

## Committee Member Packet Tuesday September 23

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#### Water Supply Advisory Committee September Meeting

\*For the documents with asterisks, please tell Nicholas and Carie of any specific concerns that you expect to raise in the meeting.

Items that have been added or changed since the Wednesday packet are listed in bold

<b>Document label</b>	<b>Document title</b>
3a Soquel updates .....	Update on Soquel Creek Water District Activities
<b>4a Agenda review .....</b>	<b>Flow Agenda</b>
<b>4b Agenda review .....</b>	<b>Official Agenda (this document is unlabeled)</b>
<b>5a The Baseline.....</b>	<b>Defining the Baseline</b>
5b The Baseline .....	*Concept paper on Modeling and Forecasting Working Group
5c The Baseline .....	Discussion about forecasting transparency
<b>5d The Baseline.....</b>	<b>A Quick Look at Comparing CMIP3 to CMIP5 GCM Outcomes for Santa Cruz]</b>
<b>6a Scenarios.....</b>	<b>Scenarios: Developing Questions of Critical Concern, Related Criteria, Scales and Ratings</b>
<b>6b Scenarios.....</b>	<b>Next Round: Criteria, scales and ratings</b>
<b>6c Scenarios.....</b>	<b>Criteria and Ratings spreadsheet</b>
<b>6d Scenarios.....</b>	<b>Evaluation Criteria Definitions with Track changes and comments from Rosemary, Dana and Doug</b>
<b>6e Scenarios.....</b>	<b>Evaluation Criteria Definitions – September Iteration</b>
7a Subconsultant tasks .....	Work Plan Development Update, and Subcontractor Recruitment and Preliminary Assignments
<b>9a Water Supply Convention ....</b>	<b>Using MCDS to Evaluate Options</b>
10a Materials from August .....	*Summary of August meeting
10b Materials from August .....	*August Action Agenda
<b>14a Community Correspondence</b>	<b>Public Correspondence Report</b>
<b>16a Economics of Reliability.....</b>	<b>Water Supply Reliability and Economic Values</b>

19a Real Deal PIng Scctee .....	*Thoughts About the Real Deal Planning Subcommittee
20a Real Deal Consultant .....	*Consultant selection process for the Real Deal
<b>20b Real Deal Consultant.....</b>	<b>Collection of Parties' Thoughts on Real Deal Consultant Hiring</b>
<b>22a Independent Review Panel</b>	<b>*WSAC IRP Policy, Role and Procedures Protocols</b>
Unlabeled .....	Absentee spreadsheet

## Committee Member Packet Friday September 19

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#### Water Supply Advisory Committee September Meeting

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19a Real Deal PIng Scctee .....	*Real Deal planning white paper (to be sent later) [TITLE MAY CHANGE]
20a Real Deal Consultant .....	*Consultant selection process for the Real Deal
<b>20b Real Deal Consultant.....</b>	<b>Collection of Parties' Thoughts on Real Deal Consultant Hiring</b>
<b>22a Independent Review Panel</b>	<b>*WSAC IRP Policy, Role and Procedures Protocols</b>
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**TO:** WATER SUPPLY ADVISORY COMMITTEE (WSAC)  
**FROM:** HEIDI LUCKENBACH  
**SUBJECT:** UPDATE ON SOQUEL CREEK WATER DISTRICT ACTIVITIES  
**DATE:** SEPTEMBER 24, 2014

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A meeting of the Mid County Groundwater Stakeholder Advisory Committee was held on September 9, 2014. <http://www.soquelcreekwater.org/our-water-groundwater/stakeholder-advisory-committee> A presentation was provided by Russ McGlothlin from Brownstein Hyatt Farber Schreck on the {then} pending California Groundwater Legislation. A handout from the meeting is attached and the presentation can be found here:

[http://www.soquelcreekwater.org/sites/default/files/documents/GWSAC/GWSA%20-%20Overview\\_Russ\\_Presentation.pdf](http://www.soquelcreekwater.org/sites/default/files/documents/GWSAC/GWSA%20-%20Overview_Russ_Presentation.pdf)

On September 16, 2014 Governor Brown signed into law the three pieces of groundwater legislation.

**Governor's Message:**

To the Members of the California Legislature:

I am signing AB 1739, SB 1168 and SB 1319, which taken collectively establish a new structure for managing the State's groundwater. These bills accomplish a number of goals described in the California Water Action Plan, a five-year plan to sustainably manage our water resources. When combined with the other elements outlined in the plan -- conservation, water recycling, expanded storage, safe drinking water, wetlands and watershed restoration -- and the passage of Proposition 1, we can take giant strides to secure California's water future. A central feature of these bills is the recognition that groundwater management in California is best accomplished locally. Local agencies will now have the power to assess the conditions of their local groundwater basins and take the necessary steps to bring those basins in a state of chronic long-term overdraft into balance. The State's primary role is to provide guidance and technical support on how to plan for a more sustainable future and to step in on an interim basis when, but only when, local agencies fail to exercise their responsibilities as set forth in this legislation. My administration will work closely with all affected groups to ensure that the statute is fairly implemented. Further, I will submit for legislative consideration during the next session a proposal to streamline judicial adjudications of groundwater rights.

GOVERNOR EDMUND G. BROWN JR.

Information on the three bills is provided below.

AB 1739 establishes when the state government can intervene if the local groups don't sufficiently do their job. (L.A. Times, 9/16/14) [http://www.leginfo.ca.gov/pub/13-14/bill/asm/ab\\_1701-1750/ab\\_1739\\_bill\\_20140916\\_chaptered.pdf](http://www.leginfo.ca.gov/pub/13-14/bill/asm/ab_1701-1750/ab_1739_bill_20140916_chaptered.pdf)

SB 1168 instructs local agencies to create management plans. (L.A. Times, 9/16/14) [http://www.leginfo.ca.gov/pub/13-14/bill/sen/sb\\_1151-1200/sb\\_1168\\_bill\\_20140916\\_chaptered.pdf](http://www.leginfo.ca.gov/pub/13-14/bill/sen/sb_1151-1200/sb_1168_bill_20140916_chaptered.pdf)

SB 1319 seeks to allay some concerns of farmers by postponing the state's action in certain places where surface water has been affected by groundwater pumping. (L.A. Times, 9/16/14) [http://www.leginfo.ca.gov/pub/13-14/bill/sen/sb\\_1301-1350/sb\\_1319\\_bill\\_20140916\\_chaptered.pdf](http://www.leginfo.ca.gov/pub/13-14/bill/sen/sb_1301-1350/sb_1319_bill_20140916_chaptered.pdf)

Staff from the City of Santa Cruz, Soquel Creek Water District, County of Santa Cruz, Pajaro Valley Water Management District and Central Water District met recently to begin discussions on how to move forward under this new legislative framework.

Also, attached is an agenda from the District's September 16, 2014 meeting. The minutes from the August 26, 2014 meeting reflect that, on the topic of Back up Water Supply Options, the Board made the following motion that passed unanimously: "To direct staff to bring back a plan for further detailed studies for 1) San Lorenzo Surface Water Transfers – Existing Infrastructure, 2) Mid County Groundwater Replenishment, and 3) Santa Cruz Regional Groundwater Replenishment and to direct staff to bring back more information regarding the Lochquifer plan."

[http://www.soquelcreekwater.org/sites/default/files/documents/board-meeting/meeting-minutes/08-26-14%20%20Special%20Meeting%20Minutes\\_.pdf](http://www.soquelcreekwater.org/sites/default/files/documents/board-meeting/meeting-minutes/08-26-14%20%20Special%20Meeting%20Minutes_.pdf)

September 2, 2014

## Legislature Passes Historic Legislation Fundamentally Changing California Groundwater Law

California's depleted groundwater basins will not go unmanaged any longer. That's the directive of the Sustainable Groundwater Management Act ("Act"), passed late Friday, August 29 by the California Legislature, which Governor Brown is expected to sign. For at-risk basins, the Act requires the designation of a "groundwater sustainability agency" and adoption of a "groundwater sustainability plan" within roughly five to seven years. The plan must set the basin on a course toward "sustainable management" to eliminate adverse groundwater conditions specified as "undesirable results" by roughly 2040. If a local agency is not designated as a groundwater sustainability agency, or if a compliant groundwater sustainability plan is not prepared within designated time frames, the State Water Resources Control Board ("SWRCB") may intervene and adopt and enforce its own plan for the basin.

### Applicable Basins

The Act applies to basins or subbasins that are to be designated by the California Department of Water Resources ("DWR") as "medium-" or "high-priority" basins. DWR will use its Bulletin 118 to delineate basins. Under the Act, DWR must rank each of the basins or subbasins identified in Bulletin 118 as either a very low-, low-, medium-, or high-priority basin based on the threat to the basin's integrity. The Act does not apply to adjudicated groundwater basins that are managed by the courts, or to basins deemed by DWR to be low or very low priority. Present AB 3030 groundwater management plans (Water Code Sections 10750 et seq.) in medium- and high-priority basins must be replaced or augmented to comply with the requirements for a groundwater sustainability plan under the Act.

We anticipate approximately 125 basins located throughout the state will be designated as medium or high priority for which a plan must be developed. The majority of these basins are in the San Joaquin Valley. Others are coastal basins and other high-demand basins that are at risk of long-term depletion or other harm (e.g., seawater intrusion).

### Plan Requirements

The Act requires that plans include prescribed components to achieve sustainable groundwater management to avoid undesirable results, such as chronic depletion of groundwater, water quality degradation, or subsidence. Each plan must include requisite monitoring and management for the basin over a 50-year planning horizon, and plans must articulate measurable objectives to be achieved every five years. DWR will review the plans and will have the power to request changes to a submitted plan.

The Act also authorizes designated groundwater sustainability agencies to limit or curtail groundwater production, monitor water withdrawals, track the location of wells, and assess regulatory fees to fund groundwater management and replenishment activities, among other powers. Agencies are not, however, authorized to issue or deny well-drilling permits, unless authorized to do so by the encompassing county.



September 2, 2014

## **Plan Development Deadlines**

Local agencies have until January 1, 2017, to elect to become or form a groundwater sustainability agency. In medium- or high-priority basins, identified by DWR as being subject to "critical conditions of overdraft," groundwater sustainability agencies must adopt a compliant plan by January 1, 2020. A compliant plan for all other medium- and high-priority basins must be adopted by January 1, 2022.

The plan must establish measurable objectives, as well as incremental milestones every five years in order to achieve the sustainability goals identified in the plan within 20 years. DWR may grant extensions to groundwater sustainability agencies for up to 10 years upon a request and showing of good cause. Groundwater sustainability agencies are required to submit their plans to DWR for initial approval and thereafter to report their progress to DWR every five years.

## **State Intervention**

The Act authorizes the SWRCB to intervene in medium- and high-priority basins when local agencies are not meeting established goals, including: failure to elect a groundwater sustainability agency by January 1, 2017; failure to develop a compliant plan within the designated time requirements; or when (i) DWR, in consultation with the SWRCB, determines that a plan is inadequate or is not being implemented in a manner that is likely to achieve the plan's sustainability goal, and (ii) the SWRCB determines that the basin is either in a state of long-term overdraft or groundwater extractions are causing significant depletions of interconnected surface water.

## **Practical Application and Challenges**

In practice, compliance with the Act will be challenging for many basins. For example, in some basins, there may be conflict over which of several existing local agencies should be the designated groundwater sustainability agency. If so, the Act permits the creation of a new groundwater sustainability agency and "sharing" of basin governance pursuant to a joint powers agreement, memorandum of agreement, or other legal agreement. The Act also allows a basin to be managed by several separate, but coordinated, groundwater sustainability plans developed by different groundwater sustainability agencies. However, in each circumstance, agreement between local agencies and stakeholders will be necessary to navigate such potential conflicts.

Another significant potential challenge will be allocating the burden of cutbacks in groundwater extractions, as well as responsibility for payment of pump assessments to fund necessary basin replenishment and other management objectives. Under the common law, senior priority water rights holders are generally not required to reduce extractions or incur significant expense for the benefit of lower-priority water rights holders. The Act expressly does not determine or quantify water rights. Therefore, significant conflicts may arise in the development of a plan where water rights priorities are contested or the equities of a proposed management plan are disputed. The likelihood for these problems warrants significant stakeholder and public outreach at the outset of any groundwater sustainability plan process. If a negotiated agreement cannot be reached to resolve such conflicts, the basin may be subject to SWRCB intervention or a general groundwater adjudication.



September 2, 2014

Groundwater adjudications may be the inevitable result for basins in which conflicts on these issues persist. Once complete, the judgment entered in a groundwater adjudication generally provides valuable legal certainty and an efficient means of basin management. Unfortunately, as a result of a lack of judicial procedures specifically tailored to the complexities of groundwater adjudications, which involve complex technical and legal issues, groundwater adjudications often take far too long (sometimes decades) and cost too much. A conceptual procedure to streamline groundwater adjudications was considered for inclusion in the Act, but was excluded because of inadequate time to address the complexities of such a process. Efforts are underway to develop legislation to establish a streamlined adjudication procedure for consideration next year. Such a result could be highly beneficial to cost-effectively resolve groundwater disputes and implement comprehensive management in a timely manner.

Without question, the Act will fundamentally change the landscape of groundwater use and management in California's most important and significant un-adjudicated groundwater basins. [Brownstein Hyatt Farber Schreck](#), LLP has worked on all aspects of groundwater management in California for more than 40 years, played a central role in the negotiations and drafting of the legislation, and is fully versed in the components and implications of the Act. We are prepared to assist groundwater stakeholders in navigating and complying with the Act, as well as its inevitable resulting complications. For the most current information on this topic, and other water law and policy issues, please visit <http://water.bhfs.com/> or call us.

*This document is intended to provide you with general information regarding California groundwater management legislation. The contents of this document are not intended to provide specific legal advice. If you have any questions about the contents of this document or if you need legal advice as to an issue, please contact an attorney listed in the link provided below or your regular Brownstein Hyatt Farber Schreck, LLP attorney. This communication may be considered advertising in some jurisdictions.*

Brownstein Hyatt Farber Schreck, LLP's [California Water Group](#)



**Board of Directors**  
Dr. Thomas R. LaHue, *President*  
Bruce Daniels, *Vice President*  
Dr. Don Hoernschemeyer  
Dr. Bruce Jaffe  
Richard Meyer  
  
Kim Adamson, *General Manager*

**BOARD OF DIRECTORS**  
**REGULAR MEETING 7:00 P.M. – 9:30 P.M.**  
**TUESDAY, SEPTEMBER 16, 2014**  
**LOCATION: Community Foundation**  
**7807 Soquel Drive, Aptos, California**

**AGENDA**

1. **ROLL CALL**
2. **PUBLIC HEARING** – None
3. **CONSENT AGENDA**
  - 3.1 Approve Previous Minutes
    - 3.1.1 August 12, 2014 Regular Meeting
    - 3.1.2 August 26, 2014 Special Meeting
  - 3.2 Conditional Will Serve Letters – None
  - 3.3 Report of Expenditures over \$25,000
  - 3.4 June/July, July/August Credit Card Analysis and August Warrants
  - 3.5 Income and Investment Report for July 2014 and August 2014
  - 3.6 District Quarterly What's on Tap Newsletter for October – December 2014
  - 3.7 McGregor Drive Pump Station, Bid Award
  - 3.8 Aptos Pump Station, CWO 09-103, Adopt Plans & Specifications and Call for Bids
  - 3.9 Production Graphs
  - 3.10 Approve Engineering Bid and Construction Support Service for McGregor Pump Station Project, CWO 08-004
  - 3.11 Quarterly Monitoring Reports
4. **ORAL COMMUNICATIONS** (*items not on the Agenda*)

5. **INFORMATION ITEMS**

5.1 Work Plan Status Report

6. **ADMINISTRATIVE BUSINESS**

6.1 Resolution Amending the District's Conflict of Interest Code Embodied in Resolution No. 08-35

6.2 Direction to Staff Proposition 218 Process for Conservation Plus

7. **STATUS REPORTS**

7.1 Conservation Customer Service Field - Oral

7.2 Engineering

7.3 Operations & Maintenance

7.4 Finance - None

7.5 Human Resources - Oral

7.6 District Counsel - Oral

7.7 General Manager - Oral

8. **WRITTEN COMMUNICATIONS AND CORRESPONDENCE**

8.1 Email from Elena Laborde regarding water restrictions

9. **CLOSED SESSION** – None

10. **ADJOURNMENT**

All information furnished to the Board of Directors with this agenda is provided under ***Who We Are - Board Meetings*** on the District's website [www.soquelcreekwater.org](http://www.soquelcreekwater.org). Any additional information provided to the Board prior to the meeting will be made available to the public at the District office. Please observe the following procedures for addressing the Board on agenda items. All those wishing to speak on an item should raise a hand and be recognized by the Board President during the portion of the proceedings set aside for public comment. Each speaker will be limited to a single presentation of up to three minutes per agenda item (time limits may be increased or decreased at the Board President's discretion). After all speakers have addressed the Board, the Board will deliberate and take action. Additional public comment will not be allowed during the Board's deliberation unless the President specifically calls on someone in the audience. Organized groups wishing to make a presentation are asked to contact the Board Clerk prior to the Board Meeting. Disability Access – the meeting room is wheelchair accessible. Please contact Karen Reese, Board Clerk, at (831) 475-8500 ext. 126 if you need assistance in order to participate in a public meeting or if you need the agenda and public documents modified as required by Section 202 of the Americans with Disabilities Act.

**Water Supply Advisory Committee**

**Meeting**

**First session: Wednesday September 24 5:00 p.m. – 9:30 p.m.**

**Second session: Friday September 26 2:00 p.m. – 6:00 p.m.**

**Police Community Room, Police Department  
155 Center St., Santa Cruz**

**Fellowship Hall, Peace United Church of Christ  
(formerly the First Congregational Church)  
900 High Street, Santa Cruz**

**Flow Agenda<sup>1</sup>**

**Notice about Enrichment Meetings**

This WSAC meeting is accompanied by the first Enrichment Meeting. These meetings provide information about topics relevant to the Committee's work. This month these meetings occur before the Committee's regular sessions however no Committee business will be conducted during the meetings. Although they are not part of the monthly meeting of the Committee we hope that they will be well attended by Committee members and anticipate therefore that a WSAC quorum may be present. Consequently they will be noticed in compliance with the Brown Act. They will of course be open to the public.

