



ROSS VALLEY SANITARY DISTRICT

FLOW-BASED RESIDENTIAL SEWER RATE FEASIBILITY STUDY

HF&H CONSULTANTS, LLC



January 25, 2012

Presentation Outline



- Study objectives and approach
- Cost of service analysis
 - Customer class allocations
- Flow-based rate design
 - Fixed and flow charges
- Feasibility
 - Bill impact analysis
 - Implementation requirements

Note: This analysis is preliminary and subject to revision. The rates are based on the current FY 2011-12 revenue requirement so that comparisons can be made with the current rate structure. The final rates will depend on the revenue requirement adopted by the Board of Directors for FY 2012-13.



Study Objectives



- Evaluate feasibility of adopting new flow-based rate structure for residential customers
 - Comparison of customer bill impacts
 - Implementation requirements
- Feasibility depends on achieving rate-making objectives
 - Rate payer equity
 - Financial stability
 - Legal compliance
 - Administrative simplicity
 - Customer understanding



Study approach



- Update allocation of costs among customer classes
 - Conduct a cost of service analysis
 - Based on estimated flow (winter MMWD water use)
 - Based on wastewater strength for each class (SWRCB guidelines)
- Evaluate alternative rate design
 - Convert residential bills from flat charges per DU to bills that include fixed and flow-based charges
 - Fixed charges cover a portion of fixed costs
 - Apply to all customers
 - Flow charges reflect each class' loadings
 - Vary by class



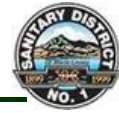
Current Rate Structure



- Residential (single and multifamily)
 - One flat charge per DU regardless of household size
- Commercial average strength and San Quentin Prison
 - One charge per EDU
 - EDUs = flow divided by 10 hcf (247 gpd) times strength factor
 - Strength factor = 1.00
- Commercial high strength
 - One charge per EDU
 - EDUs = flow divided by 10 hcf (247 gpd) times strength factor
 - Strength factor = 2.34
- Flow is based on one winter MMWD bill (two months of water use)



Cost of Service - Key Assumptions



- All customers pay the same unit costs for service
 - No subsidies among customer classes
- Customer class assumptions
 - Average strength customers
 - Single family, Multi family, Commercial (all except high strength)
 - High strength
 - Commercial (primarily food services)
 - San Quentin Prison
 - Treated as a contractual customer with special service conditions
 - Billed based on metered effluent flow
 - No allocation of inflow & infiltration
 - No property tax credit
 - Subject to further negotiations



Purpose of Cost of Service Analysis



- Allocate revenue requirement to customer classes
 - Allocate costs to functions (i.e., services)
 - Derive unit costs for each function
 - Apply unit costs to each customer class

Cost of Service Analysis					
Unit Costs of Service by Function					
Functional Categories	Accounts	Flow	BOD	TSS	Total
Allocated Costs	\$ 281,808	\$ 16,888,304	\$ 2,151,631	\$ 2,716,274	\$ 22,038,017
	1%	77%	10%	12%	100%
Units of Service	15,131	3,416,741	3,918,189	6,127,219	
	Parcels	HCF	Pounds	Pounds	
Unit Costs of Service	\$18.62	\$4.94	\$0.55	\$0.44	
	\$/Parcel	\$/HCF	\$/lb	\$/lb	



Revenue Requirement Allocations



Each class is allocated its share of the total costs based on the units of service it requires.

Cost of Service Analysis					
Functional Categories	Cost Allocations by Customer Class				
	Accounts	Flow	BOD	TSS	Total
Unit Costs of Service	\$18.62 \$/Parcel	\$4.94 \$/HCF	\$0.55 \$/lb	\$0.44 \$/lb	
Units of Service					
Residential					
Single family	12,051	1,916,621	1,966,001	3,303,206	
Multi family	2,594	746,330	765,559	1,286,265	
Commercial					
Average strength	272	294,873	302,470	508,199	
High strength	213	170,168	523,656	488,793	
San Quentin Prison	1	288,750	360,504	540,756	
	15,131	3,416,741	3,918,189	6,127,219	
Cost Allocations					
Residential					
Single family	\$224,444	\$9,473,493	\$1,079,608	\$1,464,353	\$12,241,899
Multi family	\$48,312	\$3,688,968	\$420,398	\$570,218	\$4,727,896
Commercial					
Average strength	\$5,060	\$1,457,500	\$166,098	\$225,291	\$1,853,949
High strength	\$3,973	\$841,106	\$287,560	\$216,688	\$1,349,327
San Quentin Prison	\$19	\$1,427,236	\$197,967	\$239,724	\$1,864,946
	281,808	16,888,304	2,151,631	2,716,274	\$22,038,017



Cost of Service Results



Current revenue compared with COS allocations shows a redistribution of costs that reflects current loadings from each class.

Cost of service allocations by class				
Customer Classes	Current Revenue	COS Allocation	COS Minus Current	
Ross Valley (net Ad Valorem Tax)				
SFR	\$6,794,700	\$7,749,284	\$954,584	14.0%
MFR	\$3,646,170	\$2,796,620	(\$849,550)	-23.3%
Commercial - Avg	\$823,943	\$1,043,788	\$219,845	26.7%
Commercial - High	\$973,941	\$844,650	(\$129,291)	-13.3%
Subtotal	\$12,238,754	\$12,434,342	\$195,588	1.6%
Ross Valley prop tax	\$5,069,180	\$5,069,180	\$0	0.0%
	\$17,307,934	\$17,503,522	\$195,588	1.1%
San Quentin				
	\$2,071,586	\$1,864,946	(\$206,640)	-10.0%
Larkspur				
SFR	\$1,217,376	\$1,333,420	\$116,044	9.5%
MFR	\$970,272	\$791,161	(\$179,111)	-18.5%
Commercial - Avg	\$280,269	\$384,634	\$104,365	37.2%
Commercial - High	\$190,611	\$160,334	(\$30,277)	-15.9%
Subtotal	\$2,658,528	\$2,669,549	\$11,021	0.4%
Total	\$22,038,048	\$22,038,017	(\$31)	0.0%



Rate Design - Fixed/Variable Charges



- Rate design balances fixed and variable charges
- Legal requirement for fees and charges: “shall not exceed the proportional cost of the service attributable to the parcel” [CA Const. Art. XIII. Sec. 6(b)3 aka Proposition 218]
- “Proportional” is not defined and is open to interpretation
- Strive for “reasonable” rates
 - Not capricious – sound factual basis
 - Not arbitrary – well-reasoned choices among alternatives
 - Not discriminatory – no prejudice or favoritism



