Actuarial Valuation & Levy Adequacy Analysis

FPDR

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JANUARY 28, 2025

Milliman

Introduction

- Milliman has completed its June 30, 2024 actuarial valuation of the FPDR program
  - Actuarial valuations are performed biennially
- We have also completed an analysis assessing the likelihood that the permitted levy under the City Charter will be adequate to fund the FPDR program, including contributions to Oregon PERS for FPDR Three members
  - The analysis can be used by interested parties to assess the magnitude and potential volatility of future FPDR levies and to quantify several likely economic sources of levy volatility

Basis of Valuation and Levy Modeling

- The previous iterations of valuation and levy modeling were performed as of June 30, 2022
- Changes to modeled benefit provisions since prior work
  - Oregon PERS OPSRP normal retirement age reduced from age 60 to 55
  - Oregon PERS change also affects FPDR Three disability retirement age
- Assumption changes since June 30, 2022:
  - Discount rate updated in accordance with previously adopted assumption (affects actuarial valuation present value liability calculations, but not levy modeling)
  - FPDR Two COLA assumption increased to 2.0% annual COLA for all service
  - Mortality update in accordance with previously adopted assumption (modest effect)
  - Updated Real Market Value (RMV) for property subject to taxation (affects levy modeling, but not actuarial valuation calculations)
  - Additional assumptions underlying levy modeling are detailed in the Appendix

Actuarial Valuation Results

Valuation – Uses & Limitations

- The actuarial valuation will provide the basis for two fiscal years of financial statement reporting information for both FPDR and the City of Portland
- Actuarial valuation results as of June 30, 2024 will be rolled forward for use in financial reporting at June 30, 2025 and June 30, 2026
- The pay-as-you-go structure of FPDR benefits means that the actuarial valuation is <u>not</u> used for:
  - Establishing the funded status of the FPDR program
  - Determining an actuarially calculated pre-funding contribution rate

Projected Pension Benefit Payments

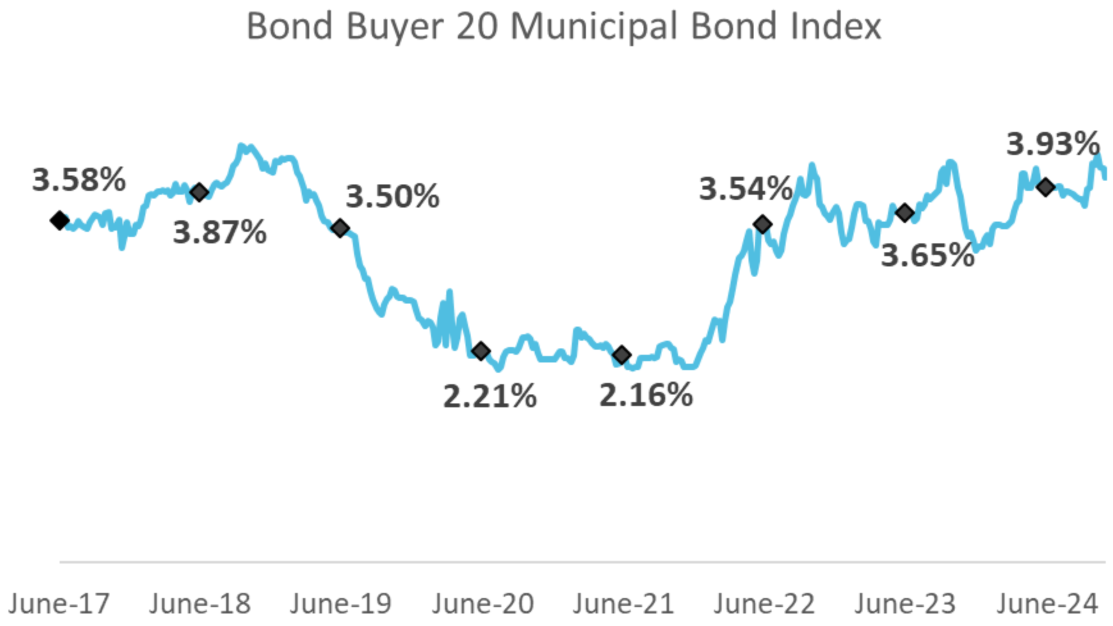
- An actuarial valuation is a very long-term calculation model
  - In total, as of June 30, 2024 retired and disabled FPDR members and their beneficiaries were receiving retirement pensions and long-term disability income replacement payments of approximately $13 to $14 million per month
  - In our actuarial valuation model, those payments are forecast to increase for the next 12 years on a non-inflation adjusted basis
    - The subsequent decline is gradual, with payments not decreasing to current levels (in non-inflation-adjusted dollars) until around the year 2055
- Given the long-term nature of the model, assumptions play a key role in the calculations

2024 Valuation Assumptions

- This valuation generally reflects the same assumptions used in the June 30, 2022 actuarial valuation
  - Based on the 2020 actuarial experience study, presented in September 2020
- Certain assumptions updated for June 30, 2024
  - Discount rate: assumption is defined by reference to municipal bond index rate; valuation uses the index's market rate as of the actuarial valuation date
  - FPDR Two COLA: updated to assume the maximum 2.0% COLA is provided for all service
    - Previous assumption was a blend of 2.00% for service before October 8, 2013 and 1.75% for service thereafter
  - Mortality: in 2014 the Board approved use of the Oregon PERS police & fire mortality assumption; FPDR assumption updated to maintain that link (modest effect)

2024 Valuation Assumptions

- Discount Rate
  - Based on Bond Buyer Index shown at right
  - 6/30/2024 rate of 3.93% is higher than the previous valuation date of 6/30/2022
    - Higher discount rate means lower liabilities



- 27-pay-period adjustment
  - About 78% of retirements in eight years prior to valuation were in favorable months
  - Results affected by high number of retirements at key dates during the pandemic
  - We maintained the current assumption of 75% and will continue to monitor

Benefit Provisions Valued

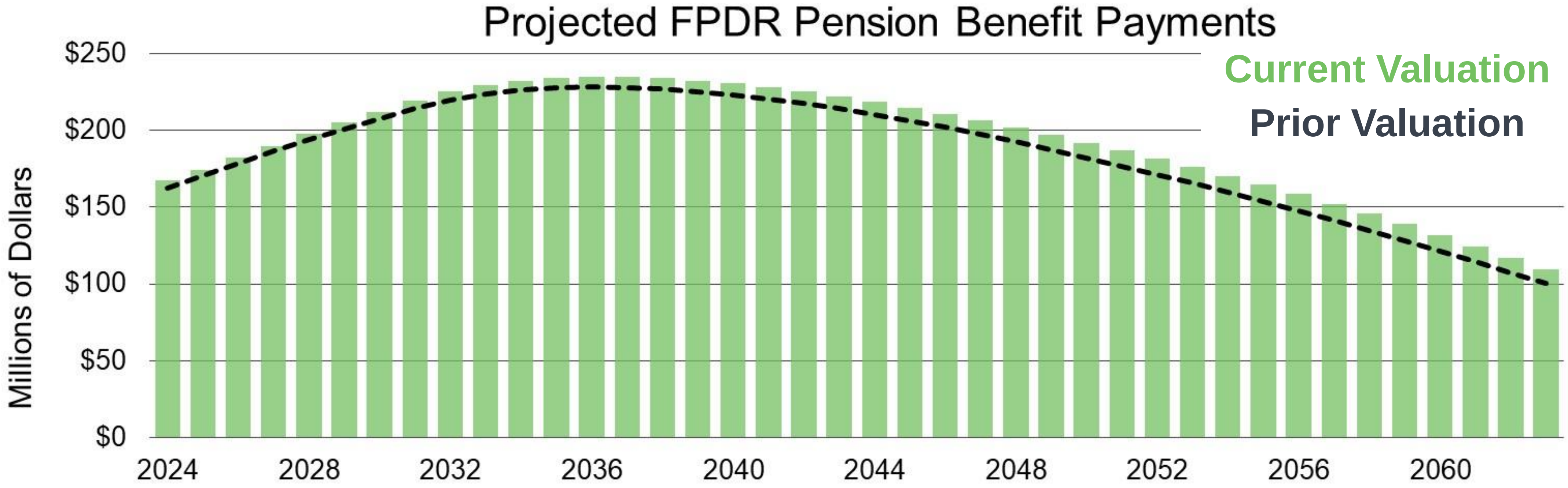
- There were no material changes in benefit provisions for the pay-as-you-go FPDR benefits valued compared to the prior valuation
- As discussed, *assumed* level of future FPDR Two COLAs was updated compared to the prior valuation
  - Assumption does not affect actual future COLA – Board retains full discretion to adopt each year’s COLA, within the Charter parameters
- In addition, changes were made to valuation of FPDR Three disability and death benefits to reflect recent changes to Oregon PERS
  - House Bill 4045 lowered the normal retirement age for OPSRP Police & Fire members from age 60 to 55 effective January 1, 2025
    - Members can still qualify for earlier unreduced retirement if age 53 with 25+ years of service
  - This change increases the value of benefits FPDR Three members and their beneficiaries can receive through Oregon PERS, but reduces the liability for their FPDR disability benefits
    - FPDR disability benefits end at PERS normal retirement age

Actuarial Valuation - Development of Liabilities

- The valuation calculates projected future FPDR benefit payments by year for the FPDR membership group as of the actuarial valuation date
  - The projections combine the member and beneficiary census data with all the long-term actuarial assumptions
- Those projected future year-by-year payments are then converted into a net present value as of the actuarial valuation date using a discount rate assumption
- A *cost allocation method* attributes a portion of the overall net present value for current actives to their service already performed as of the actuarial valuation date
  - This is called the ***actuarial accrued liability*** for the actives
- The portion of the net present value attributed to the upcoming year is called the ***normal cost*** for active members

