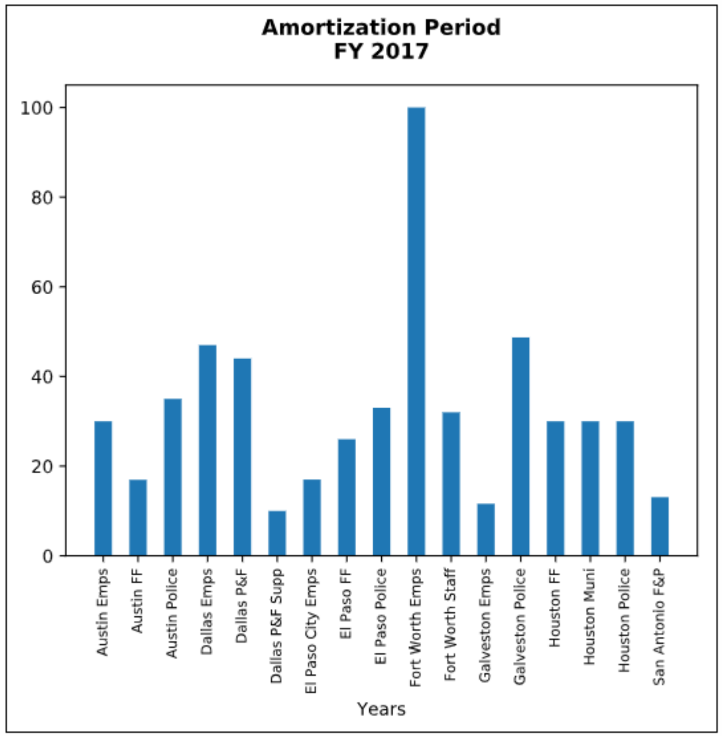
Download Data

Peer Group | Municipal | Fiscal Year | 2017

Municipal FY 2017

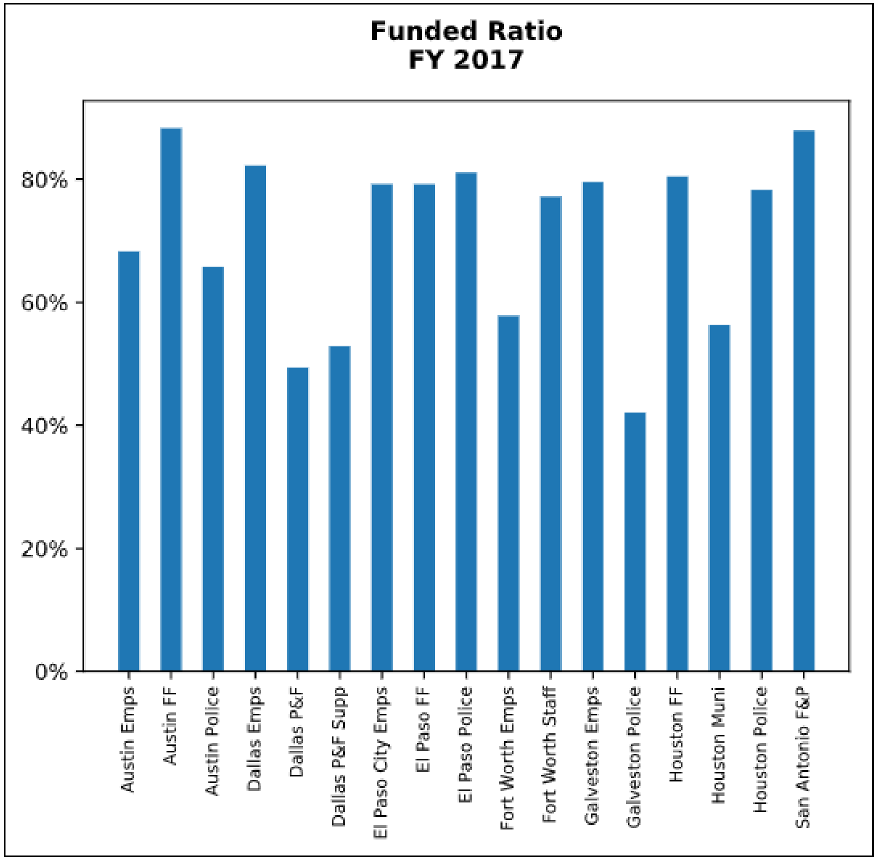
Actuarial

A retirement system's effective amortization period is defined by the PRB as the time it would theoretically take to fully fund the system's unfunded actuarial accrued liability (UAAL). The reported amortization period takes into account the plan's amortization policy and contribution history. The chart displays Municipal retirement systems' effective amortization periods for the selected fiscal year. If an actuarial valuation was not completed for the selected fiscal year, the immediately preceding fiscal year is shown.



Download Data

A retirement system's funded ratio is the percentage of its actuarial accrued liability that are funded by its actuarial value of assets. In the graph, funded ratios of Municipal retirement systems are shown for the selected fiscal year. If an actuarial valuation was not completed for the selected fiscal year, the immediately preceding fiscal year is shown.



Download Data

Minimum Educational Training (MET) Program

- **Online Courses**
  - Seven free online courses can be found on the PRB website. There have been **over 1,900 course completions** to date.
  - Courses include: Fiduciary Matters, Governance, Actuarial Matters, Investments, Risk Management, Ethics and Benefits Administration
- **Sponsor Accreditation**
  - The PRB has accredited **18** organizations as **MET sponsors**, as well as 35 individual courses offered by non-accredited sponsors. The overall satisfaction for all PRB accredited sponsors was 99% (as of June 2018).

