

**PORT OF HOUSTON AUTHORITY RESTATED
RETIREMENT PLAN**

REPORT OF AN ACTUARIAL AUDIT

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

MARCH 22, 2017



March 22, 2017

Ms. Maxine N. Buckles
Chief Audit Officer
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. Buckles:

Gabriel, Roeder, Smith & Company (GRS) is pleased to present this report of an actuarial audit of the August 1, 2016 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 February 16, 2017, and
3. The Port's response to the preliminary draft of the actuarial audit report, dated March 16, 2017.

Following the delivery of the preliminary draft of the actuarial audit report to the Port on February 16, 2017, GRS requested a response to the preliminary draft, as required by Section 802.1012(g) of the Texas Government Code. The Port provided a response to the preliminary draft on March 16, 2017.

GRS is pleased to report to the Port that, in our professional opinion, the August 1, 2016 Actuarial Valuation prepared by the retained actuary provides a fair and reasonable assessment of the financial position of the Plan.

Ms. Maxine N. Buckles

March 22, 2017

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The signing actuaries are independent of the plan sponsor. Mr. Falls is an Enrolled Actuary, a Fellow of the Society of Actuaries, and a Member of the American Academy of Actuaries. He meets 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

Handwritten signature of R. Ryan Falls in cursive script.

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

Handwritten signature of Lewis Ward in cursive script.

Lewis Ward
Consultant

**PORT OF HOUSTON AUTHORITY RESTATED
RETIREMENT PLAN**

REPORT OF AN ACTUARIAL AUDIT

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

FEBRUARY 16, 2017

February 16, 2017

Ms. Maxine N. Buckles
Chief Audit Officer
Port Houston
111 East Loop North
Houston, Texas 77029

Dear Ms. Buckles:

Gabriel, Roeder, Smith & Company (GRS) is pleased to present this report of an actuarial audit of the August 1, 2016 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, 2016, 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, 2016 Actuarial Valuation prepared by the retained actuary provides a fair and reasonable assessment of the financial position of the Plan.

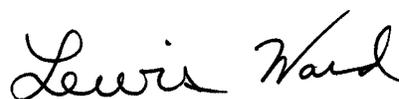
Throughout this report we make a number of suggestions for ways to improve the work product. We hope that the retained actuary and the Port find these items helpful. Thank you for the opportunity to work on this assignment.

The signing actuaries are independent of the plan sponsor. Mr. Falls is an Enrolled Actuary, a Fellow of the Society of Actuaries, and a Member of the American Academy of Actuaries. He meets 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



Lewis Ward
Consultant

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SECTION I

EXECUTIVE SUMMARY

Executive Summary

Port Houston (the Port) engaged Gabriel, Roeder, Smith & Company (GRS) to perform an actuarial audit of the August 1, 2016 Actuarial Valuation of the Port of Houston Authority Restated Retirement Plan (the Plan) performed by Milliman, the retained actuary. The project commenced in December of 2016.

The scope of this actuarial audit includes the following:

- Review and analyze the results of the actuarial valuation as of August 1, 2016, 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, 2016 actuarial valuation.

Actuarial Assumptions

- At the next experience study, we recommend that the retained actuary review the impact of service on a participant's chance of leaving active service (i.e., withdrawal and retirement) and a participant's earnings progression over their career.
- At the next experience study, we strongly recommend that the retained actuary provide documentation on each of the assumptions reviewed as part of the experience study to better comply with the ASOPs. This documentation should include a summary of the relevant data used to propose each assumption and the actuary's rationale for making the proposed assumption.

- We recommend that the Port staff and the retained actuary work together to understand the most appropriate allocation of the Plan expenses between administrative expenses and investment-related expenses. Once the most appropriate allocation is established, we also recommend that the retained actuary review the current procedures for incorporating the Plan expenses into the calculation of the recommended contribution.
- We recommend that the Port consider lowering the investment return assumption to a rate that is within the retained actuary's likely range of 4.00% to 6.87%.

Actuarial Methods and Funding Policy

We do not have any comments or recommendations regarding the retained actuary's application of actuarial methods and funding policy.

Actuarial Valuation Results

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.