Actuarial Valuation – Projected Benefits

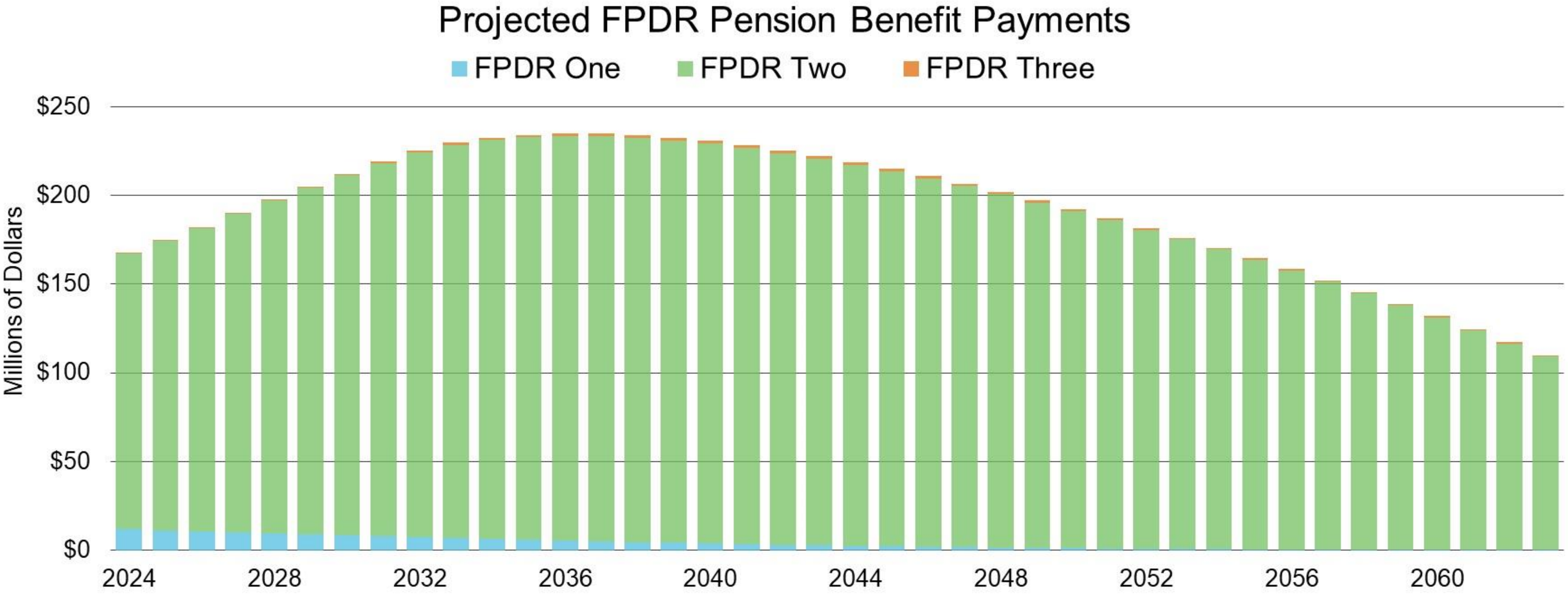
- Below are projected FPDR pension benefit payments on a non-inflation adjusted basis for the two most recent valuations



- Benefit payments projected to increase for 12 years; decrease thereafter
- Projected benefit payments are higher than the prior actuarial valuation due to higher actual salary increases and higher assumed COLAs for FPDR Two

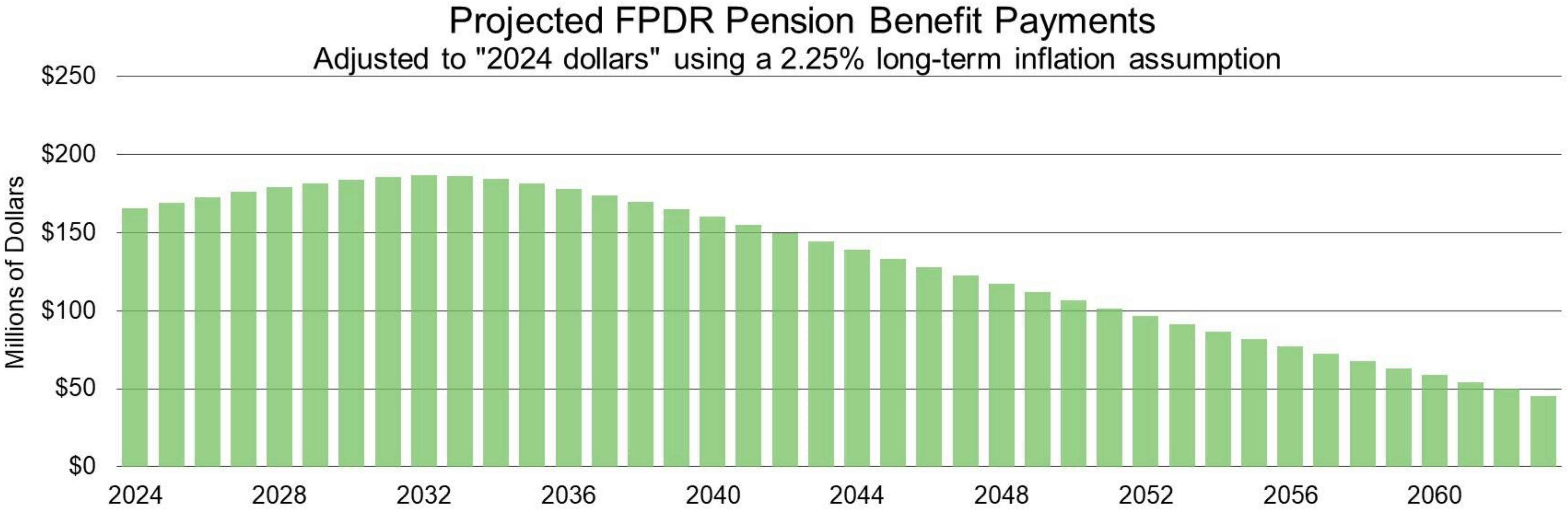
Actuarial Valuation – Projected Benefits

- Most projected benefit payments are associated with FPDR Two members



Actuarial Valuation – Projected Benefits

- This chart shows this valuation's projected payments on an inflation-adjusted basis using a long-term inflation assumption



- Once almost all FPDR Two members have retired, benefits will then begin to decrease over time when measured on this inflation-adjusted basis

Actuarial Valuation Results

($ in millions)	6/30/2022 Valuation	6/30/2024 Valuation
Discount Rate	3.54%	3.93%
Cost Allocation Method	Entry Age Normal	Entry Age Normal
Actuarial Accrued Liability	$3,865.0	$3,907.9
Normal Cost	$66.6	$54.3
Projected Base Pay for Next Year	$169.8	$187.1

- A 3.93% discount rate was used for this valuation
  - Same discount rate used for June 30, 2024 financial reporting
  - Reflects 20-year municipal bond index, per GASB financial reporting standards
  - Discount rate is higher than at previous valuation, lowering Actuarial Accrued Liability (as detailed on the next slide) and Normal Cost
- Projected base pay reflects the active member population on the actuarial valuation date, and does not reflect actual pay experience or turnover after that date

Actuarial Valuation Results

Actuarial Accrued Liability Changes

($ in millions)	Actuarial Accrued Liability
6/30/2022 Actuarial Accrued Liability	$3,865.0
Expected increase	95.5
Assumption change – discount rate	(209.0)
Assumption change – FPDR Two COLA	36.5
Experience (gain)/loss – salary	91.5
Experience (gain)/loss – mortality	13.1
All other sources	15.3
6/30/2024 Actuarial Accrued Liability	$3,907.9

Higher discount rate

- More details can be found in our formal actuarial valuation report
  - "Expected increase" is the net effect of 1) additional service performed from 2022 to 2024; 2) interest as each future year's projected benefits payments draw closer to time of payment; 3) benefit payments made between the two dates

Pay-As-You-Go Funding for FPDR

- Benefits paid from the FPDR trust are funded on a “pay-as-you-go” basis
  - Charter limits levy assessment to amount required for annual payments
- This contrasts with “pre-funding” approach used for most pension plans, where contributions are systematically collected and invested over time to pay for future benefits
- With FPDR Three members in OPSRP (a pre-funded program), FPDR is slowly transitioning from entirely pay-as-you-go to primarily pre-funded
  - An alternative approach to transition more quickly would be to also pre-fund benefits paid by the levy (FPDR One and Two benefits along with death and disability benefits for FPDR Three)
  - Pre-funding more quickly would be expected to result in overall savings in the long run, but would require increases to annual FPDR/levy costs during the pre-funding period
  - We understand that changing the funding structure would require Portland voters to approve a change to the City Charter, along with establishment of a funding policy, investment policy, and more

Levy Adequacy Modeling

Levy Analysis
Total Requirements Calculation

- Our model includes separate components to develop the ***Total Requirements*** for FPDR
  - ***Pay-as-you go costs subcomponent***
    - FPDR One and FPDR Two retiree payments, death and disability benefits, and disability-related medical reimbursements
    - FPDR Three death, disability and disability-related medical
    - Administrative and operating expenses for the program
  - ***Pre-funded costs subcomponent*** (charged on FPDR Three payroll)
    - Variable employer contributions to the Oregon PERS (PERS) defined benefit program, in which FPDR Three members are eligible for OPSRP benefits
      - Set by the PERS Board, and includes a charge for the value of benefits currently being earned and a shortfall amortization charge for PERS unfunded liability
      - Reflects changes made in House Bill 4045 from the 2024 legislative session
    - Fixed 9% of payroll contribution to the account balance-based Individual Account Program (IAP) administered by PERS

