

# SEIU Affiliates Officers and Employees Pension Plan

**Actuarial Valuation and Review as of January 1, 2019**



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**Segal**



1800 M Street NW, Suite 900 S  
Washington, DC 20036-5880  
segalco.com  
T 202.833.6400

October 9, 2020

Board of Trustees  
SEIU Affiliates Officers and Employees Pension Plan  
1800 Massachusetts Ave NW, Suite 301  
Washington, DC 20036

Dear Trustees:

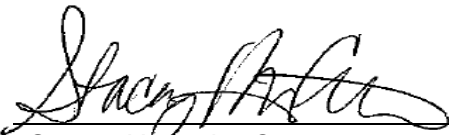
We are pleased to submit the Actuarial Valuation and Review as of January 1, 2019. It establishes the funding requirements for 2019 and analyzes the preceding year's experience. It also summarizes the actuarial data and includes the actuarial information that is required to be filed with Form 5500 to federal government agencies.


The census information upon which our calculations were based was prepared by the Benefit Funds Office, under the direction of Eunice Washington. That assistance is gratefully acknowledged. The actuarial calculations were completed under the supervision of Deborah J. Marcotte, FCA, MAAA, Enrolled Actuary.

We look forward to reviewing this report with you at your next meeting and to answering any questions you may have.

Sincerely,

Segal

By:   
Stacey Hostetler Carter  
Senior Vice President and Benefits Consultant

  
Alex Giordano  
Consulting Actuary



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# Introduction

There are several ways of evaluating funding adequacy for a pension plan. In monitoring the Plan's financial position, the Trustees should keep in mind all of these concepts.



## **Funding Standard Account**

The ERISA Funding Standard Account (FSA) measures the cumulative difference between actual contributions and the minimum required contributions. If actual contributions exceed the minimum required contributions, the excess is called the credit balance. If actual contributions fall short of the minimum required contributions, a funding deficiency occurs.



## **Zone Information**

The Pension Protection Act of 2006 (PPA'06) called on plan sponsors to actively monitor the projected FSA credit balance, the funded percentage (the ratio of the actuarial value of assets to the present value of benefits earned to date) and cash flow sufficiency. Based on these measures, plans are then categorized as critical (*Red Zone*), endangered (*Yellow Zone*), or neither (*Green Zone*). The Multiemployer Pension Reform Act of 2014 (MPRA), among other things, made the zone provisions permanent.



## **Solvency Projections**

Pension plan funding anticipates that, over the long term, both contributions and investment earnings will be needed to cover benefit payments and expenses. To the extent that contributions are less than benefit payments, investment earnings and fund assets will be needed to cover the shortfall. In some situations, a plan may be faced with insufficient assets to cover its current obligations and may need assistance from the Pension Benefit Guaranty Corporation (PBGC). MPRA provides options for some plans facing insolvency.



## **Scheduled Cost**

The Scheduled Cost is an annual amount based on benefit levels and assets that allows a comparison to current contribution levels, given the expectation of a continuing Plan.







## **Withdrawal Liability**

ERISA provides for assessment of withdrawal liability to employers who withdraw from a multiemployer plan based on unfunded vested benefit liabilities.

## Important information about actuarial valuations

An actuarial valuation is a budgeting tool with respect to the financing of future uncertain obligations of a pension plan. As such, it will never forecast the precise future contribution requirements or the precise future stream of benefit payments. In any event, the actual cost of the plan will be determined by the benefits and expenses paid, not by the actuarial valuation.

In order to prepare a valuation, Segal relies on a number of input items. These include:

|   |                                |   |
|---|--------------------------------|---|
|    | <b>Plan Provisions</b>         | Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important for the Trustees to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.   |
|    | <b>Participant Information</b> | An actuarial valuation for a plan is based on data provided to the actuary by the plan. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. For most plans, it is not possible nor desirable to take a snapshot of the actual workforce on the valuation date. It is not necessary to have perfect data for an actuarial valuation. The uncertainties in other factors are such that even perfect data does not produce a “perfect” result. Notwithstanding the above, it is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.   |
|    | <b>Financial Information</b>   | Part of the cost of a plan will be paid from existing assets – the balance will need to come from future contributions and investment income. The valuation is based on the asset values as of the valuation date, typically reported by the auditor. A snapshot as of a single date may not be an appropriate value for determining a single year’s contribution requirement, especially in volatile markets. Plan sponsors often use an “actuarial value of assets” that differs from market value to gradually reflect year-to-year changes in the market value of assets in determining the contribution requirements.  |
|  | <b>Actuarial Assumptions</b>   | In preparing an actuarial valuation, Segal starts by developing a forecast of the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of participants in each year, as well as forecasts of the plan’s benefits for each of those events. The forecasted benefits are then discounted to a present value, typically based on an estimate of the rate of return that will be achieved on the plan’s assets. All of these factors are uncertain and unknowable. Thus, there will be a range of reasonable assumptions, and the results may vary materially based on which assumptions the actuary selects within that range. That is, there is no right answer (except with hindsight). It is important for any user of an actuarial valuation to understand and accept this constraint. The actuarial model may use approximations and estimates that will have an immaterial impact on our results. In addition, the actuarial assumptions may change over time, and while this can have a significant impact on the reported results, it does not mean that the previous assumptions or results were unreasonable or wrong. |

Given the above, the user of Segal's actuarial valuation (or other actuarial calculations) needs to keep the following in mind:

The actuarial valuation is prepared for use by the Trustees. It includes information for compliance with federal filing requirements and for the plan's auditor. Segal is not responsible for the use or misuse of its report, particularly by any other party.

An actuarial valuation is a measurement at a specific date — it is not a prediction of a plan's future financial condition. Accordingly, Segal did not perform an analysis of the potential range of financial measurements, except where otherwise noted.

Critical events for a plan include, but are not limited to, decisions about changes in benefits and contributions. The basis for such decisions needs to consider many factors such as the risk of changes in employment levels and investment losses, not just the current valuation results.

ERISA requires a plan's enrolled actuary to provide a statement in the plan's annual report disclosing any event or trend that the actuary has not taken into account, if, to the best of the actuary's knowledge, such an event or trend may require a material increase in plan costs or required contribution rates. If the Trustees are aware of any event that was not considered in this valuation and that may materially increase the cost of the Plan, they must advise Segal, so that an appropriate statement can be included.

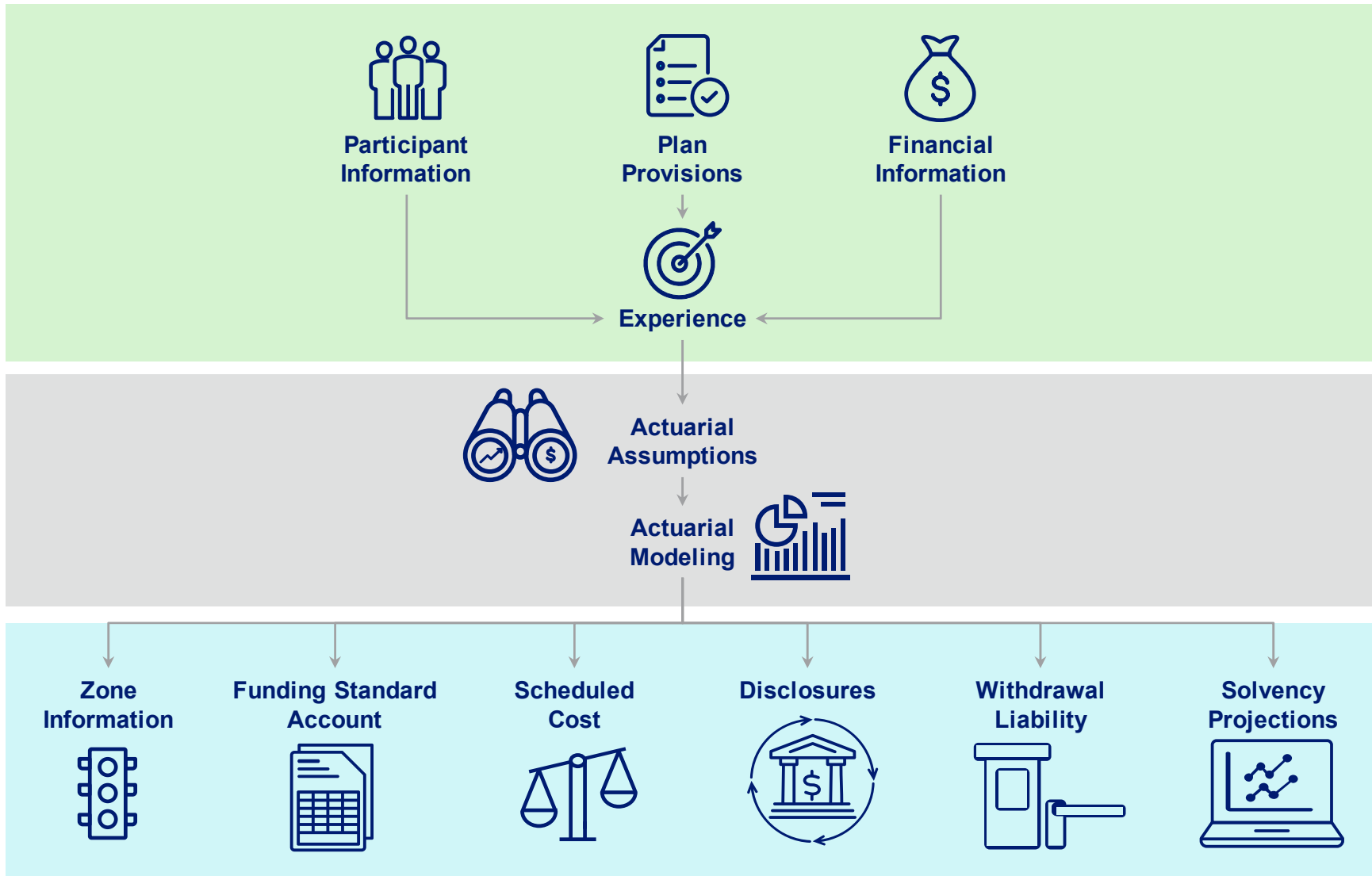
Segal does not provide investment, legal, accounting, or tax advice. This valuation is based on Segal's understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Trustees should look to their other advisors for expertise in these areas.

While Segal maintains extensive quality assurance procedures, an actuarial valuation involves complex computer models and numerous inputs. In the event that an inaccuracy is discovered after presentation of Segal's valuation, Segal may revise that valuation or make an appropriate adjustment in the next valuation.

Segal's report shall be deemed to be final and accepted by the Trustees upon delivery and review. Trustees should notify Segal immediately of any questions or concerns about the final content.

As Segal has no discretionary authority with respect to the management of assets of the Plan, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Plan.

# Actuarial valuation overview



# Section 1: Trustee Summary

## Summary of key valuation results

| Plan Year Beginning                       |   | January 1, 2018                                       | January 1, 2019                                       |
|---|---|---|---|
| <b>Certified Zone Status</b>              |   | <b>Green</b>  | <b>Green</b>  |
| <b>Demographic Data:</b>                  | <ul style="list-style-type: none"> <li>• Number of active participants</li> <li>• Number of inactive participants with vested rights</li> <li>• Number of retired participants and beneficiaries</li> <li>• Total number of participants</li> <li>• Participant ratio: non-active to actives</li> <li>• Average projected annual compensation per active participant</li> </ul> | 3,923<br>4,526<br>2,486<br>10,935<br>1.79<br>\$70,700 | 3,783<br>4,799<br>2,607<br>11,189<br>1.96<br>\$75,595 |
| <b>Assets:</b>                            | <ul style="list-style-type: none"> <li>• Market value of assets (MVA)</li> <li>• Actuarial value of assets (AVA)</li> <li>• Market value net investment return, prior year</li> <li>• Actuarial value net investment return, prior year</li> </ul>  | \$1,013,010,466<br>989,465,059<br>14.53%<br>4.39%     | \$985,931,692<br>1,035,864,572<br>-2.87%<br>4.48%     |
| <b>Actuarial Liabilities<sup>1</sup>:</b> | <ul style="list-style-type: none"> <li>• Valuation interest rate</li> <li>• Normal cost, including administrative expenses</li> <li>• Actuarial accrued liability</li> <li>• Unfunded actuarial accrued liability</li> </ul>  | 7.50%<br>\$27,832,581<br>1,200,454,409<br>210,989,350 | 7.25%<br>\$30,150,734<br>1,314,863,172<br>278,998,600 |
| <b>Funded Percentages:</b>                | <ul style="list-style-type: none"> <li>• Actuarial accrued liabilities under unit credit method</li> <li>• MVA funded percentage</li> <li>• AVA funded percentage (PPA basis)</li> </ul>  | \$1,008,769,783<br>100.4%<br>98.1%                    | \$1,103,815,616<br>89.3%<br>93.8%                     |
| <b>Statutory Funding Information:</b>     | <ul style="list-style-type: none"> <li>• Credit balance (funding deficiency) at the end of prior plan year</li> <li>• Minimum required contribution</li> <li>• Maximum deductible contribution</li> </ul>   | \$136,563,073<br>0<br>1,943,853,050                   | \$134,147,165<br>0<br>2,007,715,202                   |

<sup>1</sup> Based on Entry Age actuarial cost method used for Funding Standard Account.



