

# Port of Houston Authority Restated Retirement Plan

Report Of An Actuarial Audit

*Final Draft in Accordance with Section 802.1012(f) of the Texas  
Government Code*

April 11, 2022





April 11, 2022

Ms. Shannon Williams  
Chief Audit Executive  
Port Houston  
111 East Loop North  
Houston, Texas 77029

Re: **Final Actuarial Audit Report in Accordance with Section 802.1012(h) of the Texas Government Code**

Dear Ms. Williams:

Gabriel, Roeder, Smith & Company (GRS) is pleased to present this report of an actuarial audit of the August 1, 2021 Actuarial Valuation of the Port of Houston Authority Restated Retirement Plan (the Plan). The following documents are intended to demonstrate that Port Houston (the Port) has complied with Section 802.1012 of the Texas Government Code which requires an actuarial audit of public retirement systems with total assets of at least \$100 million.

The following three documents will constitute the final actuarial audit report, as required by Section 802.1012(h) of the Texas Government Code:

1. This cover letter,
2. Preliminary draft of the actuarial audit report, dated March 11, 2022, and
3. The Port's response to the preliminary draft of the actuarial audit report, dated March 31, 2022

Following the delivery of the preliminary draft of the actuarial audit report to the Port on March 11, 2022, GRS requested a response to the preliminary draft, as required by Section 802.1012(h) of the Texas Government Code. The Port provided a response to the preliminary draft on April 2, 2022.

GRS is pleased to report to the Port that, in our professional opinion, the August 1, 2021 Actuarial Valuation prepared by the retained actuary provides a fair and reasonable assessment of the financial position of the Plan.

The signing actuaries are independent of the plan sponsor. Mr. Falls and Mr. Siblik are Enrolled Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. Finally, each of the undersigned are experienced in performing valuations for large public retirement systems.

Respectfully submitted,  
Gabriel, Roeder, Smith & Company

R. Ryan Falls, FSA, MAAA, EA  
Senior Consultant

Daniel J. Siblik, ASA, MAAA, EA  
Consultant

# Port of Houston Authority Restated Retirement Plan

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*Preliminary Draft in Accordance with Section 802.1012(f) of the Texas  
Government Code*

March 11, 2022



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Ms. Shannon Williams  
Chief Audit Executive  
Port Houston  
111 East Loop North  
Houston, Texas 77029

Dear Ms. Williams:

Gabriel, Roeder, Smith & Company (GRS) is pleased to present this report of an actuarial audit of the August 1, 2021 Actuarial Valuation of the Port of Houston Authority Restated Retirement Plan (the Plan). We are grateful to the Port Houston (the Port) staff and Milliman, the retained actuary, for their cooperation throughout the actuarial audit process.

This actuarial audit involves an independent verification and analysis of the assumptions, procedures, methods, and conclusions used by the retained actuary for the Port, in the actuarial valuation of the Plan as of August 1, 2021, to ensure that the conclusions are reasonable and conform to the appropriate Standards of Practice as promulgated by the Actuarial Standards Board.

GRS is pleased to report to the Port that, in our professional opinion, the August 1, 2021 Actuarial Valuation prepared by the retained actuary provides a fair and reasonable assessment of the financial position of the Plan.

Throughout this report we make a number of suggestions for ways to improve the work product. We hope that the retained actuary and the Port find these items helpful. Thank you for the opportunity to work on this assignment.

The signing actuaries are independent of the plan sponsor. Mr. Falls and Mr. Siblik are Enrolled Actuaries, Members of the American Academy of Actuaries and they meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. Finally, each of the undersigned are experienced in performing valuations for large public retirement systems.

Respectfully submitted,  
Gabriel, Roeder, Smith & Company

A handwritten signature in black ink that reads "R. Ryan Falls". The signature is written in a cursive, flowing style.

R. Ryan Falls, FSA, MAAA, EA  
Senior Consultant

A handwritten signature in black ink that reads "Daniel Siblik". The signature is written in a cursive, flowing style.

Daniel J. Siblik, ASA, MAAA, EA  
Consultant

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## **SECTION I**

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### **EXECUTIVE SUMMARY**

# Executive Summary

Port Houston (the Port) engaged Gabriel, Roeder, Smith & Company (GRS) to perform an actuarial audit of the August 1, 2021 Actuarial Valuation of the Port of Houston Authority Restated Retirement Plan (the Plan) performed by Milliman, the retained actuary. The project commenced in January of 2022.

The scope of this actuarial audit includes the following:

- Review and analyze the results of the actuarial valuation as of August 1, 2021, including an evaluation of the data used, for reasonableness and consistency as well as a review of the mathematical calculations for completeness and accuracy, based on a detailed review of a representative sample of the current plan participants.
- Evaluate the actuarial cost method and the actuarial asset valuation method in use and whether other methods may be more appropriate for the Plan.
- Review the demographic and economic actuarial assumptions for consistency, reasonableness and compatibility. Such assumptions shall include, but are not limited to: mortality, retirement and separation rates, levels of pay adjustments, rates of investment return, inflation, and disability rates.
- Confirm that the actuarial valuations are performed by qualified actuaries and assess the adherence to Actuarial Standards of Practice (ASOPs) published by the Actuarial Standards Board.

This actuarial audit will satisfy the requirements of Section 802.1012 of the Texas Government Code which requires an actuarial audit of public retirement systems in Texas with total assets of at least \$100 million.

## ***Summary of Findings***

Based on our review, the actuarial valuation, studies, and reports of the Plan are reasonable, used appropriate assumptions, and complied with actuarial guidelines. We offer the following recommendations based on the valuation methods and assumptions used by the retained actuary in the August 1, 2021 actuarial valuation.

## **Actuarial Assumptions**

- At the next experience study, we recommend that the retained actuary review the impact of service on a participant's earnings progression over their career. We agree that the results based on age do appear reasonable, but the retained actuary may find that increases align even better with service and not pay.
- In order to minimize actuarial gains/losses generated by the key demographic assumptions, we recommend that the retained actuary explore the sources of the demographic gains/losses and consider an amount-weighted approach during the next actuarial experience study.



### **Actuarial Methods and Funding Policy**

We believe the Actuarial Cost Method and the Asset Valuation Method used by the retained actuary are reasonable for this purpose and appropriately applied in the August 1, 2021 actuarial valuation. We applaud the efforts of the Port to fund the normal cost even though the Plan has reached an over-funded status, and not taking any type of credit to lessen the funding contribution.

### **Actuarial Valuation Results**

We believe the Actuarial Cost Method and the Asset Valuation Method used by the retained actuary are reasonable for this purpose and appropriately applied in the August 1, 2021 actuarial valuation.

### **Content of Valuation Report**

In general, the actuarial valuation report complied with the applicable Actuarial Standards of Practice. In order to improve the ability of the report to communicate the assumptions, methods and plan provisions incorporated into the August 1, 2021 actuarial valuation, we recommend that the retained actuary incorporate the noted enhancements in future actuarial valuation reports.



## **SECTION II**

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### **GENERAL ACTUARIAL AUDIT PROCEDURE**

## General Actuarial Audit Procedure

At the commencement of this engagement, GRS requested the information necessary to thoroughly review the work product of the retained actuary. Specifically, GRS received and reviewed the following items:

- Actuarial valuation report as of August 1, 2021,
- The most recent experience study dated July 28, 2020,
- A full set of census data for plan participants and beneficiaries as of August 1, 2021,
- The Plan's Statement of Investment Objectives and Policy, adopted July 20, 2021,
- Port of Houston Authority Restated Retirement Plan, amended and restated effective as of October 24, 2017,
- Summary Plan Description (SPD), dated December 4, 2017, and
- A summary of liability calculations from the retained actuary for a sampling of 28 plan participants as of August 1, 2021.

