Classic Values, Innovative Advice

UNITE Hotel and Restaurant Employees Local 25 and Hotel Association of Washington, DC Pension Plan

Actuarial Valuation Report as of January 1, 2018

Produced by Cheiron
December 2018

TABLE OF CONTENTS

Section ***Page***

Appendices

December 17, 2018

Trustees of the
UNITE Hotel and Restaurant Employees Local 25 and
Hotel Association of Washington, DC Pension Plan
c/o Anne-Marie Sims
Associated Administrators
911 Ridgebrook Road
Sparks, Maryland 21152

Dear Trustees:

At your request, we have performed the January 1, 2018, actuarial valuation of the UNITE Hotel and Restaurant Employees Local 25 and Hotel Association of Washington, DC Pension Plan. This report contains information on the Plan's assets and liabilities and also discloses contribution levels, including the minimum required amount as mandated by Federal law.

Your attention is called to the introductory section in which we refer to the general approach employed in the preparation of this report. We also comment on the sources and reliability of both the data and the actuarial assumptions on which our findings are based. Those comments are the basis for our certification that this report is complete to the best of our knowledge and belief. The results of this report are only applicable to the 2018 plan year and rely on future plan experience conforming to the underlying assumptions. Future valuation reports may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the assumptions; changes in assumptions; and changes in plan provisions or applicable law.

The purpose of this report is to present the annual actuarial valuation of the UNITE Hotel and Restaurant Employees Local 25 and Hotel Association of Washington, DC Pension Plan. This report is for the use of the Board and its auditors in preparing financial reports in accordance with applicable law and accounting requirements. Any other user of this report is not an intended user and is considered a third party.

To the best of our knowledge, this report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

Trustees of the UNITE Hotel and Restaurant Employees
Local 25 and Hotel Association of Washington, DC
Pension Plan
December 17, 2018

This actuarial report was prepared exclusively for the UNITE Hotel and Restaurant Employees Local 25 and Hotel Association of Washington, DC Pension Plan for the purpose described herein. Other users of this valuation report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any such other users.

Please let us know if you have any questions.

Sincerely,
Cheiron

Fiona E. Liston, FSA, EA, MAAA
Principal Consulting Actuary

Kevin J. Woodrich, FSA, EA, MAAA
Principal Consulting Actuary

cc: Coralie Taylor, FSA, EA, MAAA

FORWARD

Cheiron has performed the actuarial valuation of the UNITE Hotel and Restaurant Employees Local 25 and Hotel Association of Washington, DC Pension Plan as of January 1, 2018. The purpose of this report is to:

1) **measure and disclose**, as of the valuation date, the financial condition of the Plan;
2) **provide specific information** and documentation required by the Federal Government and the auditors of the Plan;
3) **determine** whether negotiated contributions support the current level of benefits and whether they fall within the acceptable range of contributions under the Plan for the 2018 plan year; and
4) **compare** assets with the value of vested benefits to determine allocable plan withdrawal liability, if any.

An actuarial valuation establishes and analyzes Plan assets, liabilities and contributions on a consistent basis, and traces the progress from one year to the next. It includes measurement of the Plan's investment performance as well as an analysis of actuarial liability gains and losses.

Section I presents a summary of the valuation and compares this year's results to last year's results.

Section II contains exhibits relating to the valuation of assets.

Section III shows the various measures of liabilities.

Section IV shows the development of the minimum and maximum contributions.

Section V shows the development of the Plan's unfunded vested benefits for withdrawal liability purposes.

Section VI provides information required by the Plan's auditor.

The appendices to this report contain a summary of the Plan's membership at the valuation date, a summary of the major provisions of the Plan, and the actuarial methods and assumptions used in the valuation.

In preparing our report, we relied without audit, on information (some oral and some written) supplied by Associated Administrators, LLC and Novak Francella, LLC. This information includes, but is not limited to, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standards of Practice No. 23 Data Quality.

The actuarial assumptions reflect our understanding of the likely future experience of the Plan and the assumptions analyzed individually represent our best estimate for the future experience. The results of this report are dependent upon future experience conforming to these assumptions. To the extent that future experience deviates from the actuarial assumptions, the true cost of the Plan could vary from our results.

Finally, in preparing this report, we have conformed to generally accepted actuarial principles and practices which are consistent with the Code of Professional Conduct, and applicable Actuarial Standards set out by the Actuarial Standards Board.

SECTION I – SUMMARY

Table I-1 sets out the principal results of this year's valuation and compares them to last year's results.

Table I-1
Hotel and Restaurant Employees Local 25 and Hotel Association of Washington, DC Pension Plan
Summary of Principal Results

	1/1/2017	1/1/2018	Change
Participant Counts			
Actives	6,052	5,898	(2.5%)
Terminated Vesteds[1]	2,041	2,022	(0.9%)
In Pay Status	2,202	2,312	5.0%
Total	10,295	10,232	(0.6%)
Financial Information			
(1) Market Value of Assets (MVA)	$ 189,823,636	$ 222,583,144	17.3%
(2) Actuarial Value of Assets (AVA)	198,747,559	220,788,770	11.1%
(3) Actuarial Liability	$ 297,581,793	$ 314,347,125	5.6%
(4) Unfunded Actuarial Liability / (Surplus) on AVA Basis [(3) - (2)]	98,834,234	93,558,355	(5.3%)
(5) Funding Ratio on AVA Basis [(2) ÷ (3)]	66.8%	70.2%	
(6) Unfunded Actuarial Liability / (Surplus) on MVA Basis [(3) - (1)]	107,758,157	91,763,981	(14.8%)
(7) Funding Ratio on MVA Basis [(1) ÷ (3)]	63.8%	70.8%	N/A
(8) Present Value of Vested Benefits for Withdrawal Liability Purposes[2]	$ 232,543,779	$ 304,556,378	31.0%
(9) Vested Benefit Unfunded (Surplus) [(8) - (1)]	42,720,143	81,973,234	91.9%
(10) Vested Benefit Funding Ratio on MVA Basis [(1) ÷ (8)]	81.6%	73.1%	N/A
Contributions and Cash Flows			
ERISA Credit Balance (Beginning of Year)	$ 58,026,872	$ 54,988,778	(5.2%)
Employer Contributions[3]	24,217,204	*25,085,700*	3.6%
Minimum to Preserve Credit Balance	30,745,918	30,557,481	(0.6%)

[1] For 2017 and 2018, includes 15 and 16 terminated vesteds at least 85 years old whose liabilities are $0 since assumed probablilty of receipt is 0%.

[2] Note that the 2017 withdrawal liability figure was based on the Plan in effect on December 31, 2016 so the benefit increases that were effective January 1, 2017 are first shown in the 2018 vested benefit amounts.

[3] 2018 contributions are estimated and assumed to be made uniformly throughout the year.