## Section 1: Trustee Summary

### Summary of key valuation results

| Plan Year Beginning                                 |   | January 1, 2018   |                    | January 1, 2019   |                    |
|---|---|-------------------|--------------------|-------------------|--------------------|
| Scheduled Cost:                                     | • Interest rate                             | 7.50%             |                    | 7.25%             |                    |
|   |   | Amount            | Percent of Payroll | Amount            | Percent of Payroll |
|   | • Projected contributions                   | \$58,244,503      | 21.0%              | \$60,054,658      | 21.0%              |
|   | • Scheduled Cost <sup>1</sup>               | 57,696,915        | 20.8%              | 68,582,353        | 24.0%              |
|   | • Margin/(deficit)                          | 547,588           | 0.2%               | -8,527,695        | -3.0%              |
|   | • Actual contributions                      | 57,666,589        |                    | --                |                    |
| Plan Year Ending Withdrawal Liability: <sup>2</sup> |   | December 31, 2017 |                    | December 31, 2018 |                    |
|   | • Funding interest rate                     | 7.50%             |                    | 7.25%             |                    |
|   | • PBGC interest rates                       |                   |                    |                   |                    |
|   | Initial period                              | 2.34%             |                    | 2.84%             |                    |
|   | Thereafter                                  | 2.63%             |                    | 2.76%             |                    |
|   | • Present value of vested benefits          | \$1,493,391,955   |                    | \$1,519,639,189   |                    |
|   | • MVA                                       | 1,013,010,466     |                    | 985,931,692       |                    |
|   | • Unfunded present value of vested benefits | 480,381,489       |                    | 533,707,497       |                    |

<sup>1</sup> Based on Entry Age actuarial cost method.

<sup>2</sup> Using the assumptions described in Section 2: Withdrawal Liability Assumptions.

## Section 1: Trustee Summary

This actuarial valuation report is based on plan assets as of December 31, 2018 and demographic information as of January 1, 2019. The Plan's actuarial status does not reflect short-term fluctuations of the market, but rather is based on the market values as of the last day of the prior plan year. Due to the COVID-19 pandemic, market conditions have changed significantly during 2020. While it is impossible to determine how the market will perform over the next several months, and how that will affect the results of future valuation reports, Segal is available to prepare projections of potential outcomes upon request. The current year's actuarial valuation results follow.

### A. Developments since last valuation

The following are developments since the last valuation, from January 1, 2018 to January 1, 2019.

1. *Participant demographics.* The number of active participants decreased 3.6% from 3,923 to 3,783. The ratio of non-active to active participants, which is one measure of plan maturity, increased from 1.79 to 1.96.
2. *Plan assets.* The net investment return on the market value of assets was -2.87%. The net investment return on an actuarial value of assets, which reflects smoothing of prior year gains and losses, was 4.48%. The change in the market value of assets over the last two plan years can be found in Section 3, as can the calculation of the actuarial value of assets for the current plan year. As previously communicated to the Board, given the low fixed income interest rate environment, target asset allocation and expectations of future investment returns for various asset classes, we have lowered the assumed long-term rate of return assumption from 7.5% to 7.25% with this valuation.
3. *Cash flows.* Cash inflow includes contributions and cash outflow includes benefits paid to participants and administrative expenses. In the prior plan year, the plan had a net cash inflow of \$2.1 million, or about 0.21% of assets on a market value basis.
4. *Assumption changes.* Since the last valuation, we changed actuarial assumptions related to investment return and assumed administrative expenses. The new assumptions represent our best estimate of anticipated experience under the Plan. The change in the long-term rate of return assumption increased the actuarial accrued liability by 3.07% and the normal cost by 6.14% and is also effective for purposes of withdrawal liability calculated as of December 31, 2018.
5. *Scheduled Cost:* We have reset the Scheduled Cost amortization period from 11 years to 12 years remaining as of January 1, 2019 pending the Trustees' formal approval at the next Board meeting.



## Section 1: Trustee Summary

### B. Actuarial valuation results

The following commentary applies to various funding measures for the current plan year.

- 1. Zone status.** The Plan was certified to be neither in endangered status nor in critical status under the Pension Protection Act of 2006 (PPA) for the 2019 plan year. In other words, the Plan is in the “green zone” because the Plan’s funded percentage for the 2019 plan year is at least 80%, and the Plan has no projected deficiency in its funding standard account for 2019 or the next six plan years. Please refer to the actuarial certification dated March 29, 2019 for more information. In addition, the 2020 certification was filed earlier this year (also “green zone”). Please refer to the actuarial certification dated March 24, 2020 for more information related to the 2020 certification.
- 2. Funded percentages:** During the last plan year, the funded percentage that will be reported on the Plan’s annual funding notice decreased from 98.1% to 93.8%. This decrease was primarily caused by the actuarial investment loss, which reduced assets, and the net investment return assumption change, which increased liabilities. Please note that there are different measurements of funded percentage for different purposes. More information can be found in Section 2.
- 3. Funding Standard Account:** During the 2018 plan year, the credit balance decreased from \$136,563,073 to \$134,147,165. The decrease in the credit balance was due to the fact that contributions fell short of the net charges in the Funding Standard Account (FSA) for the last plan year. For the plan year ending December 31, 2019, the minimum required contribution is \$83,272,521 without regard to the credit balance (\$0 with regard to the credit balance), compared with \$60,054,658 in expected contributions. Therefore, the credit balance is projected to decline further during the plan year (2019).
- 4. Scheduled Cost:** Scheduled Cost for the plan year is the sum of the normal cost (the cost of benefit accruals plus administrative expenses) and an amortization of the unfunded liability. For the plan year ending December 31, 2019, there is a \$8,527,695 deficit between expected contributions and Scheduled Cost, or 3.0% of projected covered payroll.
- 5. Withdrawal liability:** The unfunded vested benefits is \$533.7 million as of December 31, 2018, which is used for determining employer withdrawal liability for the plan year beginning January 1, 2019. The unfunded vested benefits increased from \$480.4 million for the prior year, due mainly to the market investment loss and the decrease in the long-term rate of return assumption.
- 6. Funding concerns:** The projected decline in the credit balance should continue to be monitored. We will continue to work with the Board to model and review funding projections, including potential risk factors.



## Section 1: Trustee Summary

### C. Projections and risk

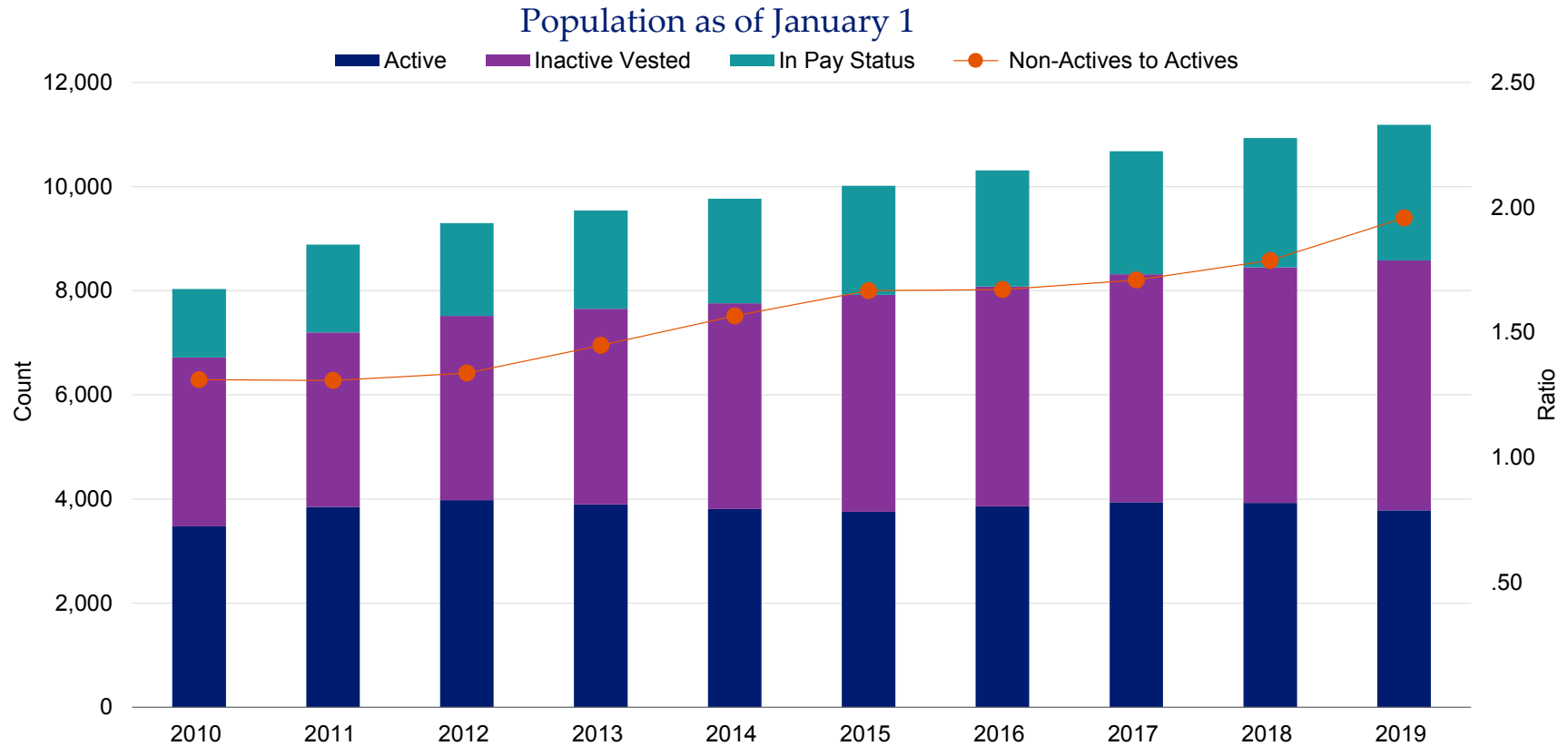
1. *Importance of projections:* Most of the results included in this valuation report are snapshot measurements, showing the Plan's status as of the valuation date. In addition to understanding the Plan's current status, it is also important to understand where the plan is headed through actuarial projections. Projections may evaluate various metrics, such as funded percentage, the Funding Standard Account credit balance, zone status, cash flows and solvency. Projections will be provided.
2. *Understanding risk:* Projections can also help the Trustees understand the sensitivity of future results to various risk factors, such as investment volatility or changes in future contributions. For example, if future investment returns are less than the actuarial assumption, or future contributions are less than projected, the Plan may not meet its funding objectives or may face eventual insolvency. See Section 2 for a general discussion on the risks facing the Plan, and how they might be better evaluated, understood and addressed. Over the past several years, the Board has requested additional analysis related to certain assumptions and risk. A more detailed assessment of the potential range of future measurements and risks would provide the Trustees with a better understanding of the risks inherent in the Plan.



# Section 2: Actuarial Valuation Results

## Participant information

- There were 3,783 active participants this year, a decrease of 3.6% compared to 3,923 in the prior year.



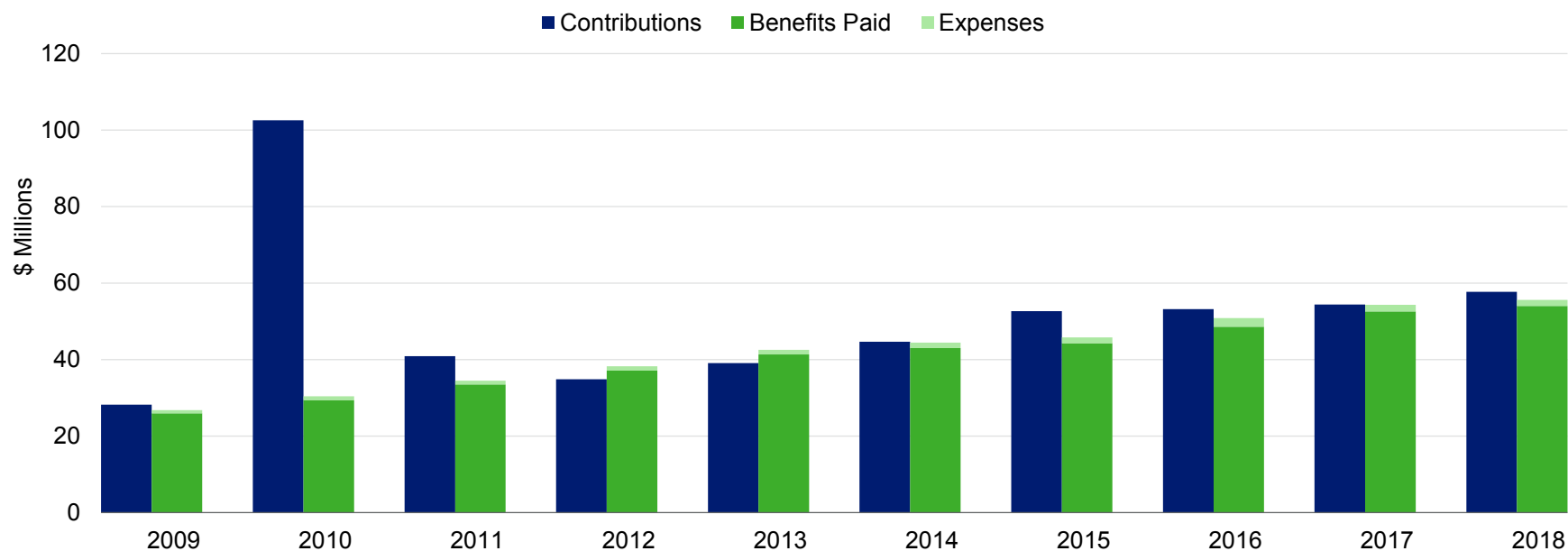
|                 | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| In Pay Status   | 1,316 | 1,686 | 1,784 | 1,890 | 2,007 | 2,094 | 2,231 | 2,363 | 2,486 | 2,607 |
| Inactive Vested | 3,242 | 3,351 | 3,538 | 3,755 | 3,953 | 4,165 | 4,219 | 4,376 | 4,526 | 4,799 |
| Active          | 3,477 | 3,851 | 3,979 | 3,897 | 3,807 | 3,755 | 3,860 | 3,942 | 3,923 | 3,783 |
| Ratio           | 1.31  | 1.31  | 1.34  | 1.45  | 1.57  | 1.67  | 1.67  | 1.71  | 1.79  | 1.96  |

## Section 2: Actuarial Valuation Results

### Financial information

- Benefits and expenses are funded solely from contributions and investment earnings.
- Contributions in 2010 include \$71.3 million due to the transfer of assets from the CSEA Retirement Plan.

