



Industry & Local 338 Pension Plan

July 1, 2019 Actuarial Update

October 15, 2019

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Today's Discussion

- **2019 PPA Zone Status Certification - Review**
- **Life After Critical Status**
- **Pension Risk**
- **Funding Goals & Managing Pension Risk**
- **2019 – 2020 Plan Year Timeline**
- **Appendix**
 - Survey of Capital Market Assumptions
 - Forecast Summary
 - Forecast Assumptions
 - Contribution Rate Summary

2019 PPA Zone Status Certification - Review

2019 PPA Certification

- **On September 27, 2019 the Plan was certified “Green Zone” for the plan year beginning July 1, 2019**
 - Emerged from Critical Status: The plan is not projected to have an accumulated funding deficiency for the plan year or any of the 9 succeeding plan years, taking into account any extension of amortization periods under section 431(d)(1), and the plan is not projected to become insolvent for any of the 30 succeeding plan years
- **Basis of the certification:**
 - Preliminary Assets based on draft financial statements for the plan year ended June 30, 2019, prepared by the Plan’s auditor
 - Projected liabilities based on results of the July 1, 2018 actuarial valuation, including a 7.50% discount rate
 - Covered Employment and Contributions
 - 10,300 total weeks worked by active participants in the current and each succeeding plan year
 - Weekly rates agreed to in agreements in effect as of July 1, 2019
 - Withdrawal liability
 - Culinar withdrawal May 10, 2019 - monthly payments will be collected
 - College of New Rochelle withdrawal August 10, 2019 – withdrawal liability uncollectible

PPA Zone Certification: July 1, 2019 – June 30, 2020 Plan Year

4.85% Return PYB 2018; 7.50% Return PYB 2019+ | 10,300 Weeks Worked beginning PYB 2019 |
Current CBA Contribution Increases only | Culinar Withdrawal Liability Payments Collected



Notes

- 1) Effective July 1, 2016, all contributions (and future rate increases, if any) are benefit-bearing. See graph for detail regarding assumed rate increases.
- 2) Benefit changes made by the RP are reflected beginning in the July 1, 2018 plan year.

Life After Critical Status

Emergence from Critical Status

- **Terms of the Plan / Rehabilitation Plan (RP)**

- Plan Benefits - the Plan has been amended to reduce benefits
- Contribution Rates
 - Contribution rates required by the RP that included in contracts continue
 - New contracts are not required to include additional contribution rate increases previously required by the RP

- **Withdrawal liability**

- Contribution rate increases required by a Funding Improvement or Rehabilitation Plan effective July 1, 2015 and later are excluded from the determination of withdrawal liability and the withdrawal liability payment while the Plan is in endangered or critical status.
- Once the plan emerges, all contributions are included for withdrawal liability purposes
 - Likely no material change to the allocation of unfunded vested benefits
 - Likely increase in the withdrawal liability payment

- **Once the Plan emerges from critical status, how best to keep it healthy?**

- Determine the Trustees' Funding Goals for the Plan
- Develop strategies (policies) for managing risk

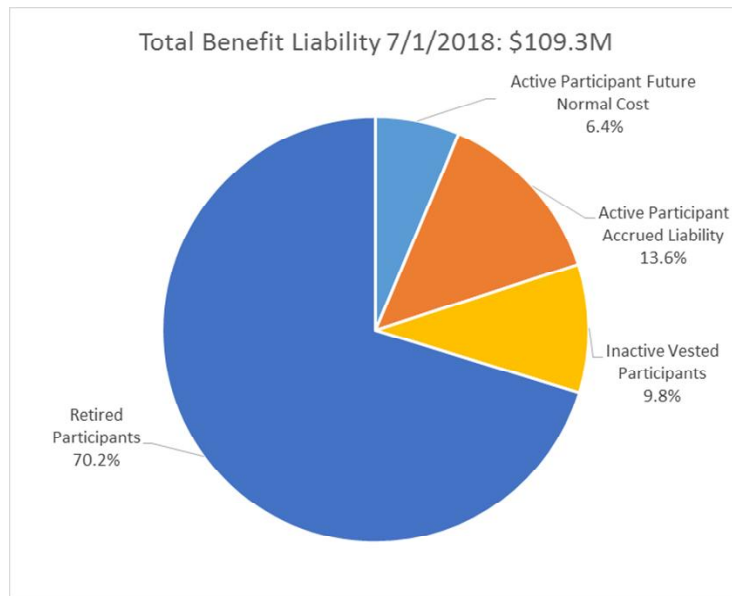
Pension Risk

Pension Risks

- **There are multiple risks inherent in all types of retirement plans, including (but not limited to):**
 - Inadequate benefits
 - Insufficient funding of promised benefits
 - Volatility of contributions and benefits (primarily due to volatility of investment returns)
 - Contribution base risk (plan maturity)
 - PBGC-related risks (higher premiums)
 - Longevity risk
- **Review the “maturity” of the Plan**
 - Inactive / active participant ratio
 - Net cash flow (“burn rate”)
 - Concentration risk
- **Review strength of actuarial assumptions**
 - Investment return assumption
 - Mortality, other demographic assumptions
 - Administrative expense assumption

Pension Risks: Plan Maturity

- More mature plans tend to be less resilient to adverse experience
- Impact of plan maturity on plan funding:
 - Consider capacity for future corrective action
 - Further adjustments to benefits are limited
 - Rehabilitation Plan eliminated all “adjustable benefits” and subsidies
 - Benefit accrual rate is 0.9% of contributions
 - Further increases in contribution rates
 - What is sustainable?



Contribution Rate by Contract		
Employer	Base Rate	6/30/2019
Crowley LaFargeville	130.00	322.67
Friesland Campina	100.12	242.64
LP Transport	160.00	322.75
Montefiore New Rochelle	120.12	270.30
Paraco Gas	124.00	263.84
Westchester L860	130.15	243.28

Plan Maturity is a Key Driver of Funding Status

Median Results for Multiemployer Pension Plans: 2002 to 2016

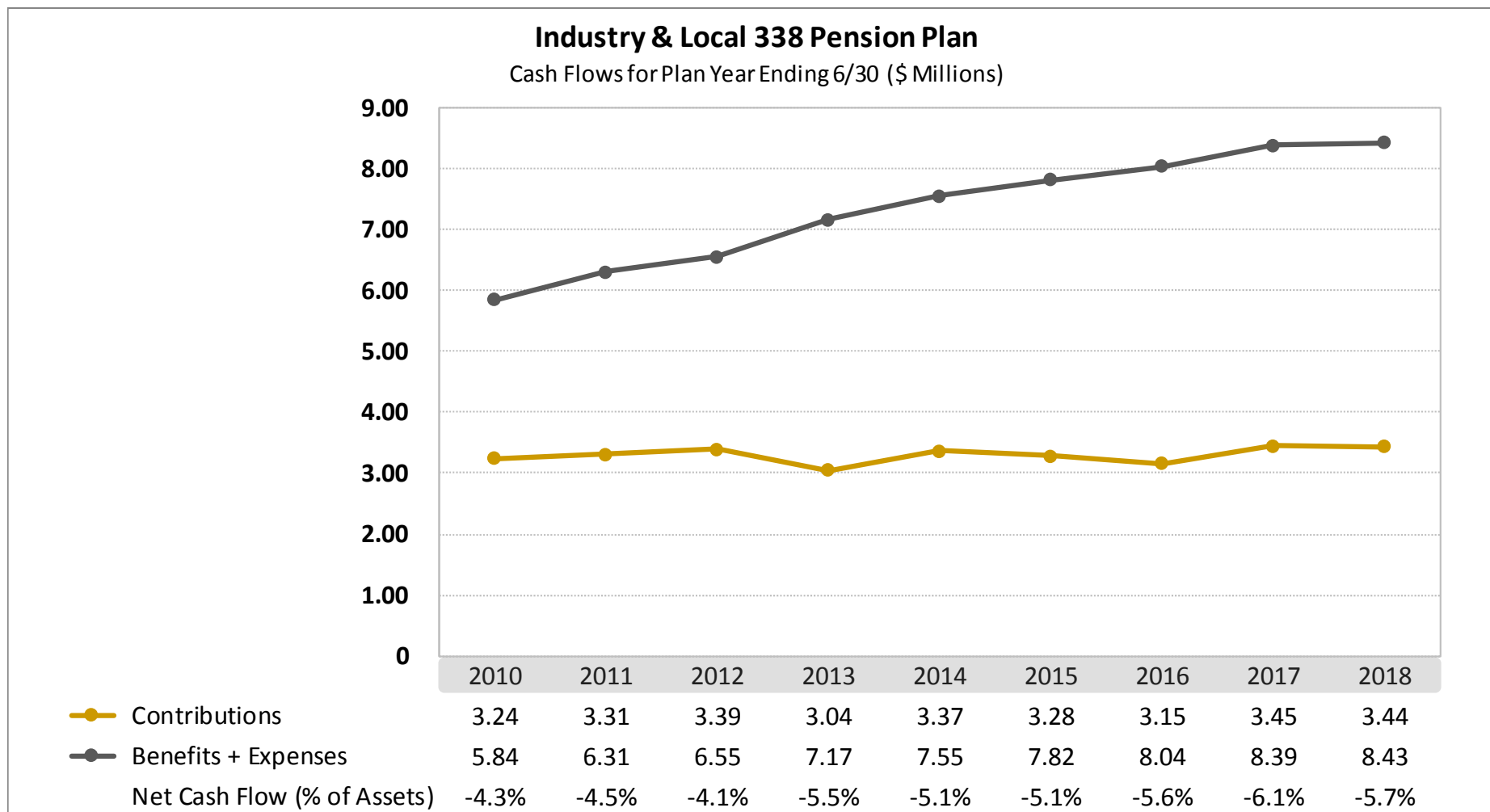
Median Results <i>Based on Form 5500 Data</i>	Funded Percentages		Annualized Returns	Contrib. Rate Increase	Participant Ratio	
2016 Zone Status	2002	2016	2002-2016	2002-2016	2002	2016
Ind & L338 Plan	92%	81%	6.0%	x 2.5	2.4	3.6
Critical & Declining	76%	52%	5.3%	x 2.9	1.7	6.4
Critical	73%	66%	5.2%	x 2.9	1.0	2.0
Endangered	68%	71%	5.1%	x 2.7	1.0	1.6
Green Zone	77%	90%	5.4%	x 2.4	0.8	1.4

Source: Horizon Actuarial study of Form 5500 data

- **Funded Percentages**
 - Results include calendar year plans only; may not be comparable with non-calendar plan years
 - Funded percentages are measured at December 31 and are based on the market value of assets and the unit credit accrued liability
- **Investment Returns**
 - Analysis performed for calendar year plans with complete history only; may not be comparable with non-calendar plan years
 - Returns are net of investment fees, but gross of operating expenses
- **Contribution Rate Increase**
 - Hours worked (or other contribution base units) are not reported on the Form 5500
 - Employer contributions per active participant is used as a proxy for contribution rate
- **Participant Ratio**
 - Participant ratio = number of inactive participants / number of active participants
 - Inactive participants include inactive participants with deferred benefits, retirees, and beneficiaries

