

DATE: January 10, 2022
FROM: ECONorthwest
SUBJECT: Pension Obligation Bond Analysis Executive Summary

Introduction

ECONorthwest recently conducted an analysis to evaluate the risks and rewards of issuance of Pension Obligation Bonds (POBs) by public employers that are part of the Oregon Public Employee Retirement System (OPERS).¹ For this analysis, we assumed that officials of governmental entities receiving our report are in a position to finance such bonds. Proceeds from the POBs would be added to, or used to create, side account balances to be managed in the same way as other PERS assets, by the Investment Division of the Oregon Treasury under the guidance of the Oregon Investment Council (OIC). This executive summary outlines the motivation for issuing POBs, our analytic methodology, and findings from our analysis. Additional details about the analysis are presented in our main report.

Background

Like many other states, Oregon's PERS has seen a growing gap between the cost of PERS benefits promised to participating public employees and the funding available for those benefits, resulting in an unfunded actuarial liability (UAL). Resolving the UAL will require increasing contributions from participating public employers over a long period of time. Pension obligation bonds, if issued in an economical manner and invested in a higher yielding portfolio, can potentially improve the ability of employers to pay their share of PERS obligations to the OPERS fund. Whether or not issuance of POBs makes sense in this setting will depend upon the likely evolution of side account returns relative to true interest cost (TIC) of the POBs.

Employers may benefit if the TIC of a bond issue is low relative to the potential return opportunities of a PERS side account over the same future period as the bond issues. However, this outcome is by no means assured. The true interest cost of carrying the POB debt would be known, but the employer also has to consider the risks associated with the fact that the future rate of returns to side account deposits are not known with

¹ The analysis provided in this document was developed by ECONorthwest for informational purposes only. All possible professional care was taken to prepare a realistic emulation of the likely POB side account behavior, and the OPERS procedures for accommodating POBs. State of the art modeling and statistical software was employed in this exercise. It should be recognized, however, that there are practical limits to the precision with which market and agency behavior can be modeled. The generic nature of the modeling performed may or may not be relevant to the circumstances of any one public employer. Additionally, nothing herein should be construed as offering investment advice or fairness opinions for the purpose of issuing securities. For this, interested parties should seek out professional counsel.

certainty. This uncertainty may have consequences for future expenses of the PERS system and revenues needed to pay the POB debt.

Portfolio allocation and other decisions made by the OIC influence the performance of the OPERS assets, as can the timing of the issuance of POBs. The primary determinants of the risk to POB issuers are (1) uncertainty in the performance of the asset classes that comprise the side account, (2) asset allocation choices made by the trustees of that account, and (3) the interactions of these factors with the POB strategy of the public employer(s).

To quantify these risks, our analysis models side account performance over time under various market conditions and bond issuance scenarios. The results quantify the potential risks and rewards of POBs under the assumed conditions.

Methodology

The model simulates side account performance using portfolio allocation targets obtained from OIC documents, and on forecasts of anticipated asset returns, based on reports from Oregon Treasury Investment Division staff, their consultants, and OPERS actuaries. We combine this information with assumptions about side account management. Specifically, we assume:

1. Side account balances are amortized at a constant share of payroll over the remaining life of the side account (assumed to expire on 12/31/2041, during fiscal year 2042).
2. Funds equal to the relevant percent of payroll are removed from the account as employer rate relief.
3. Earnings on side account deposits are credited annually.

To characterize the distribution of potential benefits to employers of POB issuance, we conduct 20,000 simulations of side account performance over the life of the account for each of four assumed POB TICs (2.5 percent, 3.5 percent, and 4.5 percent). Each simulation represents a different, potential future path of account returns over time. For each simulation, we compare the benefits provided to employers in the form of rate relief to the cost of bond repayment. In doing so, we quantify two important measures of risk and reward:

- **The net present value (NPV) of POB issuance.** This measure identifies the current value to employers of future benefits of POB issuance (the extent to which rate relief obtained exceeds bond repayments).

- **The probability that NPV is greater than zero.** This measure of risk identifies the likelihood, given the assumptions in the model, that the current value of POB issuance would prove beneficial to the employer (if NPV falls below zero, POB issuance is more costly to the employer than not issuing bonds).