#### Cash Flow



|                            | 2009    | 2010     | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    |
|----------------------------|---------|----------|---------|---------|---------|---------|---------|---------|---------|---------|
| Contributions <sup>1</sup> | \$28.21 | \$102.51 | \$40.86 | \$34.80 | \$39.06 | \$44.68 | \$52.68 | \$53.21 | \$54.41 | \$57.67 |
| Benefits Paid <sup>1</sup> | 25.96   | 29.41    | 33.46   | 37.10   | 41.33   | 43.00   | 44.25   | 48.58   | 52.58   | 54.02   |
| Expenses <sup>1</sup>      | 0.77    | 0.97     | 1.01    | 1.12    | 1.17    | 1.39    | 1.56    | 2.25    | 1.70    | 1.58    |

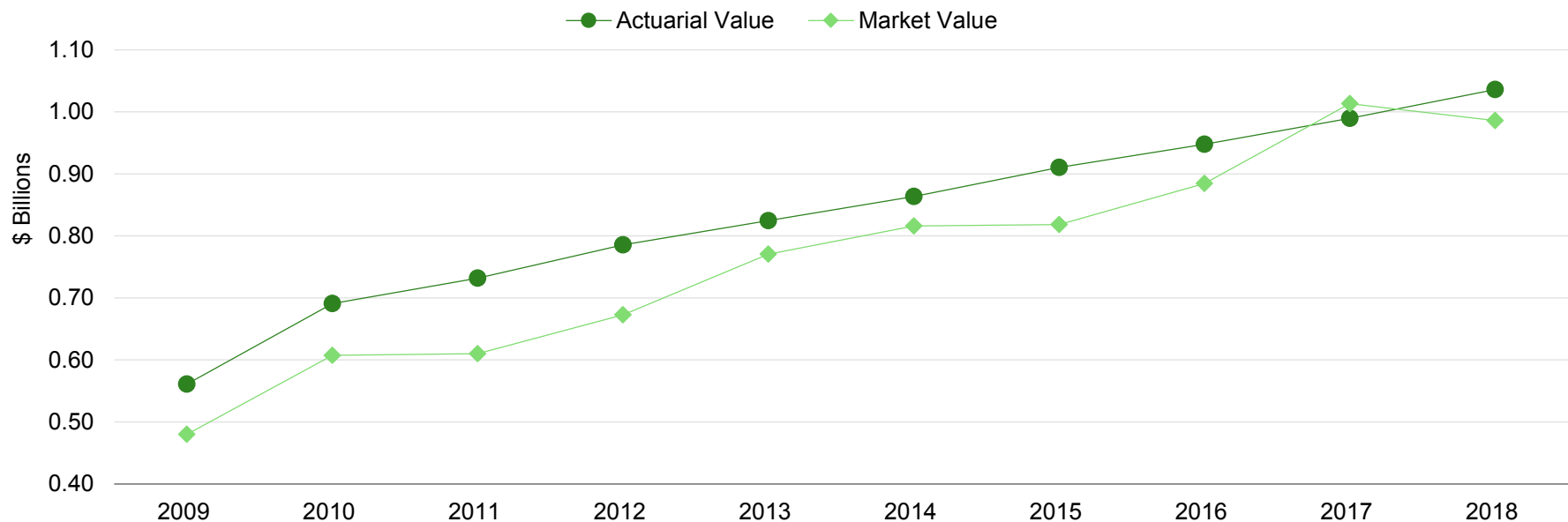
<sup>1</sup> In millions

## Section 2: Actuarial Valuation Results

### Asset history for years ended December 31

- Both the actuarial value and the market value of assets are representations of the Plan's financial status.
- The actuarial value is significant because it is subtracted from the Plan's total actuarial accrued liability to determine the portion that is not funded and is used to determine the PPA'06 funded percentages.

Actuarial Value of Assets vs. Market Value of Assets



|                              | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Actuarial Value <sup>1</sup> | \$0.56 | \$0.69 | \$0.73 | \$0.79 | \$0.82 | \$0.86 | \$0.91 | \$0.95 | \$0.99 | \$1.04 |
| Market Value <sup>1</sup>    | 0.48   | 0.61   | 0.61   | 0.67   | 0.77   | 0.82   | 0.82   | 0.88   | 1.01   | 0.99   |

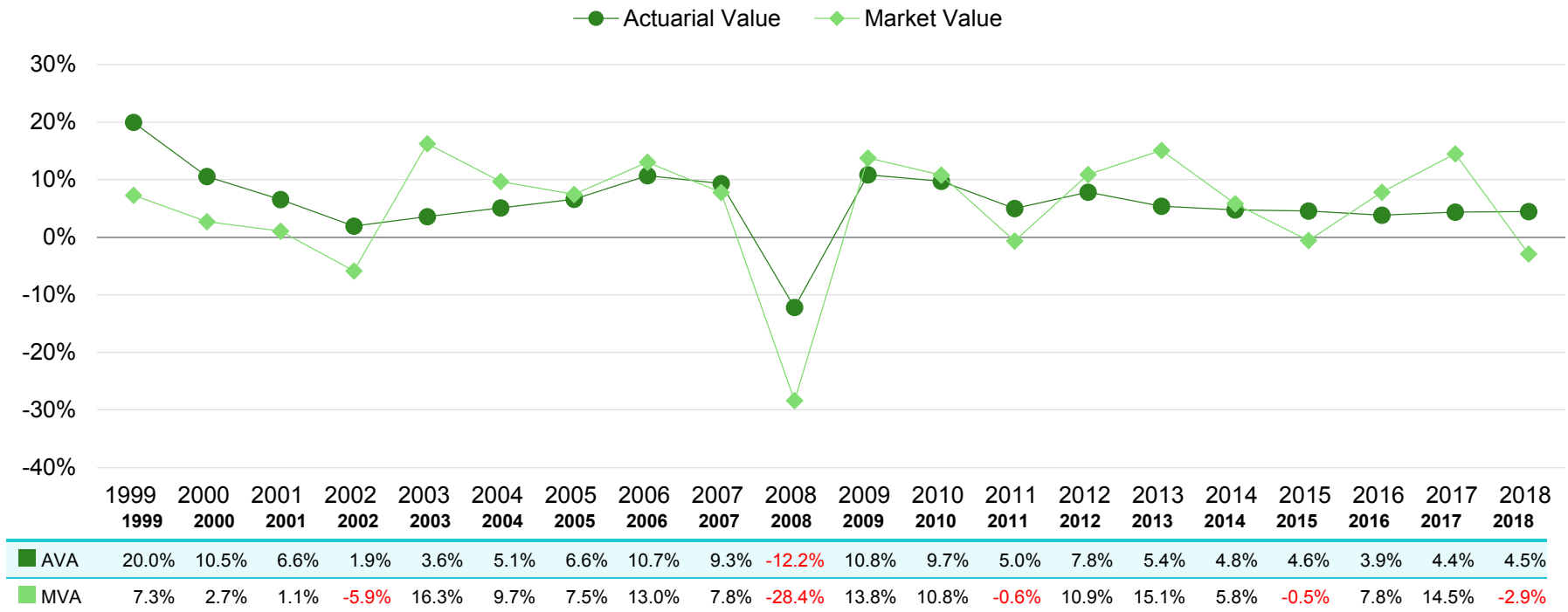
<sup>1</sup> In billions

## Section 2: Actuarial Valuation Results

### Historical investment returns

- Actuarial planning is long term. The obligations of a pension plan are expected to continue for the lifetime of all its participants.
- The assumed long-term rate of return of 7.25% considers past experience, the Trustees' asset allocation policy and future expectations.

Market Value and Actuarial Rates of Return for Years Ended  
December 31



| Average Rates of Return               | Actuarial Value | Market Value |
|---------------------------------------|-----------------|--------------|
| Most recent five-year average return: | 4.41%           | 4.73%        |
| Most recent ten-year average return:  | 5.69%           | 6.74%        |
| 20-year average return:               | 5.49%           | 4.97%        |



## Section 2: Actuarial Valuation Results

### Actuarial experience

- Assumptions should reflect experience and should be based on reasonable expectations for the future.
- Each year actual experience is compared to that projected by the assumptions. Differences are reflected in the contribution requirement as an experience gain or loss. Assumptions are not changed if experience is believed to be a short-term development that will not continue over the long term.

#### Experience for the Year Ended December 31, 2018

|          |  |                             |
|----------|--|-----------------------------|
| <b>1</b> | Loss from investments  | <b><u>-\$29,947,969</u></b> |
| <b>2</b> | Gain from administrative expenses                                    | 373,768                     |
| <b>3</b> | Net loss from other experience (0.9% of projected accrued liability) | <b><u>-11,850,999</u></b>   |
| <b>4</b> | <b>Net experience loss: 1 + 2 + 3</b>                                | <b><u>-\$41,425,200</u></b> |

## Section 2: Actuarial Valuation Results

### Investment experience

#### Loss from Investments

|   |   |                             |
|---|---|-----------------------------|
| 1 | Average actuarial value of assets                   | \$990,412,234               |
| 2 | Assumed rate of return                              | 7.50%                       |
| 3 | Expected net investment income: <b>1 x 2</b>        | \$74,280,918                |
| 4 | Net investment income (4.48% actual rate of return) | <u>44,332,949</u>           |
| 5 | <b>Actuarial loss from investments: 4 – 3</b>       | <b><u>-\$29,947,969</u></b> |

### Administrative expenses

- Administrative expenses for the year ended December 31, 2018 totaled \$1,582,784, as compared to the assumption of \$1,870,000 payable at the beginning of the year.

### Other experience

- The net loss from other experience is not considered significant and is mainly due to turnover patterns different than expected, previously terminated participants returning to work, and fewer deaths than projected. Some other differences between projected and actual experience include:
  - Salary increases more or less than projected
  - Retirement experience (earlier or later than projected and the number of retirements)
  - Number of disability retirements

## Section 2: Actuarial Valuation Results

### Actuarial assumptions

- The following assumptions were changed with this valuation:
  - The long-term rate of return assumption was decreased to 7.25% for the year beginning January 1, 2019.
  - Administrative expenses were decreased to \$1,765,000 for the year beginning January 1, 2019.
- The change in the long-term rate of return increased the actuarial accrued liability by 3.1% and increased the normal cost by 6.1%.
- Details on actuarial assumptions and methods are in Section 3.

### Plan provisions

- There were no changes in plan provisions since the prior valuation.
- The IRC Section 415(b) maximum benefit limit increased from \$220,000 in 2018 to \$225,000 in 2019.
- The IRC Section 401(a)(17) compensation limit increased from \$275,000 in 2018 to \$280,000 in 2019.
- These changes increased the actuarial accrued liability by 0.1% and the normal cost by 0.2%.
- A summary of plan provisions is in Section 3.

### Contribution rate changes

- The contribution rate remains 21% of payroll.

## Section 2: Actuarial Valuation Results

### Plan funding

#### Comparison of Funded Percentages

| Plan Year Beginning   | January 1, 2018        |                 | January 1, 2019        |                 |
|---|------------------------|-----------------|------------------------|-----------------|
| <b>Market Value of Assets</b>                                 | <b>\$1,013,010,466</b> |                 | <b>\$985,931,692</b>   |                 |
|   | <b>Amount</b>          | <b>Funded %</b> | <b>Amount</b>          | <b>Funded %</b> |
| • Funding interest rate                                       |                        | 7.50%           |                        | 7.25%           |
| • Present value (PV) of future benefits <sup>1</sup>          | \$1,383,542,965        | 73.4%           | \$1,518,222,152        | 65.1%           |
| • Actuarial accrued liability <sup>1</sup>                    | 1,214,663,943          | 83.6%           | 1,331,625,079          | 74.2%           |
| • PV of accumulated plan benefits                             | 1,008,769,783          | 100.4%          | 1,103,815,616          | 89.3%           |
| • PV of vested benefits for withdrawal liability <sup>2</sup> | \$1,493,391,955        | 67.8%           | \$1,519,639,189        | 64.9%           |
| • Current liability interest rate                             |                        | 2.98%           |                        | 3.06%           |
| • Current liability   | \$2,008,675,199        | 50.4%           | \$2,082,002,515        | 47.4%           |
| <b>Actuarial Value of Assets</b>                              | <b>\$989,465,059</b>   |                 | <b>\$1,035,864,572</b> |                 |
|   | <b>Amount</b>          | <b>Funded %</b> | <b>Amount</b>          | <b>Funded %</b> |
| • Funding interest rate                                       |                        | 7.50%           |                        | 7.25%           |
| • PV of future benefits <sup>1</sup>                          | \$1,383,542,965        | 71.7%           | \$1,518,222,152        | 68.4%           |
| • Actuarial accrued liability <sup>1</sup>                    | 1,214,663,943          | 81.6%           | 1,331,625,079          | 77.9%           |
| • PPA'06 liability and annual funding notice                  | 1,008,769,783          | 98.1%           | 1,103,815,616          | 93.8%           |
| • Withdrawal liability interest rate                          |                        | N/A             |                        | N/A             |
| • PV of vested benefits for withdrawal liability              | N/A                    | N/A             | N/A                    | N/A             |

These measurements are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations or the need for or the amount of future contributions.