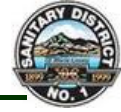
Rate Design - Fixed/Variable Tradeoffs



- Fixed charges should generate at least 30% but no more than 50% of total rate revenue
- If too little fixed revenue
 - Low-flow customers do not pay enough fixed cost
 - Revenue stream is affected more by flow and therefore less stable
- If too much fixed revenue
 - Very low flow charges are applied to too little flow
 - Not enough differentiation among customers
- Utilities that bill often can react to unforeseen changes in flow and can tolerate lower fixed charges than utilities that bill annually (like RVSD)



Rate Design – Fixed Charge Structure



- Minimum of one fixed charge per parcel
- Residential customers – single and multi family
 - One fixed charge per dwelling unit
 - Fixed charge is a fraction of current flat charge per EDU
- Non-residential customers
 - Fixed charges based on how their flow compares with average single family flow (currently 169 gallons per day)
 - Fixed charge will vary with flow
- San Quentin charged one fixed charge
 - Reflects large institutional status



Rate Design – Flow-Based Charges



- Customer flow is based on winter billing period
 - Minimal irrigation
 - Currently used for District's commercial customers
 - Currently only one billing period – better to average two billing periods
- Charge per hundred cubic feet
 - Reflects wastewater strength for each class
- Combined revenue from fixed and flow-base charges generates each class' share of the cost of service
 - Meets legal requirements



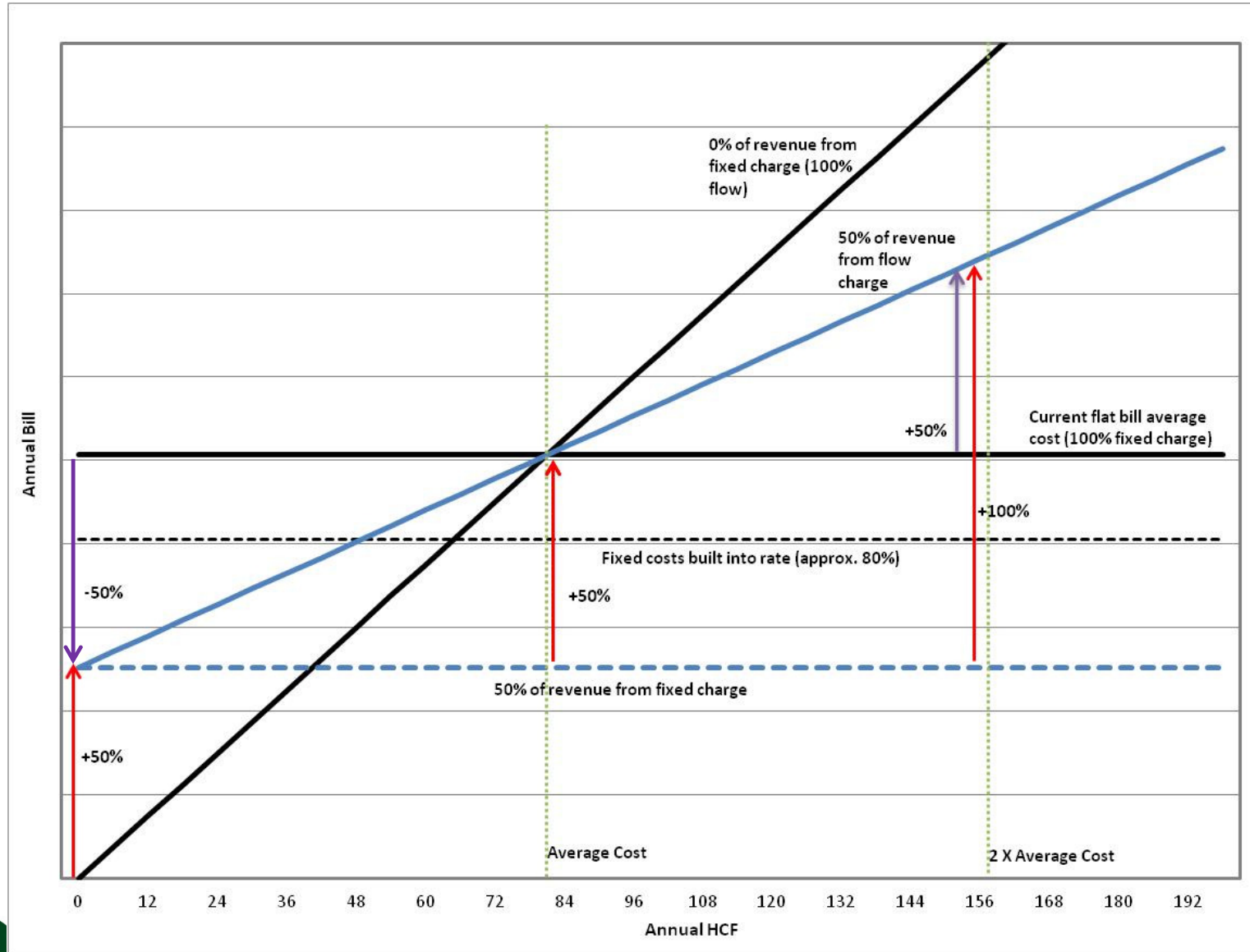
Rate Design - Recommendation



- Initially: 50% from fixed and 50% from flow-based charges
 - Improves rate-payer equity
 - Moderates revenue fluctuations
 - Fixed/flow-based proportions will vary by customer class
- Fixed component can be reduced later as customers adapt to flow-based component
- Ross Valley property tax will be credited equally to fixed and variable charges
 - Equal percentage reduction in each bill, not a fixed dollar amount



