Segal Consulting

Sheet Metal Workers' National Pension Fund

Actuarial Valuation and Review as of January 1, 2019 (Revised)

This report 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.

Segal Consulting

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October 22, 2019

Board of Trustees
Sheet Metal Workers' National Pension Fund
Fairfax, Virginia

Dear Trustees:

We are pleased to submit the revised Actuarial Valuation and Review as of January 1, 2019 based on the final audit report as of December 31, 2018. It establishes the funding requirements for the current year 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 Fund Office, under the direction of Ms. Debbie Elkins. That assistance is gratefully acknowledged. The actuarial calculations were completed under the supervision of Daniel V. Ciner, 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 Consulting, a Member of The Segal Group

By:

David A. Dean, MAAA, EA
Senior Vice President

Daniel V. Ciner, MAAA, EA
Senior Vice President and Actuary

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Sheet Metal Workers' National Pension Fund Actuarial Valuation and Review as of January 1, 2019

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.
Withdrawal Liability	ERISA provides for assessment of withdrawal liability to employers who withdraw from a multiemployer plan based on unfunded vested benefit liabilities. A separate report is available.

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 Consulting ("Segal") relies on a number of input items. These include:

Plan Provisions	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.
Participant Information	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.
Financial Information	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.
Actuarial Assumptions	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 Consulting 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.

Section 1: Actuarial Valuation Summary

Summary of Key Valuation Results

		2018	2019
Certified Zone Status		***Endangered***	***Endangered***
Demographic Data:	• Number of active participants	58,840	60,304
	• Number of inactive participants with vested rights	33,089	32,850
	• Number of alternate payees in deferred status	557	514
	• Number of retired participants and beneficiaries	47,843	48,067
	• Number of alternate payees in payment status	1,161	1,217
Assets:	• Market value of assets (MVA)[1]	$4,983,616,157	$4,859,569,652
	• Actuarial value of assets (AVA)	4,877,069,115	5,208,417,087
	• Unrecognized gain/(loss)	106,547,042	(348,847,435)
	• AVA as a percent of MVA	97.9%	107.2%
Statutory Funding Information:	• Minimum required funding standard[2]	$177,526,110	$30,204,819
	• Maximum deductible contribution	16,292,574,284	16,201,432,548
	• Expected employer contributions for coming Plan Year[3]	483,714,000	483,615,000
	• Actual Contributions[4]	590,918,958	--
	• Annual Funding Notice percentage	63.0%	66.5%
	• FSA deficiency projected in Plan Year ending[5]	N/A	N/A
Cost Elements on an FSA Cost Basis:	• Normal cost, including administrative expenses[6]	$92,111,005	$140,675,083
	• Actuarial accrued liability	7,737,632,788	7,827,699,996
	• Unfunded actuarial accrued liability (based on AVA)	$2,860,563,673	$2,619,282,909

[1]Excludes receivable liability payments of $17,833,411 for 2018 and $15,309,486 for 2019
[2]Amount required to maintain a $0 credit balance
[3]Based on 90.0 million hours worked
[4]Includes withdrawal liability payments, liquidated damages, and adjustments for withdrawal liability receivable
[5]Recognizes the five-year amortization extension; contribution rate increases are based on current collective bargaining agreements only
[6]Reflects 0.50% Applicable Percentage under VBAR formula for 2018 and a 0.75% Applicable Percentage under VBAR formula for 2019

Comparison of Funded Percentages

	Funded Percentages as of January 1		2019	
	2018	2019	Liabilities	Assets
1. Present Value of Future Benefits	55.4%	57.3%	$9,088,468,250	$5,208,417,087
2. PPA'06 Liability and Annual Funding Notice	63.0%	66.5%	7,827,699,996	5,208,417,087
3. Accumulated Benefits Liability	64.4%	62.1%	7,827,699,996	4,859,569,652
4. Current Liability	33.6%	32.7%	14,881,754,854	4,859,569,652

Notes:

1. The value of benefits earned through the valuation date (accrued benefits) plus the value of benefits projected to be earned in the future for current participants. Used to develop the actuarial accrued liability, based on the long-term funding investment return assumption of 7.50% and the actuarial value of assets. The funded percentage using market value of assets is 56.6% for 2018 and 53.5% for 2019.
2. The present value of benefits earned through the valuation date (accrued benefits) defined by PPA'06, based on the long-term funding investment return assumption of 7.50% and compared to the actuarial value of assets.
3. The present value of accrued benefits for disclosure in the audited financial statements, based on the long-term funding investment return assumption of 7.50%, and compared to the market value of assets.
4. The present value of accrued benefits based on a government-prescribed mortality table and investment return assumption of 2.98% for 2018 and 3.06% for 2019, and compared to the market value of assets. Used to develop the maximum tax-deductible contribution and shown on the Schedule MB if less than 70%.

Disclosure: 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.

This January 1, 2019 actuarial valuation report is based on financial and demographic information as of that date. Changes subsequent to that date are not reflected unless specifically identified, and will affect future results. Segal is prepared to work with the Trustees to analyze the effects of any subsequent developments. The current year's actuarial valuation results follow.

A. Developments Since Last Valuation

1. The rate of return on the market value of plan assets was -4.12% for the 2018 plan year. The rate of return on the actuarial value of assets was 5.05%. Given the low fixed income interest rate environment, target asset allocation and expectations of future investment returns for various asset classes, we will continue to monitor the Plan's actual and anticipated investment returns relative to the assumed long-term rate of return on investments of 7.50%.
2. The actuarial value of assets ($5.21 billion) is equal to 107.2% of market value ($4.86 billion). Last year, the actuarial value of assets was 97.9% of market value.
3. Based on the findings in the experience report titled: "Demographic Experience Analysis: January 1, 2013 through December 31, 2017", dated April 2, 2019, several demographic assumptions have been changed since the last valuation, including the following:
   - Mortality rates for both healthy and disabled lives
   - Retirement rates for retirements from active status
   - Retirement rates for retirements from inactive status
   - Withdrawal rates from active status
   - Incidence of disability
   - Optional form of payment
   - Intensity for future benefit accruals

   These changes decreased the actuarial accrued liability by 1.1%, or $88.6 million, and increased the normal cost by 7.0%, or $8.2 million.
4. The annual administrative expense assumption was changed from $15.0 million to $14.5 million, payable monthly.
5. Based on the 3-year average market value investment return of 7.26% for the Plan Years ended December 31, 2015-2017, the Applicable Percentage under the VBAR formula is 0.75% for the 2019 Plan Year. Based on the 3-year average market value investment return of 6.02% for the Plan Years ended December 31, 2016-2018, the Applicable Percentage under the VBAR formula will be 0.50% for the 2020 Plan Year. Details of the VBAR formula are provided in Section 4, Exhibit 9.

A. Developments Since Last Valuation (cont.)

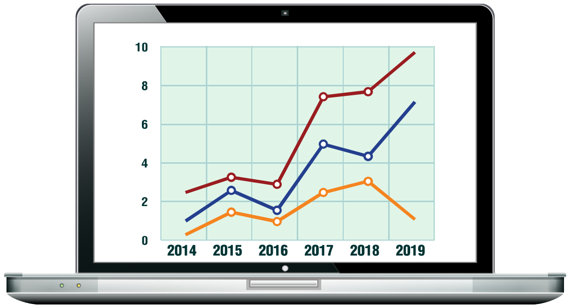
6. The number of active participants increased by 2.5% during the year, from 58,840 to 60,304. The total hours of contributions increased 3.1%, from 106.9 million to 110.3 million.
7. The average contribution rate remained level since the previous valuation at $5.37 per hour as of January 1, 2019.
8. Based on the census data used for this valuation (as of December 31, 2018), 68.1% of active participants were covered under the First Alternative Option (35.0% covered under 55/30 contracts), 27.5% were covered under the Default Option, 0.3% were covered under the benefit structure applicable to groups that did not continue bargaining increases under the Alternative Options and 4.1% were covered under the Second Alternative Option (0.2% covered under 60/30 contracts).
9. The 2019 certification, issued on March 29, 2019, was based on the liabilities calculated in the 2018 actuarial valuation, projected to December 31, 2018 and estimated asset information as of December 31, 2018. The Plan was classified as endangered (in the Yellow Zone) because the funded percentage was less than 80% and the credit balance in the FSA was projected to be positive for at least seven years. In addition, the Plan was certified to be making the scheduled progress in meeting the requirements of its Funding Improvement Plan. It was not projected to be in critical status for any of the succeeding five Plan Years. This projection was based on the Trustees' industry activity assumption of approximately 90 million hours.

B. Funded Percentage and Funding Standard Account

1. Based on this January 1, 2019 actuarial valuation, the funded percentage that will be reported on the 2019 Annual Funding Notice is 66.5%.
2. The funded percentage based on the market value of assets is 62.1%, a decrease of 2.3% from 64.4% as of the prior year.
3. The credit balance in the FSA as of December 31, 2018 was $435.6 million, an increase of $186.6 million from the prior year value of $249.0 million.
4. A 10-year projection of the Funding Standard Account based on this 2019 valuation, assuming the Plan will experience a market rate of return of 7.50% each year into the future, administrative expenses increase by 3.0% per year, all other experience emerges as projected, and with no plan amendments or changes to laws/regulations or other actuarial assumptions, indicates that credit balance (recognizing the five-year amortization extension) will remain positive. These projections are based on the Trustees' industry activity assumption (90 million hours). They also reflect the Applicable Percentage under the VBAR formula of 0.75% for 2019, 0.50% for 2020, and the average expected long-term Applicable Percentage of 0.84% for 2021 and later. The average expected long-term Applicable Percentage was developed based on stochastic projections as described in Section 4, Exhibit 8.

C. Solvency Projections

Based on this valuation, the current value of assets plus future investment earnings and contribution income is projected to exceed benefit payments and administrative expenses for at least 15 years, assuming experience is consistent with January 1, 2019 assumptions and there are no future changes in the Plan provisions, law/regulations, or actuarial assumptions. The projected assets are shown on page 32. If requested by the Trustees, we can perform additional projections of the financial status of the Plan.



D. Risk

1. 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 included a discussion of various risks that may affect the Plan in *Section 2*.
2. We have recently provided the Board of Trustees a detailed analysis of the potential range of future measurements, based on a range of possible investment returns, including a discussion of risks that may affect the Plan, and have provided periodic updates to the stochastic modeling and scenario testing.

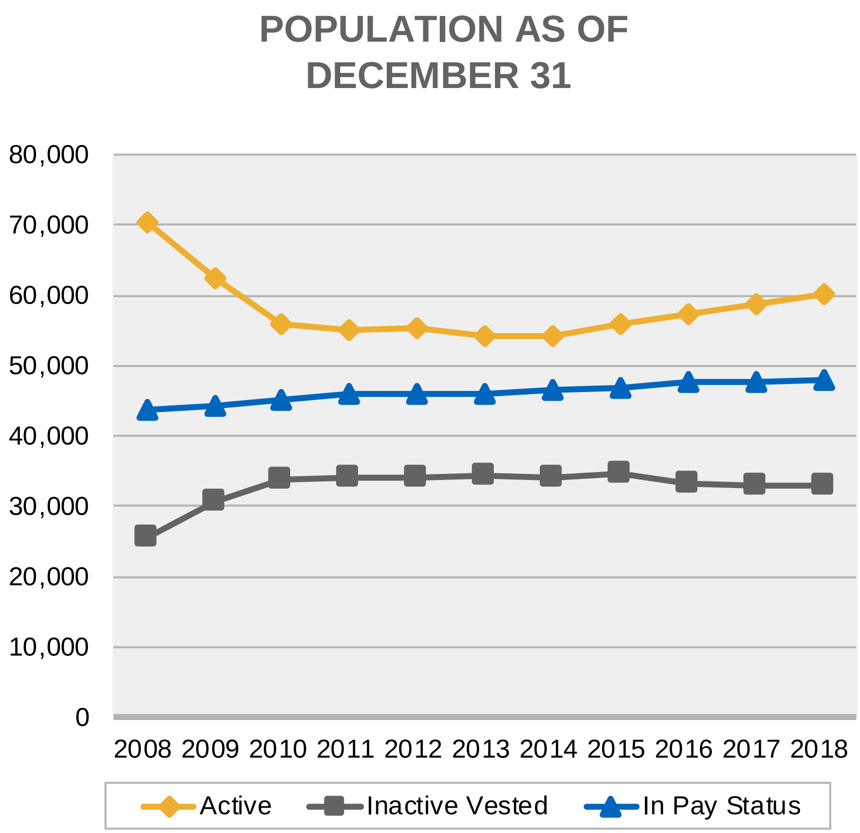
E. Withdrawal Liability

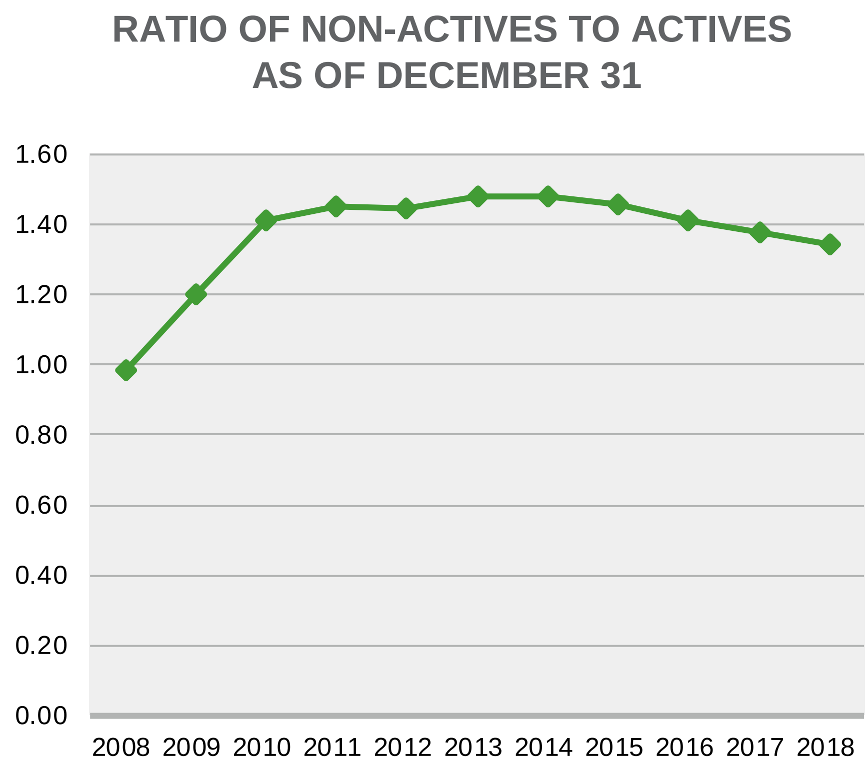
1. The actuarial present value of vested Plan benefits for withdrawal liability purposes is not the same figure as determined for FASB ASC 960 purposes because the two calculations involve different actuarial assumptions. A separate detailed report on withdrawal liability is available.