Plan Maturity Measures

Historical Cash Flow

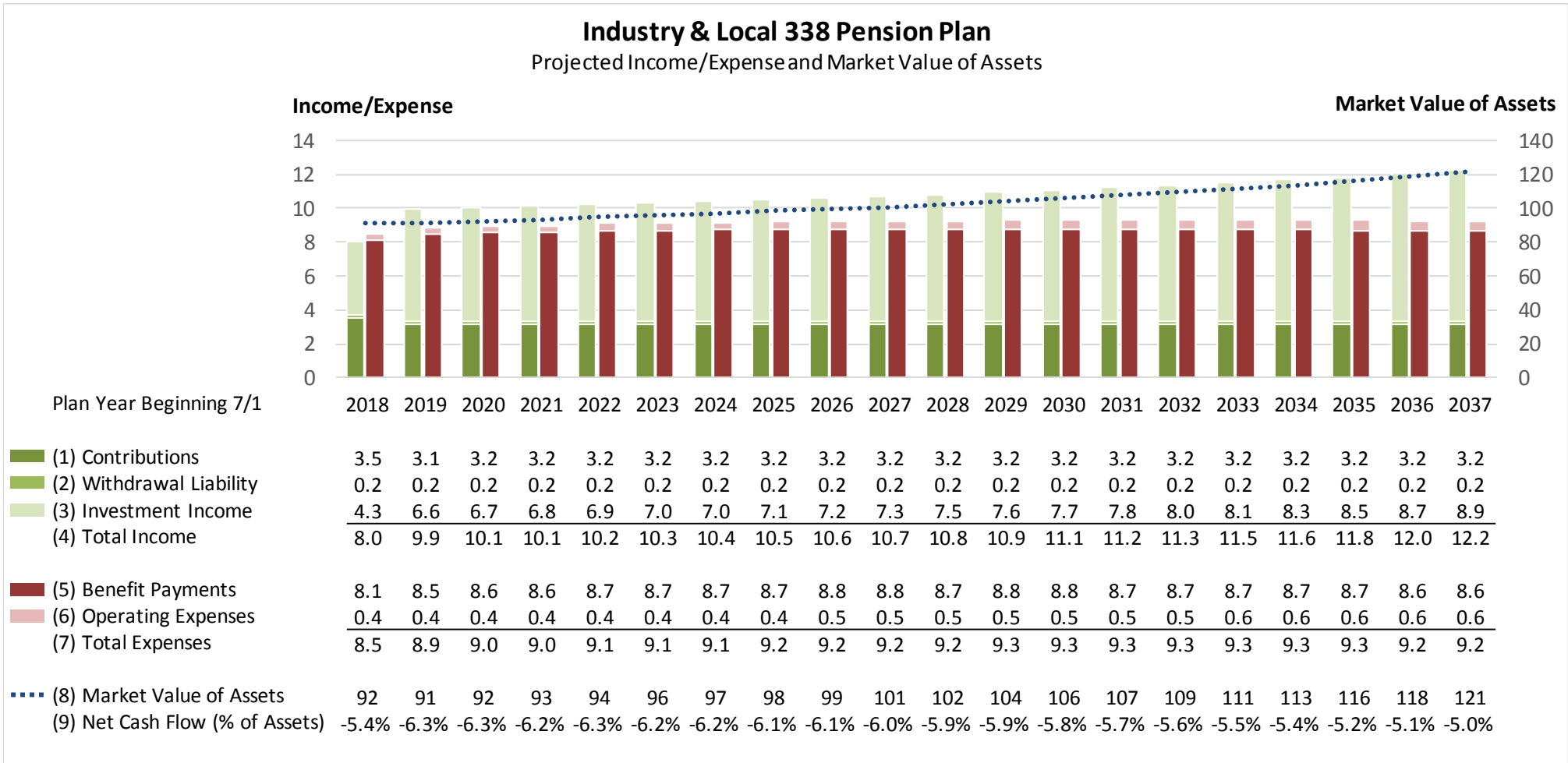


Notes

1) Contributions include withdrawal liability payments.

Plan Maturity Measures

Projected Income / Expense

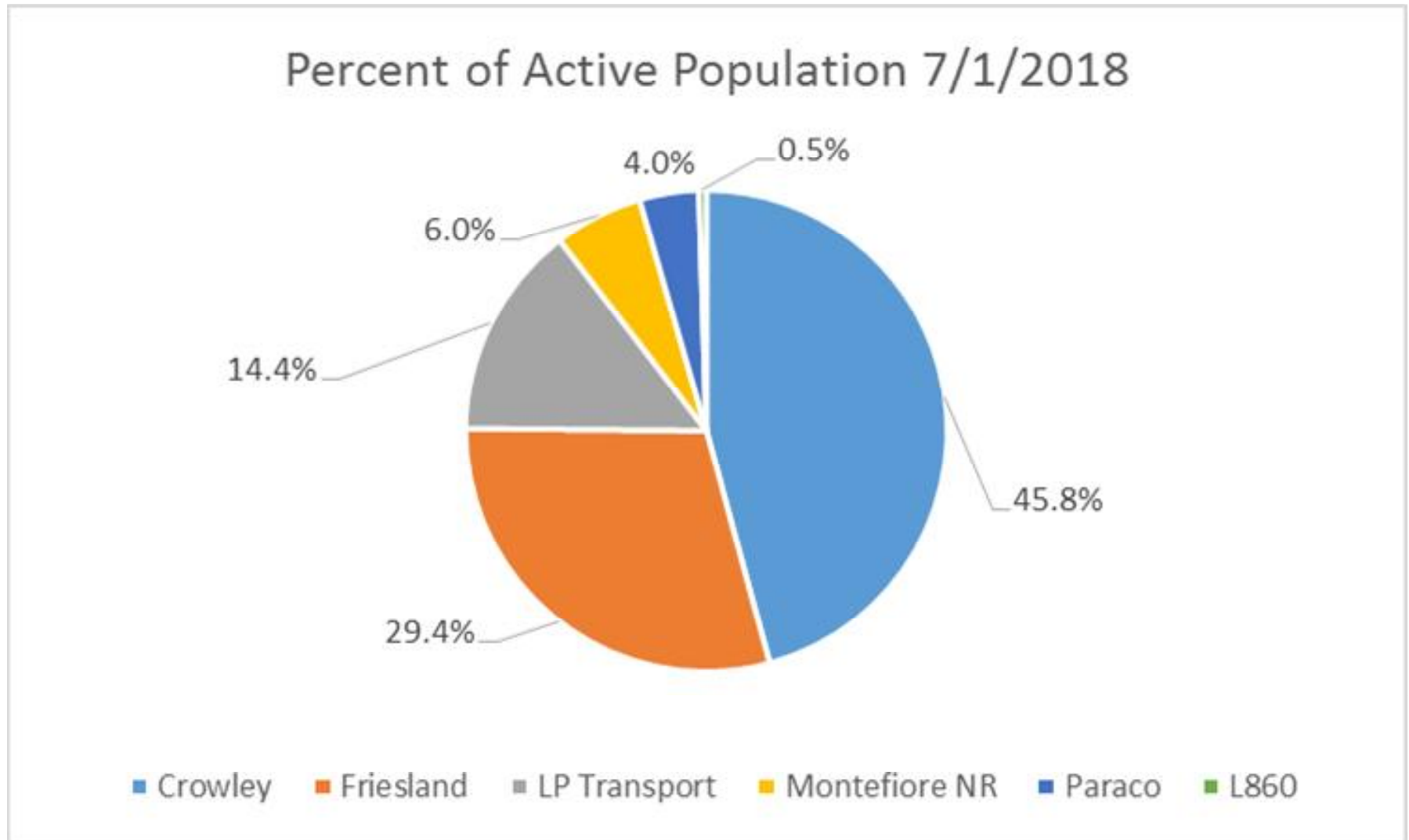


Note

1) Cash flow and investment return projections are based on baseline projection assumptions, including investment returns of 7.50% per year.

Plan Maturity Measures

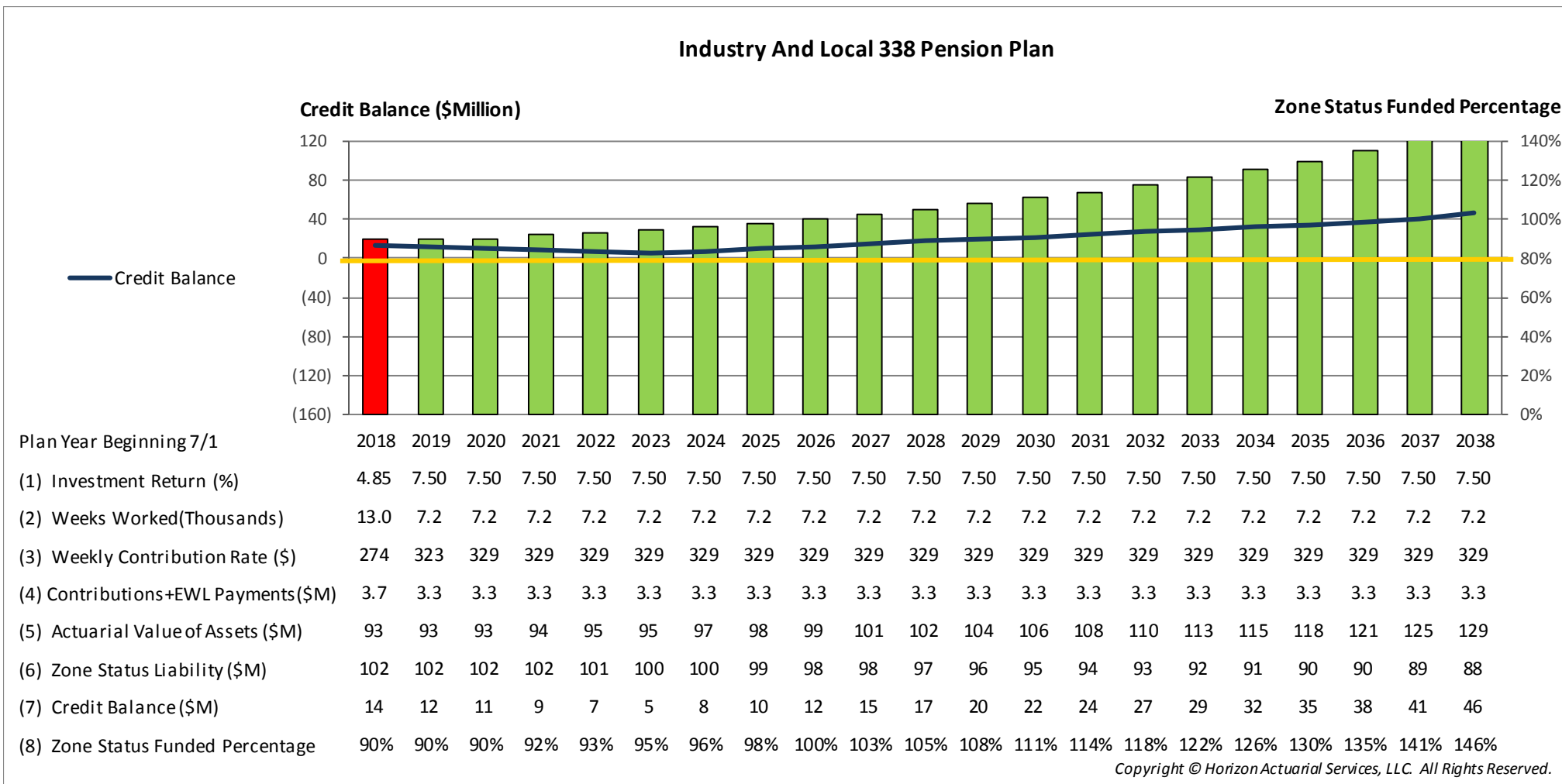
Concentration Risk



Plan Maturity Measures: Friesland Withdraws (30% decline) & Pays

4.85% Return PYB 2018; 7.50% Return PYB 2019+ | **7,200 Weeks Worked beginning PYB 2019** |