Rate Design – Proportionality Test



Fixed and Flow-Based Rates By Class

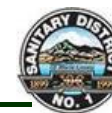


Fixed Charge Calculation - 50% of Revenue From Fixed Charge						
Total Revenue Requirement						\$ 22,038,017
Fixed Charge Portion						50.00%
Fixed Charge Revenue						\$ 11,019,008
Total EDUs						21,824
Fixed Charge Per EDU						\$ 505
Flow Charge Calculation - 50% of Revenue From Flow Charge						
	Total Rev. Req.	EDUs	Fixed Charges	Flow Charges	Annual HCF	Flow Charge (\$/HCF)
Customer Classes						
Average Strength Users						
SFR	\$ 12,241,899	12,059	\$ 6,088,644	\$ 6,153,254	980,627	\$ 6.27
MFR	\$ 4,727,896	6,838	\$ 3,452,538	\$ 1,275,358	381,855	\$ 3.34
Commercial	\$ 1,853,949	1,855	\$ 936,740	\$ 917,209	150,870	\$ 6.08
Subtotal - Average Strength	\$ 18,823,744	20,752	\$ 10,477,922	\$ 8,345,822	1,513,352	
High Strength Users						
Commercial	\$ 1,349,327	1,071	\$ 540,582	\$ 808,745	87,065	\$ 9.29
San Quentin Prison	\$ 1,864,946	1	\$ 505	\$ 1,864,441	288,750	\$ 6.46
Total Revenue Requirement	\$ 22,038,017	21,824	\$ 11,019,008	\$ 11,019,008	1,889,168	

Note: Ross Valley's rates are effectively 29% lower because of the property tax credit



Fixed and Flow-Based Revenue By Class



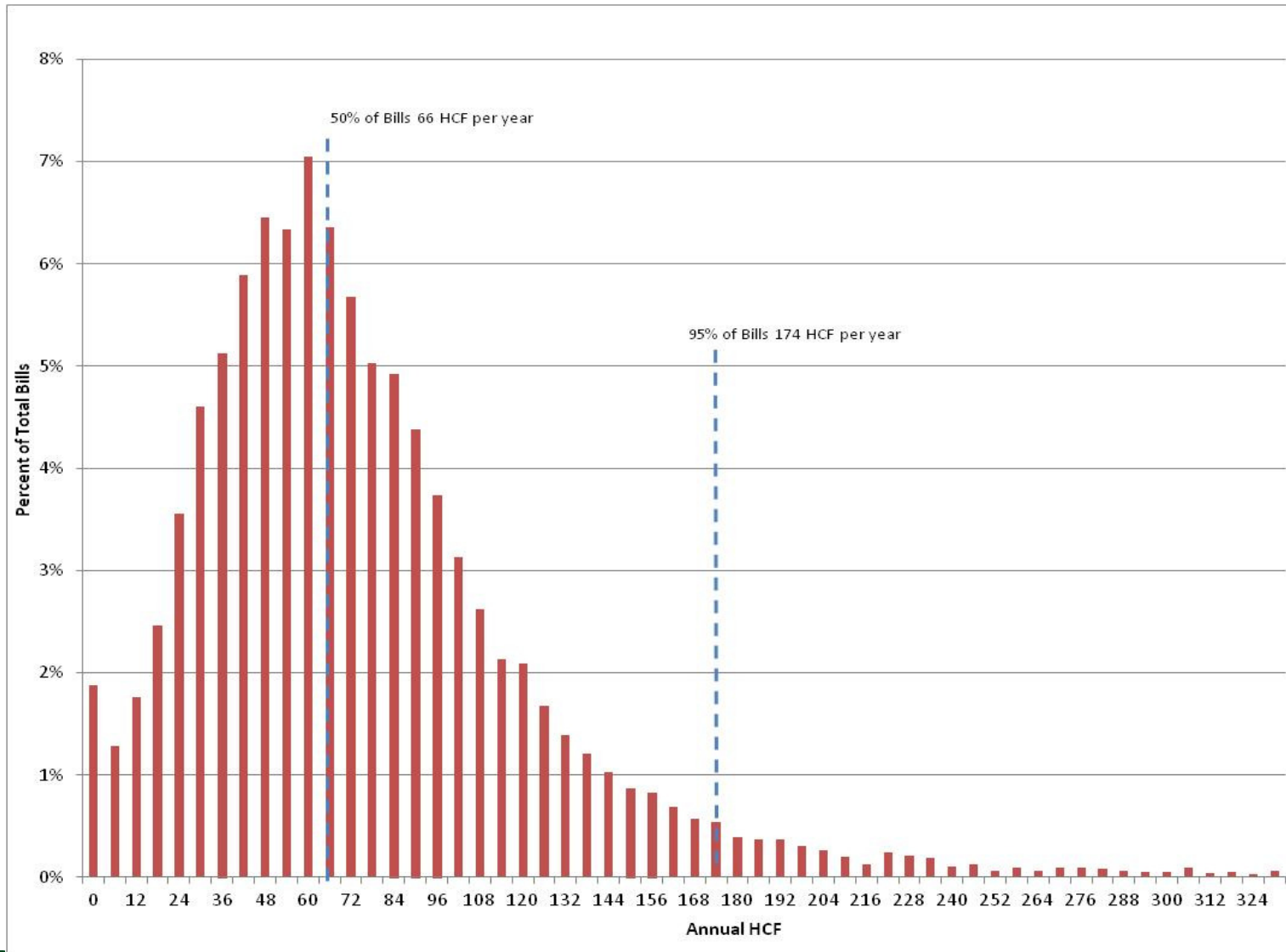
Customer Classes	Current Revenue			Proposed Revenue		
	Fixed	Flow-Based	Total	Fixed	Flow-Based	Total
SFR	\$8,012,076	\$0	\$8,012,076	\$4,531,348	\$4,551,355	\$9,082,703
MFR	\$4,616,442	\$0	\$4,616,442	\$2,616,862	\$970,920	\$3,587,782
Commercial	\$0	\$1,104,212	\$1,104,212	\$721,735	\$706,687	\$1,428,422
Commercial	\$0	\$1,164,552	\$1,164,552	\$402,627	\$602,357	\$1,004,984
San Quentin	\$0	\$2,071,586	\$2,071,586	\$505	\$1,864,441	\$1,864,946
Total	\$12,628,518	\$4,340,350	\$16,968,868	\$8,273,077	\$8,695,760	\$16,968,837
	74%	26%	100%	49%	51%	100%

- Proposed structure shifts 25% of revenue from fixed to flow-based revenue
- Increased revenue volatility with proposed structure
 - Every 1% change in flow changes revenue 0.25%

