



## NOMINAL REVENUE GROWTH

### What Is the Nominal Revenue Growth Assumption and How Do We Use It?

As part of our risk modeling, we measure the affordability of Washington State pension plans and the associated enterprise risk by comparing estimates of historical and projected pension contributions paid from the General Fund-State (GF-S) to the total GF-S budget. For this analysis, we refer to the expected annual change in Washington State GF-S budget as our Nominal Revenue Growth assumption.

In our prior study, the [2016 Risk Assessment Assumptions Study](#), we analyzed three building block components of the Nominal Revenue Growth assumption separately. These included assumptions for regional inflation, Washington State population growth, and Washington State real revenue growth. For this study, we elected to instead analyze nominal revenue growth in total. We still consider the individual components in our analysis, but believe the simplified approach is reasonable and appropriate given the purpose of this assumption.

### High-Level Takeaways

Historically, average nominal revenue growth has ranged between 4.0 and 6.0 percent per year. Meanwhile, short-term forecasts primarily indicate lower expected growth of approximately 3.0 to 3.5 percent annually. Given we're setting a long-term assumption, we considered both historical and projected revenue growth as well as other relevant economic variables. Ultimately, we reduced our Nominal Revenue Growth assumption from 4.6 percent to 4.0 percent per year based upon these factors and our professional judgement.

We will continue to monitor the recent high levels of inflation and may adjust this assumption in the future.

### Data, Assumptions, and Methodology

We relied on both historical and projected nominal revenue growth data from the Economic and Revenue Forecast Council (ERFC). We also considered economic variables that can influence it such as regional inflation, Washington State population growth, and Washington State real income growth to inform our forward-looking assumption. Data on these individual economic variables were provided by the Bureau of Labor Statistics (BLS) and the Office of Financial Management (OFM).

### Historical Data

We reviewed the most recent June forecast report from the ERFC, the [June 2022 Economic and Revenue Forecast Report](#). This helped us identify the main sources of Washington State revenue and the factors that influence nominal revenue growth. For Fiscal Year (FY) 2021, taxes on consumer purchases via retail sales tax and state use tax were approximately 50 percent of the Washington State revenue. Another approximate 40 percent of revenue was from business and occupation taxes (or tax on gross receipt of Washington State businesses), state property taxes (or taxes on real estate held by



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owner), and real estate excise taxes (or taxes from sale of property). The June 2022 report from ERFC also contains short-term forecasts of revenue and the primary sources of revenue, which are expected to remain consistent with FY 2021. Based on these sources of Washington State revenue and conversations with ERFC staff, we expect changes in regional inflation, state population, and income to be the main drivers of the annual change in the nominal revenue growth.

For this analysis, we analyzed historical nominal revenue growth, regional inflation, population growth, and real income growth. We summarized this data, over varying time periods, in the following table (please see the **Appendix** for the figures by year).

Historical Annual Averages				
	Last 40 Years	Last 30 Years	Last 20 Years	Last 10 Years
Nominal Revenue Growth	5.8%	4.7%	4.3%	6.3%
Regional Inflation <sup>1</sup>	2.9%	2.7%	2.4%	2.4%
Washington State Population Growth <sup>2</sup>	1.5%	1.5%	1.3%	1.4%
Washington State Real Income Growth <sup>3</sup>	2.1%	2.2%	2.0%	3.3%

<sup>1</sup>Source: BLS: *Consumer Price Index – Urban Wage Earners and Clerical Workers (Seattle-Tacoma-Bellevue)*.

<sup>2</sup>Source: OFM: *December 2021 Forecast of State Population*.

<sup>3</sup>Source: OFM: *Per capita income growth data*.

We believe nominal revenue growth is influenced by each of the factors summarized in the table above. We will use these relationships to set our forward-looking assumption.

At a minimum, we expect nominal revenue growth to typically grow by at least the cumulative annual change in (1) regional inflation and (2) state population since the change in price of goods and number of individuals purchasing those goods directly impact its growth. Similarly, inflation can raise the prices of real estate and business expenses. This relationship is supported by the historical averages above and we defined this as our Lower Range in the following table.

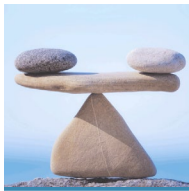
On top of these two economic variables, we believe (3) real income growth - or income growth above inflation - can influence nominal revenue growth through changes in disposable income available to purchase goods. We defined the sum of these three variables as our Upper Range in the following table.

Overall, we found that average nominal revenue growth over these time periods fell between the Lower and Upper Ranges.

Historical “Lower” and “Upper” Range				
	Last 40 Years	Last 30 Years	Last 20 Years	Last 10 Years
Lower Range	4.4%	4.2%	3.7%	3.8%
Nominal Revenue Growth	5.8%	4.7%	4.3%	6.3%
Upper Range	6.5%	6.4%	5.8%	7.1%

## Projected Data

Our annual [Projections Model](#) relies on the ERFC for short-term expected GF-S growth, more specifically, from their most recently available June *Economic and Revenue Forecast Report*. Beyond the first six years, the model relies on our long-term Nominal Revenue Growth assumption.



