

**WESTERN STATES OFFICE AND  
PROFESSIONAL EMPLOYEES PENSION FUND**

**THIRD SUSPENSION APPLICATION**

**Appendix C**

# Western States Office and Professional Employees Pension Fund

## INFORMATION ON ACTUARIAL ASSUMPTIONS AND METHODS

### Part 1 - Actuarial assumptions and methods used for projections

#### Investment returns

In developing the annual investment returns for the projections, we looked at current market based data including:

- Risk-free rates of returns based on the current Treasury spot rates,
- Forward-looking investment return statistics for various asset classes for both the near term and long term based on survey information collected by Horizon Actuarial Services' 2017 Edition of the Survey of Capital Market Assumptions, and
- The Plan's Investment Policy Statement and current strategic asset allocation

The Horizon Survey provides capital market assumptions and statistics (return expectations, standard deviations of returns and correlation coefficients) for each major asset class. Using this Horizon Survey data and the Plan's strategic asset allocation, we are able to determine a "best estimate" return for the near term (i.e. a 10-year time period), as well as for the longer term (20+ year time period). For the Plan's current asset allocation, the estimated geometric returns came out to be 6.10% for the 10-year time horizon and 7.15% for the longer 20+ year time horizon.

Using these expected return levels for the portfolio over different time periods and the Treasury yield curve spot rates as a proxy for annual forward-looking risk-free rate, we attempt to determine a reasonable level for the risk premium for each of the decades covered by our projections. As is shown on the next page, our estimated risk premium is 3% for the first 10 years, jumping to 3.5% for years 11 to 20, then declining to 3.25% for years 21 to 30 and finally back down to 3.0% for years 31 and higher.

We believe the 3.0% risk-premium for the next 10 years, which is at the lower end of historical averages for a predominantly US centered investment portfolio of stocks and bonds is reasonable given the recent decade's investment performance. Using a 3.0% risk premium for this time period produces an estimated 6.23% geometric return, which is generally in line with the 6.10% return estimated for that time period by the Horizon Survey results.

Increasing the estimated risk premium to 3.5% for the next 10-year period produces a 20-year geometric return of 6.95% which is a little bit lower than the 7.15% return estimated for that time period by the Horizon Survey results. Lowering the risk premium in each of the subsequent two decades keeps the projected geometric returns for the portfolio in line with the 7.15% long-term estimated return by the Horizon Survey and the 7.25% long-term assumption used by the Plan for ERISA funding purposes.

# Western States Office and Professional Employees Pension Fund

Plan Year	Assumed Returns	Treasury Spot Rates	Risk Premium Rates	Avg. Annualized Geometric Returns <sup>1</sup>
2018 <sup>1</sup>	4.15%	2.53%	3.00%	
2019	5.81%	2.81%	3.00%	
2020	6.01%	3.01%	3.00%	
2021	6.17%	3.17%	3.00%	
2022	6.31%	3.31%	3.00%	
2023	6.45%	3.45%	3.00%	
2024	6.57%	3.57%	3.00%	
2025	6.69%	3.69%	3.00%	
2026	6.80%	3.80%	3.00%	
2027	6.89%	3.89%	3.00%	<b>6.23%</b>
2028	7.47%	3.97%	3.50%	
2029	7.53%	4.03%	3.50%	
2030	7.59%	4.09%	3.50%	
2031	7.64%	4.14%	3.50%	
2032	7.67%	4.17%	3.50%	
2033	7.70%	4.20%	3.50%	
2034	7.73%	4.23%	3.50%	
2035	7.75%	4.25%	3.50%	
2036	7.77%	4.27%	3.50%	
2037	7.79%	4.29%	3.50%	<b>6.95%</b>
2038	7.55%	4.30%	3.25%	
2039	7.56%	4.31%	3.25%	
2040	7.57%	4.32%	3.25%	
2041	7.58%	4.33%	3.25%	
2042	7.59%	4.34%	3.25%	
2043	7.60%	4.35%	3.25%	
2044	7.61%	4.36%	3.25%	
2045	7.62%	4.37%	3.25%	
2046	7.63%	4.38%	3.25%	
2047	7.64%	4.39%	3.25%	<b>7.16%</b>
2048	7.39%	4.39%	3.00%	
2049	7.40%	4.40%	3.00%	
2050	7.41%	4.41%	3.00%	
2051	7.41%	4.41%	3.00%	
2052	7.42%	4.42%	3.00%	
2053	7.42%	4.42%	3.00%	
2054	7.43%	4.43%	3.00%	
2055	7.43%	4.43%	3.00%	
2056	7.44%	4.44%	3.00%	
2057	7.44%	4.44%	3.00%	<b>7.23%</b>

<sup>1</sup> Return shown for 2018 is for the period 4/1/2018 through 12/31/2018; 0.49% net return for the first quarter of 2018, based on Administrator financial statements, is included in the calculation of annualized geometric returns.

# Western States Office and Professional Employees Pension Fund

## The Treasury High Quality Market (HQM) Corporate Bond Yield Curve Monthly Average Spot Rates, Percent

These yield curves are based on data from the month listed at the top of the column.

