

**CITY OF ORANGE COVE**  
**SCHEDULE**  
**2014 ORANGE COVE WATER-ENERGY EFFICIENCY PROJECT**  
 December 11, 2014



**Water Energy Savings - Toilets**

Number of Toilets replaced	250
Estimated Annual Water Savings	13,000 gallon per home (EPA - WATERSENSE DATA)
<b>Total Estimated Annual Water Savings</b>	<b>3,250,000 gallons per year</b>

**Water Energy Savings - Showerheads**

Number of showerheads replaced	250
Estimated Annual Water Savings	2,900 gallon per home (EPA - WATERSENSE DATA)
<b>Total Estimated Annual Water Savings</b>	<b>725,000 gallons per year</b>

**Water Energy Savings - Faucets**

Number of Faucets replaced	250
Estimated Annual Water Savings	700 gallon per home (EPA - WATERSENSE DATA)
<b>Total Estimated Annual Water Savings</b>	<b>175,000 gallons per year</b>

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Total Water Savings 4.15 MG per year

look for



WaterSense® Labeled

# Toilets



Toilets are by far the main source of water use in the home, accounting for nearly 30 percent of an average home's indoor water consumption. Older, inefficient toilets that use as much as 6 gallons per flush also happen to be a major source of wasted water in many homes.

## FLUSH FACTS

Recent advancements have allowed toilets to use 1.28 gallons per flush or less while still providing equal or superior performance. This is 20 percent less water than the current federal standard of 1.6 gallons per flush. WaterSense labeled toilets are independently certified to meet rigorous criteria for both performance and efficiency. Only toilets that complete the third-party certification process can earn the WaterSense label.

## WATERSENSE SAVINGS

By replacing old, inefficient toilets with WaterSense labeled models, the average family can reduce water used for toilets by 20 to 60 percent—that's nearly 13,000 gallons of water savings for your home every year! They could also save more than \$110 per year in water costs, and \$2,200 over the lifetime of the toilets.

Nationally, if all old, inefficient toilets in the United States were replaced with WaterSense labeled models, we could save 520 billion gallons of water per year, or the amount of water that flows over Niagara Falls in about 12 days.

## LOOK FOR THE WATERSENSE LABEL!

Whether remodeling a bathroom, starting construction of a new home, or simply replacing an old, leaky toilet



WaterSense labeled toilets could save the average family 13,000 gallons of water per year.

that is wasting money and water, installing a WaterSense labeled toilet is a high-performance, water-efficient option worth considering.

WaterSense labeled toilets are available at a wide variety of price points and a broad range of styles. In many areas, utilities offer rebates and vouchers that can lower the price of a WaterSense labeled toilet. For more information or a list of WaterSense labeled products, visit [www.epa.gov/watersense](http://www.epa.gov/watersense).



## GET A HANDLE ON LEAKS

Does your toilet have a silent leak? Place a drop of food coloring in your toilet's tank and wait 10 minutes. If the dye shows up in the bowl, you have a leak that can probably be fixed by replacing a worn toilet flapper. For more information about fixing leaks, please visit [www.epa.gov/watersense/our\\_water/howto.html](http://www.epa.gov/watersense/our_water/howto.html)

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# Showerheads



Showering is one of the leading ways we use water in the home, accounting for nearly 17 percent of residential indoor water use. For the average family, that adds up to nearly 40 gallons per day. That's nearly 1.2 trillion gallons of water used in the United States annually just for showering, or enough to supply the water needs of New York and New Jersey for a year! By retrofitting your showerheads with WaterSense labeled models, you can save a considerable amount of this water.

## SHOWER WITH POWER

Did you know that standard showerheads use 2.5 gallons of water per minute (gpm)? Showerheads that earn the WaterSense label must demonstrate that they use no more than 2.0 gpm. The WaterSense label also ensures that these products provide a satisfactory shower that is equal to or better than conventional showerheads on the market. The U.S. Environmental Protection Agency (EPA) worked with a variety of stakeholders—including consumers who tested various showerheads—to develop criteria for water coverage and spray intensity. All products bearing the WaterSense label must be third-party certified to ensure they meet EPA water efficiency and performance criteria.