In performing our review, we:

- Reviewed the plan document and the SPD to understand the benefits provided by the Plan,
- Reviewed the appropriateness of the actuarial assumptions and methods,
- Reviewed actuarial valuation reports, and
- Reviewed the detailed liability calculation of the 28 sample lives to ensure that the calculations were consistent with the stated plan provisions, actuarial methods and assumptions.

The actuarial audit findings, which follow, are based on our review of this information and subsequent correspondence with the retained actuary for clarification and further documentation.

### ***Key Actuarial Concepts***

An actuarial valuation is a detailed statistical simulation of the future operation of a retirement plan using the set of actuarial assumptions adopted by the plan sponsor. It is designed to simulate all of the dynamics of such a retirement plan for each current participant of the plan, including:

- Accrual of future service,
- Changes in compensation,
- Leaving the plan through retirement, disability, withdrawal, or death, and
- Determination of and payment of benefits from the plan.

This simulated dynamic is applied to each active member in the plan and results in a set of expected future benefit payments for that member. Discounting those future payments for the likelihood of survival at the assumed rate of investment return produces the Total Present Value of Plan Benefits (TPV) for that participant. The actuarial cost method will allocate this TPV between the participant's past service (actuarial accrued liability) and future service (future normal costs).



We believe that an actuarial audit should focus not on finding differences in actuarial processes and procedures utilized by the retained actuary and the auditing actuary but rather on identifying and suggesting any possible improvements to the process and procedures utilized by the Port's retained actuary. In performing this actuarial audit, we attempted to limit our discussions regarding differences in opinion and focus our attention on the accuracy of the calculations of the liability and costs, completeness and reliability of reporting, and compliance with the Actuarial Standards of Practice that apply to the work performed by the Port's retained actuary.

These key actuarial concepts will be discussed in more detail throughout this report.

### ***Actuarial Qualifications***

The August 1, 2021 actuarial valuation report for the Plan was signed by Mr. Jake Pringle, EA, MAAA and Ms. Katherine Pitzinger, ASA, EA, MAAA and the report clearly states that the signing actuaries meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained within.



## **SECTION III**

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### **ACTUARIAL ASSUMPTIONS**

# Actuarial Assumptions

## Overview

For any pension plan, actuarial assumptions are selected that are intended to provide reasonable estimates of future expected events, such as retirement, turnover, and mortality. These assumptions, along with an actuarial cost method, the employee census data, and the plan's provisions are used to determine the actuarial liabilities and overall actuarially determined funding requirements for the plan. The true cost to the plan over time will be the actual benefit payments and expenses required by the plan's provisions for the participant group under the plan. To the extent the actual experience deviates from the assumptions, experience gains and losses will occur. These gains (losses) then serve to reduce (increase) future actuarially determined contributions and increase (reduce) the funded ratio. The actuarial assumptions should be individually reasonable and consistent in the aggregate, and should be reviewed periodically to ensure that they remain appropriate.

The Actuarial Standards Board ("ASB") provides guidance on establishing actuarial assumptions for a retirement program through the following Actuarial Standards of Practices (ASOP):

- (1) ASOP No. 4, *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*
- (2) ASOP No. 23, *Data Quality*
- (3) ASOP No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*
- (4) ASOP No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*
- (5) ASOP No. 41, *Actuarial Communications*
- (6) ASOP No. 44, *Selection and Use of Asset Valuation Methods for Pension Valuations*
- (7) ASOP No. 51, *Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions*
- (8) ASOP No. 56, *Modeling*

We generally reviewed the application of the ASOPs applicable on the valuation date of the August 1, 2021 actuarial valuation report. Subsequent changes to the ASOPs will have to be reflected in future actuarial valuation reports.

The actuarial valuation report for the Plan contains descriptions of the actuarial assumptions which were used in the actuarial valuation as of August 1, 2021. Additionally, the retained actuary issued a letter summarizing the actuarial experience study, dated July 28, 2020. We conducted a thorough review of these documents in order to assess the reasonableness of the assumptions used in the actuarial valuation.

Actuarial assumptions for the valuation of retirement programs are of two types: (i) demographic assumptions, and (ii) economic assumptions. We have assessed the reasonableness of both types of assumptions as part of this actuarial audit.

## ***Demographic Assumptions***

### **General**

These assumptions simulate the movement of participants into and out of plan coverage and between status types. Key demographic assumptions are:



- turnover among active participants,
- retirement patterns among active participants, and
- healthy retiree mortality.

In addition, there are a number of other demographic assumptions with less substantial impact on the results of the process, such as:

- disability incidence and mortality among disabled benefit recipients,
- mortality among active participants,
- percent of active participants who are married and the relationship of the ages of participants and spouses, and
- benefit elections upon retirement or termination.

Actuarial Standards of Practice (ASOP) No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*, applies to actuaries when they are selecting demographic assumptions. In accordance with ASOP No. 35, an actuary should identify the types of demographic assumptions to use for a specific measurement. In doing so, the actuary should determine the following:

- a. The purpose and nature of the measurement;
- b. The plan provisions or benefits and factors that will affect the timing and value of any potential benefit payments;
- c. The characteristics of the obligation to be measured (such as measurement period, pattern of plan payments over time, open or closed group, and volatility);
- d. The contingencies that give rise to benefits or result in loss of benefits;
- e. The significance of each assumption; and
- f. The characteristics of the covered group.

Not every contingency requires a separate assumption. For example, for a plan that is expected to provide benefits of equal value to employees who voluntarily terminate employment, become disabled, or retire, the actuary may use an assumption that reflects some or all of the above contingencies in combination rather than selecting a separate assumption for each.

Demographic assumptions for a retirement plan are normally established by statistical studies of recent actual experience, called experience studies. Such studies underlie the assumptions used in the valuations.

Once it is determined whether or not an assumption needs adjustment, setting the new assumption depends upon the extent to which the current experience is an indicator of the long-term future. The measurement of experience is normally affected by simply counting occurrences of an event. For example, in reviewing retirement patterns, an actuary might count the number of actual retirees among males aged 50 with 20 years of service. These retirements would be compared against the number of total people in that group to generate a raw rate of retirement for that group.

- Full credibility may be given to the current experience. Under this approach the new assumptions are set very close to recent experience.
- Alternatively, the recent experience might be given only partial credibility. Thus, the new assumptions may be set by blending the recent experience with the prior assumption.



- If recent experience is believed to be atypical of the future, such knowledge is taken into account.
- Finally, it may be determined that the size of the plan does not provide a large enough sample to make the data credible. In such cases, the experience of the plan may be disregarded and the assumption is set based upon industry standards for similar groups.

### **Experience Study Report**

The retained actuary issued a letter summarizing the most recent actuarial experience study. The letter, dated July 28, 2020, states the current and proposed assumptions that the retained actuary recommends changing as well as the impact of the changes on the actuarial valuation. It appears that this letter satisfies the Actuarial Experience Study requirements of Section 802.1014 of the Texas Government Code.

ASOP No. 41, *Actuarial Communications*, requires that the methods, procedures, assumptions, data, and other information required to complete the work be included in all Actuarial Communications. We feel that the information provided in the experience study report meets the requirements of this ASOP.

This experience study showed the exposure, the current and proposed decrement rates, and the expected results under the present and proposed decrement rates in a single table. This was helpful in showing how the results were determined.

This type of presentation that the retained actuary used has several advantages:

- (1) A reader can judge if the “exposure” is approximately correct. This exposure number is fundamental to the entire process, and we believe that it should be shown. For a five year study, for example, each person is exposed once each year, so the exposure at each age should be similar to about five times the number of participants in the current valuation.
- (2) The relative number of actual decrements and exposures illustrates the credibility of the underlying experience to the reader of the experience study report. For example, the age 20-24 row in the example chart indicates that there was only one withdrawal for those ages over the five-year experience period. This would not be sufficient experience to make significant changes to this assumption.
- (3) The presentation allows verification that the “expected” figures in the experience study are derived from the assumption rates being used in the valuation.
- (4) It was easy to see if the proposed new rates match the final assumptions, and the assumptions used in the valuation reports.