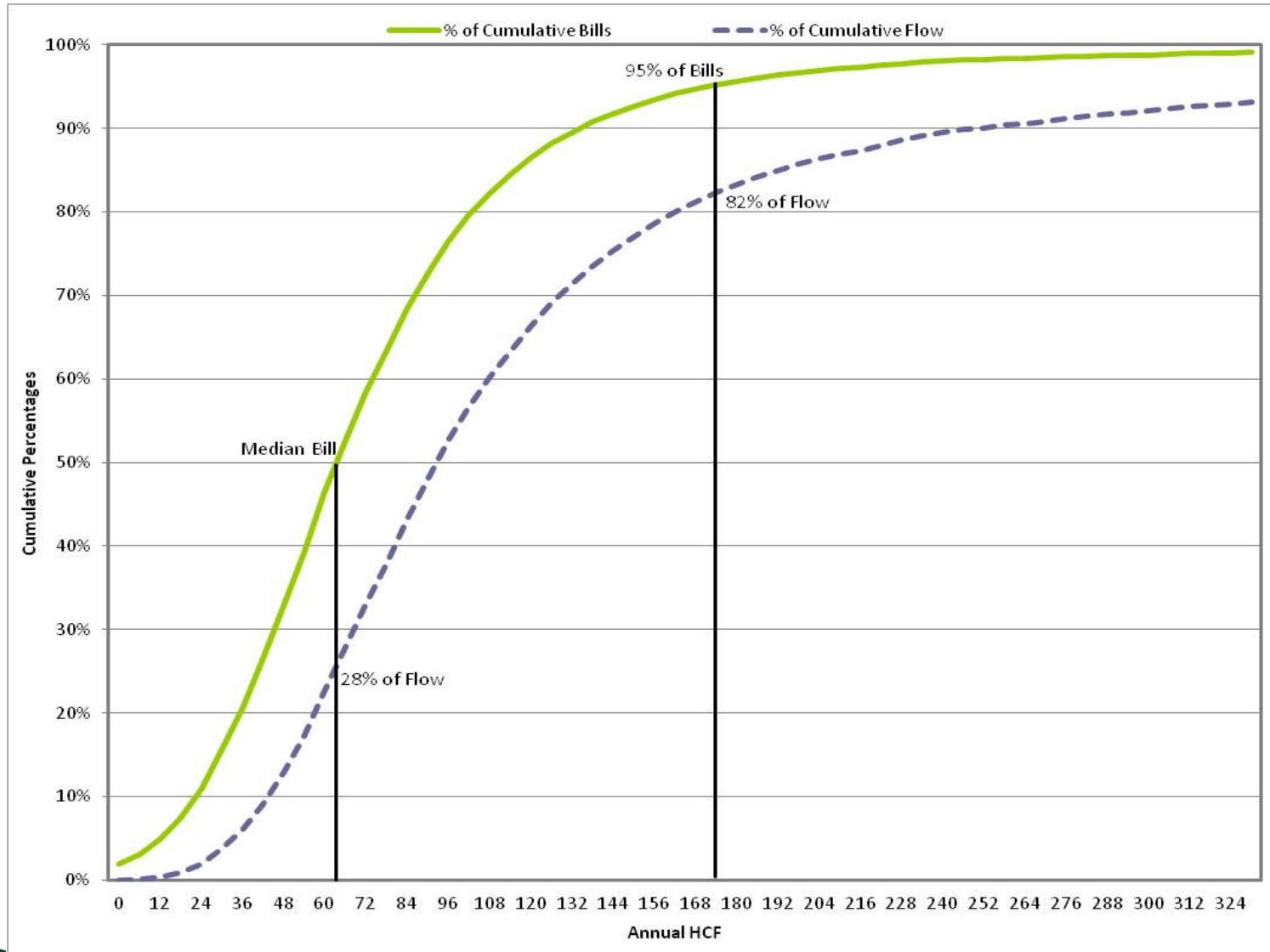
Note: Values are net of property tax revenue for Ross Valley.



