

POOL COVER TEST

Background:

On December 1, 2010, the Planning and Fiscal Affairs Committee (PFAC) approved a proposal by GVR Staff to conduct a test to determine whether covering pools in the late afternoon prior to the evening temperature drop, would be an effective energy conservation measure.

Water evaporation causes pools to loose heat, chemicals and water. Evaporation occurs at a faster rate when the air temperature is low and the water temperature is high. High water temperature makes the water molecules move faster. Moving molecules evaporate faster than stationary molecules. In addition, a layer of warm air is created above a heated pool which causes the water to evaporate at an even higher rate.

Three pools (Abrego North, Casa Paloma II, and Continental Vistas) were chosen for the test because of their relatively low use during the test hours and the fact that they are very similar in size and shape. The test began on December 27, 2010, the first day of the Southwest Gas billing cycle for GVR, and ran for 60 days ending on February 26, 2011.

The test pools were covered as close to 4pm as possible each day throughout the 60-day test period. The test pools were covered three hours earlier than non-test pools.

Mean Temperatures for Green Valley, Arizona:

	Average	Average Low	Average High
December 2010	56.2	40.6	71.7
January 2011	50.4	33.4	67.4
February 2011	49.7	33.5	65.8

Brief Results:

Results of the test reflect clear energy savings for test pools. The dollar amounts saved for test pools are as follows:

	Difference from December Bill	
	January 2011	February 2011
Abrego North	(\$295.33)	(\$841.99)
CPII	\$109.63	(\$524.95)
Continental Vistas	(\$25.34)	(\$490.79)

Total savings for the 60-day test:

	Total	Per Hour
Abrego North	\$1,137.32	\$6.32
CPII	\$415.32	\$2.31
Continental Vistas	\$516.13	\$2.87

Non-test pools experienced an increase in cost. For nine, non-test pools, the average increase in cost for Southwest Gas for January over December was \$710. In calculating the actual cost saving for the test pools, the increase in cost that the test pools would have experienced had they not been covered at 4pm must also be considered. It has not been factored in to the savings.

Conclusion:

Although a cost saving was achieved by covering the test pools before the evening temperature drop, the savings per hour for the three pools was not significant enough to recommend a change in pool hours.

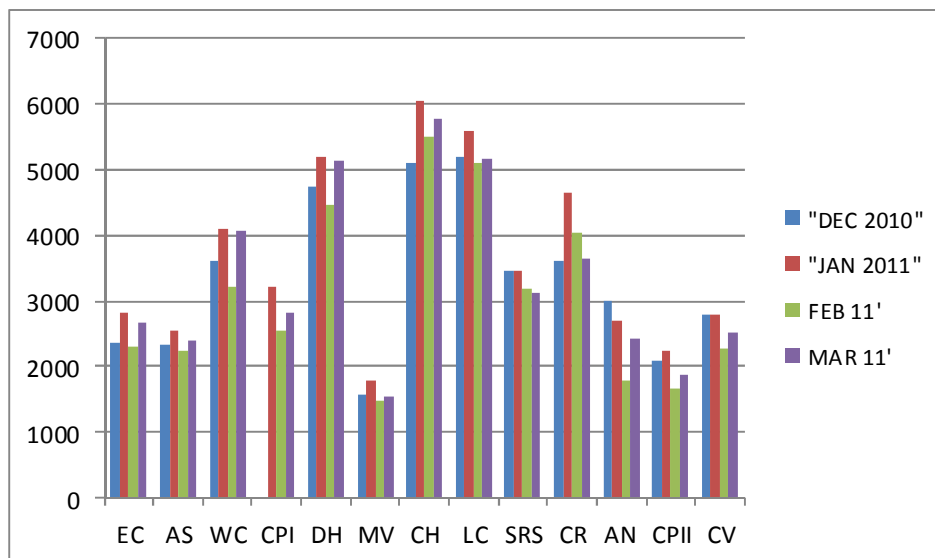
Charts & Statistics

Pool Capacity in Gallons:

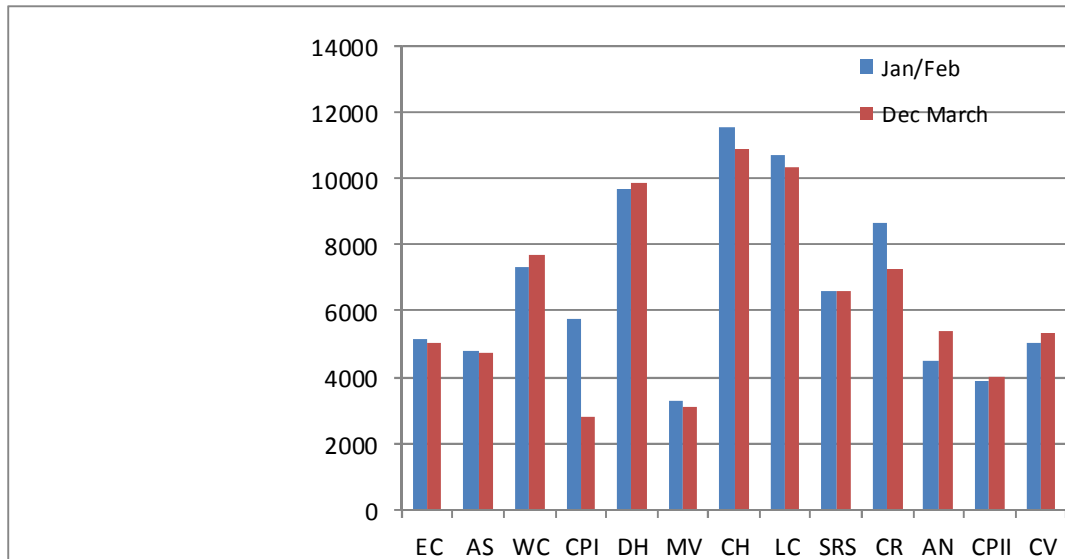
MV	45,000
AS	57,370
CV	57,370
AN	58,000
CPII	64,000
EC	75,000
DH	98,217
WC	101,200
CR	108,585
SRS	117,000
CPI	118,720
CH	134,000
LC	137,500

Therm: The energy equivalent of burning 100 cubic feet of natural gas. Southwest Gas prices are based on the consumption of therms. One drawback of the pricing plan is that the price per therm goes up as you consume less gas.

Therms



Combined Months: January and February – (Test Months) & December and March (before and after test).

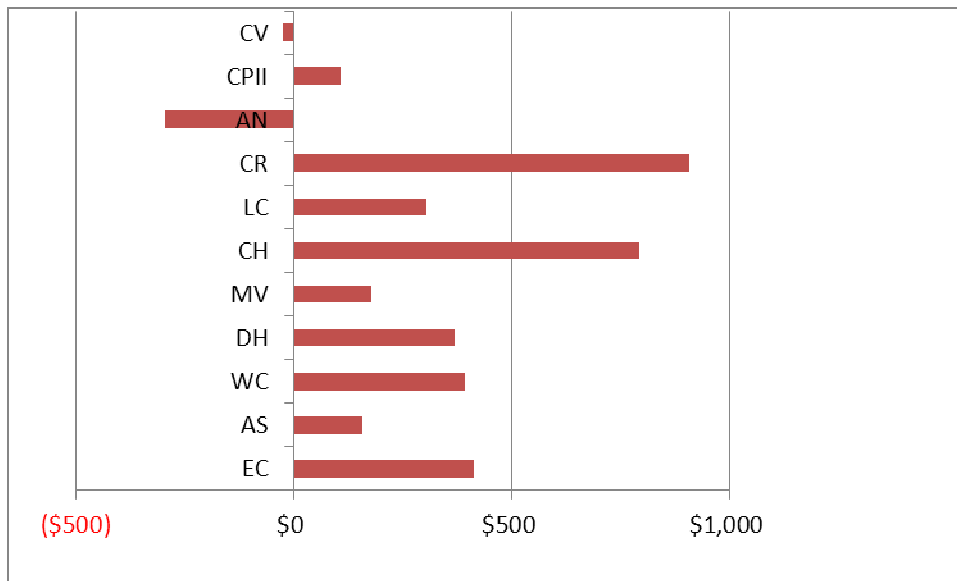


	Total Therms			
	"DEC 2010"	"JAN 2011	FEB 11'	MAR 11'
EC	2349	2830	2300	2654
AS	2340	2543	2250	2387
WC	3624	4099	3223	4063
CPI	0	3229	2556	2809
DH	4750	5211	4478	5128
MV	1568	1773	1493	1549
CH	5110	6040	5499	5787
LC	5203	5601	5102	5170
SRS	3463	3456	3174	3138
CR	3607	4646	4042	3643
AN	2997	2708	1785	2414
CPII	2095	2240	1665	1890
CV	2791	2796	2259	2518