APPENDIX V – FEBRUARY 5, 2020 PRESENTATION TO THE TEXAS REPUBLICAN CAUCUS

Agency Overview, Legislative Update, and Key Metrics for Texas Public Pensions

February 5, 2020

Pension Review Board

PRB Overview

- **Mission**: to provide the State of Texas with the necessary information and recommendations to help ensure that Texas public retirement systems are properly managed and actuarially sound
- **Service Population:** 347 public retirement systems (100 actuarially funded defined benefit; 166 defined contribution; 81 volunteer firefighter)
- **Board Composition:** Composed of seven governor-appointed members:
    - three members with a background in securities investment, pension administration, or pension law;
    - one member who is an actuary;
    - one member who is an expert in governmental finance;
    - one active member of a public retirement system; and
    - one retired member of a public retirement system.

PRB Overview

Primary Duties

- Conduct a **continuing review** of all Texas public retirement systems.
- Conduct **intensive studies** of potential or existing problems that threaten the actuarial soundness of public retirement systems.
- Prepare **actuarial impact statements** for pending legislation.
- Provide **information** and **technical assistance**.
- Recommend **policies, practices, and legislation** to public retirement systems and governmental entities.
- Develop and administer an **educational training program** for trustees and administrators of retirement systems.

Current PRB Areas of Focus

Recent PRB activities to help improve actuarial soundness of plans:

- **online pension dashboard** to provide accessible current, historical, and comparative data on Texas defined benefit plans (launched Jan. 2019)
- **intensive actuarial reviews** of certain retirement systems facing potential risks that threaten long-term stability (9 completed since 2018)
- **informal guidance and rulemaking** to implement new requirements from SB 322 and SB 2224 (86R)

PRB Online Data Center – Plan Data

Plan	Teacher Retirement System of Texas

Teacher Retirement System of Texas

In November 1936, voters approved an amendment to the Texas Constitution to create a statewide teacher retirement system. TRS was officially established by the Legislature in 1937. TRS is the largest public retirement system in Texas, in both membership and assets. The system provides benefits to public school teachers, other public school employees, and higher education personnel who are not eligible for the Optional Retirement Program (ORP), or who choose not to belong to ORP. Revisions regarding benefits, contributions, and post-retirement adjustments require legislative action.

Membership	Total Net Assets	Social Security	Contributions	Contribution Type	Fiscal Year End
Active: 872,999 Annuitant: 420,458	$154,568,901,833	No	Employee: 7.70 % Employer: 7.76 %	Fixed	August

Actuarial

A retirement system's effective amortization period is defined by the PRB as the time it would theoretically take to fully fund the system's unfunded actuarial accrued liability (UAAL), if any exists. The effective amortization period assumes no future gains or losses and factors in both the plan's stated and historical contribution policy. The calculation is done at each actuarial valuation which is conducted every year or every two years. If no bar appears for a particular fiscal year, the amortization period is zero.

PENSION REVIEW BOARD

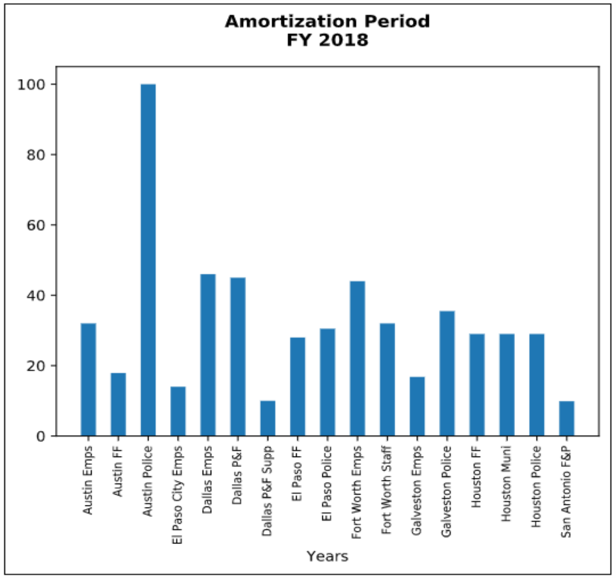
PRB Online Data Center – Comparative Data

Peer Group | Municipal | Fiscal Year | 2018

Municipal FY 2018

Actuarial

A retirement system's effective amortization period is defined by the PRB as the time it would theoretically take to fully fund the system's unfunded actuarial accrued liability (UAAL). The reported amortization period takes into account the plan's amortization policy and contribution history. The chart displays Municipal retirement systems' effective amortization periods for the selected fiscal year. If an actuarial valuation was not completed for the selected fiscal year, the immediately preceding fiscal year is shown.



Download Data

Pension Review Board

Intensive Actuarial Reviews to Date

January 2018	April 2018	October 2018	October 2019
Galveston Police Greenville Fire	Beaumont Fire Marshall Fire	Longview Fire Orange Fire Irving Fire	Odessa Fire Paris Fire

Recommendations:

- Adopt a funding policy that requires payment of an actuarially determined contribution, or at minimum, that fully funds the plan over a finite period of 30 years or less
- Adopt a formal risk/cost-sharing framework with "guardrails" or triggers that reduce uncertainty and guide stakeholders in how benefit and contribution levels will be modified under different economic conditions
- Closely monitor investment performance including asset allocation and expenses
- Conduct an in-depth asset-liability study of potential risks associated with existing asset mix and liabilities they support. Perform scenario testing of large PROP withdrawals coupled with potential adverse investment experience
- Regularly review actuarial assumptions against experience, making necessary changes
- Complete required training so that the board can make informed decisions

National Recognition of PRB Efforts

- In February 2018, **S&P Global** cited PRB oversight as an opportunity for the State in facing pension-related risks. S&P noted that they:
  - "view the transparency provided by the PRB as elevating emerging national themes and standard practices to elected officials, plans, and the public, which is positive for plan disclosure and management."
  - "Furthermore, the annual filing requirements raise awareness and could allow the PRB to recommend stopgap measures before a plan deteriorates to levels seen in New Jersey or Illinois."
- In *The Texas Pension Review Board: A Model for Nationwide Reform*, Josh B. McGee of the **Manhattan Institute** (and previous PRB Board Chair) wrote:
  - "Due in large part to the agency, the transparency of the state's pension funding, investments, governance, and benefits is unmatched across the country."
  - "While there are external groups…that research important pension policy topics and provide governments with technical assistance, PRB's work has more impact in Texas because it is more connected to local stakeholders and circumstances."
  - "…the Texas Pension Review Board is a model that other states should consider for restoring the financial soundness of their public pensions."