**Wednesday 4:00-5:00 Informally meet the Independent Review Panelists:**

This is scheduled in the Enrichment Meeting time-slot but isn't really an Enrichment Meeting. It will be an opportunity to informally meet the new panel members. No business will be conducted at this meeting

**Friday 1:00-2:00 Enrichment Meeting: Economic Issues:** Dave Mitchell, one of the Committee's economics consultants, will make a presentation and lead a

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<sup>1</sup> This is the **Flow Agenda** prepared by the co-facilitators. It includes information that is excluded from the official agenda about the timing of the meeting and the content of agenda items. We expect that, as much as we hope to stick to this flow agenda, we will have to make adjustments during the meeting to the schedule and the contents described here. The Committee is required to do pretty much exactly what the official agenda says, so we get the "wobble room" we need in the official agenda by making the official version less specific about schedule and content. You will easily recognize the official agenda by the lighthouse logo on its first page.

discussion about economic issues relevant to the Committee's work. No business will be conducted at this meeting. **First Session:**

## **Roll Call**

### **1. Welcome to the public and public comment (5:00-5:10)**

We encourage members of the public to attend this Committee's meetings and invite public comment about items on the agenda at the beginning of each session. We will invite additional comment during the session before making major decisions. We invite public comments about items relevant to this Committee's work but not on the meeting's agenda during the Oral Communication section at the end of Friday's session.

### **2. Committee member updates (5:10-5:15)**

Members provide news of significant communication between them and organizations with significant interest in the development of water policy in Santa Cruz.

### **3. Soquel updates (5:15-5:20)**

#### **See Document 3a**

Heidi Luckenbach updates the Committee on news from the Soquel Creek Water District.

### **4. Agenda Review (5:20-5:25)**

#### **See Document 4a & 4b (note that 4b is the official agenda and is not labeled)**

The Committee reviews the agenda for both sessions of this meeting.

Desired outcomes:

- Understanding of the relevance of this meeting's tasks to the Committee's work as a whole
- Agreement on the agenda for this meeting

### **5. The Baseline (5:25-6:20)**

#### **See Document 5a, 5b, 5c & 5d**

Bob Raucher will lead a discussion about the development of the Baseline. This will include a look at the bigger picture of defining the problem and the role of technical analyses in evaluating possible solutions. The intended relevance of Work Plan items (see Document 7a) will also be discussed.

Desired outcomes:

- Understanding of the purpose and component parts of the Baseline
- Understanding of the role of technical analysis in evaluating options and associated link between analyses and Work Plan items
- Understanding of the purpose, scope and schedule of the Modeling and Forecasting Working Group
- Identification of Committee Members interested in participating in the Working Group
- Agreement on next steps for baseline development and related activities including direction to Stratus
- Understanding on Work Plan items; identification of any additional items to consider for technical analysis

#### **6. Scenarios (6:20-7:20)**

**See Document 6a, 6b, 6c, 6d & 6e**

Karen Raucher leads a discussion about the development of criteria based on the criteria identified at the August meeting, the integration of the criteria and ratings scales into the scenarios and the next steps for the development of scenarios.

Desired outcomes:

- Understanding of the “if then” framework for Scenario development
- Understanding of the relationship between Problem Statements and Scenarios so that the purpose of the Scenario in the decision model is more clearly defined
- Agreement on directions to Stratus regarding the development of Problem Statements for each Scenario
- Agreement on directions to Stratus regarding the use of the “if then” framework for Scenario development
- Agreement on a set of Scenarios for further development including direction to Stratus

- Understanding of advances made to the Criteria and Ratings Scales since the last meeting
- Identification of a list of Questions of Critical Concern so that the definitions of the Criteria can be further clarified
- Agreement on next steps for criteria and ratings scales including direction to Stratus

#### **7. Subconsultant tasks (7:20-7:30)**

##### **See Document 7a**

Bob will lead a discussion about subconsultant support needed to perform tasks identified by the Committee, a work-plan and any required additional subconsultants.

Desired outcomes:

- Identification of needed subconsultant tasks
- Agreement on a work-plan for Stratus
- Agreement on any additional subconsultant(s)

#### **8. The Decision Model (7:30-8:00)**

Carie Fox will lead a discussion of the way that the baseline, the other scenarios, criteria and ratings scales work through the decision model.

Desired outcome:

- Understanding of the way that scenarios, criteria and ratings scales integrate into the decision model.

#### **9. Water Supply Convention (8:00-9:10)**

##### **See Document 9a**

Members of the Convention Subcommittee update the Committee on the progress of the Convention and the arrangements made to facilitate assessment of the submissions by the public and by Committee Members. Carie leads a dry run of the Committee's assessment process for the Convention using the tool based on a simplified decision model.



## 4a Agenda Review UPDATED FOR FRIDAY PACKET

Water Supply Advisory Committee

Desired outcomes:

- Understanding of the status of the Convention
- Agreement on any direction to the Convention Subcommittee
- Understanding of the assessment processes for the Convention and familiarity with the assessment tool

### **10. Materials resulting from the previous meeting (9:10-9:20)**

#### **See Document 10a & 10b**

The Committee Members review the Action Agenda and Meeting Summary prepared for the previous meeting.

Desired outcomes:

- Agreement on final versions of the Action Agenda and Meeting Summary for August

### **11. Wrap up, plan for second session and evaluation of this session (9:20-9:30)**

### **12. Adjourn (9:30)**

**Second Session:**

**Roll call**

**13. Public comment (2:00-2:15)**

We invite public comment about items on the agenda at the beginning of each session. We will invite additional comment during the session before making major decisions. We invite public comments about items relevant to this Committee's work but not on the meeting's agenda during the Oral Communication section at the end of this second session.

**14. Correspondence received from the community (2:15-2:20)**

**See Document 14a**

Sue Holt reports on correspondence received from the community.

Desired outcomes:

- Awareness about the correspondence received
- Agreement on any direction to be given to the Corresponding Secretary

**15. Reflections on Wednesday's session (2:20-2:30)**

The Committee considers the salient points from Wednesday's session and a review of the agenda for today's session.

Desired outcomes:

- Acknowledgement of the major achievements of Wednesday's session
- Agreement on any changes to today's agenda

**16. Economics of reliability (2:30-3:00)**

**See Document 16a**

Bob leads a discussion introducing the economics of reliability.

Desired outcome:

- Understanding of the basic concepts of the economics of reliability so that Committee Members can understand the relationship between water supply reliability and the local economy.

**17. Unscripted economics discussion (3:00-3:20)**

The Committee will engage with Bob and David Mitchell on topics related to economics and water supply reliability..

**18. Evolution of the decision model and plans for November (3:20-4:00)**

Carie leads a discussion about the “small” decision model developed for the Convention, and the “large” model in development for Recon. This will include a comparison of scenarios in the model and an exercise to explore the significance of weights in the decision model.

Desired outcomes:

- Understanding of the operation of the decision model
- Agreement on changes to the decision model
- Understanding of the significance of weights in the model
- Agreement on the progression of Recon work through October, November and December

**19. Real Deal Planning Subcommittee (4:00-4:15)**

**See Document 19a**

The Committee considers how to approach the development of the work plan for the Real Deal.

Desired outcomes:

- Understanding of the planning needed for the Real Deal
- Agreement on whether to form a Subcommittee to support this planning effort or to use some alternative approach

**20. Real Deal Consultant (4:15-4:50)**

**See Document 20a & 20b**

The Committee considers how to proceed with the process of selecting a technical support consultant for the Real Deal. The City staff has identified several ways to approach this.

Desired outcomes:

- Agreement on whether or how to proceed in the selection of the technical support consultant for the Real Deal.

**21. Outreach (4:50-5:00)**

Members of the Recon Outreach Subcommittee report on outreach activity.

Desired outcomes:

- Understanding of outreach activity
- Agreement on any direction to the Subcommittee

**22. Independent Review Panel (5:00-5:05)**

**See Document 22a**

Members of the IRP Subcommittee will describe the IRP Policy, Role and Procedures Protocols that they recommend to the Committee.

Desired outcome:

- Agreement on IRP Policy, Role and Procedures Protocols

**23. Agendas through the end of Recon (5:15-5:35)**

The Committee discusses the agenda outlines for the Committee's October, November and December meetings.

Desired outcomes:

- Understanding of the tasks anticipated for the rest of Recon
- Agreement on direction to the co-facilitators regarding the plans for Committee meetings during the rest of Recon

**24. Oral communication (5:35-5:45)**

We invite public comments about items relevant to the Committee's work but not on the meeting's agenda

**25. Reflections with IRP members and evaluation (5:45-6:00)**

Provide an opportunity for IRP members to share their perspectives, insights, and reflections on the issues discussed and actions taken by the WSAC at its meeting. Consider items to be carried forward to the next meeting.

## 4a Agenda Review UPDATED FOR FRIDAY PACKET

Water Supply Advisory Committee

### 26. Adjourn (6:00)

Santa Cruz Police Department  
Police Community Room  
155 Center St.  
Santa Cruz, CA 95060



Peace United Church of Christ  
Fellowship Hall  
900 High St.  
Santa Cruz, California 95060

## **WATER SUPPLY ADVISORY COMMITTEE (WSAC) AGENDA**

### **Special Meeting**

**September 24 & September 26, 2014**

**5:00 P.M. SPECIAL MEETING - SESSION ONE (SEPTEMBER 24): COMMUNITY ROOM**

**2:00 P.M. SPECIAL MEETING - SESSION TWO (SEPTEMBER 26): FELLOWSHIP HALL**

**Statements of Disqualification:** Section 607 of the City Charter states that "...All members present at any meeting must vote unless disqualified, in which case the disqualification shall be publicly declared and a record thereof made."

The City of Santa Cruz has adopted a Conflict of Interest Code, and Section 8 of that Code states that no person shall make or participate in a governmental decision which he or she knows or has reason to know will have a reasonably foreseeable material financial effect distinguishable from its effect on the public generally.

**General Business:** Any document related to an agenda item for the General Business of this meeting distributed to the WSAC less than 72 hours before this meeting is available for inspection at the Water Administration Office, 212 Locust Street, Suite A, Santa Cruz, California. These documents will also be available for review at the WSAC meeting with the display copy at the rear of the Council Chambers.

**Appeals:** Any person who believes that a final action of this advisory body has been taken in error may appeal that decision to the City Council. Appeals must be in writing, setting forth the nature of the action, the basis upon which the action is considered to be in error, and addressed to the City Council in care of the City Clerk Administrator.

**Other - Appeals** must be received by the City Clerk Administrator within ten (10) calendar days following the date of the action from which such appeal is being taken. An appeal must be accompanied by a fifty dollar (\$50) filing fee.

**City Councilmember Attendance:** Four or more members of the City Council may be in attendance at this meeting.

The City of Santa Cruz does not discriminate against persons with disabilities. Out of consideration for people with chemical sensitivities we ask that you attend fragrance free. Upon request, the agenda can be provided in a format to accommodate special needs. Additionally, if you wish to attend this public meeting and will require assistance such as an interpreter for American Sign Language, Spanish, or other special equipment, please call the City Clerk's Department at 420-5030 at least five days in advance so that we can arrange for such special assistance, or email [CityClerk@cityofsantacruz.com](mailto:CityClerk@cityofsantacruz.com). The Cal-Relay system number: 1-800-735-2922.

## Water Supply Advisory Committee Agenda

September 24, 2014 - 5:00 PM - 9:30 PM

### SESSION ONE

NOTE: at 4:00p.m., members of the Committee and public will have an opportunity to informally meet with panel members. This meet and greet will take place until 5:00 p.m. No business will be conducted at this event.

Call to Order - Meeting Convenes

Roll Call

Public Comment

Welcome to Public and Public Comment

A hand out will be provided to attendees. An opportunity for public comment on agenda items is provided at the beginning of each session of the meeting. An opportunity for oral communication by members of the public about issues relevant to the work of the Committee is provided at the end of the final session of the meeting. Additionally the Committee will provide an opportunity for public comment before major decisions are made.

Committee Member Updates

Committee Members will update the Committee on significant communications between them and other Santa Cruz entities with significant interest in the development of water policy in Santa Cruz.

Soquel Updates

The Water Department Deputy Director/Engineering Manager Heidi Luckenbach will update the Committee Members on significant events and news within the Soquel Creek Water District.

Agenda Review

Committee Members will review the agenda for the WSAC's fifth meeting.



### **The Baseline**

WSAC Consultant Bob Raucher will lead Committee Members in a discussion about the development of the Baseline.

### **Scenarios**

WSAC Consultant Karen Raucher will lead Committee Members in a discussion about the development of criteria based on the criteria identified during the August meeting, the integration of the criteria and ratings scales into the scenarios, and the next steps for the development of scenarios.

### **Subconsultant Tasks**

WSAC Consultant Bob Raucher will lead Committee Members in a discussion about subconsultant support needed to perform tasks identified by the Committee, a work-plan and any required additional subconsultants.

### **The Decision Model**

Co-Facilitator Carie Fox will lead Committee Members in a discussion of the way the Baseline, the other scenarios, criteria and ratings scales work through the decision model.

### **Water Supply Convention**

Members of the Convention Subcommittee will update the Committee on the progress of the Convention and the arrangements made to facilitate assessment of the submissions by the public and by Committee Members. Co-Facilitator Carie Fox will lead a test run of the Committee's assessment process for the Convention using the tool based on a simplified decision model.

### **Materials Resulting from the Previous Meetings**

The Committee Members will review the Action Agenda and Meeting Summary prepared for the previous meeting.

**Written Review and Wrap Up** - Identification of any incomplete issues to be carried forward to tomorrow's session.

**Adjournment** - The Water Supply Advisory Committee will adjourn from its first session on September 24 of the special meeting of September 24 & 26, 2014 to its second and final session on September 26 for an open session after 2:00 p.m. in the Fellowship Hall, at Peace United Church of Christ.

## **Water Supply Advisory Committee Agenda**

**September 26, 2014 - 2:00 PM - 5:00 PM**

### **SESSION TWO**

**NOTE:** at 1:00p.m., members of the Committee and public will have an opportunity to attend an Enrichment Meeting led by WSAC Economic Consultant Dave Mitchell. This Enrichment Meeting will address economic issues relevant to the Committee's work. This Enrichment Meeting will take place until 2:00 p.m. No business will be conducted at this event.

**Call to Order - Meeting Reconvenes**

**Roll Call**

**Public Comment**

**Correspondence Received from the Community**

Committee Member Sue Holt will lead Committee Members in a report on correspondence received from the community.

**Reflections on Wednesday's Session**

The Committee will consider the salient points from the first session of the September WSAC meeting as well as a review of the agenda for the second session of the September WSAC meeting.

**Economics of Reliability**

WSAC Consultant Bob Raucher will lead Committee Members in a discussion introducing the economics of reliability.

**Unscripted Economics Discussion**

Committee Members will engage with Bob and David Mitchell on topics related to economics and water supply reliability.

**Evolution of the Decision Model and Plans for November**

Co-Facilitator Carie Fox will lead Committee Members in a discussion about the decision model developed for the Convention and the decision model developed for Recon. This discussion will include a comparison of scenarios in the model and an exercise to explore the significance of weights in the decision model.

### **Real Deal Planning Subcommittee**

Committee Members will consider how to approach the development of the work plan for the Real Deal.

### **Real Deal Consultant**

Committee Members will consider how to proceed with the process of selecting a technical support consultant for the Real Deal. City Staff has identified several ways to approach this.

### **Outreach**

Members of the Recon Outreach Subcommittee will report on outreach activity.

### **Independent Review Panel**

Independent Review Panel Subcommittee Members Sid Slatter, Sue Holt, Mark Mesiti-Miller and Rick Longinotti will lead Committee Members in a description of the IRP Policy, Role and Procedures Protocols that they recommend to the Committee.

### **Agendas Through the end of Recon**

Committee Members will discuss the agenda outlines for the Committee's October, November and December meetings.

### **Oral Communication**

### **Reflections with IRP Members and Evaluation**

Committee Members will provide an opportunity for IRP members to share their perspectives, insights, and reflections on the issues discussed and actions taken by the WSAC at its meeting. Committee Members will consider items to be carried forward to next meeting.

**Adjournment** - The Water Supply Advisory Committee will adjourn from the second session on September 26 of the special meeting of September 24 & 26, 2014 to its next meeting October 23 - 24, 2014. The October 23, 2014 session will be held in the Fellowship Hall at the Peace United Church of Christ. The October 24, 2014 session will be held at the Police Community Room.



Water Department

**Water Supply Advisory Committee  
Regular Meeting  
5:00 p.m. – Wednesday, September 24, 2014  
& 2:00p.m. – Friday, September 26, 2014  
Fellowship Hall  
900 High St., Santa Cruz**

**NOTICE OF CANCELLATION**

**NOTICE IS HEREBY GIVEN that due to a change in location, the regular meeting of the Water Supply Advisory Committee of the City of Santa Cruz was cancelled. The dates and times of the September meeting, Wednesday, September 24, 2014 at the hour of 5:00 p.m. & Friday, September 26, 2014 at the hour of 2:00p.m., will remain the same. The regular meeting has been changed to a special meeting. The location for Wednesday, September 24, 2014 session has been moved from its previous location of the Fellowship Hall at the Peace United Church of Christ 900 High St. Santa Cruz, CA 95060 to the Police Community Room at the Police Department 155 Center St. Santa Cruz, CA 95060. The second session on Friday, September 26, 2014 will remain at the Fellowship Hall at the Peace United Church of Christ 900 High St. Santa Cruz, CA 95060.**

**Dated: September 23<sup>rd</sup>, 2014**

# Defining the Baseline, Articulating Criteria, Scenario Analysis and More: Analyses to Support Informed Decision-Making



Bob Raucher and Karen Raucher  
Stratus Consulting

WSAC Meeting  
Santa Cruz, CA  
September 24, 2014



# Overview of Discussion

- Big Picture perspective of decision-making and decision support processes
- What is the baseline, and why is it important?
- What are the key questions to be addressed?
- Criteria, Scales, Ratings, Scenarios, and other bits – where technical analysis fits in
- What types of recommendations does the Committee envision providing?



