FCS GROUP
Solutions-Oriented Consulting

| Technical Memorandum

To: Sara Lane, Administrative Services Director **Date:** October 21, 2022

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RE City of Shoreline Wastewater Utility Rate Study

INTRODUCTION

In April 2021, the City of Shoreline assumed responsibility for the wastewater collection system previously owned by the Ronald Wastewater District. As part of this transition, the City is in the process of re-assessing the capital and maintenance needs of the system, which in turn requires an evaluation of its rate funding. In January 2022, the City contracted with FCS GROUP to perform a wastewater utility rate study. The study consisted of three main components:

- **Policy Issue Papers:** In advance of the rate forecast, prepare an analysis of three policy topics (described below). Discuss those policy issues with the City Council, along with alternatives and recommendations.
- **Revenue Requirement Forecast:** Forecast the amount of rate revenue needed each year to cover operations and maintenance, fund the Capital Improvement Plan (CIP), and achieve the City's financial policy objectives.
- **General Facilities Charge (GFC) Update:** Update the GFC and the related Edmonds Treatment Facility Charge, based on the methodology previously used for the Ronald Wastewater District.

Each main component of the study was presented separately to City Council.

The forecast horizon was twenty years (2022-2041), based on the time horizon of the Comprehensive Sewer Plan adopted by the Ronald Wastewater District in 2021, just before the assumption. The multi-year rate schedule recommended for adoption by the City Council is six years, from 2023 through 2028. A new rate study should be undertaken sometime before the end of 2028, in coordination with updated capital planning.

POLICY ISSUE PAPERS

We drafted three policy issue papers, and on April 4, 2022, we presented to the City Council our analysis and recommendations regarding the following policy topics:

- **Capital Funding Tools:** What are the capital funding tools that may be available to a utility, and what are the tradeoffs between cash vs debt financing?
- **Low-Income Customer Assistance Programs:** what are the legal statutes that govern a low-income program for utilities, what are the tradeoffs between making the program more inclusive vs. the additional costs, and what are other local jurisdictions' low-income program policies?
- **Wastewater Rate Design:** what are the various rate design options currently used within the industry, what are the trade-offs between customer equity, administrative costs, and risks to revenue stability?

The April discussion with the Council provided guidance for subsequent steps in the rate study. Following is a brief summary of how each policy topic was incorporated into the study.

Capital Funding Tools

After we surveyed the various potential capital funding tools, the Council agreed with the suggestion that debt be viewed as an acceptable tool in the capital funding toolbox. It is useful for spreading capital costs over time, but it should be seen as a "last resort" financing mechanism, after first relying on other resources such as GFCs or available cash reserves. The forecast numbers shown in this memo incorporate the recommended level of debt.

Low-Income Customer Assistance Program

The low-income customer assistance program is the most complicated of the policy topics we examined. In the issue paper, we suggested several levels of support that could be offered to low-income customers, each of which have implications for the number of customers supported, the amount of foregone revenue, and the administrative cost. The approach that was supported by the staff and the Council was to try to develop a partnership with Seattle City Light (SCL) as a way to significantly broaden the reach of the City's program. Because renters are more likely to have electric meters in their name than wastewater accounts, the number of households in Shoreline receiving discounted electric bills is about seven times larger than the number receiving discounted wastewater bills—2,184 households compared to 311 households.

Therefore, we designed the initial rate forecast to accommodate three scenarios:

a) No change in the low-income program;

b) Increase the assumed number of participants from 311 to 2,184 but reduce the benefit from 50% of the bill to 25% of the bill; or

c) Increase the assumed number of participants from 311 to 2,184 and keep the benefit at 50% of the total bill—both the City charge and the treatment charge.

We presented all three scenarios to the City Council on July 25, 2022. The Council members indicated their support for the third scenario, in which the low-income program was expanded to seven times as many participants, while the discount remains at 50%. The remainder of this memo reflects that approach. We also assumed that an expanded low-income program would require a net increase of $50,000 per year in administrative costs.

This expansion of the low-income discount program still faces uncertainty—a partnership with SCL needs to be developed, and the administrative details and costs still need to be determined. The implementation timing will also need to be worked out by the City and SCL. But at the very least, there is room in the wastewater rate forecast for a large increase in the number of eligible low-income customers beginning in 2023, along with a related increase in administrative costs.

Wastewater Rate Design

After reviewing potential ways to structure the residential and non-residential rates, we recommended that the City's current rate design be retained, because it fits well the City's collection-only wastewater utility that depends on North City Water and Seattle Public Utilities for customer billing data. In the April policy discussion, the Council agreed with that recommendation.

REVENUE REQUIREMENT FORECAST

Changes to Rate Forecast and GFC Since Council Presentations

We presented the revenue requirement forecast to the City Council on July 25 and the GFC update on August 8. Since those two presentations, there have been several changes to the data on which the forecast is based—additional operating expenses, increased non-rate revenue, and new capital projects. The latest data is consistent with City staff's proposed 2023 budget. The net effect on the rate forecast is to push rates upward from where they were in July. The additional capital projects—particularly an increase in capital costs for the Edmonds Treatment Plant—also affect the calculation of the GFC and the Edmonds Treatment Facilities Charge. As a result, the numbers presented in this memo represent an update from the July and August presentations.

Revenue Requirement Forecast Methodology

The revenue requirement forecast identifies the total revenue needed to fully fund the utility on a stand-alone basis considering current and future financial obligations. The resulting rate increases are applied "across-the-board" for the utility; no rate design changes are proposed in this rate study.

Exhibit 1 shows that the development of rates is a two-step process. The first step is the capital funding strategy, shown in the left column. We begin with the total capital program, then subtract all of the non-debt funding sources. The remainder is the amount of borrowing needed. The number at the bottom of the first column—the debt needed to fund the remainder of the capital program—determines the amount of new debt service, which is an annual cost.

The second step is the annual forecast (in the column to the right). The fiscal policy targets include the minimum reserve balances that must be maintained in the forecast. To that number we add each year's projected operating and maintenance (O&M) costs, existing and new debt service, and the amount of current rate funding committed to capital expenditures. After deducting non-rate revenue, we now know how much money is needed each year from rates.