Content of Valuation Report

- In order to better comply with ASOP No. 27, we recommend that the retained actuary explicitly state whether they believe the Port's investment return assumption is reasonable or unreasonable. Moreover, if the actuary believes the assumption to be reasonable, we recommend that the actuary provide the rationale supporting that view.
- We recommend that the retained actuary modify the calculation of the actual investment rate of return (Exhibit 5) to be more consistent with the valuation assumption for investment returns.
- We recommend that the retained actuary incorporate the noted enhancements to Appendix A and Appendix B in future actuarial valuation reports.

SECTION II

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, 2016,
- The most recent experience study dated September 29, 2015,
- A full set of census data for plan participants and beneficiaries as of August 1, 2016,
- The Plan's Statement of Investment Objectives and Policy, dated July 26, 2016,
- First Amendment to the Port of Houston Authority Restated Retirement Plan, effective August 1, 2012, Second Amendment, effective October 31, 2012, and Third Amendment, effective January 1, 2015,
- Summary Plan Description (SPD), dated March 13, 2013, and
- A summary of liability calculations from the retained actuary for a sampling of 28 plan participants as of August 1, 2016.

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 not focus on finding differences in actuarial processes and procedures utilized by the retained actuary and the auditing actuary. Rather, our intent is to identify and suggest 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 opinion differences 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, 2016 actuarial valuation report for the Plan was signed by Mr. Jake Pringle, EA, MAAA and Mr. Bryan Wilson, 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
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*

We generally reviewed the application of the ASOPs applicable on the valuation date of the August 1, 2016 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, 2016. Additionally, the retained actuary issued a letter summarizing an actuarial experience study, dated September 29, 2015. 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 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.

Demographic assumptions for a retirement plan such as the 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 September 29, 2015, states the prior 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. However, the letter provides very little basis for the retained actuary's reasoning in developing the proposed assumptions.

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. The information provided in the experience study report does not meet the requirements of this ASOP.

A presentation style that shows the exposure, the present and proposed decrement rates, and the expected results under the present and proposed decrement rates in a single chart are generally standard in experience study reports. An example of a preferred schedule from an unrelated experience study would be:

Sample Withdrawal Experience of Active Participants 2010-2015

Age	Withdrawal	Exposure	RATES			EXPECTED WITHDRAWALS	
			Crude	Old	New	Old	New
20-24	1	25	0.040	0.096	0.090	2	2
25-29	15	152	0.099	0.086	0.090	13	14
30-34	15	232	0.065	0.070	0.065	16	15
35-39	14	410	0.034	0.030	0.034	12	14
40-44	17	516	0.033	0.027	0.033	14	17
45-49	15	570	0.026	0.025	0.025	14	14
50-54	14	457	0.031	0.023	0.025	11	11
TOTALS	91	2,362	0.039	0.083	0.080	82	87

This type of presentation 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 “crude rates” in the example chart are simply the ratio of the actual number of withdrawals to the exposure. By viewing the crude rates, the present rates, and the proposed new rates, the reader can gain an insight into the actuary’s smoothing techniques and into the judgments that were made.
- (4) The presentation allows verification that the “expected” figures in the experience study are derived from the assumption rates being used in the valuation.
- (5) It is easy to see if the proposed new rates match the final assumptions, and the assumptions used in the valuation reports.

At the next experience study, we strongly recommend that the retained actuary provide documentation on each of the assumptions reviewed as part of the experience study. This documentation should include a summary of the relevant data used to propose each assumption and the actuary’s rationale for making the proposed assumption. We recognize that the number of exposures may be small for this particular plan, but it is important for the retained actuary and the reader of the report to understand the relative credibility of data underlying the proposed assumptions.

Observations on Assumptions

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 demographic assumptions for the Plan. 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 based solely on the participant’s age. Since the plan allows participants to retire with 30 years of service (with no age requirement) and with 85 points (age plus service equals at least 85), it is likely that rates of retirement have some correlation to a participant’s service. At the next experience study, we recommend that the retained actuary review the impact of service on a participant’s chance of retiring or, at a minimum, consider increasing a participant’s rate of retirement in their first year of retirement eligibility.

Turnover – The rates at which participants are assumed to withdraw (or turnover) are based solely on the participant’s age. It is our experience that rates of withdrawal 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 chance of terminating prior to retirement eligibility.

