La Mesa Water Cooperative

Water Rates Committee

2014

For Calendar Year 2015

Final

July 25, 2015

Executive Summary

This paper describes the process used to set 2015 rates, using required revenue and a model that has estimated usage and allowed various alternative rates to be tested. The committee agreed on a $6 per month increase in the fixed charge which the Board approved as a Capital Improvement Charge, and the top $50 tier was eliminated.

Mandate

The La Mesa Water Coop Bylaws, Article X, Section 1.3 (p 12) states:

> *b) The Board shall periodically, but no less often than yearly, impanel a Water Rates Committee, comprised of volunteer Cooperative Members, yearly or whenever there is a perception by the Board that the Standby Fee or the Water Usage Assessments may need adjustment.*

Article X, Section 3 Standby Fee Assessment (page 12) states:

> *Upon issuance of a membership certificate, there shall be a Standby Assessment Fee, the amount of which shall be established by the Board, paid by each Member until the Member's residence is connected to the water system. The Standby Fee Assessment shall be dedicated to funding the Operating, Maintenance and Repair Reserve Fund. Each member shall pay the Standby Assessment Fee until the service connection is installed. The Developer shall not be subject to the Standby Assessment Fee.*

Article X, Section 4 Water Usage Assessment (page 12) states:

> *The Board of Directors shall establish the Water Usage Assessment rate schedule to be used to determine the amount to be paid by each member for water services. The Water Usage Assessment rate schedule shall consider the cost of the water and water services provided to each member and shall be dedicated to funding the Operating, Maintenance and Repair Reserve Fund. The Board shall, at each Annual Meeting of the Members, certify the rates for the following 1 year period.*

Assumptions

1. There will be a single rate structure that applies throughout the year. i.e. there will not be distinct winter and summer rates.
2. The rate structure will have no more than six tiers.
3. The Interim (2014) Leak Policy will be extended through all of 2015.
4. Focus is on Metered Revenue. Other charges are not expected to change:
    - Stand-by fee (until a water meter is installed) - $ 80 per quarter
    - Membership transfer fee - $100 each transfer
    - Delinquent account fee - $ 20 per month
5. Metered revenue for any new houses is not considered. The average revenue per house is under $600 per year, and there were any houses under construction as of October 2014. (One was started in November 2014.)
6. Keep base charge – amount to be determined.

Rates (2014)

Effective January 1, 2012

Monthly Usage	Cost per 1000 Gallons
Less than 5,000 gallons	$1.25
5,000 to 10,999 gallons	$2.50
11,000 to 13,999 gallons	$4.25
14,000 to 16,999 gallons	$8.00
17,000 to 20,999 gallons	$30.00
21,000 or more gallons	$50.00

Monthly base charge: $33.00

Guiding Principles / Evaluation Criteria

In Board and Rating Committee discussions several key points came out to be used in evaluating various rate alternatives. More or less in priority order, these are:

- **Meet target revenue** ($212,000). This is mandatory.
- **Encourage Conservation**. Recognizing that water is a scarce commodity, conservation is to be supported by charging higher prices for higher use, and lower prices for lower use.
- **Stability / Consistency**. Since the current rates have been in place for several years, people have become used to them. So few and simple changes are preferable over extensive changes.
- **Explainable**. We must be able to provide a simple, understandable explanation of changes.
- **Reasonable**. Changes and rates must fit in what our community can afford and accept. In the past, several property owners in La Mesa choose to put in their own private wells, citing the high cost of coop water.
- **Consistent with area rates**. Although the La Mesa Water Coop does not directly compete with other water systems, when people choose to move in or out of our community, water rates can be a consideration. If our rates were to become “excessive”, compared to other areas, that discourages buyers and makes it harder for current owners to sell.

Process

In order to try out various rates, an Excel spreadsheet was created that has estimated usage for each household for each month of 2015. This spreadsheet has a “Dashboard” sheet, where the user can adjust rate parameters, such as the base charge, tier levels, and tier rates. Estimated bills are calculated for each house, and summed to get estimated metered revenue, which is compared to the target.

The details of how usage was estimated, and other aspects of the rate estimate spreadsheet are given in Appendix A.

