
Round Hill Rate Study Prep

Tiered Rates Discussion

February 1, 2023

Rate Study Summary

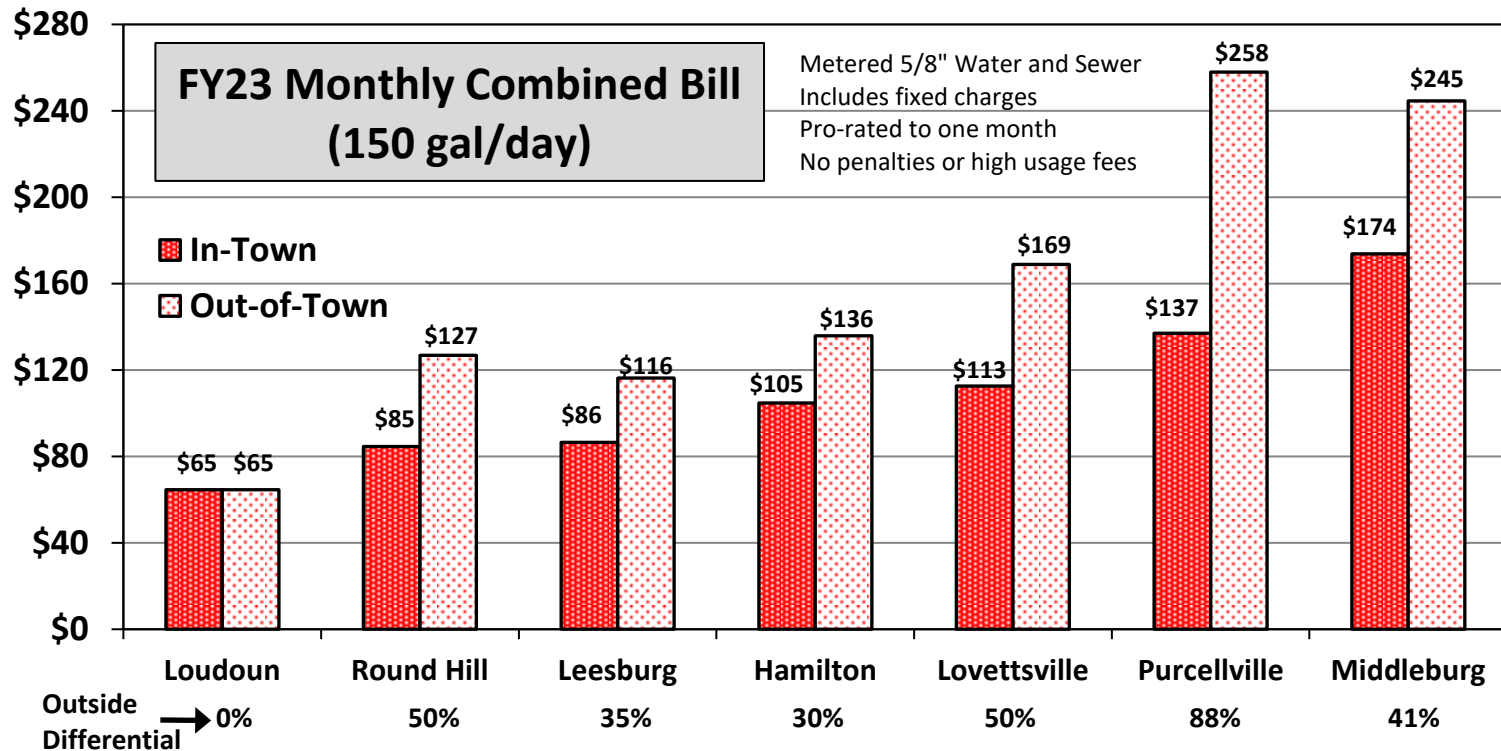
- Last rate study was 2 years ago in 2021
 - Significant increase in water availability fees
 - No increase in user rates (still doing 3% increases between rate studies)

- Several developments since 2021
 - Housing growth again exceeded 'Fast growth' scenario (+105 in 2 years)
 - New CIP projects and significant growth in construction cost estimates
 - Growth in operating costs that exceeds prior projections

