MEMO TO THE BOARD OF DIRECTORS

Subject: Agenda Item No. 6.3 Development of Water Use Reduction Program

Attachment: Attachment A – Samples of Turf Replacement Design Options

Purpose of this Memo

The purpose of this memo is to present the proposed conceptual design of the Water Use Reduction Program to date, and continue to obtain feedback from the Board and the public on key components. Specific details of the outreach plan will be developed after the program is more defined.

This memo is presented in a fashion to obtain Board consensus of the program drivers, broader design elements and implementation timeframe. Staff will present slides at the Board Meeting to facilitate discussion, public input and decision-making on critical components.

Background

At the January 7, 2014 Board meeting, staff provided a conceptual model for a phased approach to a water use reduction program. At that meeting the Board did the following: (1) adopted the phased approach to the program (Phases I – III), (2) directed staff to incorporate water budgets into Phase I, and (3) asked staff to return on April 1, 2014 with a detailed Phase I program. On January 21, the Board requested that staff return at the February 21 and March 18 meetings with progress updates to allow for input during the development of the program.

On February 21 the Board indicated general agreement with the following aspects of the proposed water use reduction program:

- Wording of the project mission statement: Save a sufficient amount of water to slow down seawater intrusion and permanently secure long-term (e.g., 20 years) water savings as we continue searching for supplemental water. Design the program so it produces water savings in a cost effective manner that is fair and equitable to customers, focuses on reductions in outdoor potable water use, provides support to customers, can be logically expanded into subsequent phases, and leaves sufficient funding for a potential supplemental supply.
- Building a program based on three main elements: (1) water budgets, (2) actions/customer support packages, and (3) communication/customer relations.
- Setting a water savings target of approximately 500 acre-feet per year, sustained for at least 20 years.
- Focusing on reducing landscape water use.
- Offering indoor and outdoor enhanced rebate packages to support customers in their efforts to save water.
Expanding the WaterSmart program to all single-family residences (SFRs) and other customer categories if possible.

Staffing a position to enforce water waste prohibitions and revising the enforcement protocols.

On March 18 the Board provided support for the following staff proposals related to water budgets, customer support actions and communications.

**Water Budgets:**

- Establishing water budgets for single-family residential (SFR) first and then making water budgets for other customer categories that are proportional in regards to the level of stringency.
- Setting the penalty structure and amounts for SFR, multifamily residential (MFR), functional turf areas (associated with institutional accounts), and dedicated landscapes that exceed their water budget as follows:
  - Accounts using 101% - 110% more than their budget pay $1 per 100 gallons.
  - Accounts using 111% or greater than their budget pay $4 per 100 gallons.
- Applying Best Management Practices (BMPs) in lieu of traditional water budgets to commercial entities, institutions and vacation rentals.
- Setting the penalty structure and amounts for account types subject to BMPs as follows:
  - Accounts meeting both indoor & outdoor BMPs pay no penalty.
  - Accounts meeting one set of BMPs pay a penalty of 1.5 times the cost of water used during each billing period.
  - Accounts not meeting either set of BMPs pay 2.0 times the cost of water used each billing period.
- Establishing site-specific landscape water budgets (based on turf area and weather conditions) for institutional customers with functional turf areas.
- Setting a water budget for dedicated landscape accounts at 0.75 gallons per square foot per month.
- Implementing a soft launch of water budgets this spring (using WaterSmart) with enforcement to begin in the fall.
- Initiating the Proposition 218 process for implementing penalties for exceeding water budgets on top of the existing approved rates.

**Customer Support Actions:**

- Funding the expansion of WaterSmart to all SFRs by late spring, and adding other customer categories as it becomes possible.
- Funding to hire a water waste patrol staff for one year beginning in June.
- Authorizing staff to revise the Water Waste Ordinance and hold an initial public hearing in May with a final hearing/Ordinance adoption in June.
- Authorizing staff to develop a rebate for customers that wish to submeter individual dwelling units currently served by one meter.
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- Authorizing staff to proceed with developing Requests for Quotations from firms that can turn-key manage the enhanced rebate package program.
- Agreeing to preliminary staffing levels associated with the program as identified to date, with the realization that the program may ultimately change.

Communications:
- Approving the cost proposal from the outreach firm MIG to construct a focus group effort.
- Approving the cost proposal from MIG to develop an outreach plan as components of the water use reduction program are agreed upon.

The Board asked staff to bring back more information on April 1 regarding the following:
- Establishing a SFR water budget higher than 65 gallons per capita per day (gpcd). Specifically, the Board asked staff to compile data for water budget levels set at 70, 75 and 80 gpcd. Data requested includes estimated amount of water to be saved if all SFRs reduce use down to budget, the percentage of SFRs affected in both winter and summer months, and the range of impacts on customer’s bills.
- Setting the residential household occupancy default at one person instead of two as proposed by staff. The Board asked staff to scope out the cost of staffing time for setting the default at one versus two persons.
- Evaluating whether second homes should be treated any differently in regards to water budget levels or default occupancy values. (Note: Due to time constraints, this item is not addressed in this memo but can be discussed at the Board meeting).
- Evaluating water budgets for multifamily based on the total number of dwelling units within each multifamily development. For instance, developments with 1-10 dwelling units would conceptually have a higher per capita water budget than developments with more than 10 units.
- Expanding BMPs for commercial, institutional and vacation rental accounts to include behavioral water-saving practices or other practices that do not greatly increase cost to the customer or staff time.
- Estimating the potential savings from requiring a more stringent level of BMPs, primarily as related to toilets and urinals.
- Providing more details on the turf replacement rebate package as related to the approval and design process with examples of potential landscape design templates.
- Calculating the financial impact of Stage 2 or 3 Emergency Rates, on top of tiered rates and penalties, for residential customers exceeding water budgets or for businesses, institutions and vacation rentals not meeting BMPs.

Responses to the above Board requests are discussed below.
Single-Family Residential (SFR) Water Budgets

Water Budget Amount

A key objective of this memo is to provide additional information to facilitate the establishment of a water budget for SFR, taking into consideration the 500 acre-feet per year target water-savings goal, the estimated number of customers affected, the current average residential water use of 70-75 gallons per capita per day (gpcd), the range of financial impacts to customers, and the number of customers that will need assistance in the form of rebates and other incentives.