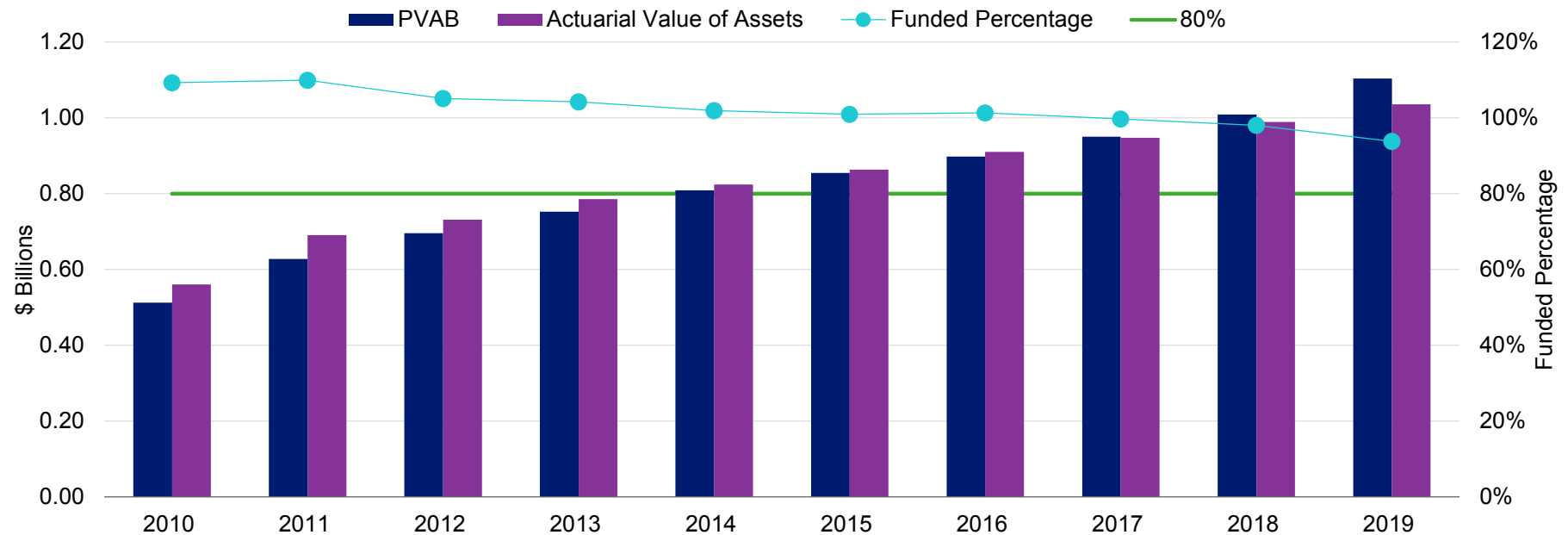
<sup>1</sup> Based on Scheduled Cost basis, which uses Entry Age actuarial cost method. As such, the assets are adjusted to include the value of long-term contribution receivables excluded for minimum funding purposes.

<sup>2</sup> The present value of vested benefits for withdrawal liability purposes based on the blended interest rate and other assumptions described later in this section.

## Section 2: Actuarial Valuation Results

### Pension Protection Act of 2006 historical information

#### Funded Percentage and Zone



| Plan year         | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   | 2019   |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Zone Status       | Green  | Green  | Green  | Green  | Green  | Green  | Green  | Green  | Green  | Green  |
| PVAB <sup>1</sup> | \$0.51 | \$0.63 | \$0.70 | \$0.75 | \$0.81 | \$0.86 | \$0.90 | \$0.95 | \$1.01 | \$1.10 |
| AVA <sup>1</sup>  | 0.56   | 0.69   | 0.73   | 0.79   | 0.82   | 0.86   | 0.91   | 0.95   | 0.99   | 1.04   |
| Funded %          | 109.3% | 110.0% | 105.1% | 104.3% | 101.9% | 101.0% | 101.3% | 99.7%  | 98.1%  | 93.8%  |

<sup>1</sup> In billions

## Section 2: Actuarial Valuation Results

### Scheduled Cost

- The Scheduled Cost is an annual contribution objective, reflecting benefit levels and current assets. It is compared to projected contributions to assess the Plan's long-term financial position. Simply avoiding an FSA funding deficiency is not a stable basis for funding the Plan. The Scheduled Cost uses a single amortization schedule for the total unfunded actuarial accrued liability, rather than the ERISA minimum funding approach.
- The actuarial assumptions used for the January 1, 2019 Scheduled Cost that differ from those used for minimum funding are:
  - The annual mandated benefit and compensation limits are assumed to increase 2.75% per year.
  - The Scheduled Cost assets include the long-term receivable contribution of \$2,123,542.
- The Scheduled Cost amortization period was reset from 11 years to 12 years remaining as of January 1, 2019 pending the Trustees' formal approval at the next Board meeting.

#### Scheduled Cost

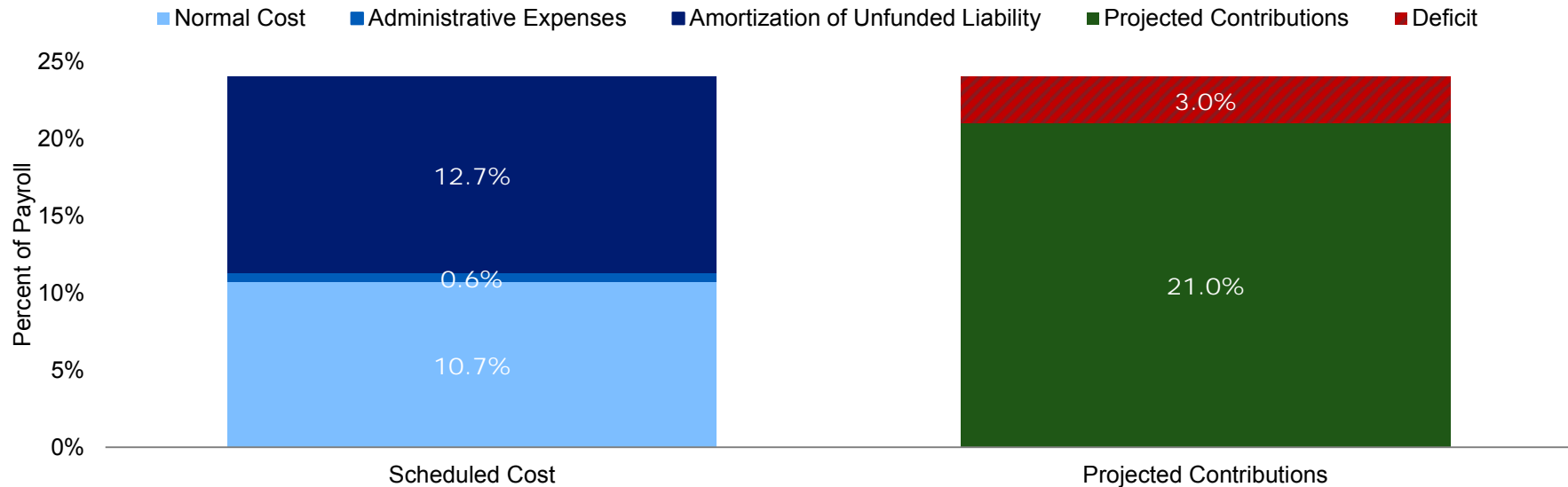
| Cost Element  | Year Beginning January 1 |                     |
|---|--------------------------|---------------------|
|   | 2018                     | 2019                |
| Normal cost <sup>1</sup>  | \$27,835,577             | \$30,476,047        |
| Administrative expenses <sup>1</sup>                                  | 1,944,288                | 1,832,829           |
| Amortization of the unfunded actuarial accrued liability <sup>1</sup> | 27,917,050               | 36,273,477          |
| • Actuarial accrued liability   | 1,214,663,943            | 1,331,625,079       |
| • Actuarial value of assets   | 991,391,563              | 1,037,988,114       |
| • Unfunded actuarial accrued liability                                | 223,272,380              | 293,636,965         |
| • Amortization period   | 12                       | 12                  |
| <b>Annual Scheduled Cost, payable monthly</b>                         | <b>\$57,696,915</b>      | <b>\$68,582,353</b> |
| Projected payroll   | \$277,354,778            | \$285,974,562       |
| Projected contributions (21% of payroll)                              | 58,244,503               | 60,054,658          |
| <b>Margin/(deficit)</b>   | <b>\$547,588</b>         | <b>-\$8,527,695</b> |
| Margin/(deficit) as a % of projected payroll                          | 0.2%                     | -3.0%               |

<sup>1</sup> Includes adjustment for monthly payments

## Section 2: Actuarial Valuation Results

### Scheduled Cost margin/deficit

- Projected employer contributions of \$60,054,658 are based on 21% of payroll, estimated to be \$285,974,562 for 2019.
- This falls short of the Scheduled Cost of \$68,582,353 (24% of payroll) by \$8,527,695, or 3.0% of projected payroll.
- Prior net investment losses are not fully recognized in the actuarial value of assets. Using the current market value of assets, the Scheduled Cost would be 26.1% of payroll. The deficit would be \$14,695,989, or 5.1% of projected payroll.



## Section 2: Actuarial Valuation Results

### Scheduled Cost reconciliation

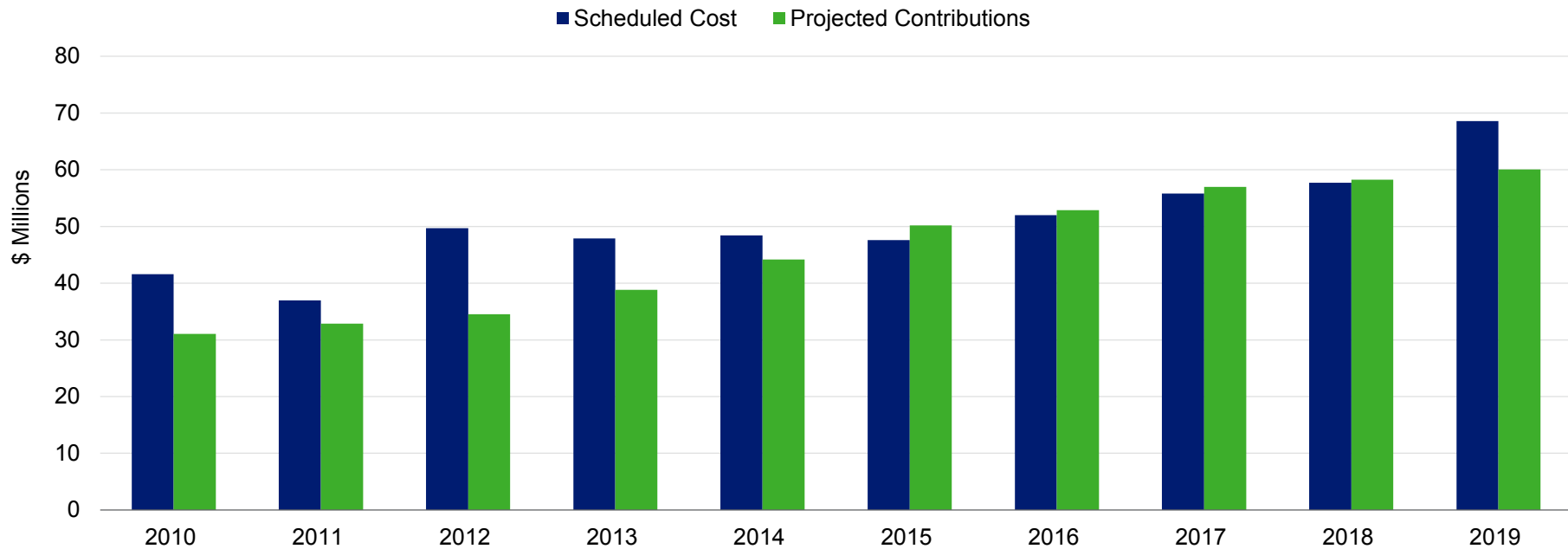
|   |                |                     |
|---|----------------|---------------------|
| <b>Scheduled Cost as of January 1, 2018</b>                                     |                | \$57,696,915        |
| • Effect of increases to mandated benefit and compensation limits               | \$73,972       |                     |
| • Effect of change in amortization period                                       | -1,814,844     |                     |
| • Effect of change in administrative expense assumption                         | -109,035       |                     |
| • Effect of decrease in the long-term rate of return assumption                 | 6,344,204      |                     |
| • Effect of contributions less than Scheduled Cost                              | 723            |                     |
| • Effect of investment loss   | 3,959,482      |                     |
| • Effect of other gains and losses on accrued liability                         | 1,558,933      |                     |
| • Effect of net other changes, including composition and number of participants | <u>872,003</u> |                     |
| <b>Total change</b>   |                | <u>10,885,438</u>   |
| <b>Scheduled Cost as of January 1, 2019</b>                                     |                | <u>\$68,582,353</u> |



## Section 2: Actuarial Valuation Results

### Scheduled Cost vs. projected contributions — Historical information

- The margin or deficit is represented by the difference between the projected contributions and the Scheduled Cost.