# What we Hope to Convey and Obtain

- General agreement that we have properly framed the problem and general approach
  - Or feedback to help us refine/recast
- Buy-in for the work plan components
  - And discussion of possible additions, refinements, etc.?
- Share information and stimulate discussion to help move informed deliberations forward





# A Big Picture Perspective

1. Define the Problem
  - This is where the “Baseline” fits in
2. Identify Options for Addressing the Problem
  - Alts Fair, professional insight, and beyond
3. Evaluate the Options
  - Applying analyses to systematically address relevant questions and concerns
4. Recommend preferred option(s)/approach(es)
  - E.g., Portfolios and Adaptive Management



# Defining the Problem: Establishing the Baseline

The baseline is combination of:

- The “status quo” mix of existing water infrastructure and management policies
- Carried forward in time through the planning horizon (e.g., to 2035)



## More specifically...

The baseline is:

- The option (**alternative**) of maintaining the status quo (not making any substantive changes to utility)
- Evaluated against a relevant **scenario** of the future  
(typically, a “traditional” future scenario)



# What does the Baseline tell us?

- The baseline is used to assess how the system performs into the future, if no substantive changes are made



If the Water Department does not make any appreciable changes in demand management or supply enhancement, and manages its resources in the same manner as now....

- How will future supply align with future demands?
- How frequent and severe will future curtailments be?
- What will this mean for the quality of life and economic vitality of the community?
- What happens to the special status fisheries?
- Can we maintain suitable water quality?



# Role of the Baseline in the Analysis

- Defines the nature and magnitude of the problem
  - E.g., Demand routinely exceeds supply by X million gallons
  - Helps identify what may be important (criteria)
- It serves as the benchmark against which other options are *compared*
  - How much are curtailments reduced if we do Y instead of the status quo?
  - How much will water bills increase if we do Y?



## The Baseline is not necessarily Static

- Changes in some infrastructure and operations may occur, due to a variety of potential factors
- For example, declining water quality and elevated DBP formation may require changes to maintain regulatory compliance. E.g.,
  - More aeration and pumping of stored finished water (w/ cost, energy, and carbon impacts, etc.)
  - Possible addition of more advanced treatment processes (e.g., membranes, UV, ozonation)





# Identifying Potential Solutions

## Possible terminology

- Options
- Management Actions
- Alternatives



# Useful Categories for Potential Solutions

- Demand Management  
(conservation, water use efficiency)
- Resource Management and Operational  
(modifying how existing resources are managed – e.g., Loch Lomond)
- New and/or enhanced Water Supplies  
(water reuse, exchanges, desal, storage, new groundwater wells, and others)
- Small but Mighty  
(possible collection of several small-scale initiatives or options with collective impact)



# Evaluating the Possible Solutions

- Numerous analytic approaches available
  - MCDS
  - Triple Bottom Line / Benefit-Cost Analysis
  - Others, and *Combinations*
- Regardless of analytic approach applied to evaluate options...

Technically sound, transparent, and objective empirical analyses are essential to inform the process



# MCDS Elements

- Problem Statement
- Criteria
- Scales (developed for each criteria)
- Ratings (scores assigned from scales)
- Weights
- Scores

Technical analyses are valuable for developing empirically-based scales and ratings



## Crosswalk to Work Plan

- Work Plan items reflect links to key criteria, scales, scenarios, and key questions
- Work items intended to provide initial scoping
  - What do we know now?
  - What key questions/issues remain?
  - Ideas for what to examine in more depth (if anything).
- Timing: intent is for scoping in Recon, possible follow-on work in Real Deal



# On-going Technical Work for Scenarios

## Enhanced Traditional Scenario

- Integrating climate change and HCP (Tier 3/2) into “enhanced” traditional scenario
- Shawn Chartrand currently factoring CC projections into stream flow model
- Flow results will feed into *Confluence* model to indicate change in system performance
- Results should be available for October meeting.



- More information will be conveyed at the Wed meeting



**DATE:** September 17, 2014

**TO:** WSAC and Water Commission

**FROM:** Rosemary Menard

**SUBJECT:** Concept paper on Modeling and Forecasting Working Group

It is clear to me from a variety of inputs that there is significant interest on the part of members of the WSAC and possibly their constituents and the Water Commission in issues related to the modeling and forecasting tools that the City uses in water supply planning. The Water Department and its technical contractors have developed a variety of modeling, forecasting and analytical tools that are used in modeling the water system and forecasting its performance and demands under various future scenarios. The tools used by the Water Department that are particularly relevant to water planning include the following:

- Hydrologic model for surface water resources;
- Confluence model for system reliability analyses and system performance forecasting;
- Water demand management Program planning and analytical model; and
- Water demand forecasting model<sup>1</sup>.

Due to the importance of the role of these tools in the water planning activities we are currently conducting, I want to create a planned and organized way for interested members of the WSAC, the constituent groups represented by the WSAC and the Water Commission to develop a level of understanding and, ideally, confidence in the modeling, forecasting and analytical tools the City is using.

To work toward the achievement of this outcome, I want to create a working group that includes members of the WSAC and the Water Commission who are interested in learning more about these tools and who are willing to invest the time necessary to do so. I propose to open this working group to public members of WSAC constituency groups so that WSAC members who are participating and have members of their group who want to or need to be included can participate directly with the group. In recommending this expanded participation, I am specifically seeking to avoid placing WSAC or Water Commission members in the position of having to be a go-between between interested individuals and the learning and understanding that it will be the goal of this effort to develop.

In recommending this approach, it is important for everyone to understand that I have no expectation that challenging questions and issues about the models the City uses won't emerge. By recommending that we work with citizens to explore how these models work, what their inputs and outputs are, and

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<sup>1</sup> The existing approach to water demand forecasting will be included in the scope of this working group. In addition, I have given direction to our WSAC consulting team to begin work on an econometric demand forecasting model that will be used for future demand forecasting beginning with the work on updating the Urban Water Management Plan next year. An econometric demand forecasting model will give the City an opportunity to include economic factors such as price and income in demand forecasting, which should improve the accuracy of the forecasts. The working group will have an opportunity to provide input to the consultant team on the development of the new econometric demand forecasting model.



the model strengths and weaknesses, which all such tools have, I am implicitly acknowledging that we are open to learning about citizen concerns and issues about the models and analytical tools we use in water planning. I am also acknowledging that we are open to taking steps to address those issues where feasible and necessary. That said, and just to be clear, I am not agreeing that working group members will exercise any final decision-making authority over what models and analytical tools the City uses in water planning or the data inputs that are used in these models. I do not want anyone to view this statement as anything more than a practical limitation that is being openly communicated up front. And I do want people to recognize that by agreeing to form and support such a working group in the first place, I am willingly opening to public scrutiny what many consider to be the mysterious “black boxes” that drive outcomes for water policy.

The timeframe for the performance of this working group is now, with membership defined by the conclusion of the Water Commission meeting on October 6, 2014.

A work plan and schedule for the working group will be developed by City staff in collaboration with relevant members of the consulting team. The timeline for completion of the working group’s activities will be December 19, 2014. This timeline is necessary to allow modeling results to be produced for use by the WSAC during the real deal phase of their work.

At the July Meeting, you gave the facilitation team permission to look into the 'slide 55' questions Rick raised. We teased out the issues in Rick's e-mail, discussed them with Rick and Rosemary and continued an ongoing discussion in various ways. The point wasn't to fix "slide 55" in amber and then analyze it to death. In many ways, the success of this discussion is that slide 55 should become history--it was meant to prompt discussion and it has succeeded in that!

In the meantime, the City's and Stratus's analyses and thinking about the process were becoming more sophisticated. A way emerged. Here is a summary of that emergence:

- In your packet you will find Rosemary's Concept Paper for the formation of a Modeling and Forecasting Working Group. There will be negotiations about this to be sure! But in the meantime, these are the kinds of things that should be shared in such a context:
  - The data on which any graphs are based, such as supply data
  - More detailed information about different instream flow regimes
- The Ctte would benefit with greater shared knowledge about how/when/why Loch Lomond is drawn from and the relation of this management choice to risk. (Supporting this Ctte understanding would presumably be one of the goals of the Working Group). These might include:
  - Management issues related to draw-down, instream flow, peak demand etc.
  - Inputs, outputs and assumptions related to the rule curve and
  - Discussion about which of these management approaches to use in the baseline
  - Clarity about which demand assumptions are being used.
- As new model are shared with and beyond the working group, each graph should be accompanied by a short list of information about inputs;
- Expected benefits from alternatives do not go in the baseline, nor does maintenance, However:
- As the Ctte is able to identify alternatives that are universally loved and relatively reliable, what Karen calls the "Small But Powerful", it would be beneficial to consider a graphic that shows the expected diminution in the supply-demand gap. That would happen ~early in the Real Deal.

The summary above captures the grist of the discussion. On the following pages, which are attached for background (or in case you suffer from insomnia), the left-hand column is taken from the e-mail Rick sent to the Committee on August 1st, 2014. The 'underlying interests' reflect ongoing conversations with Rick and Rosemary. The 'notes' are... notes. And the 'resolution' captures a convergence of thinking between Rick and Rosemary that I believe the rest of the Ctte would find positive--and certainly can raise issues about if there is hesitation or disagreement. This discussion would be most likely to come up in the agenda related to the proposed Modeling and Forecasting Working Group and in the discussion Bob will lead about baselines.

Issue	Underlying Interest	Notes	Resolution
1977 model be updated with this year's hydrology.	<ul style="list-style-type: none"> <li>• Current information</li> <li>• Clarity about what goes into the each S/D graph</li> <li>• Clarity about how those inputs are analyzed</li> <li>• Have solid Ctte agreement on baseline and other foundational work</li> <li>• Keep focus on Ctte rather than having numerous dueling analyses outside of Ctte</li> <li>• Ability to explain direction of Ctte to constituents</li> </ul>	<b>RESOLUTION:</b> <ul style="list-style-type: none"> <li>• As new graphs are created, each graph should show "hydrology from year X, previous reservoir levels from year Y, in-stream flows from system Z" and so forth;</li> <li>• Creation of "model and forecasting" Working Group where assumptions and inputs will be discussed.</li> </ul>	
Make assumptions and data public.		Used different fish flow assumptions.	
Reconcile slide 55's 650 mg shortfall with April Water Commission presentation predicting 383 mg.			
Assume state will grant water rights; want to subtract the expected benefit of that into the estimated shortfall	<ul style="list-style-type: none"> <li>• Make sure that the graph that describes your expected shortfall is accurate or, if accuracy is too much to ask given levels of uncertainty, then at least show the uncertainty of the expected shortfall.</li> <li>• If the graph is more intense and compelling than is warranted, find ways to make it more 'true'</li> </ul>	<ul style="list-style-type: none"> <li>• Water rights and subsequent management changes is an alternative</li> <li>• It is not a universally loved alternative</li> </ul>	<ul style="list-style-type: none"> <li>• Benefits of alternatives do not belong in the baseline.</li> <li>• If there is a population of alternatives that are universally loved and whose benefits are relatively certain, may be a way to express those in a Real Deal "this is the state of our problem" graph. But we are not there yet.</li> </ul>
In normal years Loch Lomond supply an amount of water = to max water rights for the reservoir (1 bg/year)	Understanding	There just seems to be a lot of confusion about the rule curve!	Shared learning! (The proposed subctte would help with this.)

Issue	Underlying Interest	Notes	Resolution
Actual avg allocation ~ half what it could be	<ul style="list-style-type: none"> <li>• Making the wisest use of the “insurance policy” that that extra water in Lock Lomond represents</li> <li>• Being transparent about that water, what it represents, how it could be used and its relation to risk</li> </ul>	<p>Notes:</p> <ul style="list-style-type: none"> <li>• This is a fascinating risk issue.</li> <li>• One argument, which I think fits in a “no big capital investment” view, is that one should draw down as <i>little</i> as possible so that dry years then require less curtailment. Another view is that one should draw down as <i>much</i> as possible in order to give more to the fish.</li> </ul>	
Is Loch Lomond being drawn down too little?			
Are various ongoing measures considered in the baseline?	A clear and intellectually rigorous baseline	Bob is going to explain baseline approaches, and this will probably include a discussion of various gray areas.	<ul style="list-style-type: none"> <li>• If it is an alternative, the benefits don’t get calculated into the baseline</li> <li>• If it is maintenance, there is nothing to put in the baseline</li> <li>• If it really is ongoing and will result in higher yield or less demand, then it should be calculated in the baseline (and that should be made explicit in the work of the Working Group).</li> </ul>
Is DFG-5 the ceiling on in-stream fish flow requirements?		No.	
Quoting CaDFW (from DEIR comments?)		I think this is probably not on point.	

Issue	Underlying Interest	Notes	Resolution

**Baseline Development:  
A Quick Look at Comparing CMIP3 to CMIP5 GCM Outcomes for Santa Cruz**

Bob Raucher  
September 18, 2014

As part of developing the “baseline,” we are working to integrate climate change information into the analysis of surface water stream flows (developed by Shawn Chartrand, at Balance Hydrologics). These results will then be used as inputs in the *Confluence* model (developed and run by Gary Fiske), so we can examine impacts on surface water yields and system performance.

As part of this on-going work item, we have been examining what climate change information to place into this assessment. The initial effort is looking at a relatively benign (relatively “wet”) climate change projection to integrate into the baseline (for what we are calling an “Enhanced Traditional” scenario, which is a “best case” scenario against which to evaluate the status quo water system as baseline). We also plan, later, to use results from relatively “dry” climate change projections to better assess outcomes under the Climate Change scenario.

The on-going work examining climate change impacts on surface water flows and system performance for Santa Cruz draws on downscaled projections from *CalAdapt*, derived from two Global Climate Models (GCMs) selected from the suite of CMIP3 GCMs used in IPCC’s 4<sup>th</sup> *Assessment Report*. This enables an expeditious look at potential climate change impacts, as the downscaled results are already available, and Shawn Chartrand has already accessed and reviewed them. He currently is working on developing the best approach for integrating these climate change impacts through his flow model, and these results will then be fed by Gary Fiske through the *Confluence* model.

There is a new suite of GCMs from the more recent IPCC’s 5<sup>th</sup> *Assessment Report*, and these are known as the CMIP5 suite of GCMs. Downscaled results for the CA-endorsed subset of CMIP5 GCMs are not yet available from *CalAdapt*. However, we have our own set of CMIP5 results, derived from a similar approach, as reported in materials we circulated to the Committee in late July.<sup>1</sup> Hence, we are able to examine how the CMIP3 findings may differ from the more recent CMIP5 results.

We undertook a preliminary investigation of how the CMIP3 results may differ from the newer suite of CMIP5 GCMs, to gain some perspective as to whether the newer models might yield significantly different results than those derived from CMIP3. We had run projections for 3 of the CA-endorsed

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<sup>1</sup> The results generated and reported here by Stratus, for both CMIP3 and CMIP5 GCMs, are derived using SimCLIM 2013 software (Yin et al., 2013; Warrick, 2009). The results developed and available through *CalAdapt* may entail a somewhat different methodology and/or report results in different spatial grids or timesteps. Both approaches entail “Bias-Correction Spatial Disaggregation” (BCSD) which is a commonly used method to increase the resolution of the GCM data and “correct” for biases in the GCM. “Biases” are identified by examining differences between climatological mean values for the observed data and GCM-generated values for a historical reference period. This correction is done at a higher spatial resolution than provided by the GCM (with GCM grid sizes typically over 100 miles by 100 miles). The “correction” is then applied to future GCM-generated projections.

CMIP5 GCMs in July, so we had those results available -- these are “bias corrected spatial disaggregation” (BCSD) results from the GCMs, to get to smaller grid scale results. The charts that follow provide some insights as to how the CMIP3 model results we derive compare to the CMIP5 results, and suggest that the results are likely to be similar (i.e., that using the CMIP3 results may be sufficient).

More specifically, for the least impactful (wetter) of the projections, the model being used from the CMIP3 suite has monthly results that are very similar to the CMIP5 projections for maximum monthly temperature (Figure 1), albeit a tad cooler in some months. For monthly precipitation, projections from the relatively wet CMIP5-based GCM are higher for the winter period, and roughly similar for other months (Figure 2). The annual average precipitation results (Figure 3) indicate that for an average year, total precipitation using the selected CMIP5 wet model is somewhat higher than the CMIP3 result. It is not clear if this divergence would have a significant impact on the results being generated by Shawn Chartrand using the CMIP3 results (Shawn may have some additional insight on this matter, based on what he uses as inputs and how sensitive his model is to such changes).

For the driest of the models examined (Figures 4 through 6), there does not appear to be much divergence across the CMIP3- and CMIP5-based results for the GCMs selected. There is however a variation in the seasonal pattern of monthly precipitation, and the CMIP3 model is drier in terms of average annual precipitation than the dry CMIP5 model used. So, using the CMIP 3 findings for the dry scenario should be suitably conservative.

It is not clear at this level of evaluation whether the use of the CMIP3 models will skew the streamflow and *Confluence* results to any significant degree, compared to the CMIP5 results. The results appear reasonably consistent across model generations. However, the seasonal results could have important implications for stream flows and water system performance (and Shawn Chartrand can probably offer some insight based on his experience and knowledge of the stream flow models).

