



MADDAUS WATER MANAGEMENT INC.

TECHNICAL MEMORANDUM

Prepared for: The City of Santa Cruz

Project Title: City of Santa Cruz - Water Conservation Master Plan

Technical Memorandum No. 1

Subject: Screening of Water Use Efficiency Measures

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1. INTRODUCTION

This Technical Memorandum 1 (Tech Memo 1) provides the methodology for conservation measure screening for the purpose of generating a list of water conservation measures to be considered for detailed water savings and cost-benefit evaluation.

2. SCREENING PROCESS

Conservation Planning Goals and Approach

As discussed at the public kickoff meeting March 4, 2013, development of the City's Water Conservation Master Plan involves a systematic process to evaluate a range of possible conservation measures and determine which measures are best suited to the City's service area. The overall goal is to create a roadmap to achieve maximum practical water use efficiency through 2030.

As part of this effort, the City is casting a wide net to request the community to review existing implementation methods, including pros/cons of current efforts, and consider implementing additional conservation measures presented in this memorandum.

It is envisioned that roughly 20-25 measures will be selected for further evaluation including the existing measures that are currently implemented that are planned to continue and new conservation measures not yet implemented. Sometimes not all programs need to be modeled to be incorporated into the plan (they can be qualitatively included in the plan) such as water waste prohibition or other non-quantifiable best practices such as public education.

Identification and Screening of New Water Conservation Measures

An important step in updating the water conservation program is the review and screening of new water conservation measures. This task includes a review of the current water conservation measures, identification of measures that may be appropriate for the City's service area, and the screening of these measures to a short-list for detailed evaluation (benefit-cost analysis). To complete this process, a list of potential demand management measures for qualitative evaluation (screening) has been compiled. This list in Appendix A includes 54 potential types of conservation measures in a variety of program implementation approaches that when combined totals 99 individual measures, ranging from those aimed at reducing real water losses to programs designed to improve customer awareness. The list also reflects the focus of specific programs based on the categories of:

- All Customers
- Residential
- Commercial, Industrial, Institutional
- System (focused on measures for the public water system, rather than customers)

Additionally, the list reflects whether customer participation in a program is solely voluntary, encouraged with incentives or mandatory through adopted rules or ordinances. This can significantly impact anticipated levels of adoption, with those that are purely voluntary likely to have the least participation, those with incentives leads to greater market penetration and mandatory measures potentially having the highest levels of adoption. These classifications also have cost implications, with incentive programs being popular, but add expense to the utility, whereas required programs typically involve minimal cost to the utility, but may result in some costs for customers.

2.1 Potential New Conservation Measures

Appendix A - Potential Conservation Measures for City lists the conservation measures considered possibly appropriate for the Santa Cruz community. The table includes devices or programs (e.g., such as a new high efficiency toilet, that would save water if installed by the City, contractor, or customer) that can be used to achieve water conservation, means through which the device or program will be implemented and what distribution method, or mechanism, can be used to activate the device or program.

The list of potential measures in Appendix A was drawn from Maddaus Water Management's (MWM's) general experience and review of what the City and other water agencies with conservation programs are currently implementing. Current Program Measures implemented in the project service area as of March 2013 are indicated in column "current City Program" in Appendix A, mostly reflecting City's conservation activities.

The Water Commission and community members are welcome to add additional measures to the list presented in Appendix A, such that the City staff and Consultant, MWM, may review these ideas as part of developing recommendations for the selection of conservation measures to be evaluated in detail. The City has already set up the ability to suggest ideas through its web site for this project: www.cityofsantacruz.com/wcmp2030.

2.2 Screening Process

The screening will be conducted by City staff with advice and facilitation support from MWM. Input is welcome following the Water Commission Meeting on April 1, 2013. The public comment period provided to stakeholders and/or policy makers to add new ideas to the list of potential measures will be closed after two weeks on April 15th in order to allow for the screening process to take place between April 17th – 24th, 2013. The results of the screening process and the measures recommended for selection for the cost-benefit analysis will be provided to Water Commission at the May 6th meeting for final review and acceptance. Additional measures added later in the modeling/planning process are not anticipated and would delay the project and require a project contract change and additional funding support.

The screening will be conducted by Water Department staff, in consultation with MWM. MWM will describe each measure prior to the rating and answer questions about its applicability, potential savings and costs. MWM will not specifically recommend any one measure be included or excluded.

Ratings with respect to each criterion will be made on a scale of 0 to 5, where 5 is the highest score. Ancillary benefits will be rated on a scale of 0 to 2, where 2 is the highest score.

It should be emphasized that a measure that passes the screening is not necessarily going to be included in the conservation plan, only that it will be analyzed.

It is suggested that the measures will be screened using the following six criteria:

- *Water Savings Potential (Service Area Match) – emphasis on the measure’s ability to reduce average daily water use within the Santa Cruz community (e.g., largely based on individual end use savings and current level of saturation)*
 - Higher savings = 5 (e.g., high end use water savings, low saturation), lower savings (e.g., low end use savings, or very saturated) = 0
- *Sustainable Water Savings – emphasis on savings lifetime/reliability*
 - Permanent = 5 (e.g., codes and technological changes ensure future reliable savings), short, temporary savings or draconian behavioral change = 0
- *Quantifiable Water Savings – emphasis on measures where water savings can be accurately predicted,*
 - Highly quantifiable = 5 (substantial evidence exists to demonstrate reliable, accurate conservation savings), measure savings not quantifiable = 0
- *Widespread Community & Social Acceptance (Technology/Market Maturity) – emphasis on willingness to participate, out of pocket expenses, equity/perceived fairness, aesthetics*
 - High expected participation = 5, Low expected acceptance/Reject Mandatory Participation = 0
- *Feasibility of Implementation/ Secondary Impacts – emphasis on ability to achieve objectives*
 - Fully within City Capacity/Legally Possible = 5, Fatally Flawed = 0 (insurmountable obstacle to implementation)
- *Ancillary Benefits – emphasis on achieving additional goals including reduction in energy/GHG and/or reduction in peak season use, providing valuable customer service, or other non-quantifiable benefits (behavioral change, public awareness)*
 - Multiple Benefits = 2 and Singular or Very Limited Benefits = 0

Ratings will be summed for all six criteria. A passing score will be selected so that the number passing the screening is 20-25 measures total.

3. NEXT STEPS

1. Following the confirmation of the final list of measures by City’s Water Commission, additional measure specific data necessary for the evaluation process will be collected.
2. The selected measures will be analyzed for water savings and cost-effectiveness by MWM using the DSS Model.
3. Results of modeling the conservation measures will be summarized in a Technical Memorandum. At that point a feasible water savings goal can be established and the measures to be incorporated into the plan selected.