- Goals for this Rate Study
 - Update financial model and forecasts, recommend new rates needed to meet rising capital construction costs (increase expected)
 - Investigate tiered rates as alternative to current single rate structure
 - Could encourage more water conservation
 - Could make rates more complicated than needed

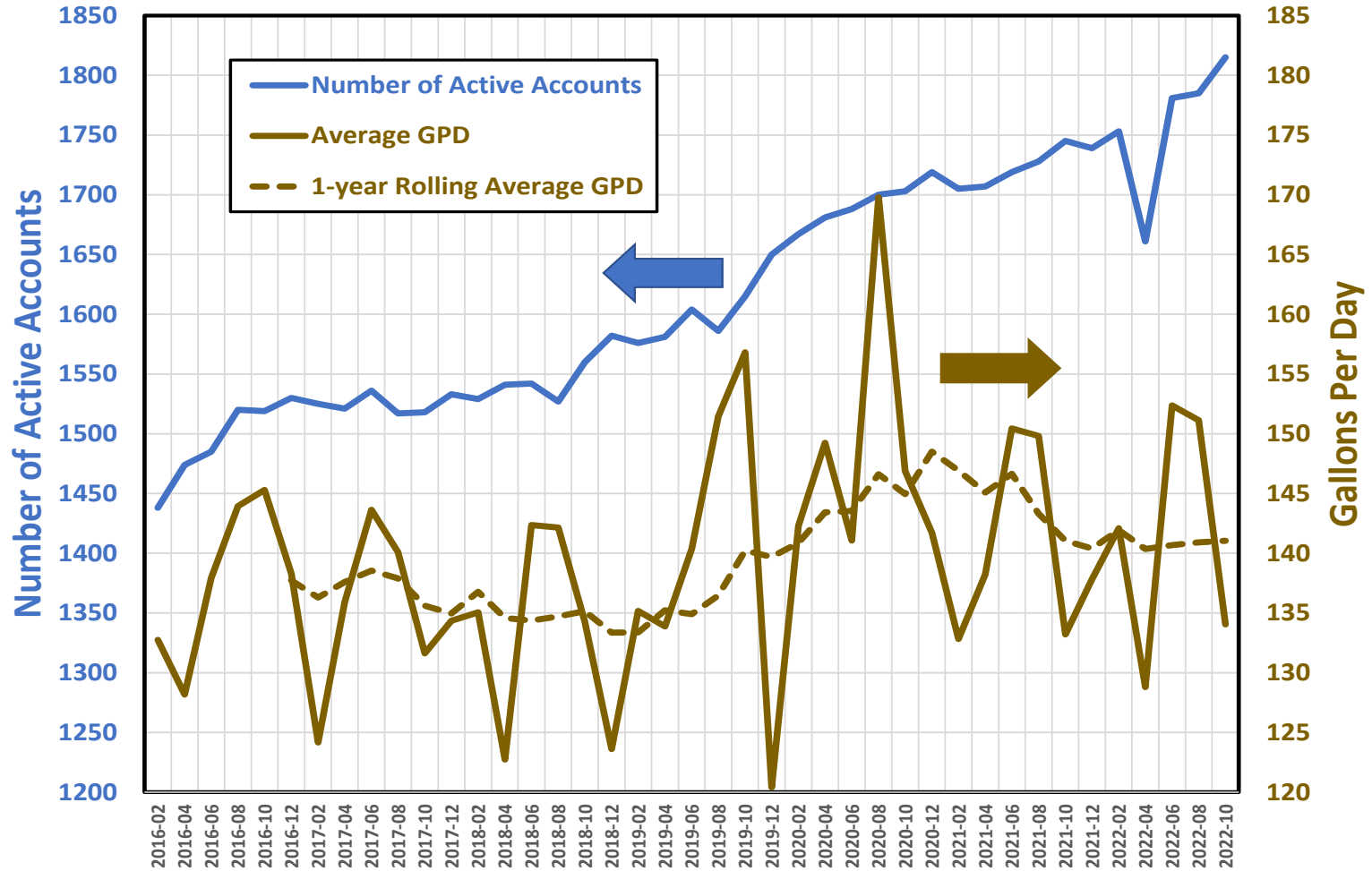
Current (FY23) Rate Comparison

FY23 Monthly Combined Bill (150 gal/day)