Current CBA Contribution Increases only | Culinar Withdrawal Liability Payments Collected



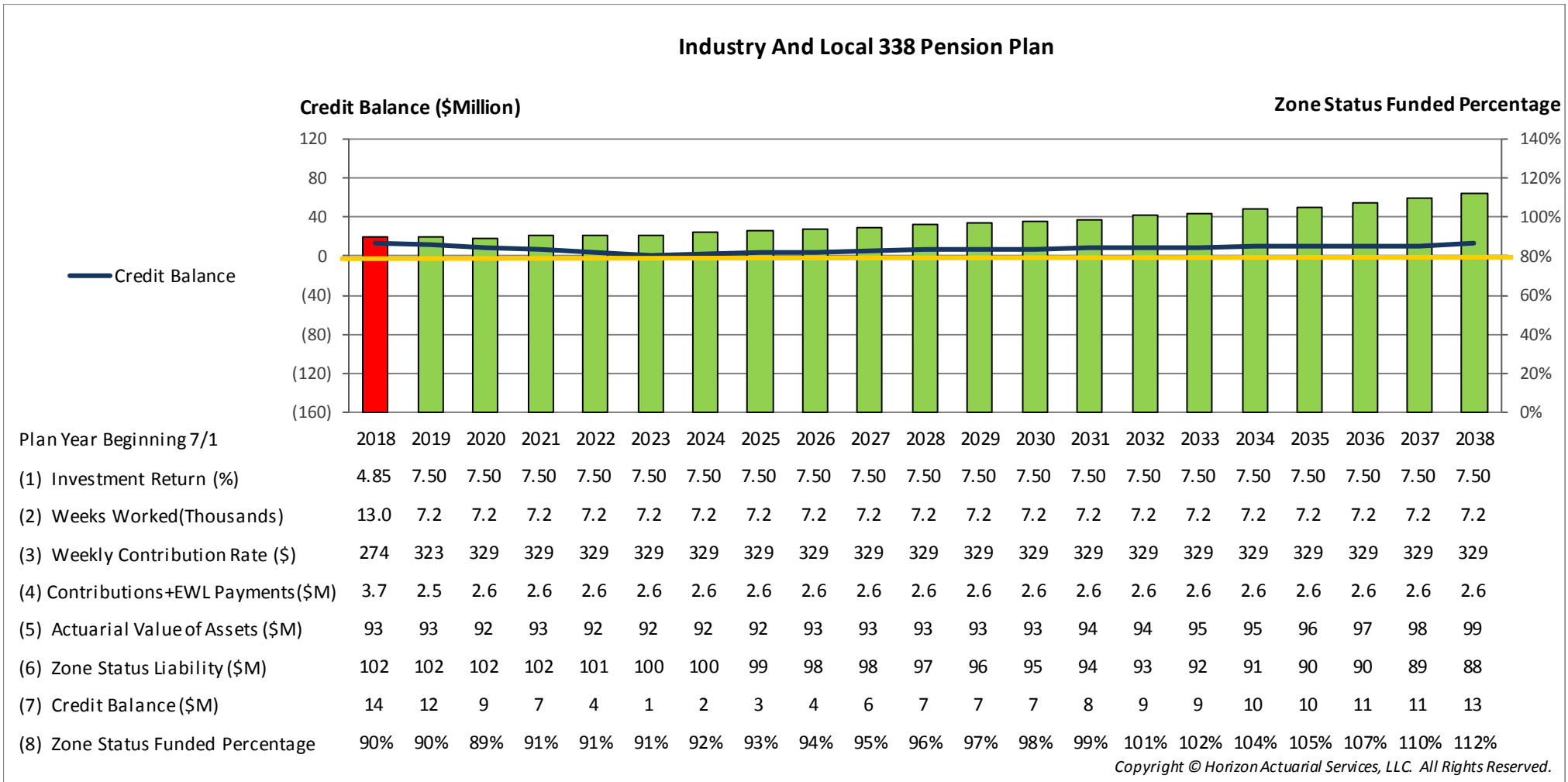
Notes

- 1) Effective July 1, 2016, all contributions (and future rate increases, if any) are benefit-bearing. See graph for detail regarding assumed rate increases.
- 2) Benefit changes made by the RP are reflected beginning in the July 1, 2018 plan year.

Plan Maturity Measures: 30% Active Population Decline

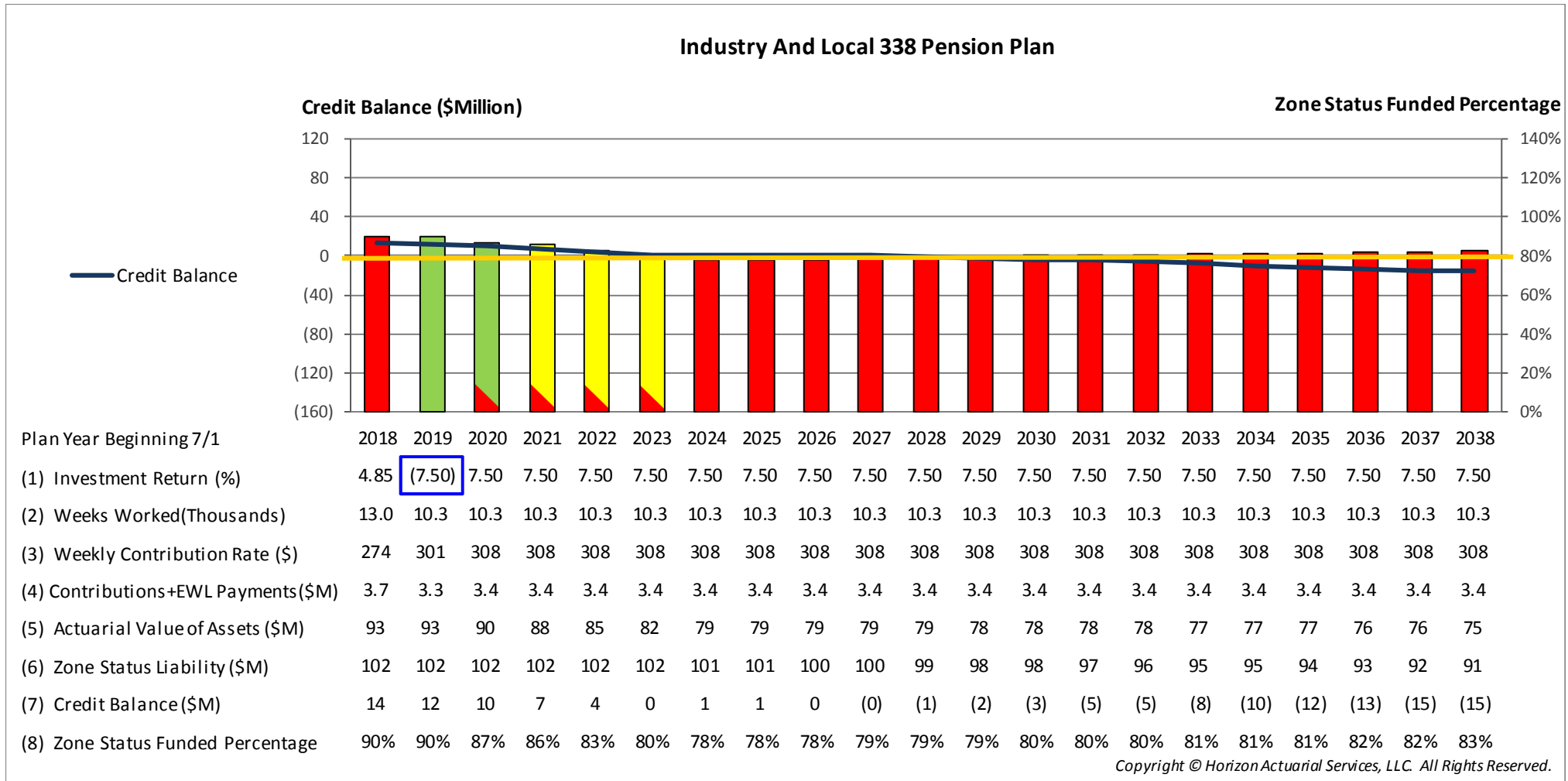
4.85% Return PYB 2018; 7.50% Return PYB 2019+ | **7,200 Weeks Worked beginning PYB 2019** |

Current CBA Contribution Increases only | Culinar Withdrawal Liability Payments Collected



Corrective Action Example: Low Investment Return in 2019

4.85% Return PYB 2018; **-7.50% PYB 2019**, 7.50% PYB 2020+ | **10,300 Weeks Worked beginning PYB 2019** |
Current CBA Contribution Increases only | Culinar Withdrawal Liability Payments Collected



Corrective Action Example: Low Investment Return in 2019

-7.50% PYB 2019, 7.50% PYB 2020+

Contribution Base		One-time increase in the Contribution Rate	
Weeks Worked PYB 7/2019+	New Wdl Liab Pmts	Remain Green thru 7/1/2038	Achieve 136% Funded at 7/1/2038
10,300	No	\$52	\$175
7,200	No	\$186	\$365
7,200	Friesland	\$37	\$205

Notes

- 1) Average Contribution Rate is \$308/ week at 7/1/2018 with 10,300 weeks
- 2) Average Contribution Rate is \$323/ week at 7/1/2018 with 7,200 weeks

Pension Risks: Investment Return Assumption

- **Lower investment return assumption = higher actuarial liability**
- **Impact of reduction in investment return on plan funding:**
 - Plan liabilities: immediate increase in actuarial accrued liability
 - Plan assets: no change in asset value
 - Funded percentage: immediate decrease funded percentage
 - Unfunded liability: immediate increase in unfunded liability
 - Credit balance: increase in unfunded liability is amortized (paid for) over a 15-year period in the funding standard account (credit balance)
- **Determination of unfunded vested benefits for withdrawal liability purposes also involves an assumption for investment return**