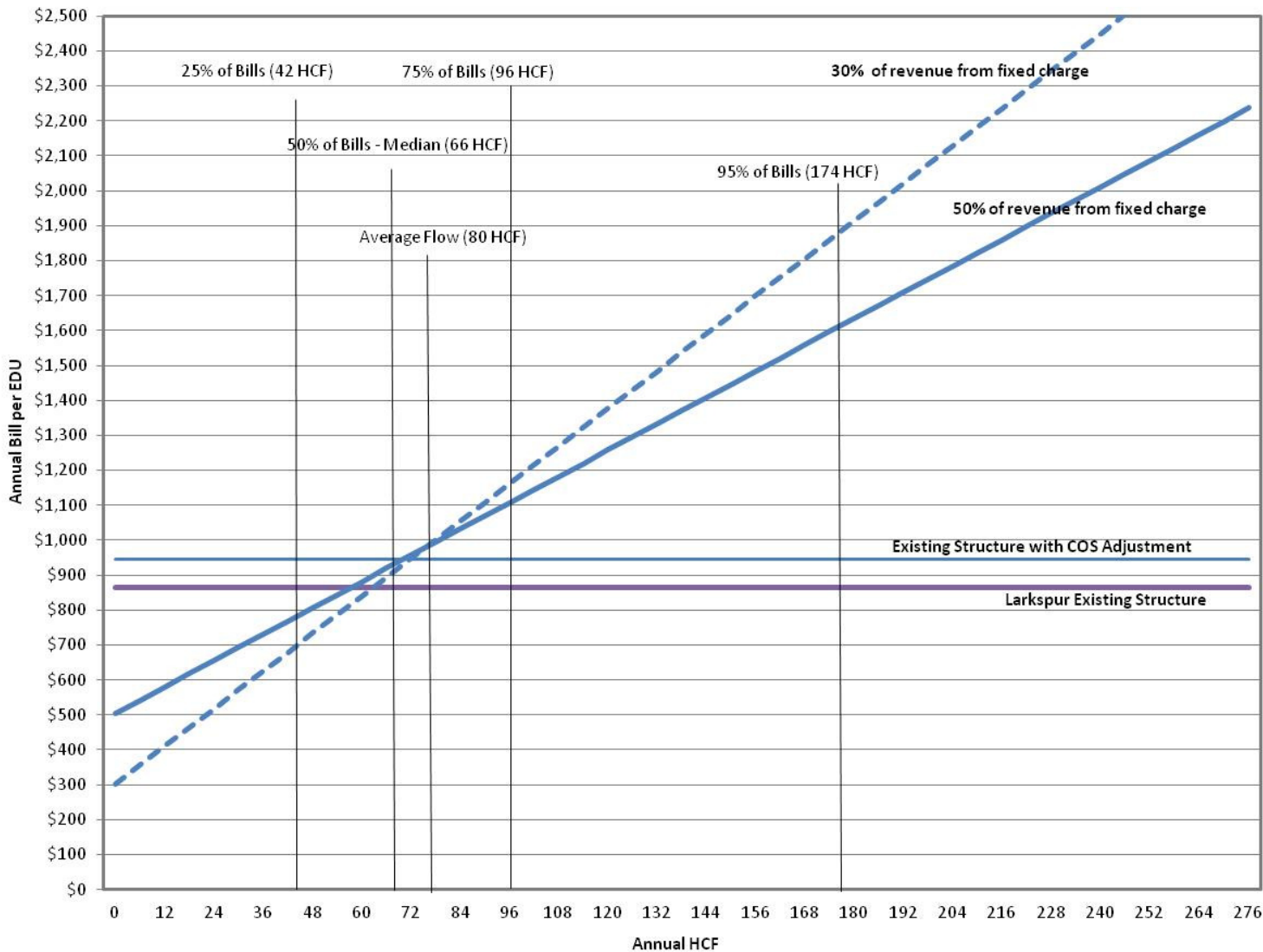
SFR Winter Flow Distribution



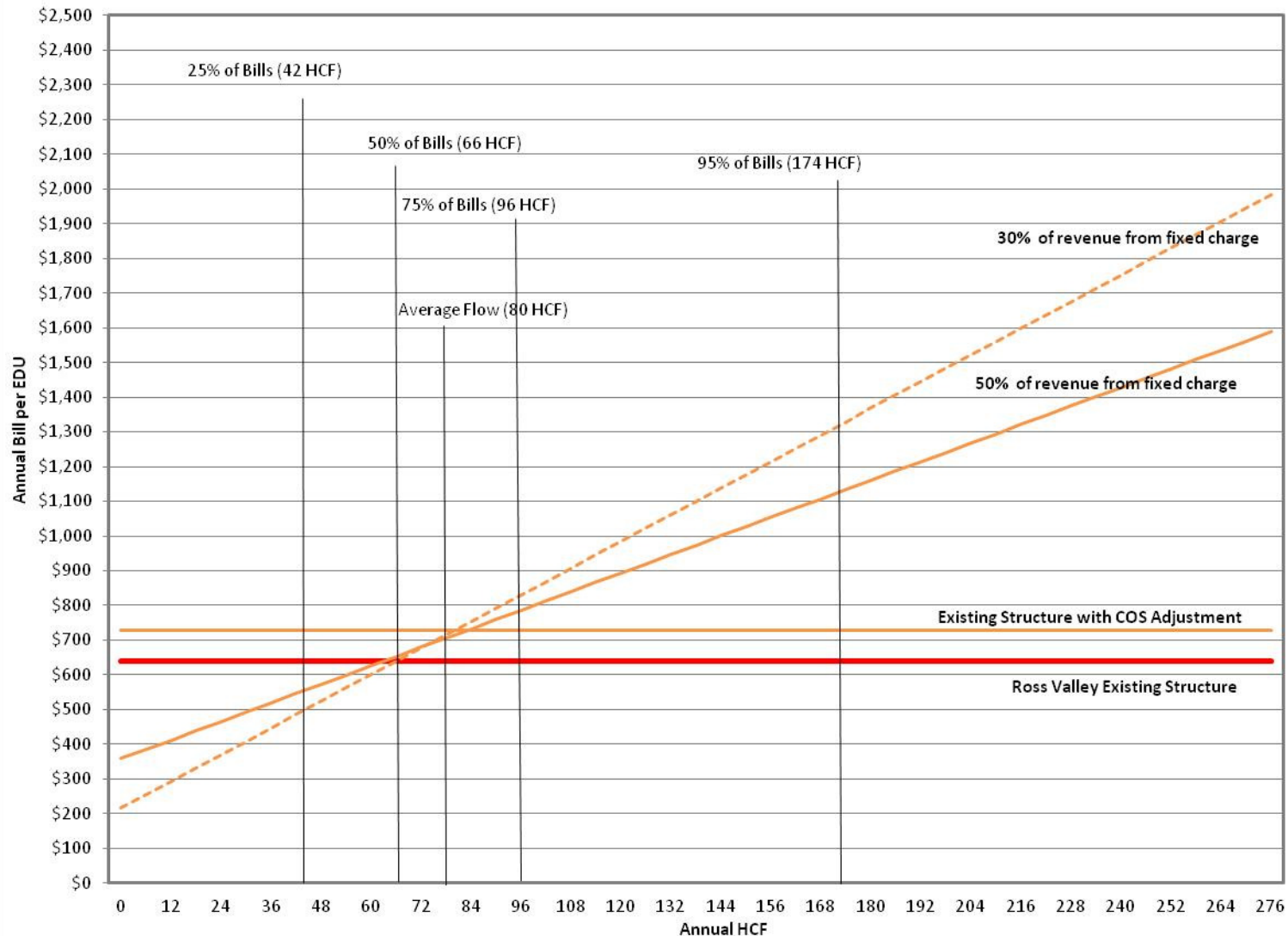
SFR Cumulative Bill Distribution



Larkspur SFR Bills



Ross Valley SFR Bills



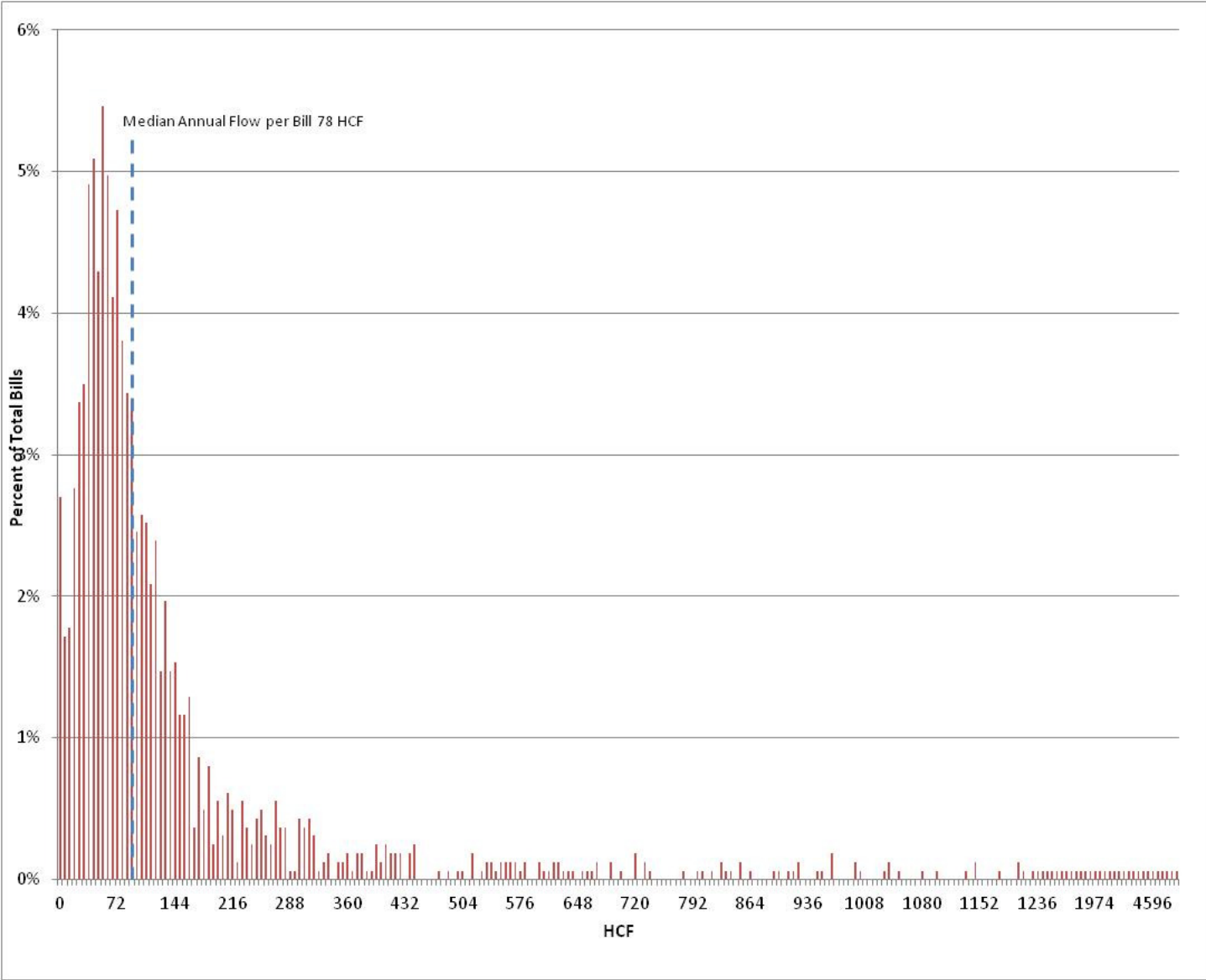
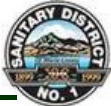
SFR Bill Comparison



Larkspur							
Fixed charge option - 50% Single family residential COS Adjmt = +9.5%	Cumul. Percent of Bills	Cumul. Percent of Flow	Current Bill	Flow-Based Bill	Flow-Based Minus Current Bill	Percentage Increase or (Decrease)	
Half of median bills 42 hcf (86 gpd)	25%	9%	\$864	\$768	(\$96)	-11%	
Median bill 66 hcf (135 gpd)	50%	28%	\$864	\$919	\$55	6%	
Average bill 84 hcf (172 gpd)	68%	43%	\$864	\$1,032	\$168	19%	
2 Times Average Bill 168 hcf (344 gpd)	95%	81%	\$864	\$1,559	\$695	80%	
Ross Valley							
Fixed charge option - 50% Single family residential COS Adjmt = +14.0%	Cumul. Percent of Bills	Cumul. Percent of Flow	Current Bill	Flow-Based Bill	Flow-Based Minus Current Bill	Percentage Increase or (Decrease)	
Half of median bills 42 hcf (86 gpd)	25%	9%	\$638	\$546	(\$92)	-14%	
Median bill 66 hcf (135 gpd)	50%	28%	\$638	\$653	\$15	2%	
Average bill 84 hcf (172 gpd)	68%	43%	\$638	\$733	\$95	15%	
2 Times Average Bill 168 hcf (344 gpd)	95%	81%	\$638	\$1,108	\$470	74%	