Update on Recent Legislation Affecting Texas Public Pensions

PENSION REVIEW BOARD

Legislative Overview

Actuarial Impact Statements

- During legislative sessions, the agency provides an actuarial impact statement analyzing the **economic or financial impact** of a proposed pension bill on a public retirement system.
- Changes to pension systems often create **financial commitments** that extend far into the future.
- By addressing the actuarial impact of proposed changes, the PRB provides the Legislature with information that assists in **managing pension costs**.

86th Legislature Pension Bill Tracking

- 120 pension bills were filed during the 86th Legislative Session.
- The PRB provided 43 actuarial impact statements on bills affecting public retirement systems.

86th Legislative Session: Major Pension Bills

Teacher Retirement System

- **SB 12**
  - Incrementally increased TRS contribution rates, including annual base employer, the supplemental employer (for districts that do not participate in Social Security), and the member contribution rates over the 2020-2025 fiscal years.
  - Provided a one-time 13th check to certain annuitants, capped at $2,000.
- **SB 500**
  - Provided supplemental appropriations to TRS from the Economic Stabilization Fund to finance the costs associated with SB 12 and HB 3 (school finance bill that also provided salary increases to certain school employees).

Galveston Employees' Retirement Plan for Police

- **HB 2763**
  - Amended Galveston Police governing statute to incorporate risk-sharing mechanisms, lower the assumed rate of return, increase board size, and require board experience/expertise qualifications.

SB 2224: Funding Policy

- All public retirement systems were required to adopt a funding policy by **January 1, 2020** and submit a copy to their sponsor and the PRB by **February 1, 2020**.
- The funding policy must detail how the system intends to achieve or exceed a 100% funding ratio.

Implementation

- The PRB published an interim study on funding policies in January 2019.
- The PRB has adopted guidance and provided a sample funding policy to assist systems.
- Funding policies should cover the following four components:
  - Clear and concrete **funding objectives**;
  - **Actuarial methods**;
  - A **roadmap** to achieve funding objectives; and
  - Actions that will be taken to **address actual experience** that diverges from assumptions.

SB 322: Investment Expense Reporting

- Systems must include in their CAFRs, by asset class, **all direct and indirect commissions and fees** paid by the system for the sale, purchase, or management of system assets and the **names of their investment managers**.

Implementation

- The PRB has proposed rules to assist with investment expense reporting which will be presented for adoption on February 6.
- The proposed rules require systems to report investment management fees and commissions, **including profit share**, broken out by **five asset classes.**
- Systems are also required to report all investment service expenses, including **investment consultant(s), custodial, investment-related legal, and investment research fees**.
- PRB staff has developed a template to assist systems with the reporting.

SB 322: Investment Practices and Performance Evaluation

Systems with **at least $30M** in assets must select **an independent firm** to evaluate the appropriateness, adequacy, and effectiveness of the system's investment practices and performance and to provide recommendations for improvement.

Areas of Evaluation:	Frequency for Subsequent Evaluations:
▪ Investment Policy ▪ Asset Allocation ▪ Investment Fees and Commissions ▪ Investment Governance Processes ▪ Investment Manager Selection and Monitoring Process	▪ Systems $\geq$= $100M in assets: once every 3 years ▪ Systems $\geq$= $30M in assets: once every 6 years

- **Deadline:** First evaluation is due to the PRB by **June 1, 2020**. The PRB will report the results to the Legislature in November 2020.

Implementation

- The PRB has adopted guidance to assist plans with completing the evaluation.

Key Metrics for Texas Public Pensions

Pension Review Board

Key Actuarial Concepts

- For a retirement system to meet its long-term obligations, **sufficient assets are needed to pay for benefits accrued** by and owed to system members.
- **Actuarial Accrued Liability (AAL)** is the portion of pension liabilities attributed to past service.
- The **Actuarial Value of Assets (AVA)** can be either the market value or a smoothed value of assets.
- **Unfunded Actuarial Accrued Liability (UAAL)** = AAL - AVA

Key Actuarial Measures

- **Two measures** frequently used to assess a system's **financial health**: funded ratio, or the ratio of assets to liabilities, and amortization period.
- **Funded Ratio:** It is the proportion of a system's accrued liabilities that are covered by the assets. It is the ratio of the assets to the liabilities. It can be calculated using the actuarial value of assets (AVA) or the market value of assets (MVA). The liabilities are measured using the Actuarial Accrued Liability (AAL).
- **Amortization Period:** The amortization period or funding period is the expected period of time for a system to pay off its UAAL.