Staff previously presented data showing the percentage of SFRs impacted over the course of a year by water budgets of 53, 60, 65 and 70 gpcd and the estimated water savings that could result when all SFRs over budget reduce water use down to the various water budget levels. Concern was expressed at the last Board meeting that at a water budget level of 65 gpcd, more than one-half of all SFR accounts exceeded the water budget during the peak summer period. There was consensus that a higher water budget may be desirable and may result in a higher chance of success; thus the Board asked staff to expand the previous analysis to include water budget levels of 75 and 80 gpcd. This data are shown below in Table 1. (Note: The previous table presented on March 18 contained errors in the data reported in the ‘March-April’ period. These errors have been corrected in this version).

Table 1. Single-Family Residential Accounts Over Budget Levels

<table>
<thead>
<tr>
<th>2013 Reading Period - Date of End Read</th>
<th>Jan-Feb</th>
<th>Mar-Apr</th>
<th>May-Jun</th>
<th>Jul-Aug</th>
<th>Sep-Oct</th>
<th>Nov-Dec</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Reads</td>
<td>13,140</td>
<td>13,472</td>
<td>12,981</td>
<td>13,068</td>
<td>12,722</td>
<td>12,713</td>
<td></td>
</tr>
</tbody>
</table>

Percent Households Over Budget:

<table>
<thead>
<tr>
<th>Water Budget</th>
<th>Jan-Feb</th>
<th>Mar-Apr</th>
<th>May-Jun</th>
<th>Jul-Aug</th>
<th>Sep-Oct</th>
<th>Nov-Dec</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>53 GPCD</td>
<td>30%</td>
<td>43%</td>
<td>60%</td>
<td>65%</td>
<td>64%</td>
<td>52%</td>
<td></td>
</tr>
<tr>
<td>60 GPCD</td>
<td>23%</td>
<td>35%</td>
<td>52%</td>
<td>60%</td>
<td>57%</td>
<td>45%</td>
<td></td>
</tr>
<tr>
<td>65 GPCD</td>
<td>19%</td>
<td>31%</td>
<td>48%</td>
<td>54%</td>
<td>52%</td>
<td>39%</td>
<td></td>
</tr>
<tr>
<td>70 GPCD</td>
<td>16%</td>
<td>26%</td>
<td>44%</td>
<td>50%</td>
<td>47%</td>
<td>35%</td>
<td></td>
</tr>
<tr>
<td>75 GPCD</td>
<td>14%</td>
<td>22%</td>
<td>39%</td>
<td>46%</td>
<td>44%</td>
<td>31%</td>
<td></td>
</tr>
<tr>
<td>80 GPCD</td>
<td>11%</td>
<td>19%</td>
<td>35%</td>
<td>42%</td>
<td>40%</td>
<td>28%</td>
<td></td>
</tr>
</tbody>
</table>

Potential AF Savings from Over Budget Households:

<table>
<thead>
<tr>
<th>Water Budget</th>
<th>AF* Savings over 1 year</th>
<th>Target Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>53 GPCD</td>
<td>923</td>
<td>500 AF</td>
</tr>
<tr>
<td>60 GPCD</td>
<td>802</td>
<td>500 AF</td>
</tr>
<tr>
<td>65 GPCD</td>
<td>729</td>
<td>500 AF</td>
</tr>
<tr>
<td>70 GPCD</td>
<td>662</td>
<td>500 AF</td>
</tr>
<tr>
<td>75 GPCD</td>
<td>597</td>
<td>500 AF</td>
</tr>
<tr>
<td>80 GPCD</td>
<td>546</td>
<td>500 AF</td>
</tr>
</tbody>
</table>

*AF = acre-feet

Notes:
Staff estimates that actual realized savings will be about 60% of the potential savings shown in light brown. This table assumes that the number of residential occupants is equal to the number of bedrooms at each SFR.
As is expected, fewer SFR accounts are affected when the water budget is increased from 65 gpcd to 75 or 80 gpcd and the estimated amount of water to potentially be saved decreases. At 75 gpcd, the number of accounts exceeding the budget ranges from 14% during the winter months to 46% during the peak summer months, and the estimated amount of water to be saved (if all accounts meet their water budget) is 597 acre feet per year. If the water budget is set at 80 gpcd, the number of accounts exceeding the budget ranges from 11% up to 42% during the peak summer months for a total potential water savings of 546 acre-feet per year. This is based on the assumption that all customers lower their water use to meet their budgets. As presented below in the memo, staff estimates that at around 75 gpcd with the proposed penalties in place, roughly 60% of the estimated potential water savings will actually be realized.

New water budget level considerations that staff would like to bring to the Board’s attention include:

1. Providing SFR single-occupant households with an additional 10 gallons per day to account for the fact that households with more than one occupant are able to consolidate some water use for cooking, landscaping, etc.

2. Allowing SFR customers the option to obtain a site-specific landscape water budget of 0.75 gallons per square foot per month (similar to what has been proposed for dedicated landscape accounts) if they pay for and install a dedicated landscape meter. The costs to the customer would include a one-time meter & installation cost, as well as monthly service charges, consumption charges, and any applicable penalties for exceeding the landscape water budget. If a customer was to choose this option, reducing their household water budget by 10 gpcd should also be considered. This approach was suggested by a customer that desires to maintain a large landscape and does not feel the draft program design is equitable to SFR customers with large landscapes. The customer recognizes that the amount of turf will have to be greatly reduced or eliminated to meet a site-specific landscape budget, yet they still desire a low water use landscape that is large in size.