## Section 2: Actuarial Valuation Results

### Risk

- The actuarial valuation results are dependent on a single set of assumptions. However, there is a risk that emerging results may differ significantly as actual experience proves to be different from the current assumptions.
- We have not been engaged to perform a detailed analysis of the potential range of the impact of risk relative to the Plan's future financial condition, but have included a brief discussion of some risks that may affect the Plan. A more detailed assessment would provide the Trustees with a better understanding of the risks inherent in the Plan.
- A detailed risk assessment could be important for your Plan because:
  - The outlook for financial markets and future industry activity is uncertain due to COVID-19.
  - The Plan may enter endangered or critical status in the near future depending on experience.
  - Relatively small changes in investment performance can produce large swings in the unfunded liabilities because the assets and liabilities are of similar size.
  - The Plan's asset allocation has potential for a significant amount of investment return volatility.
  - Potential changes in the covered population/plan industry may result in participant choices that vary from those assumed.
  - Actual contributions have been less than Scheduled Cost for the last two years, which may indicate additional funding challenges in the future.
  - The Trustees have not had a detailed risk assessment in several years.
- Economic Shock Risk. Potential implications for the Plan due to the effects of the COVID-19 pandemic (that were not reflected as of the valuation date) include:
  - Volatile financial markets and investment returns lower than assumed
  - Short-term or long-term employment levels far different than past experience, including a projected rate of change and possible "new normal" long-term state
  - Changes in future demographic experience, such as retirement, disability, turnover, and mortality patterns
- Investment Risk (the risk that returns will be different than expected)

Since the Plan's assets are much larger than contributions, investment performance will create volatility in contribution requirements.

Based on 2019 capital market expectations (developed by Segal Marco) and the Plan's current target asset allocation, we estimate that there is a 16.7% likelihood that the Plans' annual return will be less than **-3.4%** in any given year.

## Section 2: Actuarial Valuation Results

As can be seen in Section 2, the market value rate of return over the last 20 years ended December 31, 2018 has ranged from a low of -28.35% to a high of 16.26%.

- Contribution/Employment Risk (the risk that actual contributions will be different from projected contributions)

The Plan relies on contributions to pay benefits and expenses. To the extent contributions do not cover those costs, investment income is needed. As such, there is risk associated with a decline in the number of active participants to the extent it causes a decrease in contributions to the Plan. A significant decrease in the number of active participants may require increased funding to the Plan that is not sustainable solely through investment earnings.

If contributions remain at the current contribution rate of 21% of payroll, we project the unfunded actuarial accrued liability for Scheduled Cost purposes will be paid off in 19.4 years rather than the Trustees' amortization policy of 12 years.

We are prepared to model the effect of decreases in the number of actives (and projected contributions) on the projected Funded Percentage and credit balance.

- Longevity Risk (the risk that mortality experience will be different than expected)

The actuarial valuation includes an expectation of future improvement in life expectancy. Emerging plan experience that does not match these expectations will result in either an increase or decrease in the required contribution.

- Other Demographic Risk (the risk that participant experience will be different than assumed)

Examples of this risk include:

- Actual retirements occurring earlier or later than assumed. The value of retirement plan benefits is sensitive to the rate of benefit accruals and any early retirement subsidies that apply. While it is difficult to quantify the impact of potential experience, earlier retirements would generally result in higher costs for your plan.
- More or less active participant turnover than assumed. Lower turnover would generally result in higher costs for your Plan.
- Return to covered employment of previously inactive participants. More rehires would generally result in higher costs for your Plan.

- Actual Experience over the Last Ten Years

Past experience can help demonstrate the sensitivity of key results to the Plan's risk profile. Over the past ten years ended December 31, 2018, the investment gain (loss) on market value for a year has ranged from a loss of \$105,192,161 to a gain of \$62,162,720.

## Section 2: Actuarial Valuation Results

- Maturity Measures

The risk associated with a pension plan increases as it becomes more mature, meaning that the actives represent a smaller portion of the liabilities of the plan. When this happens, there is a greater risk that fluctuations in the experience of the non-active participants or of the assets of the plan can result in large swings in the contribution requirements.

- As of January 1, 2019, the retired life actuarial accrued liability represents 43% of the total actuarial accrued liability. In addition, the actuarial accrued liability for inactive vested participants represents 16% of the total. The higher the non-active actuarial accrued liability is as a percent of the total liability, the greater the danger of volatility in results.
- Over the past ten years ended December 31, 2018, the ratio of non-active participants to active participants has increased from a low of 1.31 in 2011 to a high of 1.96 in 2018. However, the ratio of benefit payments to contributions has only increased from 0.9 ten years ago to 1.0 last year. As these ratios increase, the Plan becomes more dependent upon investment returns in order to pay benefits.

- There are external factors including legislative, regulatory or financial reporting changes that could impact the Plan's funding and disclosure requirements. While we do not assume any changes in such external factors, it is important to understand that they could have significant consequences for the Plan. For example, legislative proposals in 2018 showed that Congress continues to consider possible changes to funding requirements for multiemployer plans (such as changes to the zone rules) and increases in PBGC premiums.

## Section 2: Actuarial Valuation Results

### Withdrawal liability

- The present value of vested benefits for withdrawal liability purposes reflects the assumption changes effective January 1, 2019. For purposes of determining the present value of vested benefits, we excluded all benefits that are not protected by IRC Section 411(d)(6), including lump sum benefits.
- Because the Trustees have adopted the “one-pool” allocation method, an employer withdrawing in the Plan Year ending December 31, 2019 will be assessed withdrawal liability.
- The \$53,326,008 increase in the unfunded present value of vested benefits from the prior year is primarily due to the market investment loss and the decrease in the long-term rate of return assumption.

|  | December 31          |                    |
|--|----------------------|--------------------|
|  | 2017                 | 2018               |
| <b>1</b> PVVB measured for withdrawal purposes   | \$1,493,391,955      | \$1,519,639,189    |
| <b>2</b> Market value of assets  | <u>1,013,010,466</u> | <u>985,931,692</u> |
| <b>3</b> Unfunded present value of vested benefits (UVB): <b>1 - 2</b> , not less than \$0 | \$480,381,489        | \$533,707,497      |

## Section 2: Actuarial Valuation Results

### Withdrawal liability assumptions

- The actuarial assumptions and methods are reasonable (taking into account the experience of the Plan and reasonable expectations) and, in combination, represent the actuary's best estimate of anticipated experience under the Plan to determine the unfunded vested benefits for withdrawal liability purposes.
- The interest rate is based on a blend, which includes rates selected based on estimated annuity purchase rates for benefits being settled, because withdrawal liability is a final settlement of an employer's obligations to the Plan. For benefits that could be settled immediately, because assets on hand are sufficient, the annuity purchase rates are those promulgated by PBGC under ERISA Sec. 4044 for multiemployer plans terminating by mass withdrawal on the measurement date. For benefits that cannot be settled immediately because they are not currently funded, the calculation uses rates equal to the interest rate used for plan funding calculations.

|                                |   |
|--------------------------------|---|
| <b>Interest</b>                | For liabilities up to market value of assets, 2.84% for 20 years and 2.76% beyond (2.34% for 20 years and 2.63% beyond, in the prior year valuation). For liabilities in excess of market value of assets, same as used for plan funding as of January 1, 2019 (the corresponding funding rate as of a year earlier was used for the prior year's value). |
| <b>Administrative Expenses</b> | Calculated as prescribed by PBGC formula (29 CFR Part 4044, Appendix C); not applicable to those liabilities determined using funding interest rates.   |
| <b>Mortality</b>               | Same as used for plan funding as of January 1, 2019 (the corresponding mortality rates as of a year earlier were used for the prior year's value)   |
| <b>Retirement Rates</b>        | Same as used for plan funding as of January 1, 2019 (the corresponding retirement rates as of a year earlier were used for the prior year's value)  |

## Section 2: Actuarial Valuation Results

### Summary of PPA'06 zone status rules

- Based on projections of the credit balance in the FSA, the funded percentage, and cash flow sufficiency tests, plans are categorized in one of the “zones” described below.
- The funded percentage is determined using the actuarial value of assets and the present value of benefits earned to date, based on the actuary’s best estimate assumptions.

#### Critical Status (Red Zone)

A plan is classified as being in critical status (the Red Zone) if:

- The funded percentage is less than 65%, and either there is a projected FSA deficiency within five years or the plan is projected to be unable to pay benefits within seven years, or
- There is a projected FSA deficiency within four years, or
- There is a projected inability to pay benefits within five years, or
- The present value of vested benefits for inactive participants exceeds that for actives, contributions are less than the value of the current year’s benefit accruals plus interest on existing unfunded accrued benefit liabilities, and there is a projected FSA deficiency within five years, or
- As permitted by the Multiemployer Pension Reform Act of 2014, the plan is projected to be in the *Red Zone* within the next five years and the plan sponsor elects to be in critical status.
- A critical status plan is further classified as being in *critical and declining status* if:
  - The ratio of inactive participants to active participants is at least 2 to 1, and there is an inability to pay benefits projected within 20 years, or
  - The funded percentage is less than 80%, and there is an inability to pay benefits projected within 20 years, or
  - There is an inability to pay benefits projected within 15 years.

Any amortization extensions are ignored for testing initial entry into the *Red Zone*.

The Trustees are required to adopt a formal Rehabilitation Plan, designed to allow the plan to emerge from critical status by the end of the rehabilitation period. If they determine that such emergence is not reasonable, the Rehabilitation Plan must be designed to emerge as of a later time or to forestall possible insolvency.

Trustees of *Red Zone* plans have tools, such as the ability to reduce or eliminate early retirement subsidies, to remedy the situation. Accelerated forms of benefit payment (such as lump sums) are prohibited. However, unless the plan is critical and declining, Trustees may not reduce benefits of participants who retired before being notified of the plan’s critical status (other than rolling back recent benefit increases) or alter core retirement benefits payable at normal retirement age.

## Section 2: Actuarial Valuation Results

### Endangered Status (Yellow Zone)

A plan not in critical status (*Red Zone*) is classified as being in endangered status (the *Yellow Zone*) if:

- The funded percentage is less than 80%, or
- There is a projected FSA deficiency within seven years.

A plan that has both of the endangered conditions present is classified as seriously endangered.

Trustees of a plan that was in the *Green Zone* in the prior year can elect not to enter the *Yellow Zone* in the current year (although otherwise required to do so) if the plan's current provisions would be sufficient (with no further action) to allow the plan to emerge from the *Yellow Zone* within ten years.

The Trustees are required to adopt a formal Funding Improvement Plan, designed to improve the current funded percentage, and avoid a funding deficiency as of the emergence date.

### Green Zone

A plan not in critical status (the *Red Zone*) nor in endangered status (the *Yellow Zone*) is classified as being in the *Green Zone*.

### Early Election of Critical Status

Trustees of a *Green* or *Yellow Zone* plan that is projected to enter the *Red Zone* within the next five years may elect whether or not to enter the *Red Zone* for the current year.



# Section 3: Certificate of Actuarial Valuation

October 9, 2020

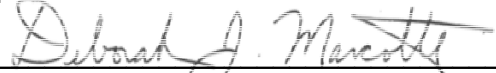
## Certificate of Actuarial Valuation

This is to certify that Segal has prepared an actuarial valuation of the SEIU Affiliates Officers and Employees Pension Plan as of January 1, 2019 in accordance with generally accepted actuarial principles and practices. It has been prepared at the request of the Board of Trustees to assist in administering the Fund and meeting filing requirements of federal government agencies. This valuation report may not otherwise be copied or reproduced in any form without the consent of the Board of Trustees and may only be provided to other parties in its entirety.

The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.

The valuation is based on the assumption that the Plan is qualified as a multiemployer plan for the year and on information supplied by the auditor with respect to contributions and assets and reliance on the Benefit Funds Office with respect to the participant data. Segal does not audit the data provided. The accuracy and comprehensiveness of the data is the responsibility of those supplying the data. To the extent we can, however, Segal does review the data for reasonableness and consistency. Based on our review of the data, we have no reason to doubt the substantial accuracy of the information on which we have based this report and we have no reason to believe there are facts or circumstances that would affect the validity of these results. Adjustments for incomplete or apparently inconsistent data were made as described in the attached Exhibit K.

I am a member of the American Academy of Actuaries and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of my knowledge, the information supplied in this actuarial valuation is complete and accurate, except as noted in Exhibit A. Each prescribed assumption for the determination of Current Liability was applied in accordance with applicable law and regulations. In my opinion, each other assumption is reasonable (taking into account the experience of the plan and reasonable expectations) and such other assumptions, in combination, offer my best estimate of anticipated experience under the plan.