<https://www.irs.gov/retirement-plans/monthly-yield-curve-tables>

Maturity	2018			Maturity	2018		
	Jan	Feb	Mar		Jan	Feb	Mar
0.5	1.97	2.13	2.37	20.5	4.00	4.25	4.29
1.0	2.12	2.31	2.53	21.0	4.01	4.26	4.30
1.5	2.26	2.47	2.68	21.5	4.02	4.26	4.31
2.0	2.38	2.62	2.81	22.0	4.03	4.26	4.31
2.5	2.48	2.73	2.92	22.5	4.03	4.27	4.32
3.0	2.57	2.83	3.01	23.0	4.04	4.27	4.32
3.5	2.65	2.91	3.10	23.5	4.04	4.27	4.33
4.0	2.73	2.99	3.17	24.0	4.05	4.27	4.33
4.5	2.80	3.07	3.24	24.5	4.05	4.28	4.34
5.0	2.88	3.15	3.31	25.0	4.06	4.28	4.34
5.5	2.95	3.23	3.38	25.5	4.07	4.28	4.35
6.0	3.03	3.31	3.45	26.0	4.07	4.29	4.35
6.5	3.10	3.39	3.51	26.5	4.08	4.29	4.36
7.0	3.17	3.46	3.57	27.0	4.08	4.29	4.36
7.5	3.24	3.54	3.63	27.5	4.08	4.29	4.37
8.0	3.31	3.61	3.69	28.0	4.09	4.30	4.37
8.5	3.37	3.67	3.75	28.5	4.09	4.30	4.38
9.0	3.43	3.74	3.80	29.0	4.10	4.30	4.38
9.5	3.49	3.80	3.84	29.5	4.10	4.30	4.38
10.0	3.54	3.85	3.89	30.0	4.11	4.31	4.39
10.5	3.59	3.90	3.93	30.5	4.11	4.31	4.39
11.0	3.63	3.94	3.97	31.0	4.11	4.31	4.39
11.5	3.68	3.98	4.00	31.5	4.12	4.31	4.40
12.0	3.71	4.02	4.03	32.0	4.12	4.32	4.40
12.5	3.75	4.05	4.06	32.5	4.12	4.32	4.40
13.0	3.78	4.08	4.09	33.0	4.13	4.32	4.41
13.5	3.80	4.10	4.11	33.5	4.13	4.32	4.41
14.0	3.83	4.13	4.14	34.0	4.13	4.32	4.41
14.5	3.85	4.15	4.15	34.5	4.14	4.33	4.41
15.0	3.87	4.16	4.17	35.0	4.14	4.33	4.42
15.5	3.89	4.18	4.19	35.5	4.14	4.33	4.42
16.0	3.91	4.19	4.20	36.0	4.14	4.33	4.42
16.5	3.92	4.20	4.22	36.5	4.15	4.33	4.42
17.0	3.93	4.21	4.23	37.0	4.15	4.33	4.43
17.5	3.95	4.22	4.24	37.5	4.15	4.34	4.43
18.0	3.96	4.23	4.25	38.0	4.15	4.34	4.43
18.5	3.97	4.23	4.26	38.5	4.16	4.34	4.43
19.0	3.98	4.24	4.27	39.0	4.16	4.34	4.44
19.5	3.99	4.24	4.28	39.5	4.16	4.34	4.44
20.0	4.00	4.25	4.29	40.0	4.16	4.34	4.44





# Western States Office and Professional Employees Pension Fund

## Mortality assumptions

RP-2014 Blue Collar Mortality Table for males and females, adjusted backward to 2006 using MP-2014, then projected forward from 2006 with Fully Generational Mortality Improvement under MP-2016

RP-2014 Disabled Retiree Mortality Table for males and females, adjusted backward to 2006 using MP-2014, then projected forward from 2006 with Fully Generational Mortality Improvement under MP-2016

## Other demographic assumptions

**Termination:** Table T-7 (Less 51 GAT) of The Actuary's Pension Handbook; Non-Vested Participants are assumed to earn one year of vesting credit annually until vested

### **Retirement:**

Active participants are assumed to retire based on the following rate table:

<u>Age</u>	<u>Rate of Retirement</u>
55	20%
56	15%
57-59	12%
60	15%
61	20%
62	40%
63-70	35%
71+	100%

Vested inactive participants are assumed to retire based on the following rate table:

<u>Age</u>	<u>Rate of Retirement</u>
55	15%
56-61	5%
62	18%
63-64	3%
65+	100%

**Disability:** 1952 Society of Actuaries Table, Period 2, Benefit 5

## Assumptions regarding form and commencement age of benefits

For those not yet in pay status, 55% of participants are assumed to elect a Life Annuity and 45% of participants are assumed to elect a 50% Joint and Survivor Annuity.

80% of non-retired male participants and 75% of non-retired female participants are assumed to be married and their spouses are assumed to be one year younger.