MFR Winter Flow Distribution



MFR Bill Comparison



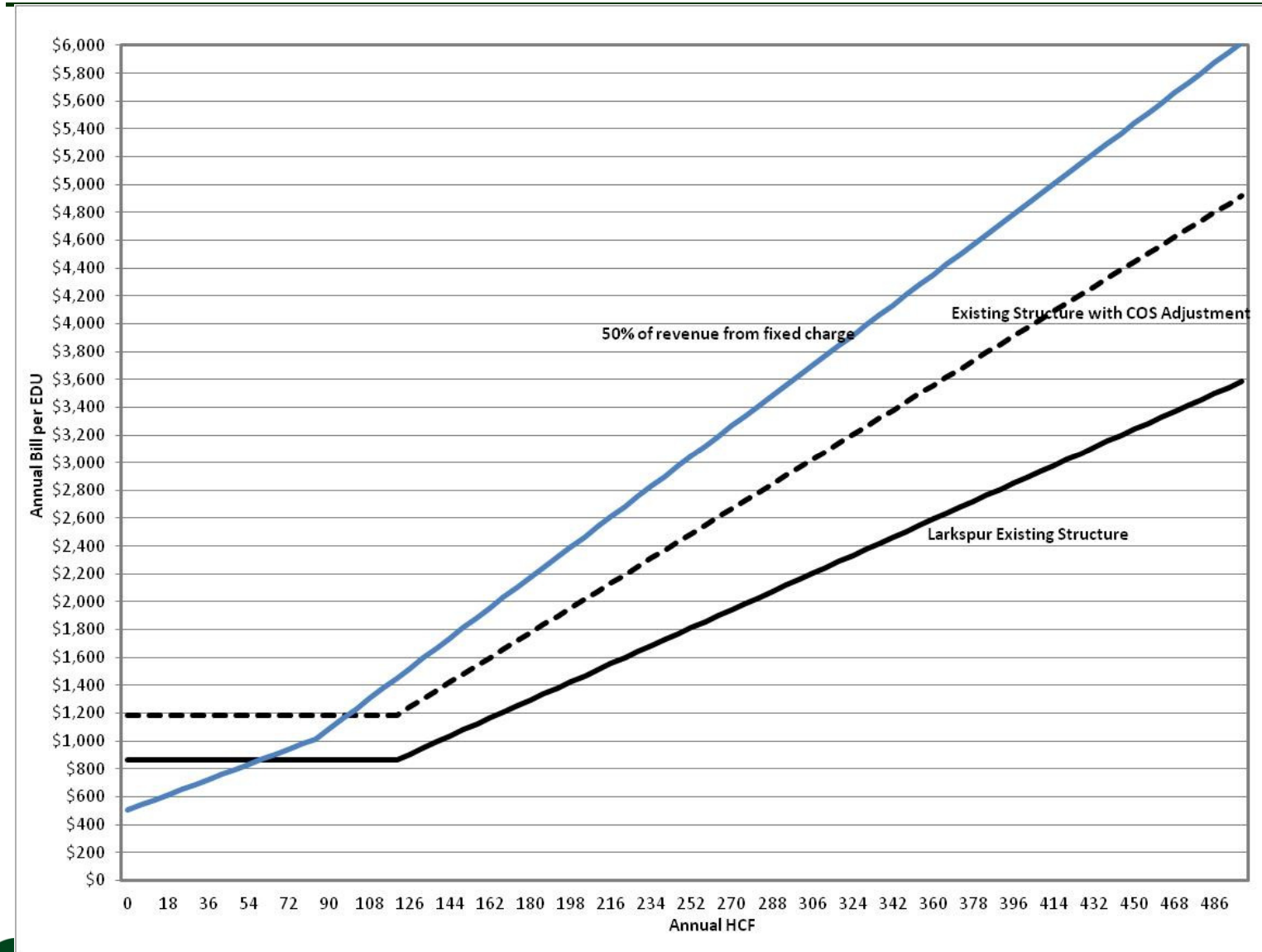
- Bills are the sum of 1 fixed charge per dwelling unit plus flow-based charge

MFR Annual Bill - Larkspur							
No. of Living Units	Annual Flow (HCF)	Existing Structure	Proposed Structure - Fixed	Proposed Structure - Flow	Proposed Structure - Total	Difference (\$)	Difference (%)
5	312	\$ 4,320	\$ 2,525	\$ 1,042	\$ 3,567	(\$753)	-17%
11	720	\$ 9,504	\$ 5,554	\$ 2,405	\$ 7,959	(\$1,545)	-16%
12	1098	\$ 10,368	\$ 6,059	\$ 3,667	\$ 9,726	(\$642)	-6%
16	798	\$ 13,824	\$ 8,078	\$ 2,665	\$10,744	(\$3,080)	-22%
80	4866	\$ 69,120	\$40,392	\$16,252	\$56,644	(\$12,476)	-18%

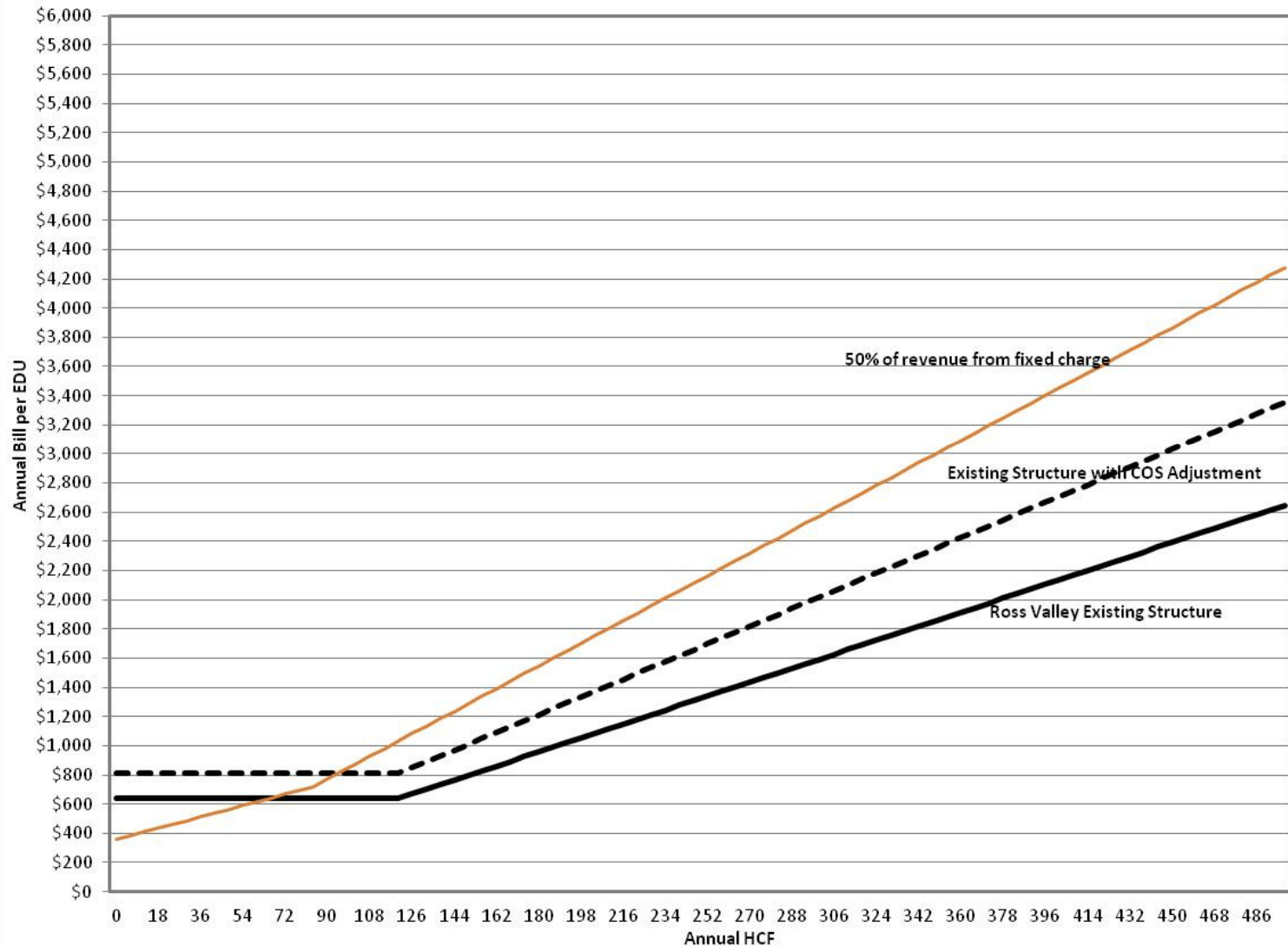
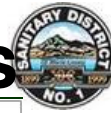
MFR Annual Bill - Ross Valley					
Existing Structure	Proposed Structure - Fixed	Proposed Structure - Flow	Proposed Structure - Total	Difference (\$)	Difference (%)
\$ 3,190	\$ 1,793	\$ 740	\$ 2,534	(\$656)	-21%
\$ 7,018	\$ 3,945	\$ 1,708	\$ 5,654	(\$1,364)	-19%
\$ 7,656	\$ 4,304	\$ 2,605	\$ 6,909	(\$747)	-10%
\$ 10,208	\$ 5,739	\$ 1,893	\$ 7,632	(\$2,576)	-25%
\$ 51,040	\$ 28,694	\$ 11,545	\$ 40,240	(\$10,800)	-21%



