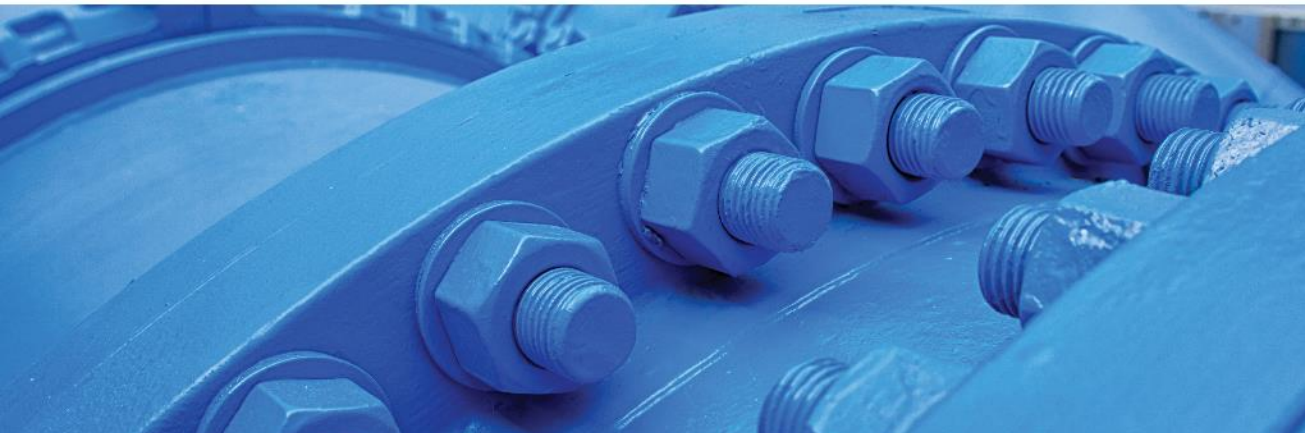




Unbilled Water and Rate Structure Change Impacts

Vallecitos Water District Finance Committee Meeting
February 22, 2017



Recent Legislation on Water Loss Management



- SB1420 Water Management: Urban Water Management Plans
 - 2014, Requires UWMP to include a water loss audit
- SB555 Urban Retail Water Suppliers: Water Loss Management
 - 2015, Water Loss Audit Report validated and submitted to DWR every year
- Use AWWA's M36 Manual and free software



Objectives of Water Loss Audit



- Determination of Water Losses and Real Losses
- Basis and reference for continuous improvement



AWWA's Water Balance

Unbilled Water = Non-Revenue Water*

Water Supplied <i>100 MG</i>	Authorized Consumption <i>88 MG</i>	Billed Authorized Consumption <i>84 MG</i>	Billed Metered Consumption <i>82 MG</i>	Revenue Water <i>84 MG</i>	
			Billed Unmetered Consumption <i>2 MG</i>		
	Water Losses <i>12 MG</i>	Unbilled Authorized Consumption <i>4 MG</i>		Unbilled Metered Consumption <i>1 MG</i>	Non-Revenue Water <i>16 MG</i>
				Unbilled Unmetered Consumption <i>3 MG</i>	
		Apparent Losses <i>4 MG</i>	Unauthorized Consumption <i>0.25 MG</i>		
			Customer Metering Inaccuracies <i>3.50 MG</i>		
		Systematic Data Handling Errors <i>0.25 MG</i>			
		Real Losses <i>8 MG</i>			

**VWD's 3-year average of unbilled water = 5.6%*

Water Audit Result Metrics/KPIs



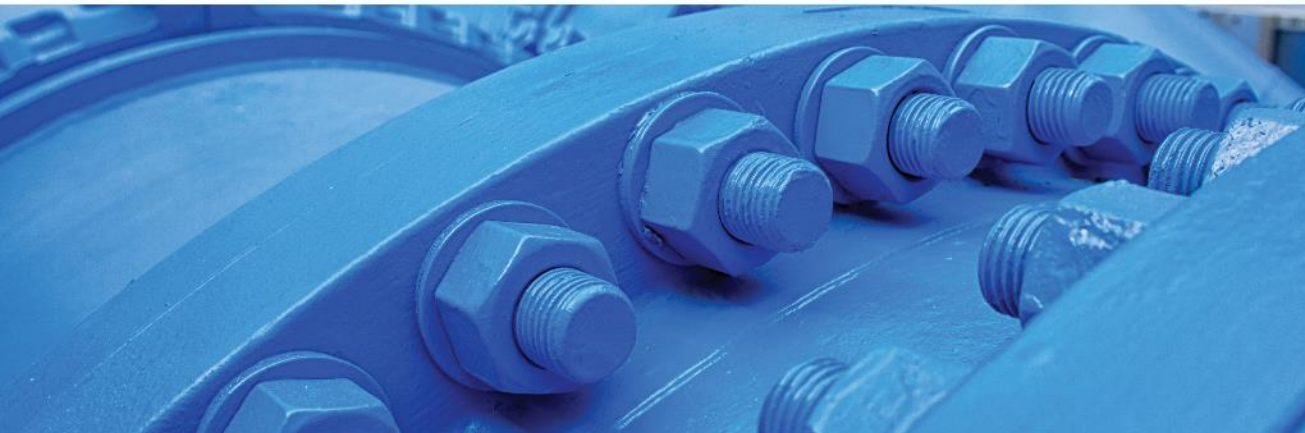
- ~~Unaccounted for water~~
- Water Audit Data Validity Score
- Priority Areas for Attention
- Non-revenue Water as a Percent by Cost of Operating System
- Infrastructure Leakage Index
- Apparent Losses per Service Connection per Day
- Real Losses per Service Connection per Day