The assumed benefit commencement age for participants who have terminated with deferred benefits is shown separately under the Retirement assumption in the "Other demographic assumptions" section above. Participants who are expected to terminate with deferred benefits in the future are all assumed, on average, to retire at age 62. This is a computational shortcut given the extreme programming that would be required to exactly match the retirement assumption used for current terminated vested participants. The weighted average retirement age over the preceding four years is 62 for retiring terminated vested participants, as shown in the "Demographic experience" section below.

Participants eligible for a disability benefit are assumed to retire and commence benefits immediately upon decrementing for disability.

# Western States Office and Professional Employees Pension Fund

## Assumptions regarding missing or incomplete data

All current terminated vested participants are assumed to be alive; an actuarial increase is applied to their benefit to reflect a delay in benefit commencement.

If not specified, participants are assumed to be female and the same age as the average of participants with the same status code.

## New entrant profile

New entrants are assumed to enter the Plan such that the active headcounts decline by 4% during each year of our projections. New entrants are assumed to be 85% female and 15% male in the following age bands:

Age Range	Percent of New Entrants
Below 25	10%
25-30	16%
30-35	16%
25-40	18%
40-45	10%
45-50	9%
Over 50	21%

## Contribution rates

As of January 1, 2018, all current contributing employers are paying supplemental contributions at the maximum rate of 80% (none are still paying surcharge contributions), except one who abated 9/1/2015 and will be at the 80% level later this year. Therefore, the current contribution rate of \$3.10 per hour is assumed to remain level for each year during the projection period.

## Contribution base units

As of January 1, 2018, the Plan has 593 active participants. We are not aware of any employer withdrawals occurring between January 1, 2018 and March 31, 2018.

For purposes of the projections, we assume that the number of actives will decline by 4% per year. To accomplish this in the projections, we assume new entrants replace a portion of the actives that terminate (due to retirement, termination, death or due to the employer withdrawing), but only to the extent that it produces an active headcount that is 96% of the previous year's headcount. Actives are assumed to work a consistent number of hours from year to year, so the net change in the contribution base units (CBUs) from year to year also results in a 4% decline.

When allocating the 4% decline, we assume that 75% of the 4% decline (i.e. 3% of the gross decline) is associated with new employer withdrawals, with a withdrawal liability imposed. Actives from newly withdrawn employers are not assumed to be replaced with new entrants. The other 25% of the 4% decline (i.e. 1% of the gross decline) is generally attributable to the net change in actives for ongoing, contributing employers. Our expectation is that the employees that terminate (regardless of decrement) from ongoing contributing employers will be replaced with a new entrant; though there may be some small level of productivity improvement such that not all are replaced fully.



# Western States Office and Professional Employees Pension Fund

## Withdrawal liability payments

We have assumed ongoing withdrawal liability payments will be made by employers that have withdrawn prior to the May 15, 2018 filing date based on the payment schedules in their withdrawal liability assessments. We do not expect payments from the 2 employers that have been deemed to have defaulted on their assessments nor from the 4 employers that are currently delinquent.

We do make an assumption that a portion of the assumed future decline in hours will trigger withdrawal liability assessments in future years.

For both the current assessed group of employers that making scheduled payments, and for future withdrawal liability assessments, we have reflected a 4% default rate on the collectability of those scheduled payments due to bankruptcies or other financial impairments.

## Administrative expenses

Administrative expenses are assumed to be \$1.3 million in 2018 (\$1.05 million from April 1, 2018 through December 31, 2018) and \$1.0 million in 2019, increasing by 1.5% each year thereafter for expected inflation and increases in PBGC premiums offset by a 4% decline in active hours each year.

## Projection methodology

Data was not grouped – an individual record was valued for each participant in the Plan.

There were no changes to the cash flow projections that would normally be provided by the actuarial software, including both changes to the programming that affect the results generated by the software and modifications to the results generated by the software.

## **Part 2 - Supporting documentation for selection of certain assumptions**

### Investment Returns

<b>Asset Class</b>	<b>Target Portfolio</b>	<b>Arithmetic Return (20yr)</b>	<b>Geometric Return (20yr)</b>	<b>Standard Deviation</b>
US Equity - Large Cap	25.71%	9.12%	7.83%	16.58%
US Equity - Small/Mid Cap	5.50%	10.33%	8.40%	20.22%
Non-US Equity - Developed	17.13%	9.42%	7.64%	18.86%
US Corporate Bonds - Core	21.20%	4.59%	4.42%	5.50%
US Corporate Bonds - Long Duration	2.73%	5.40%	4.79%	10.44%
Non-US Debt - Developed	1.63%	3.74%	3.47%	7.36%
US Treasuries (Cash Equivalents)	1.20%	3.25%	3.23%	2.97%
Real Estate	13.80%	7.82%	6.69%	14.52%
Hedge Funds	5.30%	6.33%	5.97%	8.00%
Infrastructure	5.80%	8.28%	7.09%	14.55%
Total	100.00%			