Summary of findings

The findings presented below refer to an initial side account deposit of \$1 million. The results can be scaled to approximate the potential risks and rewards of larger or smaller deposits. For example, a \$2 million deposit would generate a benefit or loss of two times the dollar amounts shown in the charts and tables below. The probability that the NPV is greater than zero depends on the TIC, not on the size of the initial deposit.

Our analysis assumes a maturity date for the bonds in fiscal year 2042. **The projected annualized geometric mean return over the term of the bonds is 6.7 percent,**² with a 5th percentile annualized return of 2.9 percent and a 95th percentile annualized return of 10.6 percent.

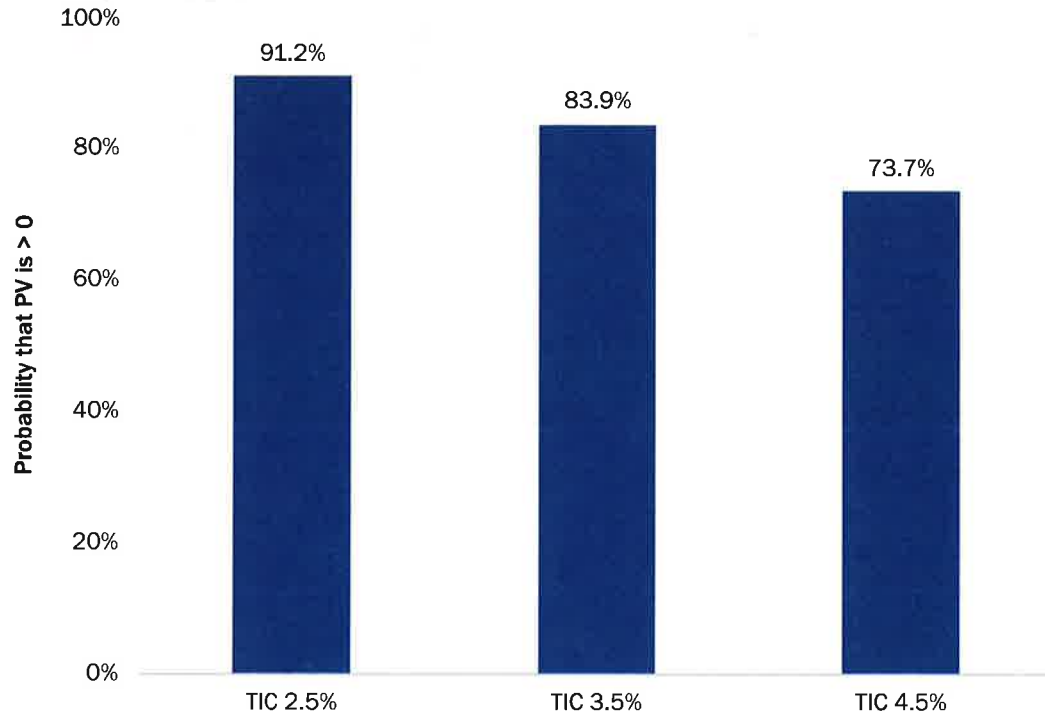
Figure 1 shows the probability that the net present value of POB issuance is greater than zero. As the chart demonstrates, this probability declines as the TIC increases. Figure 2 illustrates the range (5th percentile, median, and 95th percentile) of net present values obtained from the simulations for each TIC. This distribution shifts downward as TIC increases.

The 5th percentile net present value falls below zero at every TIC. With a TIC of 2.5 percent, the 5th percentile net present value is less than one percent of the initial deposit. This ratio increases with TIC (16.1 percent at 3.5 percent TIC and 26.3 percent at 4.5 percent TIC). These values, in combination with the probabilities described above, quantify some of the financial risks of POB issuance.

Figure 3 provides additional detail about the distribution of outcomes. As illustrated in earlier figures, outcomes at every point in the distribution are more positive at lower TICs. Net present values are also somewhat more volatile at lower TICs, as evidenced by the higher standard deviation of the calculated net present value.