Recommendations

The committee recommends two changes:

- Increase the Base charge from $33 to $39
- Eliminate Tier 6

So the rate table would be:

	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5	
Lower level	0	5,000	11,000	14,000	17,000	
Higher level	4,999	10,999	13,999	16,999		
Base charge: $39.00	$1.25	$2.50	$4.25	$8.00	$30.00	

And the estimated results are:

	Base charge	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Usage	Total Billed	Leak Relief	Total
Estimated 2015 Metered Revenue	$152,100	$18,872	$15,690	$4,600	$4,120	$8,177	$16,879	$68,339	$220,439	($6,985)	$213,455
Target 2015 Metered Revenue											$212,000
Surplus / Shortfall											$1,455

Board Decision

The Coop Board of Directors reviewed the recommendations, and at the December 3, 2014 meeting, approved the proposed rates, with two changes:

- The Base Charge will remain at $33 per month, and a new $6 per month Capital Improvement Charge will be added.
- The $6 Capital Improvement Charge will apply to all lots – metered and standby (undeveloped).

Rationale

Having the rate increase apply entirely to the monthly base charge is the simplest, with the minimum change. A key observation is that people are familiar with the current tiers and rates, so the less we change things, the better.

A more compelling reason to increase the base rate goes to what the increase is for. The coop operational costs have not increased much; this increase is really needed for the capital improvements - specifically the redundancy to be provided with well #3. That benefits everybody, irrespective of their water use. Someone who uses, say 20,000 gallons, is not any better off than a 5,000 gallon user, as far as having a more robust system with the added redundancy. So asking everybody to pay the same dollar amount seems reasonable.

Another aspect is that most of our costs are relatively fixed, and are independent of the amount of water pumped and billed. The proposed 2015 budget has $18,200 for electricity; adding in chlorine and our variable costs are well

under 10%. The proposed rate, with the $39 base charge, give us 75% of our revenue from the base charge, and 25% from usage charges.

It is not clear if a trend that will continue, but our total water (both gallons pumped and billed) went down about 9% from 2013 to 2014. Water systems throughout the country are reporting lower usage. That indicates that we should rely less on usage charges and more on a fixed, predictable base charge.

The other part of the proposed rate change is to eliminate the $50/thousand gallon tier 6, and have the top tier be $30. Past rate committee reports describe the top tier as intentionally "punitive", to force high users to conserve. This may have worked for some people, but at this time, there are 2-3 users that are regularly in tier 6 for 2-4 months each year, so this rate is not getting them to change. Of more significance, this $50 rate mostly applies to those one-time wasted water events, that can be forty, seventy, or even ninety thousand gallons. This results in considerable surprise, shock, anger, and resentment against the coop and the board.

From the standpoint of the coop finances, there is not any way to justify the top rate being forty times the bottom rate. None of the water rate setting literature suggests anything close to this kind of disparity. Of city water systems around the country, Santa Fe is recognized as having the most effective conservation program and the highest rates, with two tiers: $6.06 and $21.72.

Eliminating the $50 tier only applies to a few regular high users for a few months, but substantially reduces the sting of a large leak.

Counter Arguments

Generating the needed revenue increase only by raising the base charge for everyone means that low water users have a larger percentage increase than high users. For example, a house with zero use has the bill go from $33 to $39, over an 18% increase. A house with a bill that goes from $120 to $126 (about 18,000 gallons) has a 5% increase.

Even though only a few people normally fall into the $50 Tier 6 for a few months, that fact that the tier is there may encourage some conservation. Some people may have done things to stay out of that tier; with “only” a $30 top rate some users may increase their usage into the 2014 tier 6 range (more than 21,000 gallons per month).

Together, these two changes reduce the conservation incentives in the rates.

Impact Analysis

The impact of the proposed rate change shows up in the estimated bills for “normal” usage and for wasted water events. Of the 3,900 bills (325 houses times 12 months) to be sent in 2015, 3,879 are estimated to increase by $6.00. The 21 bills that are estimated to decrease (because of eliminating the $50 Tier 6) are shown below.

