

# Thurston County

## Water and Sewer Rate Study

FINAL REPORT  
December 13, 2022

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**FCS GROUP**  
Solutions-Oriented Consulting

December 13, 2022

Tim Wilson, Water Resources Manager  
Thurston County Public Works, Water Resources Division  
9605 Tilley Rd S  
Olympia, WA 98512

Subject: Water and Sewer Rate Study

Dear Tim Wilson:

Attached is the final report on the results of the Water and Sewer Rate Study. We want to thank the County project team for their assistance and participation in helping us gather information and work through the various rate and policy issues. It has been a pleasure to work with County staff on this study. Please let us know if you have any questions. Tage can be reached at (425) 615-6487 or [TageA@fcsgroup.com](mailto:TageA@fcsgroup.com).

Sincerely,



Angie Sanchez Virnoche  
Project Principal



Tage Aaker  
Project Manager



Zech Hazel  
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# Section I. INTRODUCTION

## UTILITY BACKGROUND

Thurston County Public Works (County) operates multiple water and sewer utilities dispersed within its boundaries including the following: the Grand Mound water and sewer utilities; the Boston Harbor water and sewer utilities, the Tamoshan water and sewer utilities (including Beverly Beach which receives only sewer service), and the Olympic View sewer utility. These utilities have a wide range of customer bases, system ages, and revenues, as shown in **Exhibit 1** below.

**Exhibit 1: Existing County Service Areas**

Community	Approximate System Age	Number of Utility Accounts	Percent of Total Accounts	2022 Estimated Water Revenue	2022 Estimated Sewer Revenue
Tamoshan	1970s	116	14%	\$119,000	\$202,000
Boston Harbor	1990s	278	34%	\$222,000	\$367,000
Grand Mound	2000s	390	48%	\$1,217,000	\$1,731,000
Olympic View	1996	28	3%	n/a	\$37,000
<b>Total</b>		<b>812</b>	<b>100%</b>	<b>\$1,558,000</b>	<b>\$2,337,000</b>

The four service areas are already partially consolidated – that is, they have shared management by the County. For that reason, the County has already achieved some of the operational efficiencies of joining small systems into one larger system. Because of shared management, there can be sharing of personnel, equipment, and administrative processes.

However, one of the key things missing from the current configuration is consolidated rates. Because customers pay separate rates specific to their area, the County is required to track its revenue and expenditures separately. It must have individual funds to account for the inflow and outflow of resources that are intended to be separate. As a result, the County maintains seven different rate schedules (four for sewer and three for water) and ten different enterprise funds. A consolidated approach would help the County manage fewer rate schedules and fewer enterprise funds, while also helping to mitigate isolated, system-specific rate increases.

## STUDY BACKGROUND

In 2020, the County completed a Utility Consolidation Feasibility Study to explore the possibility of combining the seven utilities into just two: a consolidated water utility and a consolidated sewer utility, each with a unified schedule of rates. That study reported numerous managerial as well as financial benefits to consolidating the County's utilities, but a deeper financial analysis was necessary to understand the full implications of such a process.

Thurston County Public Works contracted with FCS GROUP in 2021 to perform that deeper financial analysis. In this study, the County wanted to develop a long-range financial forecast for each individual water and sewer utility as well as for a consolidated water utility and a consolidated sewer utility.

The first deliverable for this 2021-22 study was a policy paper that defined and analyzed a variety of utility and rate-specific issues, presented alternative solutions, and recommended a course of action for the following topics:

- The merit of jurisdictional rate comparisons.
- Rate structures and effects on revenue stability and water conservation.
- A policy evaluation of three structures: block rates, seasonal rates, and meter-based fixed rates.
- Pros and cons of utility consolidation.

In particular, the issue paper focused on a few key advantages and disadvantages of rate consolidation:

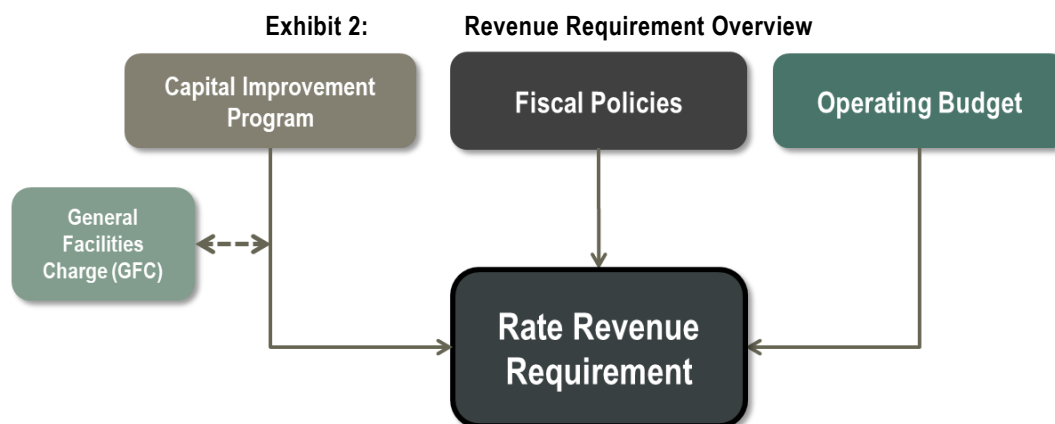
- Operational and administrative efficiencies (advantage)
- Ability to spread out the impact of capital investment (advantage)
- Area-specific rates can be politically easier (disadvantage).

For a more detailed discussion on these topics, please refer to the *Rate Study Policy Paper*, included as Appendix A in this report.

## 2021-22 RATE STUDY

As previously noted, the main analytical goal of this study was to develop a long-range financial forecast that addresses each of the County’s utilities’ capital and operational needs while also reviewing whether it would be prudent to combine its multiple systems into a consolidated water and sewer utility, and if so, how would the County phase into consolidation over time.

This funding plan is referred to as a “revenue requirement” and was performed for the 2023-28 study period, which aligns with the County’s desired final year of the rate consolidation process. A revenue requirement analysis identifies the total revenue needed to fully fund a utility on a standalone basis considering operating and maintenance expenditures, fiscal policy achievement, and the capital project needs of the utility.



This report proposes two sets of rate plans: one set to support the operational and capital costs of each utility individually and one set that will phase towards a uniform schedule of rates for a consolidated water and sewer utility over five years.

## Section II. FISCAL POLICIES

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The basic framework for evaluating utility revenue needs includes sound fiscal policies. Several policy topics are important to consider further as part of managing the finances of the County, including operating reserves, capital reserves, and rate funded capital. Existing reserves are allocated between operating and capital for purposes of the rate forecast. This is the County's current practice for the Boston Harbor, Grand Mound, and Tamoshan utilities, but not for Olympic View.

The County currently targets two to three months (60 to 90 days) of operating expenses held in reserves for all its utilities and does not set a capital fund balance target. The sections below outline some best practices related to setting fund balance targets. These best practices are recommended whether or not the County decides to consolidate its utilities and will be applied to the analysis of both scenarios (individual vs. consolidation).

### OPERATING RESERVE

An operating reserve is designed to provide a liquidity cushion; it protects the utility from the risk of short-term variation in the timing of revenue collection or payment of expenses. The most common operating reserve balance target for water utilities is between 60 days to 90 days of operating expenses. For sewer utilities, 45 to 60 days is more common given that sewer revenues are typically less volatile. In any year where operating reserves exceed the maximum days of operating expenses at year-end, the excess cash is "swept" into the capital account to help pay for capital projects.

**Recommended Policy:** For all utilities, achieve a year-end minimum balance target of at least 60 days of total annual operating expenses and hold a maximum of 90 days of total annual operating expenses.

### CAPITAL RESERVE

This reserve provides a source of emergency funding for unexpected asset failures or other unanticipated capital needs. This capital reserve policy is not intended to guard against catastrophic system failure or extreme acts of nature. Minimum balances for capital reserves are often based on a percentage (commonly 1.00 percent to 2.00 percent) of the original cost of utility fixed assets or an amount determined sufficient to fund an emergency capital project or equipment failure. In the County's case, detailed fixed asset data is lacking, so another recommendation would be to hold an average years' worth of capital expenses in reserve.

**Recommended Policy:** Achieve a minimum balance target of 1 years' worth of capital expenses unique to each of the County's utilities.

### RATE FUNDED CAPITAL

Rate funded system reinvestment (rate funded capital) is the funding of long-term infrastructure replacement needs through a regular (annual) and predictable rate provision. Most commonly,

utilities that have addressed replacement funding needs have used historical (original cost) depreciation expense as the basis for a reasonable level of reinvestment in the system. This strategy can help minimize (or eliminate) a utility's reliance on debt. In the County's case, the absence of fixed asset data makes such a target difficult to quantify using this methodology.

**Recommended Policy:** The County desires to cash-fund its capital program at this time, to the extent possible. Therefore, the utilities should strive to generate revenues to cover both operating costs and the annual average capital program that they wish to fund. In particular, the County should strive to cash fund its routine repair and replacement projects and reserve debt for larger, one-time type projects that would be difficult to cash fund.