Exhibit 1: Revenue Requirement Overview

	Capital Funding Strategy
	Total Capital Projects
-	Grants
-	Developer Contributions
-	GFC Revenue
-	Rate Funded Capital
-	Cash Reserves
=	Debt Funding (Loans or Bonds)

	Annual Forecast
	Fiscal Policy Targets
+	Operating & Maintenance
+	Existing & New Debt Service
+	Rate Funded Capital
=	Revenue Requirement
-	Miscellaneous Revenue
=	Revenue Required from Rates

The rate revenue requirement is next compared with the revenue projected to be generated by current rates. In addition, we test the current rates against the required "debt service coverage," which is an important fiscal policy explained below. If the current rates are insufficient—either because they do not generate enough cash or because the debt service coverage target is not met—then the forecast rates are adjusted to the degree necessary to balance the cash flow requirements and ensure that the coverage target is achieved.

FISCAL POLICIES

The fiscal policies that affect a rate forecast include operating reserves, capital reserves, debt management, and rate-funded capital reinvestment. Each type of policy is discussed below.

Operating Reserves

"Reserves" are another word for fund balance. An operating reserve is a cash reserve 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 operating expenses. The most common operating reserve target for wastewater utilities is between 45 days to 60 days of operating expenses, or 12-16% of annual operating expenses. The City already has a policy target for wastewater operating reserves. The City target uses a higher percentage threshold but excludes treatment costs from the calculation, since the large majority of treatment costs (the King County portion) are a simple pass-through amount based on very stable metrics. We recommend that the current City operating reserve policy be continued.

> **Recommended Policy:** Achieve a year-end balance of **20% of annual operations and maintenance costs excluding treatment costs paid to King County or Edmonds**. *Results:* This equates to $1.1 million in 2022 based on estimated operating costs. This policy is expected to increase throughout the forecast due to anticipated cost inflation. In the forecast, excess operating reserves above the target are re-characterized as capital reserves.

Minimum Capital Reserve

The capital fund balance fluctuates naturally because it serves two functions. First, capital reserves are a capital funding tool, the means by which a utility saves up in advance of major capital projects and avoids overreliance on debt. Utilities tend to go through waves of capital investment, so the reserve balance tends to grow over time and then drop suddenly when a large amount of capital spending is needed.

However, there is a second function of a capital reserve. It also serves as a risk reserve just like the operating reserve, giving the utility the flexibility to respond to unanticipated needs. Such needs could include a capital cost overrun, or it could be the unexpected failure of a major part of the system. It could be an unexpected regulatory requirement or simply an opportunity-driven capital improvement, such as the replacement of a section of a pipe in the right-of-way at the same time that the roadway is planned for reconstruction. In either case, an adequate cash cushion gives the utility flexibility to address unforeseen capital needs in a logical way.

That cash cushion is achieved by having a *minimum* capital fund balance in the forecast. In other words, when we forecast capital spending and the fund balance naturally goes up and down, we only allow it to go down so far—only as far as the target minimum—not all the way to zero.

The target minimum capital fund balance could be defined as a certain percentage of the average CIP, or as the projected replacement cost of specified high-value assets in the system. However, a simple and common way to set a target minimum capital reserve is to define it as 1% of the original cost of fixed assets in the system. This minimum naturally increases over time along with future capital investment in the system, since future capital investment results in a growing inventory of capital assets. That is the approach we recommend in this study.

Recommended Policy: Achieve a year-end minimum capital fund balance target of **1% of the original cost of the utility's plant-in-service**. *Results:* This equates to $530,000 at the beginning of 2021, based on the plant-in-service cost estimate of $53 million. This target is expected to increase to nearly $2.25 million by 2041, as the City adds assets to the system through its annual capital improvement program.

Debt Service Coverage

Debt service coverage is a requirement typically associated with revenue bonds and some state loans, and it is an important benchmark to measure the riskiness of the wastewater utility's capital funding plans. Coverage is most easily understood as a factor applied to annual debt service. A typical requirement in the sale of revenue bonds is for the debt service coverage to be at least 1.25 each year. That means that the City agrees to collect enough revenue each year to meet operating expenses and not only pay debt service but to collect an additional 25% above bonded debt service. The extra revenue is a cushion that makes bondholders more confident that debt service will be paid on time. The extra revenue can be used for capital expenditures, to build reserves for future asset replacement, or for debt service on subordinate debt. Achieving a bonded debt service coverage greater than the minimum required level is a positive signal that bond rating agencies notice, and it can result in more favorable terms when the utility needs to sell bonds. For that reason, many utilities set a policy minimum coverage target that is higher than the contractual minimum of 1.25.

Recommended Policy: We recommend that the City set rates to achieve bonded debt service coverage of at least 1.50. *Results:* In this forecast, bonded debt service coverage is projected to be at least 1.68 through the 20-year forecast period.

Rate-Funded Capital Reinvestment

To avoid overreliance on debt, it is useful to have a policy target for the amount of capital investment that is funded by rates. A common benchmark in building a long-term forecast is to aim for rate-funded capital investment at least equal to 100% of original cost depreciation on total assets. That is the policy we recommend for the City of Shoreline.

Recommended Policy: Set rates to fully fund original cost depreciation expense by the end of the forecast period. Annual depreciation is $1.1 million as of 2022 and is projected to be about $4.4 million by 2041. *Results:* This forecast achieves rate-funded capital reinvestment of 100% of depreciation by 2027 and continues above that level through the remaining forecast period.

Exhibit 2 provides a summary of the recommended fiscal policies for the wastewater utility.

Exhibit 2: Summary of Fiscal Policies

Policy	Recommended Target
Operating Reserve	20% of annual O&M excluding treatment costs ($1.1 million in 2022)
Minimum Capital Reserve	1% of original cost of plant-in-service ($530,000 based on 2022 assets)
Debt Service Coverage	A policy target of at least 1.50 for bonded debt, which is higher than the contractual minimum of 1.25
Rate-Funded Capital Reinvestment	Fully fund original cost depreciation by the end of the study period ($4.4 million / yr. by 2041)

KEY ASSUMPTIONS

Economic & Inflation Factors

The operating and maintenance (O&M) expense forecast relies primarily on the City's projected actual spending in 2022 and its proposed budget for 2023. The line items in the budget are then adjusted each year of the forecast by utilizing one of the following applicable factors:

- General Cost Inflation – assumed to be 3% per year based on the recent five-year and ten-year historical performance of the Consumer Price Index (CPI), West Region. During the past year, CPI inflation has been much higher, but this forecast is intended to extend over a 20-year time period, and it assumes that the Federal Reserve's current aggressive measures to counteract inflation will eventually succeed at bringing long-term inflation down to historical levels.
- Construction Cost Inflation – Construction cost inflation is measured by the Construction Cost Index published by the Engineering News-Record (ENR-CCI). The long-term growth of the ENR-CCI averages between a half point and one point higher than the CPI. The ENR-CCI also fluctuates more widely than the CPI. Based on staff input and recent economic indicators, this forecast assumes 12% in 2022, 8% in 2023, followed by 4% annually.
- Taxes – The City utility tax rate is 6%. The applicable State tax rate varies by function—for collection-related revenue it is 3.852%, while for treatment, transmission, GFCs and miscellaneous fees it is 1.75%. For the City, most of the revenue is treatment-related, and the weighted average State tax rate is 1.999%.
- Personnel Cost Inflation – based on staff input and Employment Cost Indices (U.S. Bureau of Labor Statistics). These escalation assumptions are drawn from internal City forecasts.
  - Labor Cost Inflation: assumed to be 2.3%-5.7% per year.
  - Benefits Cost Inflation: assumed to be 5.9%-8.4% per year.
  - PERS Inflation: assumed to be 3.1%-5.2% per year.
- Fund Earnings – assumed to be 0.25% in 2022 followed by 0.50% per year thereafter.
- Customer Account Growth – assumed to be 0.70%, consistent with population projections in the Ronald Wastewater District Comprehensive Sewer Plan (CSP), which was adopted in 2021.

Fund Balances

The wastewater utility started 2022 with just under $7.0 million in cash balances. **Exhibit 3** shows the 2022 beginning balances for each fund, as allocated for the forecast.

Exhibit 3: Fund Balances

Purpose	2022 Beginning Balance	Notes
Operating Reserve	$800,000	Allocated amount to maintain a minimum operating balance
Capital Reserve	$5,600,000	Total funds available less operating and vehicle amounts
Vehicle Reserve	$550,000	Set aside based on staff input
Total	**$6,950,000**	

Existing Debt Obligations

The wastewater utility currently has no annual outstanding debt.

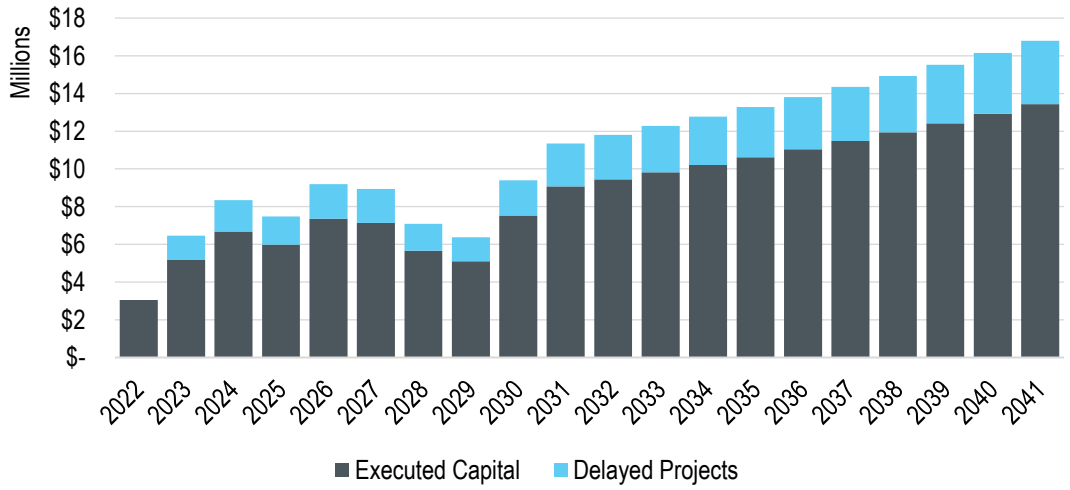
Capital Expenditure Forecast

The City provided a list of capital projects by year through 2041. This was based on the Ronald CSP, which contained cost estimates from 2020. To align the CIP with newer cost estimates, all projects were escalated to 2021 dollars based on the 6.96% growth in the ENR-CCI for the Seattle area. Future cost escalation was based on the construction inflation assumptions described above.

Based on discussions with City staff, a CIP execution factor of 80% was applied to projects beyond the current year. An execution factor is not a "reduced CIP" scenario—all of the projects would still be authorized. But a rate study is a cash flow forecast for the overall capital fund. Particularly with a growing CIP, not all of the planned projects can realistically be built within the time frame, and the cash flow forecast takes that into account. Otherwise, rates would be set too high. Typically, the unspent money does not represent true savings but delays in project execution.

Exhibit 4 outlines the total project cost by year. The total escalated cost is $219.4 million, with $176.1 million assumed to be completed within the period and a cumulative delay of $43.3 million.

Exhibit 4: Capital Improvement Program (escalated)

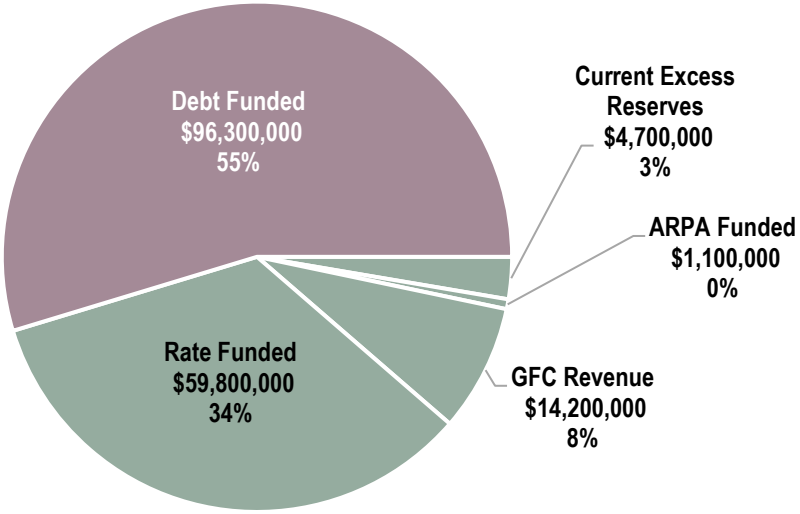


REVENUE REQUIREMENT RESULTS

Capital Funding Strategy

After inflation, the 2022-2041 executed capital program totals $176.1 million. In the recommended capital funding strategy (shown in **Exhibit 5**), about $64.5 million would be funded from existing cash reserves and planned rate-funded system reinvestment. Another $14.2 million would come from GFC revenue and about $1.1 million from American Rescue Plan Act (ARPA) grant funds. The remaining $96.3 million would be financed with revenue bonds.