The recommended demographic assumptions resulting from the most recent actuarial experience study were “headcount-weighted” which is a reasonable procedure. In order to enhance future experience studies, the retained actuary may want to also review the plan experience based on an “amount-weighted” approach. An amount-weighted analysis will generally use amounts such as benefits, pay, or liabilities to complete the analysis. For the retirement assumption, selecting an assumption based on a headcount-weighting is consistent with estimating the expected number of retirements. However, selecting an assumption based on amount-weighting is consistent with minimizing gains and losses associated with expected retirements. By weighting the data by each employee’s pay, more weight is given to members who have higher compensation (and thus have larger liabilities). The amount-weighted procedure can also be applied to the mortality, termination and salary experience by applying weights associated with benefits, pay or liabilities.

In order to minimize actuarial gains/losses generated by the key demographic assumptions, we recommend that the retained actuary explore the sources of the demographic gains/losses and consider an amount-weighted approach during the next actuarial experience study.

### **Observations on Assumptions**

Given the amount of data included in the experience study report, and how it was presented according to the method described above, it was not difficult to see how the retained actuary arrived at the proposed demographic assumptions for the Plan. The experience study had expanded information when compared to the prior experience study and this expanded information not only made the report more complete, but helped better satisfy the appropriate ASOPs.

Overall, it appears that the current demographic assumptions are reasonable. Below, we offer general observations and considerations for the retained actuary based on our experiences with similar plans.

**Retirement** –The rates at which participants are assumed to retire are now based not only on the participant’s age but also on the amount of service earned (30 years or less). The experience study



showed that rates of retirement had some correlation to a participant's service. We agree with the approach that the retained actuary took in analyzing retirement patterns in connection with age and service and increasing retirement rates as certain relevant ages (such as Rule of 85). The resulting retirement rates seem reasonable.

**Turnover** – The rates at which participants are assumed to withdraw (or turnover) are now based on the amount of service a participant has earned as opposed to being based solely on the participant's age as they were in the previous experience study. We agree with this approach and the updated withdrawal assumptions seem reasonable.

**Healthy Annuitant Mortality** – The most important demographic assumption is post-retirement mortality because this assumption is a predictor of how long pension payments will be made. The current assumption for healthy annuitant mortality is based on the Pri-2012 mortality tables, with "collar adjustments" separately applied to the hourly and salaried participants, and with mortality improvements projected indefinitely into the future (or "fully generational") using the MP-2020 mortality improvement scale. The retained actuary notes that the size of the plan does not lend itself to the development of a custom mortality table and, like many sponsors, adopting the most current applicable mortality table that aligns with the plan makes sense. The retained actuary is using the recently-released private sector tables. This is appropriate for this purpose.

**Disability Incidence and Mortality** – Very little retirement plan experience generally exists in order to set a reasonable assumption based on actual retirement plan experience. The current assumptions for disability incidence and mortality seem reasonable.

## ***Economic Assumptions***

### **General**

Economic assumptions simulate the impact of economic forces on the amounts and values of future benefits. Key economic assumptions are the assumed rate of investment return and assumed rates of future salary increase. All economic assumptions are built upon an underlying inflation assumption.

ASOP No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*, applies to actuaries when they are selecting economic assumptions. ASOP No. 27 states that each economic assumption selected by the actuary should be reasonable. For this purpose, an assumption is reasonable if it has the following characteristics:

- a. It is appropriate for the purpose of the measurement;
- b. It reflects the actuary's professional judgment;
- c. It takes into account historical and current economic data that is relevant as of the measurement date;
- d. It reflects the actuary's estimate of future experience, the actuary's observation of the estimates inherent in market data, or a combination thereof; and
- e. It has no significant bias (i.e., it is not significantly optimistic or pessimistic), except when provisions for adverse deviation or plan provisions that are difficult to measure are included and disclosed, or when alternative assumptions are used for the assessment of risk.

Additionally, ASOP No. 27 states that communications regarding actuarial reports subject to this standard should contain the following:



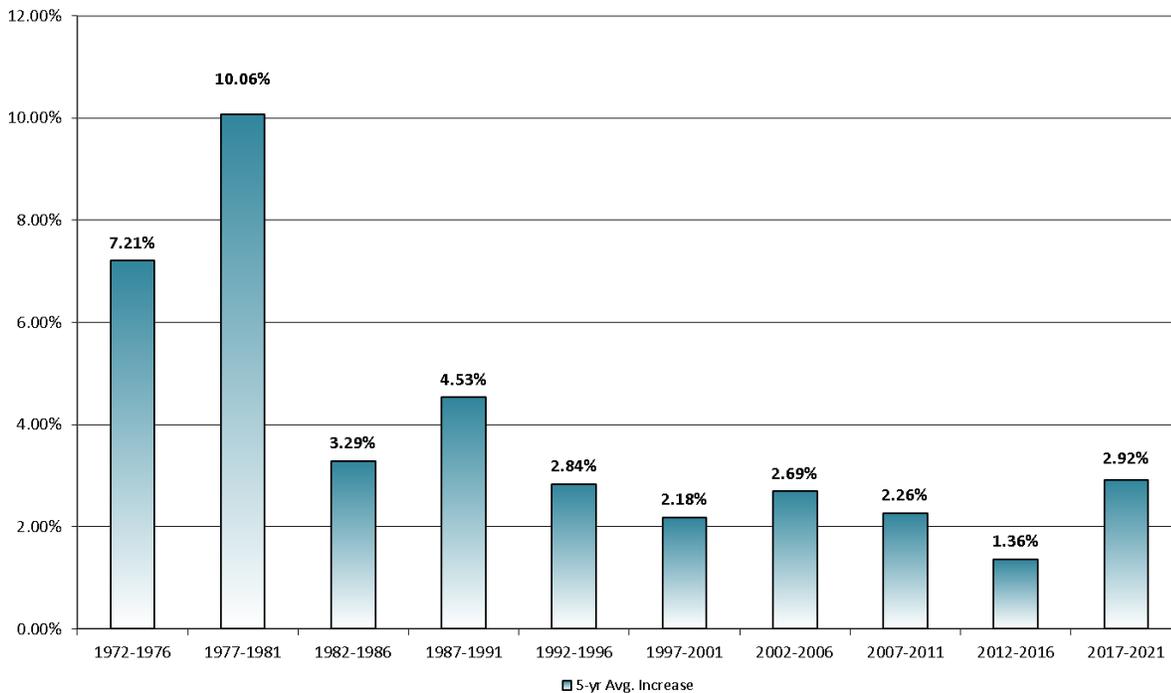
- a. A description of each significant assumption used in the measurement and whether the assumption represents an estimate of future experience, and
- b. A description of the information and analysis used in selecting each economic assumption that has a significant effect on the measurement.

**Inflation**

By “inflation,” we mean price inflation, as measured by annual increases in the Consumer Price Index (CPI). This inflation assumption underlies most of the other economic assumptions. It primarily impacts investment return, salary increases, and payroll growth. The current annual inflation assumption for the Plan is 2.20%.

The following chart shows the average annual inflation in each of the ten consecutive five-year periods over the last fifty years:

**Average Annual Inflation  
CPI-U, Five-Year Averages (December 31),**



Source: Bureau of Labor Statistics, CPI-U, all items, not seasonally adjusted

As you can see, inflation has been relatively low over the last thirty years.

Almost all investment consulting firms, in setting their capital market assumptions, currently assume that inflation will be less than 3.00%. We examined the 2021 capital market assumption sets for twelve investment consulting firms. The average assumption for inflation was approximately 2.20%, with a range of 1.92% to 2.40%.