# Western States Office and Professional Employees Pension Fund

Asset Class	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
US Equity - Large Cap	1															
US Equity - Small/Mid Cap	0.88	1														
Non-US Equity - Developed	0.81	0.75	1													
Non-US Equity - Emerging	0.72	0.69	0.79	1												
US Corporate Bonds - Core	0.13	0.08	0.14	0.13	1											
US Corporate Bonds - Long Duration	0.11	0.06	0.13	0.12	0.86	1										
US Corporate Bonds - High Yield	0.62	0.61	0.61	0.63	0.36	0.31	1									
Non-US Debt - Developed	0.15	0.09	0.3	0.22	0.56	0.51	0.21	1								
Non-US Debt - Emerging	0.55	0.5	0.59	0.68	0.45	0.4	0.61	0.39	1							
US Treasuries (Cash Equivalents)	-0.1	-0.13	-0.08	-0.08	0.35	0.34	-0.05	0.23	0.1	1						
TIPS (Inflation-Protected)	0.06	0.03	0.12	0.19	0.69	0.57	0.29	0.47	0.41	0.35	1					
Real Estate	0.43	0.43	0.39	0.34	0.07	0.09	0.32	0.05	0.24	0.1	0.11	1				
Hedge Funds	0.62	0.61	0.64	0.64	0.17	0.09	0.56	0.1	0.47	-0.08	0.16	0.32	1			
Commodities	0.32	0.31	0.41	0.45	0.9	0.03	0.35	0.21	0.35	-0.02	0.27	0.22	0.43	1		
Infrastructure	0.51	0.47	0.52	0.47	0.23	0.19	0.46	0.28	0.42	-0.04	0.18	0.27	0.42	0.31	1	
Private Equity	0.73	0.71	0.7	0.65	0.04	0.01	0.51	0.07	0.45	-0.01	0.02	0.4	0.62	0.33	0.45	1

The inflation rate inherent in the net investment returns is 2.25%.

## Demographic experience

The key demographic assumptions are reviewed with each annual valuation and the associated gain/loss by source is analyzed to determine if any trends warrant a change or modification in assumptions. Below is a table of the historical gain/loss by source which is reflective of experience prior to several assumption changes that became effective January 1, 2017:

<b>Total Gain/(Loss) Summary</b>	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Investments	(1,353,294)	(3,503,794)	6,155,370	13,070,644	(33,450,978)	(40,088,460)	(6,266,318)	27,395,188	(126,852,502)	13,188,900
Mortality	(1,248,878)	1,762,830	665,209	(21,395)	(646,955)	819,175	443,653	3,427,808	2,337,772	609,792
Turnover	175,220	(227,227)	(509,163)	52,665	(157,632)	(183,334)	182,094	138,998	208,536	3,496,820
Retirement	1,647,552	1,615,254	2,462,900	1,943,164	1,757,478	650,964	510,575	(3,026,254)	1,007,178	129,454
Disability	(92,794)	(95,159)	(94,877)	(136,510)	(127,345)	(4,920)	(131,473)	N/A	N/A	N/A
Miscellaneous	(149,325)	(58,520)	(404,437)	(344,116)	(407,394)	(372,466)	(338,597)	(589,859)	193,667	128,169
<b>Total Liability Gain / (Loss)</b>	<b>331,775</b>	<b>2,997,178</b>	<b>2,119,632</b>	<b>1,493,808</b>	<b>418,152</b>	<b>909,419</b>	<b>666,252</b>	<b>(49,307)</b>	<b>3,747,153</b>	<b>4,364,235</b>
Total Gain / (Loss)	(1,021,519)	(506,616)	8,275,002	14,564,452	(33,032,826)	(39,179,041)	(5,600,066)	27,345,881	(123,105,349)	17,553,135

A more detailed experience review was performed on the following assumptions and changes were made effective January 1, 2017 (the current assumptions are outlined as requested in the above sections).

## Retirement Age for Actives who Terminate:

Terminated Vested Retirement Age	Count
Weighted Ret Age 1/1/14	120
Weighted Ret Age 1/1/15	146
Weighted Ret Age 1/1/16	122
Weighted Ret Age 1/1/17	143
<b>Weighted Ret Age All 4 Years</b>	<b>61.6</b>

# Western States Office and Professional Employees Pension Fund

## Retirement Age for Terminated Vested Participants:

Age	2016	2015	2014	2016	2015	2014	Assumption
≤ 55	13	29	14	11%	20%	12%	<b>15%</b>
56	2	10	4	2%	7%	3%	<b>5%</b>
57	3	9	7	2%	6%	6%	<b>5%</b>
58	5	13	9	4%	9%	8%	<b>5%</b>
59	3	4	6	2%	3%	5%	<b>5%</b>
60	7	4	3	6%	3%	3%	<b>5%</b>
61	4	3	6	3%	2%	5%	<b>5%</b>
62	17	28	28	14%	19%	23%	<b>18%</b>
63	3	4	7	2%	3%	6%	<b>3%</b>
64	8	4	7	7%	3%	6%	<b>3%</b>
65	30	26	11	25%	18%	9%	<b>100%</b>
66	8	3	5	7%	2%	4%	
67	2	3	2	2%	2%	2%	
68	4	1	0	3%	1%	0%	
69	1	2	1	1%	1%	1%	
70	3	1	2	2%	1%	2%	
71	9	2	8	7%	1%	7%	
≥ 72	0	0	0	0%	0%	0%	
	122	146	120				