Financial Impact of 75 Gallons per Capita per Day (gpcd) Water Budget on SFR Bills

Table 2 below shows the financial impact of setting a SFR water budget at 75 gpcd on general categories of water users (e.g., average or meets budget, moderately high, high, etc.) using an average of 2 people per household. The area shaded gray shows the impact at the various water use levels under the current tiered rate structure and the proposed penalty structure (i.e. $1/100 gallons for use above budget and up to 110% of budget, and $4/100 gallons for use at and above 111% of budget). The tan-shaded area shows the impact at the various water use levels with Stage 2 Emergency Rates in addition to proposed penalties.
Table 2. Impact of Water Use Reduction Program on Single-Family Residential Bills

<table>
<thead>
<tr>
<th>Type of Water User</th>
<th>Monthly Use (Units)</th>
<th>Current Bill ($)</th>
<th>Current Bill with Penalties ($)</th>
<th>Increase over Current Bill (%)</th>
<th>Stage 2 Emergency Bill ($)</th>
<th>Increase over Current Bill (%)</th>
<th>Stage 2 Emergency Bill with Penalties ($)</th>
<th>Increase over Current Bill (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>4</td>
<td>$41.01</td>
<td>$0.00</td>
<td>0.00%</td>
<td>$44.43</td>
<td>8.34%</td>
<td>$44.43</td>
<td>8.34%</td>
</tr>
<tr>
<td>Average</td>
<td>6</td>
<td>$53.81</td>
<td>$0.00</td>
<td>0.00%</td>
<td>$59.69</td>
<td>10.93%</td>
<td>$59.69</td>
<td>10.93%</td>
</tr>
<tr>
<td>Moderately High</td>
<td>8</td>
<td>$69.96</td>
<td>$37.50</td>
<td>53.60%</td>
<td>$78.94</td>
<td>12.84%</td>
<td>$116.44</td>
<td>66.44%</td>
</tr>
<tr>
<td>High</td>
<td>14</td>
<td>$128.46</td>
<td>$217.50</td>
<td>69.31%</td>
<td>$148.66</td>
<td>15.72%</td>
<td>$366.16</td>
<td>185.04%</td>
</tr>
<tr>
<td>Very High</td>
<td>25</td>
<td>$283.21</td>
<td>$547.50</td>
<td>93.32%</td>
<td>$333.08</td>
<td>17.61%</td>
<td>$880.58</td>
<td>210.93%</td>
</tr>
<tr>
<td>Extremely High</td>
<td>50</td>
<td>$645.71</td>
<td>$1,297.50</td>
<td>100.94%</td>
<td>$765.08</td>
<td>18.49%</td>
<td>$2,062.58</td>
<td>219.43%</td>
</tr>
</tbody>
</table>

At low and average water use levels where the water budget is not exceeded, penalties are not triggered and there is no increase in cost over current bills unless Stage 2 Emergency Rates are implemented. With Stage 2 rates, low to average water users would see bills increase by about 8 - 11% per month (this assumes they do not reduce their consumption by any amount).

The bill impacts to an average two person household can be discerned from Table 2. Table 2 shows that a typical 2 person household uses about 6 units of water on average per month (i.e. 75 gpcd). Previous work from Dr. Sue Holt shows that an average customer’s usage typically increases by about 25% during the irrigation season, which equates to an increase of about 1.5 or 2 units per month (i.e. from 6 units to about 7.5 or 8 units per month).

Based on Table 2 and comparing bill increases from an average bill (6 units) to moderately high (8 units) bill, the average users bill would approximately double or increase by about $65 dollars per month during the height of the irrigation season – assuming the Stage 2 emergency rate increases are enacted and full penalties are applied. Based on a typical landscape irrigation season of 5 months, this would mean a total increased cost from Stage 2 rates and penalties of $325 over a year.

Two-person households using 100 gpcd (i.e. 8 units per month - moderately high water users) would see an approximate 54% increase over their current bill at current rates and proposed penalties, while their bill would increase by about 66% if Stage 2 rates were also implemented.

Two-person households using 175 gpcd (i.e. 14 units per month - high users) would pay a 169% increase over their current bill, or a 185% increase with Stage 2 rates. Very high and extremely high users with monthly household use ranging from about 312 gpcd – 623 gpcd (i.e. 25 – 50 units per month would be impacted substantially, paying 193% – 200% more than current rates, or 211% – 219% more than current rates if Stage 2 Emergency Rates are also implemented.
Multifamily Residential (MFR) Water Budgets

Water Budget Amount

In keeping with the concept of equality for all customer types, staff previously suggested that MFR customers (without dedicated irrigation meters) be provided the same per capita water budget as SFR customers (e.g., 65 gpcd), and that MFR complexes with dedicated irrigation meters receive 5 gpcd less (although this recommendation is increased to 10 gpcd as noted below). The Board questioned whether MFR customers use less water on average than SFR customers and thus should receive a lower water budget than SFR. Additionally, there was discussion about whether consumption decreases as the number of dwelling units within a MFR complex increases, and whether the District should establish different budgets for MFR complexes based on the number of units.

In response to these questions, Dr. Holt and staff evaluated 2013 consumption data for MFR and SFR. As in the SFR case, we assumed one occupant per bedroom – based on County Assessor’s Office data. These data were incomplete and sometimes inconsistent, but where errors were obvious the real estate webpages were checked to substitute for missing or inconsistent data. This provided for about 3,000 dwelling units with complete data. The average consumption in an average multi-family unit was 78 gpcd, very close to the single-family average of approximately 75 gpcd. If the Board does elect to set the MFR per capita level in the 75 gpcd range then staff recommends the complexes with dedicated irrigation accounts receive a budget of 10 gallons per person less.

Secondly, the question of declining water use as the number of MFR units increases was evaluated. MFR developments exist in a range of complex sizes, from triplexes to 101+ units per complex. There is some evidence from other water districts that per capita usage values decline from smaller to larger complexes. By contrast, in the large study done by Mayer, DeOreo, et al (National Multiple Family Submetering and Allocation and Billing Program) there is strong evidence that complex size has no effect on indoor per capita usage values across ten western urban districts. However, what is often noted (and the reason the District has lower tier thresholds for multifamily complexes vs. single-family) is that there are less people per dwelling unit in multifamily complexes than in single family homes.