Larkspur Commercial Avg Strength Bills



Ross Valley Commercial Avg Strength Bills



Commercial Avg Strength Bill Comparison



Larkspur						
Fixed charge option - 50% Commercial - Avg Strength COS Adjmt = +37.2%	Cumul. Percent of Bills	Cumul. Percent of Flow	Current Bill	Flow-Based Bill	Flow-Based Minus Current Bill	Percentage Increase or (Decrease)
Half of median bills 12 hcf (25 gpd)	32%	2%	\$864	\$578	(\$286)	-33%
Median bill 42 hcf (86 gpd)	54%	9%	\$864	\$760	(\$104)	-12%
Average bill 222 hcf (455 gpd)	86%	50%	\$1,598	\$2,684	\$1,086	68%
2 Times Average Bill 444 hcf (910 gpd)	99%	95%	\$3,197	\$5,368	\$2,171	68%

Ross Valley						
Fixed charge option - 50% Commercial - Avg Strength COS Adjmt = +26.7%	Cumul. Percent of Bills	Cumul. Percent of Flow	Current Bill	Flow-Based Bill	Flow-Based Minus Current Bill	Percentage Increase or (Decrease)
Half of median bills 12 hcf (25 gpd)	32%	2%	\$638	\$411	(\$227)	-36%
Median bill 42 hcf (86 gpd)	54%	9%	\$638	\$540	(\$98)	-15%
Average bill 222 hcf (455 gpd)	86%	50%	\$1,180	\$1,907	\$727	62%
2 Times Average Bill 444 hcf (910 gpd)	99%	95%	\$2,361	\$3,813	\$1,452	61%



Commercial High Strength Bill Comparison



Customers	Annual Flow (HCF)	Existing Structure	Proposed Structure - Fixed	Proposed Structure - Flow	Proposed Structure - Total	Difference (\$)	Difference (%)
Restaurant A	1722	\$ 29,012	\$ 10,351	\$ 15,996	\$ 26,346	(\$2,666)	-9%
Restaurant B	1434	\$ 24,160	\$ 8,619	\$ 13,320	\$ 21,940	(\$2,220)	-9%
Restaurant C	312	\$ 5,257	\$ 1,875	\$ 2,898	\$ 4,774	(\$483)	-9%
Restaurant D	720	\$ 12,131	\$ 4,328	\$ 6,688	\$ 11,016	(\$1,115)	-9%
Restaurant E	4866	\$ 81,982	\$ 29,248	\$ 45,200	\$ 74,448	(\$7,534)	-9%

Existing Structure	Proposed Structure - Fixed	Proposed Structure - Flow	Proposed Structure - Total	Difference (\$)	Difference (%)
\$ 21,423	\$ 7,353	\$ 11,363	\$ 18,716	(\$2,707)	-13%
\$ 17,840	\$ 6,123	\$ 9,463	\$ 15,586	(\$2,255)	-13%
\$ 3,882	\$ 1,332	\$ 2,059	\$ 3,391	(\$491)	-13%
\$ 8,958	\$ 3,074	\$ 4,751	\$ 7,826	(\$1,132)	-13%
\$ 60,538	\$ 20,778	\$ 32,110	\$ 52,888	(\$7,650)	-13%



Commercial High Strength Bill Comparison

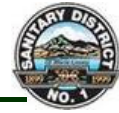


Larkspur						
Fixed charge option - 50% Commercial - High Strength COS Adjmt = -15.9%	Cumul. Percent of Bills	Cumul. Percent of Flow	Current Bill	Flow-Based Bill	Flow-Based Minus Current Bill	Percentage Increase or (Decrease)
Half of median bills 114 hcf (234 gpd)	27%	2%	\$2,022	\$1,744	(\$278)	-14%
Median bill 258 hcf (529 gpd)	50%	8%	\$4,347	\$3,947	(\$400)	-9%
Average bill 1722 hcf (3529 gpd)	95%	51%	\$29,012	\$26,346	(\$2,666)	-9%
2 Times Average Bill 3444 hcf (7058 gpd)	98%	60%	\$58,025	\$52,692	(\$5,333)	-9%

Ross Valley						
Fixed charge option - 50% Commercial - High Strength COS Adjmt = -13.3%	Cumul. Percent of Bills	Cumul. Percent of Flow	Current Bill	Flow-Based Bill	Flow-Based Minus Current Bill	Percentage Increase or (Decrease)
Half of median bills 114 hcf (234 gpd)	27%	2%	\$1,493	\$1,239	(\$254)	-17%
Median bill 258 hcf (529 gpd)	50%	8%	\$3,210	\$2,804	(\$406)	-13%
Average bill 1722 hcf (3529 gpd)	95%	51%	\$21,423	\$18,716	(\$2,707)	-13%
2 Times Average Bill 3444 hcf (7058 gpd)	98%	60%	\$42,847	\$37,432	(\$5,415)	-13%



Implementation



- No known barriers
- MMWD data can be provided
 - Initially one two-month winter bill, two bills is preferred
- Discussions are underway with County of Marin Tax Assessors Office
 - Expands flow-based charges from current commercial customers to all customers
- Initial set-up will require extra staff resources
- Final rate calculations depend on final revenue requirements adopted by Board





The End

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