Section 2: Actuarial Valuation Results

Participant Information

- The Actuarial Valuation is based on demographic data as of December 31, 2018.
- The number of active participants has declined from 70,448 as of December 31, 2008 to the lowest level of 54,282 as of December 31, 2013 and increased to 60,304 since then. The number in pay status has increased steadily over the past ten years.
- The ratio of non-actives to actives has decreased to 1.34 from 1.38 in the prior year.
- More details on the historical information are included in *Section 3, Exhibits A* and *B.*

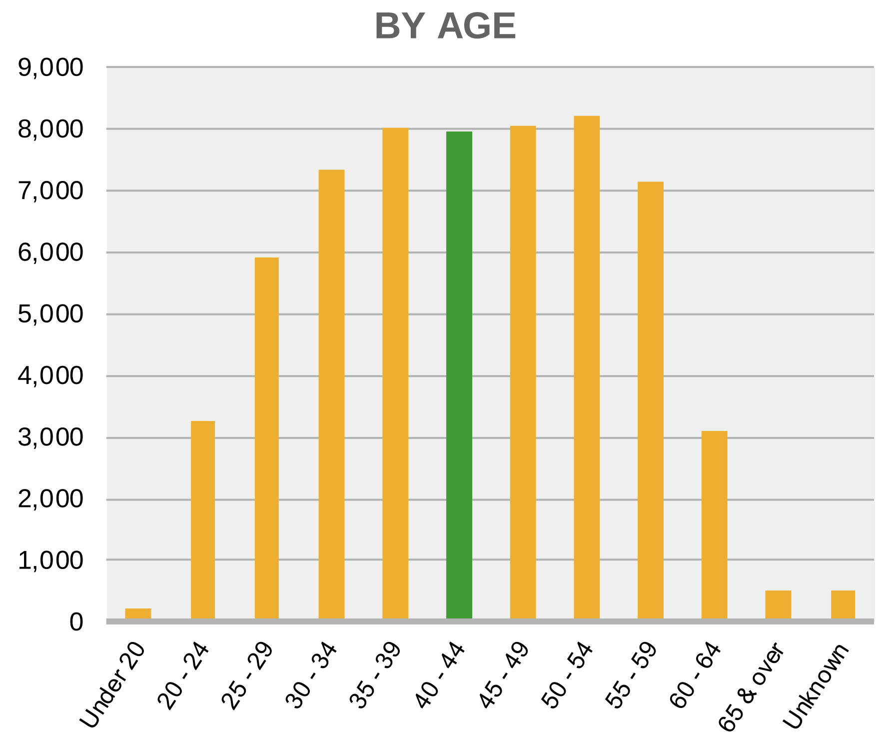


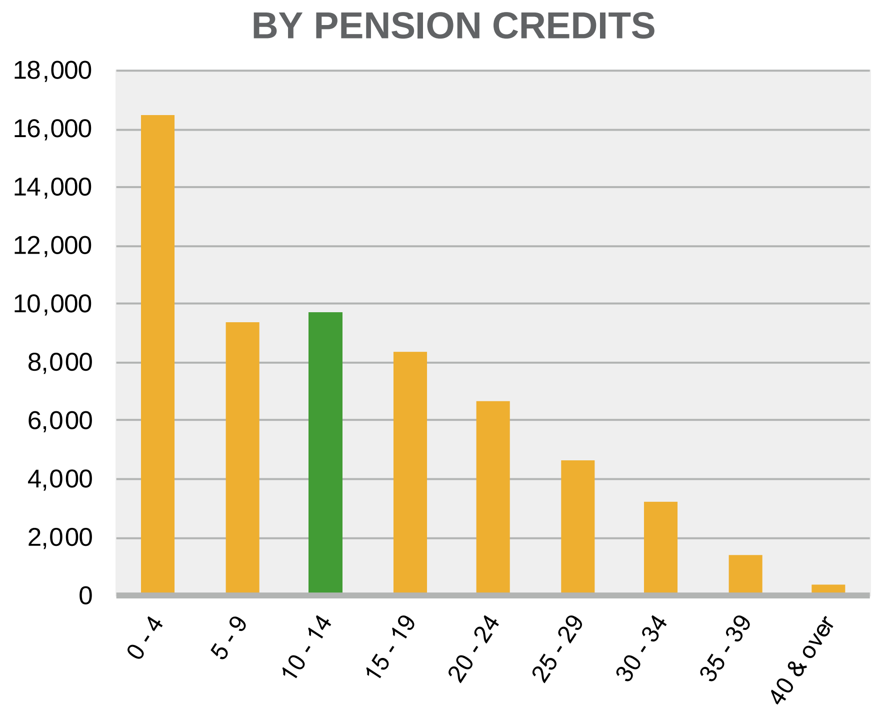


Active Participants

- There are 60,304 active participants this year, an increase of 2.5% compared to 58,840 in the prior year.
- There were 504 active participants with unknown age compared to 477 in the prior year. The actuarial calculations were adjusted for missing information by assuming that it was the same as information provided for other active participants with similar known characteristics.
- The age and service distribution is included in *Section 4, Exhibit 6*.

Distribution of Active Participants as of December 31, 2018



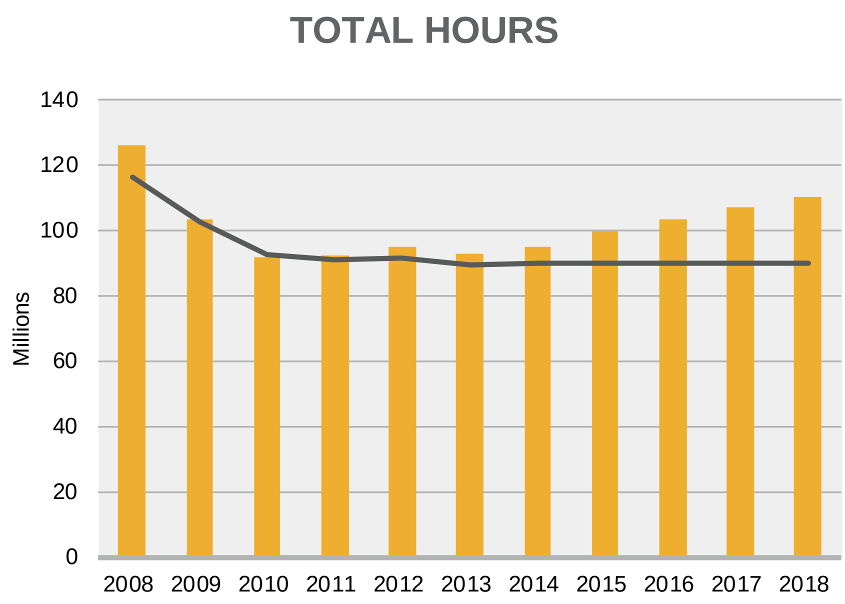


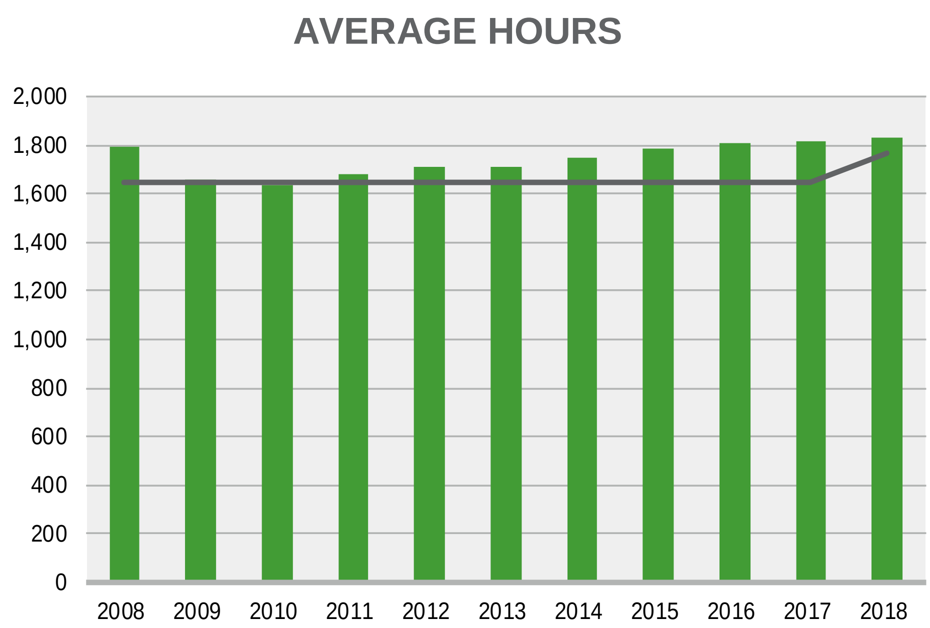
Average age	43.0
Prior year average age	43.0
Difference	0.0

Average pension credits	13.3
Prior year average pension credits	13.5
Difference	-0.2

Historical Employment

- The charts below show a history of hours worked over the last ten years. Additional detail is in *Section 3, Exhibit C*.
- The 2019 zone certification was based on an industry activity assumption of approximately 90 million hours (54,282 active participants, the number as of December 31, 2013, working 1,650 hours each). However, the assumed hours worked per participant has been updated for this valuation, based on the results of the experience study (1,750 for construction employees and 2,000 for production employees, with an average of 1,767).





Historical Average Total Hours	
Last year	110,282,173
Last five years	103,122,257
Last 10 years	99,061,502
PPA Assumption	90,000,000

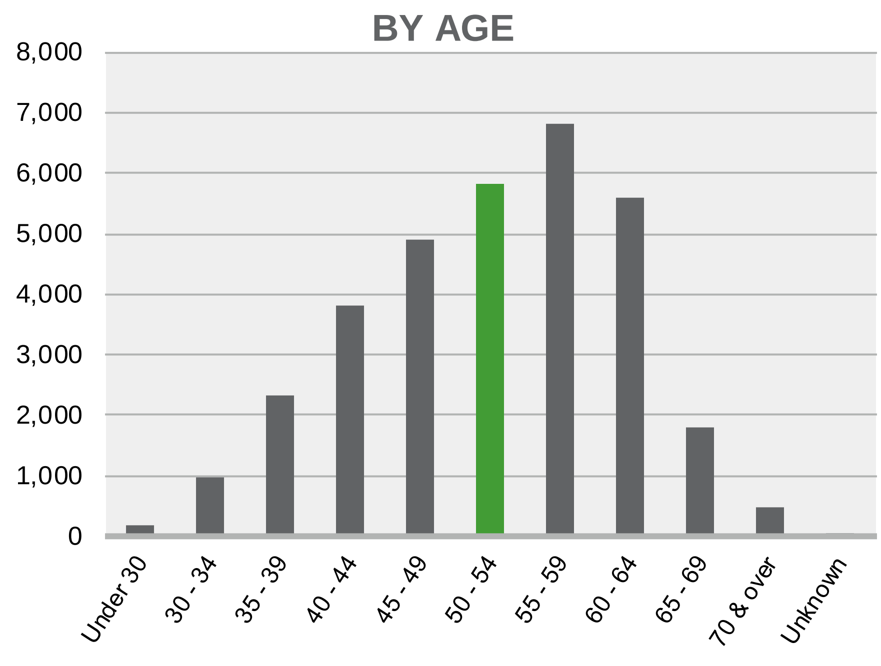
Historical Average Hours	
Last year	1,829
Last five years	1,798
Last 10 years	1,738
Long-term assumption	1,767

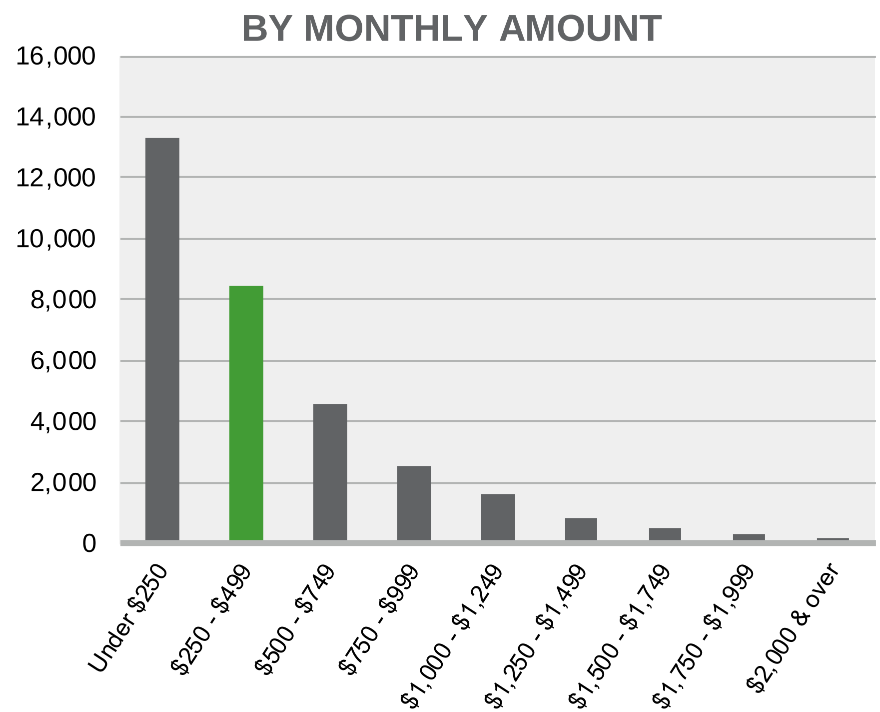
Note: The total hours of contributions are based on total hours reported in the census data. Lines in charts represent PPA assumption for industry activity following respective year.

Inactive Vested Participants

- A participant who is not currently active and has satisfied the requirements for, but has not yet commenced, a pension is considered an "inactive vested" participant. There are 32,730 inactive vested participants this year, a decrease of 0.8% compared to 32,984 last year.
- There were 38 inactive vested with unknown age compared to 36 in the prior year. The actuarial calculations were adjusted for missing information by assuming that it was the same as information provided for other active participants with similar known characteristics.
- In addition, there were 120 beneficiaries and 514 alternate payees eligible for deferred benefits in this valuation as compared to 105 beneficiaries and 557 alternate payees in the prior year. These participants are excluded from the charts shown below.

Distribution of Inactive Vested Participants as of December 31, 2018





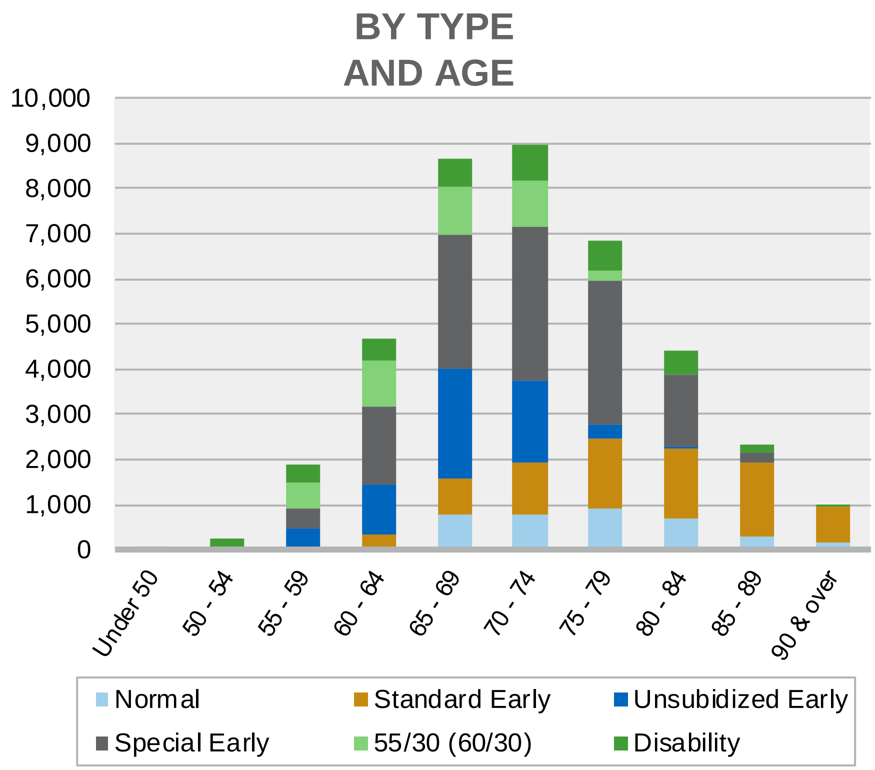
Average age	**52.6**
Prior year average age	52.2
Difference	**0.4**

Average amount	**$441**
Prior year average amount	$461
Difference	**-$20**

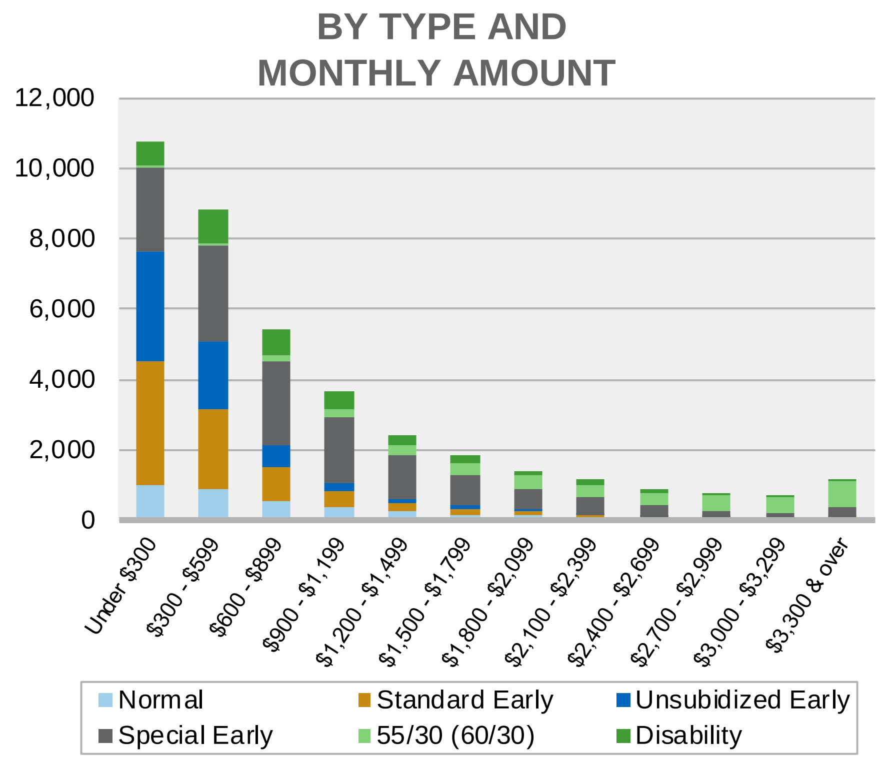
Pay Status Information

- There are 39,019 pensioners, 9,009 beneficiaries, and 1,217 alternate payees this year, compared to 38,949, 8,839, and 1,161 respectively, in the prior year. In addition, there are 38 suspended pensioners and 1 suspended beneficiary compared to 47 and 8 in the prior year.
- Monthly benefits for the Plan Year ending December 31, 2018 total $40,457,770[1], as compared to $39,674,079[1] in the prior year.