In the Social Security Administration’s 2021 Trustees Report, the Office of the Chief Actuary is projecting a long-term average annual inflation rate of 2.4% under the intermediate cost assumption (this is unchanged from the 2020 report. (The low-cost assumption was 1.8% and the high-cost assumption was 3.0%.)



The Philadelphia Federal Reserve conducts a quarterly survey of the Society of Professional Forecasters. Their most recent forecast (fourth quarter of 2021) predicts inflation over the next ten years (including 2021) will average 2.55% per year. This is an increase over prior survey forecasts and reflects the inflation that has occurred in 2021 and the higher than normal inflation expected in the near term.

We consider the current 2.20% assumption to be reasonable.

### **Administrative and Investment-Related Expenses**

The contributions to a retirement plan and the accumulated investment earnings on these contributions must be sufficient to pay the plan benefits as well as the plan expenses. As a result, an important component of the actuary's recommended contribution each year is the provision made for paying the plan's expenses (both administrative and investment-related expenses).

Plan expenses can be explicitly included in the recommended contribution as a direct increase to the annual normal cost. Alternatively, plan expenses can be implicitly included by developing an investment return assumption as a net return after payment of plan expenses. The current procedures for the Plan's recommended contribution include:

1. an explicit assumption of \$500,000 for administrative expenses which is added to the normal cost, and
2. an implicit expense assumption for investment-related expenses (i.e., the Plan investments are expected to return 6.25% after paying the investment-related expenses).

The preliminary trust statements provided to the retained actuary for the August 1, 2021 actuarial valuation indicated that the plan incurred \$198,381 in administrative fees. Based on these preliminary amounts, the retained actuary's provision for Plan expenses of \$500,000 seems somewhat high. However, it is better to be conservative in this assumption than to underestimate these amounts, although the level of conservatism should be reasonable. If there is a reason the expenses are assumed to increase above the current level, it may be helpful to comment on that reasoning.

The following section will analyze how the investment-related expenses are incorporated into the investment return assumption.

### **Investment Return**

The investment return assumption is one of the principal assumptions in any actuarial valuation. It is used to discount future expected benefit payments to the valuation date to determine the liabilities of the retirement plan. Even a small change to this assumption can produce significant changes to the liabilities and contribution rates. The current assumption assumes inflation of 2.20% per annum plus an annual real rate of return of 4.05%, net of investment-related fees paid from the trust.

For purposes of budgeting contributions and measuring liabilities for public employee retirement systems, the assumed rate of investment return is used as the discount rate to determine the present value of a system's pension obligations. For most valuations, an actuarial investment return assumption based on expected future experience is a single estimate for all years and, therefore, implicitly assumes that returns above and below expectations will average out over time. In other words, the expected risk premium is reflected in the assumed rate of investment return in advance of being earned, while the investment risk (i.e., volatility) is not reflected until actual experience emerges with each valuation.



The analysis of the investment return assumption in this report is based on forward-looking measures of expected investment return outcomes for the asset classes in the Plan's current investment policy. For purposes of this analysis, we have analyzed the Plan's investment policy with the capital market assumptions from twelve nationally recognized investment firms.

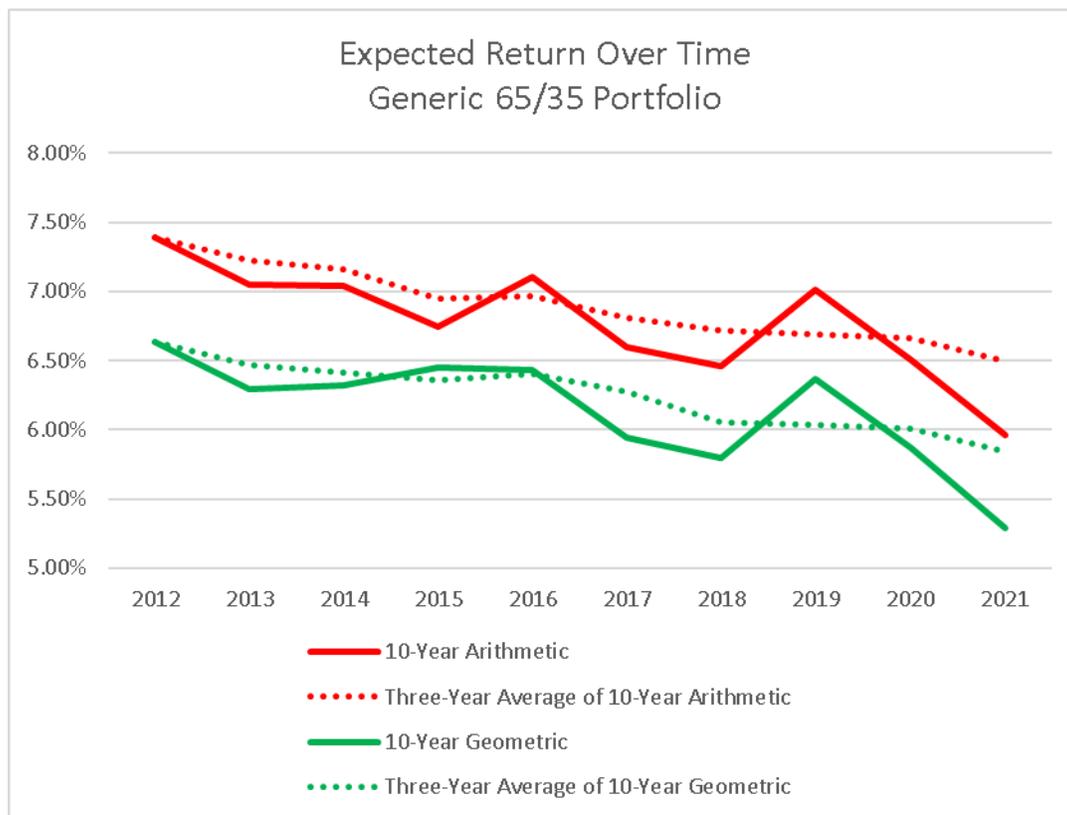
Our analysis is based on the GRS 2021 Capital Market Assumption Modeler (CMAM). Because GRS is a benefits consulting firm and does not develop or maintain its own capital market expectations, we request and monitor forward-looking expectations developed by several major investment firms. We update our CMAM on an annual basis. The capital market assumptions in the 2021 CMAM are from the following investment firms (in alphabetical order): Aon Hewitt, Blackrock, BNY Mellon, Callan, Cambridge, JPMorgan, Meketa, Mercer, NEPC, RVK, Verus, and Wilshire. We believe that the benefit of performing this analysis using multiple investment firms is to recognize the uncertain nature of the items affecting the selection of the investment return assumption. While there may be differences in asset classes, investment horizons, inflation assumptions, treatment of investment expenses, excess manager performance (i.e., alpha), etc., we have attempted to align the various assumption sets from the different investment firms to be as consistent as possible. In some cases, we have made minor adjustments or assumptions to align the various assumptions sets with our model.

Each investment firm provided capital market assumptions over an investment horizon of approximately 10 years. Although investment firms often refer to this period as "short-term" it is important to remember that 10 years is actually a very long time. Therefore, returns during the next ten years will affect the Plan's funding materially. A subset of six investment firms provided capital market expectations over a longer horizon, varying between 20 and 30 years. For purposes of this report, the analysis is generally based on the 10-year expectations provided by the investment firms.

In general, our understanding is that the methodology for developing these capital market expectations is forward-looking, not purely backward-looking. Over the years, we have observed a general decreasing trend in capital market expectations. However, we have also observed that some of the investment firms' assumption sets are dependent on the market conditions at the time they are developed and consequently may be sensitive to short-term market fluctuations. Some expectations are contrarian – meaning that when the market is high, future expectations are lowered and when the market is low, future expectations are raised. The amount of these fluctuations as they appear in the year-to-year capital market assumptions varies between the various investment firms.