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 RP-2014 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-2015 mortality improvement scale. This is an established and current mortality assumption and 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

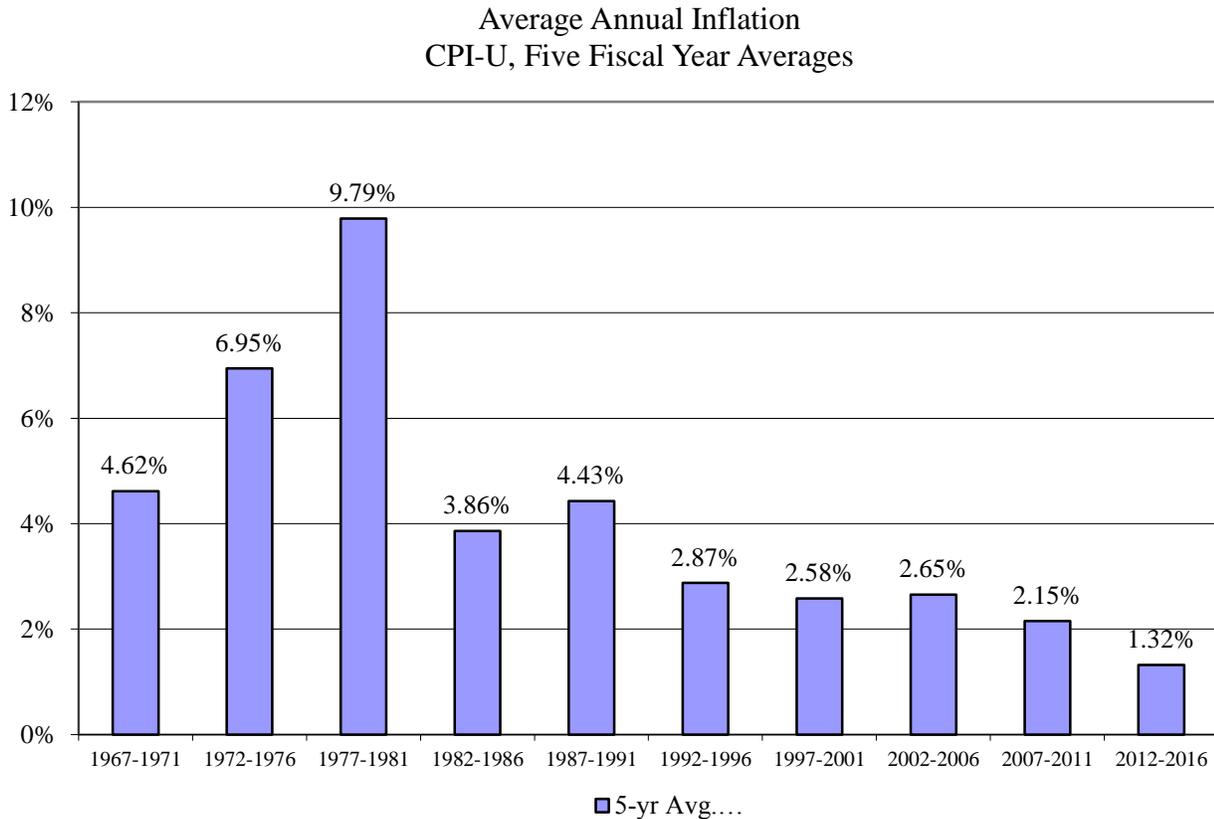
General

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.

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 2.50%.

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



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 2016 capital market assumption sets for eight investment consulting firms: BNY Mellon, PCA, NEPC, Mercer, Hewitt EnnisKnupp, JP Morgan, R.V. Kuhns, and Wilshire. The average assumption for inflation was approximately 2.2%, with a range of 1.56% to 2.75%. It should be noted that five of these investment consulting firms set their assumptions based on approximately a ten-year outlook, while actuaries must make much longer projections. The remaining three firms set their assumptions based on a 20- or 30-year outlook.

In the Social Security Administration's 2016 Trustees Report, the Office of the Chief Actuary is projecting a long-term average annual inflation rate of 2.6% under the intermediate cost assumption. (The low cost assumption was 3.2% and the high cost assumption was 2.0%.) These inflation assumptions forecasts have not materially changed for several years.

The Philadelphia Federal Reserve conducts a quarterly survey of the Society of Professional Forecasters. In their forecast immediately preceding the August 1, 2016 actuarial valuation, second quarter of 2016, was for inflation over the next ten years to average 2.2%. Over the shorter term, the society of Professional Forecasters are predicting inflation to average 2.2% for the calendar years 2017 and 2018, so they are expecting inflation to consistently stay around 2.2% over the next 10 years.

