



King County

Department of
Natural Resources and Parks

Wastewater Treatment Division

Overview of Policies that Determine Wholesale Sewer Cost Allocation

MWPAAC Rates and Finance Subcommittee

June 6, 2024

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Residential Customer Equivalent (RCE)

All for one, one for all: Robinswood Agreement

25 years ago, the County was embarking on a Regional Wastewater Service Plan (RWSP) that would include a third regional treatment plant to provide capacity for growth in the service area. The 1998 Regional Water Quality Committee retreat produced a roadmap for financial policies to facilitate recovering growth costs from new connections over the RWSP period ending in 2030. The “Robinswood Agreement” is the foundation of the current RWSP policies.



Metropolitan King County Council
Regional Water Quality Committee

November 16, 1998

The Honorable Ron Sims
Room 400
516 Third Avenue
Seattle, WA 98104

Dear Executive Sims,

This letter is a follow-up to the Regional Water Quality Committee retreat you attended on October 29 at Robinswood House in Bellevue. As you recall, the purpose of the retreat was to discuss outstanding finance issues and come to an agreement on how to finance the Regional Wastewater Services Plan (RWSP). The financing policies for the RWSP provide the framework for establishing the funding mechanism necessary to implement the plan.

The Regional Water Quality Committee (RWQC), which includes representatives of King County, suburban cities, the City of Seattle, and sewer districts is considering a Regional Wastewater Services Plan to manage wastewater in the Puget Sound through the year 2030. The RWQC will soon make a recommendation to the full King County Council who will adopt the final RWSP.

“The wastewater system is a regional system. As one participant said at the retreat, ‘All for one and one for all, from this day forward.’”

“The regional wastewater financing structure should reflect uniform regional rates for existing and new customers and achieve the principle of ‘growth pays for growth.’”

Wholesale Cost Recovery Structure – County Code

KC 28.86.160 Financial policies

Financial Policy 15.2 “Sewer rate. King County shall maintain a uniform monthly sewer rate expressed as charges per residential customer equivalent for all customers.”

Financial Policy 15.4 “Based on an analysis of residential water consumption, as of December 13, 1999, King County uses a factor of seven hundred fifty cubic feet per month to convert water consumption of volume-based customers to residential customer equivalents for billing purposes. King County *shall periodically review the appropriateness of this factor to ensure that all accounts pay their fair share* of the cost of the wastewater system..”

[The most recent review of this factor was presented to RWQC in October of 2021 – Sewer Rate Cost Structure Report, Summary of Highlights. Review of highlights are included in this presentation]

Wholesale Cost Recovery Structure - Contracts

Agency Contracts (one of 34 agency contracts – uniform language)

2. (a) To form a basis for determining the monthly sewage disposal charge to be paid by each Participant during any particular quarterly period, Metro shall ascertain the number of Residential Customers and Residential Customer equivalents of each Participant. This determination shall be made by taking the sum of the actual number of Residential customers reported as of the last day of the next to the last preceding quarter and the average number of Residential Customer Equivalents per quarter reported for the four quarters ending with said next to the last preceding quarter, adjusted for each Participant to eliminate any Residential Customers or Residential Customer equivalents whose sewage is delivered to a governmental agency other than Metro or other than a Participant for disposal outside of the Metropolitan Area.

The total quarterly water consumption report in cubic feet shall be divided by 2,250 to determine the number of Residential Customer equivalents represented by each Participant's customers other than single family residences.

- Wholesale cost recovery is structured based on a common industry approach of using a Single Family Residential equivalent as the utility unit cost basis.
- The Residential Customer Equivalent (RCE) is the common unit of measure to determine Local Sewer Agency (LSA) shares of billed wholesale costs.
- Single Family demands on utility systems tend to be relatively uniform per unit in both size and seasonal variation, while commercial and industrial varies widely in both measures. Converting non single family to the RCE provides a common unit of measure for determining proportionate cost allocation.
- The contracts refer to an RCE as equal to 2,250 cubic feet of water use quarterly, (=750/month). The history and context of this fixed number are discussed in later slides.

Wholesale Cost Recovery Structure - Contracts

Agency Contracts (one of 34 agency contracts – uniform language)

- The contracts specify that: Each LSA maintains the right to “fix its own schedule of rates and charges”
- LSAs are obligated to fix rates and charges so that they are sufficient to pay their sewage disposal charge to the County.