- Round Hill has lowest in-town utility rates of the Loudoun towns, and 2nd lowest out-of-town rates after Leesburg

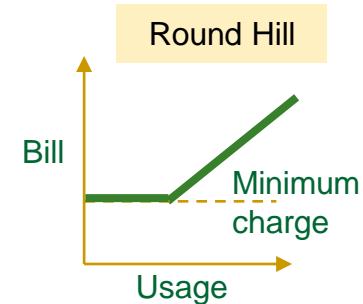
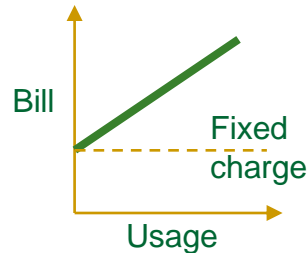
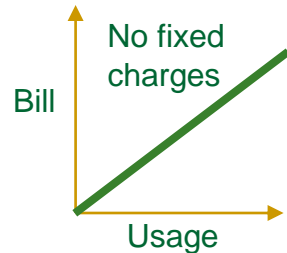
User Growth and Consumption Trends



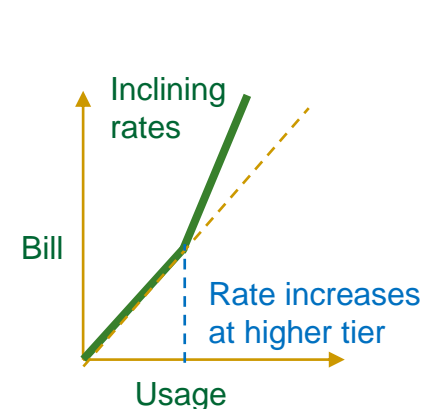
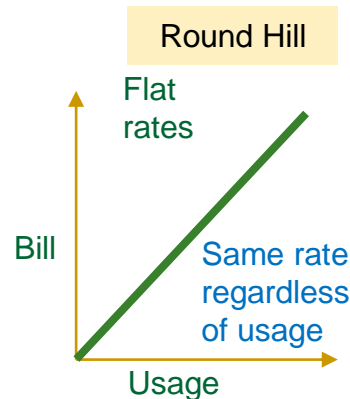
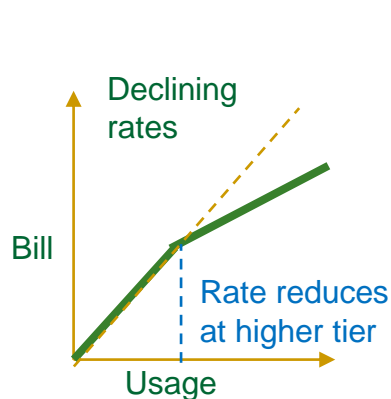
- Approaching final buildout (<150 future connections left)
- Daily usage increased to nearly 150 gpd during Covid, back down to 142 gpd

Types of Rate Structures

- Two components of rates
 - Fixed or minimum charge – same charge regardless of use



- Volumetric charges (per 1000 gallons) – pay for the gallons you use
 - Tiered rates have different rates at different tiers of use