Even with this policy recommendation, some individual utility forecasts show the need for borrowing to complete their capital program in the amounts and with the timing laid out by the County. In these cases, borrowing helps mitigate rate increases that would have been needed to fully cash-fund the capital program.

## Section III. REVENUE REQUIREMENT

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The main purpose of this section is to develop two sets of funding plans (“revenue requirements”); one set where the County’s current practice of managing the utilities as separate entities is maintained, and one set where the County consolidates its utilities into just one water and one sewer utility. As previously mentioned, a revenue requirement identifies the total revenue needed to fully fund a utility on a standalone basis considering current financial obligations including operating expenditures, policy-driven commitments, and future capital expenditures that the County chooses to fund. Under the scenario where each utility is managed independently, rate increases are applied “across-the-board” – that is, it is assumed that every charge on the rate schedule increases by the same percentage, which maintains the existing rate structure. Under the scenario where utilities are consolidated, the proposed rates differ by area and are designed to unite the disparate rate schedules after five years.

### ECONOMIC & INFLATION FACTORS

The operating and maintenance expenditure forecast largely relies on the County’s 2023 proposed budget. The line items in the budget are then adjusted each year – beginning in 2024 – by utilizing one of the following applicable factors:

- General Cost Inflation – assumed to be 2.50 percent per year based on long term average increases in the Consumer Price Index for Urban consumers in the Western Region. [Note on inflation: In the short term, the U.S. economy is experiencing a higher-than-historical level of inflation, which is influenced by pandemic conditions, supply chain issues, and reduced labor force participation. However, the inflation assumptions for this forecast are intended to be averages over the long term.]
- Construction Cost Inflation – assumed to be 4.00 percent per year based on long-term average increases in the Engineering News-Record’s Construction Cost Index (20-City Average).
- Taxes – State Business and Occupation tax rate of 1.750 percent; State Excise Tax – 5.029 percent for the water utilities, and 3.852 percent for the sewer utilities.
- Labor Cost Inflation – assumed to be 2.20 percent per year, based on Employment Cost Index – Wages and Salaries (U.S. Bureau of Labor Statistics) as well as discussions with County staff.
- Benefits Cost Inflation – assumed to be 3.30 percent per year, based on Employment Cost Index - Benefits (U.S. Bureau of Labor Statistics) as well as discussions with County staff.
- Fund Earnings – assumed to be 0.09 percent per year based on earnings reports from the State’s Local Government Investment Pool (LGIP) at the time of the analysis.
- Customer Account Growth – assumed to be 2.80 percent per year for the Grand Mound water and sewer utilities and 0.30 percent per year for the Boston Harbor water and sewer utilities. The Tamoshan and Olympic View utilities are assumed to have no capacity for growth.



## INDIVIDUAL UTILITY FORECASTS

This section summarizes the results of the individual revenue requirements of the County's seven utilities. The same process was followed for each individual utility and the two proposed consolidated utilities. However, this section abridges the details for the individual utilities given the number of separate analyses. A more detailed look at the revenue requirement process is provided in later sections which evaluate the revenue requirements for the consolidated water and sewer utilities.

### Water Utilities

The rate increases calculated by the revenue requirement analyses are listed in **Exhibit 3**. Each year's rate increase is assumed to be applied across-the-board. The rate adjustments in 2023 were capped at 5.00 percent (which for the water utilities, only impacts Tamoshan), pending a final decision by the Board to consolidate or not. If the Board chooses not to consolidate the utilities, Tamoshan would need to have a 25.00 percent increase per year for three years in a row. Boston Harbor and Grand Mound would need lower increases, at 5.00 percent and 2.00 percent per year respectively.

Some outside funding is needed to help pay for the Tamoshan and Boston Harbor capital plans; this analysis assumed that funding would take the form of revenue bonds. Grand Mound's current rates, plus minimal rate increases, allow it to fund its operating and capital expenditures during this period.

**Exhibit 3: Water Rate Increases for Individual Water Utilities**

Water Rate Increases	2022 (Existing)	2023 (ATB)	2024 (ATB)	2025 (ATB)	2026 (ATB)	2027 (ATB)	2028 (ATB)
<b>Tamoshan</b>	3.00%	5.00%	25.00%	25.00%	25.00%	10.00%	10.00%
<b>Boston Harbor</b>	3.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
<b>Grand Mound</b>	3.00%	0.00%	2.00%	2.00%	2.00%	2.00%	2.00%

The rate schedules for the individual water utilities are shown in **Exhibit 4** below. The base charges listed are charged per equivalent residential unit (ERU).

**Exhibit 4: Water Rate Schedules for Individual Water Utilities**

Water Rate Schedules	2022 (Existing)	2023 (ATB)	2024 (ATB)	2025 (ATB)	2026 (ATB)	2027 (ATB)	2028 (ATB)
<b>Tamoshan</b>							
Base Charge	\$82.38	\$86.50	\$108.12	\$135.15	\$168.94	\$185.84	\$204.42
\$/100 Cubic Ft.	\$2.75	\$2.89	\$3.61	\$4.51	\$5.64	\$6.20	\$6.82
<b>Boston Harbor</b>							
Base Charge	\$42.20	\$44.31	\$46.52	\$48.85	\$51.29	\$53.86	\$56.55
\$/100 Cubic Ft.	\$2.77	\$2.91	\$3.05	\$3.21	\$3.37	\$3.54	\$3.71
<b>Grand Mound</b>							
Base Charge	\$46.06	\$46.06	\$46.98	\$47.92	\$48.88	\$49.86	\$50.85
\$/100 Cubic Ft.	\$2.64	\$2.64	\$2.69	\$2.75	\$2.80	\$2.86	\$2.91

## Sewer Utilities

The rate increases calculated by the revenue requirement analyses are listed in **Exhibit 5**. Each year's rate increase is assumed to be applied across-the-board. Again, the rate adjustments in 2023 were capped at 5.00 percent (which for the sewer utilities, impacts Tamoshan and Olympic View), pending a final decision by the Board to consolidate or not.

Beginning in 2024, Tamoshan Sewer Utility must increase by 11.00 percent per year. Tamoshan rate revenues are not sufficient to cover current operating expenses, let alone provide for capital needs. Some outside funding is needed to help pay for the Tamoshan capital plan; this analysis assumed that funding would take the form of revenue bonds. Grand Mound will also receive about \$2.5 million in outside funding in the form of real estate excise taxes collected by the County.

For Boston Harbor, Olympic View, and Grand Mound, the percentages noted in the following exhibit would allow the utilities to fund both operating and capital related needs without borrowing.

**Exhibit 5: Sewer Rate Increases for Individual Sewer Utilities**

Sewer Rate Increases	2022 (Existing)	2023 (ATB)	2024 (ATB)	2025 (ATB)	2026 (ATB)	2027 (ATB)	2028 (ATB)
Tamoshan	3.00%	5.00%	11.00%	11.00%	11.00%	11.00%	11.00%
Boston Harbor	3.00%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%
Grand Mound	0.00%	0.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Olympic View	3.00%	5.00%	7.00%	7.00%	7.00%	7.00%	3.00%

The rate schedules for the individual sewer utilities are shown in **Exhibit 6** below. The base charges listed are charged per equivalent residential unit.

**Exhibit 6: Sewer Rate Schedule for Individual Sewer Utilities**

Sewer Rate Schedule	2022 (Existing)	2023 (ATB)	2024 (ATB)	2025 (ATB)	2026 (ATB)	2027 (ATB)	2028 (ATB)
Tamoshan	\$144.86	\$152.10	\$168.83	\$187.41	\$208.02	\$230.90	\$256.30
Boston Harbor	\$112.87	\$117.66	\$122.66	\$127.88	\$133.31	\$138.98	\$144.89
Grand Mound	\$94.91	\$94.91	\$96.81	\$98.74	\$100.72	\$102.73	\$104.79
Olympic View	\$108.70	\$114.13	\$122.12	\$130.67	\$139.82	\$149.60	\$154.09