ID	Bill Date	Estimated Gallons	2014 With bas	2015 With base	Change
7514	7/31/2015	40,843	$1,203.20	$812.32	($390.88)
1677	6/30/2015	40,710	$1,196.55	$808.33	($388.22)
1677	8/31/2015	36,300	$976.05	$676.03	($300.02)
1677	7/31/2015	34,390	$880.55	$618.73	($261.82)
7514	6/30/2015	29,710	$646.55	$478.33	($168.22)
2679	7/31/2015	28,910	$606.55	$454.33	($152.22)
1677	5/31/2015	28,700	$596.05	$448.03	($148.02)
7514	5/31/2015	26,760	$499.05	$389.83	($109.22)
7514	8/31/2015	26,644	$493.25	$386.35	($106.90)
7610	6/30/2015	25,000	$411.05	$337.03	($74.02)
7514	4/30/2015	24,380	$380.05	$318.43	($61.62)
2679	6/30/2015	23,790	$350.55	$300.73	($49.82)
4254	8/31/2015	22,880	$305.05	$273.43	($31.62)
7474	4/30/2015	22,720	$297.05	$268.63	($28.42)
5019	5/31/2015	22,234	$272.75	$254.05	($18.70)
4226	11/30/2015	22,190	$270.55	$252.73	($17.82)
1230	11/30/2015	22,150	$268.55	$251.53	($17.02)
4254	7/31/2015	21,820	$252.05	$241.63	($10.42)
2679	8/31/2015	21,800	$251.05	$241.03	($10.02)
2557	6/30/2015	21,760	$249.05	$239.83	($9.22)
9726	11/30/2015	21,350	$228.55	$227.53	($1.02)
Total					($2,355.24)

Clearly, this benefits a few high water users, but only for a few months. Nine bills are reduced by over $100. Even with the reduction, these large bills are still in the several hundred dollar range.

The point of eliminating Tier 6 is to reduce (but not eliminate) the sting of a large leak. The 30 projected wasted water events for 2015 are shown below.

Estimated Gallons	2014 With bas	2015 With base	Change
79,310	$3,126.55	$1,966.33	($1,160.22)
73,430	$2,832.55	$1,789.93	($1,042.62)
72,880	$2,805.05	$1,773.43	($1,031.62)
56,020	$1,962.05	$1,267.63	($694.42)
49,200	$1,621.05	$1,063.03	($558.02)
46,550	$1,488.55	$983.53	($505.02)
43,570	$1,339.55	$894.13	($445.42)
39,670	$1,144.55	$777.13	($367.42)
37,720	$1,047.05	$718.63	($328.42)
35,670	$944.55	$657.13	($287.42)
34,760	$899.05	$629.83	($269.22)
33,230	$822.55	$583.93	($238.62)
32,430	$782.55	$559.93	($222.62)
31,813	$751.70	$541.42	($210.28)
31,810	$751.55	$541.33	($210.22)
31,620	$742.05	$535.63	($206.42)
31,500	$736.05	$532.03	($204.02)
30,860	$704.05	$512.83	($191.22)
29,010	$611.55	$457.33	($154.22)
27,300	$526.05	$406.03	($120.02)
26,760	$499.05	$389.83	($109.22)
25,050	$413.55	$338.53	($75.02)
24,790	$400.55	$330.73	($69.82)
24,080	$365.05	$309.43	($55.62)
23,790	$350.55	$300.73	($49.82)
23,400	$331.05	$289.03	($42.02)
23,260	$324.05	$284.83	($39.22)
21,910	$256.55	$244.33	($12.22)
19,460	$164.83	$170.83	$6.00
20,300	$190.03	$196.03	$6.00
Total			($8,888.42)

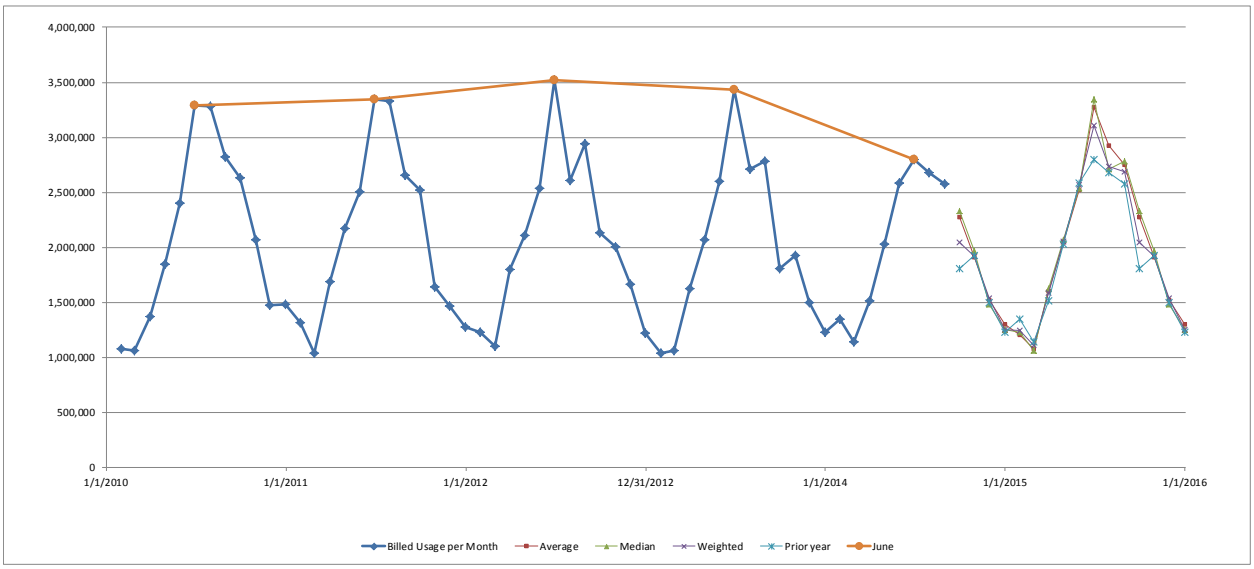
So the large events (over 40,000 gallons) have their charges reduced considerably, but several bills over $1,000 are still projected.