Distribution of Pensioners as of December 31, 2018



Average age	72.6
Prior year average age	72.4
Difference	0.2

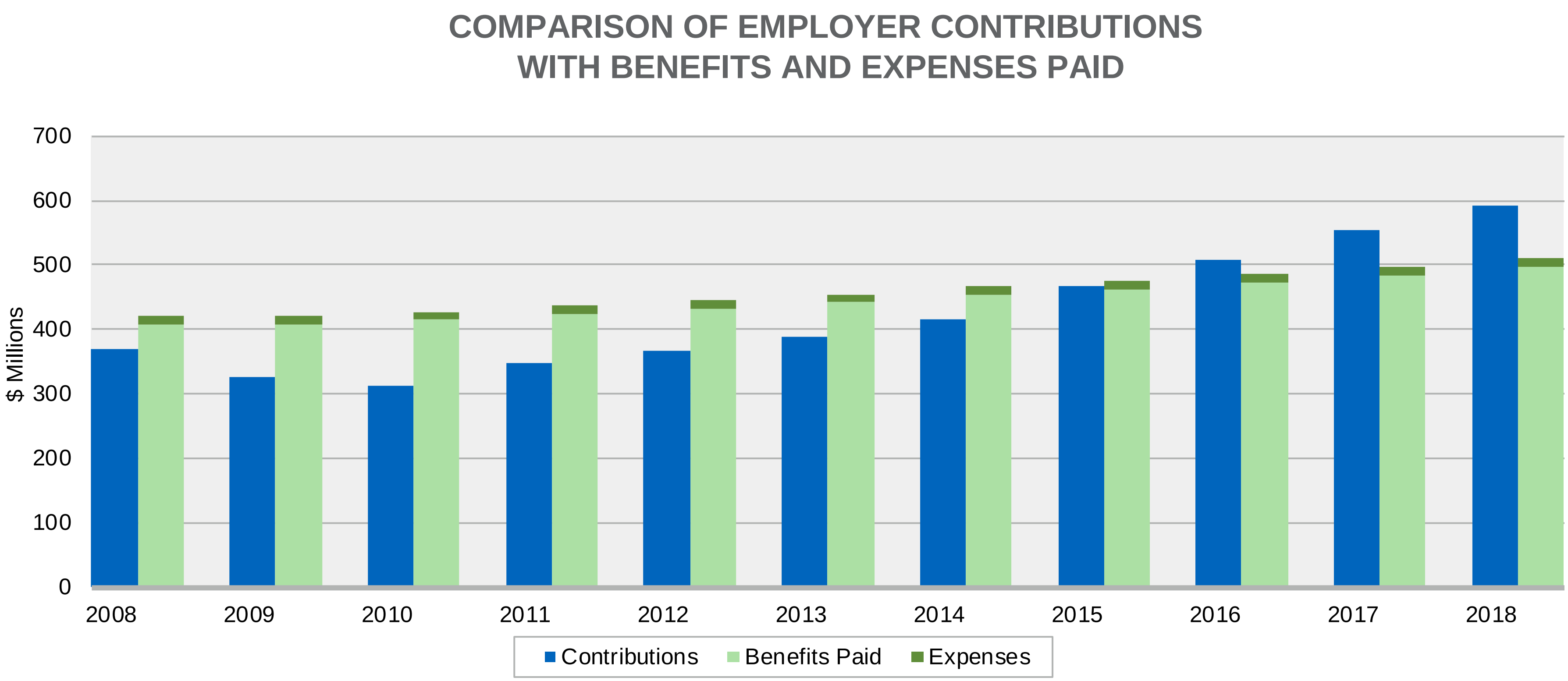


Average amount	$954
Prior year average amount	$937
Difference	$17

[1]Includes one-twelfth of annual COLA payments

Financial Information

- Benefits and expenses are funded solely from contributions and investment earnings.
- For the most recent year, benefit payments ($495.6 million) and expenses ($13.6 million) were 86% of contributions ($590.9 million).
- Contributions (including withdrawal liability payments) have exceeded benefits paid and administrative expenses in the last three years, primarily due to the higher active population (11% increase since 2013) and contribution rate increases required under the Rehabilitation/Funding Improvement Plan (23% increase in average rate since the end of 2013). Benefit payments have steadily increased over the last ten years.
- Additional detail is in *Section 3, Exhibit F*.



Determination of Actuarial Value of Assets

- The asset valuation method gradually recognizes annual market value fluctuations to help mitigate volatility in the actuarial cost calculations.
- Less volatility in the actuarial cost better aligns with negotiated contribution rates.

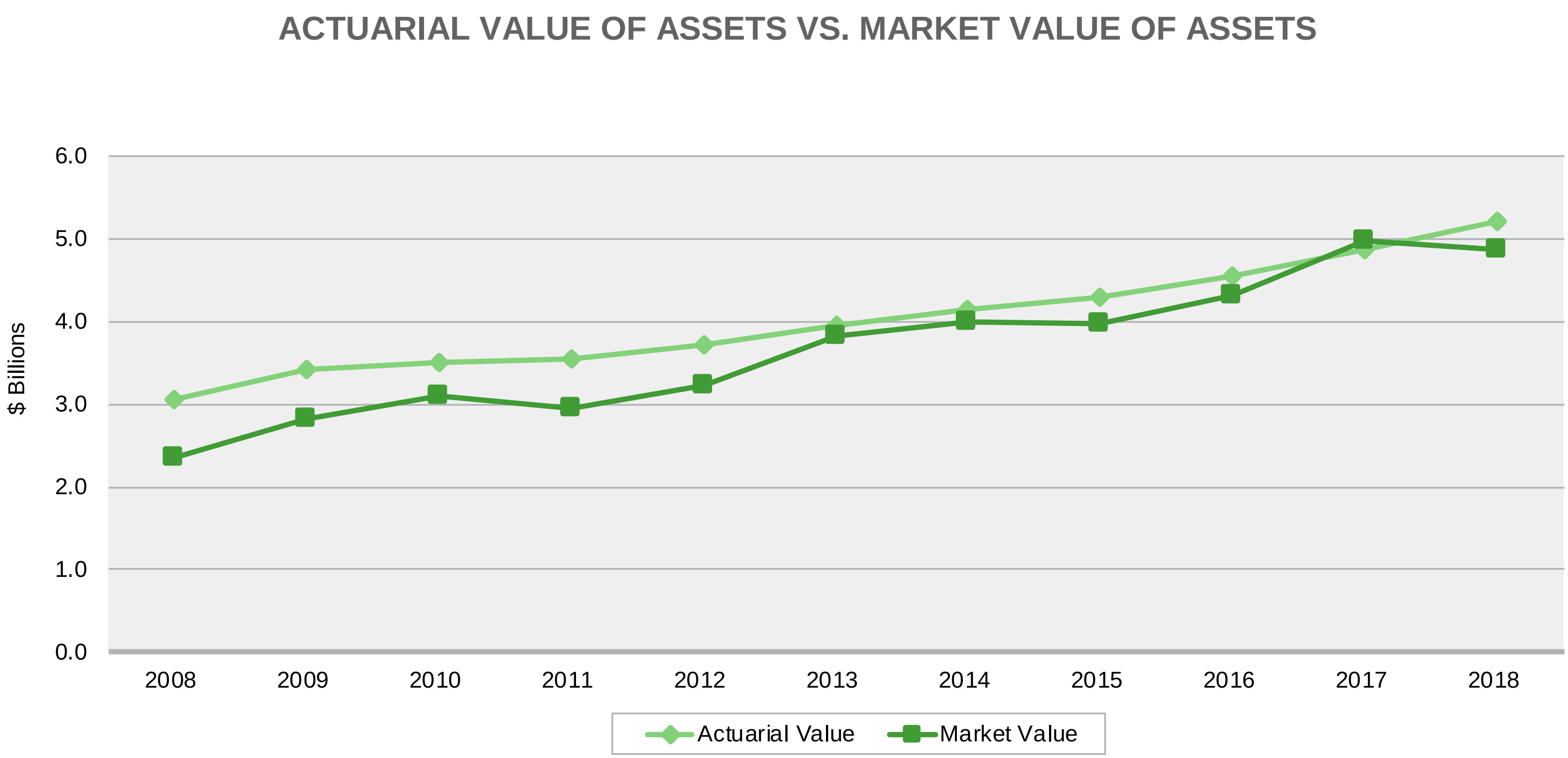
			Original Amount*	Unrecognized Return**	
1	Market value of assets, December 31, 2018				$4,859,569,652
2	Calculation of unrecognized return				
	(a)	Year ended December 31, 2018	-$583,824,479	-$467,059,583	
	(b)	Year ended December 31, 2017	287,044,734	172,226,840	
	(c)	Year ended December 31, 2016	23,047,095	9,218,838	
	(d)	Year ended December 31, 2015	-316,167,649	-63,233,530	
	(e)	Year ended December 31, 2014	-52,249,711	0	
	(f)	Total unrecognized return			-$348,847,435
3	Preliminary actuarial value: (1) - (2f)				5,208,417,087
4	Adjustment to be within 20% corridor				0
5	Final actuarial value of assets as of December 31, 2018: (3) + (4)				5,208,417,087
6	Actuarial value as a percentage of market value: (5) ÷ (1)				107.2%
7	Amount deferred for future recognition: (1) - (5)				-$348,847,435

* Total return minus expected return on a market value basis

** Recognition at 20% per year over 5 years

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 percentage.
- Amortization of the unfunded accrued liability is an important element in the contribution requirements of the Plan.



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.
- The net experience variation for the year, other than investment experience, was 0.3% of the projected actuarial accrued liability from the prior valuation, and was not significant when compared to that liability.

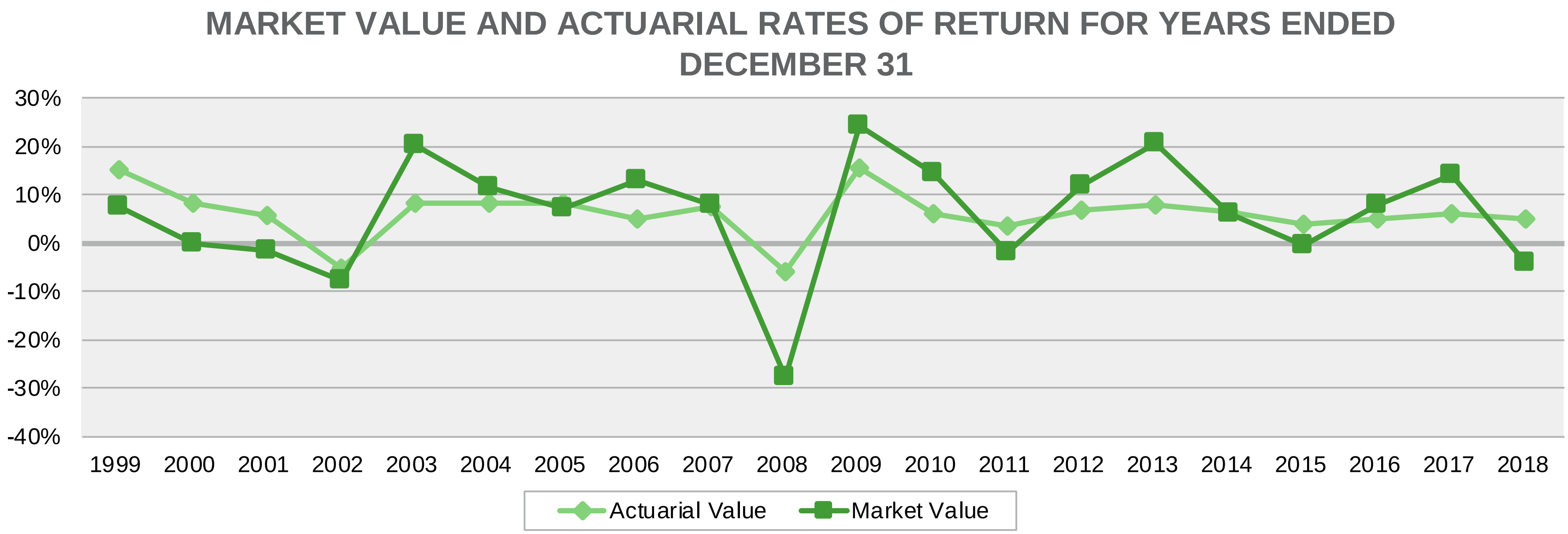
EXPERIENCE FOR THE YEAR ENDED DECEMBER 31, 2018

1	Loss from investments	
	a. Net investment income	$248,449,888
	b. Average actuarial value of assets	4,918,518,157
	c. Rate of return: a ÷ b	5.05%
	d. Assumed rate of return	7.50%
	e. Expected net investment income: b x d	$368,888,862
	f. Actuarial loss from investments: a - e	-120,438,974
2	Gain from administrative expenses	1,445,014
3	Net loss from other experience	-24,781,040
4	**Net experience loss:** 1f + 2 + 3	**-$143,775,000**

- Net investment income consists of expected investment income at the actuarially assumed rate of return, net of investment expenses, and an adjustment for market value changes.
- The actuarial value of assets does not yet fully recognize past investment gains and losses, which will affect future actuarial investment returns.
- The market value rate of return was -4.12% for the year ended December 31, 2018. The actuarial value rate of return was 5.05%.

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 7.50% considers past experience, the Trustees' asset allocation policy and future expectations.



Average Rates of Return	Actuarial Value	Market Value
Most recent year return:	5.05%	-4.12%
Most recent three-year average return:	5.48%	6.02%
Most recent five-year average return:	5.35%	4.46%
Most recent ten-year average return:	6.44%	8.08%
20-year average return:	5.94%	5.58%

Note: The average return for the most recent three years is the arithmetic average of the returns. For average returns over five or more years, the average return is weighted by the asset value.

The actuarial value investment returns for 1999, 2006 and 2008 include the effect of a change in the method for determining the actuarial value of assets.

Non-Investment Experience

Administrative Expenses

- Administrative expenses for the year ended December 31, 2018 totaled $13,602,401, as compared to the assumption of $15,000,000.

Mortality Experience

- Mortality experience (more or fewer than expected deaths) yields actuarial gains or losses.
- The average number of deaths for nondisabled pensioners over the past four years (since the last time the assumptions were changed) was 1,395 per year compared to 1,311 projected deaths per year. The average number of deaths for disabled pensioners over the past four years was 204 per year compared to 217 projected deaths per year.
- The mortality assumptions were updated for this valuation.

Other Experience

- Other differences between projected and actual experience include the extent of turnover among the participants, and retirement experience (earlier or later than projected), and the number of disability retirements.

Actuarial Assumptions

- The following actuarial assumption change is recognized in this valuation:
  - Administrative expenses were decreased from $15,000,000 to $14,500,000 for the year beginning January 1, 2019.
- In addition, changes were made to the following assumptions based on an experience study from the period January 1, 2013 through December 31, 2017:
  - Mortality rates for both healthy and disabled lives
  - Retirement rates for retirements from active status
  - Retirement rates for retirements from inactive status
  - Withdrawal rates from active status
  - Incidence of disability
  - Optional form of payment
  - Intensity for future benefit accruals
- These changes decreased the actuarial accrued liability by 1.1%, or $88.6 million, and increased the normal cost by 7.0%, or $8.2 million.
- Details on actuarial assumptions and methods are in *Section 4, Exhibit 8*.

Plan Provisions

- Based on the 3-year average market value investment return of 7.26% for the Plan Years ended December 31, 2015 - 2017, the Applicable Percentage under the VBAR formula is 0.75% for the 2019 Plan Year.
- Based on the 3-year average market value investment return of 6.02% for the Plan Years ended December 31, 2016 - 2018, the Applicable Percentage under the VBAR formula will be 0.50% for the 2020 Plan Year.