PRB Pension Funding Guidelines
(effective 6/30/17)

1. The funding of a pension plan should reflect all plan obligations and assets.
2. The allocation of the normal cost portion of the contributions should be level or declining as a percentage of payroll over all generations of taxpayers, and should be calculated under applicable actuarial standards.
3. Funding of the unfunded actuarial accrued liability should be level or declining as a percentage of payroll over the amortization period.
4. Actual contributions made to the plan should be sufficient to cover the normal cost and to amortize the unfunded actuarial accrued liability over as brief a period as possible, but **not to exceed 30 years, with 10-25 years being a more preferable target range**.* For plans that use multiple amortization layers, the weighted average of all amortization period should not exceed 30 years.* Benefit increases should not be adopted if all plan changes being considered cause a material increase in the amortization period and if the resulting amortization period **exceeds 25 years**.
5. The choice of assumptions should be reasonable, and should comply with applicable actuarial standards.
6. Retirement systems should monitor, review, and report the impact of actual plan experience on actuarial assumptions at least once every five years.

*Plans with amortization periods that exceed 30 years as of 6/30/2017 should seek to reduce their amortization period to 30 years or less as soon as practicable, but not later than 6/30/2025.

Funding Soundness Restoration Plan (FSRP)

H.B. 3310 by Paul/Taylor (84thR)

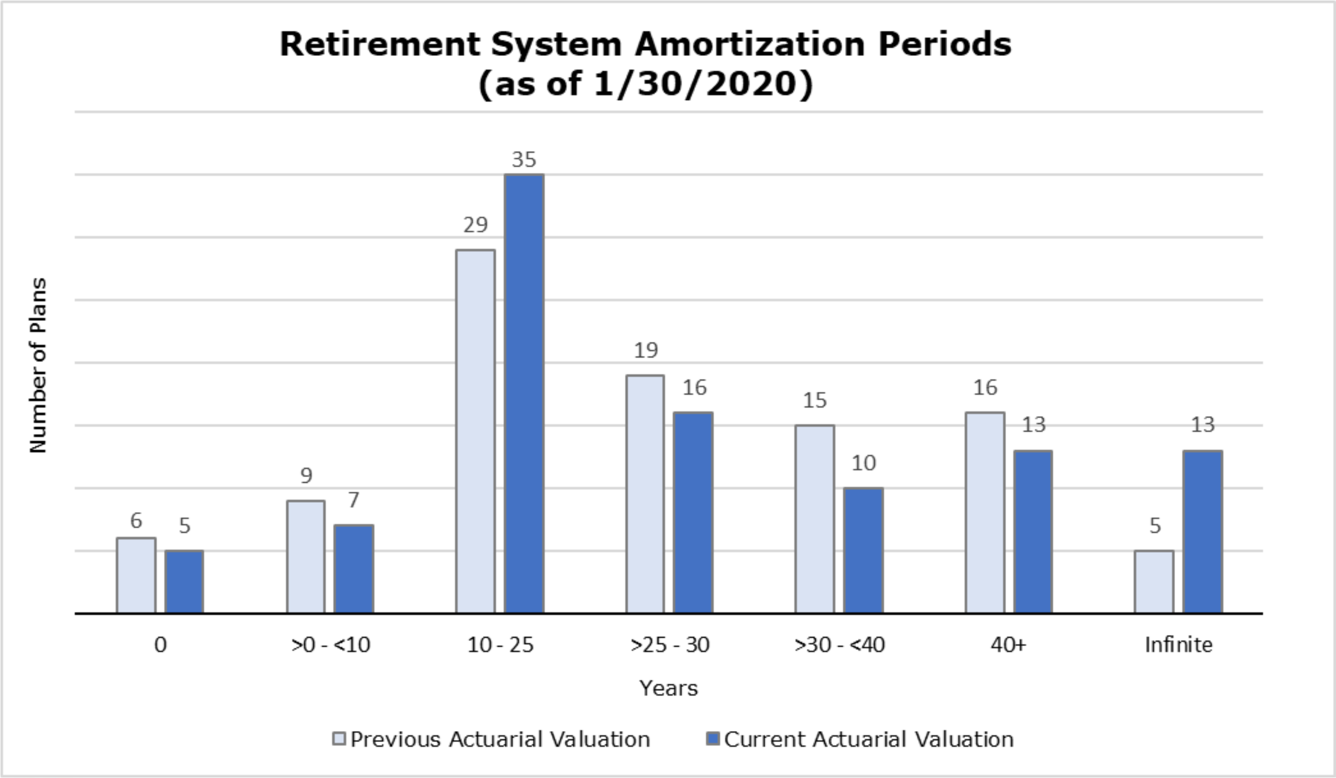
- If a retirement system receives several consecutive valuations showing its **amortization period exceeds 40 years**, the system's board and sponsoring entity must jointly formulate an FSRP and submit the plan to the PRB within 6 months following the trigger of the requirement.
- The FSRP must reduce the amortization period to 40 within **10 years**. Systems must report **updates** to PRB at least **every two years**.

- 16 systems have submitted FSRPs.
  - Five systems have achieved their goal and are below 40 years.
  - Five other systems are working on developing a Revised FSRP due to their original FSRP being out of compliance with statute.
  - The remaining six systems are working towards a 40 year amortization period.
- Two systems are subject to the requirement but have not yet submitted their FSRPs.
- Six systems will be subject to the FSRP requirement if their next valuation shows an amortization period greater than 40 years.

Pension Review Board

Amortization Periods

The PRB *Pension Funding Guidelines* establish a maximum amortization period of not more than **30 years** with a preferred target range of 10 to 25 years.



Assets - Liabilities Trends

In the last six years, the difference between the AVA and AAL has steadily increased. The average funded ratio was highest in 2014 and decreased considerably between 2017 and 2018. This was mainly due to the TRS assumption changes in 2018 which increased its actuarial liability by over $10 billion.