Rate Structure Change Impacts

Vallecitos Water District Finance Committee Meeting
February 22, 2017



	Per Unit		Total Cumulative		Monthly Average Use = 13 units				
	Projected		Projected						
	Current	2018	Current	2018	Total Increase		Commodity Increase		
RTS			\$ 31.42	\$ 34.21	\$ 2.79	8.9%			
Commodity									
1	\$ 3.08	\$ 3.50	34.50	37.71	3.21	9.3%	\$ 0.42	13.6%	
2	3.08	3.50	37.58	41.21	3.63	9.7%	0.84	13.6%	
3	3.08	3.50	40.66	44.71	4.05	10.0%	1.26	13.6%	
4	3.08	3.50	43.74	48.21	4.47	10.2%	1.68	13.6%	
5	3.08	4.39	46.82	52.60	5.78	12.3%	2.99	19.4%	
6	4.12	4.39	50.94	56.99	6.05	11.9%	3.26	16.7%	
7	4.12	4.39	55.06	61.38	6.32	11.5%	3.53	14.9%	
8	4.12	4.39	59.18	65.77	6.59	11.1%	3.80	13.7%	
9	4.12	4.39	63.30	70.16	6.86	10.8%	4.07	12.8%	
10	4.12	4.39	67.42	74.55	7.13	10.6%	4.34	12.1%	
11	4.12	4.39	71.54	78.94	7.40	10.3%	4.61	11.5%	
12	4.12	4.39	75.66	83.33	7.67	10.1%	4.88	11.0%	
13	4.12	4.39	79.78	87.72	7.94	10.0%	5.15	10.6%	
14	4.12	4.39	83.90	92.11	8.21	9.8%	5.42	10.3%	
15	4.12	4.39	88.02	96.50	8.48	9.6%	5.69	10.1%	
16	4.12	4.39	92.14	100.89	8.75	9.5%	5.96	9.8%	
17	4.12	4.39	96.26	105.28	9.02	9.4%	6.23	9.6%	
18	5.33	4.39	101.59	109.67	8.08	8.0%	5.29	7.5%	
19	5.33	4.39	106.92	114.06	7.14	6.7%	4.35	5.8%	
20	5.33	4.39	112.25	118.45	6.20	5.5%	3.41	4.2%	
21	5.33	4.39	117.58	122.84	5.26	4.5%	2.47	2.9%	
22	5.33	6.80	122.91	129.64	6.73	5.5%	3.94	4.3%	
23	5.33	6.80	128.24	136.44	8.20	6.4%	5.41	5.6%	
24	5.33	6.80	133.57	143.24	9.67	7.2%	6.88	6.7%	
25	5.33	6.80	138.90	150.04	11.14	8.0%	8.35	7.8%	
26	5.33	6.80	144.23	156.84	12.61	8.7%	9.82	8.7%	
27	5.33	6.80	149.56	163.64	14.08	9.4%	11.29	9.6%	
30	5.33	6.80	165.55	184.04	18.49	11.2%	15.70	11.7%	
37	7.41	6.80	204.94	231.64	26.70	13.0%	23.91	13.8%	
60	7.41	6.80	375.37	388.04	12.67	3.4%	9.88	2.9%	
100	7.41	6.80	671.77	660.04	(11.73)	-1.7%	(14.52)	-2.3%	