6. The District irrevocably obligates and binds itself to pay its sewage disposal charge out of the gross revenues of the sewer system of the District. The District further binds itself to establish, maintain and collect charges for sewer service which will at all times be sufficient to pay all costs of maintenance and operation of the sewer system of the District, including the sewage disposal charge payable to Metro hereunder and sufficient to pay the principal of and interest on any revenue bonds of the District which shall constitute a charge upon such gross revenues. It is recognized by Metro and the District that the sewage disposal charge paid by the District to Metro shall constitute an expense of the maintenance and operation of the sewer system of the District. The District shall provide in the issuance of future sewer revenue bonds of the District that expenses of maintenance and operations of the sewer system of the District shall be paid before payment of principal and interest of such bonds. The District shall have the right to fix its own schedule of rates and charges for sewer service provided that same shall produce revenue sufficient to meet the covenants contained in this Agreement.

Sample 2023 Sewer Rate Structures

There is variance among Local Sewer Agency Rate Structures

Volume-Based Rate Structure

City Sewer Rate	\$17.63 per ccf
Winter Average	4.3 ccf - agency average
Sewer Bill	\$75.81

Bi-monthly bill

Sewer Service

Service From	Service Through	CCF Usage	Previous Reading	Current Reading
Oct 10, 2023	Dec 11, 2023	10.77		
Residential Service		10.77 CCF @ \$17.63 per CCF		189.88

62.0% of sewer revenue is paid to King County Metro for sewage treatment.
12.0% of sewer bills are paid to city taxes and 1.2% to state taxes.

Current Sewer Service: 189.88

LSA rates are set so that they collect sufficient revenue to pay wholesale service charges. Agencies elect whether to use the current WTD rate as a separate charge on their customer bills.

Fixed Charge Rate Structure (Monthly)

Sample 1

KC WTD	\$52.11 per acct
District	<u>60.40 per acct</u>
Sewer Bill	\$112.51

Sample 2

KC WTD	\$52.11 per acct
District	<u>24.30 per acct</u>
Sewer Bill	\$76.41

Bi-monthly bill (Sample 2)

Bill Details

Sewer Base	\$45.84
KC Sewer Treatment Base	\$104.22
Total Current Billing	\$150.06
Previous Balance	\$150.06
Adjustments/Penalties	\$0.00
Last Payment Received	\$150.06
TOTAL DUE	\$150.06

Capacity Charge Overview

Capacity Charge

- Since 1990, King County has levied a capacity charge on structures with new connections to the sanitary sewer system
- The capacity charge is intended to ensure that new development pays its proportionate share of the cost of capital facilities in the King County wastewater system
 - FP 15.3: “The capacity charge shall be set such that each new customer shall pay an equal share of the costs of facilities allocated to new customers, regardless of what year the customer connects to the system.”
- The monthly charge is imposed at the time of development but billed on a quarterly basis over 15 years. Property owners may elect to pay off the balance at any time during the 15-year period, with a discount for early payment
 - King County WTD bills homes and businesses directly for the capacity charge, unlike the sewer rate.
 - The LSAs collect utility connection charges for their systems at the time of development. King County policy states intent to do the same.
 - FP 15.3: “King County shall pursue changes in state law to enable the county to require payment of the capacity charge in a single payment.”
- The sewer rate level is related to the capacity charge in that, the sewer rate supports total annual system costs after applying other revenue sources, such as capacity charge revenue.

Capacity Charge Methodology Update

Initial Phase (2021)

- In 2021, WTD hired Raftelis to perform a “capacity charge study that will review the existing charge methodology, engage regional stakeholders, and calculate alternative methodologies for assessing a capacity charge fee”
- The MWPAAC Capacity Charge Work Group met three times in 2021 to discuss the consultant study and recommendations
- Work was paused with regional planning

Current Status

- WTD is working with Raftelis on the restart of this work:
 - April presentations are scheduled with MWPAAC to review the 2021 work and kick-off MWPAAC workgroup reengagement
 - Update scenarios prepared in 2021 to guide continued methodology review
 - Frame out policy context and seek guidance from decision makers

Review / Highlights of 2021 Proviso RCE Review

King County Biennial Budget Ordinance 19210 – 2021/2022

Sewer Rate Cost Structure Report
Summary of Report Highlights

Regional Water Quality Committee

October 6, 2021



King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Proviso Content

The report shall include, but not be limited to, the following:

- A. A discussion of the history of, and rationale for, the sewer rate cost structure that has resulted in the shifting of the cost burden from commercial/industrial/multifamily housing sectors to single-family homeowners;
- B. Options for alternative cost structures that would distinguish multifamily ratepayers from commercial and industrial ratepayers; and
- C. A discussion of the appropriate balance of costs between the residential sector and the commercial/industrial sector in sewer rate revenues, and the criteria impacting that balance.