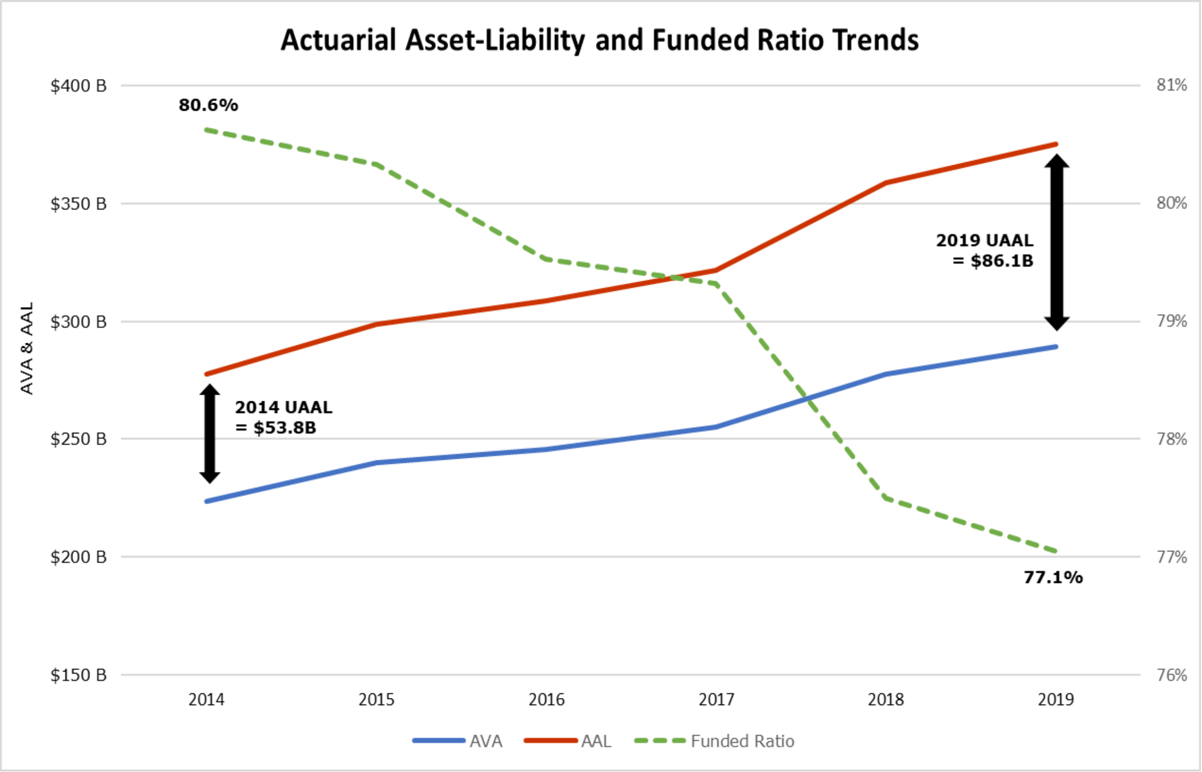
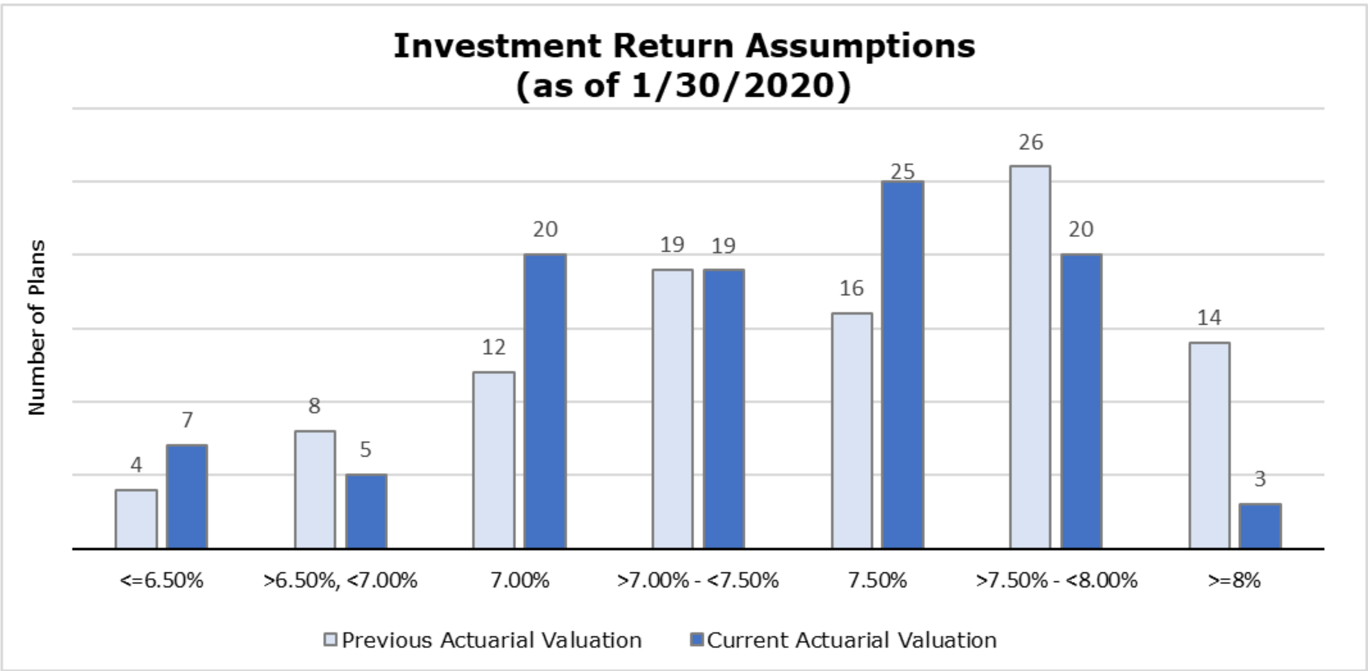


Chart utilizes information received by the PRB current through the date stated above.

