King County Biennial Budget Ordinance 19210 – 2021/2022

Sewer Rate Cost Structure Report
Summary of Report Highlights

MWPAAC Rates & Finance Committee

August 5, 2021

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

Timeline

Fall 2020: Council proviso attached to budget approval

June 3, 2021: MWPAAC R&F Proviso Draft Outline Presentation

July 29, 2021: MWPAAC receives final Proviso report

August 5, 2021: Presentation of Proviso report highlights MWPAAC R&F

Mid-August: Final report submitted to King County Council

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.

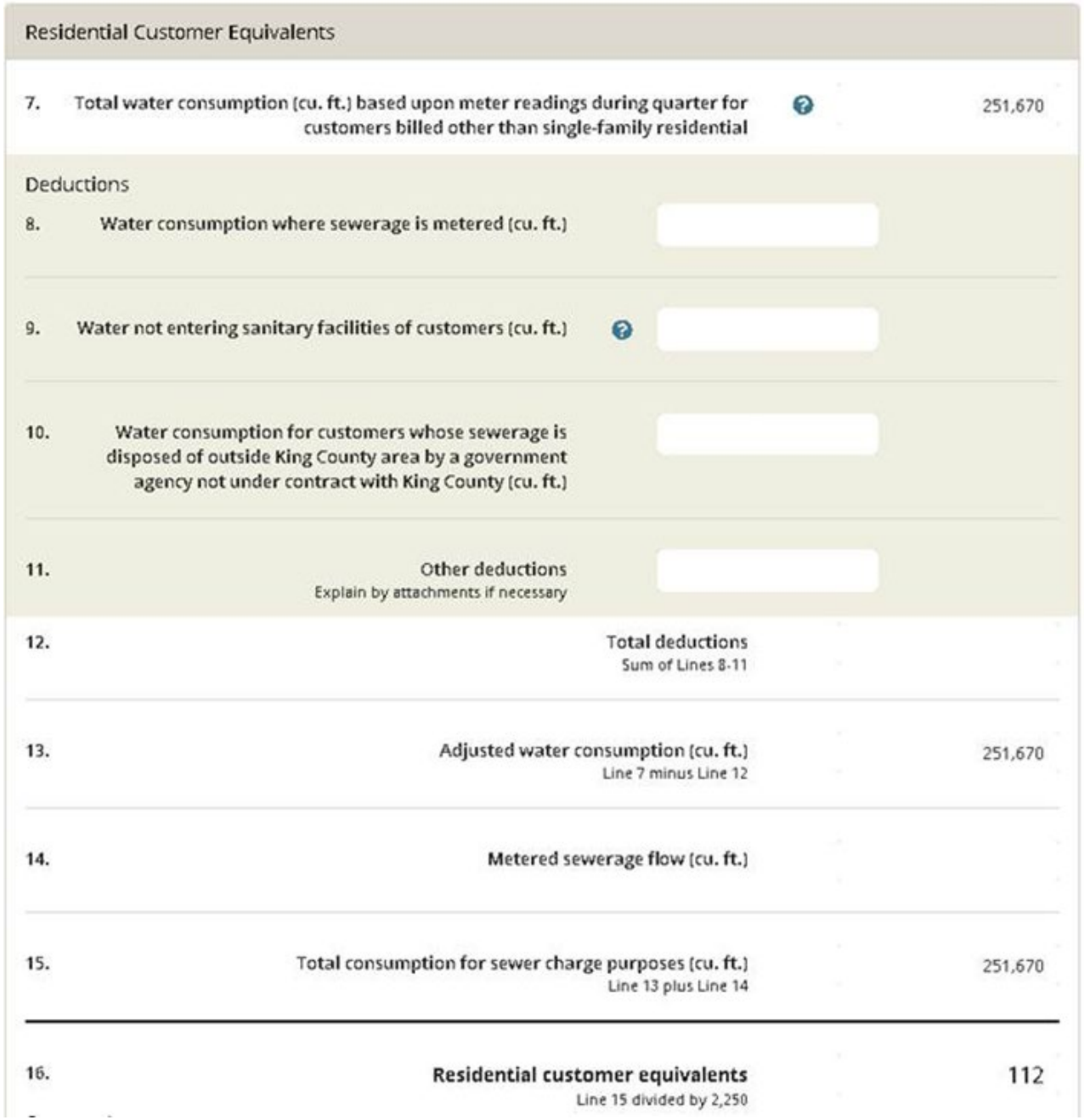
Residential Customer Equivalent

The Residential Customer Equivalent (RCE) provides the distinction for two customer classes: single-family residences and all other customers.

The contracts state "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 customer other than single family residences."

The monthly equivalent of a quarterly 2,250 cubic feet (cf) is 750 cf per month. [report pg. 7]