Background on the 750 cf RCE Factor

The 750 cubic feet can be sourced to a June 1989 Rate Structure Advisory Committee report based on 1982 water survey data. The recommendation was validated as an average single-family residence monthly water use in 1989 by Metro staff according to a letter dated October 16, 1989 (Appendix B). [Proviso report pgs. 8-9]



Exchange Building • 821 Second Ave. • Seattle, WA 98104-1398

October 16, 1989

To: Jean Baker

From: Dennis Barnes

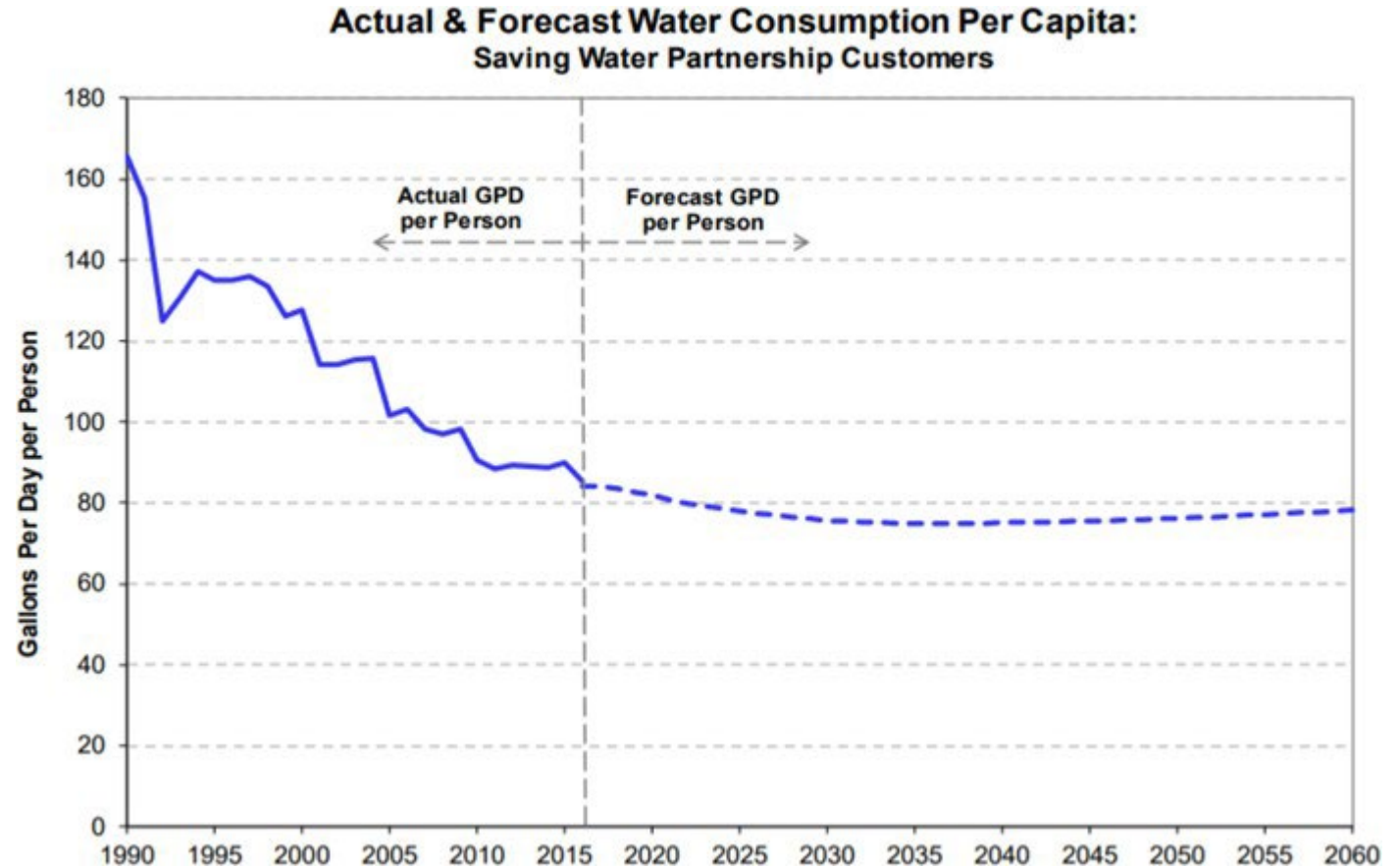
Subject: 1989 Avg. Single-Family Residential Water Consumption