Effect of Transition to FPDR Three

- During the projection period of our levy adequacy analysis, the FPDR levy will be funding two generations of FPDR members simultaneously
  - FPDR One and FPDR Two members funded on a pay-as-you-go basis during their retirement years
  - Pre-funding of FPDR Three members' retirement benefits during their working careers
- In addition, disability and administrative costs are funded on a pay-as-you-go basis
- Higher levies and near-term costs are expected during a transition from a pay-as-you-go system to a pre-funded system

Effects of 2006 City Charter Reform

- Ultimately, the long-term cost of any benefit program is:

  Cost = Benefits Paid + Administrative Expenses – Investment Earnings

- Effects of the 2006 City Charter reform on long-term cost are:
  - Decreased FPDR Three benefit levels, when compared to FPDR Two
  - The pre-funded nature of FPDR Three benefits creates the potential for investment earnings, which lower long-term cost
- The cost-saving effects of the 2006 reform accrue very slowly, with the most dramatic effects likely to occur decades after the enactment of reform

Variability in Levy Adequacy Model Analysis

- A levy adequacy analysis is not a guarantee of what will occur, and our model accordingly attempts to illustrate the potential variability of outcomes in some areas
- In our model, the two large factors that drive levy variability are actual:
  - Changes in Real Market Value (RMV) that deviate from the baseline forecast
  - Oregon PERS future investment experience varying from baseline forecast
    - Variability due to this factor increases over time as a greater percentage of total payroll becomes FPDR Three
- In many of the poor economic scenarios modeled, low RMV growth and poor PERS investment results are linked, leading to a leveraged upward effect on the levy rate calculated as a fraction of RMV

Basis for the Levy Adequacy Model

- June 30, 2024 FPDR member demographic census
- Benefit provisions as reflected in the June 30, 2024 valuation
- RMV provided by the City of $173.6 billion as of January 2024, which was used in the 2024 levy request to fund FPDR for the 2024-2025 fiscal year (also known as fiscal 2025)
- RMV growth from 2024 to 2025 of **-3.0%** and median annual growth of **4.0%** in subsequent years, based on input from the City of Portland's economist
  - A wide variety of potential RMV growth patterns were modeled
- A financial model with varying investment returns to project future Oregon PERS contributions using the most recent valuation and estimated 2024 PERS investment returns of +6.61%

Interpreting Analysis Results

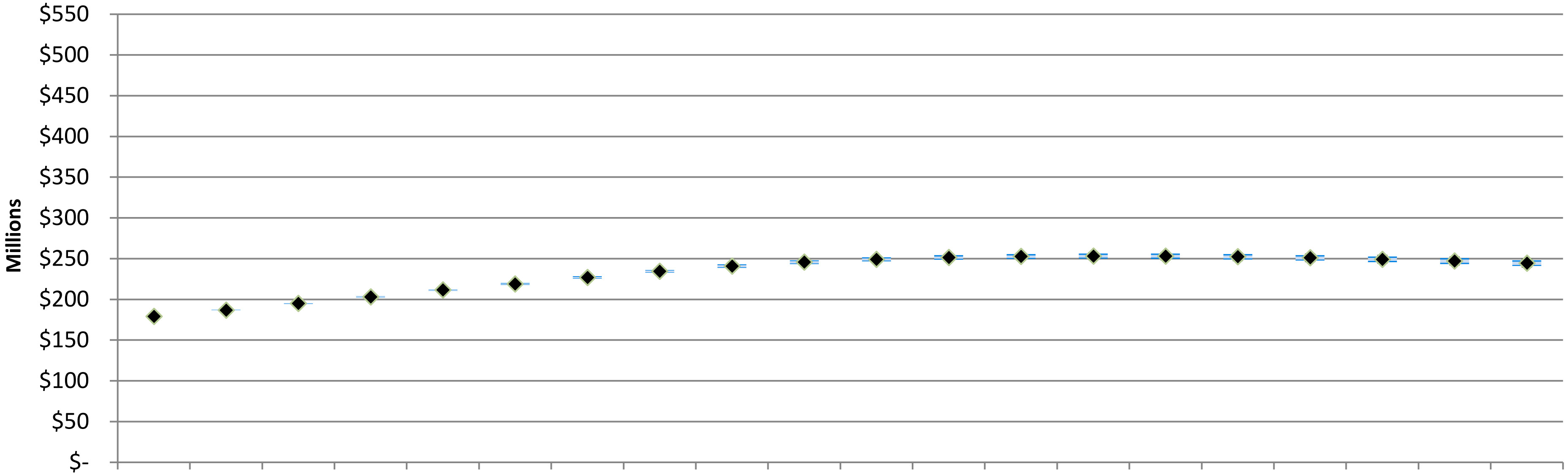
- Results are shown as a probability distribution, rather than a single amount
  - The distribution is based on a stochastic simulation using 10,000 economic scenarios
    - Scenarios were developed by Milliman’s national team of credentialed investment professionals that specialize in capital market models
- In the charts, the dots represent median outcomes
- We graphically display results from the 5th to 95th percentiles, so ten percent of model outcomes fall outside of the depicted range

Sources of Levy Volatility Not Modeled

- The levy adequacy analysis model depicts volatility associated with inflation, RMV changes and Oregon PERS investment returns, but does not include all potential sources of volatility
- Other potential sources of volatility not modeled include
  - Potential correlated effects of market conditions on levels of tax compression and/or levels of tax delinquency
  - Effects of Oregon property tax law changes and/or new levies
  - Demographic experience different from assumption (e.g., retirement, retiree life expectancy)
  - Growth in FPDR workforce or change in workforce composition
  - Changes to Oregon PERS assumptions and methodology for setting employer contribution rates
  - Future FPDR Two COLAs (determined by FPDR Board) different from assumption

Total Requirements
Pay-As-You-Go Costs Subcomponent

- Relatively predictable; increasing until essentially all FPDR Two actives are retired; FPDR Three disability and inflation-linked values of future FPDR Two benefits add volatility in later years

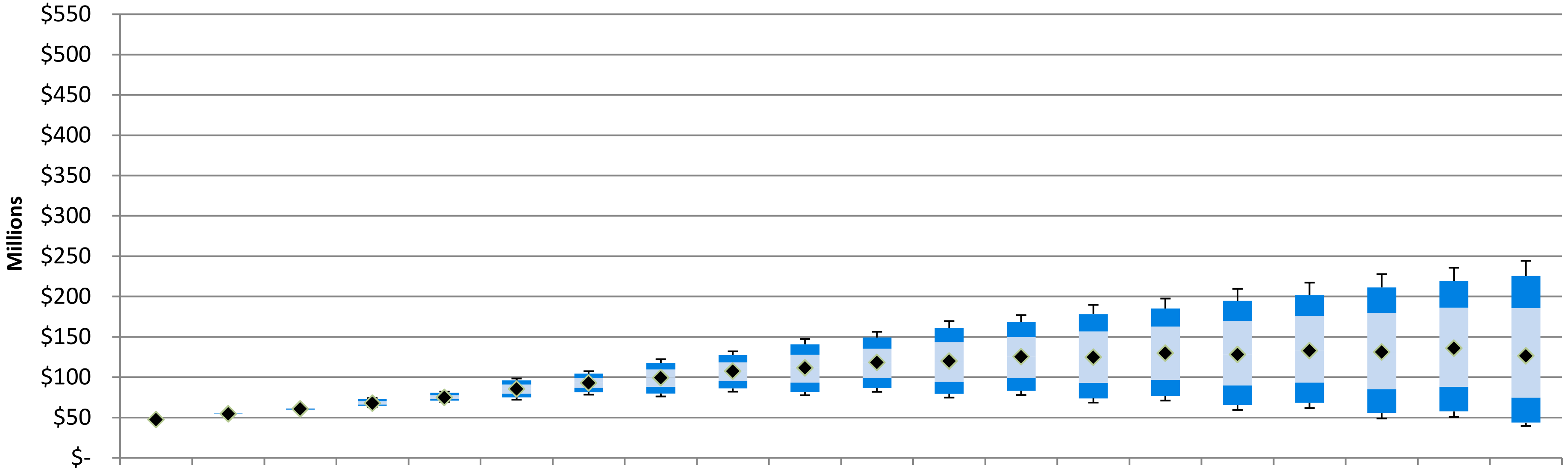


FY Ending 6/30		2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
5th	–	179.1	187.0	195.4	203.9	212.6	220.5	228.7	236.6	243.5	248.7	252.4	254.9	256.3	257.0	257.1	256.5	255.3	253.6	251.7	249.2
10th		179.1	187.0	195.3	203.7	212.3	220.2	228.3	236.1	242.9	248.1	251.7	254.1	255.5	256.1	256.1	255.5	254.3	252.6	250.6	248.1
25th		179.1	186.8	195.1	203.4	211.9	219.6	227.6	235.3	241.9	246.9	250.4	252.8	254.0	254.6	254.5	253.9	252.7	250.9	248.8	246.3
50th	●	179.1	186.7	194.8	203.0	211.4	218.9	226.8	234.4	240.8	245.7	249.1	251.3	252.5	253.0	252.8	252.1	250.9	249.1	246.9	244.4
75th		179.1	186.6	194.6	202.7	210.9	218.3	226.0	233.4	239.8	244.5	247.8	249.9	251.0	251.4	251.2	250.4	249.1	247.3	245.1	242.5
90th		179.1	186.5	194.3	202.3	210.4	217.8	225.3	232.6	238.8	243.4	246.6	248.6	249.6	250.0	249.7	248.9	247.5	245.7	243.5	240.9
95th	–	179.1	186.5	194.2	202.1	210.2	217.4	224.9	232.2	238.3	242.7	245.9	247.9	248.9	249.2	248.9	248.0	246.7	244.8	242.6	239.9