Online Reporting Form for Local Sewer Agencies

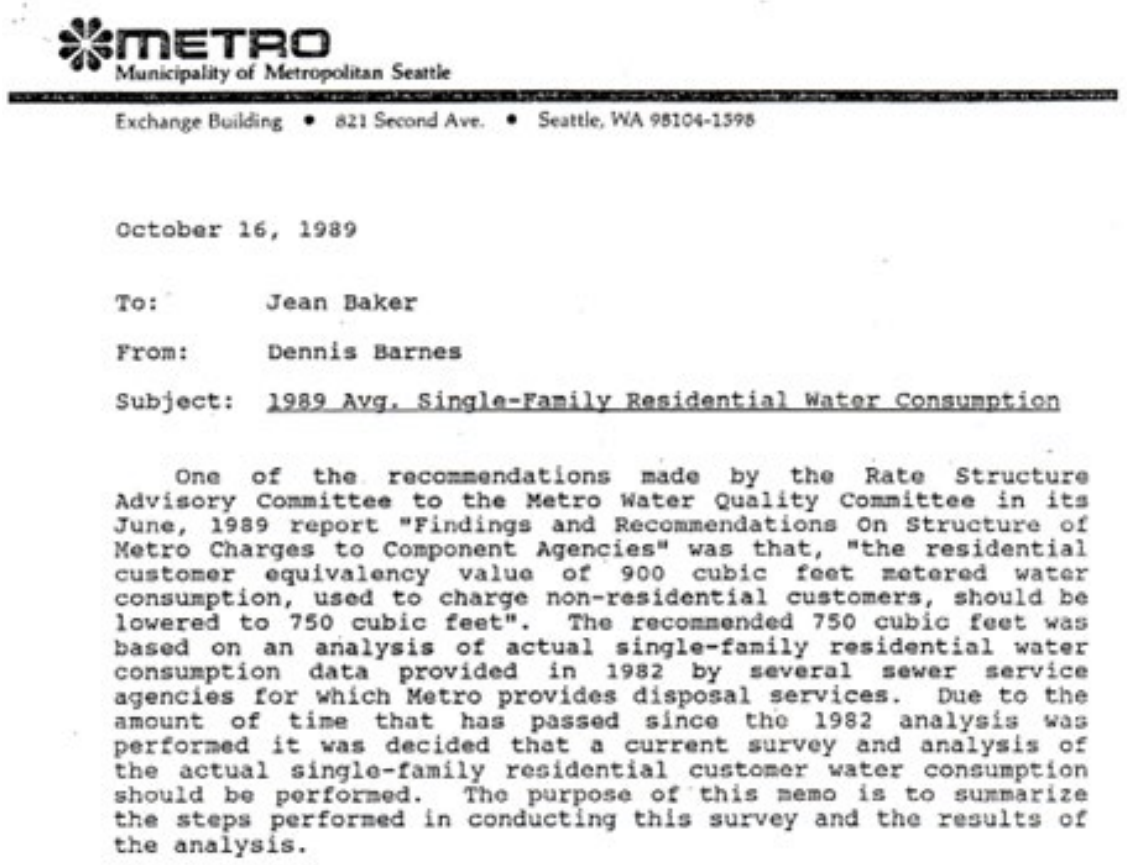


Residential Customer Equivalents

7.	Total water consumption (cu. ft.) based upon meter readings during quarter for customers billed other than single-family residential	251,670
	Deductions	
8.	Water consumption where sewerage is metered (cu. ft.)	
9.	Water not entering sanitary facilities of customers (cu. ft.)	
10.	Water consumption for customers whose sewerage is disposed of outside King County area by a government agency not under contract with King County (cu. ft.)	
11.	Other deductions Explain by attachments if necessary	
12.	Total deductions Sum of Lines 8-11	