Exhibit 5: Capital Funding Strategy



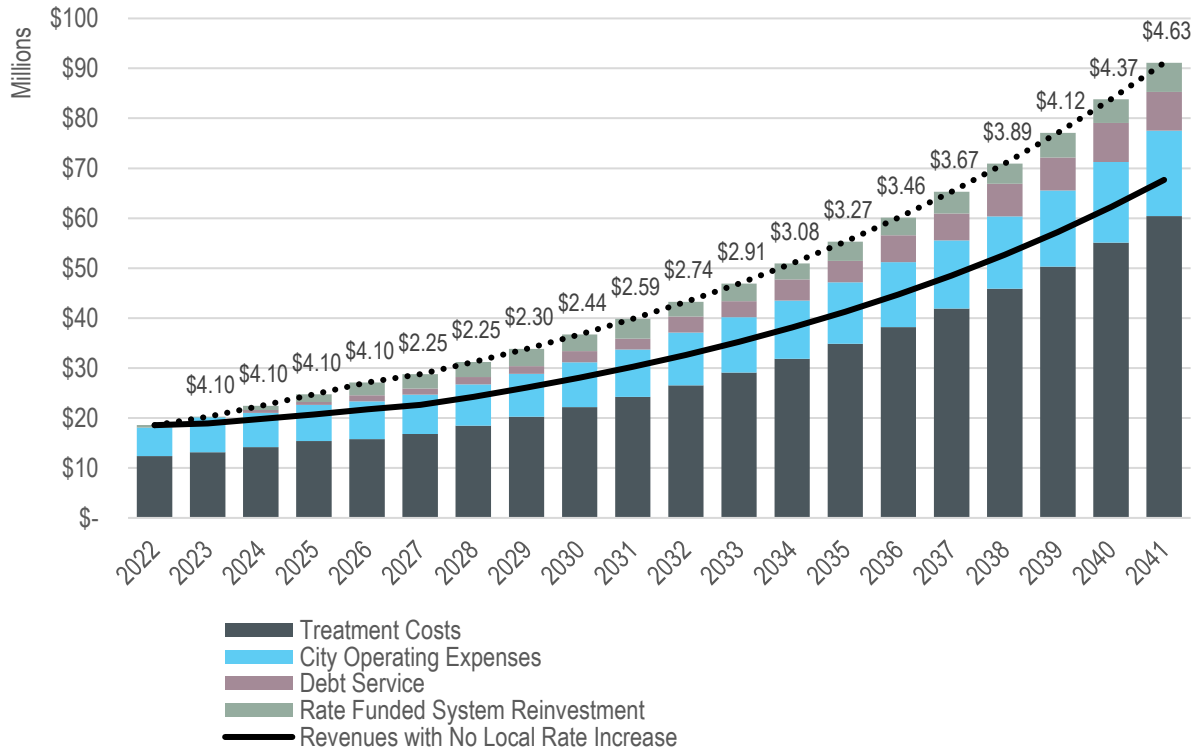
Annual Forecast

Exhibit 6 graphically represents the annual forecast through 2041. The stacked columns represent costs of the utility. The solid black line represents revenue at existing rates and the dashed line shows forecasted revenue with rate increases. Below are further observations about these variables.

- Solid black line: Total revenue without increases to the local rate (i.e., "City rate").
  - » Local rate revenues are expected to be about $5.8 million in 2021. Without rate increases, this revenue would grow with customer connections, about 0.7% per year.
  - » Other revenue is mostly comprised of treatment charges collected from Shoreline customers and passed through to King County and Edmonds. It totals $12.8 million in 2022.
  - » Treatment charges are projected to increase at the level most recently presented to the King County Metropolitan Water Pollution Abatement Advisory Committee (MWPAAC) during the 2023 – 2032 rate setting process. These annual increases range from 5.75% to 9% per year. The Edmonds treatment charge is assumed to increase at the same pace as King County.
- Dashed black line: Total revenue with local rate increases.
  - » Local rate revenue is projected to increase at a rate equal to a $4.10 per month each year from 2023 – 2026, followed by $2.25 per month increases in 2027 and 2028. After 2028, local rates increase by 6% per year throughout the forecast period.

- Dark blue bar: Treatment costs.
  - » King County treatment expenses are based on the forecasted number of RCEs served by the county annually multiplied by the monthly rate per RCE provided in the MWPAAC forecast.
  - » Edmonds treatment expenses are based on Shoreline's forecasted share of operating costs at the Edmonds plant, plus 9.49% of capital costs, per the two cities' interlocal agreement.
- Light blue bar: City operating expenses.
  - » City operating expenses are largely based on the 2022 projected actual expenditures and the proposed 2023 budget figures.
- Pink bar: Debt service.
  - » To finance the capital plan, the City is forecasted to issue revenue bonds in two year intervals beginning in 2024. Annual debt service is expected to begin at $550,000 per year in 2024 and increase to $7.8 million per year by the end of the forecast.
- Light green bar: Rate-Funded System Reinvestment.
  - » The wastewater utility starts funding capital through rates in 2023 and gradually phases into $5.6 million per year (129% of estimated depreciation) by the end of the period.
- The data labels represent the monthly bill increase to the local portion of the single family residential bill. For example, the 6% increase from 2028 to 2029 would be $2.30 per month.