Investment Return Assumption Trends

The average investment return assumption for Texas systems is currently **7.29%**. The national average is **7.27%** (NASRA, February 2019).



Average Actual Investment Return Trends

as of 1/30/2020

Average Actual Investment Returns					
Plan Type	**1-Year**	**3-Year**	**10-Year**	**Long-Term**	**Assumed Return**
Statewide	6.24%	8.23%	7.29%	8.09%	7.46%
Municipal	-0.05%	5.84%	6.91%	7.74%	7.31%
Local Firefighter	-2.50%	5.51%	6.75%	5.94%	7.52%
District/Supplemental	-1.30%	5.87%	7.61%	6.63%	6.96%
All	-0.85%	5.96%	7.11%	6.58%	7.29%

According to the most recent fiscal year-end 2018 Investment Returns and Assumptions Reports.
**Long-term return is 30 years or longest term available between 11-30 years that plans reported to the PRB.*
All returns are net of fees.

Resources

- Seven free online courses can be found on the PRB website. There have been **over 2300 course completions to date.**
- **PRB Online Courses** include: Actuarial Matters, Benefits Administration, Investments, Governance, Fiduciary Matters, Ethics, Risk Management
- Available at: http://www.prb.state.tx.us/resource-center/trustees-administrators/educational-training-program/
- Login: enter office and name. No password required

www.prb.texas.gov
512-463-1736

APPENDIX W – MARCH 9, 2020 PRESENTATION TO THE HOUSE COMMITTEE ON PENSIONS, INVESTMENTS, AND FINANCIAL SERVICES

Texas Pension Review Board

House Committee on Pensions, Investments
& Financial Services

March 9, 2020

PENSION REVIEW BOARD

About the Pension Review Board

- **Mission**: to provide the State of Texas with the necessary information and recommendations to help ensure that Texas public retirement systems are properly managed and actuarially sound
- **System Overview:** oversees 347 public retirement systems (100 actuarially funded defined benefit; 166 defined contribution; 81 volunteer firefighter) and total net assets of over $282 billion dollars.
- **Board Composition:** Composed of seven governor-appointed members:
  - three members with a background in securities investment, pension administration, or pension law;
  - one member who is an actuary;
  - one member who is an expert in governmental finance;
  - one active member of a public retirement system; and
  - one retired member of a public retirement system.

Pension Review Board

Implementation of Legislation:

SB 2224 and SB 322

PENSION REVIEW BOARD

SB 2224: Funding Policy

- A funding policy is a statement of the guiding principles and strategies a retirement system will use to ensure the funding of promised benefits.
- The Government Finance Officers Association (GFOA) **recommends that every state and local government** that offers defined benefit pensions **formally adopt a funding policy** that provides **reasonable assurance** that the cost of those benefits will be funded in an equitable and sustainable manner.

Pension Review Board

SB 2224: Funding Policy

- The PRB published an interim study on Funding Policies for Fixed-Rate Pension Plans in January 2019.
- The Board subsequently recommended to the legislature that **all plans, including fixed-rate plans, should adopt a funding policy**, in conjunction with their sponsor whenever possible.
- Funding policies should cover the following four components:
  - Clear and concrete **funding objectives**;
  - **Actuarial methods**;
  - A **roadmap** to achieve funding objectives; and
  - Actions that will be taken to **address actual experience** that diverges from assumptions.

Pension Review Board

SB 2224: Funding Policy

- SB 2224 required all systems to adopt a funding policy by **January 1, 2020** and submit a copy to their sponsoring entity and the PRB by **February 1, 2020**.
- The funding policy must detail how the system intends to **achieve or exceed a 100% funding ratio.**
- Since the bill's passage, the PRB has:
  - worked with systems to develop and issue guidance, which provided a summary of industry best practices, recommended elements, and examples
  - at the request of the systems, provided a sample funding policy
  - encouraged systems to work with sponsors to craft their funding policy and notified sponsors of the requirement
- As of March 6, 2020, **82 systems** have submitted funding policies and the agency is working with the remaining systems to help them becoming compliant with the new requirement.
- The funding policies will be discussed at the **March 30, 2020** Actuarial Committee meeting and **June 30, 2020** PRB meeting.

SB 322: Investment Expense Reporting

- Over the past decade, institutional investors including public retirement systems have increased their allocation to alternative investments, which can have opaque expense structures. **SB 322 greatly improves fee transparency and allows for comparison across systems.**
- SB 322 requires systems to include in their CAFRs, by asset class, **all direct and indirect commissions and fees** paid by the system for the sale, purchase, or management of system assets and the **names of their investment managers**.

Pension Review Board

SB 322: Investment Expense Reporting

- Since bill passage, the PRB has:
  - engaged with systems and addressed concerns regarding the format and timing of the first investment expense disclosures
  - published rules to assist with reporting investment expenses which will be **effective March 15, 2020**
    - The rules require systems to report **aggregate** investment management fees and commissions, **including profit share**, separated by **five asset classes.**
    - By rule, systems must report all investment service expenses, including **investment consultant(s), custodial, investment-related legal, and investment research fees**.
  - developed an Asset Class Categorization Guide for additional assistance
  - created a template requested by systems for further assistance
- The first reports with this information will be received in **Spring 2021** for systems with fiscal years ending on September 30, 2020.

PENSION REVIEW BOARD

SB 322: Investment Practices and Performance Evaluation

- Systems with **at least $30M** in assets must select an independent firm to evaluate the appropriateness, adequacy, and effectiveness of the system's investment practices and performance and to provide recommendations for improvement**.**

- The PRB has adopted guidance detailing the **elements of the evaluation** and clarifying what may be considered an **independent firm** to assist plans with completing the evaluation.