Appendix A – Rate Estimate Spreadsheet

In order to try out various rates, an Excel spreadsheet was created that has estimated usage for each household for each month of 2015. The basis for the usage estimate is the coop billing data from January 2010 through August 2014.

First, peaks or spikes were identified and replaced with an estimate for that month, so as to not have a revenue or rate plan based on past leaks. In most cases of a spike, a reasonable estimate appeared to be the average of the previous and subsequent month (or months, for a spike that spanned two months). Each such estimate was manually reviewed, looking at a graph of historical usage to see if the spike was really an exceptional event, or is part of a pattern. Manual adjustments were made to these estimates when appropriate.

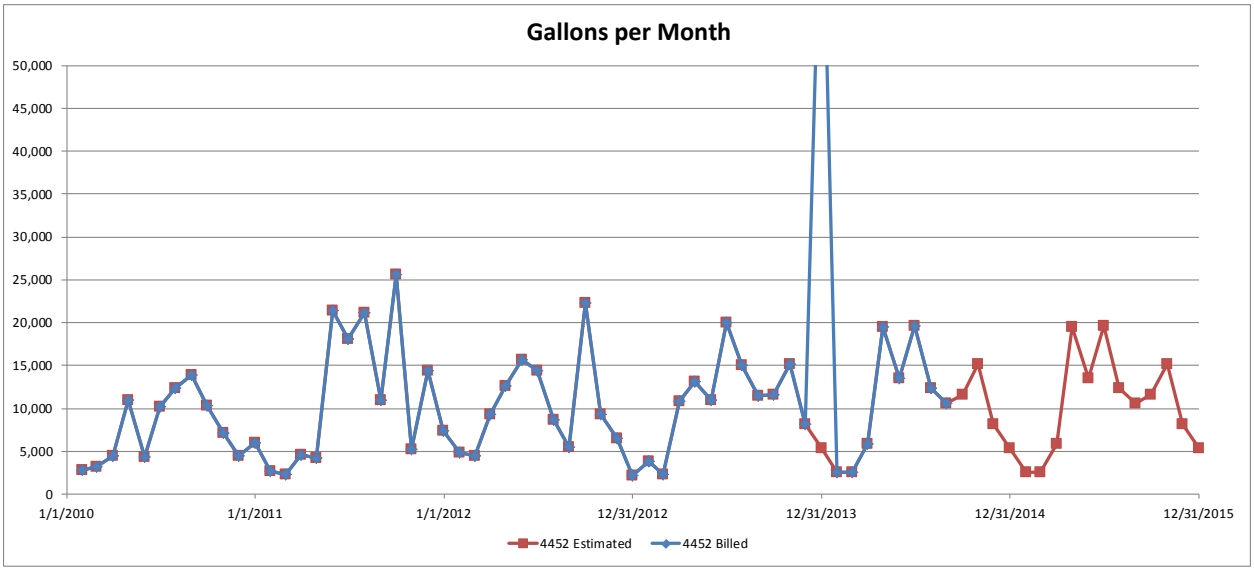
Next, several approaches were tried to extrapolate past usage to forecast usage for 2015, including simple average, median, and different weighted averages. None of these were very satisfactory because June (and some extent July) 2014 usage was significantly lower than each June in 2010 through 2013, as shown by the following chart.



Total Usage: 2010 through August 2014; Extrapolated to 2015

Since June is the peak month, how that month is estimated is significant. The different approaches are pretty equivalent for estimating other months. So the selected approach for the 2015 estimated usage is simply the same usage, by account, as the 2014 usage (and September through December 2013). This seems to be the more conservative approach, assuming that June 2015 will be comparable to June 2014, and not the higher historical average. The 2015 estimates will be high if there is a trend to even lower usage in 2015.