Deborah J. Marcotte, FCA, MAAA  
Senior Vice President and Actuary  
Enrolled Actuary No. 20-5560

## Section 3: Certificate of Actuarial Valuation

### Exhibit A: Table of Plan Coverage

The valuation was made with respect to the following data supplied to us by the Benefit Funds Offices.

| Category   | January 1     |               | Change from Prior Year |
|--|---------------|---------------|------------------------|
|  | 2018          | 2019          |                        |
| <b>Active participants in valuation:</b>               |               |               |                        |
| • Number   | 3,923         | 3,783         | -3.6%                  |
| • Average age  | 44.5          | 44.6          | 0.1                    |
| • Average years of benefit service                     | 7.7           | 7.9           | 0.2                    |
| • Average compensation                                 | \$70,700      | \$75,595      | 6.9%                   |
| • Number with unknown age                              | 60            | 7             | -88.3%                 |
| • Total active vested participants                     | 2,914         | 2,839         | -2.6%                  |
| • Number of Common Service employees                   | 235           | 196           | -16.6%                 |
| <b>Inactive participants with rights to a pension:</b> |               |               |                        |
| • Number   | 4,526         | 4,799         | 6.0%                   |
| • Average age  | 49.9          | 50.1          | 0.2                    |
| • Average estimated monthly benefit                    | \$579         | \$602         | 4.0%                   |
| <b>Pensioners:</b>                                     |               |               |                        |
| • Number in pay status                                 | 2,130         | 2,243         | 5.3%                   |
| • Average age  | 71.5          | 71.8          | 0.3                    |
| • Average monthly benefit                              | \$1,784       | \$1,805       | 1.2%                   |
| • Number in suspended status                           | 20            | 17            | -15.0%                 |
| <b>Beneficiaries:</b>                                  |               |               |                        |
| • Number in pay status                                 | 336           | 347           | 3.3%                   |
| • Average age  | 72.1          | 72.7          | 0.6                    |
| • Average monthly benefit                              | \$1,138       | \$1,159       | 1.8%                   |
| <b>Total participants</b>                              | <b>10,935</b> | <b>11,189</b> | <b>2.3%</b>            |

## Section 3: Certificate of Actuarial Valuation

### Exhibit B: Actuarial Factors for Minimum Funding

|  | 2018                   | 2019                   |
|--|------------------------|------------------------|
| Interest rate assumption                                   | 7.50%                  | 7.25%                  |
| Normal cost, including administrative expenses             | \$27,832,581           | \$30,150,734           |
| Actuarial present value of projected benefits              | \$1,364,024,274        | \$1,495,057,048        |
| Present value of future normal costs                       | 163,569,865            | 180,193,876            |
| <b>Actuarial accrued liability</b>                         | <b>\$1,200,454,409</b> | <b>\$1,314,863,172</b> |
| • Pensioners and beneficiaries                             | \$523,946,798          | \$562,411,283          |
| • Inactive participants with vested rights                 | 176,601,275            | 207,096,664            |
| • Active participants                                      | 499,906,336            | 545,355,225            |
| Actuarial value of assets                                  | \$989,465,059          | \$1,035,864,572        |
| Market value as reported by Calibre CPA Group <sup>1</sup> | 1,013,010,466          | 985,931,692            |
| Unfunded actuarial accrued liability                       | 210,989,350            | 278,998,600            |

<sup>1</sup> Reported market value reduced by long-term receivable contributions.

## Section 3: Certificate of Actuarial Valuation

### Exhibit C: Summary Statement of Income and Expenses on a Market Value Basis

|  | Year Ended December 31, 2017 | Year Ended December 31, 2018 |
|--|------------------------------|------------------------------|
| <b>Contribution income:</b>                | \$54,413,224                 | \$57,666,589                 |
| <b>Investment income:</b>                  |                              |                              |
| • Interest and dividends                   | \$12,490,374                 | \$16,212,945                 |
| • Capital appreciation/(depreciation)      | 117,068,049                  | -45,358,283                  |
| • Less investment fees <sup>1</sup>        | -1,062,670                   | 0                            |
| <i>Net investment income</i>               | 128,495,753                  | -29,145,338                  |
| <b>Total income available for benefits</b> | <b>\$182,908,977</b>         | <b>\$28,521,251</b>          |
| <b>Less benefit payments and expenses:</b> |                              |                              |
| • Pension benefits                         | -\$52,579,451                | -54,017,241                  |
| • Administrative expenses                  | -1,696,655                   | -1,582,784                   |
| <i>Total benefit payments and expenses</i> | <i>-\$54,276,106</i>         | <i>-\$55,600,025</i>         |
| <b>Market value of assets</b>              | <b>\$1,013,010,466</b>       | <b>\$985,931,692</b>         |

<sup>1</sup> Not reported in financials as of December 31, 2018.

## Section 3: Certificate of Actuarial Valuation

### Exhibit D: Determination of Actuarial Value of Assets

|            |   |                                    |  |                            |
|------------|---|------------------------------------|--|----------------------------|
| <b>1</b>   | Market value of assets, December 31, 2018                             |                                    |  | \$985,931,692 <sup>1</sup> |
| <b>2</b>   | Calculation of unrecognized return                                    | <b>Original Amount<sup>2</sup></b> | <b>Unrecognized Return<sup>3</sup></b> |                            |
| <b>(a)</b> | Year ended December 31, 2018  | -\$103,426,256                     | -\$77,569,692                          |                            |
| <b>(b)</b> | Year ended December 31, 2017  | 57,412,914                         | 28,706,457                             |                            |
| <b>(c)</b> | Year ended December 31, 2016  | -4,278,581                         | -1,069,645                             |                            |
| <b>(d)</b> | Year ended December 31, 2015  | -69,499,951                        | 0                                      |                            |
| <b>(e)</b> | Total unrecognized return   |                                    |  | -\$49,932,880              |
| <b>3</b>   | Preliminary actuarial value: <b>1 - 2e</b>                            |                                    |  | 1,035,864,572              |
| <b>4</b>   | Adjustment to be within 20% corridor                                  |                                    |  | 0                          |
| <b>5</b>   | Final actuarial value of assets as of December 31, 2018: <b>3 + 4</b> |                                    |  | 1,035,864,572              |
| <b>6</b>   | Actuarial value as a percentage of market value: <b>5 ÷ 1</b>         |                                    |  | 105.1%                     |
| <b>7</b>   | Amount deferred for future recognition: <b>1 - 5</b>                  |                                    |  | -\$49,932,880              |

<sup>1</sup> Excludes \$2,123,542 of long-term receivable contributions.

<sup>2</sup> Total return on market value basis minus expected return on actuarial basis using the net investment return

<sup>3</sup> Recognition at 25% per year over four years

## Section 3: Certificate of Actuarial Valuation

### Exhibit E: Information on Plan Status as of January 1, 2019

|   |                 |
|---|-----------------|
| Plan status (as certified on March 29, 2019, for the 2019 zone certification) | <b>Green</b>    |
| Actuarial value of assets for FSA   | \$1,035,864,572 |
| Accrued liability under unit credit cost method                               | 1,103,815,616   |
| Funded percentage for monitoring plan's status                                | 93.8%           |

#### Annual Funding Notice for Plan Year Beginning January 1, 2019 and Ending December 31, 2019

|  | <b>2019<br/>Plan Year</b> | <b>2018<br/>Plan Year</b> | <b>2017<br/>Plan Year</b> |
|--|---------------------------|---------------------------|---------------------------|
| Actuarial valuation date                   | January 1, 2019           | January 1, 2018           | January 1, 2017           |
| Funded percentage                          | 93.8%                     | 98.1%                     | 99.7%                     |
| Value of assets                            | \$1,035,864,572           | \$989,465,059             | \$947,708,341             |
| Value of liabilities                       | 1,103,815,616             | 1,008,769,783             | 950,585,358               |
| Market value of assets as of plan year end | Not available             | 985,931,692               | 1,013,010,466             |

## Section 3: Certificate of Actuarial Valuation

### Exhibit F: Schedule of Projection of Expected Benefit Payments

(Schedule MB, Line 8b(1))

| Plan Year | Expected Annual Benefit Payments |
|-----------|----------------------------------|
| 2019      | \$68,015,210                     |
| 2020      | 67,774,760                       |
| 2021      | 71,146,594                       |
| 2022      | 73,796,790                       |
| 2023      | 76,884,586                       |
| 2024      | 79,311,325                       |
| 2025      | 81,496,291                       |
| 2026      | 83,627,435                       |
| 2027      | 85,399,696                       |
| 2028      | 87,309,594                       |

This assumes the following:

- No additional benefits will be accrued.
- Experience is in line with valuation assumptions.
- No new entrants are covered by the plan.

## Section 3: Certificate of Actuarial Valuation

### Exhibit G: Schedule of Active Participant Data

(Schedule MB, Line 8b(2))

The participant data is as of January 1, 2019.

| Age       | Total    | 0 - 1    | 1 - 4    | 5 - 9  | 10 - 14 | 15 - 19 | 20 - 24 | 25 - 29 | 30 - 34 | 35 - 39 | 40 & over |
|-----------|----------|----------|----------|--------|---------|---------|---------|---------|---------|---------|-----------|
| Under 25  | 99       | 51       | 45       | 2      | 1       |         |         |         |         |         |           |
|           | \$46,284 | \$40,136 | \$56,104 |        |         |         |         |         |         |         |           |
| 25 - 29   | 327      | 98       | 206      | 22     | 1       |         |         |         |         |         |           |
|           | 60,877   | 49,011   | 65,502   | 72,877 |         |         |         |         |         |         |           |
| 30 - 34   | 463      | 90       | 225      | 123    | 25      |         |         |         |         |         |           |
|           | 69,758   | 55,430   | 66,348   | 81,669 | 93,417  |         |         |         |         |         |           |
| 35 - 39   | 597      | 57       | 200      | 199    | 123     | 18      |         |         |         |         |           |
|           | 77,662   | 57,450   | 69,401   | 84,212 | 88,654  |         |         |         |         |         |           |
| 40 - 44   | 552      | 43       | 170      | 157    | 117     | 61      | 4       |         |         |         |           |
|           | 80,029   | 46,872   | 66,639   | 82,304 | 97,928  | 98,478  |         |         |         |         |           |
| 45 - 49   | 449      | 36       | 124      | 101    | 90      | 62      | 31      | 4       | 1       |         |           |
|           | 81,145   | 61,663   | 68,274   | 82,038 | 87,791  | 94,957  | 105,964 |         |         |         |           |
| 50 - 54   | 434      | 32       | 91       | 92     | 98      | 69      | 29      | 16      | 7       |         |           |
|           | 82,448   | 51,503   | 69,370   | 75,131 | 91,952  | 94,953  | 102,179 |         |         |         |           |
| 55 - 59   | 402      | 17       | 89       | 84     | 81      | 62      | 41      | 17      | 10      | 1       |           |
|           | 77,443   |          | 63,550   | 75,337 | 79,889  | 84,957  | 92,881  |         |         |         |           |
| 60 - 64   | 301      | 13       | 49       | 58     | 70      | 54      | 29      | 15      | 7       | 3       | 3         |
|           | 79,453   |          | 67,056   | 76,389 | 75,683  | 82,159  | 95,934  |         |         |         |           |
| 65 - 69   | 122      | 3        | 20       | 29     | 31      | 17      | 10      | 6       | 4       | 1       | 1         |
|           | 76,214   |          | 61,537   | 67,327 | 75,980  |         |         |         |         |         |           |
| 70 & over | 30       | 2        | 5        | 5      | 6       | 4       | 2       | 3       | 3       |         |           |
|           | 61,359   |          |          |        |         |         |         |         |         |         |           |
| Unknown   | 7        | 4        | 3        |        |         |         |         |         |         |         |           |
| Totals    | 3,783    | 446      | 1,227    | 872    | 643     | 347     | 146     | 61      | 32      | 5       | 4         |
|           | 75,595   | 51,663   | 66,335   | 79,641 | 87,377  | 90,349  | 98,744  | 97,616  | 100,701 |         |           |



## Section 3: Certificate of Actuarial Valuation

### Exhibit H: Funding Standard Account (FSA)

- ERISA imposes a minimum funding standard that requires the Plan to maintain an FSA. The accumulation of contributions in excess of the minimum required contributions is called the FSA credit balance. If actual contributions fall short on a cumulative basis, a funding deficiency has occurred.
- The FSA is charged with the normal cost and the amortization of increases or decreases in the unfunded actuarial accrued liability due to plan amendments, experience gains or losses, and changes in actuarial assumptions and funding methods. The FSA is credited with employer contributions and withdrawal liability payments.
- Increases or decreases in the unfunded actuarial accrued liability are amortized over 15 years except that short-term benefits, such as 13th checks, are amortized over the scheduled payout period.

|  | December 31, 2018 | December 31, 2019 |
|--|-------------------|-------------------|
| <b>1</b> Prior year funding deficiency   | \$0               | \$0               |
| <b>2</b> Normal cost, including administrative expenses  | 27,832,581        | 30,150,734        |
| <b>3</b> Amortization charges  | 50,556,521        | 58,537,551        |
| <b>4</b> Interest on <b>1, 2 and 3</b>   | <u>5,879,183</u>  | <u>6,429,901</u>  |
| <b>5</b> Total charges   | \$84,268,285      | \$95,118,186      |
| <b>6</b> Prior year credit balance   | \$136,563,073     | \$134,147,165     |
| <b>7</b> Employer contributions  | 57,666,589        | TBD               |
| <b>8</b> Amortization credits  | 11,126,761        | 11,044,909        |
| <b>9</b> Interest on <b>6, 7 and 8</b>   | 13,059,027        | 10,526,425        |
| <b>10</b> Full funding limitation credits  | <u>0</u>          | <u>0</u>          |
| <b>11</b> Total credits  | 218,415,450       | 155,718,499       |
| <b>12</b> Credit balance/(Funding deficiency): <b>11 - 5</b>   | \$134,147,165     | TBD               |
| <b>13</b> Minimum contribution with interest required to avoid a funding deficiency: <b>5 -11</b> not less than zero | N/A               | \$0               |

## Section 3: Certificate of Actuarial Valuation

### Full Funding Limitation (FFL) and Credits for Plan Year January 1, 2019

|   |               |
|---|---------------|
| ERISA FFL (accrued liability FFL)           | \$528,988,509 |
| RPA'94 override (90% current liability FFL) | 920,413,653   |
| FFL credit                                  | 0             |