Each year, the GRS CMAM reflects the most up-to-date information at the time the data was collected (typically reflecting the firms' expectations at the beginning of the calendar year). The results of the 2021 survey were generally lower capital market assumptions than 2020 for most asset classes, in some cases substantially lower. This is perhaps due in part to the decrease in bond yields in 2020 to record lows and the high stock market at the end of 2020 (resulting in the contrarian expectation of lower future stock market returns). Looking back to 2019, return expectations were somewhat higher than prior years for some survey participants, perhaps in part due to an increase in bond yields and a decrease in the stock market at the end of 2018. If we consider the three-year average of return expectations, the general decreasing trend is more apparent and the short-term fluctuations are diminished. The chart below illustrates the volatility from year to year from past CMAMs with a generic 65/35 asset allocation. The general declining trend is illustrated with the three-year average of CMAM returns.





To the best of our ability, we have adapted the Plan’s investment policy to fit with the investment firms’ assumptions adjusting for these known differences in assumptions and methodology. The asset classes in the Plan’s investment allocation often do not exactly align with the asset classes of all investment firms in the survey. This may require us to make approximations which can introduce some subjectivity into the process. In the following charts, to the extent possible all returns are net of passive investment expenses and have no assumption for excess manager performance (alpha) in excess of active management fees.

For purposes of this analysis, we have reviewed the Statement of Investment Objectives and Policy for the Plan, adopted July 20, 2021, the Plan’s current target asset allocation is:

Asset Class	Target
Large Cap Domestic Equity	20.0%
Mid Cap Domestic Equity	7.5%
Small Cap Domestic Equity	10.0%
International Equity	7.5%
Fixed Income	35.0%
High Yield Fixed Income	5.0%
Bank Loans	5.0%
Real Estate	5.0%
Global Tactical Asset Allocation (GTAA)	5.0%
<b>Total</b>	<b>100.0%</b>

The arithmetic expected return developed from this asset allocation is shown in the table below. The CMAM begins with the nominal expected return from each Capital Market Assumption (CMA) set (column 2), takes out each CMA’s price inflation assumption (column 3) to arrive at the real return (column 4). We then incorporate the current price inflation assumption of 2.20% (column 5) to get the adjusted nominal



return (column 6). We believe that this is reasonable provided that the current price inflation assumption does not differ materially from the assumptions used by the investment firms. Note that the arithmetic return is in general higher than the median return due to the compounding effect of random returns. In general, the difference between the arithmetic and median return will be larger for larger standard deviation of returns. We have shown the standard deviation of returns as the investment risk in column 7.

The average arithmetic return and standard deviation from the last three years of CMAMs are shown at the bottom of the table for reference.

ASOP No. 27, Section 3.6.2, states that “[d]ue to the uncertain nature of the items for which assumptions are selected, the actuary may consider several different assumptions reasonable for a given measurement. Different actuaries will apply different professional judgment and may choose different reasonable assumptions. As a result, a range of reasonable assumptions may develop, both for an individual actuary and across actuarial practice.” This range of different expectations from the CMAs is evident from the summaries we show from our CMAM.

GRS 2021 CMAM						
Capital Market Assumption Set (CMA)	CMA Expected Nominal Return	CMA Inflation Assumption	Expected Real Return (2)-(3)	Actuary Inflation Assumption	Expected Nominal Return (4)+(5)	Standard Deviation of Expected Return (1-Year)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	4.83%	3.10%	1.73%	2.20%	3.93%	9.58%
2	4.49%	2.21%	2.28%	2.20%	4.48%	10.82%
3	4.61%	2.40%	2.21%	2.20%	4.41%	9.32%
4	4.24%	2.01%	2.23%	2.20%	4.43%	7.95%
5	4.41%	2.00%	2.41%	2.20%	4.61%	9.18%
6	4.60%	2.15%	2.45%	2.20%	4.65%	9.43%
7	4.91%	2.34%	2.57%	2.20%	4.77%	10.39%
8	4.46%	2.00%	2.46%	2.20%	4.66%	9.15%
9	4.47%	2.00%	2.47%	2.20%	4.67%	8.74%
10	4.95%	2.11%	2.85%	2.20%	5.05%	9.72%
11	5.33%	2.01%	3.32%	2.20%	5.52%	9.87%
12	5.80%	1.92%	3.88%	2.20%	6.08%	10.95%
<b>Average</b>	<b>4.76%</b>	<b>2.19%</b>	<b>2.57%</b>	<b>2.20%</b>	<b>4.77%</b>	<b>9.59%</b>
<b>Average from last 3 CMAMs</b>					<b>5.96%</b>	<b>10.75%</b>

The average expected nominal return from column 6 over the last three years is 5.96%. This is the average arithmetic rate of return. Note that the arithmetic rate of return represents the average future expected return which is higher than the median future expected. Accumulating assets and cash flows at the average arithmetic rate of return is expected to produce the average asset amount over time. However, in any given year it is less than 50% likely that the arithmetic average rate of return will be achieved. Moreover, over a period of longer than one year, the realized rate of return is generally computed as a geometric average. Additional analysis is required to adjust to the median (or geometric average) return.

Next, we compare the probabilities of achieving returns over a 10-year horizon. We compute the 40th, 50th, and 60th percentiles of returns as well as the probability of achieving the current assumption of 6.25% over a 10-year horizon. These estimates are based on the assumption that the distribution of returns for the next 10 years is the same each year.



<b>GRS 2021 CMAM</b>				
<b>Capital Market Assumption Set (CMA)</b>	<b>Distribution of 10-Year Average Geometric Net Nominal Return</b>			<b>Probability of exceeding 6.25%</b>
	<b>40th</b>	<b>50th</b>	<b>60th</b>	
(1)	(2)	(3)	(4)	(5)
1	2.73%	3.49%	4.26%	18%
2	3.07%	3.92%	4.79%	25%
3	3.25%	3.99%	4.74%	22%
4	3.50%	4.13%	4.77%	20%
5	3.48%	4.21%	4.95%	24%
6	3.47%	4.22%	4.98%	25%
7	3.44%	4.26%	5.09%	27%
8	3.54%	4.26%	4.99%	25%
9	3.61%	4.30%	5.00%	24%
10	3.83%	4.60%	5.38%	30%
11	4.28%	5.07%	5.85%	35%
12	4.65%	5.52%	6.39%	42%
<b>Average</b>	<b>3.57%</b>	<b>4.33%</b>	<b>5.10%</b>	<b>26%</b>

<b>Average from last 3 CMAMs over 10-year horizon</b>	<b>5.42%</b>
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The 50th percentile return is also related to the geometric average return. The geometric average of a sequence of returns over a number of years is the compound average of those returns over the number of years compounded. As the number of years in the geometric average increase and if the distributions of returns each year are independent and identically distributed, then the geometric average will converge to the median return. The median return may be considered a reasonable rate of return for purposes of the valuation. The average of 50th percentile returns over the past three years is 5.42% per year.

Another source of information is the Public Funds Data website. Based on a sample of 131 of the largest state and local public employee pension plans, the current database (based on the 2021 fiscal year) shows that the median investment return assumed for large statewide public retirement systems in the U.S. is 7.00%, the average investment return assumption is 6.99%, and 90 retirement systems in the sample have an investment return assumption at, or above, 7.00% (the current nominal investment return assumption for the Plan).

The retained actuary indicates in the August 1, 2021 actuarial valuation report that they believe the likely range of investment return over a 20-year horizon would be between 3.92% and 6.71% per annum with a 50% likelihood of earning 5.31% (the retained actuary's best estimate). Based on our assessment, we concur with the retained actuary that the current 6.25% investment return assumption selected by the Port appears to fall within a reasonable range for this assumption. We consider the investment return assumption to be reasonable.