SECTION I – SUMMARY

General Comments

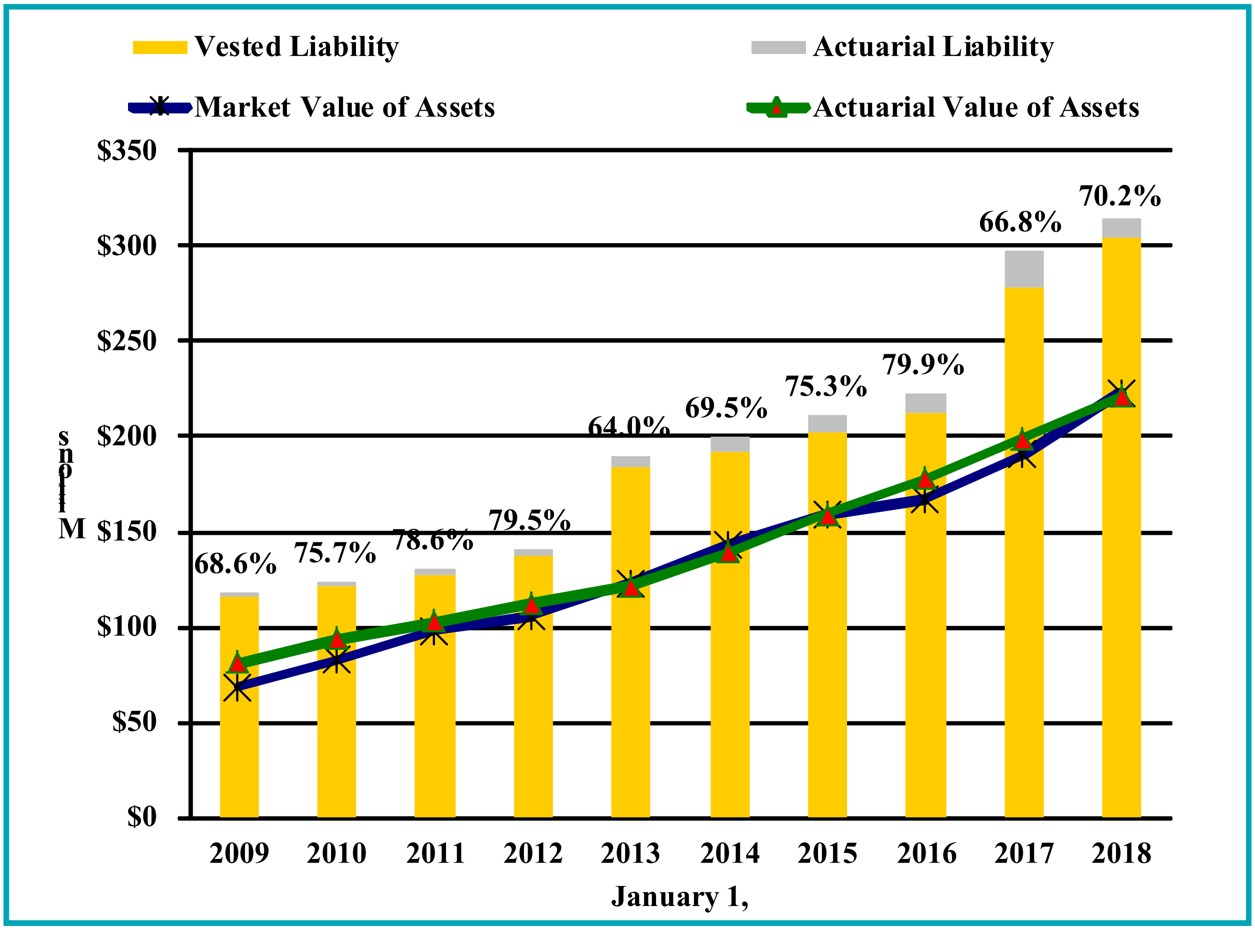
The following are general observations on the prior year experience and trends based on the January 1, 2018 valuation.

- The Market Value of Assets returned 11.82% compared to the prior year's assumed 6.75% return (a difference of 5.07%). In dollars, the total actuarial investment gain (the difference between actual and expected returns on a market value basis) was $10.1 million.
- We do not use the Market Value of Assets in our minimum funding calculations, but instead use a smoothed Actuarial Value of Assets. The smoothing method adopted by the Plan phases in investment gains and losses over five years. This means the $10.1 million gain described above will be phased in at a rate of $2.0 million per year over the next five years. The smoothed Actuarial Value of Assets is $220.8 million (99% of the market value of $222.6 million).
- The return on the Actuarial Value of Assets was 6.04%, resulting in a recognized actuarial investment loss of $1.2 million on this asset basis. Despite the favorable investment return on the market value basis, the continued recognition of the market value net actuarial investment losses for the prior three years resulted in the actuarial investment loss on an actuarial value basis.
- The Plan experienced a small liability loss of $0.5 million (0.19% of Actuarial Liability) during 2017.
- The Plan's funding ratio (Actuarial Value of Assets as a percentage of Actuarial Liability) increased from 66.8% as of January 1, 2017 to 70.2% as of January 1, 2018. The funding ratio based on Market Value of Assets also increased from 63.8% to 70.8%.
- The Unfunded Vested Benefits used in assessing Withdrawal Liability significantly increased from $42.7 million as of December 31, 2016 to $82.0 million as of December 31, 2017. This is due to the Plan changes that were effective January 1, 2017, first being reflected in the Vested Liability as of December 31, 2017 for withdrawal purposes. For funding purposes, these Plan changes were reflected as part of the January 1, 2017 amounts.
- In accordance with FASB ASC Topic No. 960 regarding accounting disclosure purposes, a provision for future administrative expenses was reflected.
- On March 30, 2018, the Plan's eleventh actuarial certification under the Pension Protection Act was filed. Due to the Special Rule of Section 432(b)(5) of the Code and Section 305(b)(5) of ERISA, the Plan was certified to be NOT in endangered, seriously endangered, critical, or critical and declining status based on financial information provided as of January 1, 2018, and using the liabilities disclosed in the January 1, 2017 actuarial valuation projected forward to January 1, 2018.

The remainder of this section reviews Plan experience over the last ten years.

Historical Summary

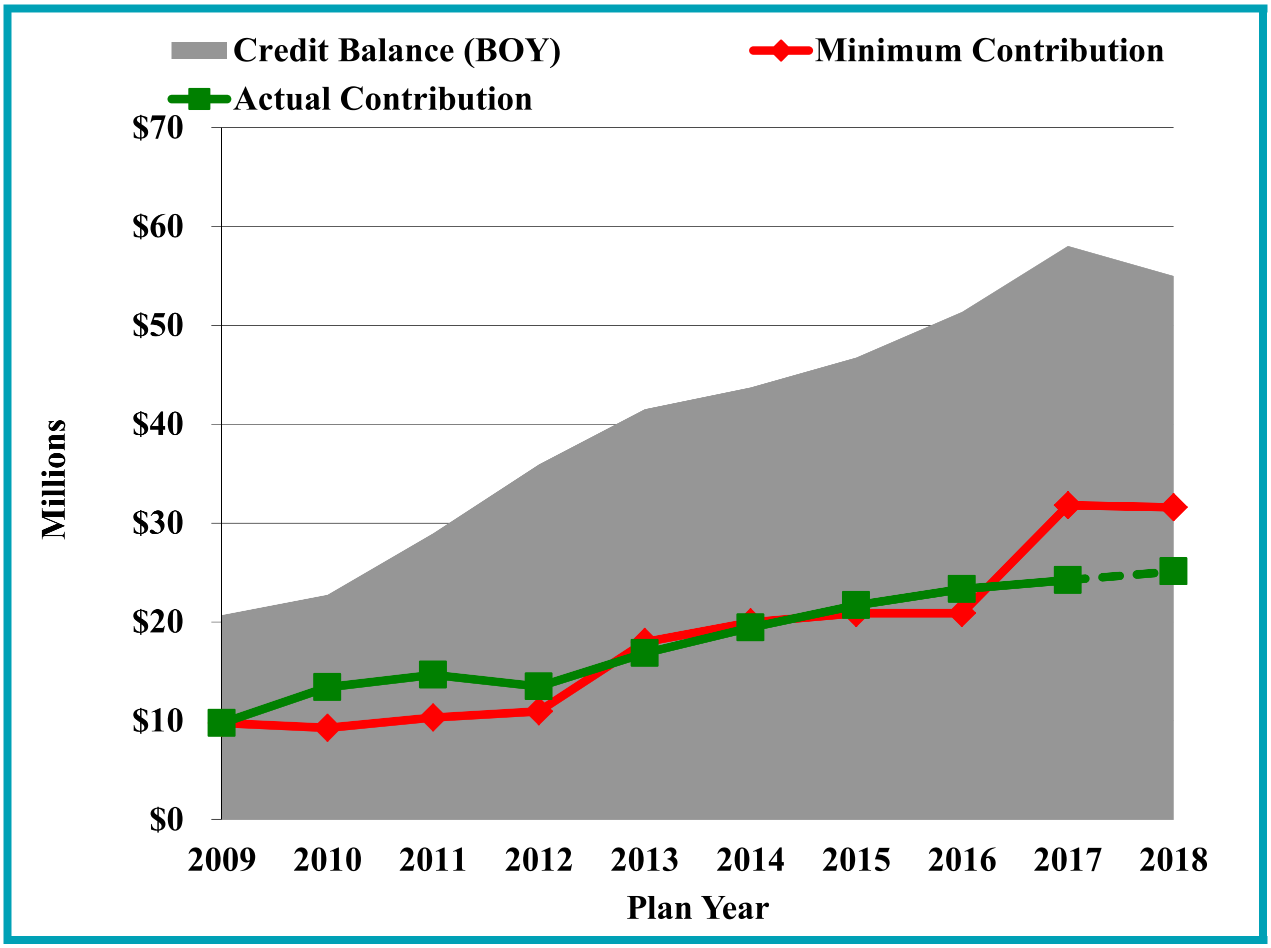
The chart below shows the Plan's funding ratio (Actuarial Value of Assets as a percent of Actuarial Liability over the last ten years. The large increase in liabilities from 2012 to 2013 was due to the benefit improvements adopted in April 2013, as well as the decrease in the discount rate from 7.5% to 7.0%. The large increase in liabilities from 2016 to 2017 was due to benefit improvements that were effective January 1, 2017, as well as assumption changes, including a decrease in the discount rate from 7.0% to 6.75%.