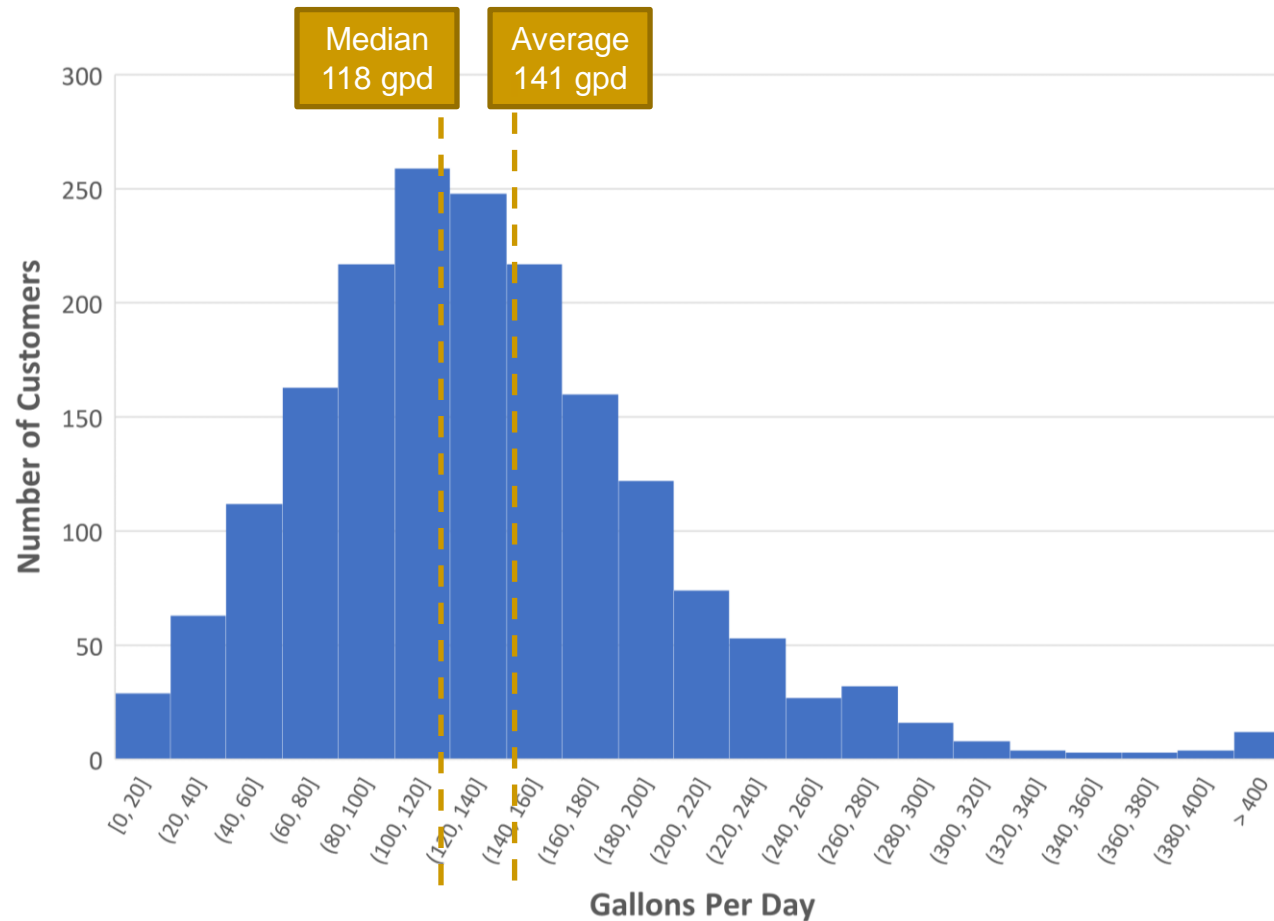
Minimum or Fixed Charge

- Round Hill has minimum charge of 2000 gallons per bi-month
 - In-town \$36.96, out-of-town \$55.44
 - 2000 gallons = 33 gpd (typical household usage is 140 gpd)
 - Middleburg (2K gallons) and Lovettsville (2K gallons/month=4K gallons/bi-month) also use minimum charges
 - Loudoun Water, Leesburg, Purcellville and Hamilton use a fixed charge
- A larger fixed/minimum charge is more 'fair'
 - Many costs in a utility system are fixed even for low users
- But fixed/minimum charges have an anti-conservation effect
 - Reduce volumetric rates by raising more revenue from low users
 - Minimum is better than fixed for conservation
- Suggest considering increase in minimum charge
 - 2000 gallons (current), 3000 gallons or 4000 gallons
 - More revenue from dormant/low-usage accounts to help pay for fixed costs
 - No effect on large majority of accounts (97% use >2K, 86% use >4K)

Why Tier Rates?