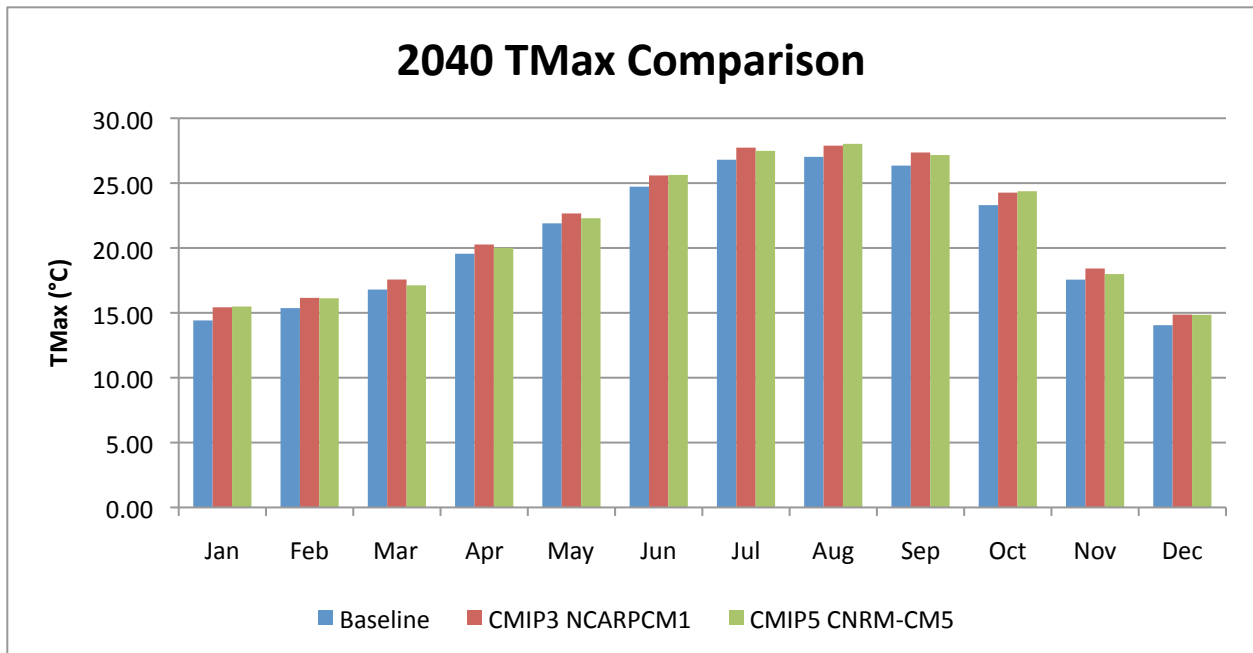


Figure 1: Wet case CC scenario – Max Monthly Temperature

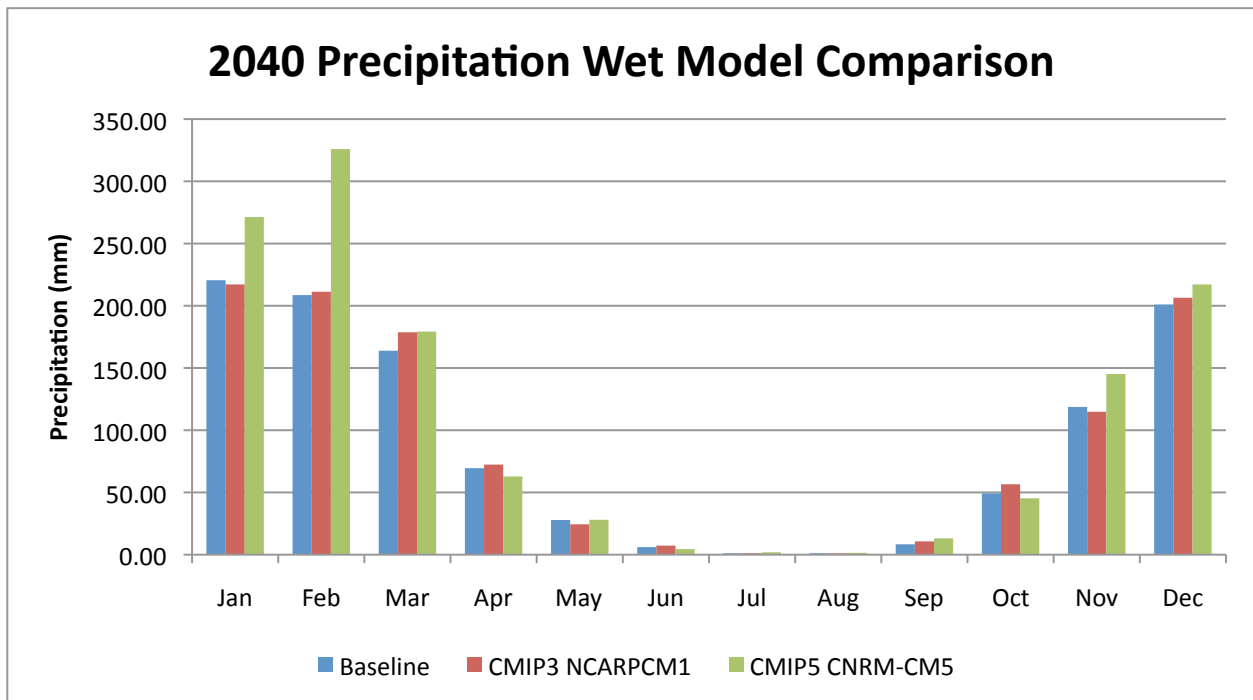


Figure 2: Wet Case CC Scenario – Monthly Precipitation



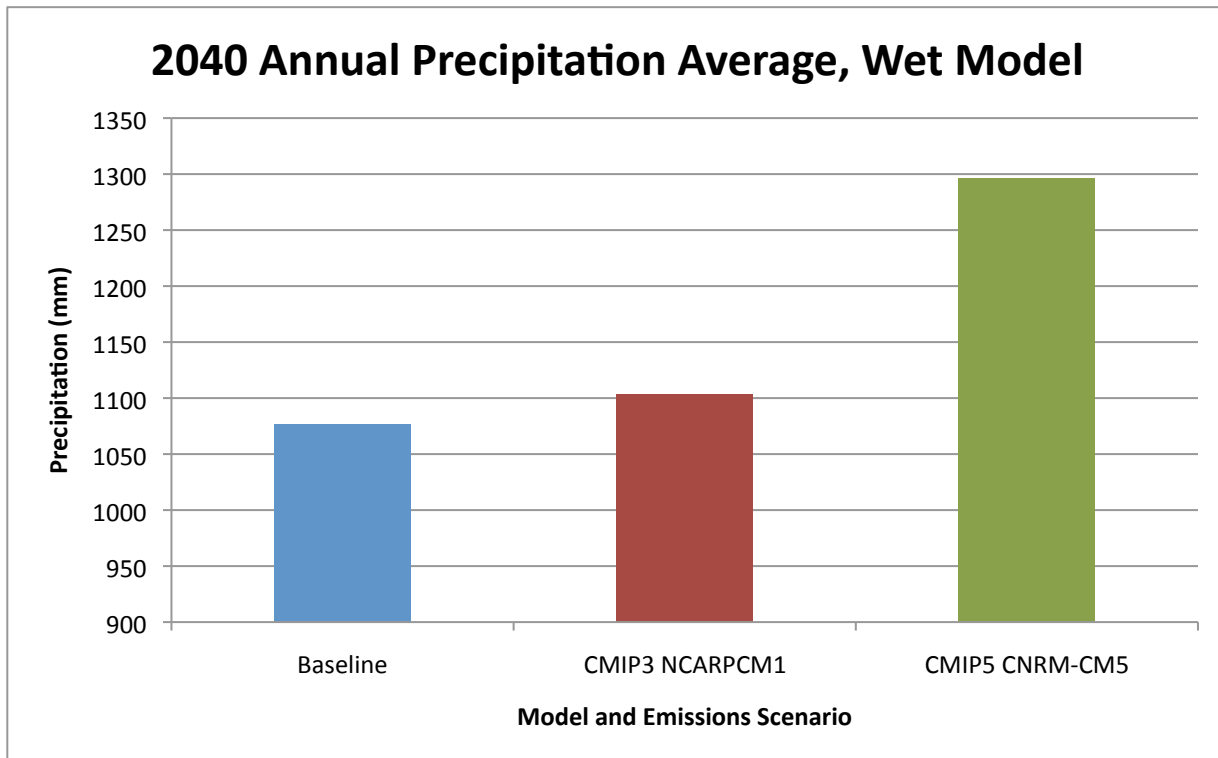


Figure 3: Annual average precipitation for wet models (CMIP3 compared to CMIP5 and baseline)

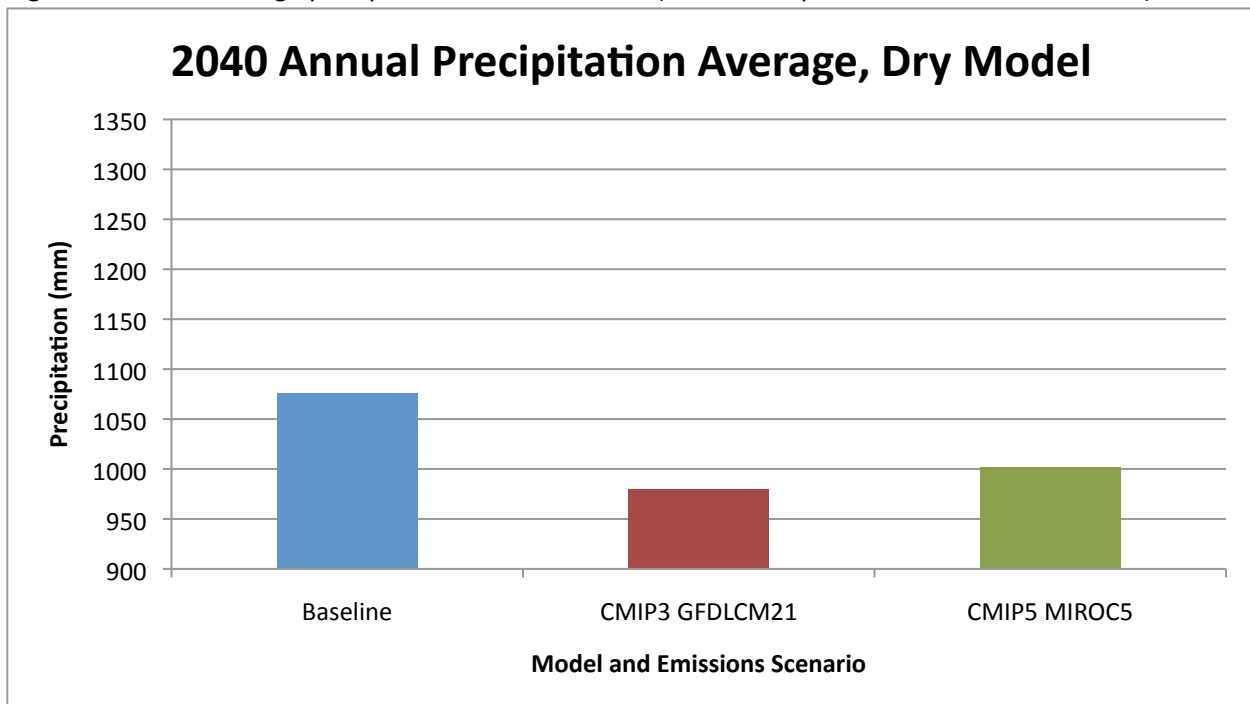


Figure 4: Annual average precipitation, dry models (CMIP3 compared to CMIP5 and baseline)

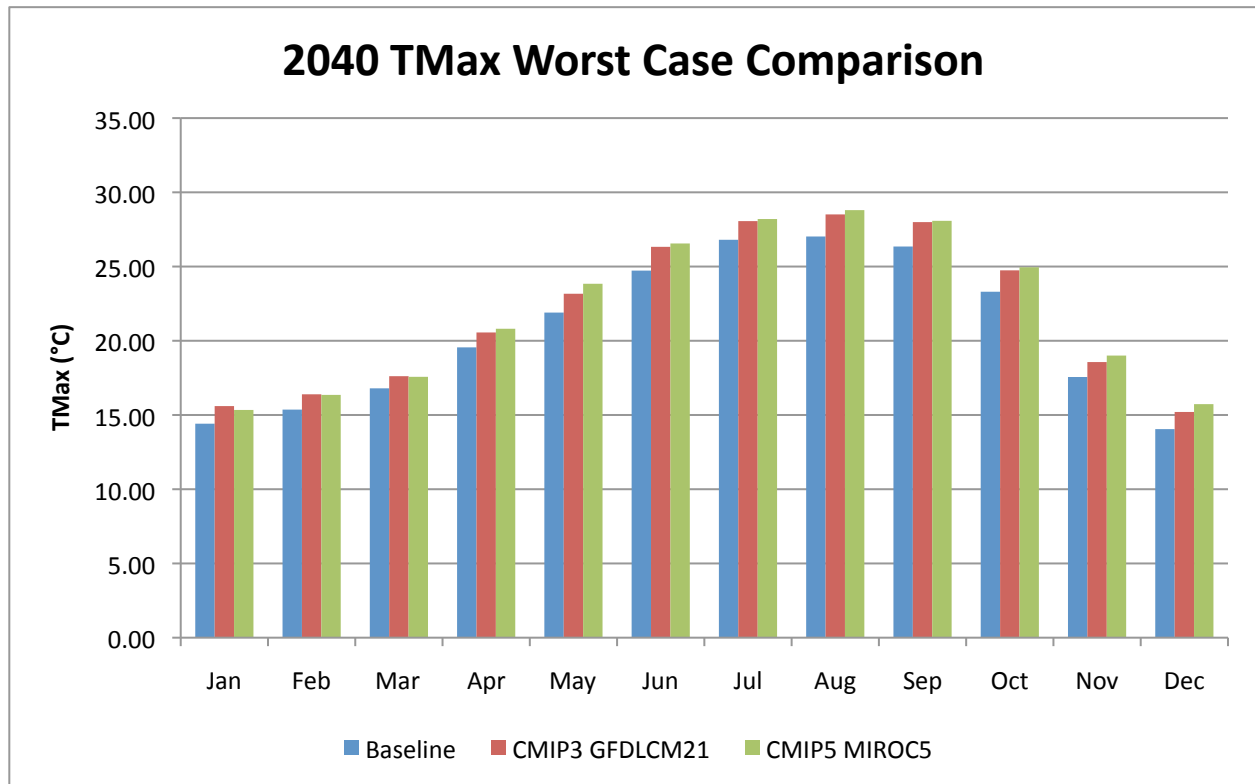


Figure 5: Dry Model projections: Max daily temp. (CMIP3 compared to CMIP5 and baseline)

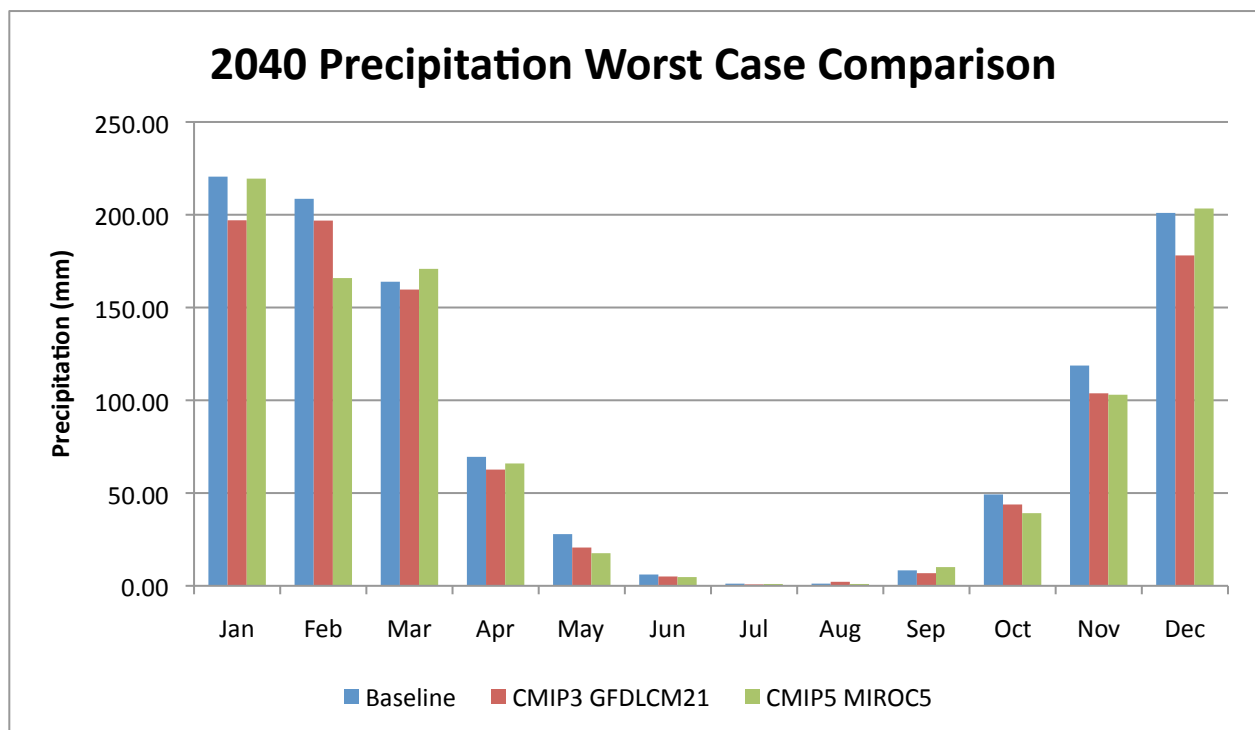


Figure 6: Dry model results: Monthly Precipitation (CMIP3 compared to CMIP5 and baseline)

## Draft Memorandum

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**To:** Water Supply Advisory Committee Members  
**From:** Karen Raucher, Stratus Consulting Inc.  
**Date:** 9/19/2014  
**Subject:** Scenarios: Developing Questions of Critical Concern, Related Criteria, Scales and Rankings

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During the last several Water Supply Advisory Committee (Committee) meetings a visioning process was used to brainstorm *Scenarios* that represent what the future may turn out to look like. This was done to ensure that regardless of how the future turns out, the *Alternatives* selected by the Committee can meet the community's water supply needs. As part of the brainstorming process the Committee identified visions of the future and began to identify *Questions of Critical Concern* about each future. The Questions of Critical Concern are useful in identifying both the criteria needed to evaluate how well the Alternatives perform in each Scenario, as well as the set of research tasks needed to develop answers for the questions (i.e., develop objective scales and ratings).

As part of the last meeting in August 2014, the Committee and a working group refined the list of *Criteria* and developed definitions. Stratus Consulting provided the Committee, as a separate memorandum included in this packet, with definitions of the Criteria with comments from Rosemary and Dana as well as a next iteration (September Iteration) and an Excel file that lists this set of criteria (with small suggested changes) with examples of rating scales (scales) for each criterion, as well as examples of how the scales can be used to develop *Ratings*.

In this memorandum we make suggestions for ways to further refine the Scenarios, Questions of Critical Concern, and Criteria. The objective of this next iteration is twofold: first, to have the Committee focus on the *Problem Statements*. A Problem Statement is used in the Multi-criteria Decision Support (MCDS) process as the objective to solve for. The Committee, therefore, needs to clearly define the Problem Statements for each Scenario. For example, as part of developing the scenarios and statements, the Committee needs to address the following question: *Do we have a complete non-duplicative set of Problem Statements that represent all the future uncertainties we want to examine?* Secondly, the Committee needs to review the current set of criteria, as developed to date, with an eye on identifying the additions and modifications needed to ensure that the criteria provide the Committee with the information they need to support good decision-making.

We look forward to the Committee's feedback, both prior to the September 24, 2014 Committee meeting, in writing as well as in person during the September meeting.

## Using an “If-Then” Lens

Although visioning is a great way to begin thinking about the future, a useful technique for refining the Scenarios further is to switch the lens away from visioning to an *if-then* statement. An if-then statement can also be used to establish the Problem Statements for MCDS. For example, *if* the future has changes in the hydrological cycle that affect both supply and demand, *then* we need these sets of Alternatives to meet water supply requirements (note that *sets of Alternatives* are used here to reflect the fact that the Committee is likely to compare sets of Alternatives rather than one Alternative to another Alternative; for example, each set might include additional Conservation Actions, Changes in Current Supply Management, and New Supplies).