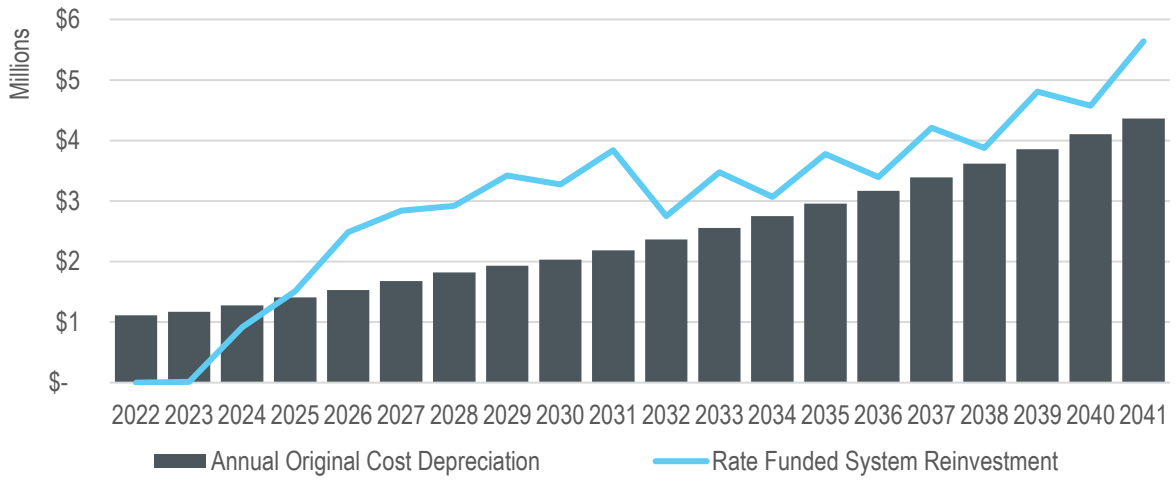
Exhibit 6: Annual Wastewater Revenue Requirement Forecast 2022-2041



Rate Funded System Reinvestment

In **Exhibit 7**, the light blue line shows the wastewater utility's projected annual level of rate-funded system reinvestment in relation to annual depreciation.

Exhibit 7: Annual Rate-Funded System Reinvestment

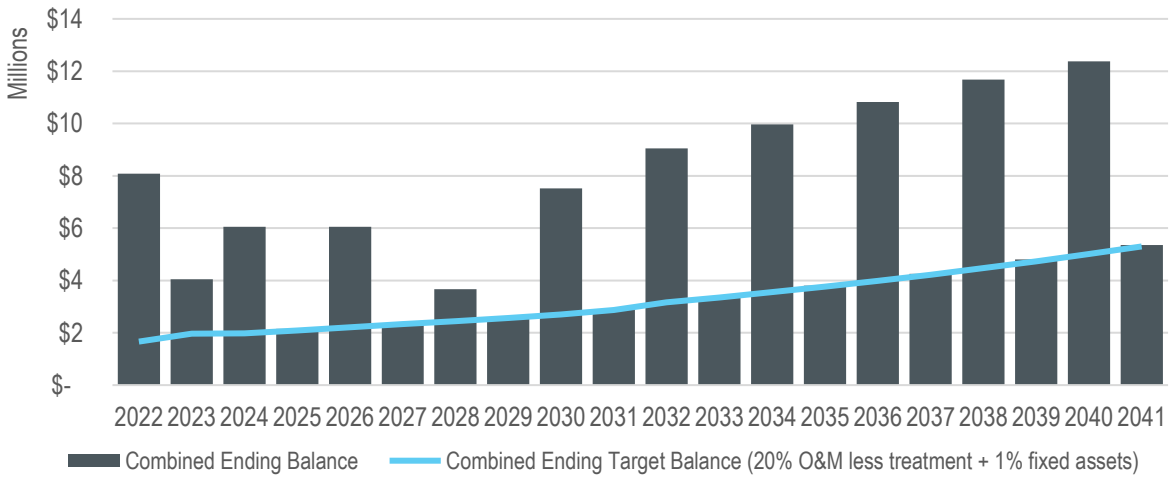


While the policy target is reached by 2025, as the utility continues to borrow in two-year increments and build capital projects, the relative growth in rate-funded system reinvestment slows down. In the later forecast years, the level of rate-funded system reinvestment still achieves the policy target.

Operating and Capital Reserve Level

The target operating reserve is equal to 20 percent of operating expenses less treatment costs. The target minimum capital reserve is equal to 1% of the original cost of fixed assets. The combination of these two targets represents the total minimum target balance. **Exhibit 8** shows that the ending fund balance spikes when a new debt issue is projected for the next two-year period and then falls back to the target minimum in the subsequent year.

Exhibit 8: Operating and Capital Reserve Forecast



SUMMARY OF RATE FORECAST

In order for the wastewater utility to properly fund all of its operating and capital needs while complying with the recommended financial policies, the City rate needs to increase by $4.10 per month annually from 2023-2026 followed by $2.25 per month in 2027 and 2028. Rate increases after 2028 are projected to be 6% percent increases through the rest of the study period.

Right now, the City charge is only about a third of what the customers pay. The majority of their bill is the treatment charge that is passed along to King County or the City of Edmonds. **Exhibit 9** shows the total monthly impact to wastewater customers over the next six years, through 2028. It assumes the projected City rates, the treatment rate increases projected by King County, and increases for the Edmonds treatment rate equivalent to the percentage increases of King County.

The City will need to issue debt beginning in 2024. Adopting a multi-year rate schedule sends a message of fiscal prudence to the bond markets, which can lead to favorable interest rates. Therefore, we recommend that the City adopt a six-year rate schedule, containing the City rate and the projected treatment rates shown in **Exhibit 9.**

Exhibit 9: Forecasted Combined Wastewater Bill Impacts

	2022	2023	2024	2025	2026	2027	2028
Local City Rate	$17.48	$21.58	$25.68	$29.78	$33.88	$36.13	$38.38
$ Increase		$4.10	$4.10	$4.10	$4.10	$2.25	$2.25
King County Rate	$49.79	$52.11	$55.11	$58.28	$61.64	$65.19	$71.06
Edmonds Rate	$30.35	$32.10	$33.95	$35.90	$37.97	$40.16	$43.77
Total Bill – King County	$67.27	$73.69	$80.79	$88.06	$95.52	$101.32	$109.44
$ Increase		$6.42	$7.10	$7.27	$7.46	$5.80	$8.12
Total Bill – Edmonds	$47.83	$53.68	$59.63	$65.68	$71.85	$76.29	$82.15
$ Increase		$5.85	$5.95	$6.05	$6.17	$4.44	$5.86

Expanded Low-Income Program

The City's low-income program gives eligible customers a 50% discount of both the City charge and the treatment charge. However, for King County customers (about 90% of the City's customers), the treatment charge for each residential customer equivalent (RCE) is set to equal to what the City must pay to the County. Even if the City collects only 50% of the treatment charge from the customer, the City must still pay the entire charge to the County. For that reason, the City charge makes up the foregone revenue from both the City charge and the treatment charge. Because the treatment charge is two-thirds of the total bill, the treatment charge triples the impact of the low-income program on the City rate.