Another source of information is the Public Funds Data website. This website is developed and maintained through a collaboration of the Center for State and Local Government Excellence (SLGE), the National Association of State Retirement Administrators (NASRA), and the Center for Retirement Research at Boston College. Based on a sample of 106 large statewide public employee pension plans, the current database (based on the 2015 fiscal year) shows that the median inflation rate assumed for large statewide public retirement systems in the U.S. is 3.00%, the average inflation rate is 3.02%, and all 106 retirement systems in the sample have an inflation assumption at, or above, 2.50% (the current inflation assumption for the Plan). We consider the current 2.50% 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 \$750,000 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 7% after paying the investment-related expenses).

The preliminary trust statements provided to the retained actuary for the August 1, 2016 actuarial valuation indicated that the plan incurred \$712,011 in administrative expenses, \$96,454 in trustee fees, and \$54,557 in investment management fees. Based on these preliminary amounts, the retained actuary's provision for Plan expenses seems reasonable.

However, the Port staff indicated during this actuarial audit that a more appropriate allocation of these expenses would have been \$234,464 in administrative expenses (including trustee fees) and \$628,558 in investment-related expenses. The fair value of assets was stated correctly and the updated amounts only impacted the allocation of the actual expenses across these categories.

The retained actuary's current provisions for Plan expenses in the recommended contribution are reasonable. However, we recommend that the Port staff and the retained actuary work together to understand the most appropriate allocation of the Plan expenses. If the restated allocation of Plan expenses is the most appropriate, we also recommend that the retained actuary review the current procedures for incorporating the Plan expenses into the calculation of the recommended contribution. We make this recommendation for the following reasons:

1. If the administrative expenses were actually \$234,000 in the prior year, then the retained actuary's assumption of \$750,000 for administrative assumptions may be too high.
2. If the investment-related expenses were actually \$629,000, then the retained actuary's assessment of the likely range of investment returns over the next 20 years, which is currently 4.00% to 6.83%, may also need to be revised.

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 2.50% per annum plus an annual real rate of return of 4.50%, net of investment-related fees paid from the trust.

We believe an appropriate approach to reviewing an investment return assumption is to determine the median expected portfolio return given the retirement plan's target allocation and a given set of capital market assumptions. Per the Statement of Investment Objectives and Policy for the Plan, dated July 26, 2016, the Plan's current target asset allocation is:

Asset Class	Target
Large Cap Domestic Equity	15.0%
Mid Cap Domestic Equity	7.5%
Small Cap Domestic Equity	10.0%
International Equity	7.5%
Core Fixed Income	40.0%
High Yield Fixed Income	5.0%
Real Estate	5.0%
Master Limited Partnerships	10.0%
Total	100.0%

Because GRS does not develop or maintain its own capital market assumptions, we reviewed assumptions developed and published by the following investment consulting firms:

- JP Morgan
- NEPC
- PCA
- Mercer
- RV Kuhns
- BNY Mellon
- Hewitt EnnisKnupp
- Wilshire

These investment consulting firms issue reports that describe their capital market assumptions, which include their estimates of expected returns, volatility, and correlations. While these assumptions are developed based upon historical analysis, many of these firms also incorporate forward looking adjustments to better reflect near-term expectations.

Given the current target asset allocation for the Plan and the investment firms' capital market assumptions for 2016, the development of the average nominal return, net of investment-related expenses paid from the trust, is provided in the table below:

Investment Consultant	Investment Consultant Expected Nominal Return	Investment Consultant 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	6.12%	2.50%	3.62%	2.50%	6.12%	10.52%
2	6.11%	2.25%	3.86%	2.50%	6.36%	10.90%
3	6.23%	2.25%	3.98%	2.50%	6.48%	10.05%
4	6.27%	2.20%	4.07%	2.50%	6.57%	9.46%
5	6.29%	2.00%	4.29%	2.50%	6.79%	10.09%
6	6.94%	2.26%	4.68%	2.50%	7.18%	10.03%
7	6.45%	1.56%	4.89%	2.50%	7.39%	10.49%
8	7.12%	2.20%	4.92%	2.50%	7.42%	11.29%
Average	6.44%	2.15%	4.29%	2.50%	6.79%	10.35%

We determined, for each firm, the expected nominal return rate based on the Plan's target allocation and then subtracted that investment consulting firm's expected inflation to arrive at their expected real return in column (4). Then we added back the Plan's current 2.50% inflation to arrive at an expected nominal return net of investment-related expenses. As the table shows, the resulting average arithmetic one-year return of the eight firms is 6.79%.