	Combined Months	
	Jan/Feb	Dec/March
EC	5130	5003
AS	4793	4727
WC	7322	7687
CPI	5785	2809
DH	9689	9878
MV	3266	3117
CH	11539	10897
LC	10703	10373
SRS	6630	6601
CR	8688	7250
AN	4493	5411
CPII	3905	3985
CV	5055	5309

Pool Cover Test: December 2010 - January 2011 Billing Cycle

Figures are the difference between the Dec 2010 Bill and the Jan 2011 Bill



Difference in December 2010 and January 2011 Bills

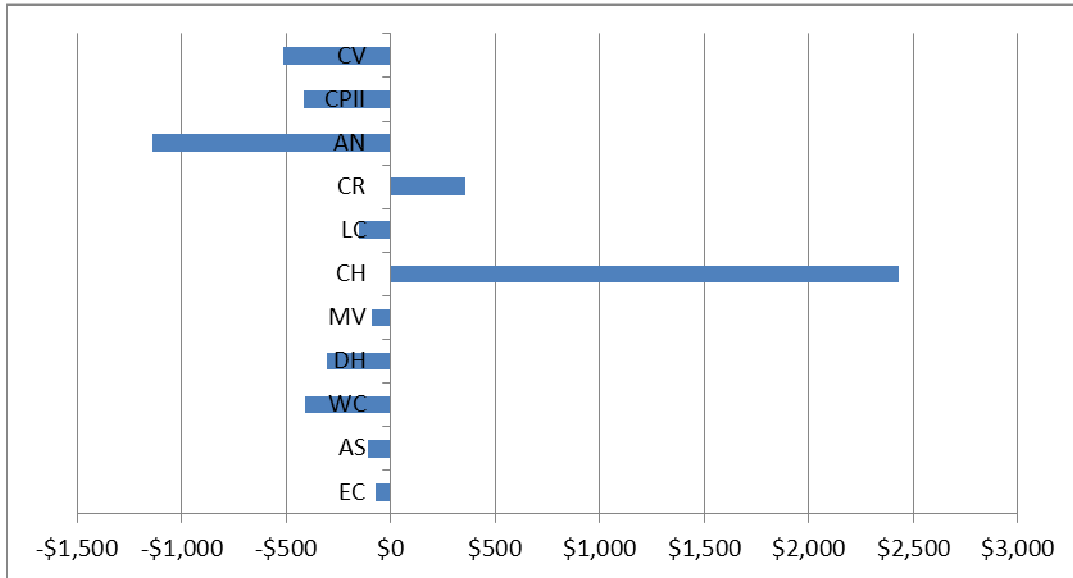
Dec - Jan Billing Cycle

EC	\$412.92
AS	\$159.82
WC	\$393.81
DH	\$369.00
MV	\$178.86
CH	\$792.32
LC	\$306.74
CR	\$907.67
AN	(\$295.33)
CPII	\$109.63
CV	(\$25.34)

CPI and SRS are not included. SRS has a different billing cycle and CP1 was closed for part of the billing cycle and would skew the results significantly. The difference between the December and January bills for CP1 showed an increase of \$2867.27.

Average Increase for non-test pools (8 pools) was \$440.14. Average Increase for test pools was -\$70.35. (A \$510.49 difference between the test and non-test pools).

Pool Cover Test - January to February Billing Cycle - Increase and Decrease in amounts over December 2010



January to February Billing Cycle - Differences in amounts compared to December 2010.

EC	-\$72.00
AS	-\$109.00
WC	-\$406.00
DH	-\$302.00
MV	-\$90.00
CH	\$2,433.00
LC	-\$152.00
CR	\$355.00
AN	-\$1,137.00
CPII	-\$416.00
CV	-\$516.00

Cost Per Gallon to Heat Pools – (Cost per Therm Varies with Use)

	Dec-10	Jan-11	Feb-11
EC	0.0310	0.0365	0.0301
AS	0.0404	0.0432	0.0385
WC	0.0346	0.0385	0.0306
CPI	0.0020	0.0261	0.0210
DH	0.0462	0.0500	0.0432
MV	0.0376	0.0416	0.0357
CH	0.0364	0.0423	0.0386
LC	0.0361	0.0383	0.0350
CR	0.0321	0.0405	0.0354
CV	0.0477	0.0472	0.0387
CPII	0.0327	0.0344	0.0262
AN	0.0504	0.0453	0.0308

Cost Per Gallon to Heat Pools