Contribution Rate Changes

- The average contribution rate remained level from the prior year at $5.37 per hour as of January 1, 2019.
- A summary of plan provisions is in *Section 4, Exhibit 9*.

Pension Protection Act of 2006

2019 Actuarial Status Certification

- PPA'06 requires trustees to actively monitor their plans' financial prospects to identify emerging funding challenges so they can be addressed effectively. Details are shown in *Section 3, Exhibit K*.
- The 2019 certification, completed on March 29, 2019, was based on the liabilities calculated in the January 1, 2018 actuarial valuation, projected to December 31, 2018, and estimated asset information as of December 31, 2018. The Trustees provided an industry activity assumption of approximately 90 million hours (54,282 active participants, the number as of December 31, 2013, working 1,650 hours each).
- This Plan was classified as endangered (in the *Yellow Zone*) because the funded percentage was less than 80.0% and the credit balance in the FSA was projected to be positive for at least seven years.

Year	Zone Status
2008	RED
2009	RED
2010	RED
2011	RED
2012	RED
2013	RED
2014	YELLOW
2015	YELLOW
2016	YELLOW
2017	YELLOW
2018	YELLOW
2019	YELLOW

Funding Improvement Plan Update

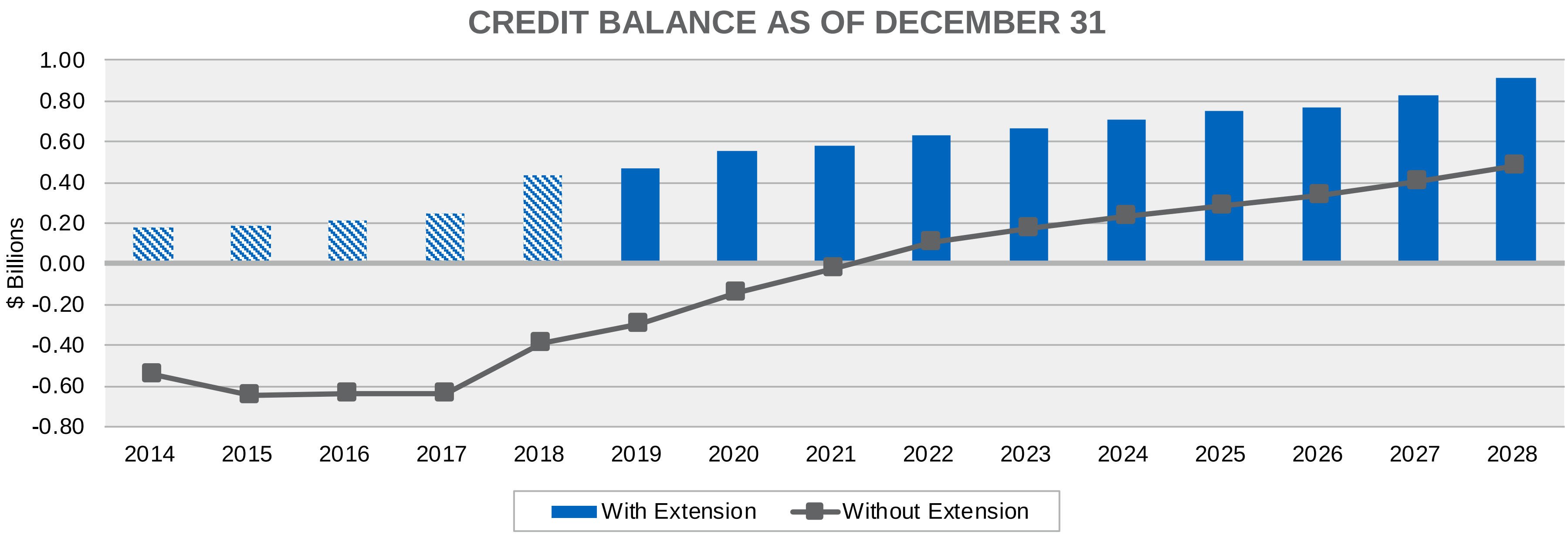
- The Plan's Funding Improvement Period is the 10-year period beginning January 1, 2017. The Plan is making the scheduled progress in meeting the requirements of its Funding Improvement Plan.
- Under the Funding Improvement Plan, 2% contribution rate increases are required for 2021 and 2022 under the First Alternate Option (1% for the Second Alternate Option). Segal will continue to assist the Trustees in evaluating and, if necessary, updating the Funding Improvement Plan.

Funding Standard Account (FSA)

- On December 31, 2018, the FSA had a credit balance of $435,552,310, as shown on the 2018 Schedule MB. Contributions meet the legal requirement on a cumulative basis if that account shows no deficiency.
- The minimum funding requirement for the year beginning January 1, 2019 is $30,204,819.
- Based on the assumption 90 million hours worked at a $5.3735 average contribution rate, the contributions projected for the year beginning January 1, 2019 are $483,615,000. The credit balance is projected to increase by approximately $35,993,434 to $471,545,744 as of December 31, 2019.
- A summary of the ERISA minimum funding requirements and the FSA for the year ended December 31, 2018 is included in *Section 3, Exhibit I.*

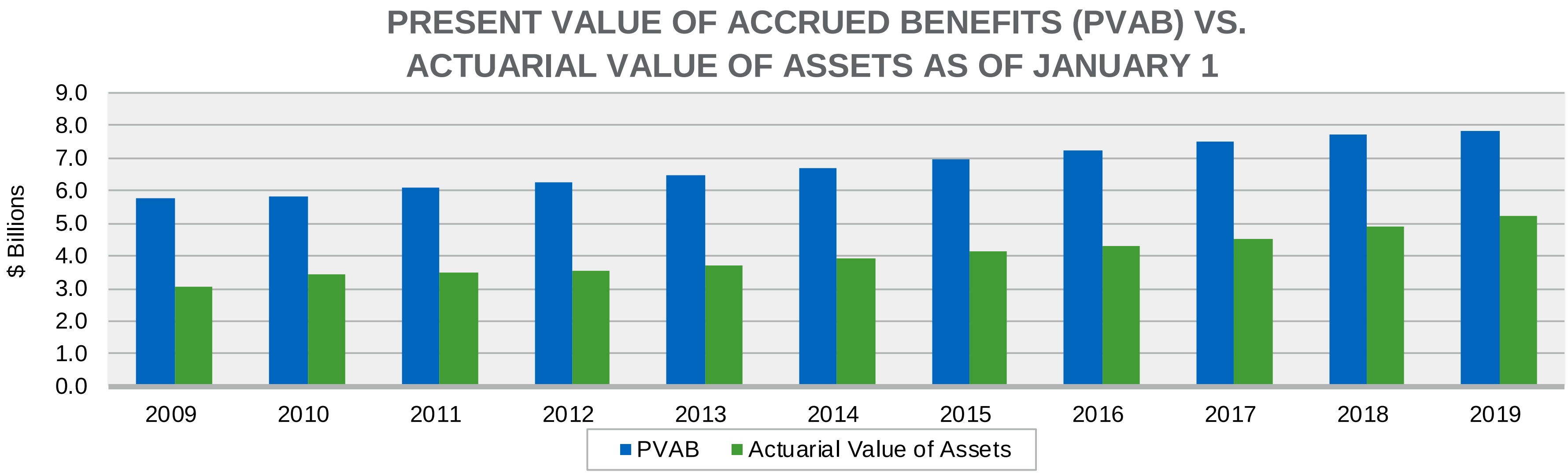
Funding Standard Account Projection

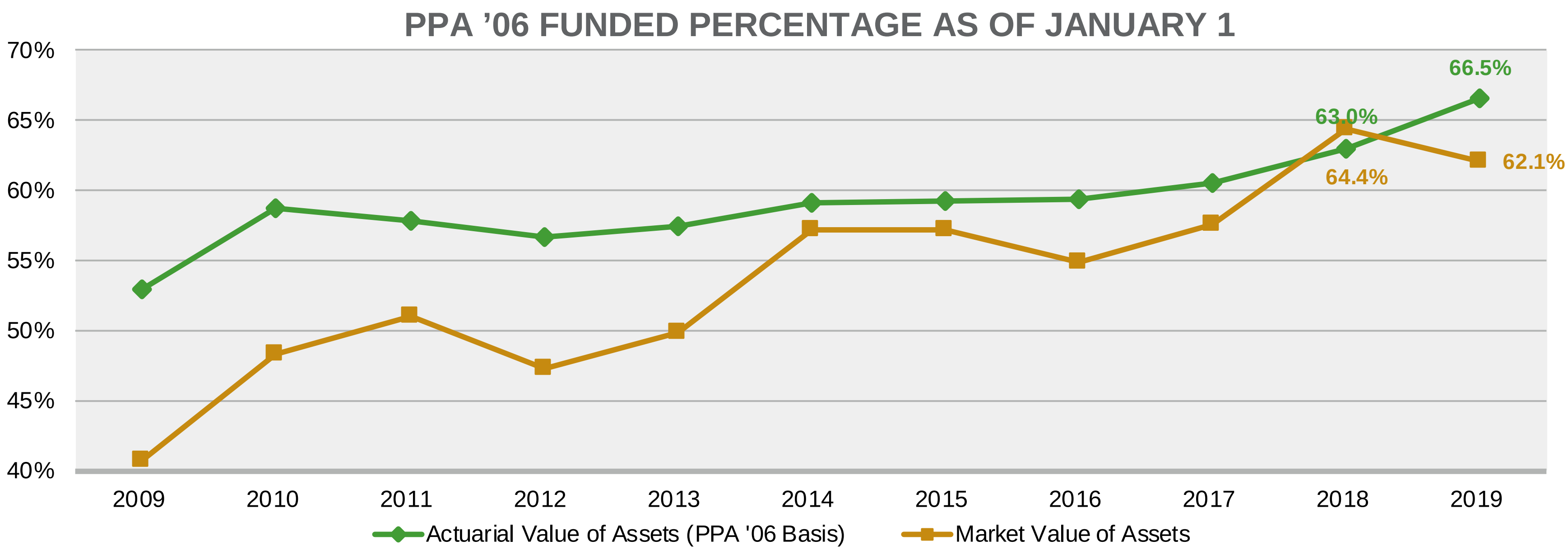
- A 10-year projection indicates the credit balance will increase steadily, assuming that:
  - The Plan will earn a market rate of return equal to 7.50% each year,
  - The long-term applicable percentage under the VBAR is 0.84% for 2021 and after,
  - No contribution increases other than those already in effect (i.e., disregarding remaining contribution rate increases under the Funding Improvement Plan),
  - All other experience emerges as assumed, no assumption changes are made (other than a 3% per year increase in administrative expenses), and
  - There are no plan amendments or changes in law/regulation.
- The projection is based on 90 million hours worked each year.



Additional scenarios would demonstrate sensitivity to risk from investment return, employment and other factors.

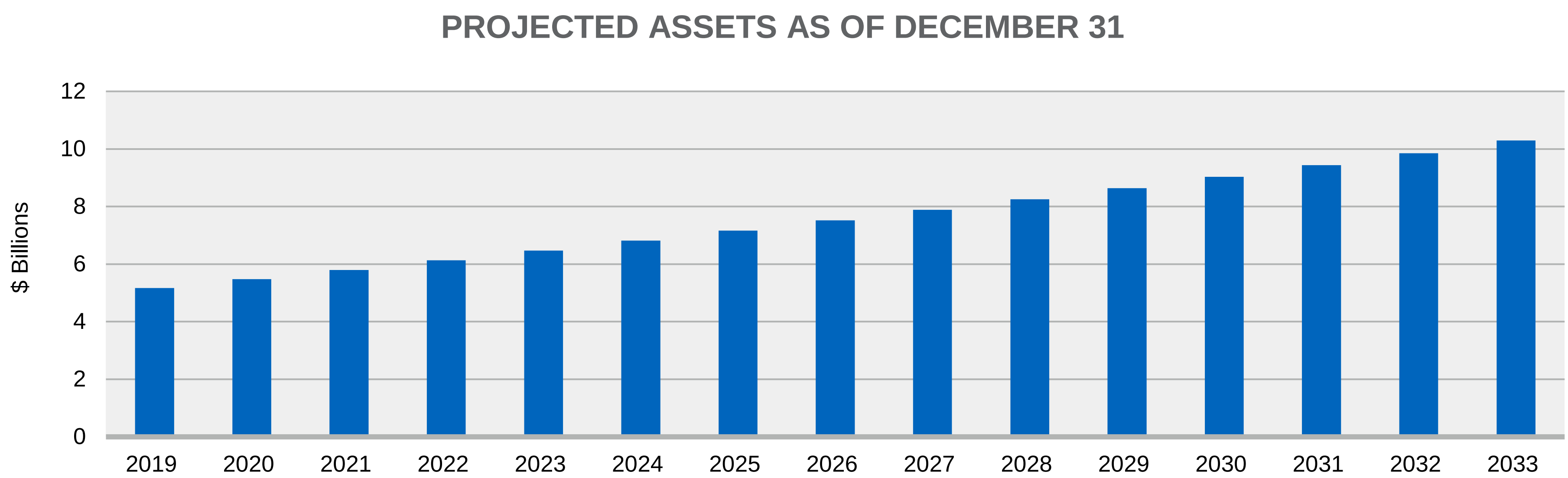
PPA'06 Funded Percentage Historical Information





Solvency Projection

- PPA’06 requires Trustees to monitor plan solvency - the ability to pay benefits and expenses when due. The Multiemployer Pension Reform Act of 2014 further classifies plans that are projected to become insolvent with 15 or 20 years as “critical and declining.” See Section 3, Exhibit K for more information.
- Projections using the current actuarial valuation assumptions show the Plan is not expected to be insolvent within 15 years, based on the negotiated contribution rates, the current plan of benefits and the Trustees’ industry activity assumption. This projection also reflects the Applicable Percentage under the VBAR formula of 0.75% for 2019, 0.50% for 2020, and the average expected long-term Applicable Percentage of 0.84% for 2021 and later.



Additional scenarios would demonstrate sensitivity to investment return, employment and other alternative assumptions.

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.
- There are many ways of illustrating how the deviation in actual experience from the assumptions could affect the cost of the Plan, such as scenario testing and stress testing. This is addressed in a separate report titled: "Identifying Pension Plan Risks and Stochastic Investment Return Analysis." We have also provided the Board of Trustees with periodic updates to the stochastic modeling and scenario testing.

  Examples of key plan risks include the following:
- Investment Risk (the risk that returns will be different than expected or volatile over time)
- Employment Risk (the risk that actual contributions will be different from projected contributions)
- Longevity Risk (the risk that mortality experience will be different than expected)
- 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.
  - More or less active participant turnover than assumed.
  - Return to covered employment of previously inactive participants.
- 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.

Withdrawal Liability

- A separate withdrawal liability report is available.

Section 3: Supplementary Information

EXHIBIT A – TABLE OF PLAN COVERAGE

Category	Year Ended December 31		Change from Prior Year
	2017	2018	
Participants in Fund Office tabulation	61,590	63,474	3.1%
Less: Participants with less than one year of vesting service	2,750	3,170	N/A
Active participants in valuation:			
First Alternative Schedule with 55/30			
• Number	20,386	21,087	3.4%
• Percentage of total active population	34.6%	35.0%	N/A
• Average contribution rate as of the valuation date	$10.00	$10.00	0.0%
First Alternative Schedule without 55/30			
• Number	19,679	19,990	1.6%
• Percentage of total active population	33.4%	33.1%	N/A
• Average contribution rate as of the valuation date	$3.83	$3.84	0.3%
Default Schedule			
• Number	16,055	16,529	3.0%
• Percentage of total active population	27.4%	27.5%	N/A
• Average contribution rate as of the valuation date	$1.68	$1.68	0.0%
No contribution increases but previously covered under an Alternative Schedule			
• Number	201	197	-2.0%
• Percentage of total active population	0.3%	0.3%	N/A
• Average contribution rate as of the valuation date	$1.27	$1.24	-2.4%
Second Alternative Schedule without 60/30			
• Number	2,367	2,361	-0.2%
• Percentage of total active population	4.0%	3.9%	N/A
• Average contribution rate as of the valuation date	$3.51	$3.51	0.0%
Second Alternative Schedule with 60/30			
• Number	152	140	-7.9%
• Percentage of total active population	0.3%	0.2%	N/A
• Average contribution rate as of the valuation date	$9.96	$10.05	0.9%
Total			
• Number	58,840	60,304	2.5%
• Average age	43.0	43.0	0.0
• Average pension credits	13.5	13.3	-0.2
• Average contribution rate as of the valuation date	$5.37	$5.37	0.0%
• Number with unknown age information	477	504	5.7%
• Total active vested participants	43,925	44,133	0.5%

Category	Year Ended December 31		Change from Prior Year
	2017	2018	
Inactive participants with rights to a pension:			
• Number	32,984	32,730	-0.8%
• Average age	52.2	52.6	0.4
• Average monthly benefit	$461	$441	-4.2%
• Beneficiaries with rights to deferred payments	105	120	14.3%
• Alternate payees with rights to deferred payments	557	514	-7.7%
Pensioners:			
• Number in pay status	38,949	39,019	0.2%
• Average age	72.3	72.6	0.4
• Average monthly benefit[1]	$937	$954	1.8%
• Number of alternate payees in pay status	1,161	1,217	4.8%
• Number in suspended status	47	38	-19.1%
Beneficiaries:			
• Number in pay status	8,839	9,009	1.9%
• Number in suspended status	8	1	-87.5%
• Average age	77.0	77.1	0.1
• Average monthly benefit	$442	$453	2.5%
Total Participants	**139,772**	**141,221**	**1.0%**

[1]Includes one-twelfth of annual COLA payments.