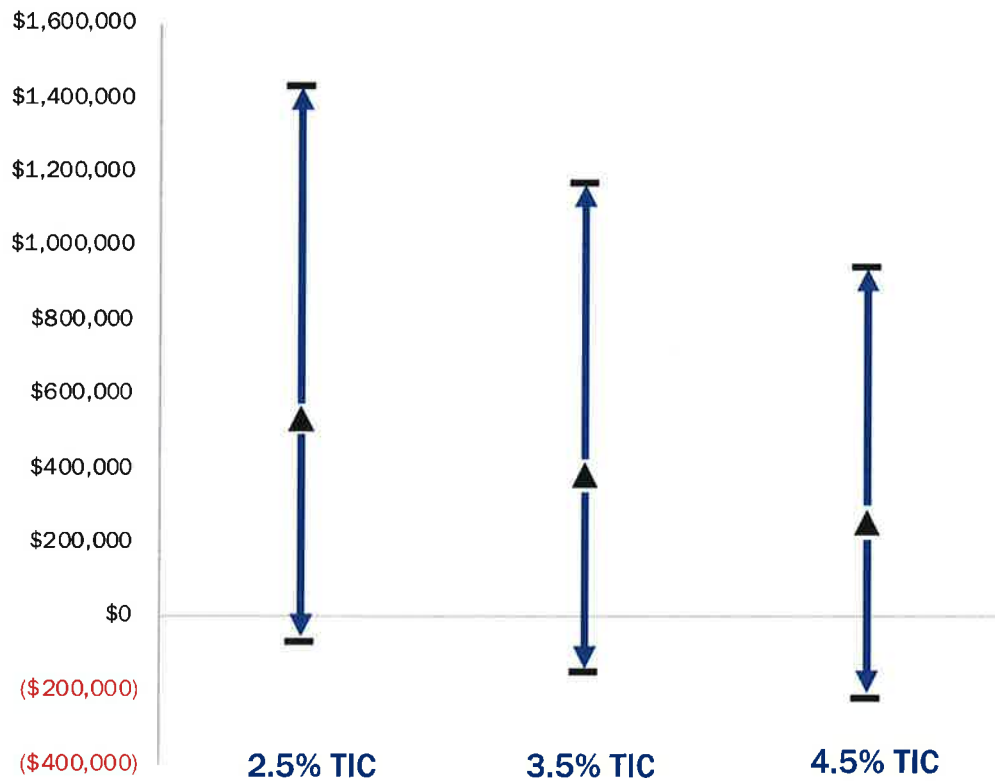
² The geometric mean return is a required statistic that borrowers will need to supply annually to the State Treasurer under ORS 238.697.

Figure 1: Probability that the net present value of POB issuance is greater than zero, various TICs



Source: ECONorthwest.

Figure 2: 5th percentile, mean, and 95th percentile net present value, various TICs



Source: ECONorthwest.

Figure 3: Distribution of net present value and probability of a positive net present value, various TICs

No. of Tranches	1	1	1
Rate (TIC)	2.5%	3.5%	4.5%
Mean	\$532,169	\$380,827	\$249,506
Std Deviation	\$478,197	\$420,247	\$370,684
Maximum	\$5,115,607	\$4,334,906	\$3,671,543
Minimum	\$(442,078)	\$(484,204)	\$(521,188)
95th Perc	\$1,433,780	\$1,170,804	\$945,826
90th Perc	\$1,135,804	\$914,213	\$722,099
75th Perc	\$769,779	\$589,757	\$434,891
50th Perc	\$443,956	\$304,281	\$182,808
25th Perc	\$197,986	\$86,494	\$(10,533)
10th Perc	\$20,226	\$(70,448)	\$(149,981)
5th Perc (VaR)	\$(71,045)	\$(150,608)	\$(220,678)
Zero Bound Perc	91.2%	83.9%	73.7%

Source: ECONorthwest.

For the modeled scenarios, the expected value to employers of a POB strategy is positive in net present value terms, with the expected value being a non-trivial proportion of POB funding under the scenarios modeled in this summary. However, there is also a non-trivial probability that the net present value of POBs is zero or less. This probability increases as the TIC increases.

In determining whether to pursue a POB issue, employers should also assess the potential effect of several additional considerations on the anticipated benefits:

- Actual issuance TIC may differ from those in the scenarios
- The TIC does not capture some issuance costs
- The employer's payroll growth rate may differ significantly from that assumed by the PERS actuary³

³ As of December 2021, the assumed payroll growth rate was 3.4 percent. This assumption was retrieved from Oregon's *PERS By The Numbers* report, which can be accessed here: <https://www.oregon.gov/pers/Documents/General-Information/PERS-by-the-Numbers.pdf>.