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	Per Unit		Total Cumulative		Monthly Average Use = 13 units				
	Projected		Projected						
	Current	2018	Current	2018	Total Increase		Commodity Increase		
RTS			\$ 36.52	\$ 34.21	\$ (2.31)	-6.3%			
Commodity									
1	\$ 3.08	\$ 3.50	39.60	37.71	(1.89)	-4.8%	\$ 0.42	13.6%	
2	3.08	3.50	42.68	41.21	(1.47)	-3.4%	0.84	13.6%	
3	3.08	3.50	45.76	44.71	(1.05)	-2.3%	1.26	13.6%	
4	3.08	3.50	48.84	48.21	(0.63)	-1.3%	1.68	13.6%	
5	3.08	4.39	51.92	52.60	0.68	1.3%	2.99	19.4%	
6	4.12	4.39	56.04	56.99	0.95	1.7%	3.26	16.7%	
7	4.12	4.39	60.16	61.38	1.22	2.0%	3.53	14.9%	
8	4.12	4.39	64.28	65.77	1.49	2.3%	3.80	13.7%	
9	4.12	4.39	68.40	70.16	1.76	2.6%	4.07	12.8%	
10	4.12	4.39	72.52	74.55	2.03	2.8%	4.34	12.1%	
11	4.12	4.39	76.64	78.94	2.30	3.0%	4.61	11.5%	
12	4.12	4.39	80.76	83.33	2.57	3.2%	4.88	11.0%	
13	4.12	4.39	84.88	87.72	2.84	3.3%	5.15	10.6%	
14	4.12	4.39	89.00	92.11	3.11	3.5%	5.42	10.3%	
15	4.12	4.39	93.12	96.50	3.38	3.6%	5.69	10.1%	
16	4.12	4.39	97.24	100.89	3.65	3.8%	5.96	9.8%	
17	4.12	4.39	101.36	105.28	3.92	3.9%	6.23	9.6%	
18	5.33	4.39	106.69	109.67	2.98	2.8%	5.29	7.5%	
19	5.33	4.39	112.02	114.06	2.04	1.8%	4.35	5.8%	
20	5.33	4.39	117.35	118.45	1.10	0.9%	3.41	4.2%	
21	5.33	4.39	122.68	122.84	0.16	0.1%	2.47	2.9%	
22	5.33	6.80	128.01	129.64	1.63	1.3%	3.94	4.3%	
23	5.33	6.80	133.34	136.44	3.10	2.3%	5.41	5.6%	
24	5.33	6.80	138.67	143.24	4.57	3.3%	6.88	6.7%	
25	5.33	6.80	144.00	150.04	6.04	4.2%	8.35	7.8%	
26	5.33	6.80	149.33	156.84	7.51	5.0%	9.82	8.7%	
27	5.33	6.80	154.66	163.64	8.98	5.8%	11.29	9.6%	
30	5.33	6.80	170.65	184.04	13.39	7.8%	15.70	11.7%	
37	7.41	6.80	210.04	231.64	21.60	10.3%	23.91	13.8%	
60	7.41	6.80	380.47	388.04	7.57	2.0%	9.88	2.9%	
100	7.41	6.80	676.87	660.04	(16.83)	-2.5%	(14.52)	-2.3%	

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1" Meters		Monthly Bill Analysis							
		Per Unit		Total Cumulative		Monthly Average Use = 45 units			
		Projected		Projected					
		Current	2018	Current	2018	Total Increase		Commodity Increase	
RTS				\$ 55.29	\$ 49.97	\$ (5.33)	-9.6%		
Commodity									
	1	\$ 3.08	\$ 3.50	58.37	53.47	(4.90)	-8.4%	\$ 0.42	13.6%
	2	3.08	3.50	61.45	56.97	(4.48)	-7.3%	0.84	13.6%
	3	3.08	3.50	64.53	60.47	(4.07)	-6.3%	1.26	13.6%
	4	3.08	3.50	67.61	63.97	(3.65)	-5.4%	1.68	13.6%
	5	3.08	3.50	70.69	67.47	(3.22)	-4.6%	2.10	13.6%
	6	4.12	3.50	74.81	70.97	(3.85)	-5.1%	1.48	7.6%
	13	4.12	4.39	103.65	96.36	(7.30)	-7.0%	(1.97)	-4.1%
	30	4.12	4.39	173.69	170.99	(2.70)	-1.6%	2.62	2.2%
	40	4.12	4.39	214.89	214.89	(0.00)	0.0%	5.32	3.3%
	61	5.33	4.39	302.62	307.08	4.46	1.5%	9.78	4.0%
	80	5.33	6.80	403.89	392.90	(10.99)	-2.7%	(5.67)	-1.6%
	215	7.41	6.80	1,125.52	1,310.90	185.38	16.5%	190.70	17.8%
	500	7.41	6.80	3,237.37	3,248.90	11.53	0.4%	16.85	0.5%