## Form of Benefit:

Benefit Form Elected	Frequency
Life Annuity	69
50% J&S Annuity	28
(2/3)% J&S Annuity	5
100% J&S Annuity	17
50% Pop Up J&S	9
(2/3)% Pop Up J&S	3
100% Pop Up J&S	9
<b>Total</b>	<b>140</b>

Total New Retirees Electing LA	274
Total New Retirees	501
Percentage electing LA	<b>54.7%</b>
Total New Retirees Electing J&S	227
Total New Retirees	501
Percentage electing J&S	<b>45.3%</b>

The spouse age difference for all retirees who elected a joint and survivor form of benefit was reviewed for 1,428 retirees as of January 1, 2017 and the resulting age difference was one year younger for male spouses and one year younger for female spouses.

The marital status is not provided in the valuation data for the Plan.

# Western States Office and Professional Employees Pension Fund

The distribution of each optional form of benefit selected at retirement for the last five years is provided in the chart below:

Benefit Form at Retirement	2016	2015	2014	2013	2012
Life Annuity	88	69	107	98	54
50% J&S Annuity	40	28	41	22	31
(2/3)% J&S Annuity	2	5	1	3	1
100% J&S Annuity	19	17	20	13	13
50% Pop Up J&S	12	9	11	5	9
(2/3)% Pop Up J&S	0	3	3	3	1
100% Pop Up J&S	19	9	19	15	15
<b>Total</b>	<b>180</b>	<b>140</b>	<b>202</b>	<b>159</b>	<b>124</b>

Retirement Age	Active to Retired					Terminated Vested to Retired				
	2016	2015	2014	2013	2012	2016	2015	2014	2013	2012
55	2.94%	5.88%				1.40%	1.64%	4.79%	5.00%	1.12%
56	8.82%	5.88%	3.85%			9.09%	8.20%	16.44%	6.67%	5.62%
57	2.94%					3.50%	1.64%	6.16%	3.33%	5.62%
58			3.85%	2.56%	6.06%	1.40%	4.10%	5.48%	8.33%	6.74%
59			1.92%	7.69%		1.40%	3.28%	8.22%	5.00%	4.49%
60	2.94%	11.76%	3.85%	7.69%	6.06%	6.99%	3.28%	3.42%	5.00%	5.62%
61	2.94%		15.38%	7.69%	6.06%	6.99%	4.92%	3.42%	3.33%	7.87%
62			15.38%	12.82%	3.03%	16.78%	5.74%	6.85%	14.17%	5.62%
63	8.82%	23.53%	7.69%	15.38%	21.21%	18.18%	9.02%	13.01%	11.67%	16.85%
64	11.76%		5.77%		3.03%	4.90%	5.74%	4.11%	8.33%	3.37%
65	14.71%	11.76%	1.92%	10.26%	9.09%	10.49%	10.66%	6.85%	7.50%	15.73%
66	20.59%	17.65%	15.38%	20.51%	15.15%	13.29%	19.67%	10.27%	7.50%	13.48%
67	14.71%	5.88%	5.77%	7.69%	3.03%	1.40%	5.74%	4.11%	3.33%	3.37%
68	2.94%	5.88%	5.77%	2.56%	9.09%	0.70%	2.46%	2.74%	1.67%	1.12%
69			1.92%	2.56%	3.03%	0.70%	2.46%	0.68%		1.12%
70	2.94%	5.88%	1.92%		9.09%		1.64%	1.37%		1.12%
≥ 70	2.94%	5.88%	9.62%	2.56%	6.06%	2.80%	9.84%	2.05%	9.17%	1.12%
<b>Total</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

## Mortality assumptions

The mortality assumption for healthy lives is based on the blue-collar rates in the RP-2014 Mortality Tables Report issued by the Society of Actuaries (located at <https://www.soa.org/Research/Experience-Study/pension/research-2014-rp.aspx>). The rates were adjusted backward to 2006 using MP-2014 then projected forward from 2006 with Fully Generational Mortality Improvement under MP-2016. We feel these tables are representative of the expected mortality experience for participants in the Plan.

The mortality assumption for disabled lives is based on the disabled rates in the same RP-2014 Mortality Tables Report issued by the Society of Actuaries. The rates were similarly adjusted backward to 2006 using MP-2014 then projected forward from 2006 with Fully Generational Mortality Improvement under MP-2016. We feel these tables are representative of the expected mortality experience for participants in the Plan.

The process used to construct the mortality rates is described in the RP-2014 Mortality Tables Report.

# Western States Office and Professional Employees Pension Fund

## New entrant profile

New entrants are assumed to replace participants who terminated employment during the year from contributing employers and to have a demographic mix consistent with recent entrants during the past six plan years with an average age of 39. A distribution of the ages of all new entrants is shown in the chart below:

Age Range	Percentage of New Entrants
Below 20	0%
20 – 24	10%
25 – 29	16%
30 – 34	16%
35 – 39	18%
40 – 44	10%
45 – 49	9%
50 – 54	8%
55 – 59	7%
60 and over	5%

New entrants are assumed to be 85% female and 15% male based on the distribution of new participants over the past six years.