City of Hermiston

Background Data

PERS Unfunded Actuarial Liability and Pension Bond Analysis
January 6, 2022

	2007 Valuation	2018 Valuation	2019 Valuation	2020 Valuation
System				
Combined Valuation Payroll	\$ 7,721,819,358	\$ 10,852,000,000	\$ 11,533,700,000	\$ 12,042,700,000
OPSRP UAL (\$ in millions)	(72.1)	1,955.0	1,891.8	2,459.3
State and Local Government Rate Pool (SLGRP)				
Combined Valuation Payroll	\$ 4,264,200,000	\$ 6,346,100,000	\$ 6,769,800,000	\$ 7,134,300,000
Total T1/T2 UAL (\$ in millions)	208.9	13,765.6	12,738.0	14,497.4
City of Hermiston				
Combined Valuation Payroll		\$ 6,700,498	\$ 7,040,821	\$ 7,130,381
Payroll Increase			5.08%	1.27%
Allocated UAL/(surplus)				
T1/T2		14,534,346	13,249,846	14,489,488
Pre-SLGRP		0	0	0
Transition		(621,460)	(567,130)	(504,004)
OPSRP		1,209,868	1,157,479	1,459,570
Total Allocated Pooled UAL		15,122,754	13,840,195	15,445,054
Less Side Account		0	0	0
Net UAL		\$ 15,122,754	\$ 13,840,195	\$ 15,445,054

	2007 Valuation	2018 Valuation	2019 Valuation	2020 Valuation
Rates Effective				
T1/T2	7/1/09 - 6/30/11	T1/T2	7/1/2021 - 6/30/23	T1/T2
OPSRP		Advisory Only	OPSRP	Advisory Only
Pension				
Normal cost rate	6.31%	8.70%	16.13%	17.79%
Tier 1/Tier 2 UAL rate	4.84%	14.50%	12.60%	13.84%
OPSRP UAL rate	(0.08%)	1.76%	1.69%	2.09%
Pre-SLGRP pool rate	0.00%	0.00%	0.00%	0.00%
Transition liability rate	0.00%	(1.22%)	(1.17%)	(1.15%)
Total Pension Rate	11.07%	31.46%	29.25%	32.57%
Side account rate relief	0.00%	0.00%	0.00%	0.00%
Member redirect offset	0.00%	(2.45%)	(2.45%)	(2.40%)
Net Pension Rate	11.07%	29.01%	26.80%	30.17%
Retiree Healthcare				
Normal cost rate	0.10%	0.05%	0.05%	0.05%
UAL rate	0.19%	0.00%	0.00%	(0.05%)
Total Retiree Healthcare Rate	0.29%	0.05%	0.05%	0.00%
Total Net Employer Rate	11.36%	29.06%	26.85%	30.17%
				25.42%

Source: Oregon Public Employees Retirement System – System Actuarial Valuation Reports and Employer Actuarial Valuation Reports.

Prepared by Piper Sandler Co.

City of Hermiston
Payroll Growth

PERS Unfunded Actuarial Liability and Pension Bond Analysis
January 6, 2022

Calendar Year	System			Payroll and Payroll Growth			City of Hermiston	
	PERS Covered Payroll	Annual Payroll	SLGRP Pool	PERS Covered Payroll	Annual Payroll	PERS Covered Payroll	Annual Payroll	
2007	\$ 7,721,819,358	-----		\$ 4,264,200,000	-----	4,599,570	-----	
2008	8,130,136,492	5.29%		4,521,300,000	6.03%	4,599,570	0.00%	
2009	8,512,192,290	4.70%		4,850,100,000	7.27%	4,599,570	0.00%	
2010	8,750,064,502	2.79%		4,973,400,000	2.54%	4,599,570	0.00%	
2011	8,550,511,000	(2.28%)		4,935,700,000	(0.76%)	4,869,074	5.86%	
2012	8,590,879,000	0.47%		5,018,000,000	1.67%	5,372,528	10.34%	
2013	8,671,800,000	0.94%		5,121,900,000	2.07%	5,174,835	(3.68%)	
2014	9,115,800,000	5.12%		5,390,800,000	5.25%	5,777,184	11.64%	
2015	9,544,100,000	4.70%		5,594,300,000	3.77%	5,916,181	2.41%	
2016	9,872,600,000	3.44%		5,714,000,000	2.14%	5,833,150	(1.40%)	
2017	10,098,900,000	2.29%		5,897,800,000	3.22%	6,700,498	14.87%	
2018	10,852,000,000	7.46%		6,346,100,000	7.60%	7,040,821	5.08%	
2019	11,533,700,000	6.28%		6,768,800,000	6.66%	7,130,381	1.27%	
2020	12,042,700,000	4.41%		7,134,300,000	5.40%			
Average		3.48%			4.04%		#DIV/0!	