## CONSOLIDATED WATER UTILITY FORECAST

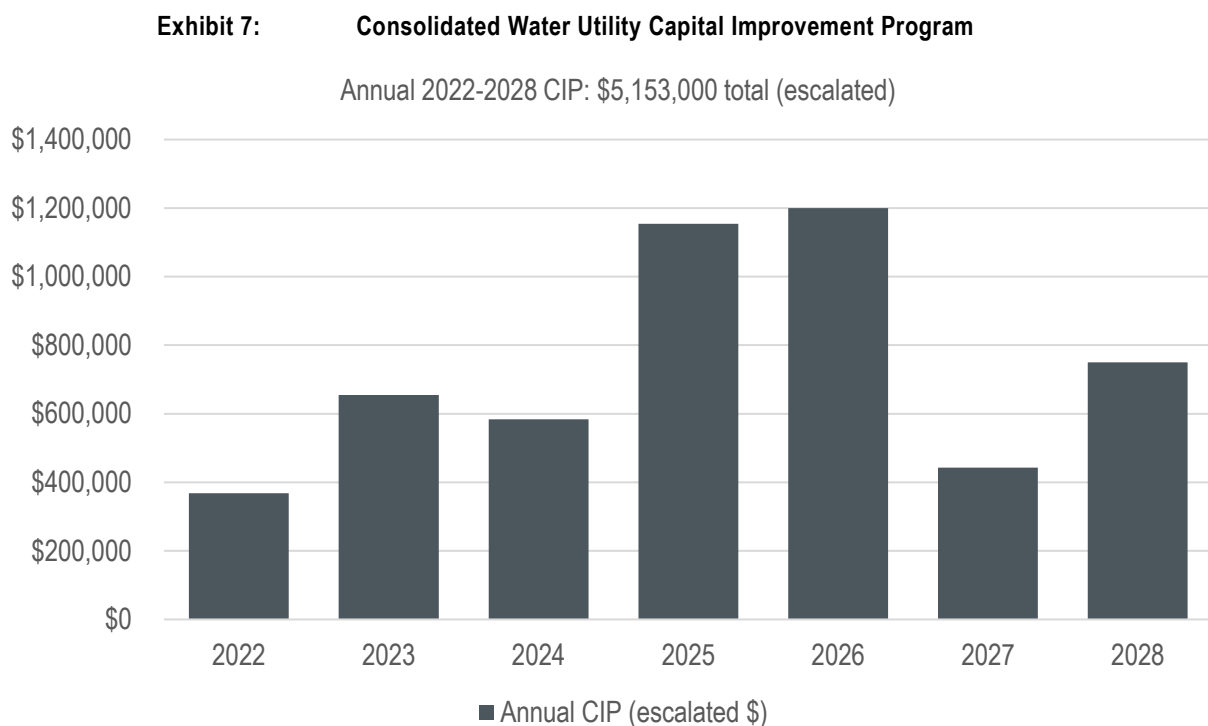
This section focuses on the revenue requirement analysis of a proposed, consolidated water utility. It outlines in detail the capital and operating needs of such a utility and proposes a rate increase plan that will unify the water rate schedules by 2028.

### Combined Capital Program

The County supplied FCS GROUP with the 2022-27 CIP for each utility, which was combined into one program for the consolidated water utility forecast. For 2028, a reasonable estimate was made based on the average expenditures of the previous five years, based on a discussion with County

staff. The 2022-28 capital program totals \$4.4 million in 2021 dollars or \$5.2 million with anticipated cost escalation.

**Exhibit 7** below shows the timing and amount of the County's capital improvement program.



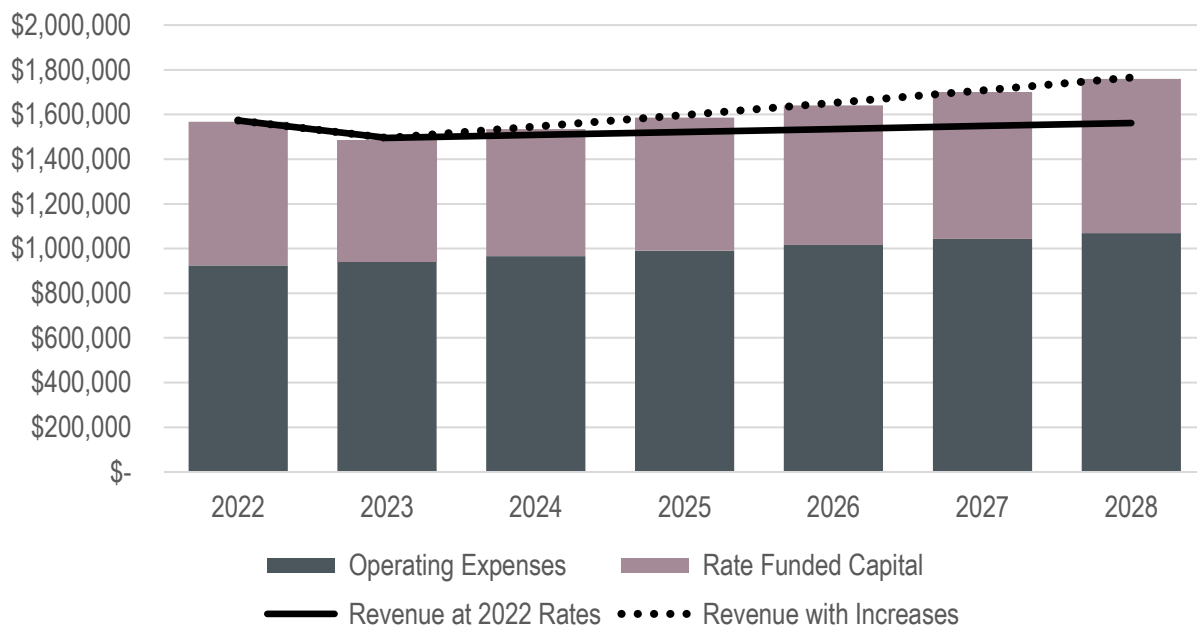
## Revenue Requirement

**Exhibit 8** graphically represents the revenue requirement forecast through 2028. The stacked columns represent costs of the utility such as operating expenses and annual rate revenue earmarked for capital projects. The solid black line represents revenue at existing rates and the dashed line shows forecasted revenue with rate increases.

- **Solid black line:** Revenue at existing rates.
  - » Rate revenue is expected to fall slightly from \$1.6 million in 2022 to \$1.5 million in 2023. Water usage in 2021 was much higher than in the previous five years, leading to more usage-based ERUs being calculated for 2022 and therefore higher base charge revenues. To be conservative, usage in 2022 (and subsequent years in the forecast) is forecast to drop to more typical levels. Because of this, revenues are forecast to dip in 2023, since there is a one-year lag – e.g., 2023 ERUs are based on 2022 consumption.
  - » This dip in revenues is despite a 5.00 percent increase to the Boston Harbor and Tamoshan rates, though there is no planned increase to Grand Mound's rates in 2022.
  - » After that decrease, rate revenue is expected to grow about 0.9 percent per year with customer growth, which is a composite growth rate based on the individual utility assumptions discussed in the Economic & Inflation Factors section.
- **Dashed black line:** Revenues with rate increases.

- » Rate revenue must increase to allow the utility to cover its existing financial obligations while also funding capital improvement projects over the study period. Rate adjustments to individual rates vary by utility and are shown in **Exhibit 10**.
- **Dark blue bar:** Cash operating expenses.
  - » Operating expenses are based on the adopted 2022 budget and the proposed 2023 budget and increase with the annual cost escalation assumptions previously discussed.
- **Pink bar:** Cash available for capital (i.e., rate funded capital).
  - » In 2022, roughly \$644,000 is available for rate funded capital. This amount is expected to decrease to \$543,000 in 2023. Rate funded capital is projected to increase to \$689,000 million by 2028. That amount is slightly below the average annual capital expenditure in 2028 but allows the County to slow the draw-down of its accumulated capital fund balance.

**Exhibit 8: Consolidated Water Utility Revenue Requirement**

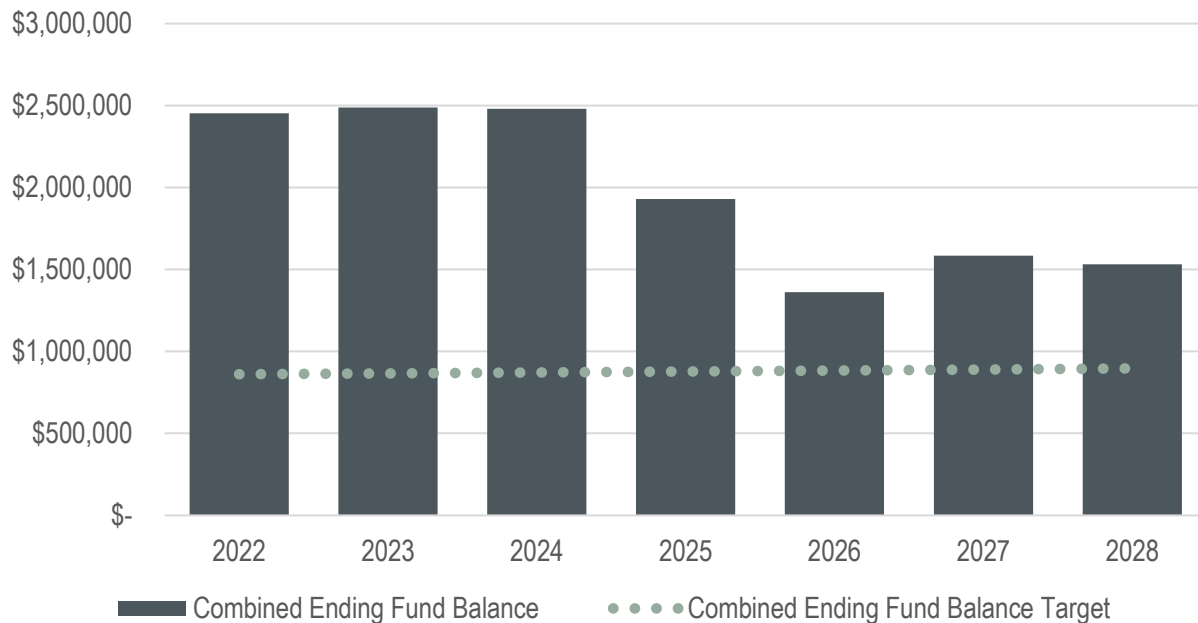


## Fund Balance

The County began 2022 with roughly \$2.1 million in cash or cash equivalents when totaling the fund balances of all individual utilities. For forecasting purposes, operating resources and uses are tracked separately from capital resources and uses. Of the \$2.1 million in beginning cash, \$861,000 was allocated to the operating reserve (90 days of operating expenses) and the remainder was allocated to the capital reserve.