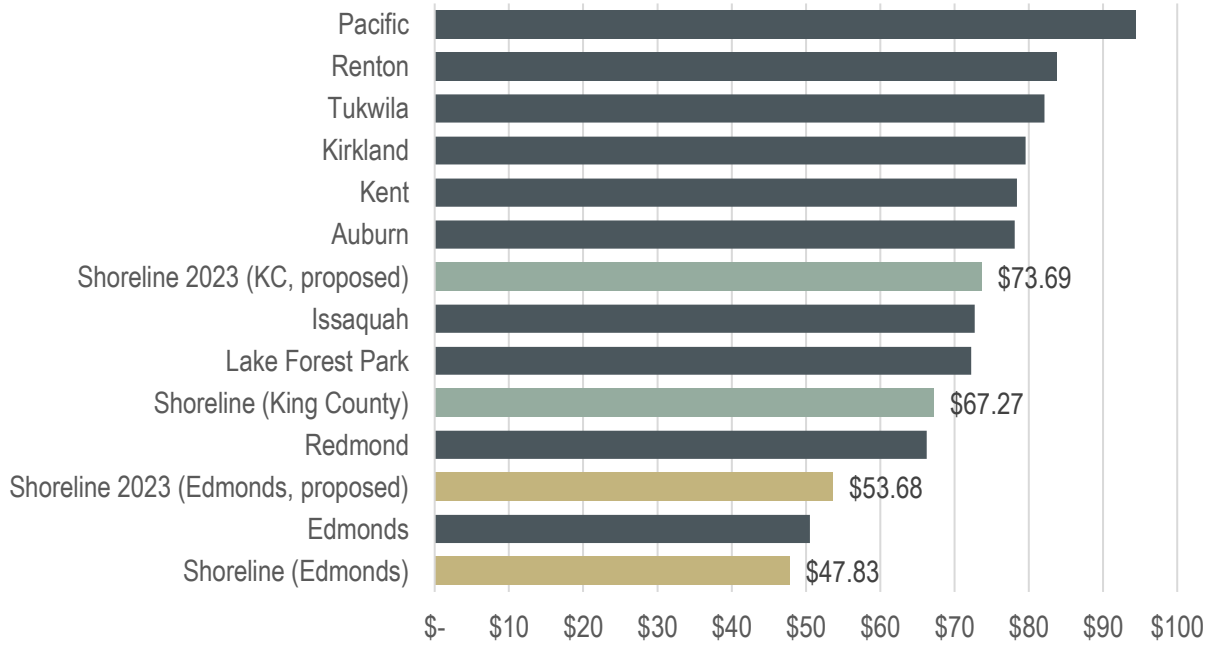
This rate forecast includes funding for a sevenfold increase in the number of eligible low-income customers. The impact of that expanded program on the City rate is further magnified by the treatment rate increases projected by King County.

The expanded low-income program is needed precisely because rates are projected to go up, but at the same time, the effect of expanding the low-income program is to make rates for non-low-income customers even higher. Absent external funding, this an unavoidable consequence of trying to respond to a rising rate forecast.

Single-Family Residential Rate Comparison

As part of this rate study, we performed a survey of utilities within the King County regional wastewater system. **Exhibit 10** shows each jurisdiction's 2022 monthly single-family residential (SFR) rate, assuming 500 cubic feet of water usage. Note that each jurisdiction has a unique set of geographic traits, customers, and system characteristics that drive the rates. Additionally, some of these jurisdictions may be planning to adjust rates in 2023 as well.

Exhibit 10: Jurisdictional Survey – Monthly Single Family Wastewater Rates (5 ccf water usage)



Shoreline's total rate for customers flowing into the King County system is currently in the lower half of the rates for comparator jurisdictions. If the Shoreline rate increases as recommended for 2023—and if the other utilities do not change—the City would fall in the middle of the group.

UTILITY GENERAL FACILITIES CHARGE UPDATE

Prior to the City's assumption of the wastewater utility in 2021, the Ronald Wastewater District updated their GFC. As part of this rate study, the GFC and the related Edmonds Treatment Facility Charge were updated, to reflect the most current CIP, and also to take into account future capital projects that are beyond the allowable time frame for districts.

Background about General Facilities Charges

GFCs are one-time fees paid at the time of development, intended to recover a share of the cost of system capacity needed to serve growth. They serve two primary purposes:

- to provide equity between existing and new customers; and
- to provide a source of funding for system capital costs as growth occurs.

GFCs apply to both new development and redevelopment that increases the demand for system capacity. Charges on redevelopment are net of previously paid-for capacity.

Legal Basis

District GFCs are governed by RCW 57.08.005 (11), but the GFCs imposed by cities are governed by RCW 35.92.025. An excerpt is provided below:

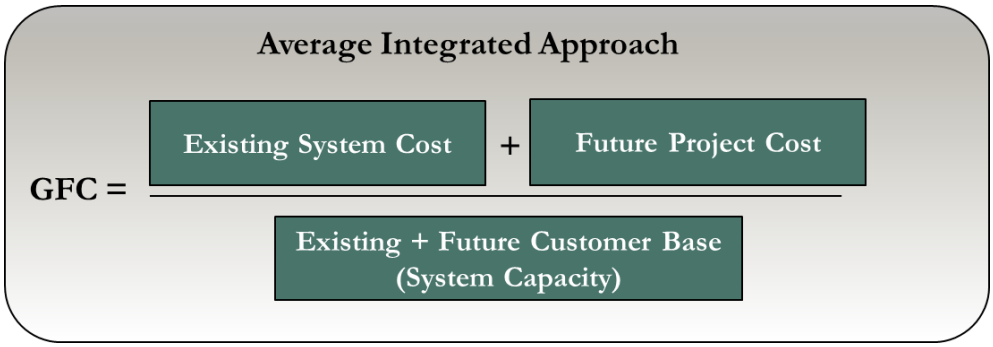
> **(RCW) 35.92.025**: "Cities and towns are authorized to charge property owners seeking to connect to the water or sewerage system of the city or town as a condition to granting the right to so connect, in addition to the cost of such connection, such reasonable connection charge as the legislative body of the city or town shall determine proper in order that such **property owners shall bear their equitable share of the cost of such system**. The equitable share **may include interest charges** applied from the date of construction of the water or sewer system until the connection, or for a period **not to exceed ten years, at a rate commensurate with the rate of interest applicable to the city or town at the time of construction** or major rehabilitation of the water or sewer system, or at the time of installation of the water or sewer lines to which the property owner is seeking to connect but not to exceed ten percent per year: PROVIDED, That the aggregate amount of interest shall not exceed the equitable share of the cost of the system allocated to such property owners. Connection charges collected shall be considered revenue of such system."