13.	Adjusted water consumption (cu. ft.) Line 7 minus Line 12	251,670
14.	Metered sewerage flow (cu. ft.)	
15.	Total consumption for sewer charge purposes (cu. ft.) Line 13 plus Line 14	251,670
16.	**Residential customer equivalents** Line 15 divided by 2,250	112

Background on the 750 cf RCE Factor

The 750 cf 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). [report pgs. 8-9]



METRO
Municipality of Metropolitan Seattle

Exchange Building • 821 Second Ave. • Seattle, WA 98104-1598

October 16, 1989

To: Jean Baker

From: Dennis Barnes

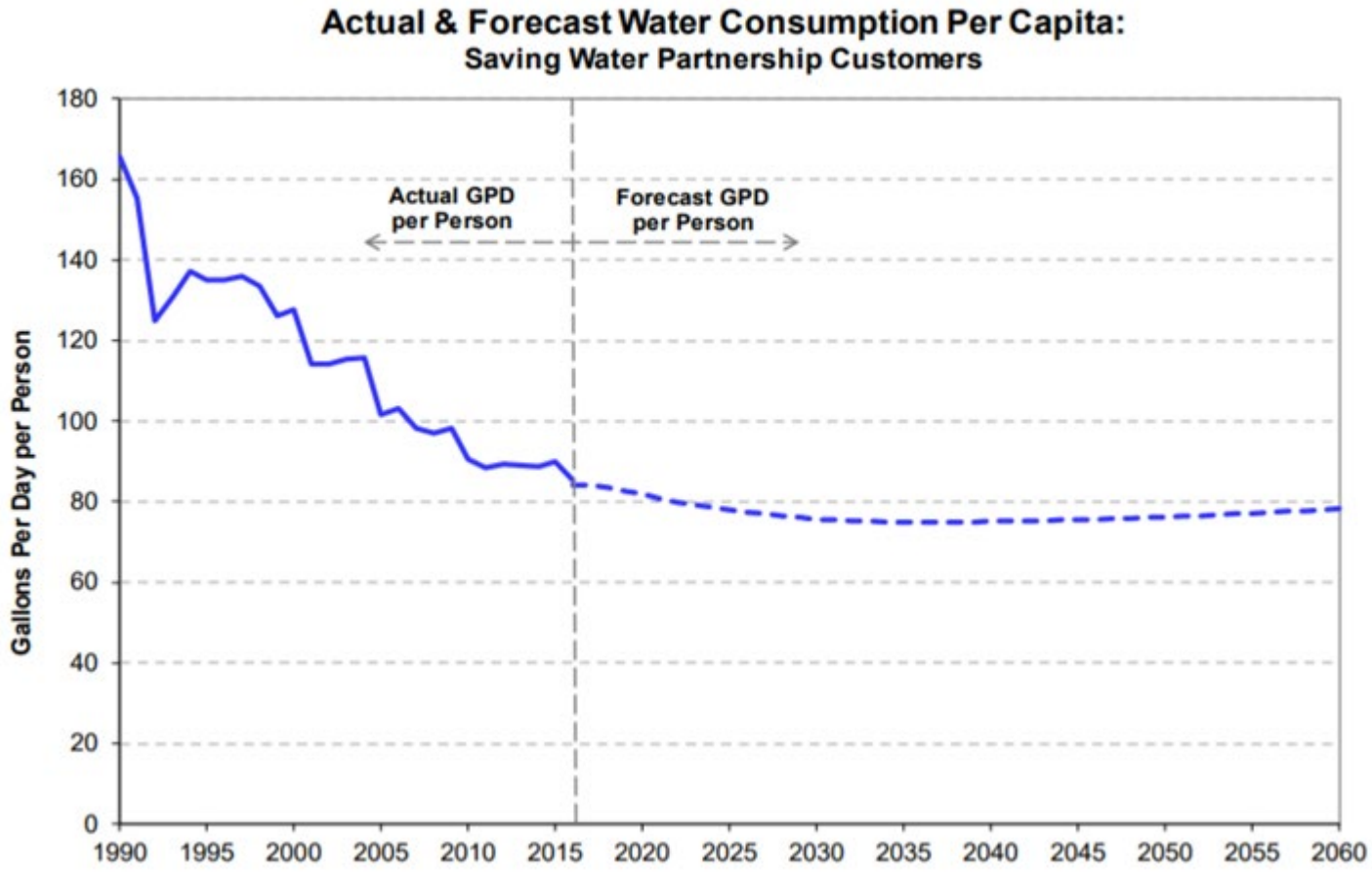
Subject: 1989 Avg. Single-Family Residential Water Consumption