2019 Survey: Evaluating the Return Assumption

Industry & Local 338

2019 Survey of Capital Market Assumptions

Asset Class	Portfolio Weight	Average Survey Assumptions		
		10-Year Horizon	20-Year Horizon	Standard Deviation
US Equity - Large Cap	25.0%	6.03%	7.05%	16.17%
US Equity - Small/Mid Cap	4.0%	6.55%	7.54%	20.15%
Non-US Equity - Developed	17.0%	6.83%	7.70%	18.23%
Non-US Equity - Emerging	4.0%	7.77%	8.67%	24.73%
US Corporate Bonds - Core	10.0%	3.58%	4.30%	5.47%
US Corporate Bonds - Long Duration	5.0%	3.53%	4.39%	10.50%
US Corporate Bonds - High Yield	8.0%	5.10%	5.82%	10.06%
Non-US Debt - Developed	-	2.56%	3.43%	7.61%
Non-US Debt - Emerging	3.0%	5.57%	6.06%	11.31%
US Treasuries (Cash Equivalents)	2.5%	2.66%	3.03%	2.31%
TIPS (Inflation-Protected)	-	3.10%	3.49%	6.11%
Real Estate	10.0%	5.79%	6.82%	15.03%
Hedge Funds	7.0%	5.27%	6.18%	8.38%
Commodities	-	3.90%	4.68%	17.66%
Infrastructure	-	6.78%	7.24%	14.39%
Private Equity	4.5%	8.97%	10.10%	22.05%
Private Debt	-	7.37%	7.76%	11.62%
Inflation	N/A	2.21%	2.29%	1.73%
TOTAL PORTFOLIO	100.0%	<i>Expected returns are geometric.</i>		

Considerations and Limitations

- Allocations may be approximated if certain asset classes are not included in the survey.
- Many investment advisors provided only shorter-term assumptions (10 years or less).
- Assumptions are generally based on indexed returns and do not reflect anticipated alpha.
- Assumptions do not reflect investment opportunities or fee considerations available to larger funds.

SOURCE: Horizon Actuarial 2019 Survey of Capital Market Assumptions

Expected returns over a 10-year horizon include all 34 survey participants.

Expected returns over a 20-year horizon are based a subset of 16 survey participants who provided long-term assumptions.

Expected Returns

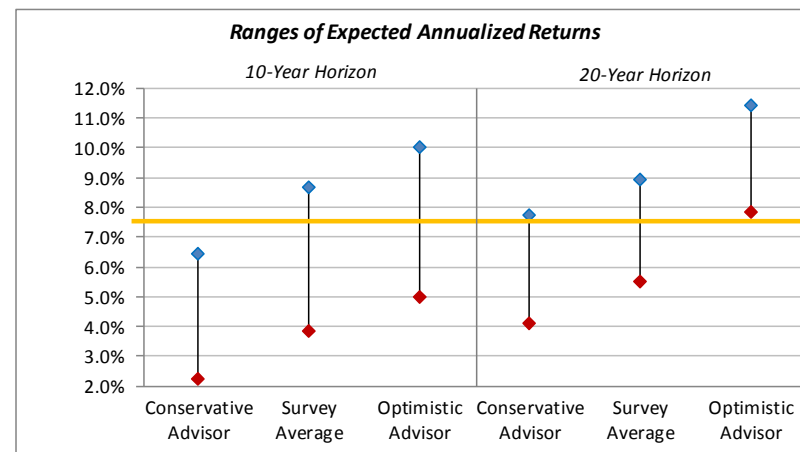
	10-Year Horizon			20-Year Horizon		
	Conservative Advisor	Survey Average	Optimistic Advisor	Conservative Advisor	Survey Average	Optimistic Advisor
Average Annual Return (Arithmetic)	4.80%	6.88%	8.16%	6.61%	7.83%	10.27%
Annualized Return (Geometric)	4.33%	6.28%	7.50%	5.93%	7.22%	9.63%
Annual Volatility (Standard Deviation)	9.90%	11.34%	11.89%	11.96%	11.48%	11.89%

Range of Expected Annualized Returns

75th Percentile	6.44%	8.70%	10.04%	7.74%	8.95%	11.42%
25th Percentile	2.22%	3.86%	4.97%	4.13%	5.49%	7.84%

Probabilities of Exceeding Certain Returns

8.00% per Year, Annualized	12.0%	31.6%	44.8%	22.0%	38.0%	73.0%
7.50% per Year, Annualized	15.6%	36.7%	50.0%	27.9%	45.6%	78.8%
7.00% per Year, Annualized	19.7%	42.0%	55.3%	34.5%	53.4%	83.9%

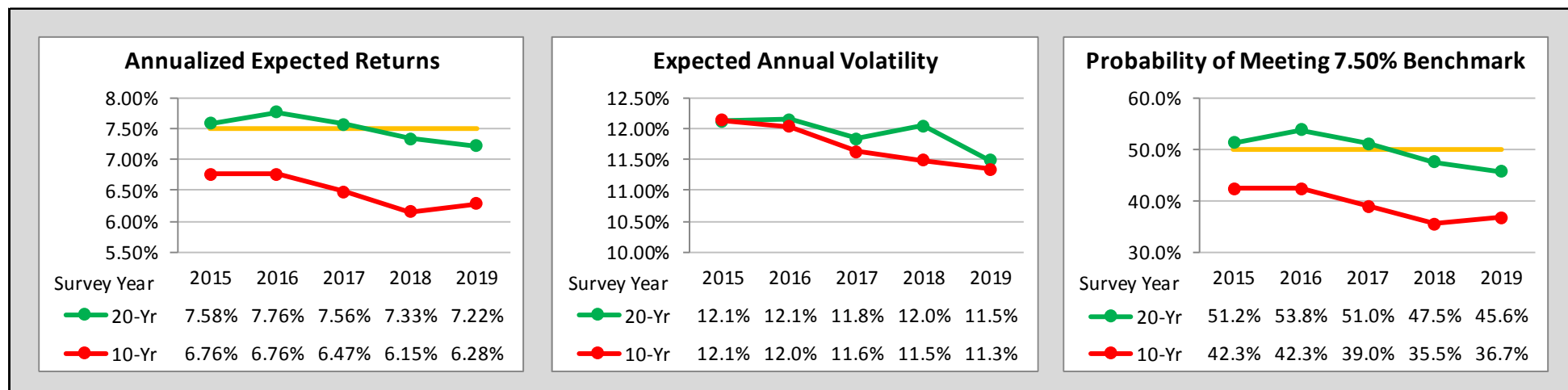


The exhibit above evaluates the investment return assumption for the portfolio shown above (highlighted in yellow). Note that the most conservative and optimistic advisors for the 10-year horizon are not necessarily the same as the most conservative and optimistic advisors for the 20-year horizon.

The Plan's asset allocation was determined based on information provided by SEI

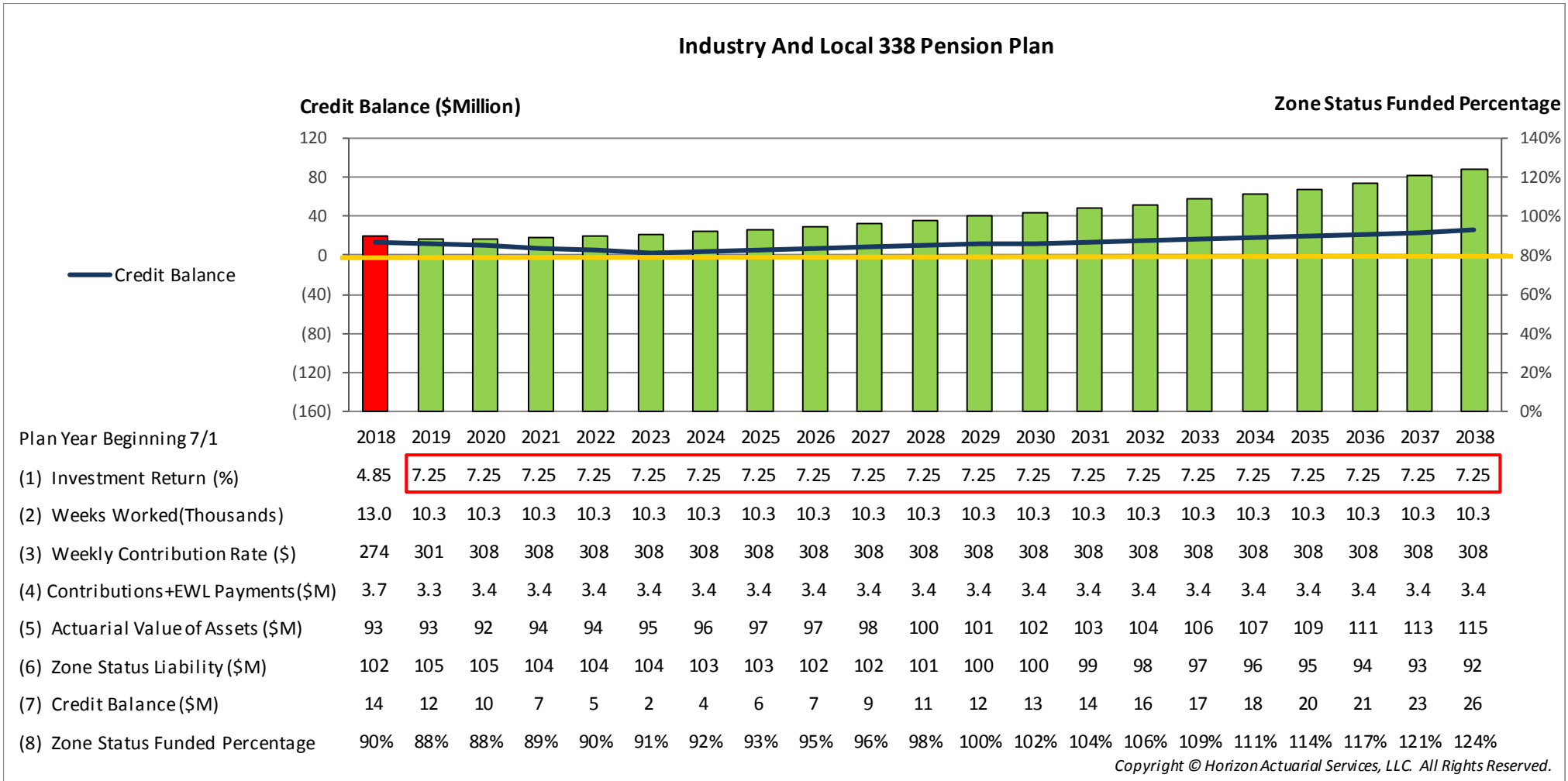
Changes in Expected Returns

- **Average assumptions change each year**
 - Mostly driven by changing return expectations
 - Changes in survey participants is also a factor
- **Focus on sustained trends**
 - It is generally not appropriate to change the investment return assumption each year
 - More appropriate to consider sustained trends when evaluating and updating assumption
- **The following graphs show the survey average results for the past five years**
 - Changes in individual plan results shown below may also be driven by changes in asset allocation