EXHIBIT B – PARTICIPANT POPULATION

Year Ended December 31	Active Participants	Inactive Vested Participants[1]	Pensioners and Beneficiaries[2]	Ratio of Non-Actives to Actives
2009	62,321	30,569	44,444	1.20
2010	55,940	33,749	45,281	1.41
2011	55,131	34,122	46,049	1.45
2012	55,440	34,161	45,974	1.45
2013	54,282	34,338	45,909	1.48
2014	54,319	34,033	46,501	1.48
2015	55,897	34,596	46,876	1.46
2016	57,295	33,149	47,652	1.41
2017	58,840	33,089	47,843	1.38
2018	60,304	32,850	48,067	1.34

[1]Includes deferred beneficiaries; excludes deferred alternate payees for 2013 and later

[2]Excludes alternate payees in pay status for 2013 and later

EXHIBIT C – EMPLOYMENT HISTORY

Year Ended December 31	Total Hours of Contributions[1]		Active Participants		Average Hours of Contributions	
	Number	Percent Change	Number	Percent Change	Number	Percent Change
2008	126,093,952	0.3%	70,448	1.5%	1,790	-1.2%
2009	103,117,103	-18.2%	62,321	-11.5%	1,655	-7.5%
2010	91,693,289	-11.1%	55,940	-10.2%	1,639	-1.0%
2011	92,440,381	0.8%	55,131	-1.4%	1,677	2.3%
2012	94,923,571	2.7%	55,440	0.6%	1,712	2.1%
2013	92,829,393	-2.2%	54,282	-2.1%	1,710	-0.1%
2014	95,139,413	2.5%	54,319	0.1%	1,751	2.4%
2015	99,639,689	4.7%	55,897	2.9%	1,783	1.8%
2016	103,613,586	4.0%	57,295	2.5%	1,808	1.4%
2017	106,936,425	3.2%	58,840	2.7%	1,817	0.5%
2018	110,282,173	3.1%	60,304	2.5%	1,829	0.7%
			Five-year average hours:		**1,798**	
			Ten-year average hours:		**1,738**	

[1] The total hours of contributions are based on total hours reported to the Fund Office.

EXHIBIT D – COMPARISON OF ACTIVE PARTICIPANTS BY LOCAL

	As of December 31, 2017					As of December 31, 2018				
Local	Number of Members	Average Age	Average Service	Average Hours	Average Rate as of 12/31[1]	Number of Members	Average Age	Average Service	Average Hours	Average Rate as of 12/31[1]
001	368	45.16	15.76	1,631.72	$8.27	377	44.99	15.05	1,707.65	$8.15
002	1,160	42.63	14.43	1,728.29	12.44	1,138	42.85	14.68	1,709.67	12.43
003	432	41.62	12.08	1,687.86	6.18	480	42.00	11.59	1,858.31	6.25
004	194	44.54	16.91	1,825.41	0.42	209	44.65	16.04	1,870.00	0.73
005	457	43.68	11.04	1,734.40	5.07	478	43.64	10.64	1,737.14	5.06
007	1,039	40.77	12.92	1,847.23	2.05	1,096	40.76	12.82	1,857.25	1.91
009	838	42.51	11.95	1,769.44	0.62	875	42.68	12.00	1,755.76	0.68
010	2,917	42.29	13.26	1,729.38	4.88	2,906	42.34	13.37	1,702.50	4.95
012	1,012	41.74	13.85	1,732.14	8.95	1,058	41.67	13.50	1,733.09	8.90
015	540	46.63	9.70	1,997.62	2.70	555	46.77	9.65	1,916.05	2.79
016	1,388	41.75	11.84	1,768.33	2.15	1,490	41.61	11.50	1,784.35	2.18
017	1,362	43.16	14.97	1,742.93	12.08	1,519	42.63	13.73	1,822.17	11.85
018	2,557	43.04	15.37	1,824.13	10.40	2,608	42.66	15.04	1,833.76	10.34
019	249	48.17	15.40	1,894.33	4.37	290	46.08	13.17	1,853.84	4.13
020	2,414	43.14	14.34	1,827.64	5.91	2,417	43.17	14.23	1,801.90	5.92
022	1	46.75	1.00	1,644.00	14.77	2	46.67	0.57	738.00	15.70
023	196	43.48	13.46	1,563.84	1.79	194	44.53	13.91	1,639.37	1.87
024	1,299	42.78	13.89	1,843.24	4.71	1,258	43.06	13.95	1,794.10	4.70
025	535	45.76	16.53	1,808.51	13.08	542	46.12	16.65	1,773.11	13.00
026	258	40.39	8.88	1,803.13	3.10	265	40.46	8.82	1,835.66	3.29
027	435	45.68	16.30	1,602.43	12.43	440	45.95	16.38	1,728.48	12.46
028	2,590	43.00	13.33	1,743.24	14.35	2,691	42.97	12.90	1,796.66	14.24
029	176	38.81	13.01	1,768.73	5.84	176	39.03	13.34	1,852.75	5.88
032	482	43.98	8.41	1,715.05	2.71	414	45.03	10.05	1,688.02	3.05

[1] Does not reflect contribution rate increases scheduled to occur during subsequent Plan years

EXHIBIT D – COMPARISON OF ACTIVE PARTICIPANTS BY LOCAL (CONTINUED)

	As of December 31, 2017					As of December 31, 2018				
Local	Number of Members	Average Age	Average Service	Average Hours	Average Rate as of 12/31[1]	Number of Members	Average Age	Average Service	Average Hours	Average Rate as of 12/31[1]
033	2,211	43.20	14.29	1,761.93	$6.77	2,272	43.08	14.06	1,779.30	$6.60
036	1,810	44.46	15.58	1,713.04	2.62	1,806	44.53	15.59	1,703.56	2.71
038	500	44.25	15.38	1,704.16	12.36	502	44.38	15.42	1,689.93	12.33
040	348	45.35	15.54	1,478.95	1.50	346	45.91	15.97	1,630.13	1.87
044	190	44.20	14.63	1,623.61	0.96	194	44.70	14.95	1,719.19	1.31
045	419	40.88	13.91	1,772.74	7.35	428	40.59	13.56	1,732.03	7.38
046	344	41.69	14.07	1,696.37	3.38	349	41.64	14.13	1,722.96	3.38
048	189	44.43	16.43	1,857.88	8.25	194	43.66	15.94	1,945.43	8.28
049	491	42.87	11.12	1,809.85	6.18	546	42.33	10.31	1,837.40	6.25
054	636	43.48	13.23	1,826.12	6.48	600	43.70	13.58	1,797.15	6.68
055	967	41.84	12.08	1,804.28	1.50	988	41.88	12.03	1,822.09	1.50
058	140	44.62	12.64	1,468.29	8.78	144	44.28	12.44	1,572.99	8.77
063	305	45.73	15.52	1,655.77	9.16	340	44.50	14.35	1,617.94	8.98
066	2,202	43.25	13.08	1,744.28	3.57	2,365	43.16	12.48	1,781.02	3.55
067	762	43.04	12.85	1,896.75	7.91	747	42.47	13.05	1,793.73	8.09
068	463	43.15	10.70	1,811.71	5.29	466	43.67	10.82	1,825.94	5.41
071	334	41.47	13.30	1,700.78	7.37	318	41.54	13.39	1,728.46	7.48
073	1,950	46.46	16.94	1,860.50	5.34	1,960	46.42	16.78	1,847.48	5.31
080	66	38.41	5.25	1,388.97	8.26	70	36.83	4.91	1,406.79	8.62
083	308	43.99	14.25	1,743.26	11.67	296	44.38	14.85	1,668.72	11.68
085	870	41.38	12.57	1,843.72	1.29	927	40.52	11.84	1,875.69	1.38
088	568	43.71	13.32	1,728.33	3.04	576	43.72	13.14	1,774.23	3.09
091	672	40.29	12.73	1,728.09	5.50	737	39.82	12.03	1,762.32	5.28
100	518	43.56	11.61	1,746.14	7.56	490	43.90	11.51	1,672.35	7.77

[1] Does not reflect contribution rate increases scheduled to occur during subsequent Plan years

EXHIBIT D – COMPARISON OF ACTIVE PARTICIPANTS BY LOCAL (CONTINUED)

Local	As of December 31, 2017					As of December 31, 2018				
	Number of Members	Average Age	Average Service	Average Hours	Average Rate as of 12/31[1]	Number of Members	Average Age	Average Service	Average Hours	Average Rate as of 12/31[1]
103	315	42.64	13.20	1,743.01	$1.46	326	42.50	13.03	1,772.42	$1.45
104	4,620	42.56	12.84	1,656.59	1.82	4,927	42.24	12.26	1,681.42	1.81
105	3,459	41.47	11.57	1,692.85	3.30	3,537	41.42	11.57	1,741.34	3.38
110	561	44.51	14.34	1,874.17	9.73	528	43.40	13.76	1,757.61	9.79
112	271	41.78	12.40	1,704.06	2.62	255	41.42	12.32	1,744.26	2.69
124	311	43.45	14.65	1,717.21	1.99	336	42.87	13.79	1,773.13	2.08
137	317	45.25	15.02	1,732.12	11.38	306	45.72	14.81	1,690.58	11.22
162	1	58.75	8.02	1,967.00	3.60	2	55.62	1.56	1,444.00	2.81
170	706	46.28	12.23	2,148.21	1.61	686	46.81	12.58	2,181.09	1.62
177	469	42.03	11.08	1,824.50	1.08	467	42.77	11.18	1,785.71	1.20
206	514	41.74	10.91	1,737.99	5.21	539	41.52	10.68	1,703.45	5.07
214	522	43.65	14.88	1,771.72	3.18	527	43.63	14.55	1,801.09	3.07
218	324	43.65	15.29	1,685.33	3.94	318	43.84	15.57	1,652.80	3.92
219	323	42.05	13.93	1,882.70	6.85	325	42.03	14.03	1,748.52	6.84
256	44	43.86	6.85	2,017.91	1.20	39	43.83	7.62	1,989.74	1.25
263	311	40.10	12.47	1,843.54	6.71	329	39.60	12.24	1,786.06	6.80
265	1,259	44.87	16.67	1,706.32	1.36	1,287	45.06	16.62	1,725.09	1.35
268	353	45.20	17.34	1,658.31	5.53	351	45.35	17.51	1,705.90	5.45
270	143	42.59	13.53	1,642.55	6.18	222	40.68	9.35	1,794.33	5.78
273	198	43.92	13.94	1,657.09	3.73	185	44.30	14.33	1,627.46	3.79
292	483	43.55	13.04	2,086.10	1.09	376	45.40	15.64	1,601.36	1.35
293	6	44.60	6.70	1,766.83	2.28	8	43.88	7.14	1,445.00	2.66
312	963	40.55	12.51	1,870.60	0.29	987	40.85	12.66	1,857.22	0.29

[1] Does not reflect contribution rate increases scheduled to occur during subsequent Plan years

EXHIBIT D – COMPARISON OF ACTIVE PARTICIPANTS BY LOCAL (CONTINUED)

	As of December 31, 2017					As of December 31, 2018				
Local	Number of Members	Average Age	Average Service	Average Hours	Average Rate as of 12/31[1]	Number of Members	Average Age	Average Service	Average Hours	Average Rate as of 12/31[1]
359	435	43.81	13.03	1,816.18	$2.74	470	44.13	12.94	1,818.30	$2.88
399	367	41.17	7.28	1,737.15	7.24	367	42.72	7.46	1,755.80	7.03
435	222	41.63	11.86	1,821.63	6.45	222	41.76	12.24	1,781.20	6.67
441	175	43.90	14.54	1,794.08	6.13	201	42.82	12.92	1,851.88	6.04
450	127	47.14	14.03	2,030.74	2.15	123	47.26	13.64	2,332.28	2.15
464	100	55.42	26.14	1,873.55	0.90	101	55.91	26.09	1,900.78	0.94
480	565	43.53	12.31	2,041.02	2.55	621	43.01	11.02	2,136.56	2.54
555	190	44.79	8.76	2,161.18	0.79	171	45.55	9.58	2,052.27	0.80
997	24	51.19	11.20	1,864.21	6.82	26	50.27	11.19	1,849.00	7.09
Total	**58,840**	**43.06**	**13.50**	**1,768.46**	**$5.37**	**60,304**	**42.90**	**13.28**	**1,775.28**	**$5.37**

[1] Does not reflect contribution rate increases scheduled to occur during subsequent Plan years

EXHIBIT E – NEW PENSION AWARDS

Year Ended Dec 31	Total		Normal		Standard Early*		Unsubsidized Early*		Special Early		55/30 (60/30)		Disability	
	No.	Average Amount/ Ret Age	No.	Average Amount/ Ret Age	No.	Average Amount/ Ret Age	No.	Average Amount/ Ret Age	No.	Average Amount/ Ret Age	No.	Average Amount/ Ret Age	No.	Average Amount/ Ret Age
2009	1,765	$838	411	$609	499	$342	--	--	597	$1,008	174	$2,357	84	$542
		60.8		66.8		59.6		--		60.1		57.5		49.5
2010	1,909	$868	457	$564	516	$406	--	--	630	$1,001	200	$2,516	106	$523
		60.8		67		59.5		--		60.1		57.8		49.9
2011	1,856	$967	505	$582	333	$434	--	--	701	$1,065	229	$2,453	88	$543
		61.0		66.5		60.1		--		60.1		57.6		49.4
2012	1,644	$972	465	$651	387	$386	--	--	499	$1,190	214	$2,383	79	$536
		61.4		66.6		60.6		--		60.5		57.9		49.8
2013	2,065	$930	592	$645	563	$440	--	--	585	$1,090	240	$2,552	85	$477
		61.5		66.8		60.6		--		60.3		57.5		49.9
2014	1,962	$916	576	$626	569	$402	--	--	504	$1,077	245	$2,544	68	$611
		61.7		66.7		60.9		--		60.2		57.5		51.1
2015	1,655	$957	511	$732	94	$578	370	$385	446	$1,131	179	$2,623	55	$611
		61.6		66.5		60.7		60.5		59.9		57.7		49.9
2016	2,237	$975	676	$642	150	$517	410	$383	660	$1,072	289	$2,649	52	$765
		62.0		66.8		61.9		59.6		61.5		57.7		51.0
2017	1,633	$1,129	518	$771	79	$665	374	$514	409	$1,436	220	$2,744	33	$735
		62.2		66.5		61.9		61.6		60.8		57.8		50.2
2018	1,813	$1,174	563	$689	106	$659	370	$503	472	$1,433	261	$2,990	41	$691
		62.2		66.7		62.4		61.9		60.7		57.2		50.4

*Unsubsidized early pensions are not separately identified prior to 2015.

EXHIBIT F – PROGRESS OF PENSION ROLLS OVER THE PAST TEN YEARS

IN PAY STATUS AT YEAR END

Year	Number	Average Age	Average Amount[1]	Terminations[2]	Additions[3]
2009	36,408	71.0	$854	1,376	1,765
2010	36,892	71.2	850	1,425	1,909
2011	37,321	71.4	857	1,427	1,856
2012	37,165	71.5	868	1,800	1,644
2013	37,648	71.7	877	1,582	2,065
2014	38,074	71.8	888	1,536	1,962
2015	38,211	72.1	906	1,518	1,655
2016	38,952	72.2	919	1,496	2,237
2017	38,949	72.3	918	1,636	1,633
2018	39,019	72.6	954	1,743	1,813

1 Includes one-twelfth of annual COLA payments.
2 Terminations include pensioners who died or were suspended during the prior plan year, less those suspended who were reinstated.
3 Additions to the pension rolls include new pensions awarded.