Includes administrative & operating expenses and short-term disability and medical costs

Total Requirements
Pre-Funded Costs Subcomponent

- Increases as the portion of payroll that is FPDR Three grows; more variable than pay-as-you-go costs since OPSRP contribution rates are linked to variable OPERS investment results

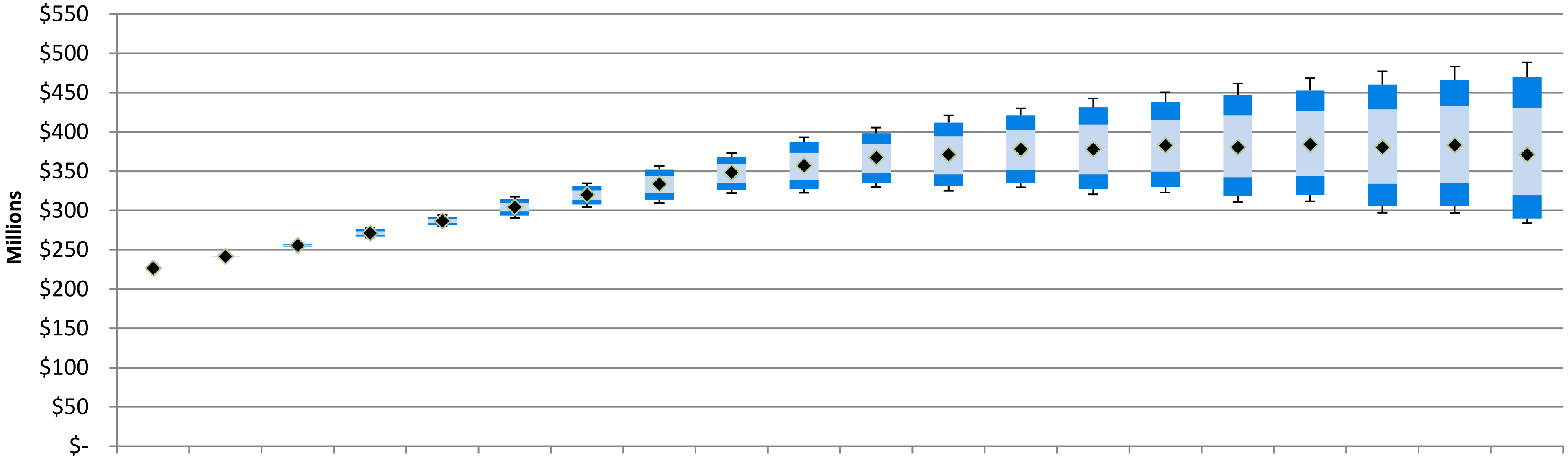


FY Ending 6/30	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
5th	47.3	55.3	62.2	74.1	82.1	98.4	107.4	122.3	132.0	147.3	156.2	169.5	177.0	189.7	197.5	209.5	217.2	227.8	235.7	244.2
10th	47.3	55.2	61.9	72.9	80.7	95.8	104.4	117.7	127.4	140.8	149.1	160.6	168.4	178.1	185.1	194.5	201.8	211.3	219.4	225.4
25th	47.3	54.9	61.3	70.3	77.8	90.9	98.9	109.6	118.3	127.9	135.4	143.5	150.0	156.5	162.7	169.4	175.7	179.4	186.1	185.9
50th	47.3	54.7	60.6	67.9	75.0	85.4	92.9	99.4	107.4	111.7	118.3	120.1	125.5	124.9	129.9	128.2	132.9	131.3	136.0	126.6
75th	47.3	54.4	60.0	66.3	73.0	79.8	86.8	88.1	95.0	93.2	98.7	94.4	98.6	92.9	96.5	89.9	93.2	85.1	88.1	74.7
90th	47.3	54.2	59.4	64.5	70.9	75.1	81.5	79.7	86.0	81.7	86.5	79.5	83.1	73.7	76.7	65.8	68.2	55.7	57.6	43.6
95th	47.3	54.0	59.1	62.6	69.1	72.1	78.3	76.1	82.0	77.6	81.8	74.6	77.9	68.4	71.0	59.5	61.6	48.7	50.5	39.4

Excludes administrative & operating expenses and short-term disability and medical costs

Total Requirements

- This is the combination of the two subcomponents (pay-as-you-go costs; pre-funded costs)
- All amounts are shown on a non-inflation adjusted basis



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5th	–	226.5	242.3	257.6	277.4	294.0	317.7	334.7	356.9	373.3	393.3	405.6	421.0	430.1	442.8	450.4	461.9	468.3	477.1	483.2	488.7
10th		226.5	242.1	257.2	276.1	292.4	315.0	331.5	352.4	368.4	386.6	398.4	412.1	421.2	431.3	438.1	446.5	452.7	460.5	466.4	469.8
25th		226.5	241.8	256.4	273.5	289.5	310.0	325.8	343.9	359.3	373.6	384.5	394.8	402.5	409.3	415.5	421.3	426.4	428.6	433.1	430.0
50th	●	226.5	241.4	255.5	271.1	286.5	304.4	319.8	333.7	348.1	357.3	367.3	371.2	377.8	378.0	382.7	380.4	384.0	380.3	383.1	371.1
75th		226.5	241.0	254.6	269.0	284.0	298.6	313.3	322.3	335.7	338.9	347.9	346.1	351.7	346.2	349.6	342.3	344.1	334.2	335.1	319.5
90th		226.5	240.7	253.8	267.0	281.6	293.6	307.8	313.7	326.4	327.2	335.4	330.9	335.5	327.0	329.8	318.8	319.9	305.8	305.7	289.8
95th	–	226.5	240.5	253.3	265.5	280.2	290.7	304.5	309.9	322.2	322.6	330.2	325.1	329.5	320.6	322.8	310.9	311.7	297.3	297.2	283.8

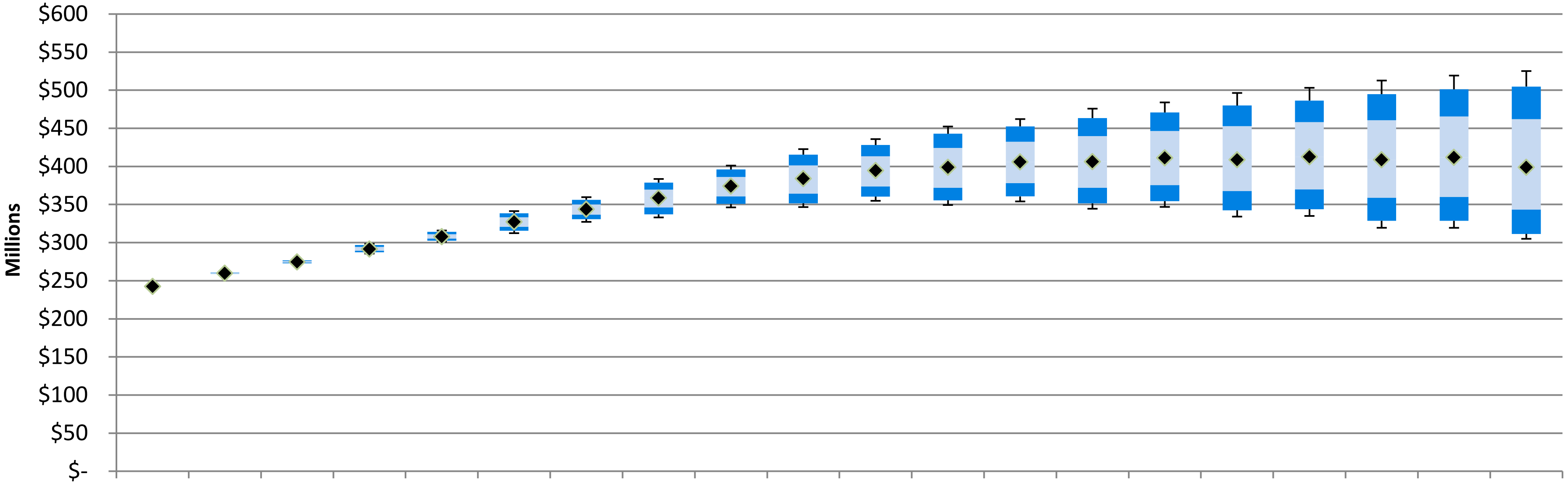
Includes administrative & operating expenses and short-term disability and medical costs

Development of Final Levy in Dollars

- The Total Requirements shown on the prior slides are the estimate of the funds needed for the operation of FPDR, including PERS contributions for FPDR Three members
- Several adjustments are made to the Total Requirements amount to develop a ***Final Levy*** for Board and Council review
  - Decrease to account for other revenue sources
  - Increase to reflect the effects of discounts and delinquencies
  - Increase to reflect the effects of tax compression on some properties
- Based on communications with the City Economist and FPDR, the net effect of these three adjustments is estimated as a 7.1%-7.5% increase, varying by year
  - Details are in the Appendix

Final Levy in Dollars

- This shows the estimated Final Levy request as a dollar amount
- All amounts are shown on a non-inflation adjusted basis