Source: Oregon Public Employees Retirement System – System Actuarial Valuation Reports and Employer Actuarial Valuation Reports.

City of Hermiston

Pension Obligation Bonds - Sensitivity Analysis Summary

PERS Unfunded Actuarial Liability and Pension Bond Analysis
January 6, 2022

	Scenario:		
	1	2	3
	Base Case: 6.9% Earnings	Assume actual earnings from 2002- 2019, then 6.90% for remainder	Assume actual earnings from 2007- 2019, then 6.90% for remainder
T1/T2 UAL Payoff	\$ 14,489,488	\$ 14,489,488	\$ 14,489,488
OPSRP UAL Payoff	1,459,570	1,459,570	1,459,570
Less: Transition Surplus	(504,004)	(504,004)	(504,004)
Less: Existing Side Account	-	-	-
Total Payoff (projected as of 12/31/2020)	\$ 15,445,054	\$ 15,445,054	\$ 15,445,054
Years where Net Rate Credit is negative	0	0	4
Years where Net Rate Credit is positive	20	20	16
T1/T2/OPSRP Average Rate Credit	13.82%	16.43%	11.64%
Debt Cost (%)	10.56%	10.56%	10.56%
Net Savings (%)	3.26%	5.87%	1.08%
T1/T2/OPSRP UAL Payoff Savings (in millions)	\$6.9	\$13.7	\$2.6
PV Savings (in millions)	\$4.7	\$8.9	\$1.7
PV Savings %	30.15%	57.46%	11.02%

Notes:

1. Scenarios 1-3 assumed borrowing rate of 3.50%.
2. "Average" Net Rate Credit may include years of both positives and negatives and does not take the time value of money into account.
3. "Net Rate Credit" is effective payroll rate credit after payment of debt.
4. Assumes issuer payroll grows at 3.40% annually. To the extent higher or lower growth is experienced, results will differ.

City of Hermiston

New Payoff Rate Credits and Pension Bond Savings (T1/T2/OPSRP UAL) Investment Earnings Scenario: 1