The forward-looking capital market assumptions and return forecasts developed by investment consulting firms already reflect expected investment expenses. Their return estimates for core investments (i.e., fixed income, equities, and real estate) are generally based on anticipated returns produced by passive index funds that are net of investment related fees. Investment return expectations for the alternative asset class such as private equity and hedge funds are also net of investment expenses. Therefore, we did not make any additional adjustments to account for investment-related expenses. This analysis also assumes that investment managers will generate enough alpha to at least cover the cost of the active management. No additional alpha for active management has been considered.

In addition to examining the expected one-year return, it is important to review anticipated volatility of the investment portfolio and understand the range of long-term net returns that could be expected to be produced by the investment portfolio. Therefore, the following table provides the 40th, 50th, and 60th percentiles of the 20-year geometric average of the expected nominal return, net of investment-related expenses paid from the trust, as well as the probability of exceeding the current 7.00% assumption.

Investment Consultant	Distribution of 20-Year Average Geometric Net Nominal Return			Probability of exceeding 7.00%
	40th	50th	60th	
(1)	(2)	(3)	(4)	(5)
1	5.01%	5.60%	6.19%	27.6%
2	5.20%	5.81%	6.42%	31.2%
3	5.44%	6.01%	6.57%	32.9%
4	5.62%	6.15%	6.69%	34.4%
5	5.75%	6.32%	6.89%	38.0%
6	6.15%	6.71%	7.28%	44.8%
7	6.29%	6.88%	7.47%	48.0%
8	6.20%	6.83%	7.47%	47.3%
Average	5.71%	6.29%	6.87%	38.0%

The table above documents that the average probability of exceeding the current 7.00% investment return assumption over a 20-year period is 38.0% based on this analysis.

Another source of information is the Public Funds Data website. Based on a sample of 106 large statewide public employee pension plans, the current database (based on the 2015 fiscal year) shows that the median investment return assumed for large statewide public retirement systems in the U.S. is 7.70%, the average investment return assumption is 7.62%, and 101 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, 2016 actuarial valuation report that they believe the likely range of investment return over a 20 year horizon would be between 4.00% and 6.83% per annum and that their best estimate is 5.41%. Based on our assessment, we concur with the retained actuary that the current 7.00% investment return assumption selected by the Port appears to fall outside a reasonable range for this assumption. We recommend that the Port consider lowering the investment return assumption to a rate that is within the retained actuary's likely range.

Earnings Progression

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

- Price Inflation – currently 2.50%
- 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:

- At the next experience study, we recommend that the retained actuary review the impact of service on a participant's chance of leaving active service (i.e., withdrawal and retirement) and a participant's earnings progression over their career.
- At the next experience study, we strongly recommend that the retained actuary provide documentation on each of the assumptions reviewed as part of the experience study to better comply with the ASOPs. This documentation should include a summary of the relevant data used to propose each assumption and the actuary's rationale for making the proposed assumption.
- We recommend that the Port staff and the retained actuary work together to understand the most appropriate allocation of the Plan expenses between administrative expenses and investment-related expenses. Once the most appropriate allocation is established, we also recommend that the retained actuary review the current procedures for incorporating the Plan expenses into the calculation of the recommended contribution.
- We recommend that the Port consider lowering the investment return assumption to a rate that is within the retained actuary's likely range of 4.00% to 6.87%.

SECTION IV

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. The recent Public Fund Survey, published in January 2015, surveyed 126 retirement systems (mostly statewide). 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 recent recession and 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.

There have been reports issued by actuaries, governmental associations, and others to assist with the development of guidelines for funding policies, including:

- Report from the Pension Funding Task Force 2013 (convened by the Center for State and Local Government Excellence), titled “Pension Funding: A Guide for Elected Officials”;
- GFOA Best Practice, titled “Core Elements of a Pension Funding Policy”; and
- Report in 2014 from the Conference of Consulting Actuaries Public Plans Community, titled “Actuarial Funding Policies and Practices for Public Pension Plans”.