### **Pull-out box: Scenario descriptions using the *if-then* statement**

**Traditional Scenario:** *If* the future looks exactly like the past except for changes in population, *then* the anticipated level of water demand is X and we need Alternative set A to meet the city’s water supply needs.

**Enhanced Traditional (best case) Scenario** – *If* the future looks exactly like the past except for changes in population and in-stream flow requirements for fish and the climate changes moderately (best case climate scenario), *then* the anticipated level of water demand is X and we need Alternative set B to meet the city’s water supply needs.

**Climate Change Scenario:** *If* the future looks exactly like the past except for changes in the hydrological cycle affect water supply extraction availability and demands, *then* we need Alternative set C to meet the city’s water supply needs.

**Economic Change Scenario:** *If* the future looks exactly like the past except for changes in the economic structure of Santa Cruz, and this changes water demand, *then* we need Alternative set C to meet the city’s water supply needs.

**Fish and Regulatory Scenario:** *If* the future looks exactly like the past except in-stream flow requirements for fish are increased and there are other new regulatory requirements that affect supply or demand, *then* we need Alternative set D to meet the city’s water supply needs.

**Sustainable Santa Cruz Scenario:** *If* the future looks exactly like the past except the residents of Santa Cruz have made it a primary driver to ensure that all the resources used in the city – including water - are sustainable over time, *then* we need Alternative set E to meet the city’s water supply needs.

**Worst Case Scenario:** *If* all the above scenarios combine to make a future that looks exactly like the past except:

- ▶ Population growth changes demand, AND
- ▶ Climate change alters the hydrology and demand, AND,
- ▶ Economic changes occur that create changes in demand, AND
- ▶ Fish and other regulatory requirements occur, AND
- ▶ Sustainability is a driving force.

*Then* we need Alternative set E to meet the city’s water supply needs.

Each Scenario provides the Committee with the opportunity to pose a unique *if-then* question – where the *if* represents a specific future and the *then* represents the set of Alternatives that provide the water supply requirements needed to meet that future. As you have heard many times, Scenario planning allows you to plan for more than one future.

### Potential Scenario Problem Statements

The pull-out box below provides an outline of potential Problem Statements, using the *if-then* lens. During the September meeting we will discuss these statements with the objective of further refining the Problem Statements and ensuring we have Problem Statements (i.e., scenarios) identified for every future the Committee wants to consider, without duplication.

In the remainder of this memorandum we provide a first cut at identifying, by Scenario, the Criteria and Questions of Critical Concern that *drive* each Scenario (*light up* in Carie’s speech). These represent a subset of the criteria previously developed and presented in the Excel spreadsheet – Criteria: September meeting. This criteria-sorting exercise is designed to support the Committee by identifying the specific research needs and criteria necessary and sufficient to understand and represent each plausible future.

During the September meeting, we will use the framework below as a kick-off to further refine the development of the Scenarios, Criteria, and Questions of Critical Concern. We will focus the discussion on ensuring that the information developed, and represented in each Criterion, is adequate but not redundant, and that the set of criteria supplies the Committee with the information they need to make good decisions.

### Traditional Scenario

- ▶ What is the demand for this Scenario that needs to be aligned with supply?
  - Criterion: Traditional supply-demand alignment criterion (note that this criterion is unique to this Scenario – this criterion can also be considered the Problem Statement that MCDS is solving)
  - Scale example: Millions of gallons per year
  - Sub-criteria:
    - Curtailment frequency and severity
      - a. Scale example: Curtailments no more than once every 10 years at Tier 2, and once in 15 years at Tier 3
    - Supply and demand by seasonality.
- ▶ What is the demand projection?
  - Information needed to develop the supply-demand alignment criterion.

- ▶ What are the changes in population, development patterns, and other assumptions used to develop demand projections?
  - Information needed to develop uncertainty scales.
- ▶ Does the most recent version of the Urban Water Management Plan(UWMP) represent what the Committee wants to consider as the Traditional Scenario?
  - Should we use this document to drive the Traditional Scenario? This would make it simple in that all assumptions are laid out and transparent.
- ▶ If so, what else is included in the most recent version of the UWMP that we need to understand to run this Scenario?
  - Information needed to build confidence in use of this source.

### **Climate Change Scenario**

- ▶ What is the demand estimate for this Scenario that needs to be aligned with supply?
  - Criterion: Climate change supply-demand alignment criteria (the Problem Statement – unique to this Scenario)
  - Scale example: Millions of gallons per year – sub-criteria include seasonality of supply and curtailment frequency and severity.
- ▶ What is the range of plausible changes in precipitation and temperature we want to examine?
  - Information needed to identify changes in supply.
- ▶ What are the changes in the local hydrology due to projected changes?
  - Information needed to identify changes in supply.
- ▶ What are the changes in extraction (i.e., supply) availability?
  - Information needed to identify changes in supply.
- ▶ What are the changes in extreme events due to climate change we want to examine?
  - Information needed to identify changes in supply.

- ▶ What are the implications of the change in extreme events on water quantity and quality?
  - Information needed to identify changes in supply.
- ▶ Will additional treatment regimens be required?
  - Water treatment cost criteria
  - Scale example: Cost/gallon.
- ▶ How will projected changes in temperature and precipitation affect demand (include seasonality and curtailment information)
  - Information needed to develop demand estimates.

### **Economic Change Scenario**

- ▶ What is the demand estimate for this Scenario that needs to be aligned with supply?
  - Criterion: Economic supply-demand alignment criteria (the Problem Statement – unique to this Scenario)
  - Scale example: millions of gallons per year – sub-criteria should include seasonality of supply and curtailment frequency and severity.
- ▶ What is the degree to which the availability of water supports or constrains the creation and sustainability of the local economy.
  - Criterion: Supports local economy
  - Scale example: Economy obtains needed supply with no more than 1 curtailment above 15% every 10 years.
- ▶ Availability of water supports or constraints the university's ability to create and sustain a level of positive activity that contributes to and is supportive of the desired characteristics of the larger community in Santa Cruz.
  - Criterion: UCSC
  - Scale example: we can do this in two ways – (1) qualitatively, or (2) develop real numbers of what they need.
- ▶ Availability of water supports or constrains the community's ability to grow in ways that are established by, for example, the city's General Plan,
  - Criterion: Impact of water on long-term growth
  - Scale example: The general plan calls for Z growth and needs X amount of water. A 3 meets or exceeds the target.



- ▶ Characteristic of a supply project that relates to how well the approach can be modified over time to respond to changing conditions.
  - Criterion: Adaptability
  - Sub criteria: Resilience – ability to effectively operate under a range of foreseeable and unforeseeable conditions
  - Scale example: Extremely resilient to changes
  - Sub-criteria: Scalability – flexibility to add capacity increments over time (scalability) or treat water from a variety of sources with different levels of quality would be examples of adaptability
  - Scale example: Highly scalable
  - Sub-criteria: Preserves future choices – saves options that may be needed if the future looks different than the one projected
  - Scale example: Does not create an irreversible situation, and can be implemented in the future as part of an adaptive management approach.

### **Fish and Regulatory Scenario**

- ▶ What is the demand estimate for this Scenario that needs to be aligned with supply?
  - Criterion: Fish and regulatory supply-demand alignment criteria (the Problem Statement – unique to this Scenario)
  - Scale example: millions of gallons per year – sub-criteria include seasonality of supply and curtailment frequency and severity.
- ▶ Minimizes impacts on fishery resources and aquatic ecosystems.
  - Criterion: Fishery values
  - Scale example: Provides in-stream flows at current regulatory requirements.
- ▶ What are the changes in in-stream flow requirements for fish?
  - Information needed to identify changes in supply availability.
- ▶ What other regulatory requirements need to be considered?
  - Information needed to identify changes in supply.
- ▶ What are the changes in supply, demand, and treatment due to additional regulatory requirements (these will be split up)?

**Sustainable Santa Cruz Scenario**

- ▶ What is the demand estimate for this Scenario that needs to be aligned with supply?
  - Criterion: Sustainable Santa Cruz supply-demand alignment criteria (the Problem Statement – unique to this Scenario)
  - Scale example: millions of gallons per year – sub-criteria include seasonality of supply and curtailment frequency and severity.
- ▶ What are the energy consumption and carbon footprint costs?
  - Criterion: Carbon costs
  - Scale example: Carbon footprint is less than X metric tons of CO<sub>2</sub>e per AF of water produced.
- ▶ Enhance the community's ability and capacity to plan and operate in a manner that is sustainable and protects the natural environment.
  - Criterion: Eco-system values
  - Scale example: + + + (i.e., qualitative scale – a “3” being “high.”)
- ▶ Designed to minimize or appropriately mitigate the impacts of water supply projects and operations on terrestrial resources and ecosystems.
  - Criterion: water resources – groundwater and surface water – values
  - Scale example: + + +.
- ▶ The degree to which water cost increases make water less available to those with lower incomes or require a disproportionate amount of a household's income to pay for water service.
  - Criterion: Affordability of water rates
  - Scale example: Household water bills will stay below 1% of median household income (note that the above is based on a U.S. Environmental Protection Agency guideline, but alternative metrics can be applied, such as households in the lowest quintile of the income distribution have water bills less than 5% of household income).

- ▶ Protection of public health – includes air quality impacts due to increases in energy air pollution.
  - Criterion: Public health – air
  - Scale example: For air quality – low additional energy contribution to public health risk issues from air quality – create ranges (i.e., based on range of estimated emissions of key air pollutants, as typically linked to levels of energy use and energy sources).
- ▶ Align with the community’s desire to be a leader and to look at issues and adopt solutions in a sustainable manner
  - Criterion: Pride in the community’s water strategy.
- ▶ Manages and protects natural and water resources so that they are sustainable at the current level over time
  - Criterion: Sustainability.
- ▶ Recognizes and values the contributions that biodiversity and environmental resilience play in supporting human activity and the importance of taking steps to protect and enhance the environment’s ability to produce and deliver these benefits.
  - Criterion: Promote biodiversity and environmental resilience

### **Worst Case Scenario**

- ▶ What is the demand estimate for this Scenario that needs to be aligned with supply?
  - Criterion: Worst case Santa Cruz supply-demand alignment criteria (the Problem Statement – unique to this Scenario).

Takes the most limiting demand projections – including limits on seasonality of supply and curtailments – from each individual Scenario in order to examine if the future brings all of these things to pass.
  - Scale: Millions of gallons per year – sub-criteria include seasonality of supply and curtailment frequency and severity.

### **Common across All Scenarios**

Except for the supply-demand alignment criterion, which establishes the Problem Statement for each Scenario, all the criteria will also be included in all the MCDS Scenario evaluation runs.

These are merely illustrated by Scenario to illustrate how some criteria drive a Scenario and to show how they relate to Questions of Critical Concern for the individual Scenarios. The objective of this sorting is to support the Committee's development of a set of criteria and research tasks. We look forward to a rich discussion and further refinements.

# Memorandum

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**To:** Water Supply Advisory Committee Members  
**From:** Karen Raucher, Stratus Consulting Inc.  
**Date:** 9/19/2014  
**Subject:** Next round: Criteria, scales, and ratings

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During the August 2014 meeting, the Water Supply Advisory Committee (Committee) charged Stratus Consulting with taking a first cut at developing rating scales (scales) that can be used as part of the Multiple-criteria Decision Support process. Attached is an Excel file that provides a draft of potential scales for each criterion.

The following provides a brief description of the Excel file:

- ▶ Column A provides a short name for each criterion – as well as suggestions (in blue) for potential groupings.
- ▶ Column B provides a brief definition for each criterion. These are shortened versions of the descriptions developed by Rosemary and Dana. Stratus Consulting-suggested edits are provided in italics.
- ▶ Columns C–E provide examples of potential scales using a three-point system.
- ▶ Tabs have been included for each of the suggested primary criterion. These tabs are included at this time merely to present how the scales can be used to develop ratings.

Examples of scales are provided for most of the criteria. The scales are primarily provided in the format that still needs to be developed. For example, number of gallons of yield per year as opposed to 200 million gallons per year (i.e., the current version does not typically include quantifiable numbers). Although not all categories can be quantified, whenever possible it is typically useful to use objective values when developing scales. Future analysis will be used to help define empirically based scales. We suggest adding a column that reflects tasks developed to help develop scales for each criterion.

The attached Excel file is a working document that will continue to be refined during both Recon and the Real Deal. We look forward to gathering the Committee's inputs on this iteration as comments before the meeting as well as in-person during the September meeting.

from Rosemary and Dana (*with suggested additions by Stratus Consulting in italics*)

Criteria	Brief description	Scale = 3 (high score for a desirable outcome)	Scale = 2	Scale = 1
Supply	<i>Not really a criteria - big versus small is probably not a sorting criteria - but this value is important to WSAC in developing portfolios of Alternatives to meet Demands in the different Scenarios</i>	Alternative A = Supply mg/y		
Implementability	Characteristic of a supply project that relates to the siting and environmental and regulatory review processes associated with a project.			
	Technically Feasible Now Approaches, technologies and regulations guiding the development and operation of the supply project, particularly related to production, storage and treatment, are known and examples of their application elsewhere provide confidence that they could be applied here.	Proven technologically, used widely in the field at City-level scale	Proven technology in the field, but not (yet) widely used at City-level scale for public water supply	Un-proven Technology -- possibly promising in lab and small-scale pilots, but not yet applied in the field for City-scale water supply
	Technically feasible in Future Approaches, technologies and regulations guiding the development and operation of the supply project, particularly related to storage and treatment, are not firmly established but are under development and likely to be available for implementation within no more than 5 years.	Proven Technology - proto-types and pilot testing demonstrate feasibility likely in next 1-5 years	Proto-types currently operating - showing good potential for future 5 to 10 years	Un-proven for the future - Still in the research or bench-scale phase
	<i>Permit/Legally Feasible now</i>	City has examined and has high-confidence level that the alt can be easily implemented in SC in terms of permits and related issues	City has not examined for local use but still has high confidence alt can be easily implemented in SC	City has grave concerns the alt is not implementable in SC
	<i>Permit/Legally feasible in the future</i>	City has examined and has high-confidence level that the alt can be easily implemented in SC in the next 1-3 years	City has not examined for local use but still has high confidence alt can be easily implemented in SC in 1-3 years	City has grave concerns the alt is not implementable in SC
	<i>Fatal Flaw What is the fatal flaw, is it still fatal and what could be done to remove it</i>	fatal flaw is easy to remove	Fatal flaw may require work but can be removed	Fatal flow is still fatal
	<i>Politically feasible</i>	The city has examined and found this Alternative to be easily implementable in any political environment	The city has examined and found this Alternative to be easily implementable in the current political environment	The city has examined and found that this cannot be implemented
Effectiveness				
	Reliability Characteristic of a supply project that relates to the certainty of project yield under a range of foreseeable and unforeseeable conditions. Reliability is mainly related to hydrologic and/or hydrogeological conditions that are variable over time and under various climatologic conditions.	Highly reliable under all conditions - including plausible changes in climate -- e.g., likely to provide at least 90% of projected (target) yields in any given year or season	Moderately reliable under current conditions -- likely to provide at least 80% of projected yields in any given year, and at least 90% of target yields in 95% of future years	Not very reliable under current or potential future conditions -- e.g., less than 75% of target yields in 20% of years.
	<i>Curtailments Scale includes curtailment size, frequency and duration</i>	Curtailments no more than once every 10 years at Tier 2, and 1 in 15 years at Tier 3	Curtailments no more than twice every 10 years at Tier 2, and once every 8 years at Tier 3	Curtailments of more than 25% 2 years or more every decade.

**Criteria****Brief description****Scale = 3 (high score for a desirable outcome)****Scale = 2****Scale = 1****Financial Costs and Benefits of water**

Financial Characteristics of each Alternative

*Financial Cost effectiveness - This is a summary value developed into a Lifecycle Cost per AF or MG water metric*

Place ranges of costs here - with least expensive a 3 and most expensive a 1 - need \$ values to populate this scale (e.g., < \$750/AF is a "3")

Place ranges of costs here - with least expensive a 3 and most expensive a 1 - need \$ values to populate this Scale (e.g., between \$750 and \$2000/AF)

Place ranges of costs here - with least expensive a 3 and most expensive a 1 - need \$ values to populate this Scale (e.g., greater than \$2000/AF)

Implementation cost Implementation costs are those required to get a project or program up and running.

Place ranges of costs here - with least expensive a 3 and most expensive a 1 - need \$ values to populate this Scale

Place ranges of costs here - with least expensive a 3 and most expensive a 1 - need \$ values to populate this Scale

Place ranges of costs here - with least expensive a 3 and most expensive a 1 - need \$ values to populate this Scale

O & M costs Operating costs are those that result from the day to day operation of the project or program.

Place ranges of costs here - with least expensive a 3 and most expensive a 1 - need \$ values to populate this Scale

Place ranges of costs here - with least expensive a 3 and most expensive a 1 - need \$ values to populate this Scale

Place ranges of costs here - with least expensive a 3 and most expensive a 1 - need \$ values to populate this Scale

Lifecycle cost (note, we have Implementation, planning and O & M costs combined this with lifecycle cost, discounted over the project life time. This above) value is used to develop the Financial cost effectiveness value

Place ranges of costs here - with least expensive a 3 and most expensive a 1 - need \$ values to populate this Scale

Place ranges of costs here - with least expensive a 3 and most expensive a 1 - need \$ values to populate this Scale

Place ranges of costs here - with least expensive a 3 and most expensive a 1 - need \$ values to populate this Scale

**Environmental well-being**

This criterion relates to the degree to which a water supply or demand management strategy contributes to or impacts the quality and sustainability of the natural environment

Sustainability Manages and protects natural and water resources so that they are sustainable at the current level over time

+++

++

+

Promote biodiversity and env'l resilience Recognizes and values the contributions that biodiversity and environmental resilience play in supporting human activity and takes steps to protect and enhance the environment's ability to produce and deliver these benefits.

+++

++

+

Permit, build, by land etc.

Supports ecosystem values *Could be merged with above* carbon costs Energy consumption and carbon footprint

+++ Carbon Footprint is less than x Metric Tonnes of CO2e per AF of water produced

++ Carbon Footprint is between x and y MT of CO2e emissions /AF ++ (moderate)

+ Carbon Footprint is greater than y MT CO2e/AF + (low)

Eco-system values Enhance the community's ability and capacity to plan and operate in a manner that is sustainable and protects the natural environment.