One of the recommendations made by the Rate Structure Advisory Committee to the Metro Water Quality Committee in its June, 1989 report "Findings and Recommendations On Structure of Metro Charges to Component Agencies" was that, "the residential customer equivalency value of 900 cubic feet metered water consumption, used to charge non-residential customers, should be lowered to 750 cubic feet". The recommended 750 cubic feet was based on an analysis of actual single-family residential water consumption data provided in 1982 by several sewer service agencies for which Metro provides disposal services. Due to the amount of time that has passed since the 1982 analysis was performed it was decided that a current survey and analysis of the actual single-family residential customer water consumption should be performed. The purpose of this memo is to summarize the steps performed in conducting this survey and the results of the analysis.

Conservation – declining per capita use

*The 2020 SPU Annual Survey of Wholesale Customers reports that “In percentage terms, total Seattle system water consumption has declined 27% since 1990 while population has increased 37%. As a result, **total consumption per capita is 47% less than it was in 1990.**”*

SPU recently updated the official water supply yield estimate (a water supply capacity analysis) and long-range water demand forecast for its 2019 Water System Plan. The yield estimate shows **declining per capita demand from 1990 through data year 2015.** [report pgs. 9-10]



Average Household Use

Historically, single-family has been based on a single unit fixed charge that assumes a level of indoor water use based on winter water use levels.

Winter average data for homes of varying sized new development was surveyed and analyzed as part of a new capacity charge rate structure for single family approved by Council in 2020.

The study found that the winter average for all surveyed single-family was 581 cf (5.81 ccf unit highlighted in table) per month, over **20 percent lower than the 750 cf equivalency currently in use to convert a volume-based customer to a single-family equivalency.** [report pgs. 12- 13]