- Round Hill has flat volumetric rates
 - In-town \$18.48 per 1000 gallons, out-of-town \$27.72/kgal
 - Middleburg and Lovettsville also have flat rates
 - Loudoun Water, Leesburg, Purcellville and Hamilton use tiered rates
- Why flat rates?
 - Easier to understand for customers, intuitively will feel 'fair'
 - Some customers need to use more water
 - Institutional users, multi-family dwellings, large families
 - Easier to implement
- Why tier rates?
 - Round Hill is at or near its water production and treatment limit
 - Adding more capacity (after Well D/ESTP) can be costly to the system
 - Round Hill customers use 140 gpd. Loudoun Water customers use over 250 gpd.
 - Tiered rates can lower average use if designed properly
 - Lower tier = typical indoor household domestic use (up to 130 gpd for example)
 - Higher tier = outdoor usage, higher than typical domestic use
 - Increase the impact on user bills if their use increases beyond typical amount

Round Hill Users GPD Last 12 Months



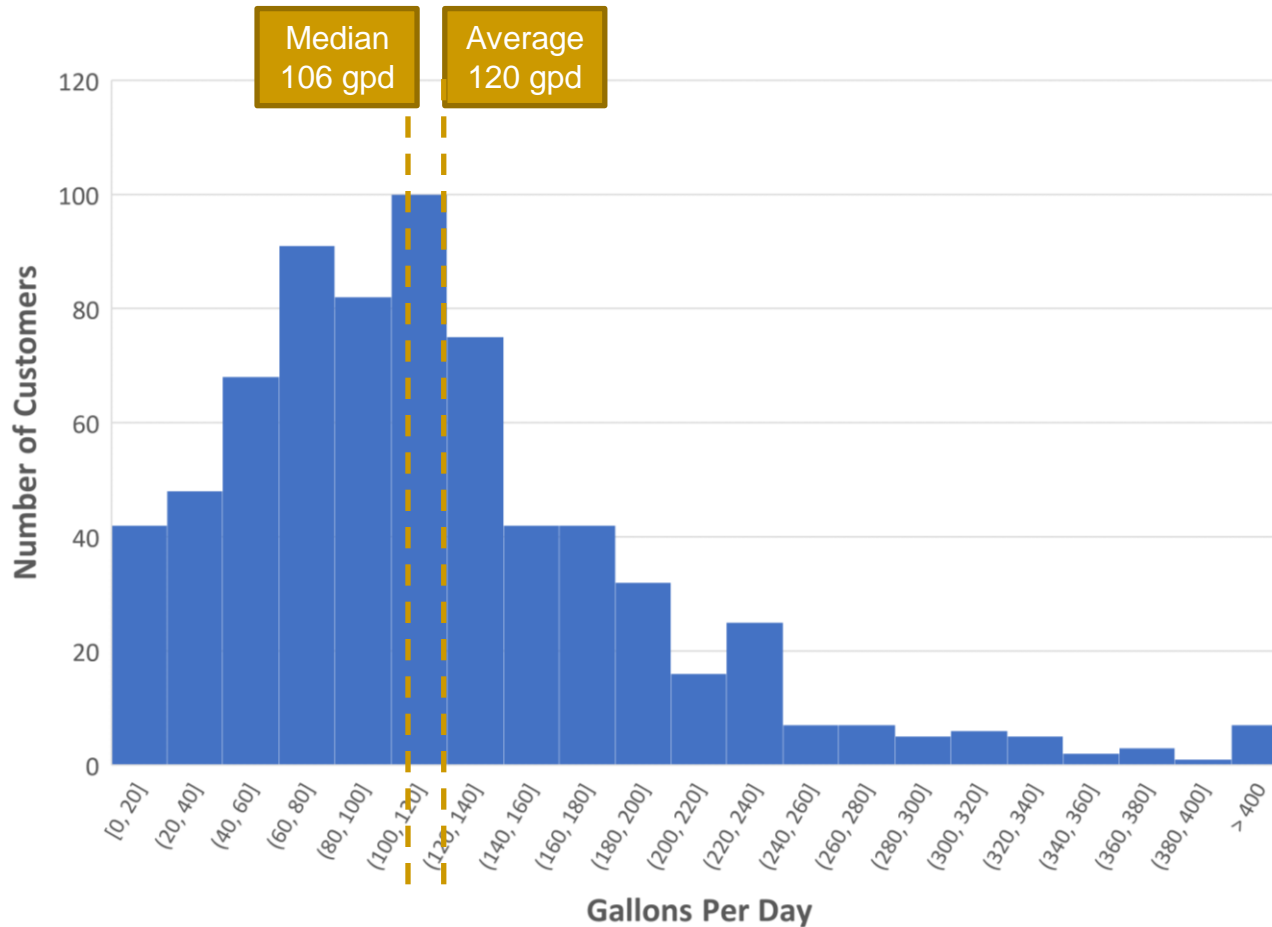
- About half (51%) of households use between 80-160 gpd
 - 21% use <80 gpd, and 28% use >160 gpd