PERS Unfunded Actuarial Liability and Pension Bond Analysis
January 6, 2022

City of Hermiston - Projected Rate Credits and Pension Bond Savings (New Payoff Date: 12/31/20, Payoff Amount: \$15,445,054)															
Fiscal Year	Side Account Balance		Deposit 6/1/22	Rate Credit		Investment Earnings		Earnings ⁽¹⁾		Side Account Balance June 30		Bond Debt Service		Savings	
	July 1	July 1		Rate Credit (%)	Rate Credit (\$)	Investment Earnings (\$)	Investment Returns (%)	Balance	June 30	Service (\$)	Debt Cost (%)	Savings (\$)	Savings (%)		
2022	\$ -	\$ 15,445,054	-	1.23%	\$ 89,334	\$ 85,620	6.90%	\$ 15,441,340	\$ -	-	\$ 89,334	1.23%	\$ -	\$ 89,334	1.23%
2023	15,441,340	-	-	14.56%	1,091,648	1,025,277	6.90%	15,374,970	836,690	11.16%	254,958	3.40%	836,690	254,958	3.40%
2024	15,374,970	-	-	14.56%	1,128,764	1,019,331	6.90%	15,265,538	867,600	11.19%	261,164	3.37%	867,600	261,164	3.37%
2025	15,265,538	-	-	14.56%	1,167,142	1,010,368	6.90%	15,108,765	896,050	11.18%	271,092	3.38%	896,050	271,092	3.38%
2026	15,108,765	-	-	14.56%	1,206,824	998,090	6.90%	14,900,031	928,100	11.20%	278,724	3.36%	928,100	278,724	3.36%
2027	14,900,031	-	-	14.56%	1,247,856	982,178	6.90%	14,634,352	958,575	11.19%	289,281	3.38%	958,575	289,281	3.38%
2028	14,634,352	-	-	14.56%	1,290,283	962,284	6.90%	14,306,353	992,475	11.20%	297,808	3.36%	992,475	297,808	3.36%
2029	14,306,353	-	-	14.56%	1,334,153	938,038	6.90%	13,910,238	1,024,625	11.18%	309,528	3.38%	1,024,625	309,528	3.38%
2030	13,910,238	-	-	14.56%	1,379,514	909,037	6.90%	13,439,760	1,060,025	11.19%	319,489	3.37%	1,060,025	319,489	3.37%
2031	13,439,760	-	-	14.56%	1,426,418	874,848	6.90%	12,888,190	1,093,500	11.16%	332,918	3.40%	1,093,500	332,918	3.40%
2032	12,888,190	-	-	14.56%	1,474,916	835,004	6.90%	12,248,278	1,130,050	11.16%	344,866	3.40%	1,130,050	344,866	3.40%
2033	12,248,278	-	-	14.56%	1,525,063	789,005	6.90%	11,512,220	1,169,500	11.17%	355,563	3.39%	1,169,500	355,563	3.39%
2034	11,512,220	-	-	14.56%	1,576,915	736,309	6.90%	10,671,613	1,211,675	11.19%	365,240	3.37%	1,211,675	365,240	3.37%
2035	10,671,613	-	-	14.56%	1,630,530	676,334	6.90%	9,717,416	1,251,400	11.18%	379,130	3.39%	1,251,400	379,130	3.39%
2036	9,717,416	-	-	14.56%	1,685,968	608,454	6.90%	8,639,902	1,293,675	11.17%	392,293	3.39%	1,293,675	392,293	3.39%
2037	8,639,902	-	-	14.56%	1,743,291	531,996	6.90%	7,428,606	1,338,325	11.18%	404,966	3.38%	1,338,325	404,966	3.38%
2038	7,428,606	-	-	14.56%	1,802,563	446,235	6.90%	6,072,277	1,385,175	11.19%	417,388	3.37%	1,385,175	417,388	3.37%
2039	6,072,277	-	-	14.56%	1,863,850	350,393	6.90%	4,558,819	1,429,050	11.16%	434,800	3.40%	1,429,050	434,800	3.40%
2040	4,558,819	-	-	14.56%	1,927,221	243,632	6.90%	2,875,230	1,479,950	11.18%	447,271	3.38%	1,479,950	447,271	3.38%
2041	2,875,230	-	-	14.56%	1,992,747	125,053	6.90%	1,007,535	1,532,525	11.20%	460,222	3.36%	1,532,525	460,222	3.36%
2042	1,007,535	-	-	7.22%	1,021,639	14,103	6.90%	0	786,600	5.56%	235,039	1.66%	786,600	235,039	1.66%
TOTAL		\$ 15,445,054			\$ 29,606,642	\$ 14,161,588			\$ 22,665,565		\$ 6,941,077		\$ 6,941,077		
											PRESENT VALUE SAVINGS⁽³⁾:		\$4,657,388	30.15%	

(1) Assumed earnings from the Payoff Date through December 31, 2041.

(2) Preliminary, based on current market conditions. Reflects a True Interest Cost (TIC) of 3.50%.

(3) Estimated present value savings discounted at the TIC on a monthly discounting of side account payments and semiannual discounting of bond payments. Percent savings shown at far right are Net PV Savings as a percentage of the payoff amount.

City of Hermiston

New Payoff Rate Credits and Pension Bond Savings (T1/T2/OPSRP UAL) Investment Earnings Scenario: 2