## WATERSENSE SAVINGS

The average family could save 2,900 gallons of water per year by installing WaterSense labeled showerheads. Since these water savings will reduce demands on water heaters, they will also save energy. The average family could save more than 370 kilowatt hours of electricity annually, or the amount it takes to power a house for 13 days. On a national scale, if every home in the United States installed WaterSense labeled showerheads, we could save more than \$2.2 billion in water utility bills and more than 260 billion gallons of water annually. In addition, we could avoid about \$2.6 billion in energy costs for heating water.



WaterSense labeled showerheads could save the average family 2,900 gallons of water per year.

## LOOK FOR THE WATERSENSE LABEL!

Whether you are replacing a showerhead or simply looking for ways to reduce water use and utility bills in your home, look for the WaterSense label when purchasing showerheads to help you identify models that save water and perform well.



In many areas, utilities offer rebates and vouchers that can lower the price of a WaterSense labeled showerhead. For more information or a list of WaterSense labeled products, visit [www.epa.gov/watersense](http://www.epa.gov/watersense).

look for



WaterSense® Labeled

# Bathroom Sink Faucets & Accessories



Most of us know we can save water if we turn off the tap while brushing our teeth (as much as 3,000 gallons per year!), but did you know that there are products that will help save water when you turn on the tap too? WaterSense labeled faucets and faucet accessories (e.g., aerators) are high-performing, water-efficient fixtures that will help you reduce water use in your home and save money on water bills.

## FAUCET FLOWS

WaterSense labeled bathroom sink faucets and accessories that use a maximum of 1.5 gallons per minute can reduce a sink's water flow by 30 percent or more from the standard flow of 2.2 gallons per minute without sacrificing performance. We could save billions of gallons nationwide each year by retrofitting bathroom sink faucets with WaterSense labeled models.

All products bearing the WaterSense label complete a third-party certification process to ensure they meet U.S. Environmental Protection Agency (EPA) criteria. Faucets and faucet accessories—products that can be attached easily to existing faucets to save water—that obtain the WaterSense label have demonstrated both water efficiency and the ability to provide ample flow.

## WATERSENSE SAVINGS

Replacing old, inefficient faucets and aerators with WaterSense labeled models can save the average family 700 gallons of water per year, equal to the amount of water needed to take 40 showers. Since these water savings reduce demands on water heaters, households will also save enough energy to run a hairdryer 10 minutes a day for a year. Achieving these savings can be as easy as twisting on a WaterSense labeled aerator, which can cost as little as a few dollars. If every home in the United States replaced existing faucets and aerators with WaterSense labeled models, we could save nearly \$1.2 billion in water and



WaterSense labeled bathroom faucets and aerators can save the average family 700 gallons of water per year.

energy costs and 64 billion gallons of water across the country annually—equivalent to the annual household water needs of more than 680,000 American homes.

## LOOK FOR THE WATERSENSE LABEL!

Whether replacing an older, inefficient faucet, or looking to reduce water in your bathroom, choose a WaterSense labeled sink faucet or faucet accessory. WaterSense labeled models are available at a wide variety of price points and styles. In many areas, utilities offer rebates and vouchers that can lower the price further. For more information or a list of WaterSense labeled products, visit [www.epa.gov/watersense](http://www.epa.gov/watersense).



**City of Orange Cove WTP Energy Usage**

PG&E Account Number 9858963919-8

Service Date	Total (kWh)	Peak (kWh)	Partial-		2013 **	WTP MG (Treated)	Total WTP Demand	kWh/MG
			Peak (kWh)	Off-Peak (kWh)				
6/7/2013 - 7/8/2013	74,320	12,240	15,440	46,640	JUN	65.8	71.2	1,044
7/9/2013 - 8/6/2013	66,240	9,453	12,182	30,899	JUL	68.8	74.4	890
8/7/2013 - 9/4/2013	61,989	10,969	12,569	36,981	AUG	65.5	70.8	875
9/5/2013 - 10/3/2013	49,896	8,866	11,443	29,587	SEP	55.1	59.6	837
10/4/2013 - 11/3/2013	44,782	7,330	9,582	27,870	OCT	47.9	51.8	865
11/4/2013 - 12/4/2013	41,016	-	14,903	26,113	NOV	37.1	40.1	1,022
12/5/2013 - 1/5/2014	42,279	-	13,799	29,480	DEC	31.9	34.5	1,226
1/6/2014 - 2/4/2014	36,683	-	14,517	22,166	JAN	46.1	49.9	736
2/5/2014 - 3/6/2014	31,766	-	12,160	19,606	FEB	33.1	35.8	887
3/7/2014 - 4/6/2014	31,429	-	11,929	19,500	MAR	38.1	41.2	763
4/7/2014 - 5/6/2014	36,311	1,287	13,848	21,176	APR	49.5	53.5	678
5/7/2014 - 6/5/2014	46,520	8,345	11,050	27,126	MAY	58.0	62.7	742
							WTP average kWh/MG	880