Nothing in this report should be construed as GRS giving investment advice.

### **Earnings Progression**



Generally, assumed rates of pay increase are constructed as the total of three main components:

- Price Inflation – currently 2.20%
- Economic Productivity Increases (base pay increases above price inflation) – The assumption is not separately identified.
- Merit, Promotion, and Longevity – This portion of the salary increase assumption reflects components such as merit and promotional increases as well as “step” increases and longevity pay. This portion of the Plan’s assumption varies based on member’s age and is not related to inflation.

In the context of a typical employer pay scale, pay levels are set for various employment grades. In general, this pay scale is adjusted as follows:

- The inflation and economic productivity assumptions, collectively referred to as wage inflation, reflect the overall increases of the entire pay scale, and
- The Merit, Promotion, and Longevity increase assumption reflects movement of members through the pay scale.

Based on the building block approach outlined above, the earnings progression assumption is based on the sum of the expected pay increases related to inflation plus a component for merit, promotion and longevity. Given the limited amount of data included in the experience study report, it is difficult to comment on the methods used to set the current assumptions for the Plan. Overall, it appears that the current earnings progression assumptions are reasonable.

Additionally, it is our experience that rates of earnings progression are much more correlated to a participant’s years of service than their age. At the next experience study, we recommend that the retained actuary review the impact of service on a participant’s earnings progression.

### **Summary**

With the exception of the investment return assumption, the set of actuarial assumptions and methods, taken in combination, is reasonable and generally established in accordance with ASOP No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*, and ASOP No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*.

We have the following recommendations regarding the actuarial assumptions:

- In order to minimize actuarial gains/losses generated by the key demographic assumptions, we recommend that the retained actuary explore the sources of the demographic gains/losses and consider an amount-weighted approach during the next actuarial experience study.
- At the next experience study, we recommend that the retained actuary review the impact of service on a participant’s earnings progression over their career.

## **SECTION IV**

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### **ACTUARIAL METHODS AND FUNDING POLICY**

# Actuarial Methods and Funding Policy

The ultimate cost of the Plan is equal to the benefits paid plus the expenses related to operating the Plan. This cost is funded through contributions to the Plan plus the investment return on accumulated contributions which are not immediately needed to pay benefits or expenses. The projected level and timing of the contributions needed to fund the ultimate cost are determined by the actuarial assumptions, plan provisions, participant characteristics, investment experience, and the actuarial cost method.

## **Actuarial Cost Methods**

An actuarial cost method is a mathematical process for allocating the dollar amount of the total present value of plan benefits (TPV) between future normal costs and actuarial accrued liability (AAL). The retained actuary uses the Entry Age Normal actuarial cost method (EAN method), characterized by:

- (1) Normal Cost – the level percent of payroll contribution, paid from each participant’s date of hire to date of retirement, which will accumulate enough assets at retirement to fund the participant’s projected benefits from retirement to death.
- (2) Actuarial Accrued Liability – the assets which would have accumulated to date had contributions been made at the level of the normal cost since the date of the first benefit accrual, if all actuarial assumptions had been exactly realized, and there had been no benefit changes.

The EAN method is the most prevalent funding method in the public sector. It is appropriate for the public sector because it produces costs that remain stable as a percentage of payroll over time, resulting in intergenerational equity for taxpayers. Recent Public Fund Surveys show that over 75% of the plans reported using the EAN Method. Therefore, the retained actuary’s stated methods for allocating the liabilities of the Plan are certainly in line with national trends.

We have reviewed the retained actuary’s application of the EAN method and we believe that the method is reasonable and applied in a reasonable manner.

## **Asset Valuation Method**

Market value is a clearly realistic current measure of the fund. Furthermore, using market value in the annual valuation has the advantage of using a value that is the same as the value shown in financial reports. It eliminates the need to explain the use of an asset value other than market value for making decisions regarding contributions and benefit enhancements.

However, the market value of assets can experience significant short-term swings, which can cause large fluctuations in the development of the actuarially determined contributions required to fund the retirement systems. Thus, many systems use an asset valuation method which dampens these short-term volatilities to achieve more stability in the employer contribution. A good asset valuation method places values on a retirement plan’s assets which are related to the current market value, but which will also produce a smoother pattern of costs. ASOP No. 44, *Selection and Use of Asset Valuation Methods for Pension Valuations*, provides a framework for the determination of the actuarial value of assets (AVA), emphasizing that the method should: (1) bear a reasonable relationship to the market value of assets

(MVA), (2) recognize investment gains and losses over an appropriate time period, and (3) avoid systematic bias that would overstate or understate the AVA in comparison to MVA.

The Plan currently uses MVA as the AVA in the annual valuation. We feel that this method is reasonable and is appropriately applied for the valuation.

### ***Funding Policy***

The significant changes in accounting for public employee pension plans have resulted in a renewed focus on formal funding policies for public pension plans. Now, more than ever, public retirement systems need to have a sound, written funding policy to secure member benefits and mitigate the risks to the plan sponsor.

In 2019 Texas Government Code Section 802.2011 required that the governing board of a Texas public retirement system adopt a written funding policy by January 1, 2020. Guidance from the Texas Pension Review Board (PRB) in this requirement stated that a funding policy should include:

1. Clear and concise funding objectives;
2. Actuarial methods;
3. A roadmap to achieve funding objectives; and
4. Actions that will be taken to address actual experience that diverges from assumptions.

In addition to the Texas Pension Review Board funding policy requirements, developing a clear, written funding policy can help decision makers understand the tradeoffs related to reaching specified goals and document the reasoning that underlies the decisions. Through this process, decision-makers can come to a better understanding of the principles and practices that help sustain benefits over the long-term.

The amount of the actuarial accrued liability in excess of the AVA is defined to be the unfunded actuarial accrued liability (UAAL). The total contribution produced by an actuarial cost method is the total of the normal cost and an amount to amortize any UAAL.

Based on our understanding of the Board's funding policy adopted in 1997, a schedule is established for all changes in the UAAL such that the changes will be reflected in the funding policy contribution over a fixed period of 5 to 30 years, depending on the cause of the change (e.g., assumption change, plan modification, etc). Additionally, the amortization of the UAAL cannot be less than the amount necessary to eliminate the UAAL over 30 years. This is a reasonable funding policy as it sets a schedule to fully fund the UAAL.

It is important to note that the Port is not required to adhere strictly to the funding requirements of ERISA, so there are many different methods for determining the recommended contribution each year the Port could consider in consultation with their retained actuary.

The funding policy is paying the normal cost of the plan (with interest) without taking a credit for any overfunded liability amounts or amortizations. This is a prudent funding approach and sets the plan up to sustain any potential losses better in the future.

As we stated earlier, our understanding of the current funding policy is reasonable. We did not receive a formal copy of a funding policy submitted to the Texas Pension Review Board for analysis, however.

### ***Summary***



We believe the Actuarial Cost Method and the Asset Valuation Method used by the retained actuary are reasonable for this purpose and appropriately applied in the August 1, 2021 actuarial valuation.



## **SECTION V**

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### **ACTUARIAL VALUATION RESULTS**

# Actuarial Valuation Results

## **Data**

We received copies of the raw data files provided by the Port to the retained actuary containing data on each participant and benefit recipient covered under the Plan. We also received copies of the final data files used by the retained actuary to prepare the actuarial valuation.

We found the data used by the retained actuary to produce the 2021 actuarial valuation to be a reasonable representation of the original raw data provided by the Port.

We have one suggestion regarding the member data. The average active pay amounts on the Summary of Results tab (“Summary 1”) and Exhibit 1 (“Page 1”) do not match. The amount on Summary 1 is \$97,244 compared to the amount on Page 1 which is \$95,745. It would be helpful to know if certain pay is included in one and not the other or if there is some other reason the amounts differ as to not cause confusion to the reader.