## Section 3: Certificate of Actuarial Valuation

### Schedule of FSA Charge Bases (Schedule MB, Line 9c)

| Type of Base                      | Date Established | Outstanding Balance | Years Remaining | Amortization Amount |
|-----------------------------------|------------------|---------------------|-----------------|---------------------|
| Change in Actuarial Assumptions   | 01/01/2009       | \$31,731            | 5               | \$7,264             |
| Plan Amendment                    | 01/01/2009       | 1,137,829           | 5               | 260,481             |
| Experience Loss                   | 01/01/2009       | 52,950,344          | 5               | 12,121,826          |
| Investment Loss Subject to Relief | 01/01/2009       | 103,606,617         | 19              | 9,522,582           |
| Investment Loss Subject to Relief | 01/01/2010       | 13,603,582          | 19              | 1,250,318           |
| Merger                            | 06/01/2010       | 9,896,716           | 6.42            | 1,849,066           |
| Investment Loss Subject to Relief | 01/01/2011       | 9,389,261           | 19              | 862,976             |
| Plan Amendment                    | 01/01/2012       | 772,955             | 8               | 121,867             |
| Experience Loss                   | 01/01/2012       | 1,554,869           | 8               | 245,146             |
| Investment Loss Subject to Relief | 01/01/2012       | 11,718,865          | 19              | 1,077,092           |
| Change in Actuarial Assumptions   | 01/01/2012       | 27,956,749          | 8               | 4,407,751           |
| Plan Amendment                    | 01/01/2013       | 631,040             | 9               | 91,272              |
| Investment Loss Subject to Relief | 01/01/2013       | 13,289,556          | 19              | 1,221,456           |
| Plan Amendment                    | 01/01/2014       | 637,820             | 10              | 85,654              |
| Investment Loss Subject to Relief | 01/01/2014       | 32,033,999          | 19              | 2,944,275           |
| Plan Amendment                    | 01/01/2015       | 58,709              | 11              | 7,391               |
| Experience Loss                   | 01/01/2015       | 18,426,057          | 11              | 2,319,748           |
| Change in Actuarial Assumptions   | 01/01/2016       | 745,365             | 12              | 88,669              |
| Experience Loss                   | 01/01/2016       | 19,718,678          | 12              | 2,345,736           |
| Plan Amendment                    | 01/01/2017       | 1,116,842           | 13              | 126,369             |
| Experience Loss                   | 01/01/2017       | 32,430,230          | 13              | 3,669,437           |
| Plan Amendment                    | 01/01/2018       | 1,120,366           | 14              | 121,245             |
| Experience Loss                   | 01/01/2018       | 48,709,353          | 14              | 5,271,293           |
| Plan Amendment                    | 01/01/2019       | 1,344,320           | 15              | 139,803             |

## Section 3: Certificate of Actuarial Valuation

| Type of Base                    | Date Established | Outstanding Balance  | Years Remaining | Amortization Amount |
|---------------------------------|------------------|----------------------|-----------------|---------------------|
| Change in Actuarial Assumptions | 01/01/2019       | 39,144,382           | 15              | 4,070,820           |
| Experience Loss                 | 01/01/2019       | 41,425,200           | 15              | 4,308,014           |
| <b>Total</b>                    |                  | <b>\$483,451,435</b> |                 | <b>\$58,537,551</b> |

## Section 3: Certificate of Actuarial Valuation

### Schedule of FSA Credit Bases (Schedule MB, Line 9h)

| Type of Base                    | Date Established | Outstanding Balance | Years Remaining | Amortization Amount |
|---------------------------------|------------------|---------------------|-----------------|---------------------|
| Change in Actuarial Assumptions | 01/01/2010       | \$954,038           | 6               | \$188,066           |
| Experience Gain                 | 01/01/2010       | 12,478,246          | 6               | 2,459,787           |
| Change in Actuarial Assumptions | 01/01/2011       | 965,584             | 7               | 168,515             |
| Experience Gain                 | 01/01/2011       | 14,543,032          | 7               | 2,538,063           |
| Change in Actuarial Assumptions | 01/01/2013       | 2,980,942           | 9               | 431,153             |
| Experience Gain                 | 01/01/2013       | 17,713,360          | 9               | 2,562,001           |
| Change in Actuarial Assumptions | 01/01/2014       | 3,723,952           | 10              | 500,094             |
| Experience Gain                 | 01/01/2014       | 13,054,848          | 10              | 1,753,151           |
| Change in Actuarial Assumptions | 01/01/2015       | 751,079             | 11              | 94,557              |
| Change in Actuarial Assumptions | 01/01/2017       | 1,957,572           | 13              | 221,497             |
| Change in Actuarial Assumptions | 01/01/2018       | 1,183,017           | 14              | 128,025             |
| <b>Total</b>                    |                  | <b>\$70,305,670</b> |                 | <b>\$11,044,909</b> |

## Section 3: Certificate of Actuarial Valuation

### Exhibit I: Current Liability

The table below presents the current liability for the Plan Year beginning January 1, 2019.

| Item <sup>1</sup>   | Number of Participants | Current Liability      |
|---|------------------------|------------------------|
| Interest rate assumption  |                        | 3.06%                  |
| Retired participants and beneficiaries receiving payments                                       | 2,607                  | \$860,273,986          |
| Inactive vested participants  | 4,799                  | 462,996,684            |
| Active participants   |                        |                        |
| • Non-vested benefits   |                        | 86,621,816             |
| • Vested benefits   |                        | 672,110,029            |
| • Total active  | <u>3,783</u>           | <u>\$758,731,845</u>   |
| <b>Total</b>  | <b>11,189</b>          | <b>\$2,082,002,515</b> |
| Expected increase in current liability due to benefits accruing during the plan year            |                        | \$96,695,252           |
| Expected release from current liability for the plan year                                       |                        | 69,609,052             |
| Expected plan disbursements for the plan year, including administrative expenses of \$1,765,000 |                        | 71,374,052             |
| Current value of assets   |                        | \$985,931,692          |
| Percentage funded for Schedule MB   |                        | 47.35%                 |

<sup>1</sup> The actuarial assumptions used to calculate these values are shown in Exhibit K.

## Section 3: Certificate of Actuarial Valuation

### Exhibit J: Actuarial Present Value of Accumulated Plan Benefits

The actuarial present value of accumulated plan benefits calculated in accordance with FASB ASC 960 is shown below as of January 1, 2018 and as of January 1, 2019. In addition, a reconciliation between the two dates follows.

|   | Benefit Information Date |                        |
|---|--------------------------|------------------------|
|   | January 1, 2018          | January 1, 2019        |
| Actuarial present value of vested accumulated plan benefits:      |                          |                        |
| • Participants currently receiving payments                       | \$523,946,798            | \$562,411,283          |
| • Other vested benefits   | <u>442,403,009</u>       | <u>495,691,003</u>     |
| • Total vested benefits   | \$966,349,807            | \$1,058,102,286        |
| Actuarial present value of non-vested accumulated plan benefits   | <u>42,419,976</u>        | <u>45,713,330</u>      |
| <b>Total actuarial present value of accumulated plan benefits</b> | <b>\$1,008,769,783</b>   | <b>\$1,103,815,616</b> |

| Factors  | Change in Actuarial Present Value of Accumulated Plan Benefits |
|--|--|
| Plan amendments  | \$144,499  |
| Benefits accumulated, net experience gain or loss, changes in data | 44,361,099   |
| Benefits paid  | <b>-54,017,241</b>   |
| Changes in actuarial assumptions                                   | 31,094,193   |
| Interest   | 73,463,283   |
| <b>Total</b>   | <b>\$95,045,833</b>  |

## Section 3: Certificate of Actuarial Valuation

### Exhibit K: Statement of Actuarial Assumptions/Methods

(Schedule MB, Line 6)

#### Mortality Rates

*Healthy:* 104.4% of the RP-2014 Blue Collar Mortality Table (separate employee and annuitant tables) projected generationally from 2018 with 2018 SSA scale.

*Disabled:* Healthy life (annuitant) mortality, with ages set forward 10 years

The RP-2014 Blue Collar tables (with ages set forward for disabled lives and the 4.4% load) and generational projection to the valuation date reasonably reflect the mortality experience of the Plan as of the measurement date.

These mortality tables were then adjusted to future years using a generational projection to reflect future mortality improvement between the measurement date and those years.

The mortality rates were based on historical and current demographic data, adjusted to reflect health characteristics of the industry, and estimated future experience and professional judgment. As part of the analysis, a comparison was made between the actual number of deaths by age and the projected number based on the prior years' assumption over the most recent eight years, taking into consideration the results of Segal's industry mortality study



## Section 3: Certificate of Actuarial Valuation

### Termination Rates

| Age | Rate (%)   |            |
|-----|------------|------------|
|     | Disability | Withdrawal |
| 20  | 0.02       | 20.00      |
| 25  | 0.03       | 20.00      |
| 30  | 0.04       | 19.16      |
| 35  | 0.05       | 16.58      |
| 40  | 0.07       | 13.61      |
| 45  | 0.12       | 10.20      |
| 50  | 0.20       | 7.21       |
| 55  | 0.34       | 4.21       |
| 60  | 0.54       | 1.22       |

The assumed rates of withdrawal shown above apply to employees with three or more years of service. For employees with less than three years of service, the assumed withdrawal rates are as follows:

| Years of Service | Rate (%) |
|------------------|----------|
| Less than 1      | 30       |
| Between 1 and 2  | 23       |
| Between 2 and 3  | 20       |

The termination rates and disability rates were based on historical and current demographic data, estimated future experience, and professional judgment. As part of the analysis, a comparison was made between the actual number of terminations and disability retirements by age and the projected number based on the prior years' assumption over the most recent five years.

## Section 3: Certificate of Actuarial Valuation

| Retirement Rates | Age     | Eligible for Unreduced Benefit | Eligible for Reduced Benefit |
|------------------|---------|--------------------------------|------------------------------|
|                  | 50 – 54 | 15.0%                          | N/A                          |
| 55               | 15.0    | 2.5%                           |                              |
| 56 – 59          | 12.0    | 2.5                            |                              |
| 60 – 61          | 15.0    | 5.0                            |                              |
| 62               | 15.0    | 12.0                           |                              |
| 63 – 64          | 15.0    | 12.0                           |                              |
| 65 – 69          | 25.0    | 25.0                           |                              |
| 70               | 100.0   | 100.0                          |                              |

The retirement rates were based on historical and current demographic data, estimated future experience, and professional judgment. As part of the analysis, a comparison was made between the actual number of retirements by age and the projected number based on the prior years' assumption over the most recent five years.

---

|   |   |
|---|---|
| <b>Description of Weighted Average Retirement Age</b>                   | Age 62, determined as follows: The weighted average retirement age for each participant is calculated as the sum of the product of each potential current or future retirement age times the probability of surviving from current age to that age and then retiring at that age, assuming no other decrements. The overall weighted retirement age is the average of the individual retirement ages based on all the active participants included in this valuation.   |
| <b>Retirement Rates for Inactive Vested Participants</b>                | 7.5% at the age when first eligible to retire, 7.5% each year thereafter, and 100% at age when first eligible for an unreduced benefit.<br>The retirement rates for inactive vested participants were based on historical and current demographic data, estimated future experience, and professional judgment. As part of the analysis, a comparison was made between the actual number of retirements by age and the projected number based on the prior years' assumption over the most recent five years. |
| <b>Retirement Age for CSEA Inactive Vested Participants (at merger)</b> | Age 63  |

## Section 3: Certificate of Actuarial Valuation

| <b>Salary Scale</b>   | <p>Annual increases of 2.75% plus an additional amount varying by age. Sample rates of increase are as follows:</p> <table border="1" data-bbox="680 240 1167 764"> <thead> <tr> <th>Age</th> <th>Annual Increase</th> </tr> </thead> <tbody> <tr> <td>20</td> <td>12.7%</td> </tr> <tr> <td>25</td> <td>10.6</td> </tr> <tr> <td>30</td> <td>8.6</td> </tr> <tr> <td>35</td> <td>7.4</td> </tr> <tr> <td>40</td> <td>6.3</td> </tr> <tr> <td>45</td> <td>5.8</td> </tr> <tr> <td>50</td> <td>5.7</td> </tr> <tr> <td>55</td> <td>5.0</td> </tr> <tr> <td>60</td> <td>3.3</td> </tr> <tr> <td>65+</td> <td>2.8</td> </tr> </tbody> </table> <p>The salary scale rates were based on historical and current demographic data, adjusted to reflect estimated future experience and professional judgment. As part of the analysis, a comparison was made between the assumed and the actual increase in salary by age over the most recent five years.</p> | Age | Annual Increase | 20 | 12.7% | 25 | 10.6 | 30 | 8.6 | 35 | 7.4 | 40 | 6.3 | 45 | 5.8 | 50 | 5.7 | 55 | 5.0 | 60 | 3.3 | 65+ | 2.8 |
|---|--|-----|-----------------|----|-------|----|------|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|-----|-----|
| Age   | Annual Increase  |     |                 |    |       |    |      |    |     |    |     |    |     |    |     |    |     |    |     |    |     |     |     |
| 20  | 12.7%  |     |                 |    |       |    |      |    |     |    |     |    |     |    |     |    |     |    |     |    |     |     |     |
| 25  | 10.6   |     |                 |    |       |    |      |    |     |    |     |    |     |    |     |    |     |    |     |    |     |     |     |
| 30  | 8.6  |     |                 |    |       |    |      |    |     |    |     |    |     |    |     |    |     |    |     |    |     |     |     |
| 35  | 7.4  |     |                 |    |       |    |      |    |     |    |     |    |     |    |     |    |     |    |     |    |     |     |     |
| 40  | 6.3  |     |                 |    |       |    |      |    |     |    |     |    |     |    |     |    |     |    |     |    |     |     |     |
| 45  | 5.8  |     |                 |    |       |    |      |    |     |    |     |    |     |    |     |    |     |    |     |    |     |     |     |
| 50  | 5.7  |     |                 |    |       |    |      |    |     |    |     |    |     |    |     |    |     |    |     |    |     |     |     |
| 55  | 5.0  |     |                 |    |       |    |      |    |     |    |     |    |     |    |     |    |     |    |     |    |     |     |     |
| 60  | 3.3  |     |                 |    |       |    |      |    |     |    |     |    |     |    |     |    |     |    |     |    |     |     |     |
| 65+   | 2.8  |     |                 |    |       |    |      |    |     |    |     |    |     |    |     |    |     |    |     |    |     |     |     |
| <b>Assumed Cost of Living Increase for CSEA Retirement Benefits</b> | <p>2.5% per year (for CSEA retirees receiving a CSEA benefit and for terminated vested participants whose accrued CSEA Plan benefit is greater than their accrued Affiliates Plan benefit)</p>   |     |                 |    |       |    |      |    |     |    |     |    |     |    |     |    |     |    |     |    |     |     |     |
| <b>Future Benefit Accruals</b>                                      | <p>One service credit per year per active employee included in the valuation,</p>  |     |                 |    |       |    |      |    |     |    |     |    |     |    |     |    |     |    |     |    |     |     |     |
| <b>Unknown Data for Participants</b>                                | <p>Same as those exhibited by participants with similar known characteristics. If not specified, participants are assumed to be female.</p>  |     |                 |    |       |    |      |    |     |    |     |    |     |    |     |    |     |    |     |    |     |     |     |
| <b>Definition of Active Participants</b>                            | <p>All active employees as of the valuation date</p>   |     |                 |    |       |    |      |    |     |    |     |    |     |    |     |    |     |    |     |    |     |     |     |