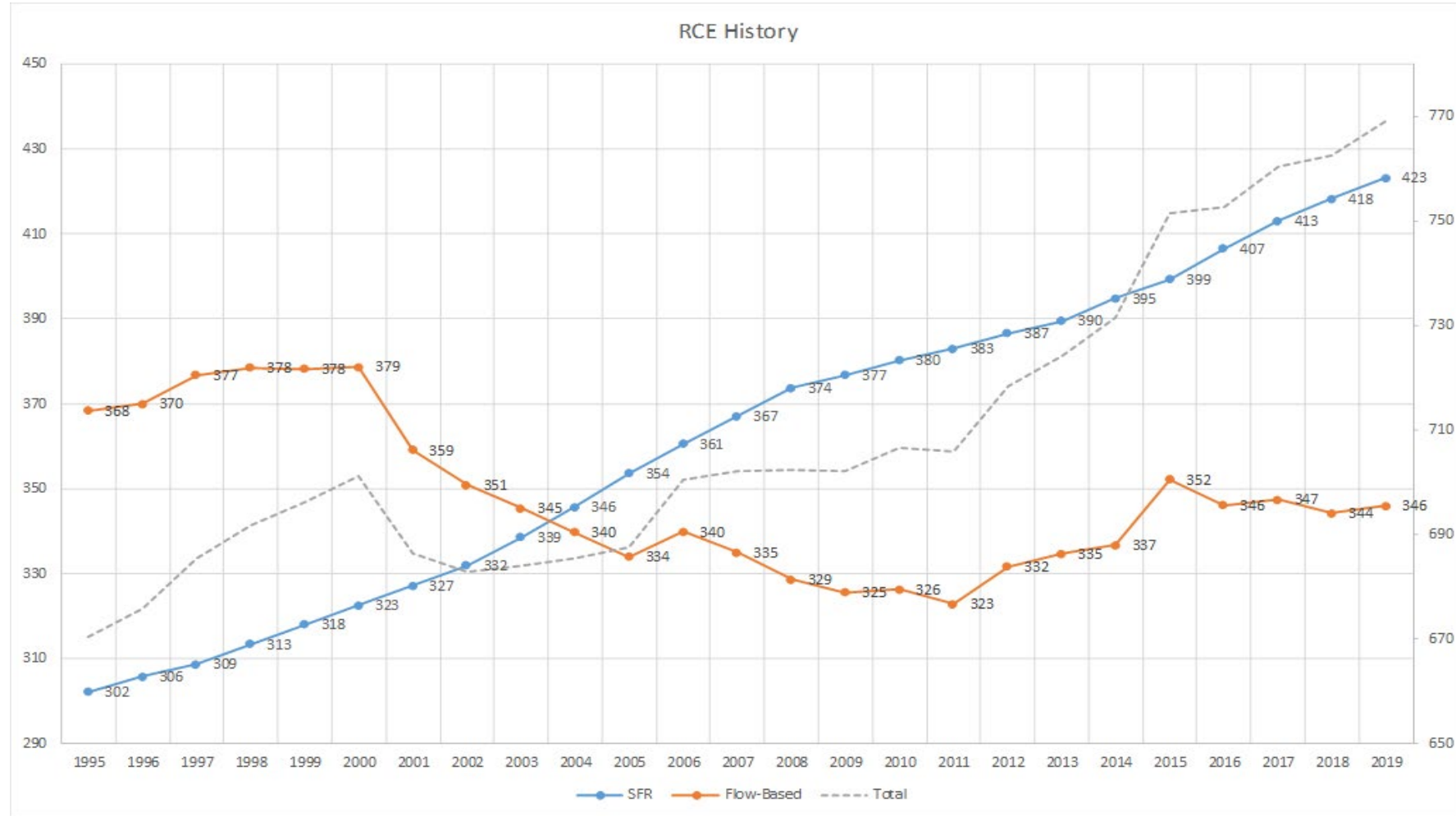
Residential Data by Unit Size	Number of Buildings	Avg Units per Building	Total Units	Avg Usage per Building	Avg Usage Per Unit	Multiple of Medium Single Family	Living Area Square Feet per Unit	Total Living Area (square feet)	Avg Usage/1,000 s.f. Living Area
Single Family:									
Large SF (>3,000 s.f.)	4,599	1.0	4,599	6.8 ccf/mo	6.79 ccf/mo	1.24	3,645	16,763,355	1.86 ccf/mo
Medium SF (1,501-3,000 s.f.):									
2,801-3,000 s.f.	1,213	1.0	1,213	5.9 ccf/mo	5.88 ccf/mo	1.08	2,908	3,526,918	2.02 ccf/mo
2,601-2,800 s.f.	1,279	1.0	1,279	5.8 ccf/mo	5.76 ccf/mo	1.05	2,702	3,456,013	2.13 ccf/mo
2,401-2,600 s.f.	1,803	1.0	1,803	5.9 ccf/mo	5.86 ccf/mo	1.07	2,509	4,522,523	2.34 ccf/mo
1,501-2,400 s.f.	6,128	1.0	6,128	5.2 ccf/mo	5.21 ccf/mo	0.95	2,007	12,298,394	2.60 ccf/mo
Total Medium SF	10,422	1.0	10,422	5.47 ccf/mo	5.47 ccf/mo	1.00	2,284	23,803,848	2.39 ccf/mo
<i>Grouping Options - Medium SF:</i>									
2,401-3,000 s.f.	4,294	1.0	4,294	5.8 ccf/mo	5.84 ccf/mo	1.07	2,679	11,505,454	2.18 ccf/mo
1,501-2,800 s.f.	9,209	1.0	9,209	5.4 ccf/mo	5.41 ccf/mo	0.99	2,202	20,276,930	2.46 ccf/mo
1,501-2,600 s.f.	7,930	1.0	7,930	5.4 ccf/mo	5.36 ccf/mo	0.98	2,121	16,820,917	2.53 ccf/mo
<i>Small SF (<=1,500 s.f.):</i>									
1,001-1,500 s.f.	918	1.0	918	5.0 ccf/mo	5.0 ccf/mo	0.91	1,294	1,187,892	3.84 ccf/mo
<=1,000 s.f.	131	1.0	131	4.4 ccf/mo	4.4 ccf/mo	0.80	868	113,708	5.01 ccf/mo
Total Small SF	1,049	1.0	1,049	4.9 ccf/mo	4.9 ccf/mo	0.89	1,241	1,301,600	3.94 ccf/mo
<i>Grouping Options - Small & Medium SF:</i>									
Total Medium/Small SF									
<=2,800 SF	10,258	1.0	10,258	5.4 ccf/mo	5.36 ccf/mo	0.98	2,104	21,578,530	2.55 ccf/mo
<=2,600 SF	8,979	1.0	8,979	5.3 ccf/mo	5.30 ccf/mo	0.97	2,018	18,122,517	2.63 ccf/mo
<=2,400 SF	7,177	1.0	7,177	5.2 ccf/mo	5.16 ccf/mo	0.94	1,895	13,599,994	2.72 ccf/mo
<i>All Single Family:</i>									
Large SF	4,599	1.0	4,599	6.79 ccf/mo	6.79 ccf/mo	1.24	3,645	16,763,355	1.86 ccf/mo
Medium SF	10,422	1.0	10,422	5.47 ccf/mo	5.47 ccf/mo	1.00	2,284	23,803,848	2.39 ccf/mo
Small SF	1,049	1.0	1,049	4.89 ccf/mo	4.89 ccf/mo	0.89	1,241	1,301,600	3.94 ccf/mo
Total Single Family	16,070	1.0	16,070	5.81 ccf/mo	5.81 ccf/mo	1.06	2,605	41,868,803	2.23 ccf/mo
<i>All Residential:</i>									
Micro-units	14	67.1	939	91.9 ccf/mo	1.37 ccf/mo	0.25	321	301,547	4.27 ccf/mo
Multi-family excl. micro-units	178	22.3	3,962	99.7 ccf/mo	4.48 ccf/mo	0.82	1,007	3,989,462	4.45 ccf/mo
Single Family	16,070	1.0	16,070	5.8 ccf/mo	5.81 ccf/mo	1.06	2,605	41,868,803	2.23 ccf/mo
Total Residential	16,262	1.3	20,971	6.9 ccf/mo	5.36 ccf/mo	0.98	2,201	46,159,812	2.43 ccf/mo