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5th	–	242.6	261.0	277.2	298.4	315.9	341.4	359.7	383.5	401.1	422.7	435.9	452.4	462.2	475.8	484.0	496.4	503.2	512.7	519.3	525.2
10th		242.6	260.7	276.7	297.0	314.2	338.5	356.3	378.8	396.0	415.5	428.1	442.8	452.6	463.5	470.8	479.9	486.5	494.9	501.2	504.9
25th		242.6	260.4	275.8	294.3	311.1	333.1	350.2	369.6	386.1	401.5	413.2	424.3	432.6	439.9	446.5	452.7	458.3	460.6	465.5	462.1
50th	•	242.6	260.0	274.8	291.6	307.9	327.1	343.6	358.6	374.1	383.9	394.7	398.9	406.0	406.2	411.3	408.8	412.7	408.7	411.8	398.8
75th		242.6	259.6	273.9	289.4	305.3	320.9	336.7	346.3	360.8	364.2	373.8	371.9	378.0	372.1	375.7	367.8	369.8	359.2	360.2	343.3
90th		242.6	259.2	273.0	287.2	302.6	315.6	330.8	337.1	350.8	351.6	360.4	355.6	360.6	351.5	354.4	342.6	343.8	328.6	328.6	311.5
95th	–	242.6	259.0	272.5	285.6	301.1	312.4	327.3	333.1	346.3	346.7	354.9	349.4	354.1	344.5	346.9	334.2	335.0	319.5	319.4	305.0

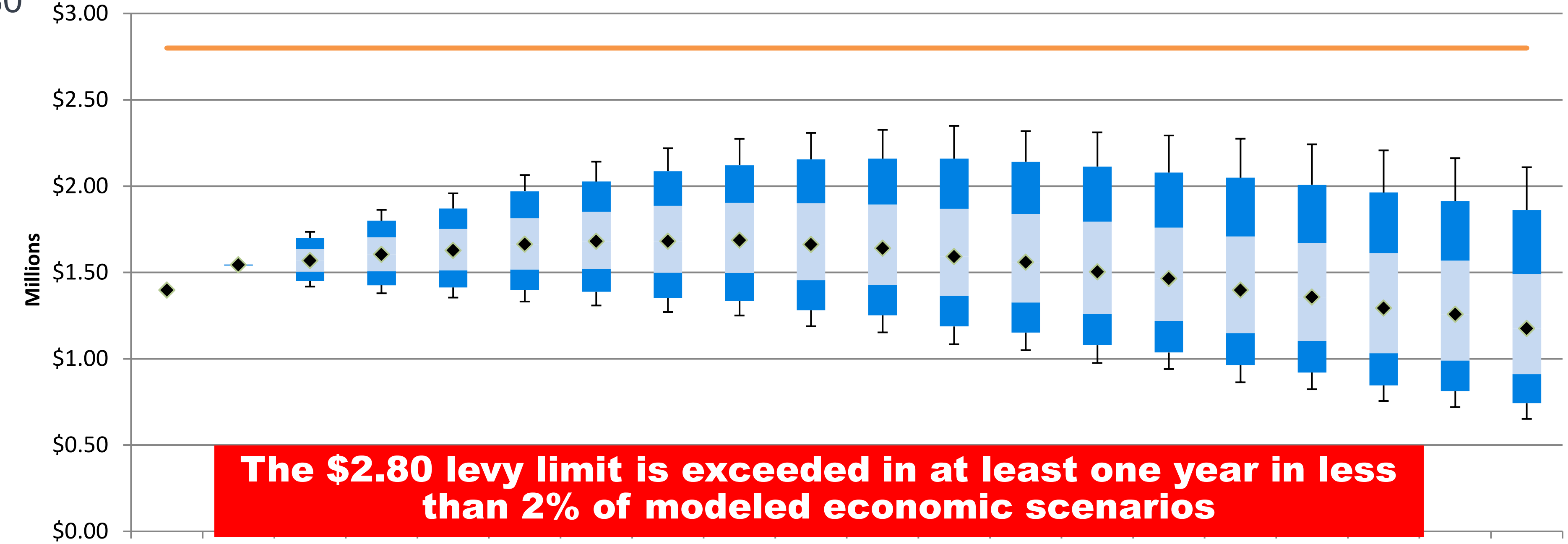
Includes administrative & operating expenses and short-term disability and medical costs

Development of Final Levy as a RMV Rate

- The Final Levy in dollars shown on the prior slide is converted into a Final Levy as a RMV Rate
- That rate is then compared to the limit in the City Charter of $2.80 per $1,000 of RMV
- Future RMV levels vary significantly by scenario in the model
- In the two years since prior modeling, overall RMV decreased by 3% cumulatively
  - RMV change was below the prior model's median assumed cumulative two-year growth of +2%

Final Levy as a RMV Rate

- This shows the estimated Final Levy request as a rate per $1,000 of RMV; the City Charter limits the levy to $2.80



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5th	–	$ 1.40	$ 1.55	$ 1.74	$ 1.86	$ 1.96	$ 2.06	$ 2.14	$ 2.22	$ 2.27	$ 2.31	$ 2.33	$ 2.35	$ 2.32	$ 2.31	$ 2.29	$ 2.27	$ 2.24	$ 2.21	$ 2.16	$ 2.11
10th		$ 1.40	$ 1.55	$ 1.70	$ 1.80	$ 1.87	$ 1.97	$ 2.03	$ 2.09	$ 2.12	$ 2.15	$ 2.16	$ 2.16	$ 2.14	$ 2.11	$ 2.08	$ 2.05	$ 2.01	$ 1.96	$ 1.91	$ 1.86
25th		$ 1.40	$ 1.55	$ 1.64	$ 1.70	$ 1.75	$ 1.81	$ 1.85	$ 1.89	$ 1.90	$ 1.90	$ 1.89	$ 1.87	$ 1.84	$ 1.79	$ 1.76	$ 1.71	$ 1.67	$ 1.61	$ 1.57	$ 1.49
50th	•	$ 1.40	$ 1.54	$ 1.57	$ 1.60	$ 1.63	$ 1.66	$ 1.68	$ 1.68	$ 1.69	$ 1.66	$ 1.64	$ 1.59	$ 1.56	$ 1.50	$ 1.46	$ 1.40	$ 1.36	$ 1.29	$ 1.26	$ 1.17
75th		$ 1.40	$ 1.54	$ 1.51	$ 1.51	$ 1.51	$ 1.52	$ 1.52	$ 1.50	$ 1.50	$ 1.45	$ 1.43	$ 1.37	$ 1.33	$ 1.26	$ 1.22	$ 1.15	$ 1.10	$ 1.03	$ 0.99	$ 0.91
90th		$ 1.40	$ 1.54	$ 1.45	$ 1.43	$ 1.41	$ 1.40	$ 1.39	$ 1.35	$ 1.34	$ 1.28	$ 1.25	$ 1.19	$ 1.15	$ 1.08	$ 1.04	$ 0.96	$ 0.92	$ 0.85	$ 0.81	$ 0.74
95th	–	$ 1.40	$ 1.54	$ 1.42	$ 1.38	$ 1.35	$ 1.33	$ 1.31	$ 1.27	$ 1.25	$ 1.19	$ 1.15	$ 1.08	$ 1.05	$ 0.98	$ 0.94	$ 0.86	$ 0.82	$ 0.76	$ 0.72	$ 0.65

Includes administrative & operating expenses and short-term disability and medical costs

Certification

This presentation summarizes key results of an actuarial valuation as of June 30, 2024 and stochastic levy adequacy analysis for the fiscal years 2025 to 2044 of the Fire & Police Disability & Retirement Fund (“FPDR” or “the Fund”) sponsored by the City of Portland. For complete actuarial valuation results, including cautions regarding the limitations of use of valuation calculations, please refer to our formal Actuarial Valuation Report as of June 30, 2024 (“the Valuation Report”) published in January 2025. The Valuation Report, including all supporting information regarding data, assumptions, methods and provisions, is incorporated by reference into this presentation.

In preparing this presentation, we relied, without audit, on information (some oral and some in writing) supplied by Fund and City of Portland staff. This information includes, but is not limited to, Fund benefit provisions as defined by City Charter, employee data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the Fund have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the Fund and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the Fund and are expected to have no significant bias. The valuation results were developed using models intended for valuations that use standard actuarial techniques.

A valuation report is only an estimate of the Fund’s financial condition as of a single date. It can neither predict the Fund’s future condition nor guarantee future financial soundness. Actuarial valuations do no affect the ultimate cost of Fund benefits, only the timing of Fund contributions or cost recognition. While the valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. Likewise, an actuarial projection, even if stochastic, is still determined by underlying assumptions. If different assumptions are used projection results may differ significantly. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements summarized in this presentation due to such factors as the following: Fund 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; and changes in Fund benefit provisions or applicable law.

Certification

Future actuarial measurements may differ significantly from the current measurements summarized in this presentation due to such factors as the following: Fund 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; and changes in Fund benefit provisions or applicable law.

This presentation includes identification and analysis of various risks relevant to the operation and funding of the FPDR program. Some of these risks were illustrated quantitatively through stochastic modeling, while others were identified without numerical illustration in this document. Our analysis was performed based on the methods, assumptions, and inputs described in this document. We recommend that FPDR continues to periodically perform further risk assessments in the future to take into account changing conditions in the underlying basis.

Milliman’s work is prepared solely for the internal business use of the City of Portland and FPDR.

Milliman does not intend to benefit or create a legal duty to any third-party recipient of its work product. No third-party recipient of Milliman’s work product should rely upon it. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman’s advice is not intended to be a substitute for qualified legal or accounting counsel.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the principles prescribed by the Actuarial Standards Board and the *Code of Professional Conduct* and *Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States* published by the American Academy of Actuaries. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Appendix

Appendix
Actuarial Basis

Data

We have based our calculation of the liabilities on the data supplied by the FPDR and summarized in the data exhibits of the Valuation Report.

Assets as of June 30, 2024, were based on values provided by FPDR and the City of Portland and are detailed in the Valuation Report.

Methods / Policies

Actuarial Cost Method: Entry age normal, as described in the Valuation Report.

Provisions

Provisions valued are as detailed in the Valuation Report and reflect benefit provisions in effect as of June 30, 2024.

FPDR Two COLA: The Valuation Report was prepared assuming future COLAs for FPDR Two are 2.00% per year.