SECTION I – SUMMARY

The chart below shows the contributions paid to the Plan (green line) and the minimum contribution (red line) required under ERISA to maintain the Credit Balance (gray area). The sharp increases in the minimum contribution line for 2013 and 2017 were attributable to the benefit change and lowering the discount rate at those times.

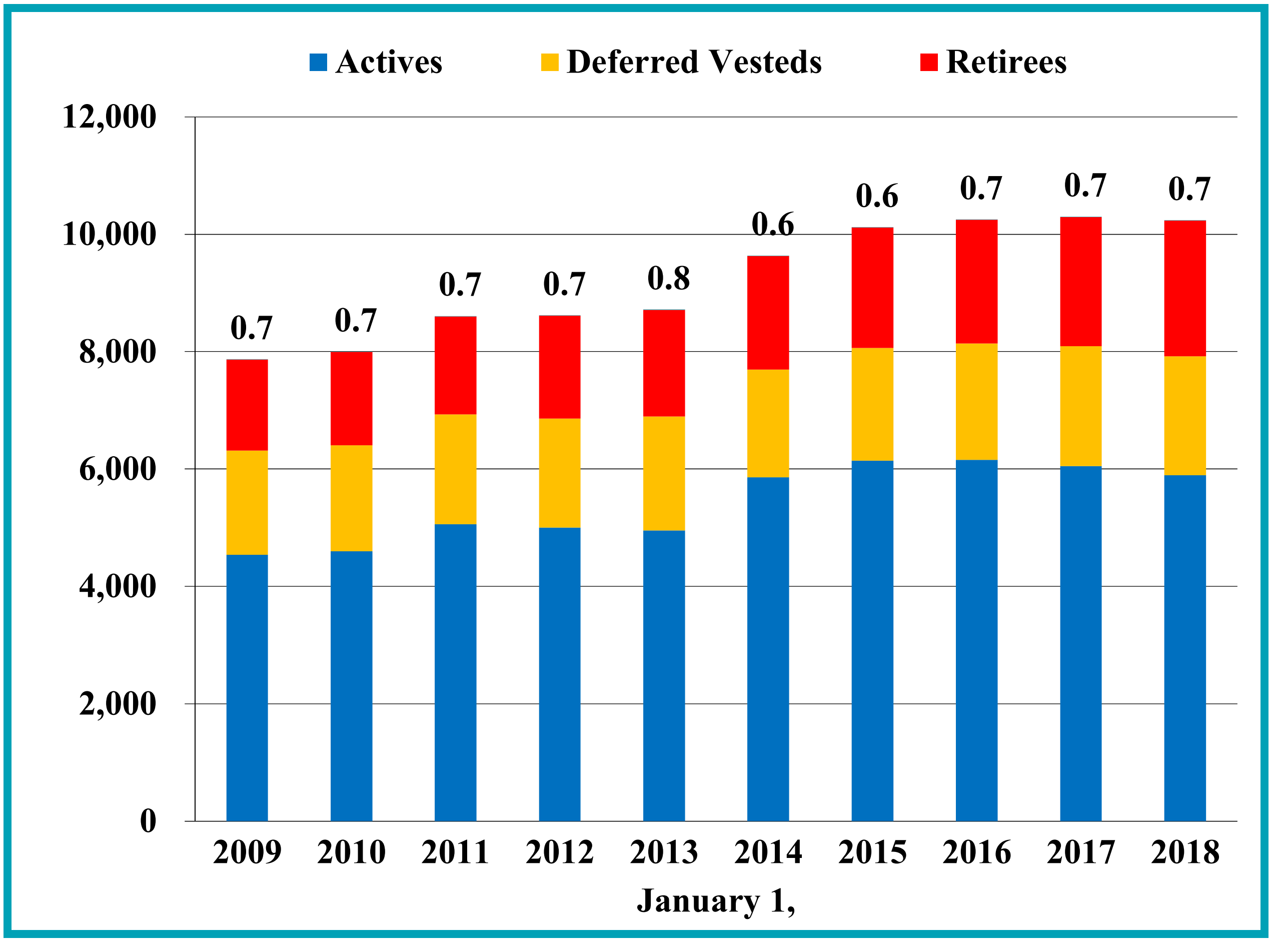
Since the minimum contribution is more than the anticipated contributions for 2017 and 2018, a small portion of the Credit Balance must be used to cover this difference. However, projections of the Credit Balance do not anticipate that the Plan is in any danger of exhausting the Credit Balance that would trigger a minimum funding deficiency.



SECTION I – SUMMARY

The following chart shows the participants of the Plan in successive valuations. The numbers above the bars indicate the ratio of retired participants and vested terminated participants to active participants. When a plan has a factor of one or more, it has more than one inactive participant for every active.

As with many plans, the number of retirees and terminated vested members has been growing over the last ten years. But unlike other multi-employer plans, the number of actives has also grown over this same period. The increase in actives between 2013 and 2014 was largely due to Gaylord participating in the Plan beginning Spring 2013.



SECTION II – ASSETS

Assets at Market Value

Market values represent "snap-shot" or "cash-out" values which provide the principal basis for measuring financial performance from one year to the next.

Table II-1
Statement of Assets at Market Value, December 31,

	2016	2017
Invested Assets		
Common Corporate Stocks	$ 1,021,944	$ 1,274,333
Commingled Fund	0	4,550,221
Housing Investment Trust	3,978,758	4,104,709
Common Collective Trusts	50,009,860	49,399,263
Registered Investment Companies	114,658,113	121,119,784
Limited Partnerships	9,147,557	28,633,805
Money Market Funds	7,845,656	9,399,874
Total Investments:	$ 186,661,888	$ 218,481,989
Other Assets		
Cash or Cash Equivalents	$ 1,081,319	$ 1,407,640
Accrued Interest and Dividends Receivable	69,927	161,559
Employer Contributions Receivable	2,031,191	2,542,709
Withdrawal Liability	0	0
Prepaid Expenses	44,592	54,977
Other Receivables	375	3,634
Accounts Payable	(65,656)	(69,364)
Total Non-Invested Assets:	$ 3,161,748	$ 4,101,155
Market Value of Assets from Auditor	**$ 189,823,636**	**$ 222,583,144**
Expected Withdrawal Liability	0	0
Market Value of Assets for Funding	**$ 189,823,636**	**$ 222,583,144**

SECTION II – ASSETS

Changes in Market Value

The components of asset change are:

- Contributions
- Benefit payments
- Expenses
- Investment income (realized and unrealized)

The specific changes during 2017 are presented in Table II-2 below:

Table II-2
Changes in Market Values

Value of Assets January 1, 2017	$ 189,823,636
Restated Value of Assets January 1, 2017	$ 190,275,369
Employer Contributions	$ 24,208,454
Withdrawal Liability Payments	8,750
Investment Return (Gross)	23,056,385
Benefit Payments	(13,546,424)
Administrative Expenses	(925,200)
Investment Expenses	(494,190)
Value of Assets January 1, 2018	$ 222,583,144

Assets at Actuarial Value

Because of volatility in investments returns, the Plan uses a smoothed Actuarial Value of Assets for determining its minimum required contribution. The Actuarial Value of Assets is calculated by excluding a portion of the prior four years actuarial investment experience, using a sliding scale.