A. Cost Shift to Single-Family Residential

The sewer rate is set on a per RCE basis, so that as a class grows in relative RCEs, it takes on more of the cost recovery through sewer rate charges.

The shift in cost burden to single-family residential from the volume-based class is a result of the contracting RCE total in the volume-based class, and growing RCE total in the single-family residential class.

The RCE distribution shift is primarily related to the significant impacts of conservation being reflected in the billing basis for the volume-based class, and fixed nature of the single-family residential RCE. [report pgs. 14-15]



C. Appropriate Balance of Costs

The appropriate balance of costs between the residential sector and the commercial/industrial sector in sewer rate revenues could be assessed based on updating the RCE flow assumption to reflect current single-family water use data for the WTD service area.

In order to test potential impacts, a placeholder of 600 cubic feet is utilized to calculate key outcomes, including total system RCEs, the sewer rate, and customer impacts.

The sewer rate is a function of two data points: 1) the total annual revenue requirement of the sewer system (\$) divided by 2) the total RCEs that will be billed. A revision downward to the conversion factor from 750 cf to 600 cf increases the denominator (total RCEs), lowering the cost per RCE (the sewer rate). [report pg. 19]

Sample Conversion Update Impact		RCEs @ 750 cf	Rate		RCEs @ 600 cf	Rate	change
2020 RCEs and Rate		740,000	\$45.33		819,550	\$40.93	-\$4.40 -10%
Single Family Residential	57%	421,800	\$45.33	51%	421,800	\$40.93	
Flow-based	43%	318,200	\$45.33	49%	397,750	\$40.93	

Under this sample conversion factor correction, the sewer rate goes down by ten percent. Since single-family customers are one RCE and pay one sewer rate, this sample would indicate that single-family customers are currently subsidizing the volume-based class at a ten percent payment over their equitable share. While volume-based customers would also be charged a lower sewer rate, it would be applied to a larger converted RCE measure.