EXHIBIT G – SUMMARY STATEMENT OF INCOME AND EXPENSES ON AN ACTUARIAL BASIS

	Year Ended December 31, 2017		Year Ended December 31, 2018	
Contribution income:				
• Employer contributions and withdrawal liability payments	$553,810,848		$587,942,281	
• Liquidated damages	228,544		452,752	
• Adjustments for withdrawal liability receivable	-1,937,454		2,523,925	
• Less administrative expenses	-14,853,932		-13,602,401	
Net contribution income		*$537,248,006*		*$577,316,557*
Other Income		1,761,552		1,147,280
Investment income:				
• Expected investment income	$342,490,567		$368,888,862	
• Adjustment toward market value	-60,175,352		-120,438,974	
Net investment income		*282,315,215*		*248,449,888*
Total income available for benefits		**$821,324,773**		**$826,913,725**
Less benefit payments		-$482,583,556		-$495,565,753
Change in reserve for future benefits		**$338,741,217**		**$331,347,972**

EXHIBIT H – INVESTMENT RETURN – ACTUARIAL VALUE VS. MARKET VALUE

Year Ended December 31	Actuarial Value Investment Return		Market Value Investment Return		Year Ended December 31	Actuarial Value Investment Return		Market Value Investment Return	
	Amount	Percent[1]	Amount	Percent		Amount	Percent[1]	Amount	Percent
1999	$363,401,597	15.40%	$190,707,659	7.52%	2009	$463,585,989	15.45%	$561,785,116	24.45%
2000	226,303,645	8.50%	3,560,195	0.13%	2010	209,948,846	6.25%	398,844,675	14.48%
2001	159,799,521	5.63%	-36,479,361	-1.39%	2011	122,036,155	3.52%	-52,598,539	-1.72%
2002	-154,706,918	-5.26%	-194,048,412	-7.69%	2012	243,627,164	6.95%	349,221,467	11.98%
2003	229,560,422	8.50%	458,228,754	20.44%	2013	293,987,827	7.99%	656,623,939	20.56%
2004	239,619,449	8.50%	298,949,842	11.55%	2014	250,531,303	6.40%	232,193,895	6.12%
2005	249,128,731	8.50%	201,693,098	7.31%	2015	163,972,601	3.97%	-16,599,604	-0.42%
2006	153,183,390	5.01%	370,984,124	13.07%	2016	224,011,197	5.20%	321,747,587	8.08%
2007	235,073,194	7.57%	243,628,390	7.84%	2017	282,315,215	6.18%	612,744,159	14.11%
2008	-193,649,545	-5.93%	-905,604,097	-27.64%	2018	248,449,888	5.05%	-206,944,589	-4.12%
					Total	$4,010,179,671		$3,488,638,298	
		Most recent three-year average return:					**5.48%**		**6.02%**
		Most recent five-year average return:					**5.35%**		**4.46%**
		Most recent ten-year average return:					**6.44%**		**8.08%**
		20-year average return:					**5.94%**		**5.58%**

Note: The average return for the most recent three years is the arithmetic average of the returns. For average returns over five or more years, the average return is weighted by the asset value.

[1] The actuarial value investment returns for 1999, 2006 and 2008 include the effect of a change in the method for determining the actuarial value of assets.

EXHIBIT I – ANNUAL FUNDING NOTICE FOR PLAN YEAR BEGINNING JANUARY 1, 2019 AND ENDING DECEMBER 31, 2019

	2019 Plan Year	2018 Plan Year	2017 Plan Year
Actuarial valuation date	January 1, 2019	January 1, 2018	January 1, 2017
Funded percentage	66.5%	63.0%	60.6%
Value of assets	$5,208,417,087	$4,877,069,115	$4,538,327,898
Value of liabilities	7,827,699,996	7,737,632,788	7,494,271,997
Fair market value of assets as of plan year end	Not available	4,859,569,652	4,983,616,157

*Excludes withdrawal liability payments receivable

Critical or Endangered Status

The Plan is in endangered status for the 2019 Plan year because it is not in critical status and its funded percentage is less than 80%. In addition, the Plan is not projected to be in critical status for any of the five succeeding Plan years.

EXHIBIT J – FUNDING STANDARD ACCOUNT

- 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. For a plan that is in critical status under PPA'06, employers will generally not be penalized if a funding deficiency develops, provided the parties fulfill their obligations in accordance with the Rehabilitation Plan developed by the Trustees and the negotiated bargaining agreements reflect that Rehabilitation Plan.

- 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. All items, including the prior credit balance or deficiency, are adjusted with interest at the actuarially assumed rate.

- 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.

FSA FOR THE YEAR ENDED DECEMBER 31, 2018
(RECOGNIZING FIVE-YEAR AMORTIZATION EXTENSION)

	Charges			Credits	
1	Prior year funding deficiency	$0	6	Prior year credit balance	$249,042,884
2	Normal cost, including administrative expenses	92,111,005	7	Employer contributions	590,918,958
3	Total amortization charges	574,100,734	8	Total amortization credits	252,028,288
4	Interest to end of the year	49,965,880	9	Interest to end of the year	59,739,799
5	*Total charges*	*$716,177,619*	10	Full-funding limitation credit	0
			11	*Total credits*	*$1,151,729,929*
				Credit balance: 11 - 5	**$435,552,310**

- PPA'06 requires the Internal Revenue Service (IRS) to permit multiemployer plans facing a funding deficiency within 10 years to extend the schedule for paying off their liabilities by five years. The Trustees elected to utilize this provision effective January 1, 2009.
- The chart below shows the development of the Funding Standard Account without the five-year amortization extension.

FSA FOR THE YEAR ENDED DECEMBER 31, 2018 (DISREGARDING FIVE-YEAR AMORTIZATION EXTENSION)

Charges			Credits		
1	Prior year funding deficiency	$608,531,513	6	Prior year credit balance	$0
2	Normal cost, including administrative expenses	92,111,005	7	Employer contributions	590,918,958
3	Total amortization charges	481,901,827	8	Total amortization credits	252,028,288
4	Interest to end of the year	88,690,826	9	Interest to end of the year	41,061,583
5	*Total charges*	*1,271,235,171*	10	Full-funding limitation credit	0
			11	*Total credits*	*884,008,829*
				Credit balance/(funding deficiency): 11 - 5	-$387,226,342

EXHIBIT K – MAXIMUM DEDUCTIBLE CONTRIBUTION

- Employers that contribute to defined benefit pension plans are allowed a current deduction for payments to such plans. There are various measures of a plan's funded level that are considered in the development of the maximum deductible contribution amount.
- One of the limits is the excess of 140% of "current liability" over assets. "Current liability" is one measure of the actuarial present value of all benefits earned by the participants as of the valuation date. This limit is significantly higher than the current contribution level.
- Contributions in excess of the maximum deductible amount are not prohibited; only the deductibility of these contributions is subject to challenge and may have to be deferred to a later year. In addition, if contributions are not fully deductible, an excise tax in an amount equal to 10% of the non-deductible contributions may be imposed. However, the plan sponsor may elect to exempt the non-deductible amount up to the ERISA full-funding limitation from the excise tax.
- The Trustees should review the interpretation and applicability of all laws and regulations concerning any issues as to the deductibility of contribution amounts with Fund Counsel.

1	Normal cost, including administrative expenses	$140,675,083
2	Amortization of unfunded actuarial accrued liability	354,969,916
3	Preliminary maximum deductible contribution: 1 + 2, with interest to the end of the plan year	$532,818,374
4	Full-funding limitation (FFL)	8,615,723,856
5	Preliminary maximum deductible contribution, adjusted for FFL: lesser of 3 and 4	532,818,374
6	Current liability for maximum deductible contribution, projected to the end of the plan year	15,171,417,384
7	Actuarial value of assets, projected to the end of the plan year	5,038,551,789
8	Excess of 140% of current liability over projected assets at end of plan year: [140% of (6)] - (7), not less than zero	16,201,432,548
9	End of year minimum required contribution	30,204,819
Maximum deductible contribution: greatest of 5, 8, and 9		**$16,201,432,548**

EXHIBIT L – PENSION PROTECTION ACT OF 2006

PPA'06 Zone Status

- 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 inactives to actives 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.

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 10 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 must elect whether or not to enter the *Red Zone* for the current year.

Section 4: Certificate of Actuarial Valuation

OCTOBER 22, 2019

CERTIFICATE OF ACTUARIAL VALUATION

This is to certify that Segal Consulting, a Member of The Segal Group, Inc. ("Segal") has prepared an actuarial valuation of the Sheet Metal Workers' National Pension Fund 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 Plan Administrator with respect to the participant data. Segal Consulting 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 8*.

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 1*. 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.

Daniel V. Ciner, MAAA
Senior Vice President and Actuary
Enrolled Actuary No. 17-05773

EXHIBIT 1 – SUMMARY OF ACTUARIAL VALUATION RESULTS

The valuation was made with respect to the following data supplied to us by the Plan Administrator:

Pensioners as of the valuation date (including 9,009 beneficiaries in pay status, 38 pensioners in suspended status, and 1 beneficiary in suspended status)		48,067
Participants inactive during year ended December 31, 2018 with vested rights (including 120 beneficiaries with rights to deferred pensions 38 participants with unknown age)		32,850
Participants active during the year ended December 31, 2018 (including 504 participants with unknown age)		60,304
• Fully vested	44,133	
• Not vested	16,171	
Total participants		**141,221**

The actuarial factors as of the valuation date are as follows:

Normal cost, including administrative expenses		$140,675,083
Actuarial accrued liability		7,827,699,996
• Pensioners and beneficiaries[1]	$4,294,083,817	
• Inactive participants with vested rights[2]	912,006,287	
• Active participants	2,621,609,892	
Actuarial value of assets ($4,859,569,652[3] at market value as reported by Calibre CPA Group)		$5,208,417,087
Unfunded actuarial accrued liability		2,619,282,909

[1] Includes liabilities for 1,217 alternate payees in pay status who are excluded from the above counts.
[2] Includes liabilities for 514 alternate payees with deferred benefits who are excluded from the above counts.
[3] Excludes receivable withdrawal liability payments of $15,309,486.

EXHIBIT 2 – 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, the factors that affected the change between the two dates follow.

	Benefit Information Date	
	January 1, 2018	January 1, 2019
Actuarial present value of vested accumulated plan benefits:		
• Participants currently receiving payments	$4,294,941,651	$4,294,083,817
• Other vested benefits	3,071,909,902	3,139,466,960
• Total vested benefits	$7,366,851,553	$7,433,550,777
Actuarial present value of non-vested accumulated plan benefits	370,781,235	394,149,219
Total actuarial present value of accumulated plan benefits	**$7,737,632,788**	**$7,827,699,996**

Factors	Change in Actuarial Present Value of Accumulated Plan Benefits
Plan amendments*	$893,531
Benefits accumulated, net experience gain or loss, changes in data	109,433,169
Benefits paid	-495,565,753
Changes in actuarial assumptions	-86,432,482
Interest	561,738,743
Total	**$90,067,208**

*Net impact of changes in individual participants' contribution rate and/or Funding Improvement Plan option.

EXHIBIT 3 – CURRENT LIABILITY

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

Item[1]		Amount
Retired participants and beneficiaries receiving payments		$6,497,825,248
Inactive vested participants		2,139,481,304
Active participants		
• Non-vested benefits	$954,615,911	
• Vested benefits	5,289,832,391	
• *Total active*		*$6,244,448,302*
Total		**$14,881,754,854**
Expected increase in current liability due to benefits accruing during the plan year		$357,183,190
Expected release from current liability for the plan year		525,787,614
Expected plan disbursements for the plan year, including administrative expenses of $14,500,000		540,287,614
Current value of assets		$4,859,569,652
Percentage funded for Schedule MB		32.7%

[1] The actuarial assumptions used to calculate these values are shown in Exhibit 8.

EXHIBIT 4 – INFORMATION ON PLAN STATUS AS OF JANUARY 1, 2019

Plan status (as certified on March 29, 2019, for the 2019 zone certification)	***Endangered***
Scheduled progress (as certified on March 29, 2019, for the 2019 zone certification)	Yes
Actuarial value of assets for FSA	$5,208,417,087
Accrued liability under unit credit cost method	7,827,699,996
Funded percentage for monitoring plan's status	66.5%

EXHIBIT 5 – SCHEDULE OF PROJECTION OF EXPECTED BENEFIT PAYMENTS

(SCHEDULE MB, LINE 8b(1))

Plan Year	Expected Annual Benefit Payments[1]
2019	$524,786,386
2020	542,157,968
2021	558,994,214
2022	575,081,563
2023	590,245,351
2024	603,576,345
2025	616,184,034
2026	627,001,855
2027	636,431,327
2028	644,124,581

[1] Assuming as of the valuation date:

- no additional accruals,
- experience is in line with valuation assumptions, and
- no new entrants are covered by the plan.

EXHIBIT 6 – SCHEDULE OF ACTIVE PARTICIPANT DATA

(SCHEDULE MB, LINE 8b(2))

The participant data is for the year ended December 31, 2018.

		Pension Credits								
Age	**Total**	**0 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35 - 39**	**40 & over**
Under 25	3,514	3,342	172	–	–	–	–	–	–	–
25 - 29	5,914	3,901	1,880	133	–	–	–	–	–	–
30 - 34	7,337	3,050	2,321	1,910	56	–	–	–	–	–
35 - 39	8,020	2,110	1,760	2,562	1,507	81	–	–	–	–
40 - 44	7,954	1,355	1,196	1,884	2,170	1,310	39	–	–	–
45 - 49	8,050	918	814	1,267	1,841	2,049	1,100	61	–	–
50 - 54	8,228	619	529	921	1,395	1,620	1,828	1,263	53	–
55 - 59	7,149	480	436	671	943	1,087	1,256	1,416	793	67
60 - 64	3,114	170	209	333	389	435	387	460	480	251
65 - 69	476	37	42	55	69	64	41	44	49	75
Over 70	44	9	7	3	2	10	2	1	3	7
Unknown	504	465	37	2	–	–	–	–	–	–
Total	**60,304**	**16,456**	**9,403**	**9,741**	**8,372**	**6,656**	**4,653**	**3,245**	**1,378**	**400**

Note: Excludes 3,170 participants with less than one year of vesting service.

EXHIBIT 7 – FUNDING STANDARD ACCOUNT

The table below presents the FSA for the Plan Year ending December 31, 2019.

Charges			Credits		
1	Prior year funding deficiency	$0	6	Prior year credit balance	$435,552,310
2	Normal cost, including administrative expenses	140,675,083	7	Amortization credits	261,096,558
3	Amortization charges	584,071,291	8	Interest on 6 and 7	52,248,665
4	Interest on 1, 2 and 3	54,355,978	9	Full-funding limitation credit	0
5	Total charges	$779,102,352	10	Total credits	$748,897,533
Minimum contribution with interest required to avoid a funding deficiency: 5 - 10, not less than zero					$30,204,819

Full Funding Limitation (FFL) and Credits	
ERISA FFL (accrued liability FFL)	$3,810,184,567
RPA’94 override (90% current liability FFL)	8,615,723,856
FFL credit	0

Schedule MB, line 8e
Difference between minimum required contribution for the year and the minimum that would have been required without extending the amortization bases is $764,497,623.