Dr. Holt evaluated whether the findings in the study cited above are true for the District – i.e. does per capita water usage decrease as the number of dwelling units per MFR complex increase? As the data in Table 3 show, the average multi-family unit used 78 gpcd on an average day in 2013. These values ranged from a low of 50 gpcd in 21-40 unit complexes to a high of 86 gpcd in 5-10 unit complexes. However, there was not a consistent drop in per capita water usage from smaller to larger complexes.
Instead, the data show that triplexes and fourplexes use more water per occupant than complexes that have 5-10 units, and that complexes with 60-100 units use more water per occupant than some complexes with fewer units. For these reasons, we assume that per capita water usage within the District does not vary with complex size, that a single standard per capita water use value can be used for the MFR water budget target, and that the MFR water budget should be the same as the SFR water budget. We recommend erring on the side of caution and not being excessively restrictive. Time will tell if the MFR water budget is relatively easy to conform to or if an adjustment should be made after evidence accumulates.

If the Board does select a per capita value in the range of 75 gpcd, then staff recommends the rate be reduced to 65 gpcd if the complex has a separate irrigation meter. To put this in perspective, a 50 person complex allowing for 10 gpcd to be devoted to landscape irrigation provides sufficient water (0.75 gallons per square foot/month) to irrigate about a quarter acre of water-wise landscape. This seems reasonable for 50 person multifamily complex.

Financial Impact on MFR Bills

Table 4 below presents the impact of a 75 gpcd water budget on multifamily residential accounts at various water use levels. The data assumes an average multifamily complex size of 10 dwelling units and that 2 persons reside in each unit. Following the format shown above for SFR, the area shaded gray shows the impact at the various water use levels under the current rate tiered structure and the proposed penalty structure (i.e. $1/100 gallons for use above budget and up to 110% of budget, and $4/100 gallons for use at and above 111% of budget). The tan-shaded area shows the impact at the various water use levels with Stage 2 Emergency Rates layered over or in addition to current tiered rates and proposed penalties.
Table 4. Impact of Water Use Reduction Program on Multifamily Residential Bills

(Based on 75 gallons per person per day water budget, assumes average complex size of 10 dwelling units, 2 persons per dwelling unit, complex served by a 1" meter)

<table>
<thead>
<tr>
<th>Type of Water User</th>
<th>Monthly Use (Units)</th>
<th>Current Bill ($)</th>
<th>Penalties ($)</th>
<th>Current Bill with Penalties ($)</th>
<th>Increase over Current Bill (%)</th>
<th>Stage 2 Emergency Bill ($)</th>
<th>Increase over Current Bill (%)</th>
<th>Stage 2 Emergency Bill with Penalties ($)</th>
<th>Increase over Current Bill (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>40</td>
<td>$289.43</td>
<td>$0.00</td>
<td>$289.43</td>
<td>0.00%</td>
<td>$335.03</td>
<td>15.76%</td>
<td>$335.03</td>
<td>15.76%</td>
</tr>
<tr>
<td>Average (meets budget)</td>
<td>60</td>
<td>$432.93</td>
<td>$0.00</td>
<td>$432.93</td>
<td>0.00%</td>
<td>$506.13</td>
<td>16.91%</td>
<td>$506.13</td>
<td>16.91%</td>
</tr>
<tr>
<td>Moderately High</td>
<td>80</td>
<td>$1,108.93</td>
<td>$2,265.00</td>
<td>$3,373.93</td>
<td>204.25%</td>
<td>$1,312.13</td>
<td>18.32%</td>
<td>$3,577.13</td>
<td>223.57%</td>
</tr>
<tr>
<td>High</td>
<td>140</td>
<td>$2,109.93</td>
<td>$5,565.00</td>
<td>$7,674.93</td>
<td>263.75%</td>
<td>$2,505.63</td>
<td>18.75%</td>
<td>$8,070.63</td>
<td>282.51%</td>
</tr>
<tr>
<td>Very High</td>
<td>250</td>
<td>$2,109.93</td>
<td>$5,565.00</td>
<td>$7,674.93</td>
<td>263.75%</td>
<td>$2,505.63</td>
<td>18.75%</td>
<td>$8,070.63</td>
<td>282.51%</td>
</tr>
</tbody>
</table>

At low and average water use levels where the water budget is not exceeded, penalties are not triggered and there is no increase in cost over current bills unless Stage 2 Emergency Rates are implemented. With Stage 2 rates, low to average water users would see bills increase by about 16 - 17% per month (this assumes they do not reduce their consumption by any amount).

Multifamily complexes (with 10 dwelling units and 2 persons per dwelling unit = 20 persons total) using 100 gpcd (i.e. 80 units per month - moderately high water users) would see an approximate 79% increase over their current bill at current rates and proposed penalties, while their bill would increase by about 96% if Stage 2 rates were also implemented.

Multifamily complexes using 175 gpcd (i.e. 140 units per month - high users) would pay a 204% increase over their current bill, or a 223% increase with Stage 2 rates. Very high MFR users with monthly use of about 312 gpcd (i.e. 250 units per month would be impacted substantially, paying 264% more than current rates, or 283% more than current rates if Stage 2 Emergency Rates are also implemented.

Household/Dwelling Occupancy Default Value

On March 18, staff proposed that the SFR and MFR occupancy default be set at 2 persons. This was based on data showing that the average occupancy for SFR homes within the service area is 2.5 persons. The Board discussed whether to lower the default to 1 person and require every household to fill out an affidavit and requested that staff evaluate this issue. The goal is to find a balance between the staff resources required to process affidavits and the potential savings resulting from requiring every household to fill out an affidavit and provide proof of household size.

If an affidavit is required from every household, staff would process over 14,000 affidavits (SFR and MFR) in a very short timeframe at the start of the program. Based on data examined by Dr. Holt and a conservation analysis, if an affidavit from every property with more than one person is required, we will process about 10,200 affidavits. In addition, we would repeat this process annually to keep the information up to date. A new affidavit will also be required each time the tenants or property
inhabitants change. We currently process approximately 130 property change-outs per month.

Using Dr. Holt’s data, we have determined that out of 12,721 homes, about 2,530 have a single bedroom. We can’t assume that 100% of those are single occupancy, but using a conservative number of 40% being occupied by two or more people, we would have approximately 1,500 homes being occupied by a single resident. This is approximately 12% of the homes in the District. If we include two bedroom households the number jumps to over 5,000 homes (again assuming conservatively that at least 40% of two bedroom homes are occupied by three or more people).