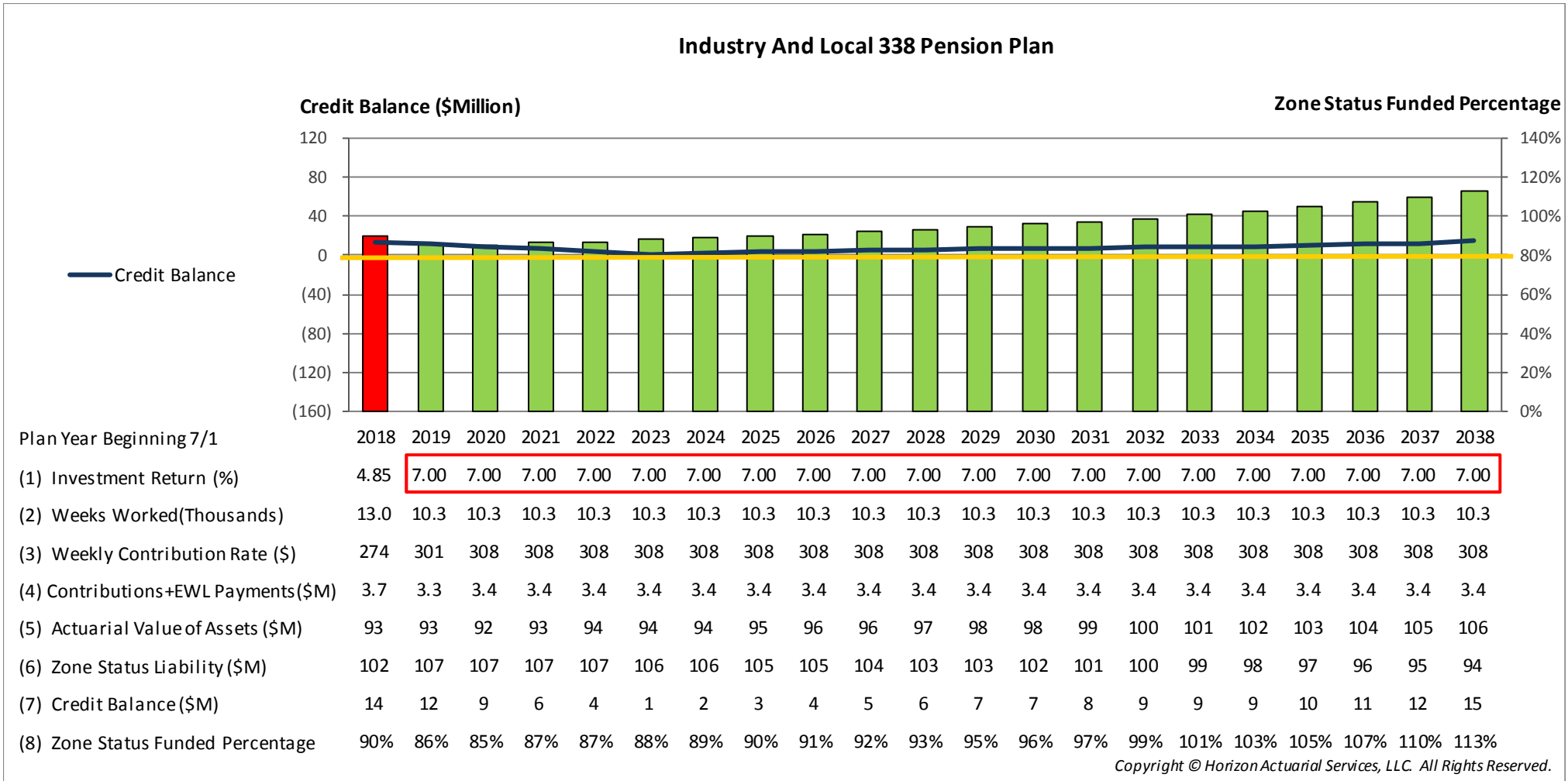
Investment Assumption Alternative: 7.25%

4.85% Return PYB 2018; 7.25% PYB 2019+ | 10,300 Thousand Weeks Worked beginning PYB 2019 |
Current CBA Contribution Increases only | Culinar Withdrawal Liability Payments Collected



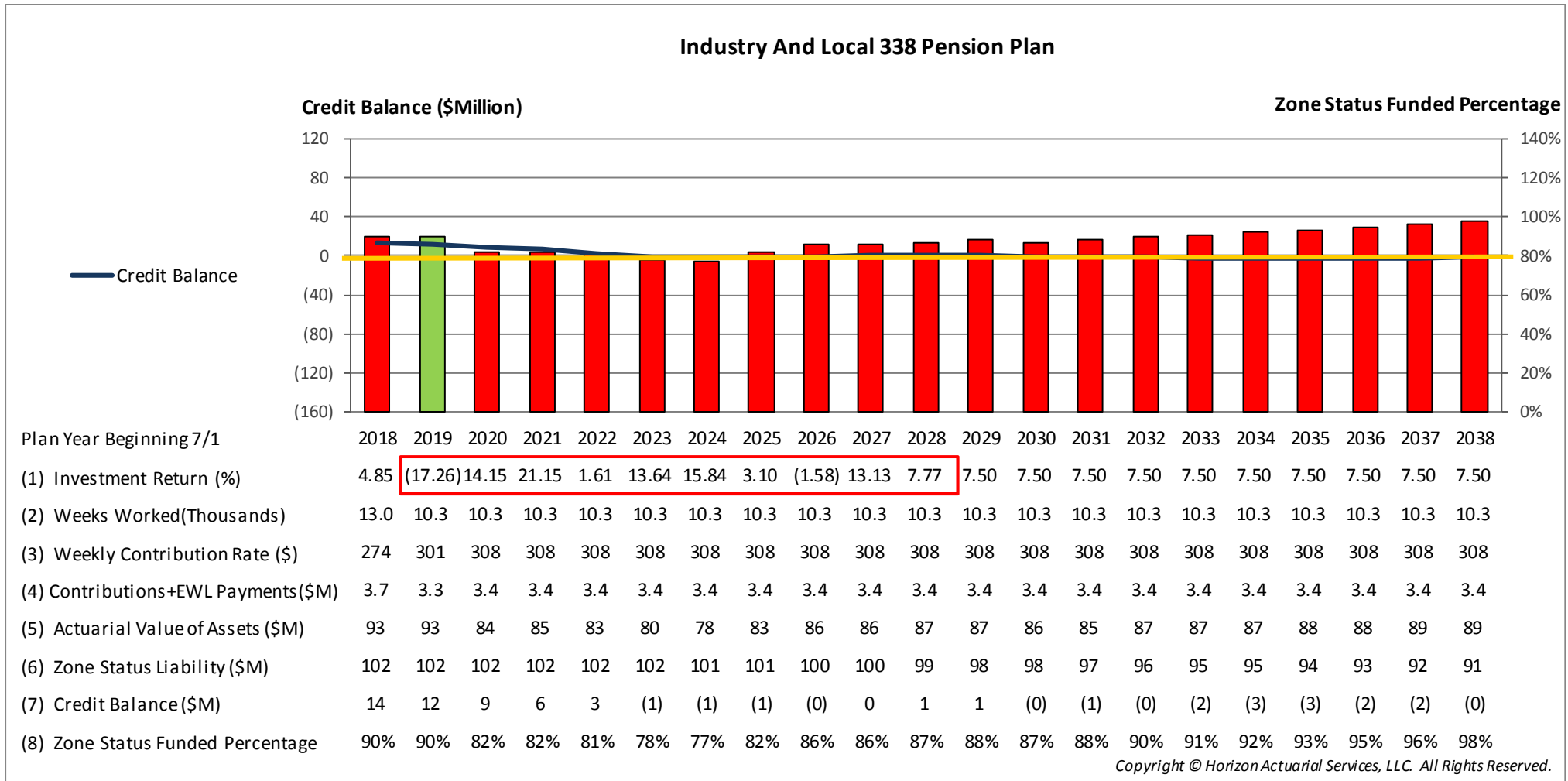
Investment Assumption Alternative: 7.00%

4.85% Return PYB 2018; 7.00% PYB 2019+ | 10,300 Thousand Weeks Worked beginning PYB 2019 |
Current CBA Contribution Increases only | Culinary Withdrawal Liability Payments Collected



Investment Return Sensitivity

Repeat 10 year returns 2009-2018 for 2019–2018 | 10,300 Thousand Weeks Worked beginning PYB 2019 |
Current CBA Contribution Increases only | Culinar Withdrawal Liability Payments Collected