**Exhibit 9** below shows the projection of the consolidated water utility's combined (operating and capital) fund balance as compared to the fund balance targets discussed in Section II.

**Exhibit 9: Consolidated Water Utility Ending Fund Balance**



## Rate Schedule to Consolidation

The rate schedule in **Exhibit 10** below allows the consolidated water utility to meet its fiscal policy targets while also covering its operating and capital expenses (without borrowing). By 2028, all three utilities arrive at a base charge of \$54.04 per ERU and a volume charge of \$3.06 per 100 cubic feet.

**Exhibit 10: Consolidated Water Rates Schedule**

Water Rate Schedules	2022 (Existing)	2023 (ATB)	2024	2025	2026	2027	2028
<b>Tamoshan</b>							
Base Charge	\$82.38	\$86.50	\$81.21	\$75.36	\$68.90	\$61.81	\$54.04
\$/100 Cubic Ft.	\$2.75	\$2.89	\$2.92	\$2.95	\$2.99	\$3.02	\$3.06
<b>Boston Harbor</b>							
Base Charge	\$42.20	\$44.31	\$46.10	\$47.96	\$49.90	\$51.92	\$54.04
\$/100 Cubic Ft.	\$2.77	\$2.91	\$2.94	\$2.97	\$3.00	\$3.03	\$3.06
<b>Grand Mound</b>							
Base Charge	\$46.06	\$46.06	\$47.55	\$49.09	\$50.69	\$52.33	\$54.04
\$/100 Cubic Ft.	\$2.64	\$2.64	\$2.72	\$2.80	\$2.88	\$2.97	\$3.06

## Sample Bills

**Exhibit 11** below displays the sample monthly bills for single-family water customers who use 700 cubic feet of water. The top table displays the sample bills if the utilities remain independent. The

bottom table displays the sample bills if the utilities consolidate, as well as the difference from the sample bills under the individual utilities.

By 2028, a typical single-family customer would see savings of \$177 per month in Tamoshan and \$7 per month in Boston Harbor. A typical single-family customer in Grand Mound would see an increase of \$4 per month.

**Exhibit 11: Sample Monthly Water Bills**

Individual Utilities	2022 (Existing)	2023 (ATB)	2024	2025	2026	2027	2028
<b>Tamoshan</b>	\$101.63	\$106.71	\$133.39	\$166.74	\$208.42	\$229.26	\$252.19
<b>Boston Harbor</b>	\$61.59	\$64.67	\$67.91	\$71.30	\$74.87	\$78.61	\$82.54
<b>Grand Mound</b>	\$64.54	\$64.54	\$65.83	\$67.15	\$68.49	\$69.86	\$71.26

Consolidated Water Utility	2022 (Existing)	2023 (ATB)	2024	2025	2026	2027	2028
<b>Tamoshan</b>							
Monthly Bill	\$101.63	\$106.71	\$101.65	\$96.02	\$89.81	\$82.96	\$75.44
Difference	-	-	(31.74)	(70.71)	(118.61)	(146.30)	(176.75)
<b>Boston Harbor</b>							
Monthly Bill	61.59	64.67	\$66.65	\$68.72	\$70.87	\$73.11	\$75.44
Difference	-	-	(1.25)	(2.59)	(4.00)	(5.51)	(7.11)
<b>Grand Mound</b>							
Monthly Bill	64.54	64.54	\$66.59	\$68.70	\$70.88	\$73.12	\$75.44
Difference	-	-	0.76	1.56	2.39	3.26	4.18

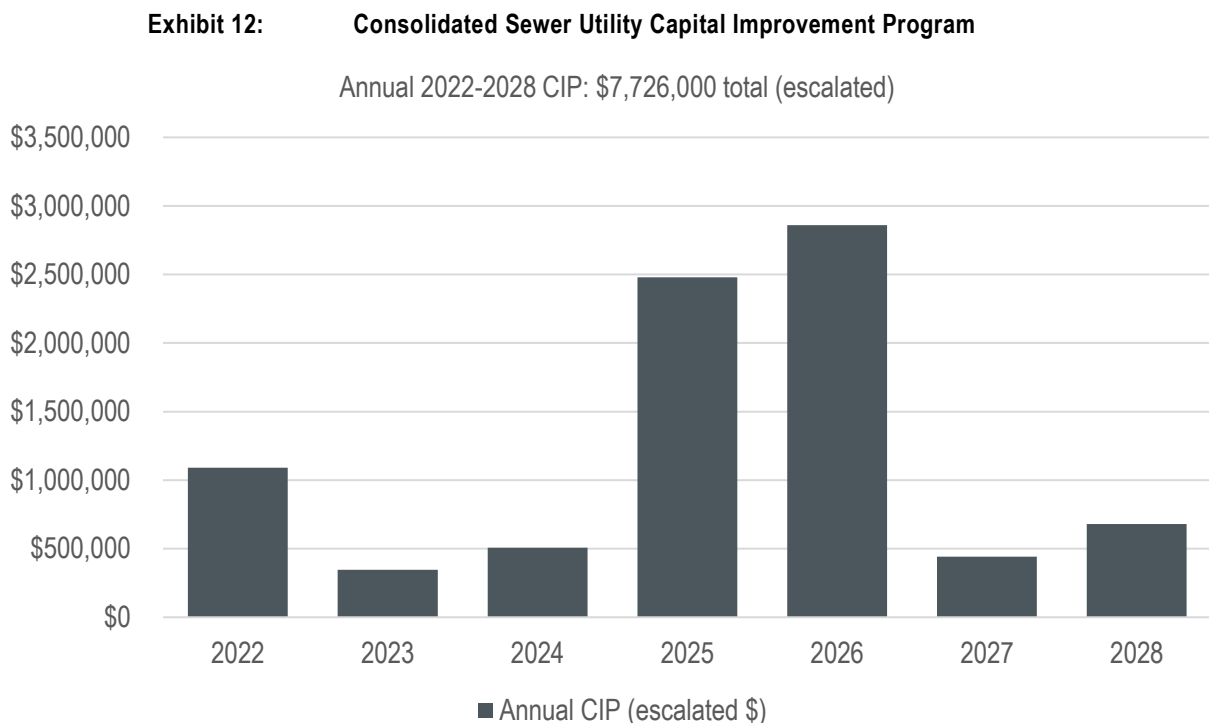
## CONSOLIDATED SEWER UTILITY FORECAST

This section focuses on the revenue requirement analysis of a proposed, consolidated sewer utility. It outlines in detail the capital and operating needs of such a utility and proposes a rate increase plan that will unify the sewer rates schedule by 2028.

### Combined Capital Program

The County supplied FCS GROUP with the 2022-27 CIP for each utility, which was combined into one program for the consolidated sewer utility. For 2028, a reasonable estimate was made based on the average expenditures of the previous five years. The 2022-28 capital program totals \$6.6 million in 2021 dollars or \$7.7 million with anticipated cost escalation due to inflation. Of this, about \$3.0 million is expected to be paid for out of real estate excise taxes collected by the County.