To determine each year's actuarial investment experience the expected return on market assets is determined using the Plan's cash flows and the actuarial rate of interest and is compared to the actual Market Value of Assets. The Actuarial Value of Assets is constrained so that it cannot exceed 120% of the Market Value of Assets and cannot be less than 80% of the Market Value of Assets.

The tables below show the development of the Actuarial Value of Assets.

Table II-3
Market Value Gain/(Loss)

Value of Assets January 1, 2017	$ 189,823,636
Employer Contributions and Withdrawal Liability Payments	24,217,204
Benefit Payments	(13,546,424)
Expected Administrative Expenses	(901,296)
Expected Return at 6.75%	12,889,603
Expected Value at January 1, 2018	$ 212,482,723
Actual Value at January 1, 2018	222,583,144
2017 Investment Gain/(Loss)	$ 10,100,421

SECTION II – ASSETS

Table II-4
Development of Excluded Gain/(Loss)

	Total Gain/(Loss)	Excluded Portion
Exclude 80% of 2017 Gain/(Loss)	$ 10,100,421	$ 8,080,337
Exclude 60% of 2016 Gain/(Loss)	(26,556)	(15,934)
Exclude 40% of 2015 Gain/(Loss)	(14,034,888)	(5,613,955)
Exclude 20% of 2014 Gain/(Loss)	(3,280,368)	(656,074)
Total Excluded Gain/(Loss) for AVA Calculation		$ 1,794,374

Table II-5
Actuarial Value of Assets

Market Value of Assets at January 1, 2018	$ 222,583,144
Total Gain/(Loss) excluded	1,794,374
Preliminary Actuarial Value of Assets January 1, 2018	$ 220,788,770
120% of MV, upper limit for actuarial value	267,099,773
80% of MV, lower limit for actuarial value	178,066,515
Actuarial Value of Assets January 1, 2018	$ 220,788,770

Actuarial Losses from Investment Performance

Table II-6 calculates the investment related actuarial gain/loss and the return for the Plan year on both a market value and actuarial value basis. The market value return is an appropriate measure for comparing the actual asset performance of 11.82% to the long-term 6.75% assumption.

The actuarial gain/loss on the actuarial value basis is one component of the Plan's experience gain/loss to be recognized in minimum funding and incorporates a significant level of smoothing. The return on this basis was 6.04% which is less than the 6.75% assumption and caused an actuarial investment loss for minimum funding purposes.

Table II-6
Asset Gain/(Loss)

Item	Market Value	Actuarial Value
January 1, 2017 Value	$ 189,823,636	$ 198,747,559
Employer Contributions and Withdrawal Liability Payments	24,217,204	24,217,204
Benefit Payments	(13,546,424)	(13,546,424)
Expected Administrative Expenses	(901,296)	(901,296)
Expected Investment Earnings (6.75%)	12,889,603	13,491,968
Expected Value as of December 31, 2017	$ 212,482,723	$ 222,009,011
January 1, 2018 Value	$ 222,583,144	$ 220,788,770
Investment Gain/(Loss)	10,100,421	(1,220,241)
Return	11.82%	6.04%

SECTION III – LIABILITIES

In this section, we present detailed information on Plan liabilities including:

- Disclosure of Plan liabilities at January 1, 2017, and January 1, 2018; and
- Statement of changes in these liabilities during the year.

Liabilities for withdrawal liability purposes are addressed in Section V.

Disclosure

Several types of liabilities are calculated and presented in this report. Each type is distinguished by the purpose for which it is being used.

- **Present Value of Future Benefits:** Used for analyzing the financial outlook of the Plan, this represents the amount of money needed today to fully pay off all the future benefits of the Plan, assuming no new participants and the current participants continue to accrue benefits until retirement.

- **Actuarial Liability:** Used in determining minimum funding standards requirements, maximum tax-deductible contributions, and long-term funding targets. These amounts are determined using the Unit Credit Cost Method**.**

- **Accrued Liability:** Used for communicating the current levels of liabilities. This liability represents the total amount of money needed to fully pay off all future obligations of the Plan using funding assumptions and assuming no further accrual of benefits. These amounts are also determined using the Unit Credit Cost Method, so they are the same as the Actuarial Liability.

  These liabilities are required for determining the funded status under PPA. The law requires these liabilities be compared to the Actuarial Value of Assets to measure funded status. They can be used to establish comparative benchmarks with other plans.

  The Accrued Liabilities must also be included in the Plan's financial statement for accounting disclosure purposes (FASB ASC Topic No. 960). For that purpose, a provision for future administrative expenses is added and that sum is referred to as the Present Value of Accumulated Benefits.

- **Withdrawal Liability:** When an employer withdraws from the Plan, the amount of Withdrawal Liability is based on the Plan's Unfunded Vested Benefits as of the last day of the prior Plan year. Vested Benefits are non-forfeitable benefits that a participant would be entitled to if they were to terminate coverage as of the end of the prior plan year. Non-forfeitable benefits do not include death or disability benefits unless they are related to the form of payment.

SECTION III – LIABILITIES

- **Current Liability:** This liability is defined by the Internal Revenue Code. It is used to determine maximum allowable tax-deductible contributions.

None of the liabilities presented in this report is appropriate for settlement purposes.

Table III-1 below discloses each of these liabilities for the current valuation and the prior one. With respect to each disclosure, a subtraction of the appropriate value of the Plan assets yields, for each respective type, a net surplus or an unfunded liability.

Table III-1
Liabilities/Net Surplus (Unfunded)

	1/1/2017	1/1/2018
PRESENT VALUE OF FUTURE BENEFITS		
Active Participants	$ 235,885,285	$ 244,960,197
Retiree and Inactive Benefits	141,584,678	149,088,723
Total Present Value of Future Benefits	**$ 377,469,963**	**$ 394,048,920**
Market Value of Assets	189,823,636	222,583,144
Net Surplus (Unfunded)	**$ (187,646,327)**	**$ (171,465,776)**
ACTUARIAL LIABILITY		
Actuarial Liability	**$ 297,581,793**	**$ 314,347,125**
Actuarial Value of Assets	198,747,559	220,788,770
Net Surplus (Unfunded)	**$ (98,834,234)**	**$ (93,558,355)**
Funded Ratio	*66.8%*	*70.2%*
ACCRUED LIABILITY		
Accrued Liability	**$ 297,581,793**	**$ 326,135,142**
Market Value of Assets	189,823,636	222,583,144
Net Surplus (Unfunded)	**$ (107,758,157)**	**$ (103,551,998)**
Funded Ratio	*63.8%*	*68.2%*
WITHDRAWAL LIABILITY		
Vested Liability for Withdrawal Liability	**$ 232,543,779**	**$ 304,556,378**
Market Value of Assets	189,823,636	222,583,144
Net Surplus (Unfunded)	**$ (42,720,143)**	**$ (81,973,234)**
Funded Ratio	*81.6%*	*73.1%*
CURRENT LIABILITY (RPA 1994)		
Current Liability (3.05% / 2.98%)	**$ 505,402,464**	**$ 560,073,701**
Actuarial Value of Assets	198,747,559	220,788,770
Net Surplus (Unfunded)	**$ (306,654,905)**	**$ (339,284,931)**
Funded Ratio	*39.3%*	*39.4%*

SECTION III – LIABILITIES

Allocation of Liabilities by Type

The Plan's participants may qualify for a benefit on death, termination, and disability as well as on retirement. The value of the liabilities arising from each of these sources is shown in Table III-2:

Table III-2
Allocation of Liabilities by Type

Benefit Type	Retirement	Termination	Death	Disability	Total
Normal Cost	$ 7,286,356	$ 2,096,833	$ 138,007	$ 118,369	$ 9,639,565
Actuarial Liability					
Actives	$ 136,345,835	$ 24,840,941	$ 2,280,129	$ 1,791,497	$ 165,258,402
Terminated Vesteds	0	34,191,539	0	0	34,191,539
Retirees and Beneficiaries	109,939,124	0	0	4,958,060	114,897,184
Total	$ 246,284,959	$ 59,032,480	$ 2,280,129	$ 6,749,557	$ 314,347,125
Current Liability Normal Cost	$ 15,357,787	$ 6,223,610	$ 184,702	$ 294,131	$ 22,060,230
Current Liability					
Actives	$ 258,703,985	$ 65,192,630	$ 2,678,660	$ 3,964,798	$ 330,540,073
Terminated Vesteds	0	65,070,419	0	0	65,070,419
Retirees and Beneficiaries	156,197,976	0	0	8,265,233	164,463,209
Total	$ 414,901,961	$ 130,263,049	$ 2,678,660	$ 12,230,031	$ 560,073,701
Vested Current Liability					
Actives	$ 84,422,742	$ 227,430,209	$ 2,563,219	$ 3,583,832	$ 318,000,002
Terminated Vesteds	0	65,070,419	0	0	65,070,419
Retirees and Beneficiaries	156,197,976	0	0	8,265,233	164,463,209
Total	$ 240,620,718	$ 292,500,628	$ 2,563,219	$ 11,849,065	$ 547,533,630

SECTION III – LIABILITIES

Changes in Liabilities

Each of the liabilities shown in the prior table is subject to change at successive valuations as the experience of the Plan varies from that assumed in the valuation. The liabilities may change for any of several reasons, including:

- New hires since the last valuation
- Benefits accrued since the last valuation
- Plan amendments
- Interest on liabilities
- Benefits paid to retirees
- Participants leaving employment at rates different from expected
- Changes in actuarial assumptions
- Changes in actuarial methods
- Corrections to participant data records

Table III-3
Actuarial Liability (Gain)/Loss

	Present Value of Future Benefits	Actuarial/Accrued Liability
Liabilities 1/1/2017	$ 377,469,963	$ 297,581,793
Liabilities 1/1/2018	394,048,920	314,347,125
Liability Increase (Decrease)	16,578,957	16,765,332
Change due to:		
Plan Amendment	$ 0	$ 0
Assumption Change	0	0
Accrual of Benefits (with Expected Expenses)	NC	10,388,627
Benefit Payments and Expected Expenses	NC	(14,447,720)
Increase for Interest	NC	20,269,974
Other Sources	16,578,957	0
Actuarial (Gain)/Loss	NC	554,451
Total	**$ 16,578,957**	**$ 16,765,332**

NC = Not Calculated

SECTION IV – CONTRIBUTIONS

In this section, we present detailed information on Plan contributions from two perspectives:

- Actuarial contributions and
- Government Limitations which could affect the above.

Actuarial Contributions

For this Plan, the funding method used to determine the actuarial contribution is the Unit Credit Cost method. It is made up of two parts. The first part is the Unit Credit Normal Cost. This is the value of the benefits and expenses expected to be accrued over the coming year. It also includes estimated administrative expenses.

The second part is an amortization payment to pay off the Unfunded Actuarial Liability. The Unfunded Actuarial Liability is the difference between the Actuarial Liability of the Plan at the valuation date and the assets the Plan should hold as determined by the actuarial cost method.

The amortization payment is determined using the amortization schedule required by the IRS to determine the Minimum Required Contribution. Because of this, the actuarial contribution and the Minimum Required Contribution are the same.

Government Limits

ERISA and the IRS tax code place various limits on the contributions made to qualified pension plans. The limits impact the minimum that must be paid, the maximum that can be deducted and the timing of contributions.

To ensure that minimum required contributions are met, pension plans are required to retain an Enrolled Actuary to complete Schedule MB to Form 5500 on an annual basis. Because the bargained contributions have exceeded the minimum required contribution in years past, the Plan has built up a Credit Balance. The Credit Balance can be used in the future to make up any difference between the Minimum Required Contribution and the employer contribution.

SECTION IV – CONTRIBUTIONS

The Minimum Required Contribution for 2018, which is an amount that will preserve the Credit Balance, is shown in Table IV-1 compared to various Government Limits and the expected employer contribution. The estimated employer contribution for 2018 is based on an hourly rate of $2.25 prior to March 15, 2018, and $2.35 thereafter.

Table IV-1
Contribution for 2018

Actuarial Contribution		
Normal Cost	$	9,639,565
Expenses		915,759
Amortization Payment		19,020,280
Interest to Mid-year		981,877
Total	$	30,557,481
Government Limits		
Maximum Deductible Contribution	$	598,468,508
Minimum Required Contribution (before Credit Balance)		30,557,481
Credit Balance		54,988,778
Minimum Required Contribution (after Credit Balance)		0
Estimated Employer Contributions	$	25,085,700
Count of Active Participants		5,898

SECTION IV – CONTRIBUTIONS

The following tables show the IRS Funding Standard Account, as well as the development of the minimum and maximum contributions for 2018 and other supporting information.

Table IV-2
Funding Standard Account for 2017 and 2018 Plan Years

	2017	2018
1. Charges For Plan Year		
a. Normal Cost plus Expenses	$ 10,388,627	$ 10,555,323
b. Amortization Charges	20,308,652	19,959,574
c. Interest on a. and b. to Year End	2,072,066	2,059,756
d. Total Charges	$ 32,769,345	$ 32,574,653
2. Credits For Plan Year		
a. Prior Year Credit Balance	$ 58,026,872	$ 54,988,778
b. Employer Contributions (actual 2017, projected 2018)	24,217,204	*25,085,700*
c. Amortization Credits	939,294	939,294
d. Interest on a., b., and c. to Year End	4,574,753	4,539,814
e. Full Funding Limit Credit	0	0
f. Total Credits	$ 87,758,123	$ 85,553,586
3. Credit Balance at End of Year [2. – 1.]	$ 54,988,778	$ 52,978,933

SECTION IV – CONTRIBUTIONS

Table IV-3
Calculation of the Maximum Deductible Contribution
For the Plan Year Starting January 1, 2018

1. "Fresh Start" Method		
a. Normal Cost plus Expenses	$	10,555,323
b. Net Charge to Amortize Unfunded Actuarial Liability over 10 years		12,334,507
c. Interest on a. and b.		1,545,064
d. Total	$	24,434,894
e. Minimum Required Contribution as of Year End		0
f. Greater of d. and e.	$	24,434,894
g. Full Funding Limitation as of Year End		306,726,756
h. Maximum Deductible Contribution, lesser of f. and g.	$	24,434,894
2. 140% of Current Liability Calculation		
a. RPA 1994 Current Liability at Start of Year	$	560,073,701
b. Present Value of Benefits Estimated to Accrue during Year		22,060,230
c. Expected RPA Benefit Payments		15,763,146
d. Net Interest on a., b. and c. at Current Liability Interest Rate (2.98%)		17,112,720
e. Expected Current Liability at End of Year, [a. + b. – c. + d.]		583,483,505
f. 140% of e.		816,876,907
g. Actuarial Value of Assets		220,788,770
h. Expected Funding Benefit Payments		15,773,679
i. Expected Expenses		915,759
j. Net Interest on g., h. and i. at Valuation Interest Rate		14,309,067
k. Estimated Value of Assets, [g. – h. – i. + j.]		218,408,399
k. Unfunded Current Liability at Year End, [f. - k.]	$	598,468,508
3. Maximum Deductible Contribution at Year End, greater of 1. and 2.	$	598,468,508

SECTION IV – CONTRIBUTIONS

Table IV-4
Development of Actuarial Gain/(Loss)
For the Year Ended December 31, 2017

1. Unfunded Actuarial Liability at Start of Year	$ 98,834,234
2. Normal Cost plus Expenses at Start of Year	10,388,627
3. Interest on 1. and 2. to End of Year	7,372,543
4. Employer Contributions and Withdrawal Liability Payments for Year	24,217,204
5. Interest on 4. to End of Year	594,537
6. Increase in Unfunded Actuarial Liability Due to Changes in Assumptions	0
7. Increase in Unfunded Actuarial Liability Due to Changes in Plan Design	0
8. Expected Unfunded Actuarial Liability at End of Year [1. + 2. + 3. – 4. – 5. + 6. + 7.]	$ 91,783,663
9. Actual Unfunded Actuarial Liability at End of Year, not less than zero	$ 93,558,355
10. Actuarial Gain / (Loss)	
a. Investment Gain / (Loss)	$ (1,220,241)
b. Actuarial Liability Gain / (Loss)	(554,451)
c. Total Actuarial Gain / (Loss) [8. – 9.]	$ (1,774,692)
11. Amortization Factor for Actuarial Gain / (Loss)	9.8781
12. Amortization Credit / (Charge) for Actuarial Gain / (Loss)	$ (179,659)