WTP Average kWh/MG (Treated)	814
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**City of Orange Cove WWTP Energy Usage**

PG&E Account Number 1466139422-2

Service Date	Total (kWh)	Peak (kWh)	Partial-		2013 **	WTP MG (Treated)	kWh/MG
			Peak (kWh)	Off-Peak (kWh)			
6/7/2013 - 7/8/2013	52,480	9,280	10,400	32,800	JUN	65.8	798
7/9/2013 - 8/6/2013	39,040	7,840	8,800	22,400	JUL	68.8	567
8/6/2013 - 9/5/2013	40,160	7,680	8,800	23,680	AUG	65.5	613
9/6/2013 - 10/4/2013	50,880	9,600	11,360	29,920	SEP	55.1	923
10/5/2013 - 11/3/2013	68,364	11,377	14,617	42,370	OCT	47.9	1,427
11/4/2013 - 12/4/2013	60,158	-	22,278	37,880	NOV	37.1	1,622
12/5/2013 - 1/5/2014	56,349	-	18,462	37,887	DEC	31.9	1,766
1/6/2014 - 2/4/2014	71,376	-	29,980	41,396	JAN	46.1	1,548
2/5/2014 - 3/6/2014	60,008	-	22,886	37,122	FEB	33.1	1,813
3/7/2014 - 4/6/2014	63,854	-	24,011	39,843	MAR	38.1	1,676
4/7/2014 - 5/6/2014	53,613	2,079	20,165	31,369	APR	49.5	1,083
5/7/2014 - 6/5/2014	60,533	11,064	12,975	36,494	MAY	58.0	1,044

WWTP Average kWh/MG	1,240
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\*\* PG&E Data July 2013 to June 2014

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**Total WTP & WWTP Energy Intensity (EI) = 768kWh/MG + 1240kWh/MG = 2,054 kWh/MG**

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**Estimated daily water usage/demand (annual water data - 2013)**

HOUR				JAN		FEB		MAR		APR		MAY		JUN	
			%	gal	gal/min										
0	-	1	2	31,342	522.37	25,243	420.71	26,181	436.34	34,600	576.67	39,019	650.32	45,467	757.78
1	-	2	1	15,671	261.18	12,621	210.36	13,090	218.17	17,300	288.33	19,510	325.16	22,733	378.89
2	-	3	0.5	7,835	130.59	6,311	105.18	6,545	109.09	8,650	144.17	9,755	162.58	11,367	189.44
3	-	4	0.5	7,835	130.59	6,311	105.18	6,545	109.09	8,650	144.17	9,755	162.58	11,367	189.44
4	-	5	0.5	7,835	130.59	6,311	105.18	6,545	109.09	8,650	144.17	9,755	162.58	11,367	189.44
5	-	6	2	31,342	522.37	25,243	420.71	26,181	436.34	34,600	576.67	39,019	650.32	45,467	757.78
6	-	7	3	47,013	783.55	37,864	631.07	39,271	654.52	51,900	865.00	58,529	975.48	68,200	1,136.67
7	-	8	3	47,013	783.55	37,864	631.07	39,271	654.52	51,900	865.00	58,529	975.48	68,200	1,136.67
8	-	9	4	62,684	1,044.73	50,486	841.43	52,361	872.69	69,200	1,153.33	78,039	1,300.65	90,933	1,515.56
9	-	10	4	62,684	1,044.73	50,486	841.43	52,361	872.69	69,200	1,153.33	78,039	1,300.65	90,933	1,515.56
10	-	11	6	94,026	1,567.10	75,729	1,262.14	78,542	1,309.03	103,800	1,730.00	117,058	1,950.97	136,400	2,273.33
11	-	12	8	125,368	2,089.46	100,971	1,682.86	104,723	1,745.38	138,400	2,306.67	156,077	2,601.29	181,867	3,031.11
12	-	13	10.5	164,545	2,742.42	132,525	2,208.75	137,448	2,290.81	181,650	3,027.50	204,852	3,414.19	238,700	3,978.33
13	-	14	9	141,039	2,350.65	113,593	1,893.21	117,813	1,963.55	155,700	2,595.00	175,587	2,926.45	204,600	3,410.00
14	-	15	8	125,368	2,089.46	100,971	1,682.86	104,723	1,745.38	138,400	2,306.67	156,077	2,601.29	181,867	3,031.11
15	-	16	4	62,684	1,044.73	50,486	841.43	52,361	872.69	69,200	1,153.33	78,039	1,300.65	90,933	1,515.56
16	-	17	3	47,013	783.55	37,864	631.07	39,271	654.52	51,900	865.00	58,529	975.48	68,200	1,136.67
17	-	18	3	47,013	783.55	37,864	631.07	39,271	654.52	51,900	865.00	58,529	975.48	68,200	1,136.67
18	-	19	7	109,697	1,828.28	88,350	1,472.50	91,632	1,527.20	121,100	2,018.33	136,568	2,276.13	159,133	2,652.22
19	-	20	7.5	117,532	1,958.87	94,661	1,577.68	98,177	1,636.29	129,750	2,162.50	146,323	2,438.71	170,500	2,841.67
20	-	21	4.5	70,519	1,175.32	56,796	946.61	58,906	981.77	77,850	1,297.50	87,794	1,463.23	102,300	1,705.00
21	-	22	4	62,684	1,044.73	50,486	841.43	52,361	872.69	69,200	1,153.33	78,039	1,300.65	90,933	1,515.56
22	-	23	3	47,013	783.55	37,864	631.07	39,271	654.52	51,900	865.00	58,529	975.48	68,200	1,136.67
23	-	24	2	31,342	522.37	25,243	420.71	26,181	436.34	34,600	576.67	39,019	650.32	45,467	757.78