Approximately 40% of the District is made up of these households. If we set the default household size at two instead of requiring an affidavit for each property, we will likely be processing about 7,500 affidavits instead of 14,000 (each residence required to file) or 10,000 (default set at one person). Dr. Holt provided the graph below on the make-up of District customers.

While it may be possible to hire a consultant to process the paper submission portion of the affidavits, staff does not recommend it. Many customers will likely come to the District office where their questions can be answered in person. This means that we will have contact with many of those accounts regardless of whether we have an outside contractor collect and compile the paperwork. The information must then be input into our billing system. This work cannot be done by someone who is not an employee of the District for security reasons. This means that a District employee will touch each account submitting an affidavit to some degree or another.

To determine how much water we may miss out on saving if the default is set to two people per household, Dr. Holt calculated the percentage of single occupancy households that would be over budget. For a water budget of 75 gpcd, assuming a 60% success rate for the program, there is potential to save an additional 21 acre feet. While we feel the affidavits for a two person default can be absorbed in the current program staff budget, an additional FTE would be required to handle twice the number of affidavits required for a one person default, the cost over and above the previously detailed program costs for these 21 acre feet would be approximately $3,200 per acre foot, which is approximately three times the cost per acre-foot of the current program being proposed.
The impacts of the Water Use Reduction Program on businesses, etc. are discussed in more detail in the section titled “Evaluation of Fairness Across Use Sectors”.

**Specific Best Management Practices**

There was general Board agreement on March 18 that requiring BMPs (with penalties for noncompliance) is preferable to traditional water budgets for these types of customers, and that the proposed penalty amounts shown below were acceptable:

- Meet only one set of BMPs (i.e. indoor OR outdoor), pay 1.5x the cost of water used during the month; or

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### Table 5. Impact of Water Use Reduction Program on Businesses, Institutions & Vacation Rentals Under Current Rate Structure

<table>
<thead>
<tr>
<th>Type of Water User</th>
<th>Monthly Use (Units)</th>
<th>Current Bill ($)</th>
<th>Penalties ($) (meets 1 BMP)</th>
<th>Increase over Current Bill (%)</th>
<th>Penalties ($) (meets neither BMP)</th>
<th>Current Bill with Penalties ($)</th>
<th>Increase over Current Bill (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>10</td>
<td>$117.13</td>
<td>$97.05</td>
<td>82.86%</td>
<td>$129.40</td>
<td>$246.53</td>
<td>110.48%</td>
</tr>
<tr>
<td>Average</td>
<td>25</td>
<td>$214.18</td>
<td>$242.63</td>
<td>113.28%</td>
<td>$323.50</td>
<td>$537.68</td>
<td>151.04%</td>
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<tr>
<td>Moderately High</td>
<td>32</td>
<td>$259.47</td>
<td>$310.56</td>
<td>119.69%</td>
<td>$414.08</td>
<td>$673.55</td>
<td>159.59%</td>
</tr>
<tr>
<td>High</td>
<td>50</td>
<td>$375.93</td>
<td>$485.25</td>
<td>129.08%</td>
<td>$647.00</td>
<td>$1,022.93</td>
<td>172.11%</td>
</tr>
<tr>
<td>Very High</td>
<td>100</td>
<td>$699.43</td>
<td>$970.50</td>
<td>138.76%</td>
<td>$1,294.00</td>
<td>$1,993.43</td>
<td>185.01%</td>
</tr>
</tbody>
</table>

Based on meeting only one set of Best Management Practices (BMPs) = 1.5x cost of water used, or on meeting neither set of BMPs = 2.0x cost of water used, assumes 1” meter)

### Table 6. Impact of Water Use Reduction Program on Businesses, Institutions & Vacation Rentals Under Stage 2 Emergency Rate Structure

<table>
<thead>
<tr>
<th>Type of Water User</th>
<th>Monthly Use (Units)</th>
<th>Current Bill ($)</th>
<th>Stage 2 Emergency Bill ($)</th>
<th>Increase over Current Bill (%)</th>
<th>Penalties ($) (meets 1 BMP)</th>
<th>Increase over Current Bill (%)</th>
<th>Penalties ($) (meets neither BMP)</th>
<th>Stage 2 Bill with Penalties ($)</th>
<th>Increase over Current Bill (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>10</td>
<td>$117.13</td>
<td>$129.53</td>
<td>10.59%</td>
<td>$115.65</td>
<td>109.32%</td>
<td>$154.20</td>
<td>$245.18</td>
<td>142.24%</td>
</tr>
<tr>
<td>Average</td>
<td>25</td>
<td>$214.18</td>
<td>$245.18</td>
<td>14.47%</td>
<td>$289.13</td>
<td>149.47%</td>
<td>$385.50</td>
<td>$534.31</td>
<td>194.46%</td>
</tr>
<tr>
<td>Moderately High</td>
<td>32</td>
<td>$259.47</td>
<td>$299.15</td>
<td>15.29%</td>
<td>$370.08</td>
<td>157.92%</td>
<td>$493.44</td>
<td>$669.23</td>
<td>205.46%</td>
</tr>
<tr>
<td>High</td>
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<td>$375.93</td>
<td>$437.93</td>
<td>16.49%</td>
<td>$578.25</td>
<td>170.31%</td>
<td>$771.00</td>
<td>$1,016.18</td>
<td>221.58%</td>
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<tr>
<td>Very High</td>
<td>100</td>
<td>$699.43</td>
<td>$823.43</td>
<td>17.73%</td>
<td>$1,156.50</td>
<td>183.08%</td>
<td>$1,542.00</td>
<td>$2,365.43</td>
<td>238.19%</td>
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</tbody>
</table>

Based on meeting only one set of Best Management Practices (BMPs) = 1.5x cost of water used, or on meeting neither set of BMPs = 2.0x cost of water used, assumes 1” meter)
• Meet neither set of BMPs (i.e. indoor AND outdoor), pay 2.0x the cost of water used during the month.
No penalties would be incurred if both the indoor and outdoor BMPs are met.