+++ (i.e., qualitative scale - a "3" being "high")

++

+

Fishery values Minimizes impacts on fishery resources and aquatic ecosystems

+++

++

+

Water resources - gw and surface - Designed to minimize or appropriately values mitigate the impacts of water supply projects and operations on terrestrial resources and ecosystems

+++

++

+

**Community Well-Being**

Encompasses a range of social and community value issues

E.g., avoid env'l backlash

Community Character The look and feel of the community as it relates to the availability of and demand for water.

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+

Criteria

	Brief description	Scale = 3 (high score for a desirable outcome)	Scale = 2	Scale = 1
Supports local economy	Degree to which the availability of water supports or constrains the creation and sustainability of the local economy	Economy obtains needed supply with no more than 1 curtailment above 15% every 10 years.	Economy obtains needed supply with no more than 2 curtailments above 20% every 10 years.	Economy obtains less than 80% of needed supply in 4 or more years every decade
Social and Political Stability	To the degree to which the availability of water supports or constrains the community's social and political stability.	+++	++	+
UCSC Vibrant	Availability of water supports or constrains the University's ability to create and sustain a level positive activity that contributes to	We can do this in two ways - 1) qualitatively, or 2) develop real numbers of what they need		
Impact on long-term growth	Availability of water supports or constrains the community's ability to grow in ways that are established by, for example, the City's General Plan,	The general plan calls for Z growth and needs x amount of water. A 3-meets or exceed target	80 to 100% of target	<80% of target
Support local parks and recreation opportunities		Parks and recreation fields are never/rarely impacted by water curtailments	Parks and recreation facilities always receive enough water to stay alive - but curtailments limit aesthetics and usefulness in many years (more than 4 years out of every 10)	Curtailments mean parks and recreation facility plantings are likely to die more than once every decade, and either require replanting or abandonment
Supports community gardens		Water supply supports all community gardening requirements	Water supply supports local natural ecosystem appropriate gardening	Water supply curtailments result in the frequent requirement to not water community gardens
Supports a Climate Change-adapted community garden plantings and landscaping requiring irrigation during the dry season.	Modified by the large scale elimination of	+++	++	+
Energy consumption	Slightly different than carbon footprint	Energy use is below x/kWh/AF	Energy use is between x and y kWh/AF	Energy use is > y kWh/AF
Politically acceptability	Placed in Implementability - but could be inserted here instead	+++	++	+
Affordability of water - rates	The degree to which water cost increases make water less available to those with lower incomes or require a disproportionate amount of a household's income to pay for water service.	Household water bills will stay below 1% of median household income (Note above is based on a US EPA guideline, but alternative metrics can be applied, such as "households in the lowest quintile of the income distribution have water bill less than 5% of HH income).	Water bills will between 1% and 2% of median household income	Water bills will be greater than 2% of median household income
Public health - air	Addresses the degree to which the Alternative affects public health. Protection of public health - includes air quality impacts due to increases in energy air pollution	For air quality - low additional energy contribution to public health risk issues from air quality - create ranges (i.e., based on range of estimated emissions of key air pollutants, as typically linked to level of energy use and energy source)	For air quality - additional energy contribution to public health risk issues from air quality - create ranges -- this would be moderate level of air pollution-associated risk or emission levels	For air quality - additional energy contribution to public health risk issues from air quality - create ranges -- this end of the scale would be for high relative risk
Allows for growth	The degree to which the availability of water supports or constrains the community's ability to grow in ways that are established by, for example, the City's General Plan,	Facilitates a highly desirable level and pattern of growth in terms of population, land use-related pattern and style of development, and enhancing economic vitality (obviously this could be very subjective)	Facilitates a moderately desirable level and pattern of growth	Contributes to undesirable levels or patterns of growth
Pride in the Community's Water Stra	Degree to which the selected strategy would align with the community's desire to be a leader and to look at issues and adopt solutions	+++	++	+



**Criteria****Brief description****Scale = 3 (high score for a desirable outcome)****Scale = 2****Scale = 1****Adaptability**

Characteristic of a supply project that relates to how well the approach can be modified over time to respond to changing conditions.

**Resilience** Ability to effectively operate under a range of foreseeable and unforeseeable conditions.

Extremely resilient to changes

Moderately resilient to changes

Not very resilient

**Scalable** Flexibility to add capacity increments over time (scalability), or treat water from a variety of sources with different quality, would be examples of adaptability

Highly scalable

Moderately scalable

Not readily scalable

**Preserves future choices** Saves options that may be needed if the future looks different than the one projected.

Does not create irreversibilities, and can be implemented in the future as part of an adaptive management approach

May create some irreversibilities, and might be reasonably implementable in the future if postponed now.

Creates a significant irreversibility; locks City into limited set of future options

**Demand**

*Not really a criteria but this value is important to WSAC in developing portfolios of Alternatives to meet Demands in the different Scenarios*

**Supply Demand Alignment**

Supply = Demand (S mg/y = D mg/y) (D is defined in each scenario)

Supply = Demand (S mg/y = D mg/y) (D is defined in each scenario) 95% to 100% of years and seasons

Supply = Demand (defined in scenario) 85% - 95% of the time

Supply = Demand (defined in scenario) less than 85% of the time

Demand - Traditional D = garden needs + baseline

For example - Using Conservation measures x, y and z and Alts A, B and C; this set of Alts represents the least expensive way to meet this D so it is a 3

For example - Using Conservation measures x, y and z and Alts A, B and C; this set of Alts represents the second most expensive way to meet this D so it is a 2

For example - Using Conservation measures x, y and z and Alts A, B and C; this set of Alts represents the most expensive way to meet this D so it is a 1

Cost to consumer

Demand - Enhanced traditional (Best Case) D = non-landscape needs + baseline

For example - Using Conservation measures x, y and z and Alts A, B and C; this set of Alts represents the least expensive way to meet this D so it is a 3

Human Health

Demand - Climate Change D = landscape needs + baseline

For example - Using Conservation measures x, y and z and Alts A, B and C; this set of Alts represents the least expensive way to meet this D so it is a 3

Other laws, regs

Demand - Economic change D = parks & recreation + baseline

For example - Using Conservation measures x, y and z and Alts A, B and C; this set of Alts represents the least expensive way to meet this D so it is a 3

Backyard food production aesthetics

Demand - Fish and regulatory D = Fishery + baseline

For example - Using Conservation measures x, y and z and Alts A, B and C; this set of Alts represents the least expensive way to meet this D so it is a 3

Backyard food production, aesthetics

Demand - Sustainable Santa Cruz D = Growth + baseline

Demand reliability The need for the supply to be reliable

This demand requirement is imperative

This demand requirement is necessary but not imperative

This demand requirement is totally flexible

Supports long-term economic growth as defined in City Vision D = Water for the economy + baseline

For example - Using Conservation measures x, y and z and Alts A, B and C; this set of Alts represents the least expensive way to meet this D so it is a 3

## Evaluation Criteria Definitions – With Track Changes and Comments from

### Rosemary, Dana and Doug

This document shares the list of criteria developed during both the August WSAC and working group meetings, with comments from Rosemary, Dana and Karen. The suggested changes reflected in the comments below are presented in the attached document – Evaluation Criteria Definitions – September Iteration. This document is intended to provide the Committee with insights into Rosemary, Dana, and Karen’s thought process while the attached – September Iteration document, is intended to provide the Committee with a cleaned up version that can be used to further refine the Criteria definitions. Note that all of these documents are works in progress!

**Supply:** Water available or developed to serve municipal and industrial needs

- Reliability – Characteristic of a supply project that relates to the certainty of project yield under a range of foreseeable and unforeseeable conditions. Reliability is mainly related to hydrologic and/or hydrogeological conditions that are variable over time and under various climatologic conditions.
- Supports ecosystem values – supply project is or can be developed and operated in a manner that minimizes or effectively mitigates for disruption to aquatic or terrestrial ecosystems.
- Resilience – Characteristic of a supply project that relates to a project’s ability to effectively operate under a range of foreseeable and unforeseeable conditions. Resilience is mainly related to natural disasters such as earthquakes, major storm events, etc.
- Adaptability – Characteristic of a supply project that relates to how well the approach can be modified over time to respond to changing conditions. Flexibility to add capacity increments over time (scalability), or treat water from a variety of sources with different quality, would be examples of adaptability.
- Implementability – Characteristic of a supply project that relates to the siting and environmental and regulatory review processes associated with a project.
- Technically feasible now – approaches, technologies and regulations guiding the development and operation of the supply project, particularly related to production, storage, and treatment, are known and examples of their application elsewhere provide confidence that they could be applied

Doug Engfer 9/15/14 12:11 PM

**Comment:** What seems to be missing here is simply the productivity of the item in question: how much water will it provide? Where is it?

Karen Raucher 9/19/14 8:16 AM

**Comment:** Broken out to recognize Supply is not a criterion but a metric used as part of the Supply-Demand Alignment Criterion

Karen Raucher 9/19/14 8:29 AM

**Comment:** Based on Dana and Rosemary’s comments below this criteria has been combined with environmental well being

danajaco 9/19/14 9:24 AM

**Comment:** This seems to be duplicative. I would remove it since this concept is covered in the environmental wellbeing section, otherwise you get double counting which will skew the results in favor of environmentally benign projects. If the committee wants to decide to value environmental effects higher this can be done with the weighting.

Rosemary Menard 9/8/14 9:09 PM

**Comment:** I agree with Dana’s comment here – when you’ve gone through the whole set, this kind of thing pops out

danajaco 9/8/14 6:26 PM

**Comment:** This could be folded into the reliability if you think there are too many sub-criteria. However, I do appreciate the distinction.

Doug Engfer 9/15/14 12:05 PM

**Comment:** I think that this should be part of our Reliability item – the distinctions here are not sufficient to warrant a different sub-criterion.

Karen Raucher 9/19/14 9:24 AM

**Comment:** Suggest putting this under a category of Adaptability –and define in a slightly different way – as the Ability to effectively operate under a range of foreseeable and unforeseeable futures

Karen Raucher 9/19/14 8:30 AM

**Comment:** Suggest using this as a criterion with several sub-criteria

Karen Raucher 9/19/14 8:29 AM

**Comment:** Suggest using this as a criterion with sub-criteria

here.

- Technically feasible in the future – approaches, technologies and regulations guiding the development and operation of the supply project, particularly related to storage and treatment, are not firmly established but are under development and likely to be available for implementation within no more than 5 years.

#### Demand: Municipal and industrial water use

- Maximizes conservation --
- Reliability – Characteristic of a demand management approach or program that relates to the certainty of program yield under a range of foreseeable and unforeseeable conditions. Reliability is mainly related to the degree to which a demand management effort focuses on modifying fixtures used, for example through plumbing code changes, or targets behavior changes of users.
- Supports ecosystem values – demand management approaches that are or can be developed and operated in a manner that facilitates operating the water system in a manner that minimizes or effectively mitigates for disruption to aquatic or terrestrial ecosystems associated with extracting water from the natural environment for use by municipal and industrial customers.
- Resilience –
- Adaptability – Characteristic of a demand management program or approach that relates to how well the approach can be modified over time to respond to changing conditions. Flexibility to expand programs over time (scalability), or incorporate technological improvements in plumbing fixtures over time, would be examples of adaptability.
- Implementability – Characteristic of a demand management program that relates to the challenges of obtaining the projected savings. The degree to which programs require incentives, program performances requires significant levels of voluntary adoption, or the degree to which mandatory changes are required, along with the requisite development of rules, regulations and enforcement mechanisms, are examples of potential issues with implementability.
- Technically feasible now – approaches, technologies and regulations guiding the development and operation of demand management programs or approaches, for example alternate or decentralized water use strategies such as grey water, or rainwater catchments, are known and examples of their application elsewhere provide confidence that they could be applied here.
- Technically feasible in the future – approaches, technologies, regulations or market conditions guiding the development of the demand management programs or approaches, for examples

Doug Engfer 9/15/14 12:08 PM

**Comment:** Agree that the two “technical feasibility” items can/should be combined into an “available when?” measure, where availability relates to PROVEN feasibility. Note that this will raise a Cmte discussion about whether (or not) SC should be on the bleeding edge of new or as-yet unproven technologies.

Karen Raucher 9/19/14 9:25 AM

**Comment:** Suggest keeping the distinction now for further discussion

danajaco 9/8/14 6:28 PM

**Comment:** I think we can combine the two technically feasible concepts into one, with a ranking system that takes into account for timing.

Rosemary Menard 9/8/14 9:11 PM

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Doug Engfer 9/15/14 12:12 PM

**Comment:** As with Supply, there is nothing here that states, simply, how much water will be saved (this one gets at it, but in the ... [1]

Doug Engfer 9/19/14 9:25 AM

**Comment:** Commenting on Dana’s comment about weighing a portfolio o ... [2]

Karen Raucher 9/19/14 9:25 AM

**Comment:** Agreed that Conservation is an Alternative – not a criteria

Rosemary Menard 9/7/14 10:30 AM

**Comment:** I actually don’t think this is a characteristic or evaluation criteria for ... [3]

danajaco 9/8/14 6:41 PM

**Comment:** Agreed. This is tricky because we are weighing a portfolio of DMMs ( ... [4]

danajaco 9/8/14 6:13 PM

**Comment:** See comment 1 above

Rosemary Menard 9/7/14 10:50 AM

**Comment:** I actually don’t think this is a characteristic of a demand managemen ... [5]

Rosemary Menard 9/7/14 10:36 AM

**Comment:** I’m using adaptability here instead of scalability because I think th ... [6]

Karen Raucher 9/19/14 8:42 AM

**Comment:** Suggest placing scalability as a sub criterion under Adaptability. In th ... [7]

Karen Raucher 9/19/14 8:41 AM

**Comment:** Suggest making this a Criterion with sub criteria

danajaco 9/8/14 6:37 PM

**Comment:** Ditto above. If these sub-criteria are each getting ranked, then t ... [8]

opportunities to implement local plumbing code changes that are more stringent than those required by national or state plumbing codes, are not firmly established but may be available for implementation within no more than 5 years.

**Cost of Water:** This criterion relates to the various ways to calculate and compare the cost of water produced from various alternative supplemental supply projects or demand management projects, programs or approaches. Each approach to looking at cost provides valuable information to be considered in decision-making.

- **Implementation cost** – Implementation costs are those required to get a project or program up and running. They do not include operating costs, but do include research and planning, engineering, land or right of way acquisition, regulatory permitting, as well as construction or program initiation costs that might be needed to get a project or a program up and running.
- **Operating cost** – Operating costs are those that result from the day to day operation of the project or program. Staffing, chemicals, power, rebates or incentives, monitoring, regulatory compliance costs, program evaluation efforts, materials and equipment, and advertising, for example, are operating costs that would be relevant to water supply or demand management programs. For water supply projects, operating costs do include regular repair and routine maintenance costs, but do not include major capital rehabilitation and replacement activities that are necessary reinvestments for major infrastructure such as reservoirs, dams, treatment plants, pump stations, pipelines, and distribution system storage and piping.
- **Cost effectiveness** – Cost effectiveness calculations provide information necessary to compare alternatives. Cost effectiveness measures can be developed for a wide range of areas of comparisons such as operating costs, implementation costs, energy costs per million gallons produced, cost per million gallons produced, etc.
- **Life-cycle cost** – Life-cycle costs include both the implementation and operating costs for a project or program and are often expressed in relative terms such as cost per million gallons produced.

**Environmental Well-Being:** This criterion relates to the degree to which a water supply or demand management strategy contributes to or impacts the quality and sustainability of the natural environment.

- **Sustainably manages and protects natural and water resources** – this criterion covers a broad array of attitudes, behaviors, policies and procedures that enhance the community's ability and capacity to plan and operate in a manner that is sustainable and protects the natural environment. Sub criteria related to this criteria would include:
  - Minimizes impacts on fishery resources and aquatic ecosystems – plans and operates in a

Doug Engfer 9/15/14 12:23 PM

**Comment:** Given OpEx definition below, then "implementation" (CapEx) needs to be expanded to include re-investments required in order to meet our target time horizon (say, 50 years). So, in the case of a water-treatment facility, what are the expected future capital investments over the next 50 years? Must be included here.

Doug Engfer 9/19/14 9:25 AM

**Comment:** As long as they aren't redundant. Really, could be boiled down to a single cost-effectiveness number that accounts for both CapEx and OpEx. If that's uncomfortable, an alternative would be to look at CapEx and OpEx "effectiveness" separately, perhaps within the separate budgetary envelopes that SCWD has for each.

danajaco 9/8/14 6:45 PM

**Comment:** Hmm, this seems duplicative too if we already have implementation and O&M costs. I guess my overarching question is how are we going to evaluate supply alternatives and DMMs on the same time scale seeing that each one has a varying degree of useful life?

Doug Engfer 9/15/14 12:21 PM

**Comment:** I agree that "cost effectiveness" and "life-cycle costs", as defined here, are duplicative. I would propose replacing "life-cycle cost" with "effective lifespan". We can then calculate a true lifetime cost-effectiveness criterion, taking into account the solution's ability to deliver value over the total timeframe that the Cmte agrees to target (I would propose that that be at least 50 years). So, a solution that has a 10-year effective life-span would need to be replaced in 10 years, and its value would therefore be discounted accordingly. Conversely, if an investment (say, reservoir) can be projected to have an effective life of 75 years, its costs would be reduced accordingly, since it would still have productive value 50 years hence.

Karen Raucher 9/19/14 8:46 AM

**Comment:** From an Economic perspective – Implementation costs, O&M costs and life-cycle costs are all different – and all three values are used to develop a cost per gallon of water produced value – cost-effectiveness metric– which is probably the number you want to compare. Suggest putting all three as sub criteria for a Cost-effectiveness criterion

manner designed to minimize or appropriately mitigate the impacts of water supply projects and operations on fishery resources and aquatic ecosystems.