**Average Booster Pump Hourly Run Time Per Day**

	JAN		FEB		MAR		APR		MAY		JUN	
	hrs/day	hrs/month										
PUMP 1 (>1500 GPM)	7	217	5	140	6	186	7	210	7	217	12	360
PUMP 2 (>2100 GPM)	2	62	1	28	1	31	5	150	6	186	7	210
PUMP 3 (>3000 GPM)	0	0	0	0	0	0	1	30	1	31	4	120

**Average Booster Pump Hourly Run Time Per Day - less than full power needed (hrs)**

PUMP 1 (>1500 GPM)	5	155	4	112	5	155	2	60	1	31	5	150
PUMP 2 (>2100 GPM)	2	62	1	28	1	31	4	120	5	155	3	90
PUMP 3 (>3000 GPM)		0		0		0	1	30	1	31	4	120

**Annual Booster Pump Run Time - assume average 50% load and "soft start" energy savings**

	Hours	HP	VOLT	PHASE	AMPS	PF	kVA (0.00173xVxA)	kW (kVAxPF)	kWh (kWhxHrs)
PUMP 1 (>1500 GPM)	1184	30	460	3	35.6	85	28.33	24.1	28,512
PUMP 2 (>2100 GPM)	1038	50	460	3	57.5	88.5	45.76	40.5	42,035
PUMP 3 (>3000 GPM)	366	75	460	3	87	87	69.23	60.2	22,046

