

DATE: July 17, 2015
TO: Water Supply Advisory Committee
FROM: Rosemary Menard, Santa Cruz Water Director
SUBJECT: Summary of WSAC Work on Demand Management Options and Options for Integrating Demand Management into potential Water Supply Advisory Committee Recommendations and Agreement

Throughout the Water Supply Advisory Committee's (WSAC) process there has been a strong and consistent interest in and support for integrating additional water demand management activities into the Committee's recommendations. The purpose of this memo is to summarize the WSAC's work to date on demand management and to suggest options for the WSAC's consideration about how to integrate demand management recommendations into any potential Committee agreement.

Attached to this summary are a series of more detailed materials developed through the Committee's process. Each attachment is referenced in the discussion that follows where it relates to the material being presented.

Summary of WSAC Work with and on Demand Management Issues

During the Committee's Reconnaissance Phase, the WSAC received several presentations about customer water use trends. In the spring and summer of 2014, in parallel processes attended by several WSAC members the Santa Cruz Water Commission held public workshops to delve into options for additional demand management measures developed as part of the Long Term Conservation Master Plan work. In addition the Santa Cruz Water Department staff and Maddaus Water Management provided several model demonstration sessions for those interested in understanding how costs and savings for demand management options are estimated.

In October, 2014, the WSAC held a community based event "Our Water, Our Future, the Santa Cruz Water Supply Convention," to elicit ideas about how to improve the reliability of the Santa Cruz water system. Water conservation and demand management strategies were well represented in the 50+ ideas that were presented at this event. The WSAC technical team used inputs received from the Water Supply Convention to create a set of Consolidated Alternatives for further exploration by the WSAC. Consolidated Alternatives 1 through 5 were focused on various demand management strategies. The Stratus memo is provided as Attachment 1 to this summary.

Beginning in early December 2014, the Water Department sponsored and facilitated a set of open to the public working sessions to provide the community with an opportunity to learn more about the details of the modeling and forecasting tools used in water supply planning. These "Modeling and Forecasting Working Group" covered hydrology, groundwater management, fisheries issues, demand forecasting, supply reliability modeling, modeling of demand management programs, and short term/seasonal water management planning. City staff and consultants involved in developing and using data and modeling and forecasting tools for use in water supply planning and management tools presented detailed information about data inputs and assumptions used in modeling and forecasting tools, demonstrated these tools, and answered questions from participants about them.

Several of the Water Convention Alternatives focused on the effects of the price of water on user demand. This concept, called “price elasticity of demand” had not been incorporated into the City’s previous 2005 or 2010 demand forecasting for future water supply. However, data from the City’s revenue forecasts for the 2004 to 2011 period, when rates were scheduled to increase by more than 120%, compared to actual revenue generated during that period indicated that both the overall price of water, and the structure of the rates used to generate the water revenues are important parameters in predicting future consumption.

The City’s demand forecasting consultant, David Mitchell of M Cubed, presented compelling information in his Modeling and Forecasting Working Group presentation on the sensitivity of consumption to changes in price from work done in several Bay Area water utilities. The [Demand Forecasting Presentation](#) is available for review on the City’s website. In the interim demand forecast created for the WSAC process and presented at the February 2015 WSAC meeting indicated that price is expected to be a continuing motivator of behavior change for Santa Cruz water service customers. Additional work on water rate structures, with a focus on structures that incentivize conservation, is underway and planned for implementation in the summer of 2016.

Following the Demand Forecasting presentation, the Modeling and Forecasting Working Group held a session on the Demand Management Decision Support System (DSS) model. It, too, is available on the City’s website: [DSS Model Presentation](#)

Following the DSS Modeling and Forecasting Working Group session, two Committee members worked with City staff and members of the consultant technical team to delve more deeply into the DSS model. Among the factors motivating these Committee members to undertake this effort was a concern about the transparency of the DSS model (or real or perceived lack thereof), and questions about a variety of assumptions, for example, how elements such as administrative costs allocated to each demand management program as part of its assumptions might (or might not) be affecting the overall cost effectiveness calculation of some of the proposed programs.

One of the issues by the two WSAC reviewers raised during the DSS related to the way administrative costs were generated for the individual measures. The concern was that the approach being used in the DSS model might result in higher administrative costs than would really be needed being assigned to the measures being reviewed. If the administrative costs were, in fact, too high, they could negatively influence the cost/benefit calculations that the DSS model produced for each measure. City staff agreed that a more effective approach would be to identify and apply an overall administrative cost to whatever package of measures (or programs) is ultimately adopted and implemented. This approach is likely to produce a more realistic estimate of the administrative cost of developing and implementing demand management programs.

Stratus Consulting developed a memo summarizing the work it did with WSAC members and City staff to sort through DSS model issues. This draft memo is provided as Attachment 2 and is still being reviewed by WSAC members who were involved in the DSS model review effort.

As the WSAC process has moved ahead, it has become very clear to everyone that the system’s vulnerability is focused in the peak season. During the March 2015 WSAC meeting, the Committee decided to form an informal working group of Committee members to look at how demand management activities might be best focused to reduce peak season demand. Working through the

Spring and early Summer of 2015, this group recommendation that an enrichment session focusing on the City's past, present and future demand management actions and options would be very useful in setting the stage for considering the future of demand management in Santa Cruz. This session was held on May 21, 2015. Attachment 3 is the presentation provided during that meeting.