However, the Board was unsettled on the content of the BMPs and whether they parallel the level of stringency required for residential customers. Staff previously proposed the following proposed BMPs:

• **Indoor BMPs:**
  o 1.6 or less gallon per flush (gpf) toilets and 1.0 gpf or less urinals (Note: If existing toilets and urinals exceed 1.6 and 1.0 gpf respectively, the customer will be required to install 1.28 gpf toilets and 0.5 gpf urinals to receive credit for meeting the BMPs).
  o 1.5 gallon per minute (gpm) or less shower heads.
  o 0.5 gpm or less bathroom faucets or aerators (or 1.5 gpm for commercial entities such as hotels, care homes, etc. that have residential-like uses).
  o 2.0 gpm or less faucets or aerators for non-restroom uses (e.g. janitorial sinks, kitchen sinks, etc.)
  o Post signage or stickers in restrooms asking employees and customers (or students) to save water and promptly report leaks.
  o Specific BMPs for certain business categories – such as requiring restaurants to only serve water upon request and requiring hotels to post signage in rooms asking customers to forego frequent towel and linen washing, etc.

• **Outdoor BMPs (for entities without dedicated landscape meters):**
  o No overhead spray irrigation and no turf grass unless it is irrigated by subsurface means. (Staff recommends a variance for small functional turf areas that serve events such as weddings, etc.).

There was concern that the indoor fixture retrofit BMPs proposed by staff were not stringent enough in regards to toilets and urinals and the Board asked staff to evaluate the potential water savings and cost to the customer from requiring 1.28 gpf toilets (as opposed to 1.6 gpf) and 0.5 gpf (as opposed to 1.0 gpf) urinals as BMPs.

Based on several assumptions about overall toilet use within businesses and institutions (e.g. 30% of indoor water use is associated with toilets and retrofitting a 1.6 gpf toilet with a 1.28 gpf toilet results in a 20% reduction), staff estimates a 5% water savings that equates to about 29 acre-feet of water. However, the costs of replacing commercial and institutional toilets are higher on average than replacing residential toilets. Staff estimates an average cost of about $800 per toilet for parts and installation. Assuming that about one-half or 2,000 of the estimated 4,000 commercial and institutional toilets in the service area have a flush volume of 1.6, the estimated cost per acre-foot of water saved is about $55,000.
Based on the high cost per acre-foot of water saved and the goal of making water use requirements equitable across different sectors, staff proposes keeping the toilet and urinal retrofit BMPs at 1.6 gpf and 1.0 gpf respectively.

Additionally, the Board expressed concern that the proposed BMPs did not go far enough to address behavioral changes that could result in increased awareness and water savings. Staff was asked to bring back some ideas of additional BMPs that would not significantly increase cost for customers or greatly affect staff time. Thus, staff suggests the following **additions** to the BMPs listed above:

- **For all customer types:**
  - Check automatic sensors on faucets, toilets and urinals (if applicable) monthly to ensure they are operating properly and avoid unnecessary water use.
  - Clean floors in a manner minimizing water use to the greatest degree possible (e.g., using a mop & bucket or water broom versus using a hose).
  - Check irrigation systems monthly to ensure irrigation controllers are properly set (or shut off during the rainy season), equipment is functioning properly, and there is no run-off or overspray.
  - Install automatic shut-off nozzles on all hoses.

In addition to the above BMP for all customer types, it is also suggested that the following types of customers be subject to the BMPs shown below:

- **For hospitality customers (e.g., hotels, motels, vacation rentals):**
  - Post signage in bathrooms asking customers to forego daily/frequent towel and linen washing, etc.

- **For restaurant customers:**
  - Serve water only upon request and post signage indicating this policy.
  - Educate employees on proper dishwasher prep and loading techniques to reduce the overall water used.
  - Replace equipment (e.g. dipper wells, wok stoves, etc.) or discontinue practices (e.g., thawing frozen food with running water) that result in the continuous use/discharge of water.

- **For grocery store customers:**
  - Limit sprays to fresh produce to the minimum amounts necessary.
  - Replace equipment (e.g., dipper wells, etc.) or discontinue practices (e.g., thawing frozen food with running water) that result in the continuous use/discharge of water.

Staff is not aware of any other types of customers that warrant specialized BMPs during this first phase of the Water Use Reduction Program; however, if we come across any in the future, BMPs can be added.
Evaluation of Fairness Across Use Sectors

A review of Tables 2, 4, 5 and 6 provides an idea of the fairness of the proposed penalties across the various use sectors (i.e. single-family, multifamily and commercial/institutional). In the big picture, based on the proposed penalty structures, a residential water budget level in the 75 gpcd range, and the suggested BMPs requirements for businesses, institutions and vacation rentals, there appears to be a relative amount of fairness. The percentage increase over current bills (see last column in Tables 2 and 4) for multifamily is a little greater than for single family due to the tier rated breakpoint differences between the two use sectors. If the Board desired to bring the two sectors even closer to alignment in regards to the percentage increase over current bills, the penalty of $4 per 100 gallons (for use exceeding the budget by more than 10%) could be reduced to $3 per 100 gallons for multifamily. Either way the Board chooses, the data could be reevaluated after one year and adjustments made to optimize fairness.

Tables 5 and 6 for businesses, institutions and vacation rentals show the higher-end penalties equate very closely to the higher-end penalties for SFR and MFR sectors. At the low end, the penalties for commercial are higher than for residential customers, but this is partially offset by the fact that meeting the indoor commercial BMPs are not too stringent. Low commercial water users would have a lower increase than higher users, but the penalties are proportional to use. Thus, staff believes this penalty structure for commercial meets the fairness standard desired in the program mission statement.

Estimated Achieved Water Savings

Since it is anticipated that we will not achieve 100% compliance with water budgets or BMPs, the program is designed to overshoot the target of 500 acre-feet per year savings by an appropriate amount to obtain the goal. Staff estimates that at around 75 gpcd, approximately 60% (360 AF) of the estimated total savings (597 AF) within the SFR sector would be realized. This estimate of realized SFR savings is based on price elasticity and other components of the water use reduction program to encourage water savings.