Appendix

Actuarial Basis

Assumptions for Valuation Calculations

As described in the Valuation Report.

Assumptions for Levy Adequacy Analysis

As described in the Valuation Report except where modified by the deviations and additions noted in this Appendix.

Real Market Value (RMV) of real estate subject to property taxes: $173.6 billion as of the beginning of 2024 as reported by the City and FPDR. It is our understanding that amount served as the basis for calculations for property tax bills sent in October 2024 to fund FPDR for the fiscal year running from July 1, 2024 to June 30, 2025 (FYE 2025). No reduction is made to RMV in the model for any estimate of urban renewal excess per our understanding (from consultation with TSCC) that RMVs are determined as inclusive of urban renewal excess value. As a result, we understand that the RMV amount without any reduction for urban renewal excess is an appropriate determination basis for evaluating the $2.80 levy limit.

Increase in RMV: Based on consultation with the City's economist, projected with -3.0% growth in the first year of our model and a 4.0% geometric average annual compounded growth thereafter. Growth patterns vary in our stochastic model with the exception of the first year.

Administrative & Operating Expenses: A component of the Total Requirements, based on consultation with FPDR this is modeled as $6.75 million in the first year of our model and in subsequent years is assumed to increase with CPI, which varies in our stochastic model.

Short-Term Disability & Disability-Related Medical Costs: A component of the Total Requirements, based on consultation with FPDR staff this is modeled as $5.18 million in the first year of our model and in subsequent years it is assumed to increase with CPI plus 1.65%, with CPI varying in our stochastic model.

Appendix
Actuarial Basis

Assumptions for Levy Adequacy Analysis (continued)

IAP Contribution to OPERS for FPDR Three members: A component of the Total Requirements, assumed to be 9% of FPDR Three payroll throughout the payment period.

OPSRP Contribution to OPERS for FPDR Three members: A component of the Total Requirements. This will vary based on future investment experience, demographic experience, and plan provisions of the OPERS program. It is assumed in this model that the current OPERS assumptions and rate calculation methods will remain consistent throughout the projection period. Detailed information on those methods can be found in the December 31, 2023 System-Wide Actuarial Valuation Report for Oregon PERS.

Overtime effect on FPDR Three base payroll subject to OPERS contributions: Throughout the projection it is assumed that overtime pay subject to OPERS contributions will be 22.8% of base FPDR Three payroll.

Adjustments to Total Requirements to Estimate Final Levy: Three adjustments are made as detailed below. For years after FYE2025 of our model, the net combined adjustment is to increase Total Requirements by 7.5%.

Other sources of revenue: Multiply by 0.975 (equal to one hundred percent minus 2.5 percent)

Adjustment for property tax discounts and delinquencies: Multiply by 1.04712 (equal to one divided by one minus 4.5 percent)

Adjustment for estimated effects of tax compression: Based on information provided by FPDR and the City's economist, multiply by the following factors:

FYE2025 – 1.04932 (equal to one divided by one minus 4.7 percent)

FYE2026 – 1.05485 (equal to one divided by one minus 5.2 percent)

FYE2027 & FYE 2028 – 1.05374 (equal to one divided by one minus 5.1 percent)

FYE2029 and later – 1.05263 (equal to one divided by one minus 5.0 percent)

Appendix
Actuarial Basis

Assumptions for Levy Adequacy Analysis (continued)

CPI: Varies in our stochastic model. Average geometric annual compounded growth of 2.40%.

Oregon PERS Investment Returns: Return for calendar year 2024 is assumed to be 6.61%, based on results published by Oregon State Treasury through November 30, 2024. Returns for 2025 and beyond vary in our stochastic model. Average geometric annual compounded growth for the post-2024 period is approximately 7.4%.

COLA increases: For FPDR One members, COLA increases are assumed to be equal to the projected wage growth in a given year and are assumed to remain level in years where projected wage growth is negative.

For FPDR Two retirement-related benefits, the baseline levy modeling assumes annual COLA increases of 2.00%

For FPDR Three, retirement-related benefits, COLA increases are assumed to be applied according to current rules for the OPERS program ("full PERS").

Wage growth: Varies in our stochastic model. Each year's projected wage growth is equal to projected CPI plus 1.00%.

New entrants and system pay growth: No new members are assumed to be eligible for FPDR One or FPDR Two benefits; all new entrants are assumed to become members under the FPDR Three/OPSRP benefit formula. Payroll for FPDR Three new entrant members is expected to grow such that overall system pay would grow at 3.25% if inflation was 2.25%, consistent with the valuation assumption.

Appendix
Rate Projection Basis

Assumptions for Levy Adequacy Analysis (continued)

Capital Market Model

For each 20-year projection, we ran 10,000 stochastic scenarios for RMV, inflation and Oregon PERS asset class rates of return. The scenarios were calibrated to represent Milliman's capital market assumptions in terms of expected average real returns, the expected year-to-year volatility of the returns, and the expected correlation between the returns of different asset classes. The correlation of RMV to investment returns was developed based on an analysis of recent actual experience. Annual rates of return for each of the asset classes and inflation are generated from a multivariate lognormal probability distribution. Rates of return are independent from year to year.

The variable return model includes 10,000 projected scenarios for possible future year-by-year system investment returns and levels of inflation. In developing that model, per Actuarial Standards of Practice we disclose reliance upon a Milliman colleague who is a credentialed actuary and also a credentialed investment professional with expertise in preparing capital outlook modeling. We reviewed overall model results for reasonability while, as part of his work, our investment professional colleague reviewed the investment projections for internal consistency.

For this purpose, we considered the Oregon PERS Fund to be allocated among the model's asset classes as shown on the following slide.

Appendix

Rate Projection Basis

Assumptions for Levy Adequacy Analysis (continued)

Capital Market Model for Oregon PERS Contribution Rate Projection

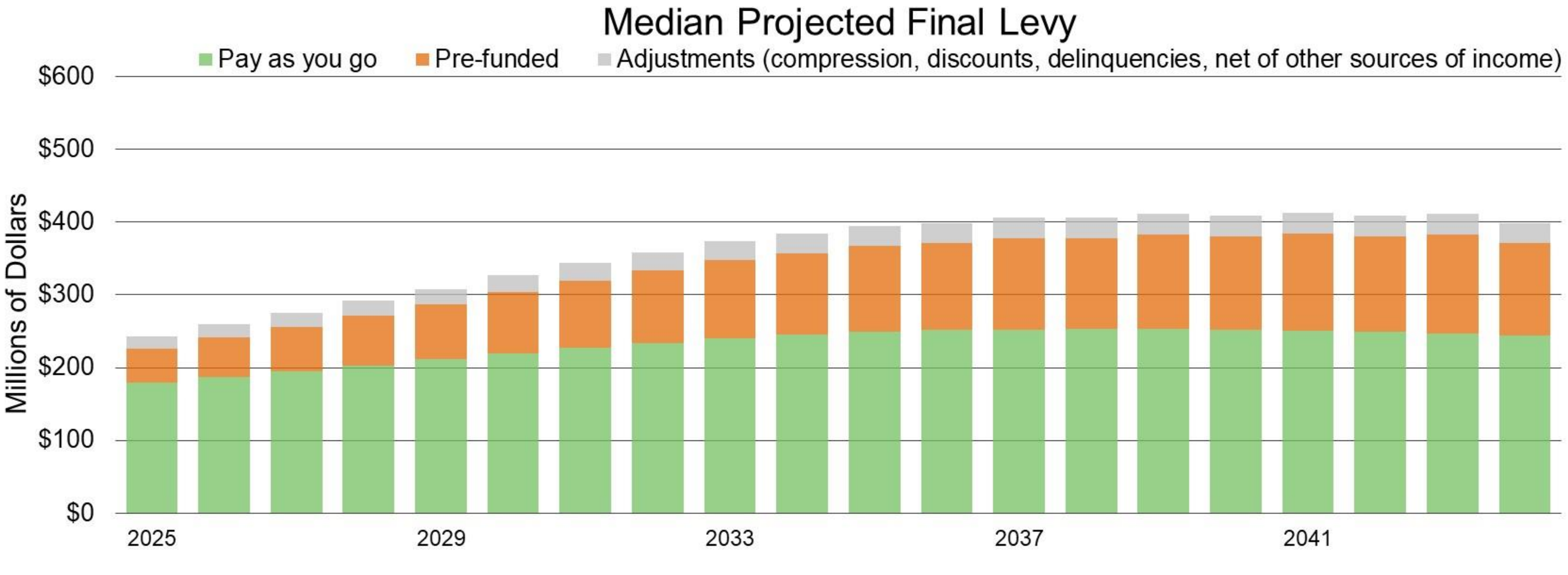
Reflects Milliman's capital market assumptions as of July 1, 2024, adjusted for changes in interest rates occurring through September 30, 2024.

	Annual Arithmetic Mean	20-Year Annualized Geometric Mean	Annual Standard Deviation	Policy Allocation
Global Equity	8.35%	6.81%	18.23%	27.500%
Private Equity	12.62%	8.55%	30.00%	25.500%
Real Estate	7.79%	6.51%	16.57%	12.250%
US Core Fixed Income	4.71%	4.83%	4.50%	25.000%
Hedge Fund – Macro	5.86%	5.66%	6.26%	5.625%
Hedge Fund – Equity Hedge	7.04%	6.29%	11.80%	0.625%
Hedge Fund – Multistrategy	6.52%	6.16%	8.72%	1.250%
Infrastructure	8.07%	6.70%	17.18%	1.500%
Master Limited Partnerships	9.13%	5.86%	26.54%	0.750%
US Inflation (CPI-U)	2.40%	2.40%	1.45%	**N/A**
Fund Total (reflecting asset class correlations)	**8.29%**	**7.47%***	**13.46%**	**100.00%**

* The model's 20-year annualized geometric median is **7.44%**.