## **Benefits**

All employers are different from each other and every employer’s retirement plan is different. Each one has a set of workforce and financial needs that dictate the type of retirement benefit that is most appropriate for their employees. Additionally, the amount of resources available to allocate to the retirement plan will dictate the level of benefits provided by the retirement plan. Regardless of the reasons for the benefit design, the employer must understand the liability and contribution requirements associated with the benefits promised. As a result, the actuarial valuation and the resulting funding policy contribution must properly reflect the benefit structure of the retirement plan.

In general, the benefits promised by the Plan were reasonably incorporated in the actuarial valuation of the Plan.

## **Actuarial Valuation Results**

As part of our review, GRS requested certain sample participant calculations from the retained actuary to help ensure that the retained actuary valued the correct benefit levels, used the correct assumptions, and calculated the liabilities correctly on an individual basis.

Generally accepted actuarial standards and practices provide actuaries with the basic mathematics and framework for calculating the actuarial results. When it comes to applying those actuarial standards to complex calculations, differences may exist due to individual opinion on the best way to make those complex calculations. This may lead to differences in the calculated results, but these differences should not be material.

**Active Participants.** At the onset of the review, we requested that the retained actuary provide liability calculations for a sample of 10 active participants. The retained actuary provided high-level liability calculation results for the requested active participants.

Based on our review, the liability determination of active participants was reasonable and appropriately determined.



***Deferred Vested Participants.*** At the onset of the review, we requested that the retained actuary provide the liability calculations for a sample of eight deferred vested participants. The retained actuary provided the liability calculation results for the requested deferred vested participants.

Based on our review, the liability determination of deferred vested participants was reasonable and consistent with the stated assumptions and methods.

**Annuitants.** At the onset of the review, we requested that the retained actuary provide the liability calculations for a sample of 10 deferred vested participants. The retained actuary provided the liability calculation results for the requested annuitants.

Based on our review, the liability determination of annuitants was reasonable and consistent with the stated assumptions and methods.

### **Summary**

We believe that the valuation results are developed in a reasonable manner and we do not have any comments or recommendations regarding the retained actuary's development of the actuarial valuation results.

## **SECTION VI**

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### **CONTENT OF THE VALUATION REPORT**

## Content of the Valuation Report

ASOP No. 4, *Measuring Pension Obligations and Determining Pension Plan Costs*, and ASOP No. 41, *Actuarial Communications*, provide guidance for measuring pension obligations and communicating the results. These Standards list specific elements to be included, either directly or by references to prior communication, in pension actuarial communications. The pertinent items that should be included in an actuarial valuation report on a pension plan should include:

- An identification of the intended users of the report.
- A statement as to the effective date of the calculations, the date as of which the participant and financial information were compiled, and the sources and adequacy of such information.
- An outline of the benefits being discussed or valued and of any significant benefits not included in the actuarial determinations.
- A summary of the participant information, separated into significant categories such as active, retired, and terminated with future benefits payable. Actuaries are encouraged to include a detailed display of the characteristics of each category and reconciliation with prior reported data.
- A description of the actuarial assumptions, the cost method and the asset valuation method used. Changes in assumptions and methods from those used in previous communications should be stated and their effects noted. If the actuary expects that the long-term trend of costs resulting from the continued use of present assumptions and methods would result in a significantly increased or decreased cost basis, this should also be communicated.
- A summary of asset information and derivation of the actuarial value of assets. Actuaries are encouraged to include an asset summary by category of investment and reconciliation with prior reported assets showing total contributions, benefits, investment return, and any other reconciliation items.
- A statement of the findings, conclusions, or recommendations necessary to satisfy the purpose of the communication and a summary of the actuarial determinations upon which these are based. The communication should include applicable actuarial information regarding financial reporting. Actuaries are encouraged to include derivation of the items underlying these actuarial determinations.
- A disclosure of any facts which, if not disclosed, might reasonably be expected to lead to an incomplete understanding of the communication. Additional disclosures include what cautions regarding possible uncertainty or risk in any results should be included, and any possible conflicts of interest.

We have reviewed the actuarial valuation report prepared by the retained actuary and we have noted a few modifications to the report that would allow the report to adhere more closely with ASOP Nos. 4 and 41.

For purposes of this actuarial audit, we received a copy of the Port of Houston Authority Restated Retirement Plan August 1, 2021 Actuarial Valuation Report, dated October 18, 2021 (hereafter, referred to as “the report”). This valuation report outlines how the Plan would comply with the requirements of ERISA in effect in 2007. Additionally, we received a copy of the attached cover letter to the valuation report, also dated October 18, 2021 (hereafter, referred to as “the cover letter”).



## **Retained Actuary's Statement on Prescribed Investment Return Assumption**

The Port's retained actuary stated in the report that there is a 50% likelihood of earning 5.31% and a 25% likelihood of earning 6.71% (as compared to the 6.25% assumed rate of return) on Plan assets based on their model and capital market assumptions. We did not see an explicit statement from the retained actuary disclosing whether or not the assumed 6.25% was considered reasonable. There is a comment in Section G that the valuation is based on one set of reasonable assumptions. Under ASOP No. 27, Section 4.2. a., when the assumed rate of return (or any other economic assumption) is set by another party such as the plan sponsor, if in the actuary's professional judgment the assumption significantly conflicts with what would be reasonable then the actuary must disclose that opinion. Absence of such a disclosure is generally interpreted to mean that the actuary believes the assumption to be reasonable.

The definition of a reasonable actuarial assumption under ASOP No. 27 changed in 2013. The new definition of reasonable is generally considered to be stricter than the previous definition of reasonable which was that the assumption must fall within a best estimate range normally considered to be between the 25th and 75th percentiles of outcomes. We encourage the retained actuary to closely consider their definition of "best estimate" under the current version of ASOP No. 27 for future actuarial valuations.

## **Applicability of ERISA to the Port and the Plan**

As stated by the retained actuary in the cover letter, the Plan is not subject to the contribution requirements of ERISA, nor the contribution limitations of the IRC, since the Port is considered a governmental entity. As a result, the Port has the ability to set its own funding policy. Accordingly, the Port adopted a slightly modified version of the minimum funding requirements of ERISA for their funding policy. However, a significant portion of the report is dedicated to: (i) developing a minimum funding requirement that differs from the funding policy contribution, and (ii) calculating a maximum tax deductible contribution which is not applicable to the Port. We made the same observations in our prior actuarial audit of the Plan, but we feel that the observations are important enough to reiterate.

We have a number of recommendations to improve the communication of the valuation report that will make the report more appropriate for the intended purpose of communicating the funding policy contribution and the funded status of the Plan.

- (1) Currently, the cover letter includes a clear statement that the contribution requirements of IRC and ERISA have no application to the Port and the Plan. However, this statement never appears in the actual report. At a minimum, we strongly recommend that a similar statement be included in the valuation report in addition to the cover letter.
- (2) All references to Maximum Deductible Contributions and IRC Section 404 should be removed from the report. Tax deductibility is not applicable to the Port and the inclusion of this information could be misleading to the reader of the valuation report. This would include *Appendix D – Description of the Maximum Deductible Contribution Limit*.
- (3) *Appendix C – General Rules* outlines additional requirements of ERISA that are not applicable to the Port. We recommend modifying this Appendix to outline the funding policy for the Plan so that the funding policy is documented within the valuation report.

As we stated previously, the funding policy is reasonable. These recommended modifications will allow the retained actuary to directly communicate the funding policy contribution and the funded status of the Plan.



**Actuarial Standard of Practice No. 56, Modeling (ASOP 56)** – ASOP 56 provides guidance to actuaries when performing actuarial services with respect to designing, developing, selecting, modifying, using, reviewing, or evaluating models. This Standard requires certain disclosures by the retained actuary as part of an actuarial valuation of the pension plan.