Based on total consumption for all sectors being approximately 3,760 acre-feet per year, and knowing the amounts consumed by each use sector (i.e. SFR at 63%, multifamily at 16%, business at 13%, dedicated landscape meters at 4% and government at 2%), likely realized water savings was estimated. Based on a program design of 75 gpcd for SFR and carrying that budget level through the other sectors to try and achieve a parallel level of fairness and effort, the total potential water savings is estimated at approximately 900 acre-feet per year and the estimated realized savings is about at the goal level of 500 acre-feet per year.
Enhanced Rebate Packages
On March 18, the Board provided concurrence for staff to develop bid requests and hire a contractor to manage the enhanced rebate package program for the water conservation measures listed below:

- Ultra-high efficiency toilets, urinals, showerheads & faucet aerators.
- Turf/overhead spray replacement with water-wise plants and drip irrigation and/or synthetic turf.
- Graywater laundry to landscape systems.
- Rainwater harvesting for landscape irrigation.

Additionally, staff proposed (and the Board approved) developing a rebate for submetering to support customers living in master-metered dwellings. Note that replacement of clothes washing machines will be promoted via the regular conservation rebate program.

The Board also asked staff to come back with more details about the turf replacement rebate package, including the approval and design process and a sample of different landscape designs that customers could choose from. Staff envisions that the approval process would be similar to the current turf rebate approval process which includes a pre-inspection to determine if the qualification requirements are met (e.g., the existing turf has been maintained and irrigated up to this point in time with an in-ground sprinkler system, etc.) and to measure the turf area for the purposes of calculating the estimated rebate amount. The rebate package program will differ in that the customer will be put directly in touch with pre-qualified installers (for both drip irrigation/water-wise plants and synthetic turf) that have provided the district with standard pricing. The customer will work with the selected installer to choose from standard design templates that fall within the range of pricing agreed upon by the installer. Staff envisions working with the rebate package program contractor and pre-qualified installers to develop the standard design templates. As requested, photos of some potential design templates for turf replacements are shown in Attachment A.

At the last Board meeting, staff sought direction on the general amount of funding (i.e. low, medium and high) to be allocated to the enhanced rebate package program and the price point (or District co-pay amount) for the proposed rebate packages. As there are a number of issues that are still under Board consideration which will affect the direction of the enhanced rebate package program, this item was not addressed in detail. Based on the data in Table 1 above showing the number of SFR customers impacted by various water budget levels, increasing the water budget level from 65 gpcd to 75 gpcd reduces the number of customers that may need assistance by about 8% (or about 1,000 fewer SFR accounts). If this same logic is applied to MFR, about 600 fewer services would need assistance. Thus, the total number of services needing assistance may drop from the initial estimate of 9,000 to about 7,000 if the water budget levels are increased from 65 gpcd to 75 gpcd.
At a rebate program funding level of 3.5 million, all 7,000 services could potentially claim rebates totaling $500 each. At a funding level of 5 million, all 7,000 services could potentially claim rebates totaling about $700 each service. As discussed in greater detail below, staff has asked Mr. Alex Handlers of Bartle Wells Associates (the District’s financial consultant) to run a financial analysis using an input value of $5 million for two years ($2.5 million year 1 and $2.5 million year 2), followed by $250,000 per year for years 3 through 10 for the District’s rebate program.

Projected Staffing
At the March 18 meeting, the following staffing levels were projected to implement and maintain the program:

- Four full time staff (for at least five years and possibly longer);
- One person at 40 hours/week for one year to perform water waste patrol;
- One person at 40 hours/week for one year to perform customer service;
- One person at one-third time for one year to serve as a hearing officer; and
- One person at 40 hours/week for one-half year to perform customer service field duties.

As a rule of thumb, each full time employee’s annual salary and benefits are estimated to be $100,000. Other associated costs would include vehicles for two of the personnel, office space, and technology supplies.

If the Board elects to set the default residential household occupancy level at 1 person (versus 2), an additional full time staff person would be needed. This would cost an additional $100,000 per year and is not included in the staff projections discussed above and the costs presented below.

Projected Cost
Water Use Reduction Program costs are estimated to include:

- Operations: $3.5 million over the first 2 years followed by $1 million per year for ongoing staffing and operations for roughly 5-10 years.
- Rebates: $5 million for rebates spread over the first 2 years, with a smaller ongoing rebate program continuing in subsequent years.

This rebate amount is just a place-holder for rate projection purposes. The staff suggested range for the rebates is from $1 million to about $7 million, depending on the Board’s desire to enhance the offerings to the customers and balance financial impacts.

Financing
Financial projections indicate the proposed Water Use Reduction Program can be funded on a pay-as-you-go basis assuming the District implements a 15% Emergency Stage 2 Rate Adjustment effective starting the upcoming fiscal year. A portion of program costs may be eligible for debt financing. However, the District can instead use debt financing to fund a larger portion of the District’s Capital Improvement
Program, while using ongoing rate revenues to fund the Water Reduction Program, thereby negating the need for any near-term debt financing for the program.

Based on a preliminary rate analysis by Bartle Wells, an additional $100 million water supply project looks possible. Such a project would require some significant rate increases and would bring the District debt coverage uncomfortably close to the bond covenant minimum debt coverage of 1.2. Also paired with a loss in what is considered “affordable” rates (the average users annual water expense at current emergency rates with penalties is 4.6% of the Santa Cruz County median household income, no more than 2% is considered affordable for these purposes) will likely result in having our current AA/Stable rating lowered. This would mean higher cost for future debt.

POSSIBLE BOARD ACTION

1. By MOTION, make decisions on the following items pertaining to water budgets or provide staff with direction on conducting further evaluation:

   Single-Family Residential (SFR) Budgets
   a) The desired SFR per capita water budget level.
   b) The default occupancy per SFR household. Staff recommends the default be set at two persons per household to reduce additional administrative staffing needs and costs.
   c) If the Board sets the SFR default occupancy level at one person, then recognize this will add an additional staff person to the presented and previously conceptually approved staffing levels.
   d) The idea of providing SFR single-occupant households with an additional 10 gallons per day to account for the fact that households with more than one occupant are able to consolidate some water use for cooking, landscaping, etc.
   e) The concept of allowing SFR customers the option of purchasing and installing a dedicated landscape meter for the purposes of receiving a landscape water budget of 0.75 gallons per square foot of landscape area per month. Staff proposes that customers electing this option receive 10 gallons per capita per day (gpcd) less than the established SFR water budget level. The same penalties that apply for exceeding the household budget would also apply to the dedicated landscape budget.