Levy Adequacy Modeling
Final Levy in Dollars – 50th Percentile

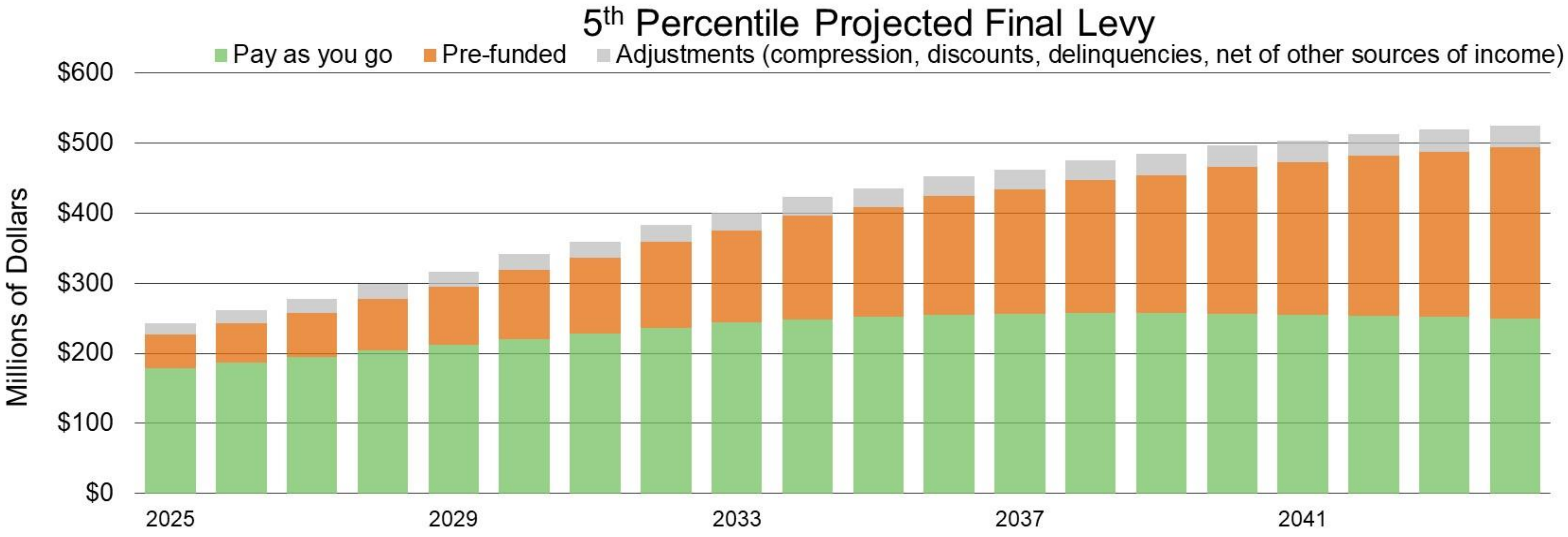
- Components underlying 50th percentile final levy results from slide 28



This work product was prepared solely for FPDR and the City of Portland for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

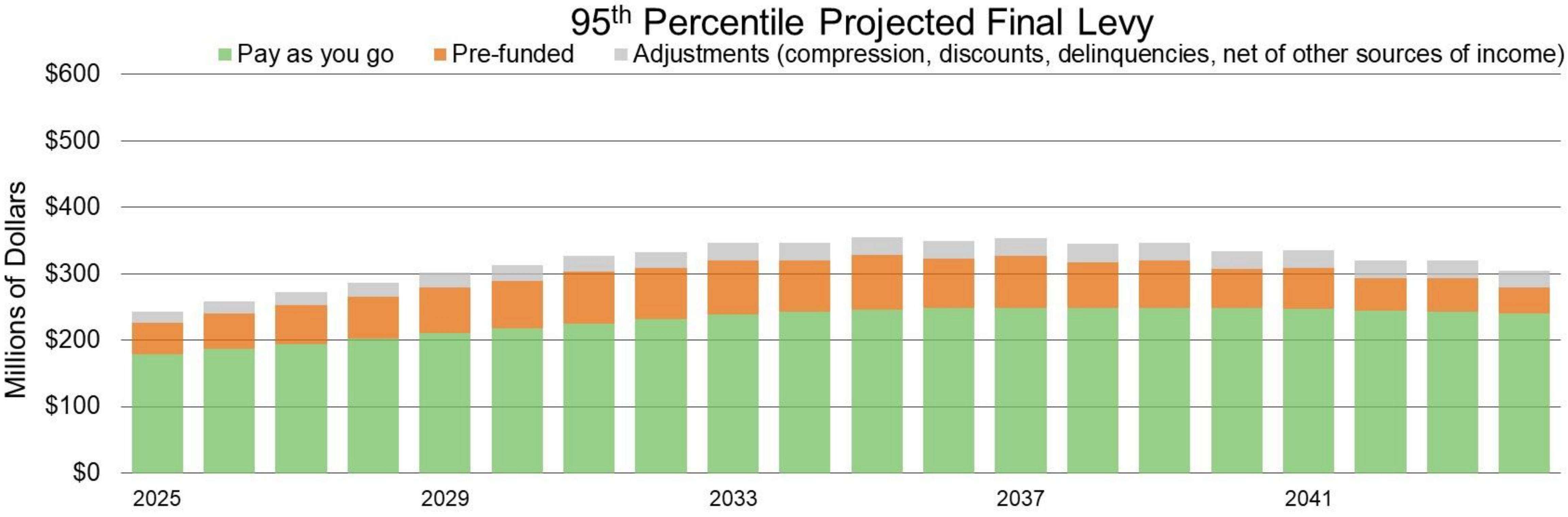
Levy Adequacy Modeling
Final Levy in Dollars – 5th Percentile

- Components underlying 5th percentile final levy results from slide 28



Levy Adequacy Modeling
Final Levy in Dollars – 95th Percentile

- Components underlying 95th percentile final levy results from slide 28



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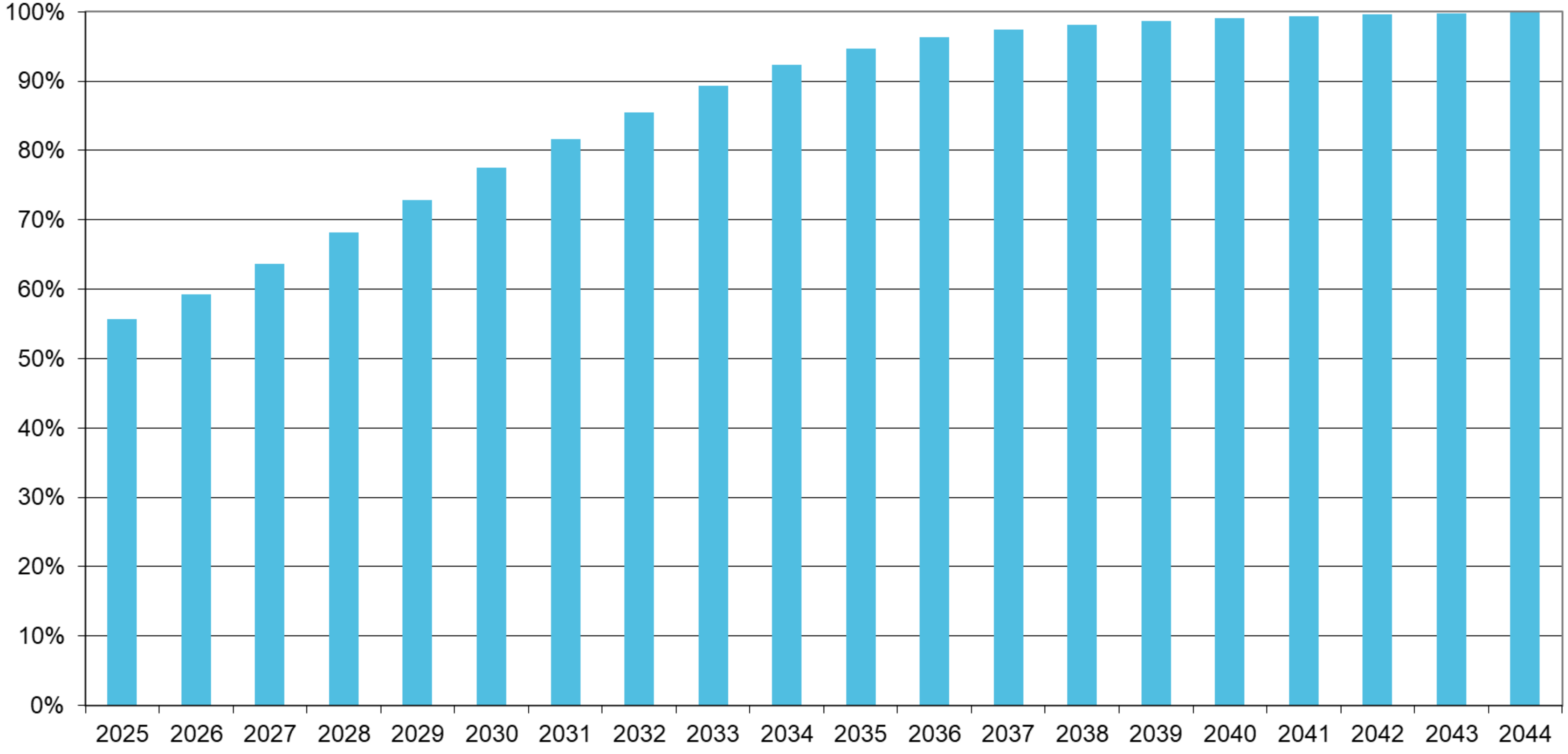
Appendix