ASOP 56 also requires the actuary to disclose: (1) material inconsistencies, if any, among assumptions, and known reasons for such inconsistencies; (2) unreasonable output resulting from the aggregation of assumptions, if material; and (3) material limitations and known weaknesses.

In order to better comply with ASOP 56, we recommend that the retained actuary include a comment that addresses the approach used for the modelling of any future results. Many actuaries state that proprietary valuation modeling and related software was used and has the capability to provide results consistent with the purposes of such valuation and has no known limitations or weaknesses and that tests were done to confirm this.

#### **Exhibit 5: Estimated Investment Return on Market Value of Assets**

Exhibit 5 estimates the rate of return on the market value of assets during the prior year using a very common approach that assumes all cash flows occur in the middle of the plan year. The estimated rate of return on plan assets can be used for many purposes by the plan sponsor (e.g., evaluation of investment advisors, comparison to benchmarks, etc.). In the context of the actuarial valuation report, this estimate of the return is generally used as a comparison to the valuation assumption for investment returns.

Currently, the estimated investment return in Exhibit 5 is assuming all cash flows are made mid-year. While that is typically a good way to estimate payouts that are made too often to track (like benefit payments), there were four distinct contributions made into the plan (listed in Exhibit 7) and not all contribution amounts are the same (the first contribution which would get the most interest is the smallest payment).

We recommend that in future valuation reports, the retained actuary consider incorporating the actual timing of the contributions.

#### **Exhibit 9: Actuarial (Gain)/Loss for Prior Plan Year**

We were not able to replicate the interest calculation applied to employer contributions on Exhibit 9 (line 6.). In future actuarial valuation reports, we encourage the retained actuary to review the procedures for calculating the expected interest on contributions in this exhibit to ensure the most appropriate determination of the actuarial gain/loss for the year. It should be noted that the result of this calculation is only a disclosure item and does not impact the required contributions for the year.

#### **Appendix A: Summary of Actuarial Assumptions and Methods**

The presentation is generally complete and understandable. The methods described in this section are reasonable and appropriate for public plans. However, we do have a suggestion to improve the overall communication of the valuation assumptions.

**Earnings Progression (Page A-3)** – In general, earnings progression (or salary scale) assumptions are comprised of three main sources of increase: (i) price inflation, (ii) economic productivity increases, and



(iii) the merit, promotion and longevity increases for the individual worker. The statement of the assumption in the valuation report only shows the aggregate rates and provides no additional description regarding the development of the assumption. We recommend that the retained actuary include a statement indicating that the stated rates include all sources of assumed earnings progression, including inflation.

## **Appendix B: Summary of Principal Plan Provisions**

The presentation is generally complete and understandable. However, we do have a suggestion to improve the overall communication of the plan provisions.

**Late Retirement Benefit (Page B-3)** – We noticed that the plan provides a very valuable benefit to participants that work past their Normal Retirement Date (NRD). Specifically, participants that work beyond their NRD receive a monthly pension benefit equal to the greater of (1) or (2) below:

- (1) Normal Retirement Benefit formula using Years of Benefit Service and Compensation through their Late Retirement Date; or
- (2) A benefit equal to the sum of (a) and (b) below:
  - (a) Actuarial Equivalent of the Accrued Benefit calculated as if the participant retired on their NRD increased at the Applicable Interest Rate from their NRD to their Late Retirement Date, and
  - (b) 2.3% of the participant's Average Monthly Compensation multiplied by the difference between Years of Benefit Service determined at their Late Retirement Date and Years of Benefit Service determined at their NRD.

The description of the Late Retirement Benefit in the actuarial valuation report should be expanded to correctly describe this benefit.

### ***Summary***

In general, the actuarial valuation report complied with the applicable Actuarial Standards of Practice. In order to improve the ability of the report to communicate the assumptions, methods and plan provisions incorporated into the August 1, 2021 actuarial valuation, we recommend that the retained actuary incorporate the noted enhancements in future actuarial valuation reports.

## **SECTION VII**

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### **FINAL REMARKS**

## Final Remarks

The auditing actuarial firm, Gabriel, Roeder, Smith & Company (GRS), is independent of the retained actuarial firm. The auditing actuaries are not aware of any conflict of interest that would impair the objectivity of this work.

We have presented a number of suggestions in areas where we believe the product may be improved. The retained actuary has access to information and a long history of retirement plans similar to the Port. We understand that the retained actuary may agree with some of our recommendations, while rejecting others. We ask that the retained actuary and the Port consider our recommendations carefully. We hope that the retained actuary and the Port find these suggestions useful.





March 31, 2022

Mr. R. Ryan Falls  
Gabriel, Roeder, Smith & Company  
5605 N. MacArthur Blvd., Suite 870  
Irving, TX 75038-2631

Dear Ryan:

Thank you for your report dated March 11, 2022 (the "Report"), of an actuarial audit of the August 1, 2021 Actuarial Valuation of the Port of Houston Authority Restated Retirement Plan (the "Plan"). The Report constitutes the preliminary draft submitted to us for purposes of discussion and clarification in accordance with Section 802.1012 of the Texas Government Code.

In Section I of the Report, you include a Summary of Findings:

"Based on our review, the actuarial valuation, studies, and reports of the Plan are reasonable, used appropriate assumptions, and complied with actuarial guidelines. We offer the following recommendations based on the valuation methods and assumptions used by the retained actuary in the August 1, 2021 actuarial valuation".

The management of the Port of Houston Authority ("PHA") is appreciative of the efforts, insights and perspectives presented in the Report. The thoroughness, expediency of execution and professionalism exhibited by all parties participating in this review were exceptional. Attached is PHA's response to your individual recommendations. If needed, we are available for further discussion at your convenience.

Sincerely yours,

Shannon Williams  
2022.04.01  
11:59:45 -05'00'

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Shannon Williams  
Chief Audit Executive

**cc:** Curtis Duncan, Controller  
Roger Walter, Director of Human Resources

## **Actuarial Assumptions**

### **(1) Recommendation:**

At the next experience study, we recommend that the retained actuary review the impact of service on a participant's earnings progression over their career. We agree that the results based on age do appear reasonable, but the retained actuary may find that increases align even better with service and not pay.

### **Management Response:**

**PHA agrees to consider requesting that the retained actuary review the impact of service on a participant's earnings progression over their career to determine if the increases align better with using service as a metric.**

### **(2) Recommendation:**

In order to minimize actuarial gains/losses generated by the key demographic assumptions, we recommend that the retained actuary explore the sources of the demographic gains/losses and consider an amount-weighted approach during the next actuarial experience study.

### **Management Response:**

**PHA agrees to consider requesting that the retained actuary consider an amount-weighted approach during the next actuarial experience study.**

### **(3) Recommendation:**

The preliminary trust statements provided to the retained actuary for the August 1, 2021 actuarial valuation indicated that the plan incurred \$198,381 in administrative fees. Based on these preliminary amounts, the retained actuary's provision for Plan expenses of \$500,000 seems somewhat high. However, it is better to be conservative in this assumption than to underestimate these amounts, although the level of conservatism should be reasonable. If there is a reason the expenses are assumed to increase above the current level, it may be helpful to comment on that reasoning.

### **Management Response:**

**PHA agrees to consider clarifying how the expense load assumption for administrative fees is reviewed through the experience study. The latest experience study was completed July 28, 2020, which included a recommendation to reduce the expense load from \$750,000 to \$500,000 based on lower average annual administrative fees incurred by the Plan. As actual administrative fees can vary from year to year, PHA believes this \$250,000 reduction was a sound adjustment to the assumption and the current expense load of \$500,000 is a more reasonable assumption, given the trends in previous years.**