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.

The Port’s current funding policy for the Plan is based on a slightly modified version of the Internal Revenue Code (IRC) and Employee Retirement Income Security Act of 1974 (ERISA) as it existed in 2007, prior to the enactment of the Pension Protection Act of 2006, as outlined in Richard White’s letter dated June 18, 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.

As we stated earlier, the current funding policy is reasonable.

Summary

We do not have any comments or recommendations regarding the retained actuary's application of actuarial methods and funding policy.

SECTION V

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 2016 actuarial valuation to be a reasonable representation of the raw data originally provided by the Port.

Benefits

Every employer is different and every employer's retirement plan is different. Each employer 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 sample participant calculations from the retained actuary to 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

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:

- The name of the person or firm retaining the actuary and the purposes that the communication is intended to serve.
- 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.

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, 2016 Actuarial Valuation Report, dated October 20, 2016 (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 a separate cover letter to the valuation report, also dated October 20, 2016 (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 only a 23% likelihood of earning 7.00% on Plan assets based on their model and capital market assumptions. We saw no statement from the retained actuary disclosing whether or not the assumed 7.00% was considered reasonable. 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. Based on the actuary's disclosure, the 7.00% assumption falls outside of the 25th to 75th percentile range and therefore would likely have been unreasonable under the old definition. Given that the new definition is intended to be a stricter definition, we would have expected the actuary to conclude from their own analysis that the assumption significantly conflicts with what they believe is reasonable. We recommend that the actuary explicitly state whether they believe the assumption is reasonable or unreasonable. Moreover, if the actuary believes the assumption to be reasonable, we recommend that the actuary provide the rationale supporting that view.

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 exact 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) The retained actuary keeps track of one set of amortization bases which are used to calculate the funding policy contribution and a second set of very similar amortization bases, developed in accordance with ERISA, that are used solely to maintain the hypothetical Funding Standard Account. We recommend that the retained actuary only maintain one set of amortization bases that are consistent with the funding policy adopted by the Port. When this change is

implemented, contribution calculations in Exhibits 12 and 14 will more closely correspond with the funding policy contributions and a separate cover letter will not be necessary to develop the funding policy contribution. Currently, the contribution calculations in Exhibits 12 and 14 are not based on the funding policy, so the resulting amounts in these Exhibits can be misleading and confusing.

- (3) 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 very misleading to the reader of the valuation report. Specifically, we believe the following portions of the report should be removed entirely: *Exhibit 13 – Charges and Credits for Maximum Deductible Contribution*, *Exhibit 15 – Maximum Deductible Contribution under IRC Section 404*, and *Appendix D – Description of the Maximum Deductible Contribution Limit*.
- (4) *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.

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 not determined in a manner consistent with the stated investment return assumption for the valuation. According to the retained actuary, the investment return assumption is 7.00% net of investment-related expenses (and not the administrative expenses). Therefore, the net investment income shown on Exhibit 5, Item 4 should be the investment income from Exhibit 4 (Items 2b, 2c and 2d) less the investment-related expenses (Exhibit 4, Item 3b). This result is \$2,218,217. Currently, the administrative expenses (Exhibit 4, Item 3c) are being subtracted from the gross investment return and not the investment-related expenses. If the estimated investment return was calculated in a manner consistent with the stated valuation assumption, the resulting rate of return would be 1.35%.

We recommend that the retained actuary modify the calculation of the actual investment return (Exhibit 5) to be more consistent with the valuation assumption for investment returns. Additionally, the description at the top of Exhibit 6 should be reviewed to make sure that it is consistent with the calculations outlined in Exhibit 5 (e.g., this description does not mention administrative expenses). These modifications will not impact the results of the actuarial valuation or the recommended contribution, but it will improve the comparability of the assumed investment return with the actual investment returns.

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 further description about 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 noted 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, 2016 actuarial valuation, we have the following recommendations regarding the content of the actuarial valuation report:

- In order to better comply with ASOP No. 27, we recommend that the retained actuary explicitly state whether they believe the Port's investment return assumption is reasonable or unreasonable. Moreover, if the actuary believes the assumption to be reasonable, we recommend that the actuary provide the rationale supporting that view.
- We recommend that the retained actuary modify the calculation of the actual investment return (Exhibit 5) to be more consistent with the valuation assumption for investment returns.
- We recommend that the retained actuary incorporate the noted enhancements to Appendix A and Appendix B in future actuarial valuation reports.