SECTION IV – CONTRIBUTIONS

Table IV-5
Schedule of Amortizations Required for Minimum Required Contribution
As of January 1, 2018

Type of Base	Date Established	Initial Amount	Initial Amortization Years	1/1/2018 Outstanding Balance	Remaining Amortization Years	Beginning of Year Amortization Amount
Charges						
1. Benefit Increase	1/1/1979	$ 190,477	40	$ 13,741	1	$ 13,741
2. Benefit Increase	1/1/1990	1,753,060	30	262,965	2	135,775
3. Benefit Increase	1/1/1991	3,136,715	30	682,315	3	242,445
4. Benefit Increase	1/1/1992	4,090,440	30	1,147,378	4	315,530
5. Benefit Increase	1/1/1995	1,898,679	30	842,958	7	145,249
6. Benefit Increase	1/1/1996	5,891,493	30	2,893,352	8	449,517
7. Method Change	1/1/1998	1,000,489	30	576,128	10	75,955
8. Plan Amendment	1/1/1999	60,042	30	36,864	11	4,548
9. Assumption Change	1/1/2000	480,026	30	311,676	12	36,271
10. Plan Amendment	1/1/2000	7,522,673	30	4,884,342	12	568,413
11. Assumption Change	1/1/2001	3,607,767	30	2,461,388	13	271,989
12. Actuarial Loss	1/1/2004	1,921,401	15	200,101	1	200,101
13. Actuarial Loss	1/1/2005	6,764,692	15	1,360,245	2	702,327
14. Actuarial Loss	1/1/2006	2,935,903	15	855,260	3	303,898
15. Plan Amendment	1/1/2007	14,443,486	30	12,095,529	19	1,075,813
16. Actuarial Loss	1/1/2007	1,692,685	15	635,269	4	174,700
17. Actuarial Loss	1/1/2009	13,230,399	15	6,962,688	6	1,357,834
18. Actuarial Loss	1/1/2011	5,767,374	15	3,789,646	8	588,767
19. Assumption Change	1/1/2012	4,617,778	15	3,305,392	9	470,212
20. Actuarial Loss	1/1/2012	5,071,774	15	3,630,358	9	516,440
21. Actuarial Loss	1/1/2013	4,921,317	15	3,791,660	10	499,883
22. Assumption Change	1/1/2013	8,383,621	15	6,459,213	10	851,567
23. Plan Amendment	1/1/2013	33,690,641	15	25,957,169	10	3,422,130
24. Actuarial Loss	1/1/2015	1,243,894	15	1,083,832	12	126,130
25. Actuarial Loss	1/1/2016	3,875,186	15	3,553,022	13	392,616
26. Plan Amendment	1/1/2017	53,358,602	15	51,193,988	14	5,401,705
27. Assumption Change	1/1/2017	9,989,145	15	9,583,911	14	1,011,241
28. Actuarial Loss	1/1/2017	4,199,364	15	4,029,006	14	425,118
29. Actuarial Loss	1/1/2018	1,774,692	15	1,774,692	15	179,659
TOTAL CHARGES				**$ 154,374,088**		**$ 19,959,574**

SECTION IV – CONTRIBUTIONS

Table IV-6
Schedule Of Amortizations Required for Minimum Required Contribution
As of January 1, 2018

Type of Base	Date Established	Initial Amount	Initial Amortization Years	1/1/2018 Outstanding Balance	Remaining Amortization Years	Beginning of Year Amortization Amount
Credits						
1. Assumption Change	1/1/1992	$ 2,129,460	30	$ 597,315	4	$ 164,262
2. Funding Method Change	1/1/1998	392,131	30	225,804	10	29,769
4. Mortality Change	1/1/2003	521,650	30	386,812	15	39,159
5. Actuarial Gain	1/1/2008	873,553	15	396,143	5	89,901
6. Actuarial Gain	1/1/2010	3,581,997	15	2,127,758	7	366,630
7. Actuarial Gain	1/1/2014	1,039,960	15	855,463	11	105,541
8. Assumption Change	1/1/2015	1,420,441	15	1,237,660	12	144,032
TOTAL CREDITS				**$ 5,826,955**		**$ 939,294**
NET CHARGE				**$ 148,547,133**		**$ 19,020,280**
Less Credit Balance				54,988,778		
Unfunded Actuarial Liability				$ 93,558,355		
Actuarial Accrued Liability				$ 314,347,125		
Actuarial Value of Assets				220,788,770		
Unfunded Actuarial Liability				$ 93,558,355		

Table IV-7
Development of Full Funding Limitation
For the Year Starting January 1, 2018

	Minimum	Maximum
1. Unit Credit Actuarial Liability Calculation		
a. Actuarial Liability	$ 314,347,125	$ 314,347,125
b. Normal Cost plus Expenses	10,555,323	10,555,323
c. Lesser of Market Value and Actuarial Value of Assets	220,788,770	220,788,770
d. Credit Balance at Start of Year	54,988,778	N/A
e. Actuarial Liability Full Funding Limit [a. + b. - c. + d.] x 1.0675	$ 169,841,872	$ 111,141,351
2. Full Funding Limit Override (RPA '94)		
a. RPA 1994 Current Liability at Start of Year	$ 560,073,701	$ 560,073,701
b. Present Value of Benefits Estimated to Accrue during Year	22,060,230	22,060,230
c. Expected RPA Benefit Payments	15,763,146	15,763,146
d. Net Interest on a., b. and c. at Current Liability Interest Rate	17,112,720	17,112,720
e. Expected Current Liability at End of Year, [a. + b. – c. + d.]	583,483,505	583,483,505
f. 90% of e.	525,135,155	525,135,155
g. Actuarial Value of Assets at Start of Year	220,788,770	220,788,770
h. Expected Funding Benefit Payments	15,773,679	15,773,679
i. Expected Expenses	915,759	915,759
j. Net Interest on g., h. and i. at Valuation Interest Rate	14,309,067	14,309,067
k. Estimated Value of Assets, [g. - h. - i. + j.]	218,408,399	218,408,399
l. RPA 1994 Full Funding Limit Override	$ 306,726,756	$ 306,726,756
3. Full Funding Limitation at End of Year, greater of 1. and 2.	$ 306,726,756	$ 306,726,756
4. Full Funding Limitation at Start of Year	$ 287,331,855	$ 287,331,855

SECTION V – UNFUNDED VESTED BENEFITS (UVB) FOR WITHDRAWAL LIABLITY PURPOSES

The amount of Withdrawal Liability is based on the Plan's Unfunded Vested Benefits (UVB) at the time of withdrawal. The Unfunded Vested Benefits are equal to the value of Vested Benefits less the Market Value of Assets. Vested Benefits are those that the participant is entitled to if they were to terminate coverage under the Plan as of the measurement date.

The Unfunded Vested Benefits are determined using the actuarial methods and assumptions shown in Appendix C. This amount is reduced by any outstanding claims for withdrawal liability payments expected to be collected from employers who have previously withdrawn. For this valuation, the auditor reported that there are no future withdrawal liability payments anticipated to be collected from previously withdrawn employers in the future.

The method used to allocate UVB to a withdrawing employer is referred to as the Rolling Five Method.

Table V-1 summarizes the calculation of the Unfunded Vested Benefits. It also provides a history of employer contributions for the previous five years which are used in allocating the Unfunded Vested Benefits to an employer. These contribution amounts reflect the contributions actually made during the calendar years. The contribution amounts shown have been reduced by any contributions made by employers who previously withdrew.