   Multifamily Residential (MFR) Budgets
   f) The desired MFR per capita water budget level for complexes without a dedicated irrigation meter. Staff recommends that the MFR per capita budget be the same as SFR residential and that all MFR complexes receive the same budget regardless of the number of dwelling units.
   g) The desired MFR per capita water budget level for complexes with a dedicated irrigation meter. Staff recommends that MFR complexes with a
dedicated irrigation meter receive 10 gpcd less than the established water budget level for MFR complexes without a dedicated irrigation meter.

h) The default occupancy per MFR dwelling unit. Staff originally recommended the default be set at two persons per dwelling for MFR. However, due to occupancy generally being less per MFR dwelling unit than SFR, staff suggests that the Board consider setting the default at one person for MFR. There is more benefit for amount of effort in taking this approach in MFR versus SFR.

i) The idea to lower the penalty of $4/100 gallons (for use exceeding the budget by more than 10%) to $3/100 gallons to make the impact of penalties for MFR more equitable to the impact of penalties on SFR.

2. By MOTION, make decisions on the following items pertaining to Best Management Practices (BMPs) for businesses, institutions and vacation rentals, or provide staff with direction on conducting further evaluation:

a) The proposed indoor BMPs for toilets and urinals. Staff proposes setting the toilet efficiency level at 1.6 gallons per flush and the urinal efficiency level at 1.0 gallon per flush to maintain the same relative level of stringency across customer sectors.

b) The proposed additions to the BMPs that focus on water-saving behavioral modifications (as opposed to fixture retrofits).

3. By MOTION, provide feedback on general funding levels to be allocated to the rebate package program and input on rebate amounts.

4. By MOTION, approve the implementation of Stage 2 emergency rates to offset the loss of revenue associated with the projected water savings and resulting reduction in water sales – starting July 1, 2014.

By _____________________________
Shelley Flock
Staff Analyst

By ________________________________
Ron Duncan
Conservation and Customer Service Field Manager
Landscape templates for turf removal

Here are some examples of landscape templates to replace turf as shown on Long Beach Water Department’s “Lawn-to-Garden” website.

Include photos of before and after turf removal to inspire landscape redesign.
I don’t think the scheme we have so far is a true system of water budgets – it is a rigid system of fines, like speeding tickets. There is a fine for exceeding the quota, but no reward for being under quota. Stick with no carrot. Shouldn’t we reward people for using less water? A simple system of credits, used to reduce future penalties only, can make a true budget system. This is not a different idea than staff’s, but an improvement to it.

With a real money budget, you can be under budget one month and over budget another month, but at the end of the year you still have made your annual budget. People will see this as more fair than a penalty that seems to be saying “no outdoor watering at all”. We have all agreed to discourage people from outdoor water use, but our program will be more acceptable if we allow people some flexibility in when and how they use water within their budget.

We would start each year by comparing usage against the water budget on every month’s bill. When they are under budget, they get a credit that month towards any future penalty that might be due later in the same year. Credits could accumulate but are reduced by penalties. One gallon under budget counts 1:1 towards the penalty for one gallon over budget. Any time the penalty is higher than any accumulated credits, the net penalty is immediately due and payable on the current bill. At the end of the year, there is a reset and remaining credit is zeroed. Credits may only be used to offset penalties and no other charges. The system is very like a rebate coupon arriving in the mail. Its only value is to reduce the value of some specific thing purchased in the future (the penalty), if and when purchased. Like a rebate coupon, it has an expiration date, the end of the year. There is no interaction with the existing water rates – it deals only with the fines, and a fair way to reduce or eliminate them. The idea works best when the “water year” begins with the rainy season when you can accumulate credits towards the dry season, perhaps October 1, when a fiscal quarter begins.

The monthly rather than annual payment of any net penalty is Bruce Daniels’ addition to the idea. It improves on an annual “true-up” payment of penalties in three ways:

1. An immediate penalty may be more compelling than one that carries forward.
2. The bill doesn’t grow to become unmanageable at the end of the year.
3. There should be less problems with bad debt over the system where there are only monthly penalties but no way to prepare to avoid them with added conservation, since there will never be more than one penalty due.

I contend that customers watching their monthly credits (and penalties) may be better motivated to conserve than with fines only, as there is both a carrot (credit) and a stick (penalty.) We give credits for a job well done (they could be shown for example with a heightening green thermometer), as well as
penalties for failing to conserve (turning eventually into a red thermometer). Anticipating the need for some summer watering, they can bank credits to avoid penalties. Psychological research has clearly shown that people prefer systems where they retain some degree of control.

Because people will have more flexibility in how to use their annualized budget, I think we can set the water budget level lower without people incurring penalties. We would want to set it somewhat lower, since it allows temporary overages that flat penalties don't. I think this will help with customer satisfaction, and as a result, compliance.

I know this presents a need for changes to the billing system, and that software development can be unpredictable, but I would think penalties also require changes. I don't see why, like penalties alone, it cannot be fully automated. The scheme is very like a statement that totals up past debits and credits to calculate a net amount due.

As far as legal justifications for the credits go, I think a credit for using less water may be on a par with a penalty for using more water. They both apply selectively to different people but have a legitimate, nondiscriminatory public policy purpose in reducing total water consumption. Everyone is subject to the same rules.

Some customers will accept the need for water budgets because of our public education program, but we can't forget that most Americans have had a lifetime of unlimited and almost free water. Taking that away may produce resistance in significant proportion of our customers, and that resistance will tend to take the form of protest of any perceived inequities in how water budgets work. I expect that a flat monthly budget with no allowance for summer watering, and no flexibility, would be perceived by many as unjust. There is still a signal about reducing outdoor use because the penalties will tend to occur when the sprinklers turn on each year. But with a way to avoid penalties, the system will be seen as fairer. I think if we don't do this, we will be repeatedly asked for it – it's so obvious. Would you rather have more dissatisfied customers, or added software development?

I'm sorry to introduce this idea so late in the planning process. Please give it your consideration. Michele is researching some of the billing, legal and accounting ramifications.