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 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 updates its official water supply yield estimate (a water supply capacity analysis) and long-range water demand forecast when its Water System Plan is updated or when significant new information becomes available. The official forecast was most recently updated for the 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.

In January 2021, WTD implemented a new capacity charge rate structure for single-family that created new customer classes based on people per household and structured based on home square footage. Winter average data for homes of varying sized new development was surveyed and analyzed.

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]

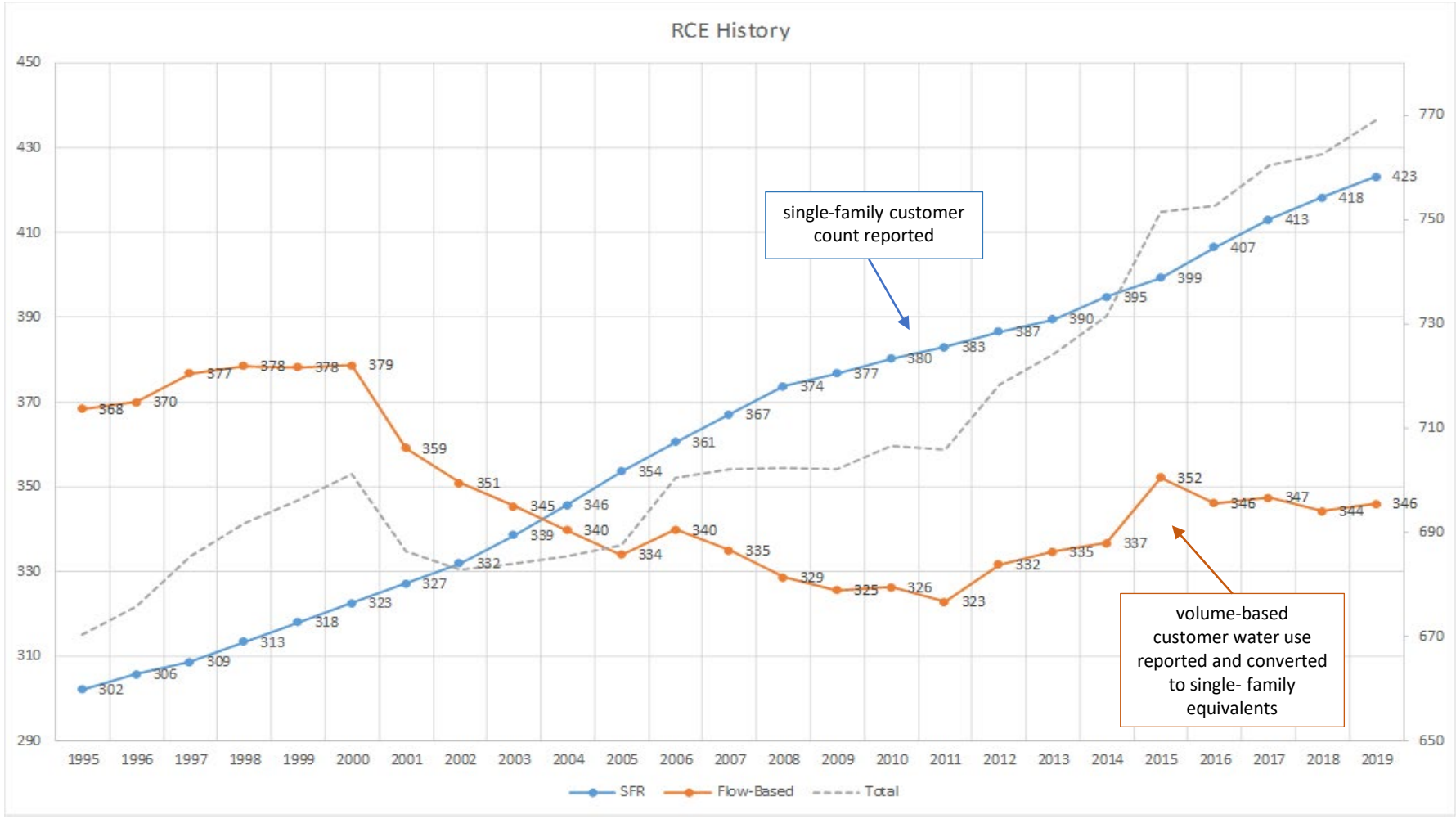
Residential Data by Unit Size	Number of Buildings	Avg Units per Building	Total Units	Avg Usage per Building	Avg Usage Per Unit	Multiple of Medium Single Family	Living Area Square Feet per Unit	Total Living Area (square feet)	Avg Usage/ 1,000 s.f. Living Area
Single Family:									
Large SF (>3,000 s.f.)	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
Grouping Options - Medium SF:									
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
Small SF (<=1,500 s.f.):									
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
Grouping Options - Small & Medium SF:									
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
All Single Family:									
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
All Residential:									
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]



B. Multifamily Rate Structure Considerations