**Exhibit 12** below shows the timing and amount of the County's capital improvement program.



### Revenue Requirement

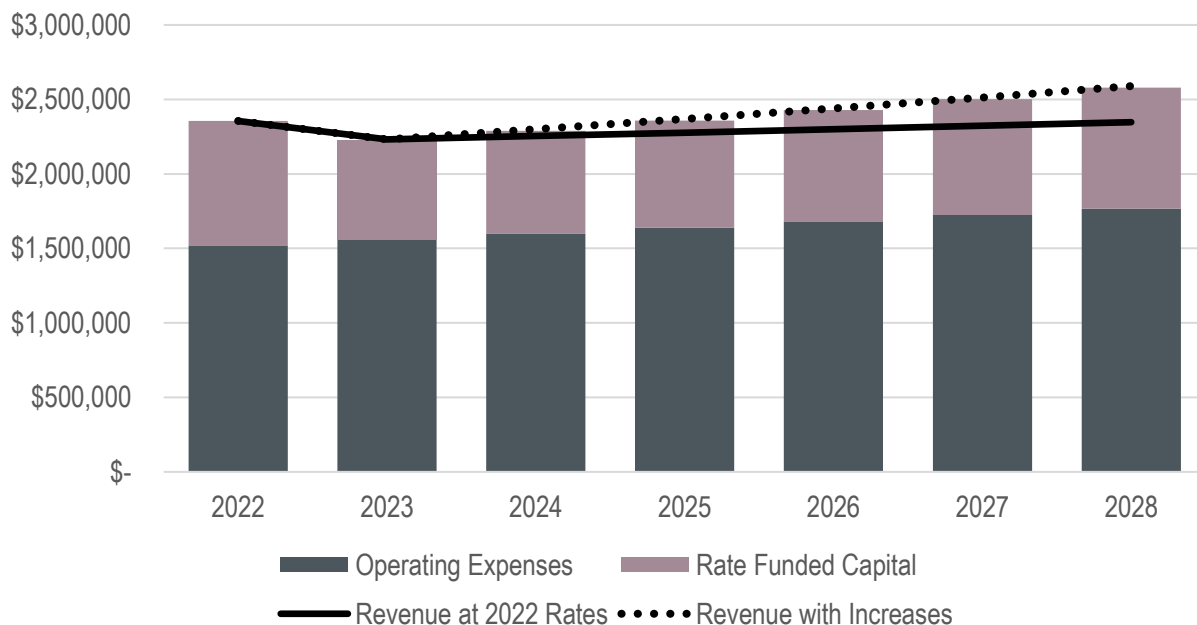
**Exhibit 13** graphically represents the revenue requirement forecast through 2028. The stacked columns represent costs of the utility such as operating expenses and annual rate revenue earmarked for capital projects. The solid black line represents revenue at existing rates and the dashed line shows forecasted revenue with rate increases.

- **Solid black line:** Revenue at existing rates.
  - » Rate revenue is expected to fall slightly from \$2.4 million in 2022 to \$2.2 million in 2023. Water usage in 2021 was much higher than in the previous five years, leading to larger ERU calculation in 2022 and higher base charge revenues. To be conservative, 2022 and 2023 usage is expected to drop to more typical levels. That is despite a 5.00 percent increase to the Olympic View and Tamoshan rates, and a 4.25 percent increase to the Boston Harbor rates.

After that decrease, rate revenue is expected to grow about 1.0 percent per year with customer growth.

- **Dashed black line:** Revenues with rate increases.
  - » Rate revenue must increase to allow the utility to cover its existing financial obligations while also funding capital improvement projects over the study period. Rate adjustments vary by utility and are shown in **Exhibit 15**.
- **Dark blue bar:** Cash operating expenses.
  - » Operating expenses are based on the adopted 2022 budget and proposed 2023 budget and increase with the annual cost escalation assumptions previously discussed.
- **Pink bar:** Cash available for capital (i.e., rate funded capital).
  - » In 2022, roughly \$835,000 is available for rate funded capital. This amount is expected to decrease to \$665,000 in 2023. Rate funded capital is projected to increase to \$811,000 million by 2028. That amount is a little above the average annual capital expenditure by 2028

**Exhibit 13: Consolidated Sewer Utility Revenue Requirement**



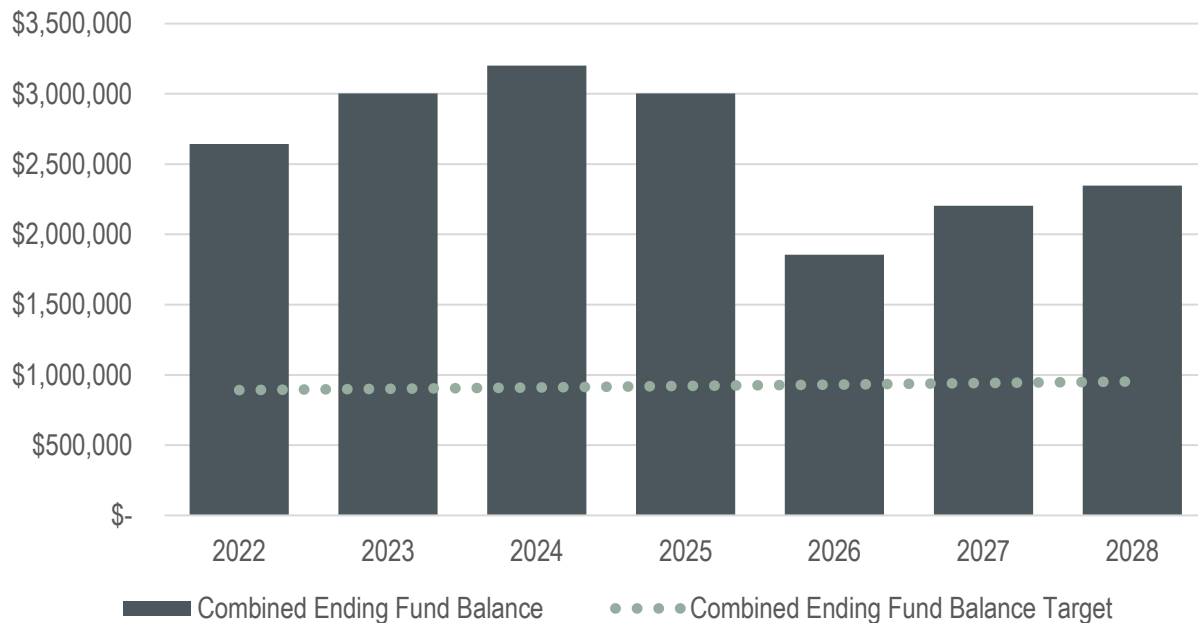
## Fund Balance

The County began 2022 with roughly \$2.3 million in cash or cash equivalents when totaling the fund balances of all individual utilities. For forecasting purposes, operating resources and uses are tracked separately from capital resources and uses. Of the \$2.1 million in beginning cash, \$892,000 was allocated to the operating reserve (90 days of operating expenses) and the remainder was allocated to the capital reserve.

**Exhibit 14** below shows the projection of the consolidated sewer utility's combined (operating and capital) fund balance as compared to the fund balance targets discussed in Section II.



**Exhibit 14: Consolidated Sewer Utility Ending Fund Balance**



## Rate Schedule to Consolidation

The rate schedule in **Exhibit 15** allows the consolidated sewer utility to meet its fiscal policy targets while also covering its operating and capital expenses (without borrowing). As shown, by 2028, all four utilities arrive at a base charge of \$112.61 per ERU.

**Exhibit 15: Consolidated Sewer Rate Schedule**

Sewer Rate Schedule	2022 (Existing)	2023 (ATB)	2024	2025	2026	2027	2028
Tamoshan	\$144.86	\$152.10	\$144.95	\$136.78	\$128.67	\$120.62	\$112.61
Boston Harbor	\$112.87	\$117.67	\$113.41	\$113.18	\$112.96	\$112.78	\$112.61
Grand Mound	\$94.91	\$94.91	\$98.98	\$102.37	\$105.77	\$109.19	\$112.61
Olympic View	\$108.70	\$114.13	\$114.14	\$114.14	\$113.47	\$113.03	\$112.61

## Sample Bills

**Exhibit 16** below displays the sample monthly bills for single-family sewer customers. The top table displays the sample bills if the utilities remain independent. The bottom table displays the sample bills if the utilities consolidate, as well as the difference from the sample bills under the individual utilities. By 2028, a typical single-family customer would see savings of \$144 per month in Tamoshan, \$32 per month in Boston Harbor, and \$41 per month in Olympic View. A typical single-family customer in Grand Mound would see an increase of \$8 per month compared to the individual utility rate forecast.

**Exhibit 16: Sample Monthly Sewer Bills**

Individual Utilities	2022 (Existing)	2023 (ATB)	2024	2025	2026	2027	2028
<b>Tamoshan</b>	\$144.86	\$152.10	\$168.83	\$187.41	\$208.02	\$230.90	\$256.30
<b>Boston Harbor</b>	\$112.87	\$117.66	\$122.66	\$127.88	\$133.31	\$138.98	\$144.89
<b>Grand Mound</b>	\$94.91	\$94.91	\$96.81	\$98.74	\$100.72	\$102.73	\$104.79
<b>Olympic View</b>	\$108.70	\$114.13	\$122.12	\$130.67	\$139.82	\$149.60	\$154.09

Consolidated Sewer Utility	2022 (Existing)	2023 (ATB)	2024	2025	2026	2027	2028
<b>Tamoshan</b>							
Monthly Bill	\$144.86	\$152.10	\$144.95	\$136.78	\$128.67	\$120.62	\$112.61
Difference	-	-	(23.88)	(50.62)	(79.35)	(110.28)	(143.69)
<b>Boston Harbor</b>							
Monthly Bill	\$112.87	\$117.67	\$113.41	\$113.18	\$112.96	\$112.78	\$112.61
Difference	-	-	(9.25)	(14.70)	(20.35)	(26.20)	(32.27)
<b>Grand Mound</b>							
Monthly Bill	\$94.91	\$94.91	\$98.98	\$102.37	\$105.77	\$109.19	\$112.61
Difference	-	-	2.17	3.63	5.06	6.45	7.82
<b>Olympic View</b>							
Monthly Bill	\$108.70	\$114.13	\$114.14	\$114.14	\$113.47	\$113.03	\$112.61
Difference	-	-	(7.98)	(16.53)	(26.34)	(36.57)	(41.48)

## Section IV. CONCLUSION

### Individual Versus Consolidated Rate Schedules

As shown in the previous section, there is significant advantages to consolidation for the Boston Harbor, Tamoshan, and Olympic View utilities. For example, Tamoshan customers will save \$176.75 on their water bills and \$143.69 on their sewer bills under consolidation by 2028. **Exhibit 17** below displays the difference between individual and consolidated monthly utility bills in 2028.