## Section 3: Certificate of Actuarial Valuation

|   |   |
|---|---|
| <b>Exclusion of Inactive Vested Participants</b>  | Inactive participants over age 80 are excluded from the valuation. In addition, records identified as unconfirmed deaths or deaths with survivor benefits payable, but on hold who are over age 80 are also excluded from the valuation. The exclusion of these participants over age 80 is based on historical and current demographic data, estimated future experience, and professional judgement. As part of the analysis, the ages of new retirees from inactive vested status was reviewed.  |
| <b>Percent Married</b>                            | 65% of males and 35% of females   |
| <b>Age of Spouse</b>                              | Females 3 years younger than males  |
| <b>Benefit Election</b>                           | <p>Non-married participants are assumed to elect the single life annuity with three years certain form of payment. Married participants are assumed to elect the 50% Spousal Pension with three years certain form of payment. Additionally, 20% of future retirees are assumed to receive 30% of the value of their benefit as a lump sum payable at retirement. Lump sums are determined using an interest rate of 5.0% and the mortality table mandated by PPA'06</p> <p>The benefit elections were based on historical and current demographic data, adjusted to reflect the plan design, estimated future experience and professional judgment. As part of the analysis, a comparison was made between the assumed and the actual option election patterns over the most recent six years.</p> |
| <b>Eligibility for Delayed Retirement Factors</b> | Inactive vested participants after attaining age 65   |
| <b>Net Investment Return</b>                      | <p>7.25%</p> <p>The net investment return assumption is a long-term estimate derived from historical data, current and recent market expectations, and professional judgment. As part of the analysis, a building block approach was used that reflects inflation expectations and anticipated risk premiums for each of the portfolio's asset classes, as well as the Plan's target asset allocation.</p>  |
| <b>Annual Administrative Expenses</b>             | <p>\$1,765,000, payable monthly, for the year beginning January 1, 2019</p> <p>The annual administrative expenses were based on historical and current data, adjusted to reflect estimated future experience and professional judgment.</p>   |
| <b>Actuarial Value of Assets</b>                  | The market value of assets less unrecognized returns in each of the last three years. Unrecognized return is equal to the difference between the actual market return and the projected return on the actuarial value, and is recognized over a four-year period. The actuarial value is further adjusted, if necessary, to be within 20% of the market value.  |

## Section 3: Certificate of Actuarial Valuation

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| <b>Actuarial Cost Method</b>  | Entry Age Normal Actuarial Cost Method. Entry Age is the age at date of employment or, if date is unknown, current age minus pension credits. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by salary, with Normal Cost determined as if the current benefit accrual rate had always been in effect.  |
| <b>Benefits Valued</b>  | Unless otherwise indicated, includes all benefits summarized in <i>Exhibit L</i> .  |
| <b>Current Liability Assumptions</b>  | <i>Interest</i> : 3.06%, within the permissible range prescribed under IRC Section 431(c)(6)(E)<br><i>Mortality</i> : Mortality prescribed under IRS Regulations 1.431(c)(6)-1 and 1.430(h)(3)-1(a)(2): RP-2014 employee and annuitant mortality tables, adjusted backward to the base year (2006) using scale MP-2014, projected forward generationally using scale MP-2017 (previously, the MP-2016 scale was used).  |
| <b>Estimated Rate of Investment Return</b>                                      | <i>On actuarial value of assets (Schedule MB, line 6g)</i> : 4.5%, for the Plan Year ending December 31, 2018<br><i>On current (market) value of assets (Schedule MB, line 6h)</i> : -2.9%, for the Plan Year ending December 31, 2018  |
| <b>FSA Contribution Timing (Schedule MB, line 3a)</b>                           | Unless otherwise noted, contributions are paid periodically throughout the year. The interest credited in the FSA is therefore assumed to be equivalent to a July 15 contribution date.   |
| <b>Justification for Change in Actuarial Assumptions (Schedule MB, line 11)</b> | For purposes of determining current liability, the current liability interest rate was changed from 2.98% to 3.06% due to a change in the permissible range and recognizing that any rate within the permissible range satisfies the requirements of IRC Section 431(c)(6)(E) and the mortality tables and mortality improvement scales were changed in accordance with IRS Regulations 1.431(c)(6)-1 and 1.430(h)(3)-1.<br>Based on past experience and future expectations, the following actuarial assumptions were changed:<br>Net investment return decreased from 7.5% to 7.25%<br>Annual administrative expenses, payable as of the beginning of the year, decreased from \$1,870,000 to \$1,765,000 |

Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative, and client requirements. Our Actuarial Technology and Systems unit, comprised of both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility, and user control. The client team programs the assumptions and the plan provisions, and validates the models and reviews test lives and results, under the supervision of the responsible actuaries.

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### Exhibit L: Summary of Plan Provisions

(Schedule MB, Line 6)

This exhibit summarizes the major provisions of the Plan included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

|                            |   |
|----------------------------|---|
| <b>Plan Year</b>           | January 1 through December 31   |
| <b>Pension Credit Year</b> | January 1 through December 31   |
| <b>Plan Status</b>         | Ongoing plan  |
| <b>Normal Pension</b>      | <ul style="list-style-type: none"><li>• <i>Age Requirement:</i> 65</li><li>• <i>Service Requirement:</i> 15 years of Service Credit with at least one year of Current Service; or three years of Current Service or Vesting Service; or the fifth anniversary of Plan participation.</li><li>• <i>Amount:</i> 2.5% of Final Average Compensation times years of service*. Former participants of the California State Employees Association Retirement Plan will receive their accrued benefit in that Plan as of June 1, 2010 if it has a greater present value.</li><li>• <i>Final Average Compensation:</i> Highest average using 36 consecutive months of compensation. Maximum annual compensation is \$280,000 for 2019 (\$275,000 for 2018).</li><li>• <i>Maximum Annual Benefit:</i> \$225,000 for 2018 (\$220,000 for 2017). Actuarially reduced for retirement before age 62.</li><li>• <i>Delayed Retirement Amount:</i> Actuarial increases in accordance with Plan provisions.</li></ul> |
| <b>Early Retirement</b>    | <ul style="list-style-type: none"><li>• <i>Age Requirement:</i> 55 (or 50 provided age plus service total 80 or more)</li><li>• <i>Service Requirement:</i> 15 years of Service Credit with at least one year of Current Service; or 10 years of Current Service or Vesting Service.</li><li>• <i>Amount:</i> Normal Pension accrued reduced by 5% for each year of age less than 65. There is no reduction if age plus service total 80 or more.</li></ul>   |

\* Employees with common service under the SEIU Affiliates' Officers and Employees Pension Plan and the Pension Plan for Employees of the Service Employees International Union will have their benefits paid based on the percentage of their career spent in each Plan.

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| <b>Disability</b>   | <ul style="list-style-type: none"><li>• <i>Age Requirement:</i> None</li><li>• <i>Service Requirement:</i> 15 years of Service Credit with at least one year of Current Service; or 10 years of Current Service or Vesting Service.</li><li>• <i>Amount:</i> (1) Normal pension based on service accrued and final compensation at disability, payable immediately, or (2) for local unions with Long Term Disability Income Plan Benefits only - the Pension Plan will continue to credit service while the employee is disabled. When insurance payments cease, the employee will be entitled to a pension based on the total of actual service plus service credited during the period of disability and annual compensation at the time of disability increased by the percentage increase in the Consumer Price Index per year from the time of disability until the Disability Pension commences.</li></ul>                                      |
| <b>Vesting</b>  | <ul style="list-style-type: none"><li>• <i>Age Requirement:</i> None</li><li>• <i>Service Requirement:</i> Three years of Vesting Service.</li><li>• <i>Amount:</i> Normal Pension accrued payable at age 65.</li><li>• <i>Normal Retirement Age:</i> 65</li></ul>   |
| <b>Spouse's Pre-Retirement Death Benefit</b>  | <ul style="list-style-type: none"><li>• <i>Age and Service Requirement:</i> Eligible for an immediate or deferred vested pension.</li><li>• <i>Amount:</i> 100% of the benefit the employee would have received had he or she retired the day before death and elected the joint and survivor option.</li><li>• <i>Benefit Commencement:</i> First of the month following the death of the employee if the employee dies while eligible for an immediate pension. If the employee dies while eligible for a deferred pension, benefits commence on the first of the month the employee would have been eligible for a pension had he or she lived but earned no additional service, but no later than age 55. However, in all circumstances, the monthly benefit is payable to the surviving spouse for the first 24 months following the death of the employee, and for as long as any dependent children of the employee are under age 18.</li></ul> |
| <b>Pre-Retirement Lump-sum Death Benefit (if not eligible for spouse's benefit)</b> | <ul style="list-style-type: none"><li>• <i>Age Requirement:</i> None</li><li>• <i>Service Requirement:</i> One year of Service Credit or Vesting Service</li><li>• <i>Amount:</i> \$5,000 for less than five years of service; \$10,000 for five years of service or more; or 60 times monthly Normal Pension accrued, if greater.</li></ul>   |

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| <b>Post-Retirement Death Benefits</b> | <ul style="list-style-type: none"> <li>• <i>Benefit:</i> Benefits are payable for life with a guarantee that total benefits paid will equal 36 times the original Normal Pension accrued including early retirement reductions. All optional forms of payment include this guarantee.</li> <li>• <i>Joint and Survivor:</i> For married participants, pension benefits are paid in the form of a joint and survivor annuity unless this form is rejected by the participant and spouse. If this form is not rejected, the benefit amount otherwise payable is reduced to reflect the joint and survivor coverage. If this form is rejected, or if the participant is not married, benefits are payable for the life of the participant, or in any other available optional form elected by the participant in an actuarially equivalent amount. No death benefits shall be payable other than those provided under the optional methods elected.</li> </ul> |
| <b>Optional Forms of Benefits</b>     | <ul style="list-style-type: none"> <li>• Single Life Annuity with 5 or 10 years certain</li> <li>• Joint and 50% Survivor Annuity</li> <li>• Joint and 75% Survivor Annuity</li> <li>• Joint and 100% Survivor Annuity</li> <li>• Level Income Annuity</li> </ul> <p>A participant can elect to receive between 5% and 30% of their benefit as a lump sum</p>   |
| <b>Cost-of-Living Adjustments</b>     | <p>Monthly payments to all pensioners and beneficiaries are increased 1.5% each January for all pensions in payment status for at least six months. Participants who retired under the provisions of the CSEA Retirement Plan receive an increase each April equal to California CPI, up to a maximum of 2.5% per year. The California CPI is equal to the average of the annual CPI for the Los Angeles-Long Beach area and the annual CPI for the San Francisco-Oakland area published by the Bureau of Labor Statistics of the United States Department of Labor.</p>  |
| <b>Participation</b>                  | <p>On the first day of the month after 12 consecutive months of employment during which at least \$4,000 in compensation was earned</p>   |
| <b>Years of Service</b>               | <p>One month of service credit granted for each month employee earned any compensation</p>  |
| <b>Past Service</b>                   | <p>Continuous service from date of hire to October 1, 1964 (if employer entered on that date), or prior service granted by the Trustees</p>   |
| <b>Current Service</b>                | <p>Years of Service for which contributions are received or for which an employer is obligated to contribute</p>  |
| <b>Vesting Service</b>                | <p>One year of Vesting Service granted for any calendar year in which the participant earns compensation during any five months</p>   |
| <b>Service Credit</b>                 | <p>Sum of Current Service and Past Service</p>  |



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| <b>Employer Contributions</b>     | 21% of covered payroll   |
| <b>Changes in Plan Provisions</b> | There were no changes in plan provisions reflected in this actuarial valuation |

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