A difference between the two statutes is that districts can only include 10 years of future capital costs in the GFC calculation, but for cities the time limit is undefined. For practical purposes, the timeframe for cities is often based on the length of the established CIP. Shoreline's CIP goes out twenty years, so the GFC can incorporate future capital projects over a 20-year time horizon.

Average Integrated Approach Methodology

In Washington, there is more than one approach that can be used to construct a defensible GFC. Here we use the *average integrated approach*, which provides stability over time and equity between new and existing customers. It is a simple calculation. The total cost (existing assets plus planned capital improvements) divided by the total RCEs (existing capacity plus growth allowed by future capital investment) equals the GFC. The GFC represents the average unit cost of capacity. **Exhibit 11** illustrates how the average integrated approach is calculated.

Exhibit 11: Calculation Using the Average Integrated Approach



The following discussion addresses the calculation of the city-wide GFC for the collection system. The Edmonds Treatment Facilities Charge is discussed later.

Existing Cost Basis

The existing cost portion of the calculation is intended to recognize the current ratepayers' net investment in the original cost of system assets. The calculation includes the following elements:

- Utility Plant-In-Service: The existing cost basis begins with the original cost of plant-in-service., as documented in the fixed asset schedule of the utility.
  - The City's records as of the end of 2021 identify **$50.7 million** in assets.
- Plus: Construction Work in Progress: Construction work in progress (CWIP) is added, to recognize expenditures on projects currently underway but not yet complete.
  - Based on the City's CWIP Summary Trial Balance, the utility had just under **$2.4 million** in construction work in progress as of the end of 2021.
- Less: Edmonds WWTP Assets: These assets will counted in the cost basis for the Edmonds Treatment Facilities Charge, so they are subtracted here to avoid a double-count.
  - The City's records as of the end of 2021 identify **$5.1 million** of Edmonds WWTP assets.
- Less: Contributed Capital: Assets funded by grants or local improvement districts are excluded, as is developer-built infrastructure. Capital funded by rates or past GFC revenue is included.
  - Capital contributions of **$11.2 million** (excluding GFC revenues) were identified in the historical financial statements.
- Less: Provision for Future Retirement of Replaced Assets: All of the City's wastewater capital projects are repairing or replacing existing assets (excluding Edmonds WWTP projects). To avoid including the value of these projects twice – in the existing assets and in the capital plan – a deduction is made for future asset retirements related to CIP projects classified as repair and replacement (R&R). The provision for future asset retirement approximates the original cost of the asset that the R&R project is replacing, using the useful life of the new project and a historical inflation index (the ENR-CCI). In simple terms, if an existing lift station is planned to be replaced in 2025, and the expected useful life for lift stations is assumed to be 30 years, then the provision for future asset retirement uses the historical ENR-CCI to estimate how much that lift station might have cost in 1995 (that is, 30 years earlier than the replacement date). That amount is then removed from the existing cost basis.
  - This adjustment reduces the existing cost basis by approximately **$10.5 million**.

- Plus: Interest on Utility-Funded Assets: The RCW and subsequent legal interpretations allow GFCs to include interest on an asset at the rate applicable at the time of construction. Interest can accumulate for a maximum of ten years from the date of construction for any particular asset. Conceptually, this interest provision accounts for opportunity cost that City customers incur by funding infrastructure investments rather than having it available for other needs.
  - » After deducting interest from the Edmonds WWTP and contributed capital, accumulated interest adds about **$13.2 million** to the existing cost basis.

The sum of these elements results in an existing cost basis of **$39.6 million**, as shown in **Exhibit 12**.

Exhibit 12: Existing Cost Basis

Component	Amount
Existing Wastewater Plant-in-Service	$50,744,173
Plus: Construction Work in Progress as of 12/31/2021	2,394,643
Less: Edmonds WWTP through 12/31/2021	(5,075,802)
Less: Contributed Facilities through 12/31/2021	(11,171,351)
Less: Provision for Retirement of Assets to be Replaced	(10,539,885)
Cumulative Interest	20,023,725
Less: Cumulative Interest on Edmonds WWTP	(1,481,363)
Less: Cumulative Interest on Contributed Facilities	(5,303,855)
Total Existing Cost Basis	$39,590,285

Future Cost Basis

The future cost basis is intended to recognize planned future capital investment from ratepayers, and it is based on 20 years of the City's adopted CIP. The same CIP execution factor of 80% that was used for the rate forecast is also used for the GFC calculation. In addition, **$1.1 million** of projected ARPA grant funds is deducted because it won't come from ratepayers. No cost escalation is used for the GFC calculation. The future cost basis is summarized in **Exhibit 13** and totals **$97.6 million**.

Exhibit 13: City's 20 Year CIP (2022-2041)

Component	Amount
Capital Improvement Plan	$122,699,285
Less: Capital Execution Factor	(24,010,618)
Less: ARPA Funded Capital	(1,100,000)
Total Future Cost Basis	$97,588,667

System Capacity

So far we have discussed the numerator in the GFC, with its two main components: the value of existing assets and future capital costs. The denominator in the GFC calculation is the projected number of residential customer equivalents, or RCEs, at the end of the planning period.

Based on data from December 2021, the City serves 22,331 RCEs. We projected that number to 2041, based on the 20 year projected population growth from 2020 to 2040 shown in Table 3.1 in the *2020 Ronald Wastewater District Comprehensive Sewer Plan* (CSP). Table 3.1 in the CSP cites a 2020 population of 71,730 and a projected 2040 population of 101,000, which is a 41% increase. If this same increase is applied to the current number of RCEs, then 2041 RCEs can be estimated to be 31,443 (22,331 * 1.41), as shown in **Exhibit 14**.