**Exhibit 17: Difference in Average Monthly Bills in 2028 (Individual versus Consolidated Utilities)**

Service Area	Water	Sewer
Tamoshan	\$(176.75)	\$(143.69)
Boston Harbor	(7.11)	(32.37)
Grand Mound	4.18	7.82
Olympic View	-	(41.48)

As shown above, while Grand Mound would bear the burden of consolidation, there is a relatively small difference in its rates under consolidation versus its individual schedule. By 2028, single-family customers in Grand Mound will only pay an extra \$4.18 on a monthly water bill and \$7.82 on a monthly sewer bill.

If the County moves forward with consolidation, Boston Harbor, Tamoshan, and Olympic View will avoid larger rate increases, while Grand Mound will experience some additional burden on its ratepayers. However, because each system was installed in different decades, they will each undergo their own phases of system reinvestment. Eventually, Grand Mound's system will need to be replaced or updated, at which point the other utilities will help support Grand Mound's rate payers.

### Implementation Timeline

The County has several next steps to implement the recommendations of this report. In the fourth quarter of 2022, the County staff will develop a transition plan for the consolidation of its utilities, including a communication plan and recommendations from its Utility Advisory Committees. Public outreach on utility consolidation will begin in the first quarter of 2023. The County will begin reorganizing its funds and developing a budget for the consolidated utilities during the second, third, and fourth quarters of 2023. Finally, code updates and a resolution forming the consolidated utilities will be adopted in the fourth quarter of 2023.

### Updating This Study's Findings

It is recommended that the County revisit the study findings during the forecast period to check that the assumptions used are still appropriate and that no significant changes have occurred that would alter the results of the study. The County should use the study findings as a living document, routinely comparing the study outcomes to actual revenues and expenses. Any significant or unexpected changes may require adjustments to the rate strategy recommended in this report.

For example, the consolidated scenarios do not include general facilities charge (GFC) revenues. If the County recalculates a GFC for a consolidated system, it may reduce the need for rate-funded system reinvestment. In addition, this report does not make any changes to the rate structures of the water and sewer utilities, the only change is consolidating the individual utility rates into one schedule. The County may in the future decide to add a conservation encouraging element to its rate structure, such as tiered usage rates for single-family customers.

# APPENDIX A: RATE STUDY POLICY PAPER

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## BACKGROUND

Thurston County Public Works (County) contracted with FCS GROUP in 2021 to perform a water and sewer utility rate study. As a part of the study, the County requested a policy paper to define and analyze a variety of utility and rate-specific issues, present alternative solutions, and recommend a course of action. These topics include the following:

- The merit of jurisdictional rate comparisons.
- Pros and cons of utility consolidation.
- Rate structures and effects on revenue stability and water conservation.
- A policy evaluation of three structures: block rates, seasonal rates, and meter-based fixed rates.

## VALIDITY OF JURISDICTIONAL COMPARISONS

Jurisdiction comparisons of utility rates are often a point of interest, but they are actually limited in their usefulness, because there are so many significant variables that can affect the rates.

One example is utility size. Water and sewer utility systems have large, upfront construction costs and high fixed operating costs. However, the incremental cost of providing water or handling flow from an additional customer is relatively small. In larger systems, the upfront and fixed costs are distributed over a broad customer base (more total customers and/or more commercial/industrial customers), resulting in economies of scale. In smaller systems, costs are distributed over a smaller group of customers, and often there are few commercial or industrial customers. All else being equal, this means that small systems tend to have higher unit costs.

Other key variables include the year when most of the infrastructure was initially built, the condition of the infrastructure, geographic proximity to water supply sources or wastewater treatment options, and proximity to environmentally sensitive areas. The density of development also matters; the more equivalent residential units (ERUs) per mile of pipe, the lower the unit costs, since ERUs generate revenue while pipe (or other infrastructure) generates costs. Topography can matter, especially for sewer systems; for example, a hilly service area that requires a lot of pump stations is more costly than a service area that can rely on gravity for most of its flows. The type of water supply source matters—wells vs. surface water—as does the technology used for wastewater treatment. The financial policies can also affect the rates—the degree to which the utility relies on debt vs. pay-as-you-go capital financing. For all of these reasons, jurisdictional rate comparisons are often interesting but rarely useful for making policy or management decisions for a particular utility.

**Conclusion:** While decision-makers often want to know how their utility rates compare to other regional utility providers, it can be difficult to draw meaningful conclusions because each jurisdiction has a unique set of geographic traits, customers, and system characteristics that can have a significant impact on rates.

## UTILITY CONSOLIDATION

The County completed an in-depth policy analysis on utility consolidation, documented in an April 2020 report, *Thurston County: Utility Consolidation Feasibility Study*. Therefore, only a brief discussion of the general pros and cons of utility consolidation are discussed in this paper.

### County Service Areas

Currently the County has three water service areas and four sewer areas, as shown in **Exhibit 1**.

**Exhibit 18: Current Service Areas**

Summary of System Information					
Community	Approx. System Age	No. Utility Accounts	% of Total Accounts	Monthly Water Rates	Monthly Sewer Rates
Tamoshan <sup>1</sup>	1970s	116	14%	\$79.98/ERU plus \$2.67/ccf	\$140.64/ERU
Boston Harbor	1990s	278	34%	\$40.97/ERU plus \$2.69/ccf	\$109.58/ERU
Grand Mound	2000s	390	48%	\$44.72/ERU plus \$2.56/ccf	\$92.15/ERU
Olympic View	1996	28	3%	N/A	\$105.53/ERU
		812	100%		
<sup>1</sup> Within Tamoshan system, Beverly Beach subdivision receives only sewer service.					

The four service areas are already partially consolidated—that is, they have shared management by the County. For that reason, the County has already achieved some of the operational efficiencies of joining small systems into one larger system. Because of shared management, there can be sharing of personnel, equipment, and administrative processes.

However, something significant is missing from the current configuration: consolidated *rates*. Because customers pay separate rates specific to their area, the County is required to track its revenue and expenditures separately. It must have individual funds to account for the inflow and outflow of resources that are intended to be separate.

Therefore, in exploring “utility consolidation,” the main question is whether to consolidate the rate schedules (including general facilities charges and miscellaneous fees as well as monthly rates). Consolidated rates are geographically neutral rather than area-specific. For that reason, they are sometimes referred to as “postage stamp” rates, because the cost of mailing a letter from Olympia to Tenino is no different than the cost of mailing a letter from Olympia to Miami.

The alternative is to continue with the current area-specific rates.

### Advantages of Rate Consolidation

#### Operational and Administrative Efficiencies

Consolidation of the funds would allow further operational and administrative efficiencies. In order to maintain separate funds for separate areas, the County staff must allocate its staff time and other

maintenance costs in some logical way. There are methods for allocating staff time that are relatively simple. For instance, a given employee might simply assume that she spends 40% of her time at Grand Mound, 25% at Boston Harbor, 20% at Tamoshan, and 15% at Olympic View. However, such a simple method can be disconnected from the reality of actual time commitments. On the other hand, tracking each day's actual time worked by area on the time sheets can yield valid information, but it can also be a significant administrative burden. In general, the methods that yield the most meaningful differentiation across different areas require the most staff time to administer reliably.

The level of aggregation is a policy choice that the County gets to make. If the County were to fully consolidate the service areas, the implication would be that geographic distinctions are not relevant. The County already ignores some geographic distinctions—for instance, it does not charge lower sewer rates for customers who live closer to a wastewater treatment plant. Consolidating the four areas would be a step further; it would be a declaration that the County has a policy commitment to “one system.” This would reduce the administrative burden and still yield reliable budgetary information. There would be fewer rate schedules and fewer enterprise funds to track.

### Ability to Spread Out Impact of Capital Investment

However, area-specific rates are more than just an accounting burden. The more important consideration is that area-specific rates affect the County's ability to make capital investments to address system needs. If the cost of a particular capital project must be recovered from a small customer base, the rate impact is more severe than if it can be recovered over a larger, consolidated customer base.