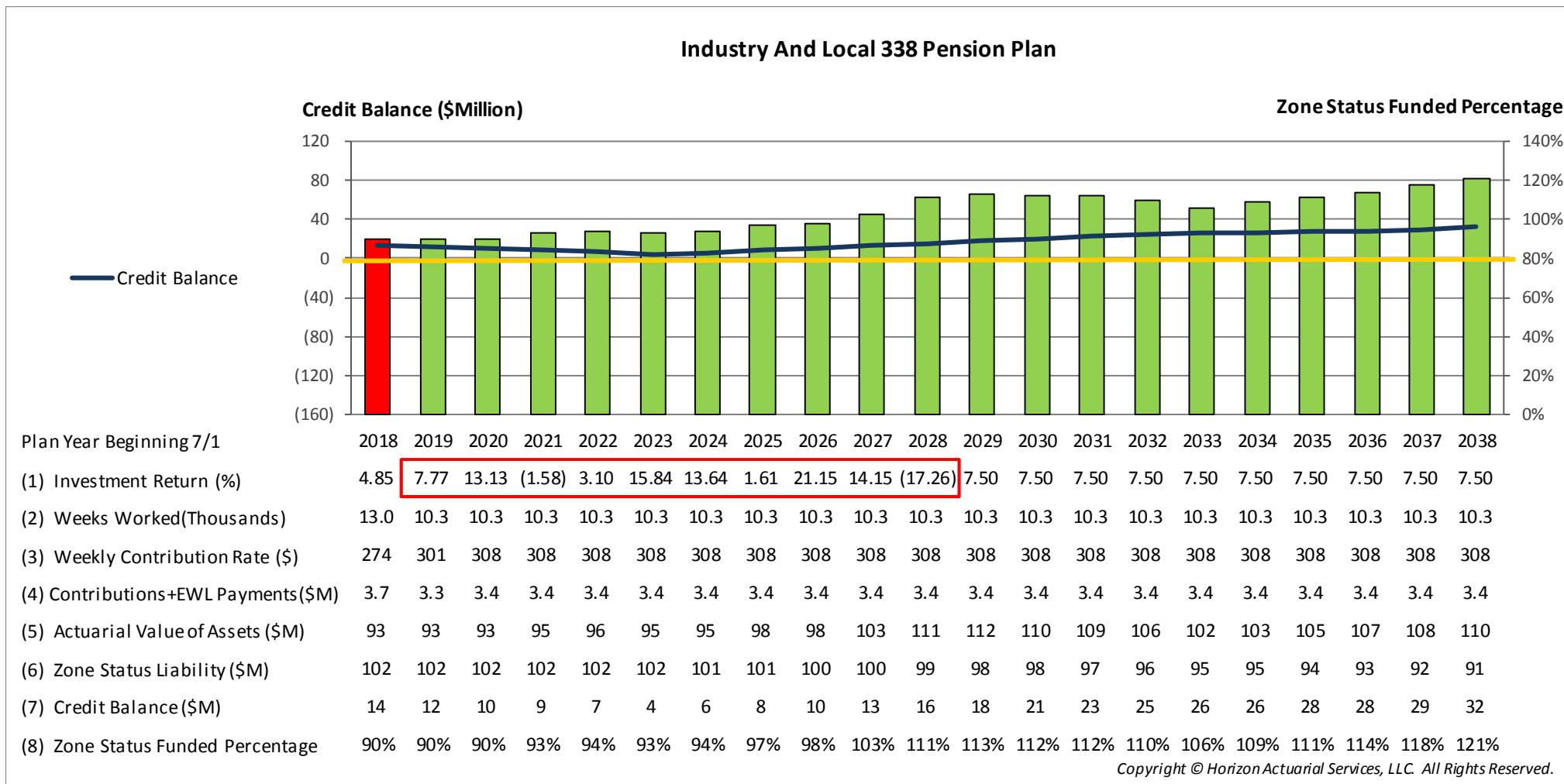


Notes

1) 10-year average return for assumed 2019 – 2028 = 6.59%

Investment Return Sensitivity

Repeat 10 year returns 2009-2018 for 2019–2018: Reverse Order | 10,300 Thousand Weeks Worked beginning PYB 2019 | Current CBA Contribution Increases only | Culinar Withdrawal Liability Payments Collected



Notes

1) 10-year average return for assumed 2019 – 2028 = 6.59%

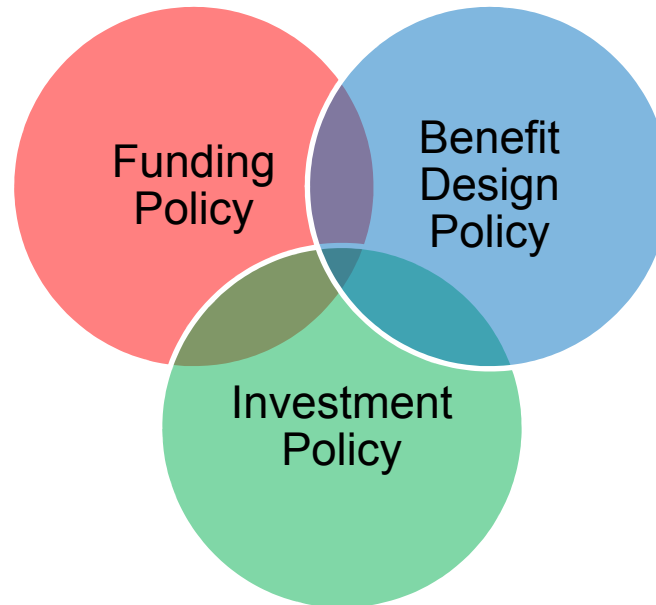
Summary: Pension Risk Discussion

- **The Plan is:**
 - Demographically mature
 - Has significant concentration risk (few employers)
 - Dependent on investment performance
- **Capacity for future corrective action is limited**
 - Further adjustments to benefits limited
 - Rehabilitation Plan eliminated all “adjustable benefits” and subsidies
 - Benefit accrual rate is 0.9% of contributions
 - Further increases in contribution rates

Funding Goals & Managing Pension Risk

How Can Risk Be Managed?

- Through these three interconnected policies:



- None of the three policies can operate effectively independently of the other two. Some examples:
 1. A more aggressive **investment policy** means greater return volatility and risk of underfunding...
 - ...increasing the need for a prudent **funding policy** to absorb adverse experience
 2. A **benefit design policy** that targets a specific income replacement level...
 - ...needs appropriate **funding** and **investment** policies to help stabilize contributions

Benefit Design Policy

- **A Benefit Design Policy addresses these questions (among others):**
 - Are the promised benefits adequate?
 - How are benefits allocated among participants?
 - Who has the investment risk for the benefit design?
 - Are lifetime benefits available? (the longevity risk)
- **Alternative Approaches for Benefit Design**
 - Traditional defined benefit
 - Current benefit design:
 - Accrual = 0.9% of contributions,
 - Payable at normal retirement age 65
 - Available before age 65 on an actuarially reduced basis
 - Defined contribution
 - Hybrid
 - Cash Balance
 - Variable Benefit
 - Composite – if enacted by legislation

Benefit Design Policy

■ Considerations

- Evaluate the allocation of risk among these plan types
 - How is risk shared between employers and participants?
- Consider legacy funding costs vs. the cost of future benefit accruals
 - Legacy benefit liabilities cannot be reduced by benefit design (unless the Plan is in critical status)
 - The “legacy benefits” can account for 75% or more of the total liability 15 years after a plan change
 - Thus, it can take many years for new policies to impact pension costs

Investment Policy

- **The Investment Policy is commonly the one policy that gets the most attention...**
 - How much investment risk is tolerable?
 - What is the optimal asset allocation?
 - Who controls the investments?
- **From the Industry & Local 338 Pension Fund Annual Funding Notice:**
 - The investment policy of the Plan is to maximize the total rate of return over the long term, subject to preservation of capital, by diversifying the allocation of capital among professional investment managers with complementary or diverse investment styles in domestic equity securities, domestic fixed income instruments and other asset classes as deemed prudent.

Funding Policy

- **A funding policy establishes a formal connection between contributions and benefits, including rules for:**
 - Benefit improvements and/or contribution reductions when experience is favorable, and
 - Benefit reductions and/or contribution increases when experience is unfavorable
- **ERISA requires funding policies, but policies are often minimally designed, simply to comply with the ERISA rule**
- **From the Industry & Local 338 Pension Fund Annual Funding Notice:**
 - The funding policy of the Plan is that the Plan is funded by contributions made by employers pursuant to collective bargaining agreements with Teamster Union Locals 445, 687 and 317, the local unions that represent the Plan's participants.

Funding Policy

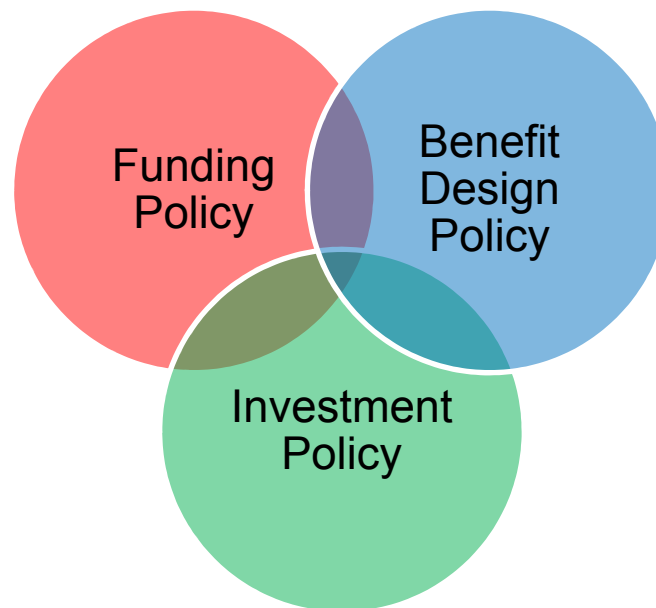
- **PPA rehabilitation plans and funding improvement plans are forms of “statutory funding policies”**
 - In effect, the Plan’s Rehabilitation Plan has served as its funding policy since 2017
- **Once the Plan emerges from critical status, a well designed funding policy can help guide the Plan’s operation and stabilize funding by establishing objective criteria for reaching defined objectives**
- **Possible objectives**
 - Meet ERISA minimum funding standards
 - Meet other PPA targets (e.g., remain in the “green zone”)
 - Establish an appropriate funding cushion
 - for example, to minimize the chance of funding shortfalls
 - Define when to take corrective action
 - Define when to consider benefit improvements (including restoration of prior reductions) and/or contribution reductions when experience is favorable, and
 - Define when to require benefit reductions and/or contribution increases when experience is unfavorable.

Connecting the Policies

- **An effective funding policy addresses the risks associated with the benefit design**
- **The investment policy must also be considered: If a key objective is to stabilize contributions and benefits, the greater the investment risk, the more conservative the funding policy needs to be**

Managing Risk – Next Steps

- **Define Trustees' objectives**
- **Use funding projections and “stress testing” to design the optimal benefit policy, funding policy, and investment policy**
- **Review tools of enforcement**
- **Document the policies**



2019 – 2020 Plan Year Timeline

2019 – 2020 Plan Year Timeline – PPA

Event	Deadline / Information	Latest Date
Actuarial Certification	90 days into plan year	Complete 9/27/2019
Notice of Critical Status (if applicable)	30 days after actuarial certification	N/A after Plan was Certified “Green” 7/1/2019
Review and Update Rehabilitation Plan (if applicable)	Rehabilitation Plan adopted 9/18/2017; Review annually during the Rehabilitation Period	N/A after Plan was Certified “Green” 7/1/2019
Rehabilitation Period	After expiration of contracts covering at least 75% of active participants, not later than first of plan year following second anniversary of adoption of RP	N/A after Plan was Certified “Green” 7/1/2019

2019 – 2020 Plan Year – Other Actuarial Information

Event	Deadline / Information	Latest Date
<i>Annual Funding Notice</i>	120 days after the end of the plan year	10/28/2019
<i>Schedule MB (Form 5500)</i>	Last day of the 7 th month following the end of the Plan Year (2½ month extension available)	1/31/2020 (w/o ext) 4/15/2020 (with ext)
<i>ERISA 104(d) Notice</i>	30 days after due date Form 5500 filing	3/1/2020 (w/o ext) 5/15/2020 (with ext)
<i>PBGC Premium Filing</i>	15 th day of the 10 th full calendar month in the Plan Year	4/15/2020
<i>Actuarial Valuation</i>	Data received, work in progress	N/A
<i>Review of Actuarial Assumptions</i>	In conjunction with the actuarial valuation	N/A

Appendix

Survey of Capital Market Assumptions: Overview

- **Capital market assumptions:**
 - Expected returns by asset class
 - Standard deviations by asset class
 - Correlation coefficient matrix
- **34 survey participants**
 - 28 advisors
 - 6 published white papers
- **Short-term vs. long-term:**
 - “Short-term” considered to be 10 years or less
 - “Long-term” considered to be 20 years or more
 - All 34 respondents provided short-term assumptions
 - 16 respondents also provided long-term assumptions