Areas of Evaluation:	Frequency for Subsequent Evaluations:
▪ Investment Policy ▪ Asset Allocation ▪ Investment Fees and Commissions ▪ Investment Governance Processes ▪ Investment Manager Selection and Monitoring Process	▪ Systems with at least $100M in assets: once every 3 years ▪ Systems with at least $30M but less than $100M in assets: once every 6 years

- **Deadline**: The first evaluation is due to the PRB by **June 1, 2020**. The PRB will report the results in its Biennial Report to the Governor and Legislature in November 2020.

Pension Review Board

Agency Areas of Focus and Current Trends for Texas Public Retirement Systems

Pension Review Board

Intensive Actuarial Reviews to Date

January 2018	April 2018	October 2018	October 2019
Galveston Police Greenville Fire	Beaumont Fire Marshall Fire	Longview Fire Orange Fire Irving Fire	Odessa Fire Paris Fire

Recommendations:

- Adopt a funding policy that requires payment of an actuarially determined contribution, or at minimum, that fully funds the plan over a finite period of 30 years or less
- Adopt a formal risk/cost-sharing framework with “guardrails” or triggers that reduce uncertainty and guide stakeholders in how benefit and contribution levels will be modified under different economic conditions
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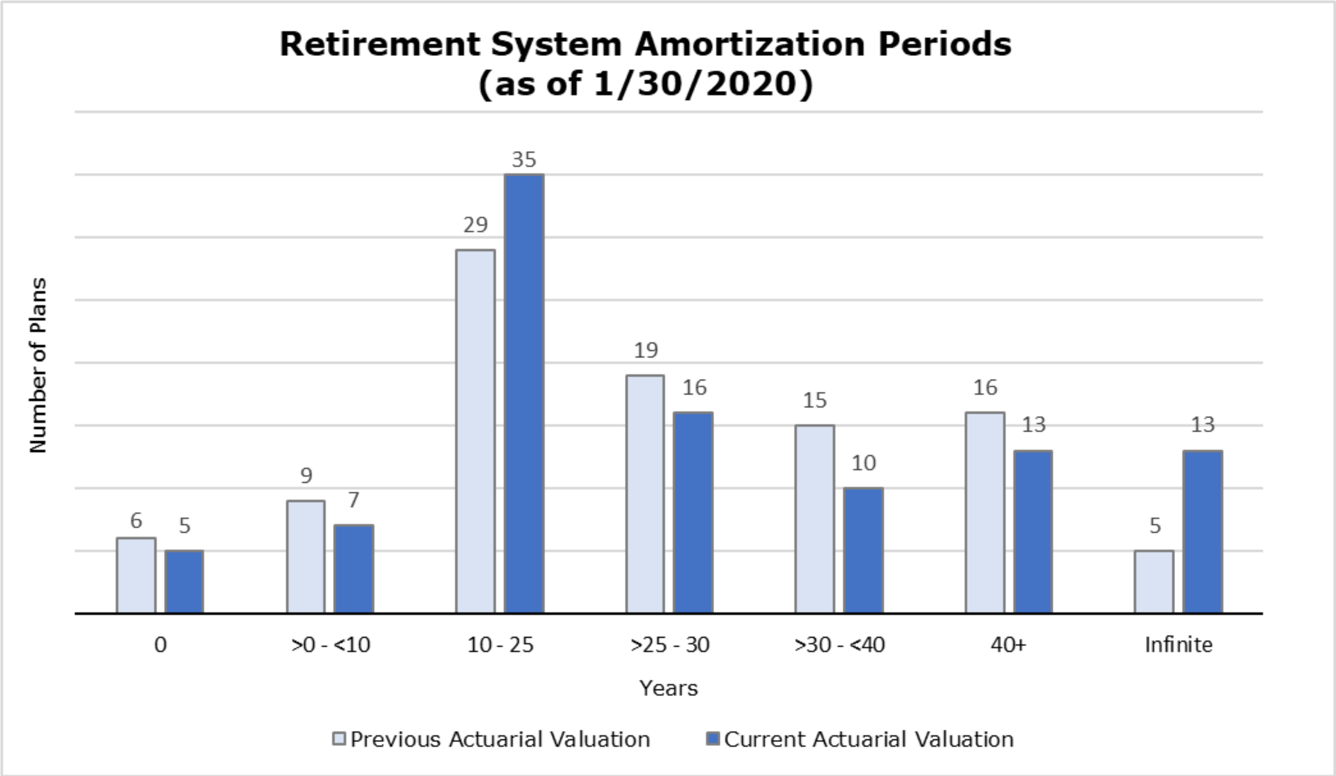