1.5" Meters		Monthly Bill Analysis							
		Per Unit		Total Cumulative		Monthly Average Use = 117 units			
		Projected		Projected					
		Current	2018	Current	2018	Increase		Commodity Increase	
RTS				\$ 110.59	\$ 128.74	\$ 18.15	16.4%		
Commodity									
	1	\$ 3.08	\$ 3.50	113.67	132.24	18.57	16.3%	\$ 0.42	0.7%
	2	3.08	3.50	116.75	135.74	18.99	16.3%	0.84	1.4%
	3	3.08	3.50	119.83	139.24	19.41	16.2%	1.26	2.0%
	4	3.08	3.50	122.91	142.74	19.83	16.1%	1.68	2.5%
	5	3.08	3.50	125.99	146.24	20.25	16.1%	2.10	3.0%
	6	4.12	3.50	130.11	149.74	19.63	15.1%	1.48	2.0%
	33	4.12	4.39	241.35	245.13	3.78	1.6%	(14.37)	-7.7%
	158	5.33	4.39	757.56	793.88	36.32	4.8%	18.17	2.6%
	197	5.33	6.80	965.43	967.50	2.07	0.2%	(16.08)	-1.8%
	628	7.41	6.80	3,264.74	3,898.30	633.56	19.4%	615.41	19.2%
	1,000	7.41	6.80	6,021.26	6,427.90	406.64	6.8%	388.49	6.5%

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2" Meters

Monthly Bill Analysis

Monthly Average Use = 201 units

	Per Unit		Total Cumulative					
	Projected		Projected					
	Current	2018	Current	2018	Total Increase		Commodity Increase	
RTS			\$ 178.11	\$ 207.52	\$ 29.41	16.5%		
Commodity								
1	\$ 3.08	\$ 3.50	181.19	211.02	29.83	16.5%	\$ 0.42	13.6%
2	3.08	3.50	184.27	214.52	30.24	16.4%	0.84	13.6%
4	3.08	3.50	190.43	221.52	31.09	16.3%	1.68	13.6%
6	4.12	3.50	197.63	228.52	30.89	15.6%	1.48	7.6%
10	4.12	3.50	214.11	242.52	28.41	13.3%	(1.00)	-2.8%
30	4.12	3.50	296.51	312.52	16.01	5.4%	(13.40)	-11.3%
65	4.12	4.39	440.71	435.91	(4.81)	-1.1%	(34.21)	-13.0%
100	4.12	4.39	584.91	589.56	4.64	0.8%	(24.76)	-6.1%
243	5.33	4.39	1,175.28	1,217.33	42.04	3.6%	12.64	1.3%
337	5.33	6.80	1,676.30	1,632.40	(43.91)	-2.6%	(73.31)	-4.9%
807	7.41	6.80	4,183.48	4,828.40	644.92	15.4%	615.51	15.4%
2,000	7.41	6.80	13,023.61	12,940.80	(82.82)	-0.6%	(112.22)	-0.9%

3" Meters

Monthly Bill Analysis

Monthly Average Use = 778 units

	Per Unit		Total Cumulative					
	Projected		Projected					
	Current	2018	Current	2018	Increase		Commodity Increase	
RTS			\$ 356.22	\$ 317.80	\$ (38.42)	-10.8%		
Commodity								
1	\$ 3.08	\$ 3.50	359.30	321.30	(38.00)	-10.6%	\$ 0.42	0.2%
2	3.08	3.50	362.38	324.80	(37.58)	-10.4%	0.84	0.5%
4	3.08	3.50	368.54	331.80	(36.74)	-10.0%	1.68	0.9%
6	4.12	3.50	375.74	338.80	(36.94)	-9.8%	1.48	0.7%
50	4.12	3.50	557.02	492.80	(64.22)	-11.5%	(25.80)	-6.8%
100	4.12	3.50	763.02	667.80	(95.22)	-12.5%	(56.80)	-9.7%
336	4.12	4.39	1,735.34	1,494.69	(240.65)	-13.9%	(202.23)	-13.0%
500	4.12	4.39	2,411.02	2,214.65	(196.37)	-8.1%	(157.95)	-7.1%
1,134	5.33	4.39	5,024.31	4,997.91	(26.40)	-0.5%	12.02	0.2%
1,198	5.33	6.80	5,365.43	5,281.28	(84.15)	-1.6%	(45.73)	-0.9%
3,971	7.41	6.80	20,147.60	24,137.68	3,990.08	19.8%	4,028.50	20.2%
5,000	7.41	6.80	27,772.49	31,134.88	3,362.39	12.1%	3,400.81	12.3%

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