Of note, not all LSAs pass-through the WTD sewer rate structure. Some LSAs, including SPU, treat the WTD billing as a line item in the total utility costs, and set sewer rates for their customer classes based on the agency's evaluation of equitable cost allocation to their own customer classes. Any rebalancing among WTD classes would not have a direct impact to an SPU commercial customer. [report pgs. 19-20]

LSA Cost Shifts - Sample

Each LSA has a varying distribution of customer classes. Any cost shift among customer classes will have varying impacts to each agency's billing.

Quarter 4 year-end RCE totals for each agency at 750 cf are compared to the equivalent RCEs under a 600 cf factor and combined with bill impacts reflecting the lower sewer rate per RCE.

Potential shifts among agencies vary by share of single-family versus volume-based RCEs.

Volume-based customers are billed based on average RCEs reported over the previous year, meaning any impacts from a change to the factor would phase in over a year. Additional policy-based phase-in strategies would likely be considered as well. [report pg. 19-20]

Sample Conversion Factor Revision Agency Cost Shift	2020 RCEs 750 cf	% of RCEs & Revenue	2020 RCEs 600 cf	% of RCEs & Revenue	Net LSA Bill Change %
Local Sewer Agencies - Cities					
Algona	1,421	0.2%	1,514	0.2%	-3.7%
Auburn	30,056	4.1%	34,246	4.2%	3.0%
Bellevue	60,345	8.2%	67,299	8.2%	0.8%
Black Diamond	1,329	0.2%	1,345	0.2%	-8.5%
Bothell	7,833	1.1%	8,594	1.1%	-0.8%
Brier	1,814	0.2%	1,877	0.2%	-6.5%
Carnation	1,168	0.2%	1,239	0.2%	-4.1%
Issaquah	12,945	1.8%	14,466	1.8%	1.1%
Kent	37,130	5.0%	43,106	5.3%	5.0%
Kirkland	15,237	2.1%	16,531	2.0%	-1.9%
Lake Forest Park	4,048	0.5%	4,161	0.5%	-7.1%
Mercer Island	8,696	1.2%	9,078	1.1%	-5.6%
Pacific	2,710	0.4%	3,001	0.4%	0.1%
Redmond	30,112	4.1%	33,830	4.1%	1.6%
Renton	30,106	4.1%	33,589	4.1%	0.9%
Seattle	284,918	38.5%	317,776	38.9%	0.9%
Tukwila	6,719	0.9%	8,138	1.0%	9.5%
Subtotal	536,587	72.6%	599,787	73.3%	1.1%
Local Sewer Agencies - Sewer Districts and Tribe					
Alderwood Water & Wastewater District	50,649	6.8%	54,637	6.7%	-2.5%
Cedar River Water & Sewer District	5,489	0.7%	5,832	0.7%	-3.9%
Coal Creek Utility District	4,371	0.6%	4,673	0.6%	-3.3%
Cross Valley Water District	384	0.1%	480	0.1%	13.0%
Highlands Sewer District	106	0.0%	106	0.0%	-9.4%
Lakehaven Utility District	1,053	0.1%	1,054	0.1%	-9.5%
Muckleshoot Indian Tribe	366	0.0%	378	0.0%	-6.5%
NE Sammamish Sewer & Water District	4,822	0.7%	4,846	0.6%	-9.1%
Northshore Utility District	29,834	4.0%	32,293	3.9%	-2.1%
Olympic View Water & Sewer District	207	0.0%	207	0.0%	-9.6%
Ronald Wastewater District	19,674	2.7%	20,792	2.5%	-4.4%
Sammamish Plateau Water & Sewer District	16,364	2.2%	17,530	2.1%	-3.1%
Skyway Water & Sewer District	5,375	0.7%	5,736	0.7%	-3.5%
Soos Creek Water & Sewer District	38,472	5.2%	39,915	4.9%	-6.2%
Valley View Sewer District	14,909	2.0%	16,858	2.1%	2.2%
Vashon Sewer District	913	0.1%	1,036	0.1%	2.6%
Woodinville Water District	5,701	0.8%	6,408	0.8%	1.6%
Subtotal	198,689	26.9%	212,781	26.0%	-3.2%
Non-Municipal Participants and Other Customers					
	4,206	0.6%	5,258	0.6%	13.0%
Total	739,482	100.0%	817,825	100.0%	0.0%



Q&A





Contact
Information

Courtney Black

Finance & Administration Section Manager
coublack@kingcounty.gov