SECTION VII

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 many suggestions for areas where we believe the product can 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 16, 2017

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 February 16, 2017 (the "Report"), of an actuarial audit of the August 1, 2016 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(f) of the Texas Government Code.

In the Executive Summary of the Report, you include a Summary of Findings and Final Remarks:

"Based on our review, the actuarial valuation, studies, and reports of the Plan are reasonable, used reasonable 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, 2016 actuarial valuation."

The management of the Port of Houston Authority ("Port Authority") is appreciative of the efforts, insights and perspectives presented in the Report. We appreciate the thoroughness, expediency of execution and professionalism exhibited by all parties participating in this review. Attached are the Port Authority's responses to your draft report findings. We are available for further discussion at your convenience.

Sincerely yours,

Maxine N. Buckles
Chief Audit Officer

Actuarial Assumptions

(1) Finding:

At the next experience study, we recommend that the retained actuary review the impact of service on a participant's chance of leaving active service (i.e., withdrawal and retirement) and a participant's earnings progression over their career.

Management Response:

Currently, withdrawal and retirement assumptions are based on age. Additional consideration will be given to the impact of service based withdrawals in future experience studies.

(2) Finding:

At the next experience study, we strongly recommend that the retained actuary provide documentation on each of the assumptions reviewed as part of the experience study to better comply with the ASOPs. This documentation should include a summary of the relevant data used to propose each assumption and the actuary's rationale for making the proposed assumption.

Management Response:

We agree that actuarial assumptions are subject to ASOPs 4, 23, 27, 35, 41 and 44. Although not detailed in the current experience study report, these details were reviewed by Plan management and Milliman, the retained actuary. Going forward, we will include more detail relating to a summary of relevant data for each assumption and the actuary's rationale for making the proposed assumptions, as deemed appropriate, in the experience study report. The Port Authority's intent is to comply with all ASOPs.

(3) Finding:

We recommend that the Port Authority staff and the retained actuary work together to understand the most appropriate allocation of the Plan expenses between administrative expenses and investment-related expenses. Once the most appropriate allocation is established, we also recommend that the retained actuary review the current procedures for incorporating the Plan expenses into the calculation of the recommended contribution.

Management Response:

We acknowledge this finding and it has been reemphasized the importance of the correct breakdown of expenses between the two categories (administrative expenses and investment-related expenses), to the Accounting staff. Prospectively, Milliman will work with Port Authority staff to ensure plan expenses are categorized correctly and assumptions are based on current expectations. There was no impact to the liability or assets reported based on the misclassification of expenses.

(4) Finding:

We recommend that the Port Authority consider lowering the investment return assumption to a rate that is within the retained actuary's likely range of 4.00% to 6.87%.

Management Response:

We acknowledge this finding. Over the last two years, the Port Authority has discussed with Milliman the possibility of reducing the investment return assumption rate. Milliman prepared additional calculations showing the impact of such reductions. On December 13, 2016, the Port Commission approved a reduction of the actuarial investment return assumption rate from 7.00% to 6.75% which is in line with the auditor's recommendation. We will continue to work with Milliman to consider further reductions as appropriate.

Content of Valuation Report

(5) Finding:

In order to better comply with ASOP No. 27, we recommend that the retained actuary explicitly state whether they believe the Port Authority's investment return assumption is reasonable or unreasonable. Moreover, if the actuary believes the assumption to be reasonable, we recommend that the actuary provide the rationale supporting that view.

Management Response:

We agree with this recommendation. Appropriate modifications related to the Port Authority's investment return assumption reasonableness will be made by the retained actuary to ensure compliance with ASOP No. 27, as necessary.

(6) Finding:

We recommend that the retained actuary modify the calculation of the actual investment rate of return (Exhibit 5) to be more consistent with the valuation assumption for investment returns.

Management Response:

We agree with this recommendation. As noted in the previous response regarding plan expenses, Milliman will review the calculation of actual investment return to ensure accuracy with the valuation assumption.

(7) Finding:

We recommend that the retained actuary incorporate the noted enhancements to Appendix A and Appendix B in future actuarial valuation reports.

Management Response:

We agree with this recommendation. Additional consideration will be given to expanding the description of the salary scale assumption and late retirement benefit in future valuation reports.