- Minimizes impacts to terrestrial resources and ecosystems -- plans and operates in a manner designed to minimize or appropriately mitigate the impacts of water supply projects and operations on terrestrial resources and ecosystems.
- Utilizes groundwater resources in a sustainable manner and restores depleted aquifers -- plans and operates in a manner designed to use groundwater resources in a sustainable manner and to improve the conditions of depleted aquifers so that they can support long-term sustainable use.
- Supports and maintains biodiversity and environmental resilience – recognizes and values the contributions that biodiversity and environmental resilience play in supporting human activity and takes steps to protect and enhance the environment's ability to produce and deliver these benefits.
- Minimizes increased energy consumption and carbon footprint – this criterion focuses on the energy intensity and contribution to the Water Utility's (and the community's) carbon footprint of various alternative approaches to improving the reliability of Santa Cruz's water supply.
- Improves the ability of the environment to adapt to climate change – this criterion relates to the degree to which alternative approaches to improving the reliability of Santa Cruz's water supply would affect the ability of the environment to adapt to climate change.
- Promotes outdoor recreation
- Improve ambient aesthetics

**Community Well-Being:** This criterion encompasses a range of social and community value issues that are important in establishing and maintaining a strong and socially viable community that supports the desired range of community characteristics and provides for the community's diverse needs and interests. Included in this criterion are basic human needs and values, as shown, for example, in lower three levels of Maslow's hierarchy of need as well as larger community needs and values.



- Community Character – this criterion focuses on the look and feel of the community as it relates

Doug Engfer 9/19/14 9:25 AM

**Comment:** Focus here should be on characterizing the GHG/Carbon footprint. Energy consumption costs will be in OpEx above. "Minimizing" is not a criterion; it's a characteristic of a portfolio.

Karen Raucher 9/19/14 9:25 AM

**Comment:** These are really two separate considerations. Suggest placing carbon footprint as a sub-criteria under Community wellbeing as it is really measuring public health impacts from carbon. Energy can also be a sub-criteria to community wellbeing and may be an important driver in the Sustainability scenario

Doug Engfer 9/19/14 9:25 AM

**Comment:** Perhaps a useful construct is to think about SCWD's relationship with the watershed. To the extent that we can take on responsibility for the health of our watershed, we can both (1) improve the quality ar ... [9]

Rosemary Menard 9/7/14 1:01 PM

**Comment:** So, here's another one I'm struggling with. In the supply and de ... [10]

danajaco 9/19/14 9:25 AM

**Comment:** I agree. The water dept. has control over only so much! I guess as ... [11]

Rosemary Menard 9/7/14 12:31 PM

**Comment:** See comment in the community well-being section about ... [12]

Karen Raucher 9/19/14 9:25 AM

**Comment:** Placed as a sub-criterion under Community Well-being with a slightly ... [13]

Doug Engfer 9/15/14 12:30 PM

**Comment:** Move to community values.

Rosemary Menard 9/19/14 9:25 AM

**Comment:** If this is about ensuring the availability of green spaces for passiv ... [14]

Rosemary Menard 9/19/14 9:25 AM

**Comment:** I really have no idea what this is. Seems to me that this might belo ... [15]

Karen Raucher 9/19/14 9:25 AM

**Comment:** Removed

Doug Engfer 9/15/14 12:31 PM

**Comment:** Move to community values and then duck!

Doug Engfer 9/19/14 9:25 AM

**Comment:** This feels more like a rendition of scenarios rather than a sub-criteri ... [16]

Karen Raucher 9/19/14 8:55 AM

**Comment:** Placed as a sub-criterion under Community Well-being – for now

to the availability of and demands for water. Examples of a continuum of community characteristics that relate to water are shown below:

- Community with gardens and green spaces using traditional/historical plantings and landscaping;
  - Community that has been modified by the wholesale adoption of biodiversity adapted plantings and landscaping
  - Community that has been modified by the large scale elimination of plantings and landscaping requiring irrigation during the dry season.
- Strong Economy – this criterion relates to the degree to which the availability of water supports or constrains the creation and sustainability of the local economy. Characteristics of the water issue that probably influence the local economy as much as the total amount of water that is available for use in economic activity and maintaining the desired community character include the reliability, adaptability and resilience of the supply and demand management programs.
- Vibrant University of California at Santa Cruz – this criterion relates to the degree to which the availability of water supports or constraints the University's ability to create and sustain a level positive activity that contributes to and is supportive of the desired characteristics of the larger community in Santa Cruz.
- Social and Political Stability – this criterion relates to the degree to which the availability of water supports or constrains the community's social and political stability. Characteristics of the water issue that have the greatest potential to influence social and political stability include the degree to which the resolution or lack of resolution of the water supply reliability issue in our community becomes polarizing or divisive.
- Growth – this criterion relates to the degree to which the availability of water supports or constrains the community's ability to grow in ways that are established by, for example, the City's General Plan, as well as the degree to which the availability of water supports or constrains growth that might occur after the period covered by the current General Plan.
- Public Health – this criterion addresses the degree to which options for supplemental supply or demand management minimize the potential for degrading the protection of public health.
- Affordability – this criterion addresses the degree to which water cost increases make water less available to those with lower incomes or require a disproportionate amount of a household's income to pay for water service.
- Pride in the Community's Water Strategy – Each community has its own identity, character and

Karen Raucher 9/19/14 8:55 AM

**Comment:** These can be captured in the scales – I think

danajaco 9/8/14 7:24 PM

**Comment:** So these would all be different scenarios?

danajaco 9/8/14 7:26 PM

**Comment:** I'm not sure this should be called out separately since it's such a divisive issue. I would include this in the community character criterion somehow.

Rosemary Menard 9/19/14 9:25 AM

**Comment:** Or part there and part in economic wellbeing?

Doug Engfer 9/15/14 12:33 PM

**Comment:** I don't see this standing alone, any more than we should have a separate Demand sub-criterion relating to the reduction of UCSC water use. They are simply a (big) part of our Community, and must play well with others, as must we all.

Karen Raucher 9/19/14 9:26 AM

**Comment:** Placed as a sub-criterion under Community Well-being

Doug Engfer 9/15/14 12:38 PM

**Comment:** This doesn't feel like a sub-criterion but rather as an over-arching concern or "value" that the Cmte must consider as it builds its Portfolio(s). It's not clear to me how you would measure this differently for different solutions, for example.

Doug Engfer 9/15/14 12:35 PM

**Comment:** Need to be careful that we don't double-count between this and strong economy. Perhaps we parse out economic growth, population growth as separate sub-criteria?

Karen Raucher 9/19/14 9:18 AM

**Comment:** Left separate at the moment as a sub criterion under Community Well-being

Doug Engfer 9/15/14 12:37 PM

**Comment:** Does this belong here or under Cost of Water?

Karen Raucher 9/19/14 9:26 AM

**Comment:** Placed as a sub criterion under Community Well-being

danajaco 9/8/14 7:28 PM

**Comment:** I also feel like this could be lumped in with the community chara... [17]

Karen Raucher 9/19/14 9:26 AM

**Comment:** Placed as a sub criterion under Community Well being

value system. This criterion relates to the degree to which the selected strategy would align with the community's desire to be a leader and to look at issues and adopt solutions in a manner that support its strong commitments to environmental sustainability, demand management, and a willingness to try new approaches.

- Recreation –

Doug Engfer 9/15/14 12:36 PM

**Comment:** Agree with Dana – lump it.

Doug Engfer 9/15/14 12:35 PM

**Comment:** It is a community benefit; folks will value it with their weightings.

Karen Raucher 9/19/14 9:20 AM

**Comment:** Combined with promotes outdoor recreation and modified to state – supports local parks and recreation opportunities

Rosemary Menard 9/7/14 11:41 AM

**Comment:** I'm having a hard time with this one – If this an ancillary benefit of certain kind of supply benefits, for example a reservoir, then I get it. If it is water related recreation in flowing streams, beyond what we would do for fish flow releases, I really can't see us doing anything else related to releasing water for recreation. If this is part of the larger community well-being (a la Maslow), then I'm fine with it, but I really don't think that this is a stand-alone criterion that we can or should use to rate possible supply or demand management projects.

What am I missing?



Main document changes and comments		
<b>Page 1: Inserted</b>	<b>Karen Raucher</b>	<b>9/19/14 8:14 AM</b>
<b>Page 1: Comment</b>	<b>Doug Engfer</b>	<b>9/15/14 12:11 PM</b>
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<b>Page 1: Comment</b>	<b>Doug Engfer</b>	<b>9/15/14 12:05 PM</b>
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<b>Page 1: Comment</b>	<b>Karen Raucher</b>	<b>9/19/14 8:30 AM</b>
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<b>Page 1: Comment</b>	<b>Rosemary Menard</b>	<b>9/8/14 9:11 PM</b>
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Dana's idea here works for me

<b>Page 1: Comment</b>	<b>Doug Engfer</b>	<b>9/15/14 12:12 PM</b>
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As with Supply, there is nothing here that states, simply, how much water will be saved (this one gets at it, but in the wrong way (as RM has noted, correctly in my estimation).

<b>Page 1: Comment</b>	<b>Doug Engfer</b>	<b>9/19/14 9:25 AM</b>
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Commenting on Dana's comment about weighing a portfolio of demand-mitigation approaches v a single supply, I would disagree. In my mind, the "order of engagement" would be to (1) define our baseline supply and demand numbers, (2) evaluate the range of demand-mitigation alts available to us, and then (3) consider the range of supply-enhancement opportunities we have, so that we can (4) develop a comprehensive portfolio consisting (likely) of several demand and several supply related alts.

<b>Page 1: Comment</b>	<b>Karen Raucher</b>	<b>9/19/14 9:25 AM</b>
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Agreed that Conservation is an Alternative – not a criteria

<b>Page 1: Comment</b>	<b>Rosemary Menard</b>	<b>9/7/14 10:30 AM</b>
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I actually don't think this is a characteristic or evaluation criteria for demand management. I think this is a characteristic of a recommended program or portfolio. In other words, demand management programs or approaches (which likely include a range of individual programs or approaches) should not be evaluated on this criteria because by definition each approach probably would meet it. But we should evaluate packages or portfolios of measures against this criteria – and that comes later once we've created them.

<b>Page 1: Comment</b>	<b>danajaco</b>	<b>9/8/14 6:41 PM</b>
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Agreed. This is tricky because we are weighing a portfolio of DMMs on the demand side against individual alternatives on the supply side. Usually, for the DDMs, there is a benefit to cost ratio as the deciding factor. But for the supply alternatives I don't think we'll be able to do a comprehensive benefit analysis within the scope of this project. Perhaps this comment belongs in the cost of water section.

<b>Page 1: Comment</b>	<b>danajaco</b>	<b>9/8/14 6:13 PM</b>
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See comment 1 above

<b>Page 1: Comment</b>	<b>Rosemary Menard</b>	<b>9/7/14 10:50 AM</b>
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I actually don't think this is a characteristic of a demand management program. If we have reliability here, which we do, then that covers the relevant topic for demand management.

<b>Page 1: Comment</b>	<b>Rosemary Menard</b>	<b>9/7/14 10:36 AM</b>
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I'm using adaptability here instead of scalability because I think the degree to which we can keep the language used for evaluation criteria for supply and demand similar, the better off we will be.

<b>Page 1: Comment</b>	<b>Karen Raucher</b>	<b>9/19/14 8:42 AM</b>
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Suggest placing scalability as a sub criterion under Adaptability. In this case – scalability would refer to the flexibility to add capacity increments over time, or treat water from a variety of sources with different water quality

<b>Page 1: Comment</b>	<b>Karen Raucher</b>	<b>9/19/14 8:41 AM</b>
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Suggest making this a Criterion with sub criteria

<b>Page 1: Comment</b>	<b>danajaco</b>	<b>9/8/14 6:37 PM</b>
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Ditto above. If these sub-criteria are each getting ranked, then technical feasibility would carry more weight than it ought to in relation to the other sub-criteria.

<b>Page 1: Comment</b>	<b>Doug Engfer</b>	<b>9/15/14 12:23 PM</b>
Given OpEx definition below, then “implementation” (CapEx) needs to be expanded to include re-investments required in order to meet our target time horizon (say, 50 years). So, in the case of a water-treatment facility, what are the expected future capital investments over the next 50 years? Must be included here.		
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Perhaps a useful construct is to think about SCWD’s relationship with the watershed. To the extent that we can take on responsibility for the health of our watershed, we can both (1) improve the quality and quantity of our supply and (2) improve the resilience of the watershed in the face of climate change.		
<b>Page 1: Comment</b>	<b>Rosemary Menard</b>	<b>9/7/14 1:01 PM</b>
So, here’s another one I’m struggling with. In the supply and demand definitions elsewhere in this document, the adaptability of the solution to climate change has been laid out for consideration. But what is it we can really do to the environment (or not do, I suppose) to improve its ability to adapt to climate change? Maybe I’m missing something here, but I just can’t see it. If we build more storage of some sort to catch rain when it is available, that improves our ability to use what get by giving us a place to put it. If we lower our carbon foot print, which we have addressed in a criterion elsewhere, that does improves the environment’s ability to slow down climate change, but I don’t think ghg mitigation is the same thing as adaptation.		
<b>Page 1: Comment</b>	<b>danajaco</b>	<b>9/19/14 9:25 AM</b>

I agree. The water dept. has control over only so much! I guess as part of defining alternatives we could suggest combining, creating, or changing the mission statement and statutory authority of various local agencies to take a more holistic approach to water/wastewater/storm water management and also include environmental stewardship. But “changing the environment’s capacity to adapt” is unreasonable.

<b>Page 1: Comment</b>	<b>Rosemary Menard</b>	<b>9/7/14 12:31 PM</b>
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See comment in the community well-being section about recreation. I don’t see the connection of this to what we’re doing. And I certainly don’t see how we apply this kind of criteria to evaluation of alternate water supply projects or demand management programs.

<b>Page 1: Comment</b>	<b>Karen Raucher</b>	<b>9/19/14 9:25 AM</b>
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Placed as a sub-criterion under Community Well-being with a slightly different definition -Supports local parks and recreation opportunities

<b>Page 1: Comment</b>	<b>Doug Engfer</b>	<b>9/15/14 12:30 PM</b>
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Move to community values.

<b>Page 1: Comment</b>	<b>Rosemary Menard</b>	<b>9/19/14 9:25 AM</b>
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If this is about ensuring the availability of green spaces for passive and active recreation, then I think it belongs in community wellbeing and maybe it is a separate Sub criteria – but we have to call it something else besides this – this title doesn’t resonate

<b>Page 1: Comment</b>	<b>Rosemary Menard</b>	<b>9/19/14 9:25 AM</b>
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I really have no idea what this is. Seems to me that this might belong more in the community wellbeing section and that if it does, than I’ve already covered it there, at least in part, with the discussion about the continuum of landscaping and plantings

<b>Page 1: Comment</b>	<b>Karen Raucher</b>	<b>9/19/14 9:25 AM</b>
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Removed

<b>Page 1: Comment</b>	<b>Doug Engfer</b>	<b>9/15/14 12:31 PM</b>
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Move to community values and then duck!

<b>Page 1: Comment</b>	<b>Doug Engfer</b>	<b>9/19/14 9:25 AM</b>
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This feels more like a rendition of scenarios rather than a sub-criterion. Not sure how this would work, unless we propose to rate each solution here against each scenario (which, if guess, is possible). It may be the case that we are better served by rating Portfolios against scenarios? I'm still a bit wobbly on the process flow here...

<b>Page 1: Comment</b>	<b>Karen Raucher</b>	<b>9/19/14 8:55 AM</b>
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Placed as a sub-criterion under Community Well-being – for now

<b>Page 1: Comment</b>	<b>Karen Raucher</b>	<b>9/19/14 8:55 AM</b>
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These can be captured in the scales – I think

<b>Page 1: Comment</b>	<b>danajaco</b>	<b>9/8/14 7:24 PM</b>
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So these would all be different scenarios?

<b>Page 1: Comment</b>	<b>danajaco</b>	<b>9/8/14 7:26 PM</b>
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I’m not sure this should be called out separately since it’s such a divisive issue. I would include this in the community character criterion somehow.

<b>Page 1: Comment</b>	<b>Rosemary Menard</b>	<b>9/19/14 9:25 AM</b>
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Or part there and part in economic wellbeing?

<b>Page 1: Comment</b>	<b>Doug Engfer</b>	<b>9/15/14 12:33 PM</b>
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I don’t see this standing alone, any more than we should have a separate Demand sub-criterion relating to

the reduction of UCSC water use. They are simply a (big) part of our Community, and must play well with others, as must we all.

<b>Page 1: Comment</b>	<b>Karen Raucher</b>	<b>9/19/14 9:26 AM</b>
Placed as a sub-criterion under Community Well-being		

<b>Page 1: Comment</b>	<b>Doug Engfer</b>	<b>9/15/14 12:38 PM</b>
This doesn't feel like a sub-criterion but rather as an over-arching concern or "value" that the Cmte must consider as it builds its Portfolio(s). It's not clear to me how you would measure this differently for different solutions, for example.		

<b>Page 1: Comment</b>	<b>Doug Engfer</b>	<b>9/15/14 12:35 PM</b>
Need to be careful that we don't double-count between this and strong economy. Perhaps we parse out economic growth, population growth as separate sub-criteria?		

<b>Page 1: Comment</b>	<b>Karen Raucher</b>	<b>9/19/14 9:18 AM</b>
Left separate at the moment as a sub criterion under Community Well-being		

<b>Page 1: Comment</b>	<b>Doug Engfer</b>	<b>9/15/14 12:37 PM</b>
Does this belong here or under Cost of Water?		

<b>Page 1: Comment</b>	<b>Karen Raucher</b>	<b>9/19/14 9:26 AM</b>
Placed as a sub criterion under Community ?Well-being		

<b>Page 1: Comment</b>	<b>danajaco</b>	<b>9/8/14 7:28 PM</b>
I also feel like this could be lumped in with the community character criterion somehow.		

<b>Page 1: Comment</b>	<b>Karen Raucher</b>	<b>9/19/14 9:26 AM</b>
Placed as a sub criterion under Community Well being		

<b>Page 1: Comment</b>	<b>Doug Engfer</b>	<b>9/15/14 12:36 PM</b>
Agree with Dana – lump it.		

<b>Page 1: Comment</b>	<b>Doug Engfer</b>	<b>9/15/14 12:35 PM</b>
It is a community benefit; folks will value it with their weightings.		

<b>Page 1: Comment</b>	<b>Karen Raucher</b>	<b>9/19/14 9:20 AM</b>
Combined with promotes outdoor recreation and modified to state – supports local parks and recreation opportunities		

<b>Page 1: Comment</b>	<b>Rosemary Menard</b>	<b>9/7/14 11:41 AM</b>
I'm having a hard time with this one – If this an ancillary benefit of certain kind of supply benefits, for example a reservoir, then I get it. If it is water related recreation in flowing streams, beyond what we would do for fish flow releases, I really can't see us doing anything else related to releasing water for recreation. If this is part of the larger community well-being (a la Maslow), then I'm fine with it, but I really don't think that this is a stand-alone criterion that we can or should use to rate possible supply or demand management projects.		

What am I missing?