How Other Loudoun Towns Tier Rates

- Loudoun Water and Leesburg rates superficially incline, but actually decline between 100 gpd and 250 gpd
 - Combination of a large fixed charge and barely inclining water rates
- Lovettsville, Round Hill, Middleburg and Purcellville are flat
 - Purcellville nominally tiers, but has fixed charge that reduces the impact
 - Purcellville second tier only 25% higher (combined) rate
- Hamilton rates noticeably incline despite using a fixed charge
 - Second tier rate is aggressive: 135% higher than base tier
 - Only Town that tiers both water and sewer rates
- High rates have a conservation effect even if the structure is flat
 - Round Hill has lowest Town utility rates now, can benefit more from tiering

Town	Bimonthly Water/Sewer Bill					Ratio of Bill to 100 gpd Bill					Rate Design
	0 gpd	50 gpd	100 gpd	150 gpd	250 gpd	0 gpd	50 gpd	100 gpd	150 gpd	250 gpd	
Loudoun	\$ 51.95	\$ 77.69	\$ 103.43	\$ 129.17	\$ 180.66	0.50	0.75	1.00	1.25	1.75	Fixed charge, incline above 275 gpd
Leesburg	\$ 45.64	\$ 85.63	\$ 128.59	\$ 172.91	\$ 268.89	0.35	0.67	1.00	1.34	2.09	Fixed charge, slight incline above 65 gpd
Lovettsville	\$ 98.44	\$ 98.44	\$ 150.12	\$ 225.18	\$ 375.30	0.66	0.66	1.00	1.50	2.50	66 gpd minimum, flat rates
Round Hill	\$ 36.96	\$ 56.36	\$ 112.73	\$ 169.09	\$ 281.82	0.33	0.50	1.00	1.50	2.50	33 gpd minimum, flat rates
Middleburg	\$ 76.00	\$ 115.90	\$ 231.80	\$ 347.70	\$ 579.50	0.33	0.50	1.00	1.50	2.50	33 gpd minimum, flat rates
Purcellville	\$ 32.46	\$ 108.68	\$ 184.90	\$ 274.21	\$ 468.88	0.18	0.59	1.00	1.48	2.54	Fixed charge, incline above 115 gpd
Hamilton	\$ 32.00	\$ 82.60	\$ 133.20	\$ 209.57	\$ 457.64	0.24	0.62	1.00	1.57	3.44	Fixed charge, steep incline above 130 gpd

Hamilton Users GPD August 2018



- Summer billing cycle, with usage 15% lower than the Round Hill annual average

Rate Structure Testing Notes

- Used the last 12 months of billing data
- Removed commercial, institutional, or construction users
- Tested a range of rate structures for each customer's bill
- Rates adjusted in each structure to generate the same revenue as the current structure
- Excluded fixed fees (surcharges)

- Each option shown raises the same amount of revenue, but different amounts from different users
- Overall rates may still need to be increased to account for new capital costs (to be discussed next month)

Variables Tested

Variable	Testing Value
Minimum gallons	Current = 2000 Also tested 3000, 4000
# Tiers	1-2 tiers tested (1 = flat rate)
Tier cutoffs	<ul style="list-style-type: none">• 8,000 impact begins in quartile 3 (Carol)• 12,000 impact begins in quartile 4 (Dave)
Tier multiplier	For 2-tier structures, tested 1.5, 2, & 2.23x (Hamilton)
Out of Town multiplier	Maintained at 1.5x of In Town rates
Sewer multiplier	Maintained at 1.5x of water rates
Sewer flat rate	Maintained at 9,000 gallons * sewer rate

Meet the Neighbors

Name	Gallons / Day	Gallons / Bill	Summer	Winter	Description
Alice	62	4,278	63	56	Single. Works outside the home.
Bob	108	7,452	112	99	Married. Works outside the home.
Carol	145	10,005	145	134	Married w/ teenage daughter. Works from home.
Dave	201	13,869	209	190	Loves his nuclear family.
Evan	390	26,910	714	179	Waters a big lawn (and maybe fills his pool).