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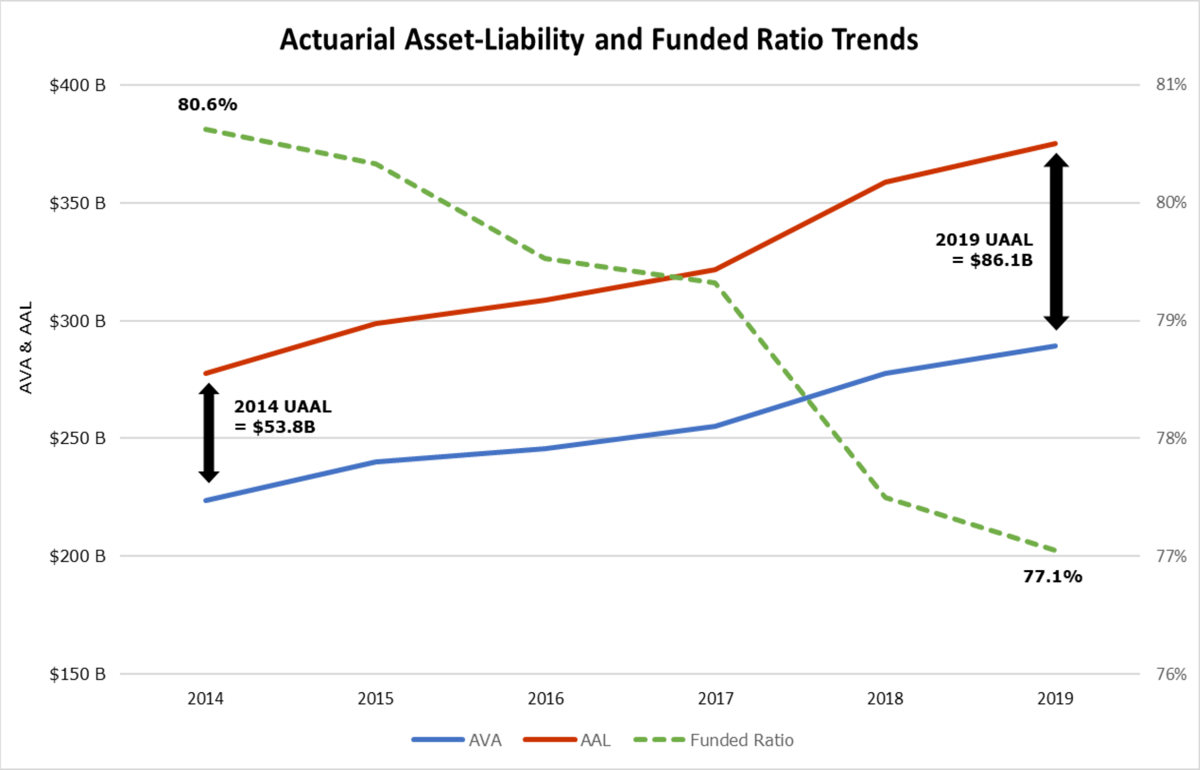

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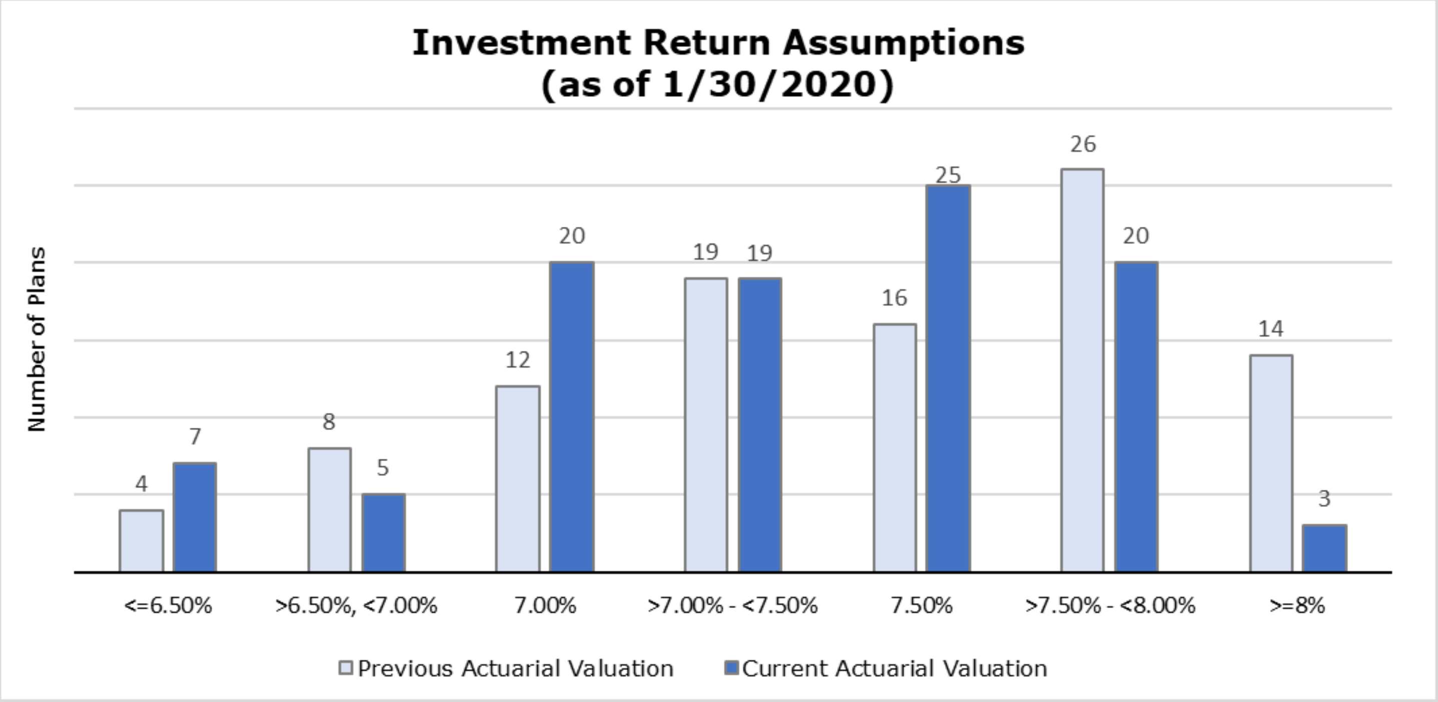

Pension Review Board

Average Actual Investment Return Trends

as of 1/30/2020

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Local Firefighter	-2.50%	5.51%	6.75%	5.94%	7.52%
District/Supplemental	-1.30%	5.87%	7.61%	6.63%	6.96%
All	-0.85%	5.96%	7.11%	6.58%	7.29%

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Minimum Educational Training Program

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