EXHIBIT 7 – FUNDING STANDARD ACCOUNT (*CONTINUED)*

Schedule of FSA Bases (Charges) (Schedule MB, Line 9c)

Type of Base	Date Established	Amortization Amount	Years Remaining	Outstanding Balance
Plan Amendment[1]	01/01/1989	$14,770,976	5	$64,243,792
Prior Local 137 Combined Bases[1]	01/01/1990	75,592	4	272,170
Plan Amendment[1]	01/01/1990	4,751,276	6	23,974,394
Prior Local 51 Combined Bases[1]	01/01/1991	41,541	2	80,184
Prior Local 17 Combined Bases[1]	01/01/1991	411,698	2	794,672
Plan Amendment[1]	01/01/1991	4,891,544	7	27,851,703
Plan Amendment[1]	01/01/1992	24,338,562	8	153,250,219
Plan Amendment[1]	01/01/1993	5,201,026	9	35,665,017
Plan Amendment[1]	01/01/1994	6,086,651	10	44,912,707
Plan Amendment[1]	01/01/1995	1,519,236	11	11,947,394
Plan Amendment[1]	01/01/1996	6,412,433	12	53,322,104
Change in Assumptions[1]	01/01/1996	9,939,333	12	82,649,766
Plan Amendment[1]	01/01/1997	8,866,050	13	77,447,418
Plan Amendment[1]	01/01/1998	2,160,881	14	19,719,859
Prior Local 38 Combined Bases[1]	01/01/1999	538,164	1	538,164
Plan Amendment[1]	01/01/1999	555,298	15	5,269,312
Actuarial Loss[1]	01/01/2000	4,068,171	1	4,068,171
Plan Amendment[1]	01/01/2000	19,037,631	16	187,085,075
Plan Amendment[1]	01/01/2001	192,228	17	1,949,485
Actuarial Loss[1]	01/01/2001	5,338,829	2	10,305,182
Actuarial Loss[1]	01/01/2002	35,807,007	3	100,100,823

[1]Denotes bases that were extended five years (not to exceed 30 years for the extended recognition of the 2008 investment loss) under IRC Section 431(d)(1)

EXHIBIT 7 – FUNDING STANDARD ACCOUNT (*CONTINUED)*

Schedule of FSA Bases (Charges) (Schedule MB, Line 9c)

Type of Base	Date Established	Amortization Amount	Years Remaining	Outstanding Balance
Plan Amendment[1]	01/01/2002	10,255,333	18	107,003,731
Plan Amendment[1]	01/01/2003	3,719,186	19	39,817,637
Actuarial Loss[1]	01/01/2003	60,459,486	4	217,685,934
Actuarial Loss[1]	01/01/2004	4,431,608	5	19,274,511
Plan Amendment[1]	01/01/2004	12,476,476	20	136,730,671
Actuarial Loss[1]	01/01/2005	7,680,390	6	38,754,362
Actuarial Loss[1]	01/01/2006	3,351,822	7	19,084,762
Plan Amendment[1]	01/01/2006	3,205,525	22	36,586,200
Actuarial Loss[1]	01/01/2007	4,600,188	8	28,965,547
Change in Asset Method[1]	01/01/2007	10,417,797	3	29,123,630
Plan Amendment[1]	01/01/2007	3,652,209	23	42,428,415
Change in Assumptions[1]	01/01/2007	75,824,731	23	880,870,382
Actuarial Loss[1]	01/01/2008	4,486,880	9	30,767,896
Actuarial Loss[1]	01/01/2009	2,228,555	10	16,444,259
Extended Recognition of 2008 Investment Loss[1]	01/01/2009	53,243,117	20	583,495,482

[1]Denotes bases that were extended five years (not to exceed 30 years for the extended recognition of the 2008 investment loss) under IRC Section 431(d)(1)

EXHIBIT 7 – FUNDING STANDARD ACCOUNT (*CONTINUED)*

Schedule of FSA Bases (Charges) (Schedule MB, Line 9c)

Type of Base	Date Established	Amortization Amount	Years Remaining	Outstanding Balance
Change in Assumptions	01/01/2011	15,855,237	7	90,277,282
Extended Recognition of 2008 Investment Loss	01/01/2011	25,516,210	19	273,176,780
Plan Amendment	01/01/2012	429,327	8	2,703,303
Extended Recognition of 2008 Investment Loss	01/01/2012	5,765,101	19	61,721,219
Actuarial Loss	01/01/2012	10,376,023	8	65,333,683
Plan Amendment	01/01/2013	486,781	9	3,338,006
Change in Assumptions	01/01/2013	4,648,382	9	31,875,366
Extended Recognition of 2008 Investment Loss	01/01/2013	6,588,832	19	70,540,100
Plan Amendment	01/01/2014	285,758	10	2,108,574
Extended Recognition of 2008 Investment Loss	01/01/2014	16,044,274	19	171,770,145
Plan Amendment	01/01/2015	360,874	11	2,837,942
Actuarial Loss	01/01/2015	7,597,483	11	59,747,225
Change in Assumptions	01/01/2015	17,095,062	11	134,436,952
Plan Amendment	01/01/2016	449,715	12	3,739,573
Actuarial Loss	01/01/2016	18,446,304	12	153,388,845
Plan Amendment	01/01/2017	121,392	13	1,060,397
Actuarial Loss	01/01/2017	13,672,087	13	119,429,484
Actuarial Loss	01/01/2018	10,049,347	14	91,708,731
Plan Amendment	01/01/2019	94,163	15	893,531
Actuarial Loss	01/01/2019	15,151,509	15	143,775,000
Total		**$584,071,291**		**$4,616,343,168**

EXHIBIT 7 – FUNDING STANDARD ACCOUNT (*CONTINUED)*

Schedule of FSA Bases (Credits) (Schedule MB, Line 9h)

Type of Base	Date Established	Amortization Amount	Years Remaining	Outstanding Balance
Change in Assumptions	01/01/1989	$4,851,476	1	$4,851,476
Prior Local 501 Combined Bases	01/01/1990	22,415	2	43,267
Change in Assumptions	01/01/1992	11,419,594	3	31,924,218
Change in Method	01/01/1992	15,774,802	3	44,099,486
Plan Amendment	07/01/1994	13,462	11.5	108,956
Plan Amendment	01/01/1996	14,769,689	7	84,096,338
Plan Amendment	09/01/2003	21,285,335	14.67	199,463,447
Plan Amendment	01/01/2005	3,079,758	16	30,265,148
Plan Amendment	01/01/2008	2,607,010	4	9,386,608
Plan Amendment	03/01/2008	49,137,498	4.17	183,365,051
Plan Amendment	08/01/2008	27,770,774	4.58	112,233,153
Change in Asset Method (Funding Relief)	01/01/2009	18,467,501	20	202,386,793
Plan Amendment	01/01/2010	627,690	6	3,167,254
Actuarial Gain	01/01/2010	12,696,666	6	64,065,914
Extended Recognition of 2008 Investment Loss	01/01/2010	14,218,585	19	152,224,295
Plan Amendment	01/01/2011	1,357,810	7	7,731,161
Actuarial Gain	01/01/2011	30,219,651	7	172,066,049
Plan Amendment	01/01/2013	21,746	9	149,122
Actuarial Gain	01/01/2013	4,724,529	9	32,397,530
Actuarial Gain	01/01/2014	18,105,267	10	133,596,720
Plan Amendment	01/01/2018	816,745	14	7,453,481
Change in Assumptions	01/01/2019	9,108,555	15	86,432,482
Total		**$261,096,558**		**$1,561,507,949**

EXHIBIT 8 – STATEMENT OF ACTUARIAL ASSUMPTIONS/METHODS

(SCHEDULE MB, LINE 6)

Rationale for Demographic Assumptions	The information and analyses used in selecting each demographic assumption that has a significant effect on this actuarial valuation are shown in the experience study report titled: "Demographic Experience Analysis: January 1, 2013 through December 31, 2017," dated April 2, 2019. Assumptions were based on historical and current demographic data, adjusted to reflect estimated future experience and professional judgment.
Mortality Rates	*Healthy Male Employee*: 103% of the RP-2006 Blue Collar Male Employee Mortality Table, projected generationally from 2006 with scale MP-2018 *Healthy Female Employee*: 108% of the RP-2006 Blue Collar Female Employee Mortality Table, projected generationally from 2006 with scale MP-2018 *Healthy Male Pensioner or Beneficiary:* 103% of the RP-2006 Blue Collar Healthy Annuitant Mortality Table, projected generationally from 2006 with scale MP-2018 *Healthy Female Pensioner or Beneficiary:* 108% of the RP-2006 Blue Collar Healthy Annuitant Mortality Table, projected generationally from 2006 with scale MP-2018 *Disabled Male:* 90% of the RP-2006 Disabled Male Retiree Mortality Table, projected generationally from 2006 with scale MP-2018 *Disabled Female:* 100% of the RP-2006 Disabled Female Retiree Mortality Table, projected generationally from 2006 with scale MP-2018 The above tables with generational projections to the ages of participants as of the measurement date reasonably reflect the mortality experience of the Plan as of the measurement date. The mortality tables were then adjusted to future years using the generational projection to reflect future mortality improvement between the measurement date and those years.

Annuitant Mortality Rates

	Rate (%)[1]			
	Healthy		Disabled	
Age	Male	Female	Male	Female
55	0.66%	0.45%	2.22%	1.50%
60	0.92%	0.71%	2.53%	1.95%
65	1.49%	1.14%	3.27%	2.53%
70	2.45%	1.83%	4.39%	3.43%
75	4.01%	2.97%	6.03%	4.91%
80	6.57%	4.90%	8.48%	7.26%
85	10.82%	8.43%	12.34%	10.85%
90	17.83%	14.45%	18.41%	15.86%

[1] Mortality rates shown for base table.

Termination Rates Before Retirement

	Rate (%)				
	Mortality[1]			Withdrawal[3]	
Age	Male	Female	Disability[2]	Construction	Production
20	0.06%	0.02%	0.03%	18.00%	23.00%
25	0.08%	0.03%	0.03%	10.00%	20.00%
30	0.08%	0.03%	0.03%	6.00%	15.00%
35	0.09%	0.04%	0.03%	5.00%	13.00%
40	0.10%	0.06%	0.04%	4.00%	11.00%
45	0.14%	0.08%	0.15%	3.00%	7.00%
50	0.23%	0.13%	0.40%	2.00%	7.00%
55	0.38%	0.22%	0.10%	2.00%	7.00%
60	0.67%	0.36%	0.10%	2.00%	7.00%

[1] Mortality rates are projected on a generational basis using Scale MP-2018. Rates above are sample rates in 2019.

[2] Participants are assumed to elect non-disability pensions upon eligibility.

[3] Withdrawal rates do not apply at or beyond early retirement age.

Retirement Rates for Active Participants

Age	Annual Retirement Rates		
	Not Eligible for Special Early	Eligible for Special Early but not for 55/30 (60/30) Pension	Eligible for 55/30 (60/30) Pension*
55	5%	5%	30%
56-57	5	5	15
58	5	5	15
59	5	8	15
60	6	10	25
61	9	14	25
62	22	33	40
63	13	21	25
64	16	24	25
65-66	25	35	40
67-69	25	35	30
70	100	100	100

*Rate at first eligibility for 55/30 (60/30, if applicable) Pension is 30% or above rate at applicable age, if higher

Description of Weighted Average Retirement Age

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 the January 1, 2019 actuarial valuation.

Retirement Rates for Inactive Vested Participants

Age	Annual Retirement Rates: Not Eligible for Special Early	Eligible for Special Early but not for 55/30 (60/30) Pension	Eligible for 55/30 (60/30) Pension*
55	5%	15%	65%
56	5	10	40
57	5	10	45
58	5	15	40
59	5	15	25
60	5	15	25
61	5	20	30
62	10	50	50
63	10	30	50
64	15	30	50
65	35	35	50
66-79	25	50	50
80	100	100	100

Future Benefit Accruals

For Construction employees: 1,750 hours per year

For Production employees: 2,000 hours per year

The Funding Improvement Plan Option covering each participant, based on the census data provided for this valuation, is assumed to remain unchanged.

The Applicable Percentage under the Plan's benefit formula is 0.75% for 2019 and 0.50% for 2020. For 2021 and beyond, the average expected Applicable Percentage is 0.84%.

The average expected Applicable Percentage was determined by stochastically projecting the Plan's market investment returns after 2018. The stochastic projections were based on the long-term expected returns and volatility estimates as provided by the Plan's Investment Manager in 2019, as well as the Plan's target asset allocation.

Unknown Data for Participants

Same as those exhibited by participants with similar known characteristics. If not specified, participants are assumed to be male.

Definition of Active Participants	Employees with at least 435 hours in the most recent plan year and who have accumulated at least one year of vesting service, excluding those who have retired as of the valuation date.
Percent Married	80%
Age and Sex of Spouse	Spouse of male participant is assumed to be three years younger than the participant and spouse of female participant is assumed to be three years older than the participant. If the spouse's sex is not provided, the spouse is assumed to be the opposite sex of the participant.
Benefit Election	50% of participants are assumed to elect a single life annuity, 20% of participants are assumed to elect a 50% joint and survivor annuity (with popup, if available), and 30% of participants are assumed to elect a 100% joint and survivor annuity (with popup, if available).
Delayed Retirement Factors	Inactive vested participants after attaining age 65, with increases up to age 80.
Net Investment Return	7.50% 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, based on the Plan's target asset allocation, a building block approach was used that reflects inflation expectations and anticipated risk premiums for each of the portfolio's asset classes as provided by Segal Marco Advisors, and stochastic modeling was performed based on the long-term expected returns and volatility estimates as provided by the Plan's Investment Manager.
Annual Administrative Expenses	$14,500,000 for the year beginning January 1, 2019 (equivalent to $13,945,981 payable at the beginning of the year) The annual administrative expenses were based on historical and current data, estimated future experience and professional judgment.
Actuarial Value of Assets	The market value of assets less unrecognized returns in prior years. Unrecognized return is equal to the difference between the actual market return and the projected market return, and is recognized 20% per year over a five-year period. The actuarial value is further adjusted, if necessary, to be within 20% of the market value.
Actuarial Cost Method	Unit Credit Actuarial Cost Method. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis.
Benefits Valued	Unless otherwise indicated, includes all benefits summarized in *Exhibit 9*.
Current Liability Assumptions	*Interest: 3.06%*, within the permissible range prescribed under IRC Section 431(c)(6)(E) *Mortality:* 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
Estimated Rate of Investment Return	*On actuarial value of assets (Schedule MB, line 6g):* 5.1%, for the Plan Year ending December 31, 2018 *On current (market) value of assets (Schedule MB, line 6h):* -4.1%, for the Plan Year ending December 31, 2018

FSA Contribution Timing (Schedule MB, line 3a)	Unless otherwise noted, contributions are paid periodically throughout the year pursuant to collective bargaining agreements or as periodic withdrawal liability payments. The interest credited in the FSA is therefore assumed to be equivalent to a June 30 contribution date.

Justification for Change in Actuarial Assumptions

(Schedule MB, line 11)

Based on past experience and future expectations, the following actuarial assumptions were changed as of January 1, 2019 for funding purposes and as of December 31, 2018 for withdrawal liability purposes, as applicable:

- Annual administrative expenses, previously $15,000,000, payable monthly.
- Mortality rates for both healthy and disabled lives, previously the RP-2014 Blue Collar or Disabled Retiree Mortality Tables with ages set forward 1 year, projected generationally using scale MP-2014.
- Retirement rates for retirements from active status, previously:

	Annual Retirement Rates (%)	
Age	Not Eligible for 55/30 (60/30) Pension	Eligible for 55/30 (60/30) Pension*
55	5	25
56-57	5	14
58-59	7	14
60-61	14	20
62	35	40
63-69	25	35
70	100	100

*Rate at first eligibility for 55/30 (60/30, if applicable) Pension is 25% or above rate at applicable age, if higher.

- Retirement rates for retirements from inactive status, previously:

Age	Annual Retirement Rates*
55-61	5
62-63	10
64	30
65	35
66-79	20
80	100

*20% of inactive participants are assumed to retire with a Special Early, or 55/30 Pension (60/30 if applicable) if expected to be eligible based on reported Funding Improvement Plan Option, and 80% are assumed to retire with a Normal or Standard Early Pension, depending upon age and service at retirement.

- Withdrawal and disability incidence rates from active status, previously:

Withdrawal Rate[3] (%)		
Disability[2]	Construction	Production
0.04	13.00	24.00
0.04	10.17	20.00
0.04	7.00	14.84
0.05	5.42	11.57
0.07	4.72	9.57
0.14	3.53	8.43
0.30	3.00	7.40
0.64	3.00	7.40
1.30	0.00	7.40

- Optional form of payment, previously: Married participants are assumed to elect the 50% joint and survivor annuity (with the “pop-up” feature if available) and non-married participants are assumed to elect the single life annuity.
- Intensity for future benefit accruals, previously 1,650 and 1,700 hours per year for Construction and Production employees, respectively.

EXHIBIT 9 – 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.