<http://www.epa.gov/region9/waterinfrastructure/technology.html>

<http://www.energy.ca.gov/process/pubs/vfds.pdf>

Total	92,593	kWh
50% Energy Savings	46,296	kWh

**Estimated daily water usage/demand (annual water data - 2013)**

				JUL		AUG		SEP		OCT		NOV		DEC	
HOUR		%	gal	gal/min	gal	gal/min	gal	gal/min	gal	gal/min	gal	gal/min	gal	gal/min	
0	-	1	2	45,987	766.45	43,858	730.97	38,333	638.89	32,503	541.72	26,333	438.89	22,181	369.68
1	-	2	1	22,994	383.23	21,929	365.48	19,167	319.44	16,252	270.86	13,167	219.44	11,090	184.84
2	-	3	0.5	11,497	191.61	10,965	182.74	9,583	159.72	8,126	135.43	6,583	109.72	5,545	92.42
3	-	4	0.5	11,497	191.61	10,965	182.74	9,583	159.72	8,126	135.43	6,583	109.72	5,545	92.42
4	-	5	0.5	11,497	191.61	10,965	182.74	9,583	159.72	8,126	135.43	6,583	109.72	5,545	92.42
5	-	6	2	45,987	766.45	43,858	730.97	38,333	638.89	32,503	541.72	26,333	438.89	22,181	369.68
6	-	7	3	68,981	1,149.68	65,787	1,096.45	57,500	958.33	48,755	812.58	39,500	658.33	33,271	554.52
7	-	8	3	68,981	1,149.68	65,787	1,096.45	57,500	958.33	48,755	812.58	39,500	658.33	33,271	554.52
8	-	9	4	91,974	1,532.90	87,716	1,461.94	76,667	1,277.78	65,006	1,083.44	52,667	877.78	44,361	739.35
9	-	10	4	91,974	1,532.90	87,716	1,461.94	76,667	1,277.78	65,006	1,083.44	52,667	877.78	44,361	739.35
10	-	11	6	137,961	2,299.35	131,574	2,192.90	115,000	1,916.67	97,510	1,625.16	79,000	1,316.67	66,542	1,109.03
11	-	12	8	183,948	3,065.81	175,432	2,923.87	153,333	2,555.56	130,013	2,166.88	105,333	1,755.56	88,723	1,478.71
12	-	13	10.5	241,432	4,023.87	230,255	3,837.58	201,250	3,354.17	170,642	2,844.03	138,250	2,304.17	116,448	1,940.81
13	-	14	9	206,942	3,449.03	197,361	3,289.35	172,500	2,875.00	146,265	2,437.74	118,500	1,975.00	99,813	1,663.55
14	-	15	8	183,948	3,065.81	175,432	2,923.87	153,333	2,555.56	130,013	2,166.88	105,333	1,755.56	88,723	1,478.71
15	-	16	4	91,974	1,532.90	87,716	1,461.94	76,667	1,277.78	65,006	1,083.44	52,667	877.78	44,361	739.35
16	-	17	3	68,981	1,149.68	65,787	1,096.45	57,500	958.33	48,755	812.58	39,500	658.33	33,271	554.52
17	-	18	3	68,981	1,149.68	65,787	1,096.45	57,500	958.33	48,755	812.58	39,500	658.33	33,271	554.52
18	-	19	7	160,955	2,682.58	153,503	2,558.39	134,167	2,236.11	113,761	1,896.02	92,167	1,536.11	77,632	1,293.87
19	-	20	7.5	172,452	2,874.19	164,468	2,741.13	143,750	2,395.83	121,887	2,031.45	98,750	1,645.83	83,177	1,386.29
20	-	21	4.5	103,471	1,724.52	98,681	1,644.68	86,250	1,437.50	73,132	1,218.87	59,250	987.50	49,906	831.77
21	-	22	4	91,974	1,532.90	87,716	1,461.94	76,667	1,277.78	65,006	1,083.44	52,667	877.78	44,361	739.35
22	-	23	3	68,981	1,149.68	65,787	1,096.45	57,500	958.33	48,755	812.58	39,500	658.33	33,271	554.52
23	-	24	2	45,987	766.45	43,858	730.97	38,333	638.89	32,503	541.72	26,333	438.89	22,181	369.68

**Average Booster Pump Hourly Run Time Per Day**

	JUL		AUG		SEP		OCT		NOV		DEC	
	hrs/day	hrs/month										
PUMP 1 (>1500 GPM)	12	372	8	248	7	210	7	217	6	180	2	62
PUMP 2 (>2100 GPM)	7	217	7	217	6	180	4	124	1	30	0	0
PUMP 3 (>3000 GPM)	4	124	2	62	1	30	0	0	0	0	0	0

**Average Booster Pump Hourly Run Time Per Day - less than full power needed (hrs)**

PUMP 1 (>1500 GPM)	5	155	1	31	1	30	3	93	5	150	2	62
PUMP 2 (>2100 GPM)	3	93	5	155	5	150	4	124	1	30		0
PUMP 3 (>3000 GPM)	4	124	1	31	1	30		0		0		0

ORANGE COVE WATER TREATMENT PLANT  
ELECTRIC MOTORS/PUMPS

<b>Booster pumps</b>	<b>gpm</b>	<b>flow rates gpm</b>	<b>HP</b>
Pump # 1	600		30
Pump # 2	950		50
Pump # 3 & 4	1550		75
<b>Clear well transfer pumps to storage tank</b>			
Pump # 1	500		7.5
Pump # 2	1000		15
Pump # 3	1800 (backwash/transfer)		30
<b>Surface wash pump</b>			
	75		5
<b>Raw water pumps</b>			
Pump A & B	1550		20