The presentation in Attachment 3 includes several parts:

- the results of the Baseline Conservation Survey,
- a focus on the City's ongoing water budget program for large irrigators, and
- an overview of the work of the Peak Season Demand Management working group ideas.

Following the enrichment session, the Working Group developed a report on their analysis and a table of the estimated range of savings that could result from the measures and strategies they identified. Attachment 4 is their report and Attachment 5 is the summary spreadsheet of the Working Group's estimate of savings from the measures and strategies they identified.

Finally City staff conducted a review of the measures identified by the Working Group and developed a brief memo summarizing its review, which is provided as Attachment 6. In summary, the City's review concluded that, aside from a very few specific ideas, the recommendations of the working group are well-aligned with the set of measures and overall direction currently being contemplated as part of the Water Conservation Master Plan. That project is temporarily on hold until a contract amendment and additional funding is approved to complete the program design and analytical work. Some of the suggestions will require modifying existing cost and savings estimates, or making new estimates of cost so they can be evaluated from a benefit/cost perspective and to understand the unit cost of savings involved. The working group made its own separate estimates of water savings, but staff cautions that because of overlap with estimates in the DSS model, it's not clear at this point how much additional water savings could be obtained by the 2035 timeframe above that already projected. Additional work will also need to be done to ensure savings are not double counted in both the DSS model and the new water demand forecast.

This summary demonstrates both the diversity of the Committee's and community's interest in demand management efforts as well as the depth of the Committee's exploration of the topic. The City's current and very recent messaging related to drought and the community's significant and consistent responsiveness to those messages has resulted in a level of awareness among community members that is unprecedented and likely provides a unique opportunity upon which to build additional long term changes in water use. The question for the WSAC is "what is the best way to reflect and take advantage of this opportunity in the crafting of its recommendations and the development of its agreements?"

Options for Addressing Demand Management Programs in Committee Recommendations and/or Agreements

While certainly not an exhaustive list of options, at least the following three options would seem to cover the spectrum of possible approaches for addressing water demand management activities in the Committee's potential recommendations and agreements:

1. Identify specific, individual, demand management programs and specify details about timing, participation targets, cost and savings assumptions and targets and timelines;

2. Identify a package of demand management programs and specify priorities for timing of implementation, levels of rebates and/or incentives to target certain kinds of demand reductions; and
3. Provide results oriented, policy level direction with guidance about key criteria to emphasize in developing and implementing program and adapting the program over time.

There isn't a right answer to the question of which approach to adopt or whether some kind of hybrid might better suit the Committee's needs and purposes. For each approach identified, I've provided some further discussion, an example or two and an issue or two to think about if that approach is selected.

1. Identify specific, individual, demand management programs.

In this approach the details and assumptions underpinning all of the programs identified and evaluated in the DSS model would be reviewed, specified, and the DSS model would be rerun to provide details of the recommended program, its cost and savings. For example, specific provisions of the types of eligible fixtures and levels of rebates for toilet and washing machines would be identified. Marketing plans and timings would be developed and reflected in the modeling inputs. Similar level of detail would be developed for other programs to be included. The results generated by the DSS model would identify individual and composite program costs and water savings. These details would be the basis of the Committee's recommendations and would be reflected in any Committee agreement.

For this approach to work in the given time frame for developing the Committee's recommendations and agreement, it will likely require that a working group of Committee members spend time in the coming weeks to work with City staff to develop for the full Committee's consideration recommendations that specify the details of individual programs to be included in the Committee's recommendation and agreements.

2. Identify a package of demand management programs.

In this approach, the Committee would adopt a package of demand management programs, provide more general (rather than individual program specific) details about implementation timing, participation and program focus areas and then reflect this direction and target outcomes in its recommendations and agreements. Program Crec, which the WSAC has had information about as one of the demand management Consolidated Alternatives is an example of the kind of package of programs that might be created.

Should the Committee want to pursue this approach, it would likely make sense for the Committee to establish a working group to work with City staff over the coming weeks to develop recommendations for the full Committee's consideration about exactly what is in the package of programs to be included and to define any additional parameters or directions to be recommended.

3. Provide results oriented, policy level direction with guidance about key criteria.

In this approach, the recommendation for demand management might be something like: “Implement demand management programs as needed to produce a XXX mgy reduction in demand by 2035. In selecting programs to implement emphasize those programs that are the most cost-effective and give priority to those that focus on peak season demand management first.” This approach could work if WSAC members feel they understand the currently available options and approaches related to demand management and that result oriented policy direction with some specific priorities and key criteria to be considered in selecting and implementing programs is adequate direction to ensure that the right things will happen in the future. For this approach to work, the Committee would need to have confidence that City staff, with the oversight of the Water Commission and the City Council, would takes appropriate and timely steps to achieve the savings goal and would do so in a manner aligned with the Committees priorities and goals.

As indicated above, these three options aren’t the only choices, but this range of approaches should be adequate to generate a discussion about this topic at the July WSAC meeting and to provide staff with additional information help the Committee make a decision about this topic at the August meeting.