New Entrant Sex	Count	% (Excluding Missing)	Assumption
Male	58	16%	15%
Female	300	84%	85%
Missing	3		
361			

In developing the new entrant profile, we did consider whether “rehires” (i.e. participants returning to work with prior credited & vesting service) should be considered as part of the new entrant profile. In looking back over the prior 6 plan years, less than 9% of the new entrants were rehires (35 of 396). Only 14 of the 35 remain as active participants as of 1/1/2018. During the most recent 3 years, on 5% of the new entrants were rehires having prior vesting or benefit service. As such, we did not consider the rehires to be significant enough to warrant an adjustment to the new hire profile.

# Western States Office and Professional Employees Pension Fund

## Contribution base units and employer withdrawals

Following is a table of employers that contributed 5% or more of the annual contributions to the Plan in each plan year beginning with 2009, per the corresponding Schedule R attachments to the Form 5500. The table includes the base, supplemental and surcharge contributions, total contributions, CBUs (hours) and average contribution rate for each employer.

Employer	Plan Year	Contributions			Hours	Average Contribution Rate
		Base	Supplemental + Surcharge	Total		
ATPA	2009	\$709,925	\$13,998	\$723,923	223,084	\$3.25
Cascade Regional Blood Services	2009	421,051	8,663	429,714	233,763	\$1.84
NW Natural Gas	2009	422,395	8,834	431,228	1,407,966	\$0.31
WPAS	2009	844,648	17,488	862,135	305,836	\$2.82
ATPA	2010	650,850	72,036	722,886	205,211	\$3.52
Cascade Regional Blood Services	2010	388,152	38,815	426,967	215,640	\$1.98
NW Natural Gas	2010	385,069	38,512	423,581	1,283,547	\$0.33
WPAS	2010	840,813	84,081	924,894	288,455	\$3.21
ATPA	2011	651,080	92,245	743,325	205,734	\$3.61
NW Natural Gas	2011	377,902	37,795	415,697	1,259,656	\$0.33
WPAS	2011	857,317	85,731	943,049	290,615	\$3.25
ATPA	2012	639,605	109,279	748,884	201,687	\$3.71
NW Natural Gas	2012	376,353	37,639	413,992	1,254,491	\$0.33
WPAS	2012	835,883	83,588	919,471	283,349	\$3.25
ATPA	2013	656,007	131,910	787,917	206,918	\$3.81
NW Natural Gas	2013	387,039	38,710	425,749	1,290,111	\$0.33
WPAS	2013	819,672	81,969	901,641	277,854	\$3.25
ATPA	2014	391,502	382,300	773,802	123,866	\$6.25
WPAS	2014	824,649	82,466	907,115	279,540	\$3.25
WPAS	2015	801,138	80,068	881,206	271,571	\$3.24
ILWU-PMA Welfare Plan	2016	221,519	177,215	398,733	54,696	\$7.29

The assumption that CBU levels will decline at a lower rate than recent history would indicate is supported by the following rationale:

1. The Board of Trustees believes that the factors that resulted in a decline in CBUs in the past have ceased.
2. Past fluctuations in CBUs were primarily the result of:
  - a) the Plan declaring Red Zone status in 2009;
  - b) employers reacting to the additional costs of the employer surcharge followed by supplemental employer contributions under the Rehabilitation Plan; and
  - c) the Great Recession (2007–2012), which limited employer financial resources. The Pension Protection Act shifted the economic burden of funding Red Zone plans onto employers (supplemental employer contributions) and participants (wage concessions), which was particularly painful during a recession.

## Western States Office and Professional Employees Pension Fund

Under the PPA rules, employers had until the expiration date of their bargaining agreement that was in place at the time the Rehabilitation Plan was approved to adopt a bargaining agreement that complied with the terms of the Rehabilitation Plan. Many employers elected to withdraw rather than agree to the Rehabilitation Plan for some or all of the following reasons:

- a) Did not want to be obligated to pay the higher Rehabilitation Plan contributions on an ongoing basis;
  - b) Did not want to increase their future Withdrawal Liability payment schedule by agreeing to the higher contributions while still an active employer if they were considering withdrawal or concerned about mass withdrawal in the future; and
  - c) Did not expect the plan would recover given the pre-MPRA tools available.
3. At this time, the Board believes that the economic burden imposed by the Pension Protection Act has now been absorbed by the ongoing employers and their associated participants as of January 1, 2018. This should reduce the rate of decline in CBU levels (and for the participating employers, stable costs) going forward. Specifically:
- a) as of 1/1/2018, all employers have adopted the Rehabilitation Plan;
  - b) as of 1/1/2018 all employers, except one who abated 9/1/2015, are paying at the maximum rate under the Rehabilitation Plan (80%); and
  - c) the economy is in the second longest bull market in history.