Plan Year	January 1 through December 31
Pension Credit Year	January 1 through December 31
Plan Status	Ongoing plan
Regular Pension	• *Age Requirement:* 65 • *Service Requirement:* Five years of participation in the Plan • *Amount:* Described below **For service on and after January 1, 2014:** Participant's *Benefit Rate* multiplied by the participant's *Contribution Hours* for the Plan Year multiplied by the *Applicable Percentage* for the Plan Year. *Benefit Rate* is the portion of the participant's contribution rate that is subject to benefit accruals. For Participants working under a Collective Bargaining Agreement that qualifies for a 55/30 (or 60/30) Pension, the *Benefit Rate* is the total Contribution Rate less the 55/30 (or 60/30) Rate (30% of the Contribution Rate for periods after December 1, 2007). *Contribution Hours* are the hours for which contributions are required to be made for the participant's work in Covered Employment. *Applicable Percentage* is based on the average of the Plan's rate of market value investment return for each of the three most recent Plan Years reported in the Actuarial Valuation and Review as of January 1 of the immediately preceding Plan Year and is defined in the following table:

Applicable Percentage	Average of Market Value Investment Return Percentages for 3 Most Recent Plan Years
1.25%	10.0% or higher
1.00%	8.5% or higher but less than 10.0%
0.75%	6.5% or higher but less than 8.5%
0.50%	Greater than 0% but less than 6.5%
0.00%	0% or less

The above formula applies unless otherwise stated in a Funding Improvement Plan Option.

The Applicable Percentage for the 2019 Plan Year is 0.75%.

For service and on and after adoption of Rehabilitation Plan Schedule and before January 1, 2014:

Default Schedule/Persons for Whom Contribution were Not Required to be Made ("Persons for Whom"): 1% of the amount determined by multiplying the participant's Benefit Rate by the participant's Contribution Hours for the Plan Year.

First Alternative Schedule: Same as accrual for service on and after December 1, 2007 and before adoption of Rehabilitation Plan Schedule.

Second Alternative Schedule: 1% of the amount determined by multiplying the participant's Benefit Rate by the participant's Contribution Hours for the Plan Year.

Formerly Alternative Schedule and Agreement Did Not Include Required Contribution Rate Increases - No Increase Consequences ("NIC"): 1% of the amount determined by multiplying the participant's Benefit Rate by the participant's Contribution Hours for the Plan Year.

For service on and after December 1, 2007 and before adoption of Rehabilitation Plan Schedule:

Employers that have not made required contribution rate increases: Same as accrual for service after August 31, 2003.

Employers that have made required contribution rate increases: 1.5% of the amount determined by multiplying the participant's Benefit Rate by the participant's Contribution Hours for the Plan Year (up to 1,200 hours), plus 0.7% of the amount determined by multiplying the participant's Benefit Rate by the participant's Contribution Hours (over 1,200 hours). The 1.5% multiplier is applied to the first 1,200 hours at the highest Benefit Rate in effect during the Plan Year.

For service after August 31, 2003 and before December 1, 2007:

0.8571% of the amount determined by multiplying the participant's Benefit Rate by the participant's Contribution Hours (up to 1,400 hours), plus 0.3% of the amount determined by multiplying the participant's Benefit Rate by the participant's Contribution Hours (over 1,400 hours). For participants in 55/30 Locals, 80% of the total contribution rate is subject to benefit accruals. The 0.8571% multiplier is applied to the first 1,400 hours at the highest Benefit Rate in effect during the Plan Year.

Supplemental accruals:
Locals are required to increase their contribution rates subject to benefit accruals by 10% annually for eligibility. Participants of Locals that make the required increases earn a supplemental accrual that brings the total accrual to twice the normal rate in the year following the increase.

For service after December 31, 1999 and before September 1, 2003:

1.7142% of the amount determined by multiplying the participant's Benefit Rate by the participant's Contribution Hours (up to 1,400 hours), plus 0.6% of the amount determined by multiplying the participant's Benefit Rate by the participant's Contribution Hours (over 1,400 hours). The 1.7142% multiplier is applied to the first 1,400 hours at the highest Benefit Rate in effect during the Plan Year.

For service before January 1, 2000:

Benefit accrued according to the rules of the Plan in effect on December 31, 1999

Past Service:

$10.00 for each year of Past Service Credit, if any, up to 10 years

- *Post-Normal Retirement Age Adjustment:* Regular pension accrued at Normal Retirement Age (NRA), increased by 1.0% for each month greater than NRA, and 1.5% for each month greater than age 70.

Standard Early Retirement	• *Age Requirement:* 55 • *Service Requirement:* Fulfill any one of the following: a. 10 years of Pension Credits, including at least five years of Future Service Credit, or b. 10 years of Vesting Service, or c. 15 years of Pension Credits, including at least 12 months of Future Service Credit • *Amount:* Normal Retirement benefit reduced as described below. **For benefits accrued on and after January 1, 2014:** Reductions based on the participant's Funding Improvement Plan Option, which depends upon the Schedule or Rehabilitation Plan provision which applied to the classification of employment when the Plan was in critical status. *Default Option* — Actuarially from age 65 (Unsubsidized Early Retirement Pension) *First Alternative Option* — 6% per year from age 65 *Second Alternative Option* — Actuarially from age 65 (Unsubsidized Early Retirement Pension) **For benefits accrued before January 1, 2014:** Reductions based on the participant's Home Local Schedule (Rehabilitation Plan Schedule) when the Plan was in critical status. *Default Schedule/ Persons for Whom* — Actuarially from age 65 (Unsubsidized Early Retirement Pension) *First Alternative Schedule* — 6% per year from age 65 *Second Alternative Schedule* — Actuarially from age 65 (Unsubsidized Early Retirement Pension) *NIC* — Actuarially from age 65 (Unsubsidized Early Retirement Pension)

Special Early Retirement	• *Age Requirement:* 55 • *Service Requirement:* Fulfill any one of the following: a. 10 years of Pension Credits, including at least five years of Future Service Credit, or b. 10 years of Vesting Service, or c. 15 years of Pension Credits, including at least 12 months of Future Service Credit • *Active Service Requirement:* Complete at least 3,500 hours of work in covered employment during the five consecutive calendar years immediately preceding retirement • *Amount:* Normal Retirement benefit reduced as described below. **For benefits accrued on and after January 1, 2014:** Reductions based on the participant's Funding Improvement Plan Option, which depends upon the Schedule or Rehabilitation Plan provision which applied to the classification of employment when the Plan was in critical status. *Default Option* Unavailable *First Alternative Option* 6% per year from age 62 *Second Alternative Option* Unavailable **For benefits accrued before January 1, 2014:** Reductions based on the participant's Home Local Schedule (Rehabilitation Plan Schedule) when the Plan was in critical status. *Default Schedule/ Persons for Whom* Unavailable *First Alternative Schedule* 6% per year from age 62 *Second Alternative Schedule* Unavailable *NIC* Unavailable

Age 62 Pension	• *Age Requirement:* 62 • *Service Requirement:* Same as Special Early Retirement • *Active Service Requirement:* Same as Special Early Retirement • *Amount:* Described below **For benefits accrued on and after January 1, 2014:** Amount based on the participant's Funding Improvement Plan Option, which depends upon the Schedule or Rehabilitation Plan provision which applied to the classification of employment when the Plan was in critical status. *Default Option* Unavailable *First Alternative Option* Unavailable *Second Alternative Option* Normal Retirement Benefit amount **For benefits accrued before January 1, 2014:** Amount based on the participant's Home Local Schedule (Rehabilitation Plan Schedule) when the Plan was in critical status. *Default Schedule/ Persons for Whom* Unavailable *First Alternative Schedule* Unavailable *Second Alternative Schedule* Normal Retirement Benefit amount *NIC* Normal Retirement Benefit amount

55/30 Pension	• *Age Requirement:* 55 • *Service Requirement:* 30 years of Future Service Credit with at least 60 months of the last 120 months of Future Service Credit subject to a 55/30 Rate • *Active Service Requirement:* Complete at least 3,500 hours of work in covered employment at 55/30 Rate during the five consecutive calendar years immediately preceding retirement • *Amount:* Described below **For benefits accrued on and after January 1, 2014:** Amount based on the participant's Funding Improvement Plan Option, which depends upon the Schedule or Rehabilitation Plan provision which applied to the classification of employment when the Plan was in critical status. *Default Option* Unavailable *First Alternative Option* Normal Retirement benefit amount *Second Alternative Option* Unavailable **For benefits accrued before January 1, 2014:** Amount based on the participant's Home Local Schedule (Rehabilitation Plan Schedule) when the Plan was in critical status. *Default Schedule/ Persons for Whom* Unavailable *First Alternative Schedule* Normal Retirement Benefit amount *Second Alternative Schedule* Unavailable *NIC* Unavailable

60/30 Pension	• *Age Requirement:* 60 • *Service Requirement:* Same as 55/30 Pension • *Active Service Requirement:* Same as 55/30 Pension • *Amount:* Described below **For benefits accrued on and after January 1, 2014:** Amount based on the participant's Funding Improvement Plan Option, which depends upon the Schedule or Rehabilitation Plan provision which applied to the classification of employment when the Plan was in critical status. *Default Option* — Unavailable *First Alternative Option* — Unavailable *Second Alternative Option* — Normal Retirement benefit amount **For benefits accrued before January 1, 2014:** Amount based on the participant's Home Local Schedule (Rehabilitation Plan Schedule) when the Plan was in critical status. *Default Schedule/ Persons for Whom* — Unavailable *First Alternative Schedule* — Unavailable *Second Alternative Schedule* — Normal Retirement benefit amount *NIC* — Unavailable
Full Disability	• *Age Requirement:* Under age 55 • *Service Requirement:* 10 years of Credited Service, including at least five years of Future Service Credit • Active Service Requirement: Worked at least 435 hours in the 24-month period immediately preceding the date of disablement • *Other Requirement:* Approved for disability benefit with the Social Security Administration or Railroad Retirement Board • *Amount:* Early Retirement benefit amount, payable beginning in the seventh month of disability • Charge for Coverage: None • *The Disability Benefit is not payable for participants categorized as Persons for Whom when the Plan was in critical status unless all eligibility conditions had been satisfied before January 1, 2010.*

Vesting	• *Age Requirement:* None • *Service Requirement:* Five years of Vesting Service • *Amount:* Normal Retirement benefit amount, based on plan in effect when last active • *Normal Retirement Age: 65*
Spouse's Pre-Retirement Death Benefit	• *Eligibility Requirement: Has attained Vested Status* • *Amount:* 50% of the monthly benefit the participant would have received had he/she terminated employment on his/her date of death and survived to his/her Early Retirement Date (or any later date elected by the spouse), retired and elected to receive benefits in the Normal Form of payment. • *When Paid: Immediately if participant's death occurred after attainment of his/her earliest retirement age, otherwise month in which the participant would have attained his/her earliest retirement age. If surviving spouse elects to receive payments before the month in which participant would have attained his/her earliest retirement age, the monthly benefit will be the actuarial equivalent of the amount described above.*
Pre-Retirement Lump-sum Death Benefit	• *Eligibility:* Date of death after December 31, 2007; has attained Vested Status; no portion of the benefit assigned to an Alternative Payee under a QDRO; and worked at least 435 hours within 24-month period preceding death • *Amount:* $5,000

Post-Retirement Death Benefit	*50% Joint and Survivor:* If married, pension benefits are paid in the form of a 50% joint and survivor annuity unless the participant and spouse reject this form. If not rejected, the benefit amount otherwise payable is reduced to reflect the joint and survivor coverage. If not rejected, the spouse predeceases the employee, and the employee retired on March 1, 1999 or later, the employee's benefit amount will subsequently be increased to the unreduced amount payable ("pop-up" feature) had the joint and survivor coverage been rejected. If rejected, or if not married, benefits are payable for the life of the employee, or in any other available optional form elected by the employee in an actuarially equivalent amount. The "pop-up" feature is only applicable to pre-2014 benefits if the participant's Home Local Schedule/Rehabilitation Plan Schedule as of December 31, 2013 was the First Alternative Schedule or Second Alternative Schedule. It is only applicable to post-2013 benefits attributable to Contribution Hours worked under a collective bargaining agreement satisfying the required contribution rate increases under the Rehabilitation Plan First Alternative Schedule/Funding Improvement Plan First Alternative Option or Rehabilitation Plan Second Alternative Schedule/Funding Improvement Plan Second Alternative Option. *60-Month Certain:* If the member has completed at least 15 years of Pension Credits before retirement and died within 5 years after retirement (if married, and taking joint and survivor pension, the spouse also died prior to receiving an amount equal to 60 times the amount of the pension the participant had been entitled), the pension benefit will continue to be paid to the participant's designated beneficiary until a total of 60 months payments had been made. The 60-month certain is only applicable to pre-2014 benefits if the participant's Home Local Schedule/Rehabilitation Plan Schedule as of December 31, 2013 was the First Alternative Schedule or Second Alternative Schedule. It is only applicable to post-2013 benefits attributable to Contribution Hours worked under a collective bargaining agreement satisfying the required contribution rate increases under the Rehabilitation Plan First Alternative Schedule/Funding Improvement Plan First Alternative Option or Rehabilitation Plan Second Alternative Schedule/Funding Improvement Plan Second Alternative Option.

Forms of Payment	The normal forms of payment are: • Single life annuity for single participants, and • 50% joint and survivor annuity with a “pop-up” feature for married participants (if applicable) The available optional forms of payment are: • Single life annuity with 60-month certain (if applicable) • 50% joint and survivor annuity with a “pop-up” feature and 60-month certain (if applicable) • 75% joint and survivor annuity with a “pop-up” feature (if applicable) • 100% joint and survivor annuity with and without a “pop-up” feature (if applicable) The ”pop-up” feature and 60-month certain are only applicable to pre-2014 benefits if the participant’s Home Local Schedule/Rehabilitation Plan Schedule as of December 31, 2013 was the First Alternative Schedule or Second Alternative Schedule. They are only applicable to post-2013 benefits attributable to Contribution Hours worked under a collective bargaining agreement satisfying the required contribution rate increases under the Rehabilitation Plan First Alternative Schedule/Funding Improvement Plan First Alternative Option or Rehabilitation Plan Second Alternative Schedule/Funding Improvement Plan Second Alternative Option.
Participation	After completion of 870 hours during a calendar year
Past Service Credit	Service granted on the basis of days worked or amount earned in covered employment in calendar years prior to a participant’s Contribution Date. For employers with a Contribution Date on or after January 1, 2000, the employer’s initial contribution rate must be at least $0.50 per hour.

Future Service Credit	Service granted on the basis of hours of work in a calendar year after a Participant's Contribution Date in accordance with the following schedule:

Months of Future Service Credit	Hours of Work in Covered Employment During Calendar Year
0	Less than 100
1	100 - 199
2	200 - 299
3	300 - 399
4	400 - 499
5	500 - 599
6	600 - 699
7	700 - 799
8	800 - 899
9	900 - 999
10	1,000 - 1,099
11	1,100 - 1,199
12	1,200 & Over

Pension Credit	Sum of the Past Service Credit and Future Service Credit (excluding service lost under the Plan's break in service rules)
Vesting Service	870 or more hours of work within a Plan year earns one year of Vesting Service
Contribution Rate	Varies from $0.05 to $19.11 per hour as of the valuation date. The average rate is $5.37 per hour as of January 1, 2019. 2.5% of certain employer contributions are allocated to 401(h) Medical Accounts but are subject to pension benefit accruals.

Required Contribution Increases	Contribution rate increases required under the Funding Improvement Plan Options are described below. *First Alternative Option:* None for 2018 through 2020, 2.0% for 2021 and 2022. *Second Alternative Option:* None for 2018 through 2020, 1.0% for 2021 and 2022.
Cost of Living Adjustment (COLA)	• *Eligibility:* Pensioners and beneficiaries whose benefits are based on contribution rates that were increased by the Required Pension Fund Increase and who separated and retired from Covered Employment on or after January 1, 1991 and before December 1, 2001. No payment is made after January 1, 2008 unless the annual supplement had been in effect 60 months before that date (i.e., the benefit must have been payable on the participant's Allocation Date for 2002 – October 31, 2002). • *Amount:* An annual supplement equal to 2% of the participant's total monthly payments for the 12 months immediately preceding the Allocation Date, multiplied by the number of whole years preceding the Allocation Date that the participant or beneficiary has received benefits, up to a maximum of 15 years. If the participant had elected a level income option, the 2% factor is applied to the benefit prior to the adjustment for the form of payment. *Effective July 1, 1995, no NPF COLA Benefit is payable with respect to any benefits accrued after June 30, 1995.* *A participant who was retired and received an annual supplemental increase under the NPF COLA Benefit for the 2002 Allocation Date will continue to receive the benefit, but it will not exceed the supplement that was paid for the 2002 Allocation Date (i.e., it remains fixed at that amount)*
Changes in Plan Provisions	Since benefit accruals are tied directly to contribution rates, changes in contribution rates are treated as a Plan change. In addition, some participants' Funding Improvement Plan Option changed.

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