What Their Bills Look Like...

	Current	Min 3000	Min 4000	Tier 8k @1.5x	Tier 8k @2x	Hamilton Tier 8k @2.23x	Tier 12k @1.5x	Tier 12k @2x
Alice	93	93	109	85	77	74	90	87
Bob	173	171	169	156	142	137	166	160
Carol	235	234	230	219	206	201	227	218
Dave	324	321	317	340	354	360	314	304
Evan	657	652	643	789	897	941	792	916

- The red-blue scale runs left-right across the options.
- Red = More expensive option for that person
- Blue = Less expensive

How Much Their Bills Change

Shows the difference between a new structure and the current structure, by percent and amount.

	Current	Hamilton						
		Min 3000	Min 4000	Tier 8k @1.5x	Tier 8k @2x	Tier 8k @2.23x	Tier 12k @1.5x	Tier 12k @2x
Alice		-1%	16%	-10%	-18%	-21%	-4%	-7%
Bob		-1%	-2%	-10%	-18%	-21%	-4%	-7%
Carol		-1%	-2%	-7%	-12%	-15%	-4%	-7%
Dave		-1%	-2%	5%	9%	11%	-3%	-6%
Evan		-1%	-2%	20%	36%	43%	20%	39%

	Current	Hamilton						
		Min 3000	Min 4000	Tier 8k @1.5x	Tier 8k @2x	Tier 8k @2.23x	Tier 12k @1.5x	Tier 12k @2x
Alice		(\$1)	\$15	(\$9)	(\$16)	(\$20)	(\$4)	(\$7)
Bob		(\$1)	(\$4)	(\$16)	(\$30)	(\$36)	(\$7)	(\$13)
Carol		(\$2)	(\$5)	(\$16)	(\$29)	(\$35)	(\$9)	(\$17)
Dave		(\$3)	(\$7)	\$17	\$31	\$37	(\$9)	(\$19)
Evan		(\$5)	(\$14)	\$132	\$240	\$284	\$134	\$259

Summer vs Winter

Shows their bill amounts by season, with icons highlighting the most/least expensive structures.

Alice			Bob			Carol				
Normal	Summer	Winter	Normal	Summer	Winter	Normal	Summer	Winter		
93	95	94	Current	● 173	● 183	● 177	Current	● 235	● 240	● 242
93	94	93	Min 3000	171	182	176	Min 3000	234	239	240
● 109	● 109	● 109	Min 4000	169	180	173	Min 4000	230	235	237
85	86	85	Tier 8k @1.5x	156	166	160	Tier 8k @1.5x	219	227	228
77	78	77	Tier 8k @2x	142	152	145	Tier 8k @2x	206	215	217
● 74	● 75	● 74	H. Tier 8k @2.23x	● 137	● 146	● 140	H. Tier 8k @2.23x	● 201	● 211	● 212
90	92	91	Tier 12k @1.5x	166	177	171	Tier 12k @1.5x	227	231	233
87	88	87	Tier 12k @2x	160	170	164	Tier 12k @2x	218	223	224

Dave			Evan			
Normal	Summer	Winter	Normal	Summer	Winter	
324	341	337	Current	657	1,227	332
321	338	335	Min 3000	652	1,218	329
317	334	330	Min 4000	● 643	● 1,201	325
340	361	359	Tier 8k @1.5x	789	1,560	349
354	379	376	Tier 8k @2x	897	1,832	362
● 360	● 386	● 383	H. Tier 8k @2.23x	● 941	1,944	● 368
314	333	331	Tier 12k @1.5x	792	1,612	319
● 304	● 333	● 323	Tier 12k @2x	916	● 1,967	● 307

Next Steps

- Council decides the best shape for rate structure
 - How much conservation to encourage
 - What is fair

- Second part of rate study will scale that shape higher or lower as needed to meet operating and capital costs