All of these factors support more stability in CBU levels in the future. Below is a chart showing the hours and contribution history for the ongoing active employers as of January 1, 2018:

### Current Contributing Employers (168 Employers / 593 Actives)

Year	Contributions			Hours	Average Total Rate
	Base	Supplemental + Surcharge	Total		
2009	\$3,213,999	\$68,977	\$3,282,976	1,037,930	\$3.16
2010	3,072,535	386,038	3,458,572	977,347	\$3.54
2011	3,058,603	650,866	3,709,470	959,326	\$3.87
2012	3,058,507	1,056,917	4,115,424	957,156	\$4.30
2013	3,069,215	1,731,598	4,800,813	946,090	\$5.07
2014	3,034,284	2,331,347	5,365,631	926,908	\$5.79
2015	3,047,697	2,458,845	5,506,543	909,173	\$6.06
2016	3,027,696	2,434,413	5,462,109	901,280	\$6.06

As is demonstrated above, the hours progression for the ongoing active employers as of January 1, 2018 has remained relatively steady over the past three years and even when looking at the 8-year history the hours decline has not been very dramatic. As the Rehabilitation Plan contributions have now been fully phased in, we anticipate that future hours for current active employers that remain in the Plan will stay relatively flat (our projection assumptions reflect a 1% decline in CBU levels not related to employer withdrawals).

4. The nature of the remaining contributing employers also leads us to believe these employers will continue to participate, and not incur a meaningful drop in future hours. As of January 1, 2018, the Plan currently has approximately 168 contributing employers covering 593 active participants. The overwhelming majority of these employers are local unions in the western US, and the people covered by the Plan by these employers are the OPEIU secretarial and office staff supporting the union's staff of officers and business agents. About 70% of these local union employers have between 1-3 OPEIU employees supporting their much larger staffs. As such, the economic burden of continuing payment of the Rehabilitation Plan costs (which have been frozen) is not overly severe.

# Western States Office and Professional Employees Pension Fund

Even the largest employers contributing to the Plan at this point are not overly large. Of the approximately 168 employers only eight have more than 20,000 CBUs (approximately 10 employees) and only 2 of those have more than 30,000 CBUs. These largest employers are at the highest supplemental percentage under the Rehabilitation Plan and their hours have remained constant or have grown over the last three years.

5. The Board also believes that approval of the benefit suspension plan is critical to retaining employers, and maintaining the assumed CBU levels. Some employers have informed the Board that they will stay in the Plan if the benefit suspension is approved, since the suspension provides a path to a more financially stable plan and the suspension cuts do not apply to newly accrued benefits. Approval of the benefit suspension helps support the minimal decline in the CBU levels that are assumed.
6. The Board has adopted two administrative policies that support the assumption that actives terminating for reasons other than employer withdrawal will generally be replaced with new entrants. First, the Board requires that employer contribution rates cannot be less than the rate in effect when the Board declared Red Zone status. This rule applies to any CBA, even after adoption of the Rehabilitation Plan. Second, the Board enforces an “all or nothing” rule. This means that employers must make contributions to the Plan for all new hires covered by the CBA. Employers cannot, for example, contribute to a 401(k) plan for new hires.
7. Many of the arguments above would possibly lead to a level future contribution base units assumption for the future, however, we do not fully expect there to be some level of ongoing withdrawals. That said, we do not anticipate the rate of future withdrawals will approach the levels we have seen during the 2008-2017 time period.

## **Backup Support for Withdrawal Liability Payment Assumptions**

The actuary's projections reflect all known withdrawals as of the application date and incorporate expected withdrawal liability payments for each of the withdrawn employers based on their payment schedule, most of which are capped at 20 years. All employers that have withdrawn prior to January 1, 2018 have been assessed withdrawal liability. We have attached an exhibit at the end of this document showing the assessments for each employer and the current status of that assessment. Some withdrawn employers have paid a lump sum settlement of their withdrawal liability assessment, and that payment is reflected accordingly as a replacement for their scheduled quarterly payments.

To date, the Plan has had 135 employers withdraw from the Plan from 2008 through 2017. Of those 135 assessments, only 2 employers defaulted on their withdrawal liability assessments and had those assessments deemed uncollectible. We believe that these 2 situations were unique and will not generally apply to the other WL assessments the Plan has made against other current and future withdrawn employers. That said, circumstances change and thus, we have included an assumption that 4% of the existing and future withdrawal liability payment schedules will become distressed and be deemed uncollectible. The following is rationale to support this assumption:

1. The two companies that the Plan has been unable to collect from were both in the third party administration or “TPA” business. TPAs administer retirement plans and health and welfare plans on behalf of the Plan sponsor. TPA firms administer plans on a nondiscretionary basis so they are not ERISA plan administrators, but rather contract administrators. The majority of their employees were represented by an OPEIU local and participated in the Plan, and their management employees participated in the Plan under a special agreement. TPA companies have few hard assets, other than goodwill, office furniture, computer systems and hardware.
  - a) The first company went out of business because a client obtained a substantial judgment against the company that exceeded its insurance coverage. The company did not properly implement investment changes requested by participants, who incurred damages. As noted above, TPA companies have few hard assets. In order to protect his personal assets, the owner, without telling his other clients or the Plan, moved his assets to Texas. Texas laws shielded his personal assets from creditors. The Plan deposed the owner and determined that he had no collectible personal assets and were unable to collect the withdrawal liability amount assessed.