PERS Unfunded Actuarial Liability and Pension Bond Analysis
January 6, 2022

City of Hermiston - Projected Rate Credits and Pension Bond Savings (New Payoff Date: 12/31/20, Payoff Amount: \$15,445,054)													
Fiscal Year	Side Account		Rate Credit	Rate Credit (\$)	Earnings ⁽¹⁾		Investment Returns (%)	Balance June 30	Bond Debt Service		Savings		
	Balance July 1	Deposit 6/1/22			Investment Earnings (\$)	Investment Returns (%)			Debt Service (\$) ⁽²⁾	Debt Cost (%)		Savings (\$)	Savings (%)
2022	\$ -	\$ 15,445,054	1.23%	\$ 89,334	\$ 85,620	6.90%	\$ 15,441,340	\$ -	-	\$ 89,334	1.23%		
2023	15,441,340	-	14.56%	1,091,648	3,271,626	22.00%	17,621,319	836,690	11.16%	254,958	3.40%		
2024	17,621,319	-	14.56%	1,128,764	2,259,175	13.27%	18,751,730	867,600	11.19%	261,164	3.37%		
2025	18,751,730	-	15.57%	1,248,052	2,485,905	13.74%	19,989,583	896,050	11.18%	352,002	4.39%		
2026	19,989,583	-	15.57%	1,290,485	2,983,317	15.45%	21,682,415	928,100	11.20%	362,385	4.37%		
2027	21,682,415	-	18.55%	1,589,741	1,973,323	9.47%	22,065,997	958,575	11.19%	631,166	7.36%		
2028	22,065,997	-	18.55%	1,643,792	(5,745,041)	(27.18%)	14,677,164	992,475	11.20%	651,317	7.35%		
2029	14,677,164	-	21.56%	1,975,456	2,608,200	19.12%	15,309,908	1,024,625	11.18%	950,831	10.38%		
2030	15,309,908	-	21.56%	2,042,622	1,770,085	12.44%	15,037,371	1,060,025	11.19%	982,597	10.37%		
2031	15,037,371	-	15.46%	1,514,407	314,350	2.21%	13,837,314	1,093,500	11.16%	420,907	4.30%		
2032	13,837,314	-	15.46%	1,565,897	1,910,047	14.68%	14,181,464	1,130,050	11.16%	435,847	4.30%		
2033	14,181,464	-	15.97%	1,672,354	2,074,849	15.60%	14,583,959	1,169,500	11.17%	502,854	4.80%		
2034	14,583,959	-	15.97%	1,729,214	983,667	7.20%	13,838,411	1,211,675	11.19%	517,539	4.78%		
2035	13,838,411	-	17.61%	1,971,871	242,798	1.90%	12,109,339	1,251,400	11.18%	720,471	6.43%		
2036	12,109,339	-	17.61%	2,038,914	760,507	6.90%	10,830,932	1,293,675	11.17%	745,239	6.44%		
2037	10,830,932	-	18.52%	2,217,459	1,478,300	15.30%	10,091,773	1,338,325	11.18%	879,134	7.34%		
2038	10,091,773	-	18.52%	2,292,852	37,199	0.42%	7,836,120	1,385,175	11.19%	907,677	7.33%		
2039	7,836,120	-	18.96%	2,426,862	888,702	13.56%	6,297,960	1,429,050	11.16%	997,812	7.80%		
2040	6,297,960	-	18.96%	2,509,375	342,208	6.90%	4,130,792	1,479,950	11.18%	1,029,425	7.78%		
2041	4,130,792	-	20.92%	2,862,944	179,661	6.90%	1,447,508	1,532,525	11.20%	1,330,419	9.72%		
2042	1,447,508	-	10.37%	1,467,770	20,262	6.90%	0	786,600	5.56%	681,170	4.81%		
TOTAL		\$ 15,445,054		\$ 36,369,815	\$ 20,924,761			\$ 22,665,565		\$ 13,704,251			
										PRESENT VALUE SAVINGS⁽³⁾:		\$ 8,875,485	57.46%

(1) Assumed earnings from the Payoff Date through December 31, 2041.

(2) Preliminary, based on current market conditions. Reflects a True Interest Cost (TIC) of 3.50%.

(3) Estimated present value savings discounted at the TIC on a monthly discounting of side account payments and semiannual discounting of bond payments. Percent savings shown at far right are Net PV Savings as a percentage of the payoff amount.