Utilities tend to go through waves of capital investment, and the Capital Improvement Plan (CIP) is like a rotating spotlight—first it shines on one area, then on another area, depending on where the capital needs are most critical. Maybe this year, capital investment is needed in Boston Harbor, and some other year a capital project will be needed in Grand Mound. With consolidated rates, the various areas take turns. The customers all pay into the common fund, and eventually all of the areas have their capital needs addressed. Equity is achieved over time.

When the County's total service area is broken into small subareas, each area must recover its own costs independently, and the result is that needed capital investment can be prohibitively expensive for any one group of customers to shoulder at a given time. When that happens, capital reinvestment is more likely to be deferred, and costs down the road may end up even higher. In this way, a fragmented fund structure can prevent the County from reinvesting in the capital infrastructure.

Consolidated water and sewer utilities have a larger pool of customers, which can better handle each wave of investment without requiring sudden, disruptive rate increases to a given subarea. Through shared management, the County already has achieved some economies of scale in its O&M budget. However, when it comes to capital investment, economies of scale are only achieved if rates are consolidated and the different subareas are considered to be part of one system.





### Disadvantages of Rate Consolidation

The main drawback to consolidated rates is the fact that area-specific rates are politically easier, especially if residents in the subareas are accustomed to thinking of themselves as independent contributors to their water or wastewater system. In general, people tend to focus on the most local level of public services, and the “equity over time” and “taking turns” rationale does not necessarily make a proposal for consolidated rates easy to accept.

The objections to consolidation would be particularly noticeable in two types of circumstances. One is where there are significant differences in the historical capital investment in the subsystems. The customers in a subsystem which has already made substantial capital investments will normally—all else being equal—be reluctant to blend rates with a subsystem that is facing a significant future capital liability due to a lack of prior investment.

The other circumstance that can draw opposition from customers is where there is a significant difference in the level of rates across the various subareas. In the rate-blending process, if one group's rates go down, someone else's rates must go up. The relative size of the systems makes a difference to the rate impact of consolidation. **Exhibit 2** illustrates this with a hypothetical illustration of two consolidation scenarios.

**Exhibit 19: Illustration - Impact of Changing from Area-Specific to Consolidated Rates**

Impact of Changing from Area-Specific to Consolidated Rates			
<b>Scenario 1 - Small Utility has higher rates than Big Utility</b>			
	<b>Big Utility</b>	<b>Small Utility</b>	<b>Consolidated</b>
Number of ERUs	5,000	50	5,050
Avg Monthly Revenue/ERU	\$50.00	\$75.00	
Total Rate Revenue	\$3,000,000	\$45,000	\$3,045,000
Blended Monthly Revenue/ERU	\$50.25	\$50.25	\$50.25
% Impact of Blended Rates	0.5%	-33.0%	
<b>Change is Easier</b>			
<b>Scenario 2- Big Utility has higher rates than Small Utility</b>			
	<b>Big Utility</b>	<b>Small Utility</b>	<b>Consolidated</b>
Number of ERUs	5,000	50	5,050
Avg Monthly Revenue/ERU	\$75.00	\$50.00	
Total Rate Revenue	\$4,500,000	\$30,000	\$4,530,000
Blended Monthly Revenue/ERU	\$74.75	\$74.75	\$74.75
% Impact of Blended Rates	-0.3%	49.5%	
<b>Change is Harder</b>			
<i>Average revenue/mo/ERU is a simple measure of the overall level of rates.</i>			

In Scenario 1, a larger utility with lower rates is blended with a smaller utility with higher rates. In Scenario 2, a larger utility with higher rates is blended with a smaller utility with lower rates. Scenario 1 will typically draw less opposition than Scenario 2. Fortunately, Thurston County faces a situation that is closer to Scenario 1, where the subsystem with the highest monthly rates (Tamoshan) has only 14% of the total number of accounts.

We do not know how the capital investment cycles differ between the various subsystems, and that could make a difference to the acceptability of blended rates. For example, since Tamoshan is older than the other subsystems (vintage 1970s), it might have already been subject to a wave of capital re-investment, which would help explain why its rates are higher. If so, it is possible that the other subsystems—which are 20-25 years old—might be looking ahead at big future rate increases as their infrastructure ages. In that case, the impact of consolidated rates might be easier to explain and justify to the residents of subareas that are disadvantaged in the short term. For example, when the rotating spotlight of the CIP shines on Boston Harbor, and that subsystem is required to make some



of the capital improvements that Tamoshan has already had to make, then Boston Harbor customers might appreciate being part of a system with 812 customers instead of 278 customers.

## Summary of Utility Consolidation Issue

The American Water Works Association's *Journal AWWA* recently published an article in its December 2021 issue, entitled "*Too Small to Succeed: State-Level Consolidation of Water Systems.*" It noted, "consolidation is widely seen as a necessary process to improve water quality and build greater sustainability into water management. In some cases, however, consolidation can be seen as controversial; any resistance should be addressed transparently before the consolidation moves forward. Our analysis shows that consolidation may be an opportunity for water systems to move away from a reactive style of management to become more proactive, resulting in improved water quality, increased public trust, and greater affordability."

**Conclusion:** In coordination with the 2021-22 rate study, the County should analyze the long-term rate impacts for each subsystem individually compared to the corresponding consolidated utilities and then communicate those results to stakeholders. Along with this quantitative analysis, the County should identify and communicate the key operational and management efficiencies that could result from a consolidation of subsystems. The County should also be prepared to articulate the benefit of a combined CIP.

## RATE DESIGN, REVENUE STABILITY, AND CONSERVATION

Based on industry experience, water utilities typically recover anywhere from 30% to 60% of annual revenue from base charges. Where a particular utility might fall on that spectrum depends on the goals of its decision-making body. Common rate-making goals for utilities often include revenue stability, water conservation, affordability, ease of administration, and transparency (the ability of customers to understand their bills). Two of these goals are often at odds – revenue stability and water conservation. Conservation-based rate structures shift cost recovery to peak-demand periods, providing a stronger incentive for customers to use less water during those periods.

The County's existing water rate structure promotes conservation by linking the amount of water that customers use to what they pay. However, the uniform volume rate structure only provides a limited incentive for customers to conserve water. If the County wishes to emphasize conservation and efficiency (with the goal of deferring future supply investments, for example), it could introduce an inclining block structure for single-family users and a seasonal rate structure for other customers. These rate structure features shift cost recovery to peak-demand periods, providing a stronger incentive for customers to use less water during those periods.

Recognizing that the County has likely incurred a substantial cost to size its water system to meet peak demands, inclining block rates could improve the proportionality of the County's rate structure – however, they would be more complex to administer than the existing structure. For example, it may be difficult to code an inclining block rate structure into some billing systems. It is also more difficult to explain the rate structure to customers and to communicate the rates on a bill.

While inclining-block rates generally result in lower bills for low users, they are less affordable for low-income customers with larger families and/or less efficient plumbing fixtures. While rate structure modifications that incentivize conservation generally reduce revenue stability, the County can address this by maintaining higher reserves to mitigate the increased volatility.

**Conclusion:** If the County wishes to improve revenue stability, it could focus future rate increases on its base rate structure. If the County wishes to prioritize water conservation over current revenue stability, it could introduce an inclining block structure for single-family users and a seasonal rate structure for other customers. Subsequent sections of this paper discuss in more detail inclining block rates and seasonal rates.

## INCLINING BLOCK RATES

As noted previously, the County currently utilizes a uniform volume rate structure. In 2021, those rates range from \$2.59 to \$2.69 per 100 cubic feet (ccf) of water consumption. Whether a customer uses 1 ccf or 50 ccf in a billing cycle, they both would pay the same unit rate.

Inclining block rates would send a stronger price signal to customers. A three-tiered block rate design is common, and it could decrease overall system consumption as a result of price elasticity. Depending on the source of the County's water supply, this could help ease pressure on system capacity, which may allow for the postponement of costly system expansion or the purchase of additional water rights.

Block rate structures are typically only charged to single-family customers, which are relatively similar in their scale and typical water usage. Non-single family customers include such a wide range of businesses that it would be hard to set appropriate block thresholds. If the County wants to send stronger pricing signals to non-single-family customers, seasonal rates are the best option.

### Example Methodology

While approaches vary based on location and policy, here is one reasonable approach to setting the thresholds in a three-tiered block rate design.

- Block 1: Typically set at single-family monthly winter average consumption, resulting in a unit rate that reflects average indoor water usage and not summer irrigation usage.
- Block 2: Often set to twice the summer monthly average, although it can be set lower or higher.
- Block 3: Set to the level at which it would apply to about 5-10% of the single-family bills. Block 3 is the "penalty block"—its explicit purpose is to be a disincentive for excess water usage. If the Block 3 percentage of bills is too low, the pricing signal will be fairly weak. If the Block 3 percentage of bills is too high, this may increase revenue volatility from year to year.