The nominal revenue growth forecast for the next six fiscal years from the June 2022 report is displayed below. FY 2022 is expected to have significantly higher growth relative to later years in the ERFC forecast due to short-term high inflation expectations.

Projected Nominal Revenue Growth	
2022	11.4%
2023	0.2%
2024	2.5%
2025	3.0%
2026	3.0%
2027	3.3%

Source: ERFC

For a longer term outlook, we also reviewed OFM’s expectations for population and real income growth as part of their [November 2021 long-term forecast](#). This data is summarized in the next table.

Forecasted Annual Average over Next 30 Years	
WA State Population Growth	0.8%
WA State Real Per Capita Income Growth	2.0%

The above OFM forecasts, along with our current 2.75 percent regional inflation assumption, suggest a Lower and Upper Range for nominal revenue growth of approximately 3.5 to 5.5 percent. This range is slightly lower than what we’ve observed historically. It also suggests the steadily increasing nominal revenue growth from the ERFC’s short-term forecast will continue.

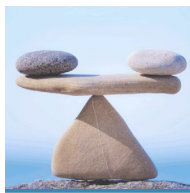
The 2.75 percent regional inflation assumption was last reviewed during our [2021 Economic Experience Study](#) (EES). We will review this assumption again as part of the 2023 EES.

## Results

We recognize that historical experience is not a perfect predictor of the future; however, historical relationships are helpful indicators for setting assumptions. In the past, average nominal revenue growth has generally fallen between our defined Lower and Upper Ranges, and we expect this relationship to continue. Based on data from ERFC, OFM, and our EES, it suggests lower nominal revenue growth in the future than what we have observed historically.

Taking the historical and projected data into consideration, along with our professional judgement, we selected an annual Nominal Revenue Growth assumption of 4.0 percent for each year beyond the six-year forecast period from ERFC. This is down from our old assumption of 4.6 percent per year.

As noted earlier, we will revisit the regional inflation assumption as part of our EES, which is performed every two years. If that assumption changes, then we will review our Nominal Revenue Growth assumption for consistency. Similarly, we intend to periodically review the OFM forecasts for population, income, and short-term revenue growth, and will consider changes to this assumption as appropriate.



**APPENDIX**

The following table summarizes the annual historical growth data referenced in the **Historical Data** section.

Historical Growth Data									
Year*	Nominal Revenue Growth	Regional Inflation	WA State Population Growth	WA State Real Income Growth	Year*	Nominal Revenue Growth	Regional Inflation	WA State Population Growth	WA State Real Income Growth
1982	6.9%	6.5%	1.1%	(0.3%)	2002	0.6%	1.8%	1.5%	(0.9%)
1983	24.5%	(0.3%)	0.7%	1.8%	2003	0.8%	1.4%	1.1%	1.0%
1984	4.1%	3.3%	1.1%	2.2%	2004	5.4%	1.6%	1.3%	3.6%
1985	8.8%	2.1%	1.4%	1.4%	2005	5.5%	3.0%	1.5%	(0.1%)
1986	6.8%	0.7%	1.1%	3.3%	2006	9.8%	3.7%	1.9%	4.1%
1987	9.7%	2.3%	1.5%	0.9%	2007	8.0%	3.8%	1.6%	4.3%
1988	4.8%	3.3%	2.0%	2.4%	2008	1.2%	4.5%	1.3%	0.4%
1989	8.3%	4.7%	2.4%	3.5%	2009	(9.6%)	0.4%	1.0%	(5.7%)
1990	14.4%	7.1%	2.9%	1.8%	2010	(4.1%)	0.8%	0.8%	0.0%
1991	4.6%	5.5%	2.7%	1.1%	2011	7.9%	3.2%	0.7%	1.9%
1992	7.3%	3.5%	1.8%	2.5%	2012	1.5%	2.5%	0.8%	5.0%
1993	3.7%	3.0%	1.9%	0.3%	2013	6.1%	1.2%	1.0%	(0.2%)
1994	5.9%	3.7%	2.0%	1.1%	2014	3.8%	1.9%	1.3%	4.8%
1995	9.8%	2.9%	2.0%	1.6%	2015	5.5%	0.9%	1.4%	4.1%
1996	1.5%	3.3%	1.6%	3.6%	2016	7.5%	2.3%	1.8%	2.4%
1997	5.8%	3.1%	1.8%	4.0%	2017	6.2%	3.3%	1.8%	2.4%
1998	6.4%	2.6%	1.9%	6.8%	2018	10.0%	3.4%	1.7%	2.9%
1999	3.6%	3.1%	1.9%	3.4%	2019	3.3%	2.1%	1.7%	2.9%
2000	6.3%	3.7%	1.8%	3.1%	2020	6.2%	1.9%	1.5%	5.3%
2001	4.4%	3.6%	1.3%	(0.9%)	2021	13.3%	4.8%	0.8%	3.4%

\*Either fiscal year or calendar year dependent upon the source of information.