# Western States Office and Professional Employees Pension Fund

- b) The second company went out of business and became bankrupt due to executive fraud and mismanagement that led to the loss of too many clients. The TPA business can be competitive and plans often “shop around” for the best deal, in order to save plan assets. Once a few clients left that TPA, other clients began to shop for TPA services. After losing additional clients the company could no longer stay in business.
2. Two other TPA companies participate in the Plan.
    - a) The biggest TPA employer withdrew in 2016 and there is no reason to believe that they will not pay their withdrawal liability. This firm was not required to bargain the Rehabilitation Plan Schedule until 12/31/2016 and withdrew before that occurred. As such, their Withdrawal Liability payment schedule is effectively at the same level as their base contribution rate and is “affordable” as an ongoing cost item. This firm was also a large beneficiary of the bankrupt TPA’s loss of clients and is well positioned financially going forward.
    - b) The other TPA employer has some offices that have withdrawn and some offices that continue to participate in the Plan (represented by different locals). Again, there is no reason to believe that the offices that have withdrawn will not pay their withdrawal liability.
  3. The Board believes that the two TPA companies that did not pay their withdrawal liability are unique situations. The first company’s negligence resulted in a judgment that exceeded its insurance coverage. That is a rare and unique event. The second company fell victim to mismanagement and cost cutting after the Great Recession. Again, the Board believes this is a unique situation highlighted by the fact that two other TPA firms participate in the Plan and continue to make all required payments.
  4. Through the 2018 benefit suspension filing date, there have been 135 employer withdrawals. The vast majority is current with their withdrawal liability payment schedules or has made a settlement offer / payment that the Trustees have accepted. Other than the two TPA companies noted above all other withdrawn employers, except for 4, are currently paying, paid their withdrawal liability in full or agreed to a lump sum settlement. The Board has no reason to believe that those making quarterly payments will stop making payments in the future.
  5. The projections in this application do not reflect any withdrawal liability payments for the 4 withdrawn employers that are not currently paying their withdrawal liability assessments. However, these four employers have been referred to collection counsel and the Plan will likely collect some or all of the withdrawal liability owed from each of these employers in the future.
  6. Other than the withdrawal liability defaults discussed above, our 3 largest assessments are as follows:
    - a) WPAS is described in item 2a. above.
    - b) NWNG is a gas-delivery utility based in Oregon. Their withdrawal liability payment schedule is very small relative to their corporate revenue and expenses. We are not aware of any financial impairment that would affect their credit rating.
    - c) Cascade Regional Blood Services is a nonprofit entity that withdrew in 2012 and has been making quarterly withdrawal liability payments since they were assessed in 2013.
  7. The Board has a robust collections procedure in the event an employer does not pay withdrawal liability. The Plan has never had to file suit to collect.

The projections provided with the application assume a 4% annual decline in the active participant group (and therefore contribution base units). 75% of this decline is expected to be the result of future employer withdrawals, with a resulting assessment of withdrawal liability. For the employers that withdraw, the ongoing withdrawal liability payments would replace (and in most circumstances exceed) the level of contributions currently being received for that employer, albeit subject to the 20-year limitation on the payment schedule. That limitation on the payment schedule is reflected in the projections and we have also included the same assumption of a 4% rate of default on these future assessments.

# Western States Office and Professional Employees Pension Fund

For this purpose, we have determined the withdrawal liability payment schedule for all existing active employers (as if they withdraw immediately). An exhibit has been attached at the end of this document to show the recent contribution history for these employers and an estimate of their annual withdrawal liability payment should they withdraw. Assuming a 3% annual decline in active participants is due to withdrawals, we add in 3% of the estimated withdrawal liability payments for these existing employers commencing the plan year following the year of the associated decline, and then reduce that schedule by a 4% assumed default rate for non-collectability.

## **Take-up rate with respect to selection of benefit/contribution schedules**

The Rehabilitation Plan was created in the fall of 2009 and included a drop in the accrual rate as well as reductions in adjustable benefits along with significant contribution increases. The contribution increases needed to help the Plan emerge from critical status were so high that some employers elected to withdraw from the Plan while others negotiated the rates into their Collective Bargaining Agreements (CBAs). A few employers extended their current CBAs prior to the effective date of the Rehabilitation Plan and locked in the lower surcharge rate for a longer period of time. A number of employers that agreed to the Rehab Plan schedules have subsequently withdrawn and their payment schedules reflect the supplemental contribution rates negotiated. As of January 1, 2018, all current contributing employers are paying the maximum 80% supplemental contributions under the forestall insolvency Rehabilitation Plan.

## **Projection methodology**

We did not use any approximation techniques in our projections.

The benefit payment cash flow items in our projections are taken directly from the ProVal output. We did not make any changes to the programming that would affect the results generated by the software nor did we modify the results generated by the software.

## **Part 3 – Additional disclosures relating to use of different assumptions**

The same actuarial assumptions were used for all illustrations and deterministic projections under Revenue Procedure 2017-43.