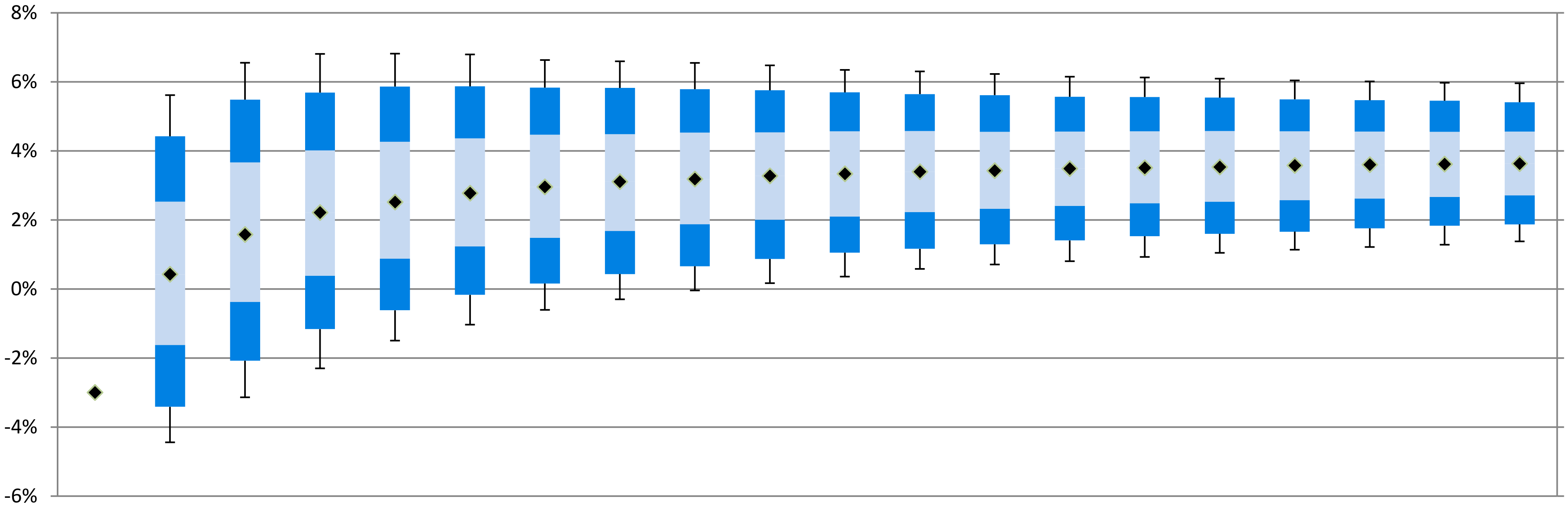
Proportion of Active Payroll that is FPDR Three



FY Ending 6/30	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
FPDR Three Pay as % of Total	56%	59%	64%	68%	73%	78%	82%	85%	89%	92%	95%	96%	97%	98%	99%	99%	99%	100%	100%	100%

Appendix

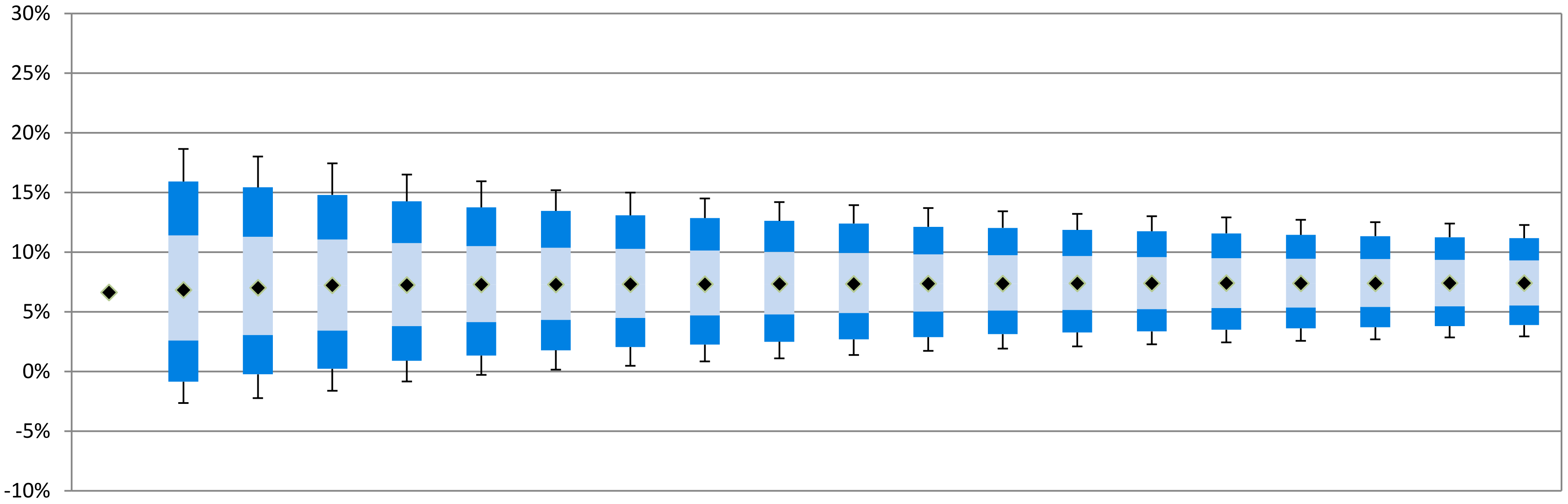
Cumulative Annualized Geometric Growth in RMV



CY Ending 12/31		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
95th	–	-3.0%	5.6%	6.6%	6.8%	6.8%	6.8%	6.6%	6.6%	6.5%	6.5%	6.3%	6.3%	6.2%	6.2%	6.1%	6.1%	6.0%	6.0%	6.0%	6.0%
90th		-3.0%	4.4%	5.5%	5.7%	5.9%	5.9%	5.8%	5.8%	5.8%	5.8%	5.7%	5.6%	5.6%	5.6%	5.6%	5.5%	5.5%	5.5%	5.5%	5.4%
75th		-3.0%	2.5%	3.7%	4.0%	4.3%	4.4%	4.5%	4.5%	4.5%	4.5%	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%	4.5%	4.6%
50th	•	-3.0%	0.4%	1.6%	2.2%	2.5%	2.8%	3.0%	3.1%	3.2%	3.3%	3.3%	3.4%	3.4%	3.5%	3.5%	3.5%	3.6%	3.6%	3.6%	3.6%
25th		-3.0%	-1.6%	-0.4%	0.4%	0.9%	1.2%	1.5%	1.7%	1.9%	2.0%	2.1%	2.2%	2.3%	2.4%	2.5%	2.5%	2.6%	2.6%	2.7%	2.7%
10th		-3.0%	-3.4%	-2.1%	-1.2%	-0.6%	-0.2%	0.2%	0.4%	0.7%	0.9%	1.1%	1.2%	1.3%	1.4%	1.5%	1.6%	1.7%	1.8%	1.8%	1.9%
5th	–	-3.0%	-4.4%	-3.1%	-2.3%	-1.5%	-1.0%	-0.6%	-0.3%	0.0%	0.2%	0.4%	0.6%	0.7%	0.8%	0.9%	1.0%	1.1%	1.2%	1.3%	1.4%

Appendix

Cumulative Annualized Geometric Investment Return on Oregon PERS Fund



CY Ending 12/31		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
95th	–	6.6%	18.7%	18.0%	17.4%	16.5%	15.9%	15.2%	15.0%	14.5%	14.2%	13.9%	13.7%	13.4%	13.2%	13.0%	12.9%	12.7%	12.5%	12.4%	12.3%
90th		6.6%	15.9%	15.4%	14.8%	14.3%	13.8%	13.5%	13.1%	12.9%	12.6%	12.4%	12.1%	12.0%	11.9%	11.8%	11.6%	11.4%	11.3%	11.3%	11.2%
75th		6.6%	11.4%	11.3%	11.1%	10.8%	10.5%	10.4%	10.3%	10.1%	10.0%	9.9%	9.8%	9.7%	9.7%	9.6%	9.5%	9.5%	9.4%	9.4%	9.3%
50th	•	6.6%	6.8%	7.0%	7.2%	7.2%	7.3%	7.3%	7.3%	7.3%	7.3%	7.3%	7.3%	7.4%	7.4%	7.4%	7.4%	7.4%	7.4%	7.4%	7.4%
25th		6.6%	2.6%	3.1%	3.4%	3.8%	4.1%	4.3%	4.5%	4.7%	4.8%	4.9%	5.0%	5.1%	5.2%	5.2%	5.3%	5.4%	5.4%	5.5%	5.5%
10th		6.6%	-0.9%	-0.2%	0.2%	0.9%	1.3%	1.8%	2.0%	2.2%	2.5%	2.7%	2.9%	3.1%	3.3%	3.4%	3.5%	3.6%	3.7%	3.8%	3.9%
5th	–	6.6%	-2.6%	-2.2%	-1.6%	-0.8%	-0.3%	0.2%	0.5%	0.8%	1.1%	1.4%	1.7%	1.9%	2.1%	2.3%	2.4%	2.6%	2.7%	2.9%	2.9%

Retirement System Risks

- FPDR, like all defined benefit plans, is subject to various risks that will affect future plan liabilities, including:
  - **Demographic risks**: the potential that mortality experience, retirement behavior, or other demographic experience for the plan population will be different than expected
  - **Contribution risk**: the potential that actual future contributions will be materially different than expected, or that significant changes occur to sources of funding. For FPDR benefits, material changes in the property tax structure or the City's Real Market Value would be an example of contribution risk.
- The results of an actuarial valuation are based on one set of reasonable assumptions, but it is almost certain that future experience will not exactly match the assumptions
- Further discussion of plan risks and historical information regarding plan experience are shown in our actuarial valuation