Table V-1
Items Required to Calculate an Employer's Withdrawal Liability

a. Present Value of Vested Benefits at December 31, 2017	$ 304,556,378
b. Market Value of Assets	222,583,144
c. Unfunded Vested Benefits [a - b]	$ 81,973,234
d. Due from Withdrawn Employers	0
e. Net Unfunded Vested Benefits to Allocate [c - d]	$ 81,973,234
f. Total Employer Contributions for previous five Plan Years	
Calendar Year 2017	$ 24,208,454
Calendar Year 2016	23,029,709
Calendar Year 2015	21,545,770
Calendar Year 2014	19,296,485
Calendar Year 2013	16,715,042

SECTION VI – FASB ASC TOPIC NO. 960 DISCLOSURES

Table VI-1
Present Value of Accumulated Benefits as of January 1, 2018
In Accordance with FASB ASC Topic No. 960

		Amounts	Counts
1. Actuarial Present Value of Benefits			
For Retirees and Beneficiaries	$	114,897,184	2,312
Terminated Vesteds		34,191,539	2,022
Active Participants		159,593,528	4,069
Vested Benefits	$	308,682,251	8,403
2. Non-vested Benefits		5,664,874	1,829
3. Present Value of Expected Administrative Expenses*		11,788,017	
4. Accumulated Benefits [(1) + (2) + (3)]	$	326,135,142	10,232
5. Market Value of Assets	$	222,583,144	
6. Funded Ratios			
Vested Benefits		72%	
Accumulated Benefits		68%	

Table VI-2
Reconciliation of Present Value of Accumulated Benefits

1. Actuarial Present Value at Start of Prior Year	$	297,581,793
2. Increase (decrease) over Prior Year due to:		
Benefit Accruals (with Expenses)		10,388,627
Benefit Payments and Expected Expenses		(14,447,720)
Increase for Interest		20,269,974
Experience (Gains)/Losses		554,451
Changes in assumptions		0
Plan Amendments		0
3. Actuarial Present Value at End of Prior Year (w/o Administrative Expenses)	$	314,347,125
4. Present Value of Expected Administrative Expenses*		11,788,017
5. Actuarial Present Value at End of Prior Year	$	326,135,142

* *The expected administrative expenses associated with the Accumulated Benefits is estimated to be 3.75% of the assumed Present Value of Accumulated Benefits.*

APPENDIX A – MEMBERSHIP INFORMATION

The data for this valuation was provided electronically by Associated Administrators, LLC (AA). Cheiron did not perform a formal audit on this data. However, we did perform checks of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23 *Data Quality*. The data was collected as of January 1, 2018. Below is a list of assumptions Cheiron made in using the data this year.

Date of Birth for Active Employees

There were 29 active participants who were missing dates of birth. For these participants, we have imputed a date of birth based on the missing participant's years of credited benefit service and an average hire age of 37.5.

Gender for Active Employees

There were 35 active participants who were missing gender codes. For these participants, we have assumed they were male if the last digit of their social security number was 0-4, otherwise female.

Date of Hire for Active Employees

Rather than use the date of hire provided in the raw data (which sometimes reflects a re-hire date for those who change employers), we developed an "effective" date of hire for each active record based on their reported years of service.

Date of Birth for Terminated Vesteds

There were 32 terminated vested participants who were missing dates of birth. For these participants, we have imputed a date of birth based on the average age of the remaining terminated vesteds of 57.0.

The following is a list of data charts contained in this section:

- Age/Service Distribution for Active Participants
- Counts and Average Benefit Amount by Age for Retirees, Beneficiaries, and Disabled Participants
- Counts and Average Benefit Amount by Age for Terminated Vested Participants

APPENDIX A – MEMBERSHIP INFORMATION

Data Reconciliation
From January 1, 2017 to January 1, 2018

	Active	Terminated Vesteds	Disabled	Retiree	Survivors	Totals
1. January 1, 2017 valuation	**6,052**	**2,041**	**78**	**1,972**	**152**	**10,295**
2. Additions						
a. New entrants/Show-Ups	386	1		9	18	414
3. Reductions						
a. Terminated - not vested	(375)					(375)
b. Deaths	(5)	(13)	(4)	(60)	(10)	(92)
c. Total	(380)	(13)	(4)	(60)	(10)	(467)
4. Changes in status						
a. Terminated - vested	(96)	96				
b. Returned to work	10	(10)				
c. Retired	(74)	(77)		151		
d. Disabled		(6)	6			
e. Data corrections		(10)				(10)
f. Total	(160)	(7)	6	151		(10)
5. January 1, 2018 valuation	**5,898**	**2,022**	**80**	**2,072**	**160**	**10,232**

Distribution of Active Members
By Age And Service as of January 1, 2018

	Completed Years of Credited Service										
AGE	Under 1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Up	Total
Under 25	33	97	4	0	0	0	0	0	0	0	134
25-29	43	251	81	0	0	0	0	0	0	0	375
30-34	31	223	168	31	1	0	0	0	0	0	454
35-39	27	222	225	96	24	0	0	0	0	0	594
40-44	25	218	256	120	38	14	1	0	0	0	672
45-49	16	218	272	154	95	51	20	0	0	0	826
50-54	10	183	243	166	94	72	77	19	1	0	865
55-59	11	132	244	152	106	106	113	84	26	0	974
60-64	2	51	146	121	60	86	118	77	60	20	741
65-69	3	20	68	24	16	12	28	17	13	10	211
70 & Up	0	13	19	4	6	3	2	1	1	3	52
Total	201	1,628	1,726	868	440	344	359	198	101	33	5,898

Average Age = **48.1** Average Service = **10.7**

APPENDIX A – MEMBERSHIP INFORMATION

Age Distribution of Inactive Participants
Pensioners and Beneficiaries Receiving Benefits as of January 1, 2018

	Disability Retirements		Normal, Early Deferred Vested Retirements		Surviving Spouses and Beneficiaries Receiving Benefits		Total	
Age	Number	Monthly Benefit	Number	Monthly Benefit	Number	Monthly Benefit	Number	Monthly Benefit
Under 55	2	$ 632	0	$ 0	11	$ 4,752	13	$ 5,384
55-59	10	5,353	2	775	3	458	15	6,586
60-64	26	15,158	55	27,799	16	4,232	97	47,189
65-69	28	14,602	599	345,504	25	6,100	652	366,206
70-74	14	6,280	528	263,117	25	5,138	567	274,535
75-79	0	0	421	195,507	28	5,980	449	201,487
80 & Over	0	0	467	180,649	52	9,880	519	190,529
Total	80	$ 42,025	2,072	$ 1,013,351	160	$ 36,540	**2,312**	**$ 1,091,916**

Participants Entitled to Future Benefits
as of January 1, 2018

	Terminated Vesteds	
Age	**Number**	**Monthly Benefit Payable at Normal Retirement Date[1]**
Under 45	307	$ 52,576
45-49	256	50,574
50-54	375	85,988
55-59	452	106,077
60-64	417	109,708
65 & Over	215	62,526
Total	**2,022**	**$ 467,449**

[1] *Adjusted to reflect assumed probability of receipt.*

APPENDIX B – SUMMARY OF MAJOR PLAN PROVISIONS

1. Eligibility

All employees covered by a collective bargaining agreement between an employer and the Union and engaged in employment requiring pension fund contributions.

2. Normal Retirement Date

Beginning on January 1, 1976, the normal retirement date is the date when the participant is age 65 or older and has 5 or more years credited vesting service.

3. Contributions

The entire Plan cost is paid for by the participating employers. Effective March 15, 2018, the contribution rate for most employers increased from $2.25 to $2.35 per hour worked by covered employees.

4. Hour of Service

An hour of service is credited to a participant for an hour or its equivalent for which he is entitled to wages (within certain limits). Such hours of service are credited to the plan year in which they are earned (except when a period of not more than 31 days overlaps two plan years, the employer may uniformly credit the hours to one of the plan years).

5. Credited Benefit Service

Credited benefit service is the sum of past credited service and future credited benefit service.

- Past Credit Service
  A participant may receive past credited service if payments to the Pension Fund were made on his behalf for 500 or more hours from October 1, 1960 to December 31, 1961. The years of past credited service is found by subtracting from 1961 the earlier of the date the employee:
  - Joined the union, or
  - Began employment with a participating employer up to a maximum of 20 years.

- Future Credit Benefit Service
  - A participant may receive future credited benefit service for employment after September 30, 1960.