City of Hermiston

New Payoff Rate Credits and Pension Bond Savings (T1/T2/OPSRP UAL) Investment Earnings Scenario: 3

PERS Unfunded Actuarial Liability and Pension Bond Analysis
January 6, 2022

City of Hermiston - Projected Rate Credits and Pension Bond Savings (New Payoff Date: 12/31/20, Payoff Amount: \$15,445,054)														
Fiscal Year	Side Account		Rate Credit	Rate Credit (\$)	Earnings ⁽¹⁾		Investment Returns (%)	Balance June 30	Bond Debt Service		Savings			
	Balance July 1	Deposit 6/1/22			Investment Earnings (\$)	Investment Returns (%)			Debt Service (\$) ⁽²⁾	Debt Cost (%)	Savings (\$)	Savings (%)		
2022	\$ -	\$ 15,445,054	1.23%	\$ 89,334	\$ 85,620	6.90%	\$ 15,441,340	\$ -	-	\$ -	-	\$ 89,334	1.23%	
2023	15,441,340	-	14.56%	1,091,648	(4,029,273)	(27.18%)	10,320,420	836,690	11.16%	836,690	11.16%	254,958	3.40%	
2024	10,320,420	-	14.56%	1,128,764	1,860,086	19.12%	11,051,743	867,600	11.19%	867,600	11.19%	261,164	3.37%	
2025	11,051,743	-	11.98%	960,378	1,311,614	12.44%	11,402,979	896,050	11.18%	896,050	11.18%	64,328	0.80%	
2026	11,402,979	-	11.98%	993,031	240,219	2.21%	10,650,167	928,100	11.20%	928,100	11.20%	64,931	0.78%	
2027	10,650,167	-	10.76%	922,031	1,492,038	14.68%	11,220,174	958,575	11.19%	958,575	11.19%	(36,544)	(0.43%)	
2028	11,220,174	-	10.76%	953,380	1,671,984	15.60%	11,938,777	992,475	11.20%	992,475	11.20%	(39,095)	(0.44%)	
2029	11,938,777	-	10.77%	986,917	821,708	7.20%	11,773,568	1,024,625	11.18%	1,024,625	11.18%	(37,708)	(0.41%)	
2030	11,773,568	-	10.77%	1,020,472	213,279	1.90%	10,966,375	1,060,025	11.19%	1,060,025	11.19%	(39,553)	(0.42%)	
2031	10,966,375	-	12.23%	1,198,525	712,571	6.90%	10,480,421	1,093,500	11.16%	1,093,500	11.16%	105,025	1.07%	
2032	10,480,421	-	12.23%	1,239,275	1,503,560	15.30%	10,744,706	1,130,050	11.16%	1,130,050	11.16%	109,225	1.08%	
2033	10,744,706	-	11.86%	1,242,372	42,318	0.42%	9,544,651	1,169,500	11.17%	1,169,500	11.17%	72,872	0.70%	
2034	9,544,651	-	11.86%	1,284,613	1,202,217	13.56%	9,462,255	1,211,675	11.19%	1,211,675	11.19%	72,938	0.67%	
2035	9,462,255	-	12.43%	1,391,660	601,679	6.90%	8,672,275	1,251,400	11.18%	1,251,400	11.18%	140,260	1.25%	
2036	8,672,275	-	12.43%	1,438,976	545,429	6.90%	7,778,727	1,293,675	11.17%	1,293,675	11.17%	145,301	1.25%	
2037	7,778,727	-	12.95%	1,550,403	479,673	6.90%	6,707,998	1,338,325	11.18%	1,338,325	11.18%	212,078	1.77%	
2038	6,707,998	-	12.95%	1,603,117	403,853	6.90%	5,508,734	1,385,175	11.19%	1,385,175	11.19%	217,942	1.76%	
2039	5,508,734	-	13.13%	1,680,311	318,263	6.90%	4,146,685	1,429,050	11.16%	1,429,050	11.16%	251,261	1.96%	
2040	4,146,685	-	13.13%	1,737,442	222,179	6.90%	2,631,422	1,479,950	11.18%	1,479,950	11.18%	257,492	1.95%	
2041	2,631,422	-	13.36%	1,827,901	114,297	6.90%	917,819	1,532,525	11.20%	1,532,525	11.20%	295,376	2.16%	
2042	917,819	-	6.58%	930,576	12,757	6.90%	-	786,600	5.56%	786,600	5.56%	143,976	1.02%	
TOTAL		\$ 15,445,054		\$ 25,271,126	\$ 9,826,072			\$ 22,665,565				\$ 2,605,561		
										PRESENT VALUE SAVINGS ⁽³⁾:			\$1,701,304	11.02%

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