Exhibit 14: Future System Capacity (in RCEs)

Description	Amount
RCEs as of 12/2021	22,331
Growth in Population 2020-2040 (Table 3.1 in CSP)	1.41 (101,000 ÷ 71,730)
Projected RCEs in 2041	31,443

GFC Calculation

The following exhibit shows the summary calculation for the City's GFC. The total existing cost basis ($39.6 million) plus the future cost basis ($97.6 million) totals $137.2 million. This is divided by the estimated future system capacity of 31,443 RCEs, which results in a GFC of $4,363 per RCE. This is shown in **Exhibit 15**.

Exhibit 15: GFC Calculation

Description	Amount
Existing Cost Basis	$39,590,285
Future Cost Basis	$91,588,667
Total Cost Basis	$137,178,953
Future System Capacity	31,443 RCEs
Calculated GFC per RCE	**$4,363**

Edmonds Treatment Facilities Charge

The figure shown above ($4,363) applies to the entire City area. It recovers an equitable cost share for the City's *collection system*, but it does not include a cost share of the *treatment plants* into which the wastewater is discharged. Most of Shoreline is subject to the King County capacity charge, which is paid by property owners directly to King County and is not collected by the City of Shoreline. Therefore, most of Shoreline is charged only the citywide GFC.

However, the City does collect one treatment-related development charge in a specific area. The Edmonds Treatment Facilities Charge is an additional charge that applies to the area that flows toward the Edmonds Wastewater Treatment Plant and not through a King County transmission line.

The area where the Edmonds Treatment Facilities Charge applies is traditionally referred to (with only approximate accuracy) as the "ULID #2" area. To make things a bit confusing, there is another area, Richmond Beach, that falls within the King County wastewater service boundaries but that physically flows toward the Edmonds WWTP under the terms of a "flow swap" agreement between King County and the City of Edmonds. Even though the Richmond Beach flows do end up in Edmonds, that area is still within the King County wastewater service area, so new development in Richmond Beach pays the King County capacity charge and does *not* pay the Edmonds Treatment Facilities Charge to the City. Development in the ULID #2 area pays the Edmonds Treatment Facilities Charge *and also* the citywide GFC.

The Edmonds Treatment Facilities Charge recovers a share of treatment capital costs, using the same methodology we described for the citywide GFC. By agreement, the City is charged 9.49% of the cost of the City of Edmonds' treatment capital projects. The value of existing assets related to the Edmonds WWTP totals $7.1 million including the cumulative interest. The forecasted capital projects total $2.6 million, so the total cost basis for this charge is $9.7 million.

Using a 20 year time horizon for growth, the total denominator for the Edmonds WWTP increment is 2,807 RCEs. This is based on an estimated 2,663 RCEs currently served (based on December 2021 data). Conservatively assuming twenty years of growth at 0.5% per year, this increases the denominator by 144 RCEs. **Exhibit 16** shows that after dividing the cost basis by the projected number of future RCEs, the Edmonds Treatment Facilities Charge is $3,444 per RCE.

Exhibit 16: GFC Calculation – Edmonds Treatment Facilities Charge

Description	Amount
Existing Cost Basis	$7,057,262
Future Cost Basis	$2,608,856
Total Cost Basis	$9,666,118
Future System Capacity	2,807 RCEs
Edmonds Treatment Facilities Charge per RCE	**$3,444**

Definition of RCE

When new development occurs, the City reports it to King County, so the County can begin sending out bills for its capacity charge. The County reporting form contains information needed to define the number of RCEs for new development.

For the sake of consistency, the City has opted to follow the King County definition of an RCE for the purpose of calculating the GFC. The practice of connecting the City definition to the County definition avoids a situation where, for example, a given multi-family building might count as 3.6 RCEs for the County and 3.9 RCEs for the City.

In September 2020 King County adopted a new RCE definition to use with its capacity charges effective January 1, 2021. Consistent with the District's policy of aligning with the County, the City has adopted this same policy. For reference, **Exhibit 17** outlines the RCE values.

Exhibit 17: Definition of Residential Customer Equivalents (RCEs)

Type of Development	Updated King County RCE Definition
Small Single Family (less than 1,500 net square feet)	0.81 RCE
Medium Single-Family (1,500-2,999 net square feet)	1.00 RCE
Large Single Family (3,000 net square feet or greater)	1.16 RCE
Detached Accessary Dwelling Unit	0.59 RCE
Attached Accessary Dwelling Unit	0.59 RCE
Multi-Unit Structures with 2-4 units	0.81 RCE per unit
Multi-Unit Structures with 5 or more units	0.63 RCE per unit
Microhousing Structures	0.35 RCE per unit
Senior Resident, Low-Income, and Special Purpose Housing	0.32 RCE per unit
Adult Family Homes and Student Dormitories	1.0 RCE per 20 fixture-units
Commercial with Standard Fixtures	1.0 RCE per 20 fixture-units
Commercial with Non-Standard Fixtures or Process Water (for example, fountains, spas, cooling towers, swimming pools, commercial laundry, car washes, commercial dishwashers, or industrial process water)	1.0 RCE per 20 fixture-units, plus 1.0 RCE per 187 gpd of projected process water, as self-reported by applicant.

The main observation from this table is that defining an RCE for the purpose of calculating a GFC is separate from defining an RCE for the purpose of calculating monthly service charges. When calculating the monthly service charges, the RCE definition for a commercial building can rely on water consumption, because the building has already been built and is consuming water. In contrast, an RCE for new development must be defined with reference to characteristics that are known *in advance* of construction. For calculating monthly service charges, all single-family residential homes are one RCE. For calculating a GFC, the square footage of the home makes a difference—a larger home may be more than 1 RCE, while a smaller home may be less.

Summary

We recommend an updated citywide GFC of $4,363 per RCE that would apply to all new development in the City, and an additional $3,444 Edmonds Treatment Facilities Charge that would

apply to the area that flows toward the Edmonds Wastewater Treatment Plant and not through a King County transmission line.

A survey of GFCs from regional wastewater collection-only utilities is provided in **Exhibit 18**. All of these collection-only systems are served by King County Wastewater Treatment Division and therefore are assessed the King County capacity charge, payable over fifteen years as a monthly charge. Although the recommended citywide GFC would increase by $1,351, the City's charge would still be in the middle third of those surveyed.

Exhibit 18: Single-Family Residential 2022 GFCs for Collection-Only Systems