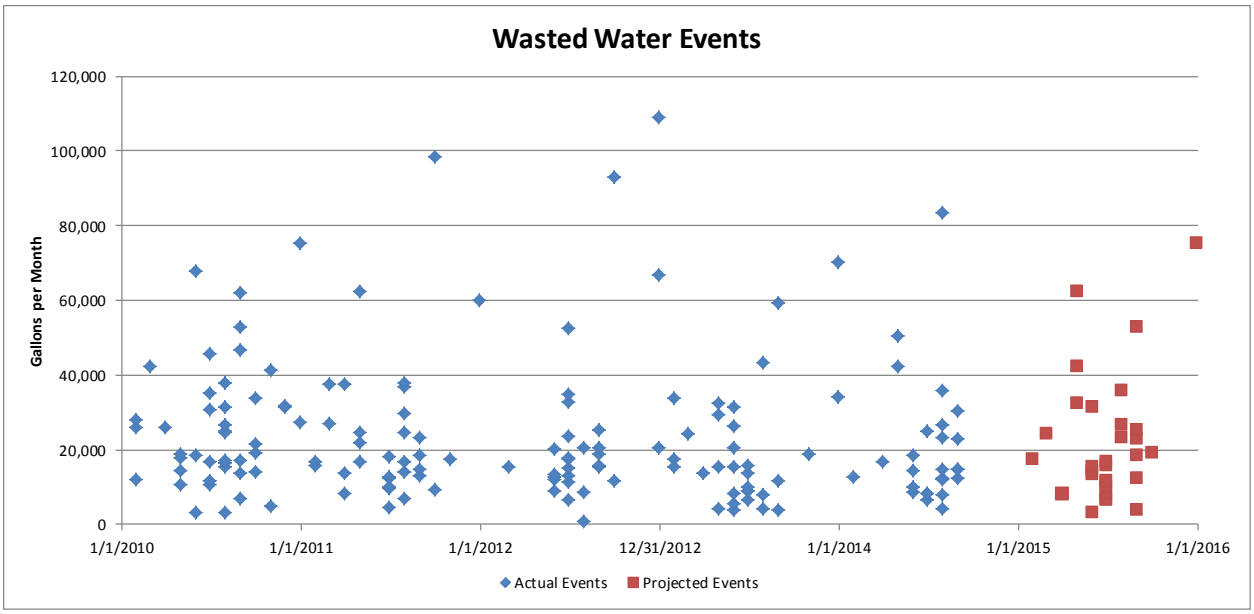
For example, the following chart shows the historical and estimated usage for one account.



The first step described above removed the spikes, such as shown in the chart above. Although these spikes in total represent only about 3% of metered water, because some of them are so large, they push individual bills into the top rate tiers, and so distort coop revenue, irrespective of leak policy. In the 2010 through 2014 data, there are about 30 such spike events (out of about 3,900 billing events) per year.

The difference between the peak value and the estimated value is called “wasted water” in this study, and a spike is called a “wasted water event”. Without knowing about what really happened, we cannot know if the water was truly wasted; most of these events look very similar to the chart above, and it seems a reasonable assumption that the resident did not intend this extraordinary use or get any beneficial use.

The magnitude of these wasted water events range from a few thousand gallons to tens of thousands of gallons. A sample of thirty projected events, having the same distribution, is included in the rate estimate spreadsheet, as shown in the chart below.



Actual and Projected Wasted Water Events

Note that about half of these events are below 20,000 gallons, so under the Interim (2014) Leak Policy, do not get any relief benefit. However, they do bring in additional revenue, and should be considered in setting rates.

References

La Mesa Water Coop

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  http://lamesawatercoop.org/misc_files/Pricing Committee for Full Board 081028.pdf
- LMWC Conversion to Billing on a Monthly Basis, November 2, 2010
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Guidance Papers

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- Setting Small Drinking Water System Rates for a Sustainable Future: One of the Simple Tools for Effective Performance (STEP) Guide Series, EPA Office of Water (4606M), EPA 816-R-05-006, January 2006
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  http://www.abcwua.org/Water_Rates.aspx
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- City of Santa Fe, Water Rates
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- Cedar Creek HOA, Bylaws, 1/19/2013
  http://www.cedarcreekplacitas.com/2012_Bylaw_Rewrite.pdf
- Desert / Sky Mountain Water Cooperative
  http://placitashoa.com/uploads/Jul_2013_updated_water_rates.pdf
- Anasazi Trails Water Coop (not on website)