While fixed charges accomplish a key rate-setting objective well, yielding necessary revenue in a stable and predictable manner, they are not as effective at promoting fairness and equity. Equity is more tailored under a volume-based structure that ties the size of the charges to the customer-specific and time-specific demands on the system. Using metered water use as a proxy for sewage flows allows the capacity needs of the system to tie cost recovery to relative demands placed on the system. The existing volume-based structure applied to the multifamily class is the most equitable industry approach.

[report pg. 17]

The Municipal Research and Services Center (MRSC) 2017 posting, Sewer Rate Structures for Utilities highlights this topic.

"Volumetric rates have historically been more commonly used for commercial and multifamily customers (when treated similarly to commercial customers for ratemaking purposes). Volumetric rates are applied to usage over any amount built into the base rates.

Single-family customers are less likely to be separately metered for fire flow or irrigation water and, as a result, their water demand less accurately represents their sewer flows. For this reason, flat sewer rates have historically been most common for these customers.

In recent years, an increasing number of utilities have been moving away from flat, single-family sewer rates and shifting to (or at least considering) volume-based rates. This shift is prompted by a number of reported upsides, including improved equity in cost recovery, reinforcement of conservation-oriented price signals embedded in water rates, and enhanced affordability for low users."

Highlighting single-family rate structure alternatives informs the discussion of multifamily customer class equity since equity is a relative measure. While the existing multifamily class rate structure includes a high degree of equity, if another class is not as equitably measured, cost shifts can occur that are not based on equitable cost sharing. [report pg. 18]

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%

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