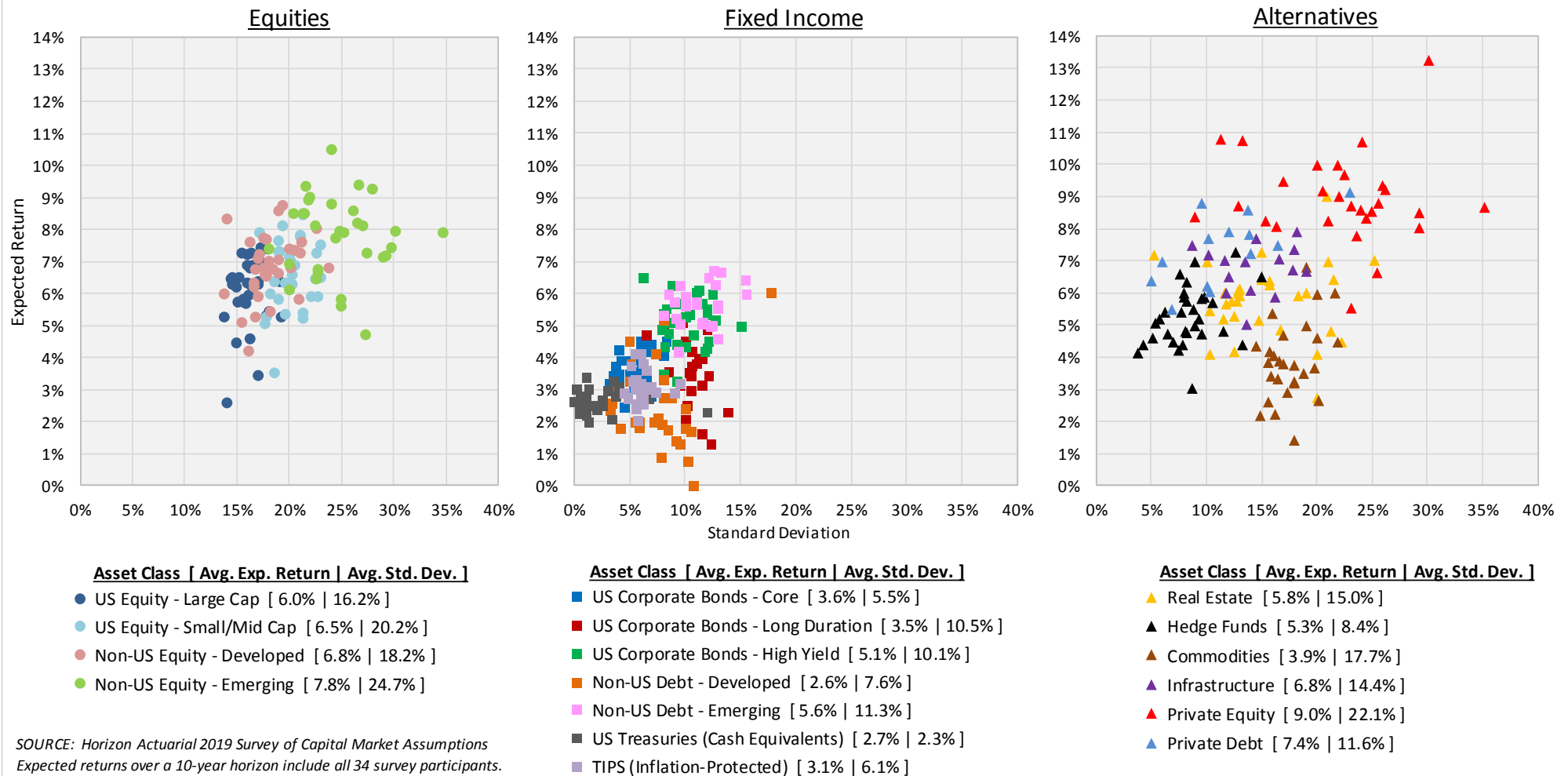
2019 Survey Participants	
<i>AJ Gallagher</i>	<i>Marquette Associates</i>
<i>Alan Biller</i>	<i>Meketa Investment Group</i>
<i>AndCo Consulting</i>	<i>Mercer</i>
<i>Aon Hewitt</i>	<i>Merrill Lynch Global Institutional Consulting</i>
<i>The Atlanta Consulting Group</i>	<i>Morgan Stanley Wealth Management</i>
<i>Bank of New York Mellon*</i>	<i>NEPC</i>
<i>BlackRock*</i>	<i>PFM Asset Management, LLC</i>
<i>Callan Associates</i>	<i>Research Affiliates, LLC*</i>
<i>Cambridge Associates</i>	<i>RVK</i>
<i>CapTrust</i>	<i>Segal Marco Advisors</i>
<i>Ellwood Associates</i>	<i>SEI</i>
<i>Envestnet</i>	<i>Sellwood Consulting</i>
<i>Goldman Sachs Asset Management</i>	<i>SunTrust*</i>
<i>Graystone Consulting</i>	<i>UBS</i>
<i>Investment Performance Services, LLC (IPS)</i>	<i>Verus</i>
<i>Janney Montgomery Scott LLC</i>	<i>Voya Investment Management*</i>
<i>J.P. Morgan Asset Management*</i>	<i>Willis Towers Watson</i>
* Assumptions obtained from published white paper	

The full report can be found at www.horizonactuarial.com.

2019 Survey: Distribution of Assumptions (10-yr)

2019 Survey: Distribution of Expected Returns and Standard Deviations

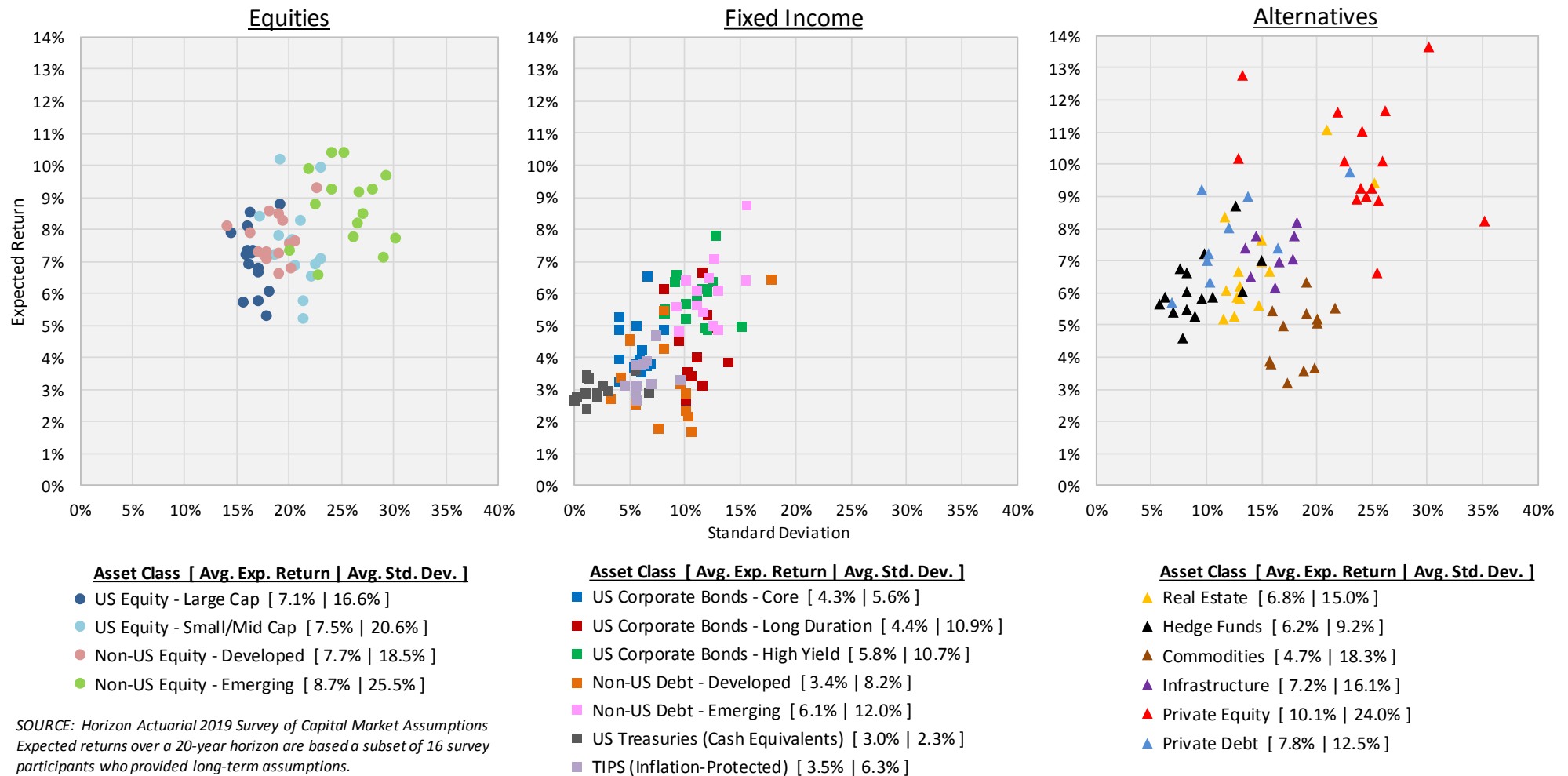
10-Year Horizon | Geometric Returns



For consistency and completeness, assumptions are based on a 10-year horizon.

2019 Survey: Distribution of Assumptions (20-yr)

2019 Survey: Distribution of Expected Returns and Standard Deviations
20-Year Horizon | Geometric Returns



The exhibit above shows a distribution based on a 20-year horizon for the subset of 16 advisors who provided longer-term assumptions.