APPENDIX B – SUMMARY OF MAJOR PLAN PROVISIONS

Beginning in 1993, future credited benefit service is earned in each calendar year a participant works 400 or more hours as shown below:

Reported Hours Worked During Calendar Year	Years of Future Credited Benefit Service
1,000 or more	1
400 to 999	½
0 to 400	0

6. Credited Vesting Service

The sum of past credit service (see past credited benefit service above) and future credited vesting service. A participant may receive future credited vesting service for employment after September 30, 1960. For 1976 and thereafter, a year of future credited vesting service is earned in each calendar year in which a participant earns 750 or more hours of service.

7. Normal Retirement Benefit

Effective January 1, 2017, the monthly normal retirement benefit is $41.00 multiplied by the participant's credited benefit service.

8. Early Retirement

At the employee's option, after he has both attained age 62 and has at least 5 years of credited vesting service, his accrued normal retirement pension is reduced by one-half of one percent for each month by which his retirement precedes his 65th birthday.

9. Disability Retirement

A participant who becomes totally and permanently disabled is eligible for a disability retirement benefit with payments beginning immediately if he satisfies the following conditions:

- He has 5 years of future credited benefit service (if his disability was incurred on the property of any employer and is classified as occupational, then 5 years total credited benefit service).
- He was employed by an Association member in the two calendar quarters immediately preceding his disability.

10. Deferred Vested Pension Benefit

A participant who incurs a break in service may be eligible for a deferred vested benefit with benefits deferred to his normal retirement date when he has 5 or more years credited vesting service.

APPENDIX B – SUMMARY OF MAJOR PLAN PROVISIONS

11. Pre–Retirement Death Benefit

A death benefit will be paid to the designated beneficiary of a participant who dies after age 62 with 5 years credited vesting service as follows:

- If the participant was not married for a period of one year or longer immediately preceding his death, the amount paid will be the greater of:
  - The sum of 36 monthly payments of the retirement benefit the employee would have received had he retired on the day preceding his death, or
  - $2,000.

- If the participant was married for one year or longer immediately preceding his death, his spouse will receive a monthly pension equal to the pension that the participant would have received if the participant had retired on the day preceding his death and elected the joint and 50% survivor option (see Pension Benefit Forms). In no event will the total death benefit paid be less than the amount paid as stated above.

- If the participant was not eligible for early or normal retirement (but was married for one year or longer) immediately preceding his death, his spouse will receive the monthly deferred vested benefit the participant would have received. The benefit is reduced for early retirement to the earliest retirement age and for a joint and 50% survivor option.

12. Normal Form of Pension

Pension benefits are payable for the participant's life (or until recovery if recovery occurs before age 65 in the case of disability retirement) and cease at death.

13. Changes to Plan Provisions Since Last Valuation

None

APPENDIX C – ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

1. Rates of Investment Return

Funding and disclosure purposes:
6.75% compounded annually
Current Liability under RPA 1994:
2.98% compounded annually
All investment returns are net of investment expenses.

2. Rates of Mortality

(a) Funding:

Healthy Lives - 102% and 107% of the RP-2014 Healthy Annuitant Mortality Table for males and females, respectively, adjusted to 2006 with Blue Collar Adjustments, projected using the MP-2016 generational mortality improvements to 2017 and then 0.75% per year (ages < 86) thereafter.

Disabled Lives - 100% of the RP-2014 Disabled Retiree Mortality Table adjusted to 2006 with Blue Collar Adjustments, projected using the MP-2016 generational mortality improvements to 2017 and then 0.75% per year (ages < 86) ultimate scale thereafter.

(b) RPA ’94 Current Liability:
The separate 2018 Static Mortality Tables for annuitants and non-annuitants as prescribed under IRS Notice 2016-50 and Regulation §1.431(c)(6)-1.

3. Rates of Retirement

Rates of retirement are assumed to be in accordance with annual rates as shown below for illustrative ages.

Age	Rate of Retirement
62	0.100
63	0.075
64	0.200
65	0.500
66	0.400
67	0.400
68	0.300
69	0.300
70	1.000

APPENDIX C – ACTUARIAL ASSUMPTIONS AND METHODS

4. Rates of Turnover

Rates of termination of employment for reasons other than death, disability or retirement are assumed to be in accordance with annual rates as shown below for illustrative ages.

Years of Service	Withdrawal Rate
0	.275
1	.200
2	.150
3	.100
4	.100
5	.075
6-10	.050
11-29	.035
30+	.025

5. Disability

Rates of disability are assumed to be in accordance with annual rates as shown below for illustrative ages.

Age	Disability Rate
20	.000100
25	.000100
30	.000100
35	.000133
40	.000200
45	.000300
50	.000500
55	.000933
60	.001600
61	.001800
62	.001967
63	.002133
64	.002300
65	.000000

APPENDIX C – ACTUARIAL ASSUMPTIONS AND METHODS

6. Pre-Retirement Spouse's Benefit

It was assumed that 80 percent of the male employees and 80 percent of the female employees would be married at the time of death and, assuming service and age requirements were met, would, therefore, be eligible for the pre-retirement spouse's benefit. It was assumed that surviving spouses would begin to receive benefits when first eligible.

7. Hours Worked

It was assumed each employee will work the same amount of hours each year into the future that the employee worked during the calendar year preceding the valuation date.

8. Terminated Vested Participants

Terminated Vested participants are assumed to have the following probabilities of receipt of their benefits.

Attained Age	Probability of Receipt
Under 75	100%
75 – 79	75%
80 – 84	50%
85 and older	0%

9. Administrative Expenses

9.5% of Normal Cost payable at the beginning of the year.

For financial disclosure under FASB ASC 960, the present value of future administrative expense is assumed to be 3.75% of Accrued Liability. This percentage is based on future cash flows of $90.46 per participant that increase 1% per year for inflation.

10. Rationale for Economic and Demographic Assumptions

Assumptions are based on the latest experience study review performed concurrent with the January 1, 2017 valuation and covering the period January 1, 2012 through December 31, 2016. The results of that study are incorporated here by reference.

The Plan's investment manager was projecting an annual return of 7.4% at the time of the experience study with an underlying inflation assumption of 2.6%. Given that investment-related fees had averaged 16 basis points, the 6.75 % assumption is reasonable.

APPENDIX C – ACTUARIAL ASSUMPTIONS AND METHODS

APPENDIX C – ACTUARIAL ASSUMPTIONS AND METHODS

11. Changes in Assumptions Since Last Valuation

As required, the current liability interest rate and mortality tables were updated. The interest rate went from 3.05% to 2.98% (per IRS Notice 2011-7), and the mortality table was updated to the 2018 Static Mortality Tables for annuitants and non-annuitants (per IRS Notice 2016-50) and Regulation §1.431(c)(6)-1.

For financial disclosure under FASB ASC 960, an assumption regarding future administrative expense was reflected.

APPENDIX C – ACTUARIAL ASSUMPTIONS AND METHODS

B. Actuarial Methods

1. Asset Valuation Method

The valuation assets are determined as the market value less (1) 80% of the investment actuarial gain/(loss) during the preceding year, less (2) 60% of the investment gain/(loss) during the second preceding year, less (3) 40% of the investment gain/(loss) during the third preceding year, less (4) 20% of the investment gain/(loss) for the fourth preceding year. For the purpose of this calculation, the actuarial gain/(loss) is defined as the difference between the actual and the expected return (based on the valuation interest rate) on the Market Value of Assets during the year.

The actuarial value is taken to be the adjusted market value as described above, but subject to a 20 percent corridor limit around the actual market value; that is, the actuarial value is never greater than 120 percent of market value, nor less than 80 percent of market value.

2. Funding Method: Unit Credit Cost Method

The cost method for the valuation of liabilities used for this valuation is the Unit Credit Cost method. This is one of a family of valuation methods known as an accrued benefits method. The chief characteristic of an accrued benefits method is that the funding pattern follows the pattern of benefit accrual. Under the Unit Credit Cost method, the normal cost is determined as that portion of each Participant's benefit attributable to service expected to be earned in the upcoming plan year. The actuarial liability, which is determined for each Participant as of each valuation date, represents the actuarial present value of the Participant's current accrued benefit as of the valuation date.

One of the significant effects of this funding method is that, depending on the demographics of the population, the Unit Credit Cost method tends to produce lower costs in the early years. There is a possibility that as the population ages, the annual cost could increase over time.

3. Changes in Methods

None