**Exhibit 3** summarizes this approach to a block rate design.

**Exhibit 20: Guidelines for Block Rate Design for Single-Family Customers**

Block	General Design Goals
Block 1	Average monthly winter consumption
Block 2	2x summer monthly average consumption
Block 3	Between 5-10% of bills ( <i>not accounts</i> )

## Price Elasticity

A block rate structure with a high top rate can reduce revenue stability. However, block rates can be designed to anticipate reduced usage. “Price elasticity” is a measure of the sensitivity of water usage in relation to changes in price. Using industry standard estimates for price elasticity, the prices for higher blocks can be set to account for lower anticipated usage, so that total revenue recovery meets the intended level.

## Reasons Utilities Have Not Implemented Block Rates

Some utilities have decided not to adopt block rates, citing some or all of the following reasons:

- They would shift cost recovery to more volatile usage, reducing revenue stability at a time when the utility is facing infrastructure funding needs that do not vary with water use.
- They would be more complex to administer than the existing structure.
- They may contribute to the need for additional near-term rate increases if they successfully encourage water conservation.
- They would be less affordable to low-income customers that are not low water users, including those with large families and/or older household fixtures.

**Conclusion:** If the County wants to prioritize water conservation over revenue stability, it can consider implementing an inclining block rate structure for single-family customers. The County could maintain higher reserves to mitigate the increased volatility.

## SEASONAL RATES

Seasonal rates are designed to reflect the higher costs associated with providing water during peak demand months and are typically applied to non-single-family customers. Seasonal rates recover more of the system costs during peak-demand periods, and they create an incentive for non-single-family customers to use less water during those periods.

Seasonal rates are easier to implement than a block rate design.

**Exhibit 4** outlines one possible approach, using hypothetical water consumption figures. Under the uniform rate example, customers pay \$2.00 per ccf, while under the seasonal example, customers pay a lower rate in winter (\$1.76) and a higher rate in the summer (\$2.48). This is based on a multiplier of 1.4X for the summer rate – the County could reduce or increase this multiplier. This example does not take into account price elasticity, but it may be prudent to do if the County is considering this type of rate structure.

Exhibit 21: Seasonal Rate Example

Description	Uniform Example	Seasonal Example
Annual ccf	100,000	
Uniform \$ / ccf	\$2.00	
Annual variable revenue	\$ 200,000	
Winter usage (8 months)		66,000
Winter \$ / ccf		\$1.76
Summer usage (4 months)		34,000
Summer \$ / ccf		\$2.48
Annual variable revenue		\$ 200,480

**Conclusion:** If the County wishes to prioritize water conservation over revenue stability, it can consider implementing a seasonal rate structure for non-single-family customers. The County could maintain higher reserves to mitigate the increased volatility.

## ERU-BASED VS. METER-BASED FIXED RATES

The County's current fixed charges for both water and sewer utilities are based on equivalent residential units (ERUs). Assuming the adoption of changes planned for January 2022, the ERUs used to calculate non-single-family bills are based on the average of the highest six months of metered water usage in the previous year, where a certain amount of usage (700 cubic feet per month in Grand Mound, 900 cubic feet per month in the other subareas) is assumed to be equal to one ERU.

### Water Fixed Rates

For water utilities, a fixed charge calculated from a usage-based ERUs is uncommon. Instead, water fixed charges tend to be based on the meter size. The meter size corresponds to the physical limit on the amount of water that can be delivered to a given customer, so it is a good proxy measure for a customer's impact on the system's peak-day demand. In addition, meter size is a stable metric—knowable before a building is even built (so it can be applied to general facilities charges)—and it does not need to be updated each year.

Since the County's current method for calculating water fixed charges is based on the average of the highest six months of actual usage, it does correspond to peak season demand. But much of the system (including the pipes in the distribution system) must be designed to meet peak-day or peak-hour demand, not peak season demand. Meter size is a better metric for approximating the impact a customer has on peak-day or peak-hour demand. In addition, the County's current method is more costly to administer, since it must be updated each year. We suggest that the County consider changing the calculation of the water fixed charge so it is based on meter size rather than the average of the highest six months of usage.

## Example of Meter Size Approach

When charging by meter size, utilities must distinguish the relative demand of various meter sizes. A common and defensible method is to assign meter capacity equivalents (MCEs) to each meter size. MCEs measure the maximum safe flow capacity in gallons per minute (gpm), relative to the smallest meter in the system (generally either 5/8" x 3/4" or 3/4" x 3/4"). There are industry standards established by the American Water Works Association (AWWA) to determine the number of MCEs for each meter size, which are shown in **Exhibit 5**. After assigning MCEs to each meter size, a base rate is calculated per MCE, and customers are charged the product of the base rate and the number of MCEs associated with their meter size.

**Exhibit 22: MCEs for a 5/8" Base and a 3/4" Base**

Meter Size (inches)	Flow (gpm)	MCEs (5/8" Base)	MCEs (3/4" Base)
5/8 x 3/4	20	1.00	n/a
3/4	30	1.50	1.00
1	50	2.50	1.67
1½	100	5.00	3.33
2	160	8.00	5.33
3	320	16.00	10.67
4	500	25.00	16.67
6	1,000	50.00	33.33
8	1,600	80.00	53.33

Many utilities use a blended approach, using these MCE ratios to recover costs related to average and peak water demand, and recovering customer-related costs (such as customer billing) uniformly regardless of meter size. This could result in a fixed charge schedule that is less “steep” than what is shown in **Exhibit 5**.

Charging water customers using meter-based fixed rates would not impact revenue stability, and it would reduce administrative complexity in the calculation of water bills for non-single-family customers.

## Sewer ERUs

An ERU-based charge is common for sewer utilities. However, a flow-based ERU for sewer should be based on the winter average of metered water use—in other words, the average of the *lowest* months, not the highest months. That way the equivalence between single family and non-single family usage is tied to indoor water consumption, excluding summer irrigation.

For the sewer utility, if the County decides to change from a peak-season ERU to a winter-average ERU, it might be a logical time to also update the equivalence factors to reflect average single-family usage. The current equivalence factors of 700 and 900 cubic feet per month are probably higher than actual winter average water consumption for the County’s single-family customers. Because of the advent of water efficient fixtures in the past 20 years, average water usage has been declining

nationwide. A more common winter average usage for single-family customers would now be closer to 500 cubic feet per month. The average for the County's customers can be determined by reviewing actual customer data.

## Implementation of Rate Design Changes

If the County chooses to change the basis of either the water or sewer charges, it will need to adjust the rates to ensure that the revenue generated by the new units matches the revenue needed to meet system requirements. This can be done as part of a normal rate study.

We have suggested consideration of three types of changes to the unit basis for the utility charges:

- Water – Change to a fixed charge based on meter size rather than peak-season consumption.
- Sewer – Change to a fixed charge based on winter average rather than peak-season usage.
- Sewer – Update the equivalence factors used to express the relation between the winter average usage of single-family customers and the number of ERUs for non-single-family customers.

Changes to the unit basis for a utility charge can require careful communication with customers. First of all, when the units change, then a change to the *rate* does not necessarily mean a comparable change to the *charge* that a customer actually pays each month. For that reason, customer communication needs to focus on the size of a typical bill rather than the rate.

In addition, a change that is intended to improve the equity of the overall rate design will probably cause some customers to have to pay more on the monthly bill, while other customers pay less. Those who pay more are likely to notice the change more than those who pay less. For that reason, if the County is interested in potential changes to the rate design, we suggest that the rates and typical monthly charges be projected as part of the upcoming rate study, so they can be compared with the rates and typical monthly charges under the current rate design.

**Conclusion:** The County should consider meter-based fixed charges for its water utilities, mainly because they are easier to administer. For sewer customers, an ERU based on actual recent usage is appropriate as the basis for monthly sewer charges; however, the ERU for a given customer should be calculated based on winter average consumption, not peak-season consumption. If the County changes the basis of either water or sewer charges, the rates will need to be adjusted to ensure the appropriate amount of total revenue is generated. In addition, if changes are made to the unit basis, the impact on rates and typical monthly charges should be projected so that the County can be aware of the impact on the various customer groups.

## SUMMARY

FCS GROUP recommends that the County consider the following items:

- Consider consolidating its water utilities into a single water utility and its sewer utilities into a single sewer utility, with consolidated rates that are geographically neutral. If the County desires to move toward consolidated rates, the change can be phased in over several years in order to soften the impact on customers who are disadvantaged in the short term by the change.
- If water conservation is prioritized over revenue stability – or if looming water supply costs are significant – the County can consider an increasing block rate structure for single-family water utility customers and seasonal rates for non-single-family (multi-family, commercial industrial, etc.) water customers.

- Consider implementing meter-based fixed charges for water customers.
- Consider changing the basis of sewer ERUs from peak-season to winter average usage, along with updating the equivalence factors.