2019 Survey: Average Assumptions

Horizon Actuarial 2019 Survey of Capital Market Assumptions

Average Survey Assumptions

Expected Returns

Asset Class	10-Year Horizon		20-Year Horizon		Standard Deviation
	Arith.	Geom.	Arith.	Geom.	
1 US Equity - Large Cap	7.26%	6.03%	8.34%	7.05%	16.17%
2 US Equity - Small/Mid Cap	8.45%	6.55%	9.52%	7.54%	20.15%
3 Non-US Equity - Developed	8.40%	6.83%	9.30%	7.70%	18.23%
4 Non-US Equity - Emerging	10.62%	7.77%	11.67%	8.67%	24.73%
5 US Corporate Bonds - Core	3.74%	3.58%	4.46%	4.30%	5.47%
6 US Corporate Bonds - Long Duration	4.07%	3.53%	4.97%	4.39%	10.50%
7 US Corporate Bonds - High Yield	5.60%	5.10%	6.38%	5.82%	10.06%
8 Non-US Debt - Developed	2.80%	2.56%	3.81%	3.43%	7.61%
9 Non-US Debt - Emerging	6.19%	5.57%	6.76%	6.06%	11.31%
10 US Treasuries (Cash Equivalents)	2.71%	2.66%	3.07%	3.03%	2.31%
11 TIPS (Inflation-Protected)	3.29%	3.10%	3.69%	3.49%	6.11%
12 Real Estate	6.95%	5.79%	7.94%	6.82%	15.03%
13 Hedge Funds	5.63%	5.27%	6.61%	6.18%	8.38%
14 Commodities	5.41%	3.90%	6.29%	4.68%	17.66%
15 Infrastructure	7.79%	6.78%	8.46%	7.24%	14.39%
16 Private Equity	11.34%	8.97%	12.82%	10.10%	22.05%
17 Private Debt	8.09%	7.37%	8.57%	7.76%	11.62%
Inflation	2.22%	2.21%	2.29%	2.29%	1.73%

Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	1.00																
2	0.86	1.00															
3	0.83	0.74	1.00														
4	0.72	0.67	0.78	1.00													
5	0.15	0.07	0.17	0.17	1.00												
6	0.13	0.07	0.14	0.13	0.84	1.00											
7	0.60	0.58	0.61	0.61	0.41	0.33	1.00										
8	0.20	0.12	0.32	0.29	0.53	0.50	0.23	1.00									
9	0.51	0.47	0.54	0.64	0.45	0.35	0.59	0.42	1.00								
10	(0.06)	(0.07)	(0.05)	(0.03)	0.23	0.17	(0.01)	0.20	0.07	1.00							
11	0.04	0.01	0.08	0.14	0.68	0.52	0.27	0.45	0.35	0.24	1.00						
12	0.48	0.49	0.46	0.41	0.16	0.15	0.42	0.15	0.33	0.03	0.15	1.00					
13	0.64	0.62	0.64	0.62	0.18	0.11	0.53	0.19	0.42	(0.02)	0.13	0.36	1.00				
14	0.31	0.30	0.38	0.42	0.10	0.04	0.32	0.22	0.31	0.02	0.22	0.27	0.38	1.00			
15	0.50	0.46	0.52	0.45	0.21	0.24	0.41	0.29	0.39	0.00	0.13	0.41	0.35	0.25	1.00		
16	0.75	0.70	0.70	0.63	0.05	0.07	0.50	0.11	0.39	(0.06)	0.00	0.43	0.58	0.32	0.40	1.00	
17	0.40	0.39	0.41	0.41	0.21	0.30	0.55	0.19	0.43	0.01	0.14	0.30	0.40	0.22	0.27	0.47	1.00

SOURCE: Horizon Actuarial 2019 Survey of Capital Market Assumptions

Expected returns over a 10-year horizon include all 34 survey participants.

Expected returns over a 20-year horizon are based a subset of 16 survey participants who provided long-term assumptions.

- Each of the assumption sets was given equal weight in determining the average assumptions.
- For reference, expected returns are shown over 10-year and 20-year horizons.
- Expected returns are also provided on both an arithmetic basis (one-year average) and geometric basis (multi-year annualized).
- The standard deviations (volatilities) and correlations apply to both arithmetic and geometric expected returns.

Projection Roadmap – No Additional Rate Increases

Scenario	Investment Return PYE 2020 / PYE 2021+	Weeks Worked Each year PYE 2019+	Zone Status 2020-2021 / 2021-2022	Zone Status 2038- 2039	FSA Balance 6/30/2039	% Funded 7/1/2038	Weekly Contrib Rate 7/1/2038
1 PPA Zone Certification 7/1/2019	7.50% / 7.50%	10,300	Green / Green	Green	\$38M	136%	\$308
2 Friesland Withdraws (30% Active Decline), Friesland pays Wdl Liab	7.50% / 7.50%	7,200	Green / Green	Green	\$46M	146%	\$329
3 30% Active Population Decline No Associated Wdl Liab Pmts	7.50% / 7.50%	7,200	Green / Green	Green	\$13M	112%	\$329
4 Corrective Action Example Lower Return in 2019	-7.50% / 7.50%	10,300	Green / Yellow	Red	-\$15M	83%	\$308
5 Investment Assumption Alternative 7.25% Interest Rate	7.25% / 7.25%	10,300	Green / Green	Green	\$26M	124%	\$308
6 Investment Assumption Alternative 7.00% Interest Rate	7.00% / 7.00%	10,300	Green / Green	Green	\$15M	113%	\$308
7 Investment Return Sensitivity	Repeat 10 year rtns 2009-2018 for 2019-2018	10,300	Red / Red	Red	\$0M	98%	\$308
8 Investment Return Sensitivity	Repeat 10 year rtns 2009-2018 for 2019-2018: Reverse Order	10,300	Green / Green	Green	\$32M	121%	\$308

Data, Assumptions, Methods and Provisions

- **Please refer to the Horizon Actuarial Services July 1, 2018 Actuarial Valuation Report for more detail.**

Projection Assumptions and Methods

- **Unless otherwise stated,**

- The projection assumptions, methods, data and plan provisions used are the same as those used for the July 1, 2018 actuarial valuation
 - No future expected gains or losses other than those attributable to investment returns, as applicable
- No assumption changes to account for possible changes to participant behavior due to benefit changes made by the RP
- No changes to valuation methods / no amortization extensions.
- Investment Earnings
 - 4.85% return on assets for the plan year ending June 30, 2018
 - 7.50% per year, net of investment-related expenses, thereafter
- Operating Expenses: \$375,000 for the plan year beginning July 1, 2018, increasing 3.0% per year

Other assumptions may be reasonable and could produce different results. Additional scenarios available upon request.

Projection Assumptions

- **Contributions:**

- Work Levels
 - 10,300 total weeks each plan year beginning July 1, 2019
- Contribution Rates
 - <1% of weeks worked under contracts that are expected to renew in PYB 2018
 - Westchester Local 860
 - 16% of weeks worked under contracts that are expected to renew in PYB 2019
 - LP Transport
 - 81% of weeks worked under contracts that are expected to renew in PYB 2020
 - HP Hood / Crowley, Montefiore New Rochelle, Friesland
 - 3% of weeks worked under contracts that are expected to renew in PYB 2021
 - Paraco
- All contribution rate increases are benefit-bearing
- All contribution rate increases are compounded

Other assumptions may be reasonable and could produce different results. Additional scenarios available upon request.

Historical Contribution Rates by Contract

Employer	Base Rate	As of Plan Year Ending									
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
College of New Rochelle	\$ 110.44	\$ 130.40	\$ 143.60	\$ 158.00	\$ 174.00	\$ 174.00	\$ 174.00	\$ 174.00	\$ 174.00	\$ 208.95	\$ 269.04
Crowley LaFargeville	130.00	154.00	169.00	186.34	204.97	225.47	248.00	272.79	286.43	303.98	322.67
Culinart	108.44	128.08	141.08	154.98	170.48	187.53	206.28	226.91	226.91	267.15	267.15
Friesland Campina	100.12	121.13	133.25	146.57	161.23	177.35	195.09	205.09	215.09	247.60	242.64
LP Transport	160.00	160.00	176.00	192.00	208.00	228.80	251.60	276.80	290.80	322.75	322.75
Montefiore New Rochelle	120.12	145.33	159.86	175.85	193.44	212.78	234.06	234.06	234.06	251.61	270.30
Paraco Gas	124.00	140.00	148.00	156.00	172.00	188.00	206.80	227.60	227.60	245.15	263.84
Westchester L860	130.15	154.17	169.59	186.55	205.21	205.21	205.21	205.21	205.21	243.28	243.28

Notes

- 1) Effective July 1, 2016, all contributions (and future rate increases, if any) are benefit-bearing.
- 2) Contribution rates for 2018 include surcharges for College of New Rochelle, Culinart, Friesland Campina, Westchester L 860

Contribution Increases Required by the Rehabilitation Plan

Year	Rate Increase
1	17.55
2	18.69
3	19.91
4	21.20
5	22.58
6	24.05
7	25.61
8	27.27
9	29.05
10	30.93

Contract	Increases when RP was Initially Effective	Number of 10 Increases Anticipated by the RP Remaining	Comments
College of New Rochelle	2018 - 2019 (2 Increases)	8 (beginning 4/2020)	Withdrawn 8/2019
Crowley LaFargeville	2017 - 2019 (3 Increases)	7 (beginning 11/2020)	
Culinart	2018 - 2019 (2 Increase)	8 (beginning 4/2020)	Withdrawn 6/2019
Friesland Campina	2018 - 2020 (2 Increases)	8 (beginning 1/2021)	
LP Transport	2018 (1 Increase)	9 (beginning 8/2019)	
Montefiore New Rochelle	2018 - 2019 (3 Increases)	7 (beginning 11/2020)	
Paraco Gas	2018 - 2020 (3 Increases)	7 (beginning 2/2021)	
Westchester L860	N/A	10 (beginning 4/2018)	

- 1) All contributions are benefit-bearing, effective beginning July 1, 2016.
- 2) The contribution rate increases shown are to be applied cumulatively such that the increase applicable for a given year is applied in addition to increases for all prior years.

Actuarial Certification

We have prepared this actuarial report for use by the **Industry & Local 338 Pension Plan** (the “Plan”). This report has been prepared solely for the benefit of the Plan, and it is not complete without the accompanying discussion with a representative of Horizon Actuarial Services, LLC. This report should not be distributed to others not affiliated with the Plan or relied upon by any other person without prior written consent from Horizon Actuarial Services, LLC.

In preparing this report, we have relied on all the information and data provided by the Plan, including plan provisions and asset information, as being complete and accurate. We have not independently verified the accuracy or completeness of the data or information provided, but we have reviewed the data for reasonableness to the extent that we believe appropriate based on the purpose for which it has been used.

The analysis contained in this report may involve actuarial calculations. Actuarial calculations require that we make assumptions about future events. We have used assumptions that we believe are reasonable and appropriate for the purpose for which they have been used. Other assumptions may also be reasonable and could result in substantially different results. Because it is not possible or practical to model all aspects of a situation, we may use summary information, estimates, or simplifications of calculations to facilitate the modeling of future events. We may also exclude factors or data that are immaterial in our judgment.

We have not performed a detailed analysis of the potential effects of risk on the Plan’s future financial condition, but have included a discussion of some risks that may significantly affect the Plan. A more detailed assessment of the risks could provide the Trustees with a better understanding of the risks inherent in the Plan and may include additional scenario testing, sensitivity testing, stress testing and stochastic modeling.

Future events and actual experience will vary from any assumptions we have used, and calculations prepared with actual data will vary from estimates or summaries used for modeling purposes. Actual future results will differ from our projections. As these differences arise, contributions and/or benefits may need to be adjusted to take these changes into account.

In our opinion, any methods, assumptions, and calculations are in accordance with the applicable provisions of the Internal Revenue Code and ERISA, and the procedures followed and presentation of results conform with generally accepted actuarial principles and practices. The undersigned consultants of Horizon Actuarial Services, LLC with actuarial credentials meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. There is no relationship between the Plan and Horizon Actuarial Services, LLC that affects our objectivity.



Stanley I. Goldfarb, FSA, EA, MAAA
Actuary and Managing Consultant



Mary Ann Dunleavy, ASA, EA, MAAA
Consulting Actuary