Header and footer changes
Text Box changes
Header and footer text box changes
Footnote changes

# Memorandum

**To:** Water Supply Advisory Committee Members  
**From:** Karen Raucher, Stratus Consulting Inc.  
**Date:** 9/19/2014  
**Subject:** Evaluation Criteria Definitions – September Iteration

In this document we provide a clean copy of the Evaluation Criteria Definitions. This cleaned-up version is based on the Criteria developed by the Water Supply Advisory Committee (Committee) in August 2014 and the definitions and comments provided by Rosemary and Dana in late August and early September. Any suggested changes to the definitions are noted in italics. This iteration also includes a slightly different sorting of the Criteria into Sub-criteria in order to respond to the many comments concerning how the Criteria work together.

We look forward to the next round of discussions with the Committee in order to further refine the Criteria, Sub-criteria, and definitions.

	From Rosemary and Dana <i>(with suggested additions by Stratus Consulting in italics)</i>
<b>Criteria</b>	<b>Brief description</b>
<b>Supply</b>	<i>Not really a criteria – big versus small is probably not a sorting criteria – but this value is important to WSAC in Alternatives to meet Demands in the different Scenarios</i>
<b>Implementability</b>	Characteristic of a supply project that relates to the siting and environmental and regulatory review processes associated with a project.
Technically feasible now	Approaches, technologies and regulations guiding the development and operation of the supply project, particularly related to production, storage and treatment, are known and examples of their application elsewhere provide confidence that they could be applied here.
Technically feasible in future	Approaches, technologies and regulations guiding the development and operation of the supply project, particularly related to storage and treatment, are not firmly established but are under development and likely to be available for implementation within no more than 5 years.
<i>Permit/Legally feasible now</i>	
<i>Permit/Legally feasible in the future</i>	

	From Rosemary and Dana <i>(with suggested additions by Stratus Consulting in italics)</i>
<b>Criteria</b>	<b>Brief description</b>
<i>Fatal flaw</i>	<i>What is the fatal flaw, is it still fatal and what could be done to remove it</i>
<i>Politically feasible</i>	
<b>Effectiveness</b>	
Reliability	Characteristic of a supply project that relates to the certainty of project yield under a range of foreseeable and unforeseeable conditions. Reliability is mainly related to hydrologic and/or hydrogeological conditions that are variable over time and under various climatologic conditions.
<i>Curtailments</i>	<i>Scale includes curtailment size, frequency and duration</i>
<b>Financial Costs and Benefits of Water</b>	Financial Characteristics of each Alternative.
<i>Financial cost effectiveness – Cost per AF or MG water</i>	<i>This is a summary value developed into a metric.</i>
Implementation cost	Implementation costs are those required to get a project or program up and running.
O & M costs	Operating costs are those that result from the day to day operation of the project or program.
Lifecycle cost	Implementation, planning and O & M costs discounted over the project life time. This value is used to develop the Financial cost effectiveness value.
<b>Environmental Well-being</b>	This criterion relates to the degree to which a water supply or demand management strategy contributes to or impacts the quality and sustainability of the natural environment.
Sustainability	Manages and protects natural and water resources so that they are sustainable at the current level over time.
Promote biodiversity and env'l resilience	Recognizes and values the contributions that biodiversity and environmental resilience play in supporting human activity and takes steps to protect and enhance the environment's ability to produce and deliver these benefits.
Carbon costs	Energy consumption and carbon footprint.
Eco-system values	Enhance the community's ability and capacity to plan and operate in a manner that is sustainable and protects the natural environment.

	From Rosemary and Dana (with suggested additions by Stratus Consulting in italics)
<b>Criteria</b>	<b>Brief description</b>
Fishery values	Minimizes impacts on fishery resources and aquatic ecosystems.
Water resources – gw and surface – values	Designed to minimize or appropriately mitigate the impacts of water supply projects and operations on terrestrial resources and ecosystems.
<b>Community Well-being</b>	Encompasses a range of social and community value issues
Community character	The look and feel of the community as it relates to the availability of and demand for water.
Supports local economy	Degree to which the availability of water supports or constrains the creation and sustainability of the local economy.
Social and political stability	To the degree to which the availability of water supports or constrains the community's social and political stability.
UCSC vibrant	Availability of water supports or constraints the University's ability to create and sustain a level positive activity that contributes to and is supportive of the desired characteristics of the larger community in Santa Cruz.
Impact on long-term growth	Availability of water supports or constrains the community's ability to grow in ways that are established by, for example, the City's General Plan.
Support local parks and recreation opportunities	
Supports community gardens	
Supports a climate change-adapted community garden	Modified by the large scale elimination of plantings and landscaping requiring irrigation during the dry season.
Energy consumption	Slightly different than carbon footprint.
Politically acceptability	Placed in Implementability – but could be inserted here instead.
Affordability of water – rates	The degree to which water cost increases make water less available to those with lower incomes or require a disproportionate amount of a household's income to pay for water service.
Public health – air	Addresses the degree to which the Alternative affects public health. Protection of public health – <i>includes air quality impacts due to increases in energy air pollution.</i>

	From Rosemary and Dana <i>(with suggested additions by Stratus Consulting in italics)</i>
<b>Criteria</b>	<b>Brief description</b>
Allows for growth	The degree to which the availability of water supports or constrains the community's ability to grow in ways that are established by, for example, the City's General Plan.
Pride in the community's water strategy	Degree to which the selected strategy would align with the community's desire to be a leader and to look at issues and adopt solutions.
<b>Adaptability</b>	Characteristic of a supply project that relates to how well the approach can be modified over time to respond to changing conditions.
Resilience	Ability to effectively operate under a range of foreseeable and unforeseeable conditions.
<i>Scalable</i>	Flexibility to add capacity increments over time (scalability), or treat water from a variety of sources with different quality, would be examples of adaptability.
<i>Preserves future choices</i>	Saves options that may be needed if the future looks different than the one projected.
<b>Demand</b>	<i>Not really a criteria but this value is important to WSAC in developing <u>portfolios</u> of Alternatives to meet Demands in the different Scenarios.</i>
<b>Supply Demand Alignment</b>	Supply = Demand ( S mg/y = D mg/y) (D is defined in each scenario)
Demand – traditional	D = garden needs + baseline
Demand-enhanced traditional (best-case)	D = non-landscape needs + baseline
Demand – climate change	D = landscape needs + baseline
Demand – economic change	D = parks & recreation + baseline
Demand – fish and regulatory	D = Fishery + baseline
Demand – sustainable Santa Cruz	D = Growth + baseline
Demand reliability	The need for the supply to be reliable
Supports long-term economic growth as defined in City Vision	D = Water for the economy + baseline



**Work Plan Development Update, and Subcontractor Recruitment and Preliminary Assignments**

September 17, 2014

This document provides an overview of where we stand in terms of lining up technical work items needed to inform WSAC, and identifies the various sub-consultants we anticipate tasking to accomplish this work. A brief description is provided of a wide array of work scope items that either have been or will be initiated. The objective is to launch several technical investigations and mobilize information that we believe will be critical to the Committee's ability to evaluate relevant water supply and demand management alternatives. This information is provided to inform the Committee of our current and anticipated technical activities, and to provide an opportunity for the Committee to form questions.

**Sub-consultants:**

Table 1 provides a summary of the sub-consultants that we have put forward for WSAC review to date; credentials have already been provided for WSAC review. There have been some questions posed and responses provided to Committee members, and no notable remaining objections have been voiced by the Committee regarding any of these individuals or firms. At this time, this established team, together with the Committee, the Independent Review Panel, and City staff, appears sufficient to address relevant work scope items.

**Table 1. Summary of sub-consultants**

<b>Subcontractor</b>	<b>Individual(s)</b>	<b>Specialties</b>
Andy Fisher (UC Santa Cruz)	Andy Fisher	<b>Hydrogeologist</b> ; currently doing north county passive recharge and has done Monterey County active recharge work and will likely sit on a review committee for the groundwater model work being done by the City and Soquel Creek Water District
Balance Hydrologics	Shawn Chartrand	<b>Hydrologist/Geomorphologist</b> ; Water balance modeling, streamflows
Brown & Caldwell	William K. Faisst Charles W. Joyce Jenny Gain James L. "Butch" Matthews Wendy Broley	<b>Engineers</b> ; Resource management, water management, regulations, water quality, economics, civil engineering; Designed 1990 upgrade to WWTF.
David Abbot	David Abbot	<b>Hydrogeologist</b> ; groundwater supply, yield and watershed studies, aquifer storage
Ebin Moser + Skaggs, LLP	Sean Skaggs	<b>Attorney</b> ; current HCP attorney, Fishery Endangered Species Act
Gary Fiske and Associates, Inc.	Gary Fiske	<b>Engineer</b> ; Water resource planning, <i>Confluence</i> ® water resource planning model

## 7a Subconsultant Tasks

George Tchobanoglous (UC Davis)	George Tchobanoglous	<b>Civil engineer</b> ; specializing in innovative water and wastewater treatment systems
Hagar Environmental Science	Jeff Hagar	<b>Biologist</b> ; Fisheries, resource management, water quality
HydroMetrics	Derrick Williams	<b>Hydrogeologist</b> ; resource management, hydrogeology, water quality; history with Soquel Creek Water District and the state of the shared basin.
Lennihan Law	Martha H. Lennihan	<b>Attorney</b> ; Water rights, regulations
Maddaus Water Management	Bill Maddaus Lisa Maddaus Michelle Maddaus Christopher Matyas Tess Kretschmann	<b>Engineers</b> ; Water resource planning
Luhdorff & Scalmanini	Vicki Kretsinger Grabert	<b>Hydrologist</b> ; groundwater quality, environmental regulations, groundwater resource assessment
M-Cubed	David Mitchell	<b>Economist</b> ; Resource management, water management, economics
Pueblo Water Resources	Michael Burke Martin Feeney Robert Marks Stephen Tanner	<b>Hydrogeologists/Engineer</b> ; worked recently with City on Beltz 12 and Tait Street well projects, and in Monterrey County on ASR
Rose Env. Engineering	John Rosenblum	<b>Civil engineer</b> , specializing in industrial water and energy efficiency; evaluating the regional impacts of water efficiency measures on energy use and greenhouse gas emissions
Trussell Technologies	R. Shane Trussell R. Rhodes Trussell	<b>Engineers</b> ; water quality, sanitary engineering, civil engineering, water reuse, desalination and filtration

### Work Scope Areas and Recommendations

There are several technical issues that need to be addressed in order to provide the Committee with the types of analyses and information with which they can evaluate several of the potentially relevant Alternatives and Management Actions. These work scope areas span a range of topics and tap into an associated array of technical specialties. Below, we provide abbreviated synopses of several technical work areas we have identified as being directly relevant to the Committee's ability to conduct informed deliberations. We also recommend paths forward (including recommended sub-consultant assignments), organized according to relevant topic areas and disciplines. Several of these areas of work had already begun; others will begin shortly following the Committee meeting.

Because this is a long list of potential work scopes, we indicate some work items that may be of lesser priority and may be deferred. Also, we view most of these work items as initial scoping investigations for

Recon, with the intent of providing more context and definition to the work areas for possible further consideration during the Real Deal. In other words, the work done during these initial investigations will define what is known (about the various topics), what is not known, and what would be worth investigating further.

Specific timetables and work scopes will be developed in concert with the relevant technical experts, with the overall intent of having these initial scoping investigations completed by December. These initial investigations will articulate a focused and well-defined set of technical next steps for possible follow-on work to support the Real Deal.

### **1. Demand Management: Conservation, Water Use Efficiency, and Improved Forecasts**

#### ***a. Where is Santa Cruz now? Assessing the response to and impact of the Current Drought.***

In concert with the Water Department, we have initiated roundtable discussions with members of the local business community to assess the impact of the current drought and curtailments on enterprise-level water use and business performance. Our focus includes the “green” (e.g., plant nursery, landscaping, golf course) and hospitality (e.g., hotels, eateries) sectors. This effort is also assessing the level and manner in which water use efficiency measures have been implemented, and the degree to which conservation and the water use curtailments have reduced water consumption in some businesses. This is a recently initiated effort, conducted jointly by Stratus, David Mitchell (M-Cubed), and the Water Department. Preliminary findings will be available to the Committee at their October meeting.

#### ***b. How far can Santa Cruz go in reducing demands, what will that cost, and who bears those costs?***

Amongst the principles stated in the Committee’s charge is that “conservation is a cornerstone of our water profile and should be maximized.” The Water Department has been working with Maddaus Water Management to develop a Long Term Water Conservation Master Plan. This plan will provide direction to the City for maximizing water conservation efforts. A supplemental effort to the on-going Maddaus work with the Water Department is required to provide WSAC with a broader understanding of what levels of aggregate (and disaggregated) water demand may be feasible, which in turn raises questions such as what additional conservation and water use efficiency measures are available, what they will cost, who will bear those costs, and what they are likely to attain in terms of water use reductions. A study focused on managing seasonal peak demand appears to be particularly relevant to the Committee’s deliberations (as summer season demands are what drive the “gap” observed between supply and demand in drought years). Maddaus Water Management will be asked to initiate a scoping study of these options and associated implications.

#### ***c. Demand Forecasting: Econometric Demand Modeling***

A critical aspect of effective water planning includes developing reliable demand forecasts. For many water utilities across North America, this has emerged as a significant challenge, as past traditional

forecasts have often failed to capture the level and persistence of declining per capita demands due economic, technologic and other changes. (This has become a very widespread issue throughout the water supply sector, resulting in over-estimated demands and associated “revenue gaps” and other problems).

Moving forward, demand forecasting using econometric (i.e., advanced statistical) methods enables a much more robust and useful approach to predicting and understanding how demands may change as a result of changes in prices (water rates), incomes, weather, and other relevant factors. Econometric demand forecasting also provides a measure of economic loss associated with different levels of curtailments. We are in the process of scoping out such a demand forecasting effort, with David Mitchell (M-Cubed) working in tandem with Stratus Consulting and the Water Department.

### **2. Climate Change: How Will Climate Change Impact Santa Cruz’s Water Future?**

#### ***a. What Impact will the range of projected changes in the levels and patterns of future precipitation and temperature have on Supply? Demands? Water Quality?***

As presented to WSAC in past meetings and related written materials, climate change is likely to have a range of potentially significant impacts on Santa Cruz and its water future. In concert with developing relevant future “Scenarios” to help guide evaluations of future supplies and demands, Stratus has been developing a range of temperature and precipitation projections based on the latest IPCC- and DWR-endorsed models and methods (e.g., as circulated in written materials prior to the July meetings, and as presented during those meetings). We currently are in the process of working with Shawn Chartrand (Balance Hydrologics) and Gary Fiske (Gary Fiske and Associates) in conducting initial scoping investigations of: (1) how projected climate changes can be integrated into the hydrologic instream flow model, and then (2) how those flow results can be integrated into the *Confluence* model to project water system performance (e.g., surface water yields and associated projections of system reliability). We expect to have initial results available for WSAC review for the October meetings.

#### ***b. Sea Level Rise and Climate Change-Related Extreme Events – Developing a Preliminary Vulnerability Assessment***

Climate change has numerous pathways through which it may impose risks to Santa Cruz’s water resources, related infrastructure, and the community as a whole. Sea level rise (and storm surge), extreme precipitation events, drought, and wildfire are among the possible climate change-related events to which the system will be vulnerable to water quality degradation, inundation, and other adverse impacts. A preliminary assessment of such vulnerabilities has been explored by the Water Department, and Stratus will work with the Department to convey these risks within a “risk profile matrix” (an approach presented by Karen Raucher in a recent AWWA-sponsored webcast focused on climate change, and viewed by several WSAC members).

### 3. Energy Requirements and Carbon Footprints of Potential Water Options

#### ***a. Preliminary assessment of energy requirements and carbon footprints for key alternatives***

Energy use and the associated carbon footprints of various potential water supply alternatives are a significant concern in Santa Cruz. Each of the possible water-related futures for the City (including the status quo “baseline”) has an associated energy requirement and carbon footprint. A preliminary assessment of the energy and carbon footprint implications of key water technologies and management strategies will help guide initial evaluations and focus where more in-depth analysis may be warranted. We will work with John Rosenblum (Rose Environmental) to provide a preliminary assessment in which he develops preliminary estimates of energy use and carbon footprints associated with the baseline (including possible water treatment or pumping upgrades as may be required for continued water quality compliance), desal, water reuse, water exchanges, demand management, and other relevant options. This effort will draw on available past studies and may entail engineering-related support from Brown and Caldwell and/or Trussell Technologies.

#### ***b. Opportunities for tapping green energy and/or providing meaningful carbon offsets***

Extracting, treating, and distributing water inevitably requires a considerable amount of energy consumption. Are there meaningful ways in which the City can minimize its water-related energy use, tap into green energy, and/or provide meaningful carbon offsets? This may be a topic WSAC wishes to explore, possibly after (or in concert with) the work item defined above (3a). The Stratus Team is in a position to address many if not all of these issues.

### 4. Fisheries: Flow Requirements and Impacts on Yields

#### ***a. What will HCP requirements entail for surface water yields? How does Climate Change potentially interface with HCP instream flow requirements and impact yields?***

In concert with the Habitat Conservation Plan (HCP), the City is already working with Jeff Hagar and Shawn Chartrand to evaluate how fish flow requirements translate into instream flows and hence (via Gary Fiske and the *Confluence* model), into water system yields and performance. As noted above (item 3a), we are working with these subject area experts to factor climate change impacts into these calculations. The coupling of potential climate change impacts with HCP-driven fishery flow requirements is an essential component of examining Santa Cruz’s water future under various scenarios (including the baseline, climate change, and worse case scenarios).

#### ***b. How would going beyond HCP -- to ensure “110%” of salmonid needs -- impact surface water yields?***

A possible extension of item 4a, above, entails examining the implications of an approach in which fish flow requirements are based on going beyond HCP requirements to provide greater assurance of the

protection of special status fish (tied to possible “Fish First” scenario). Jeff Hagar (Hagar Environmental) can be tasked with providing the associated fish flows, which would then be used as input to the stream flow hydrology work described above, and then worked through the *Confluence* model to reveal impacts on the City water system surface water yields and performance. This may not be an immediate priority, but it is an issue that can be examined in a relatively straightforward manner.

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Additional information will likely be required for the Committee to better understand the various water supply alternatives to be considered. The following work efforts will serve to provide this information in terms of what is known about each topic, what is not known, and what is worth pursuing further.

### **5. Water Storage (Inter-seasonal and/or Inter-annual)**

Water storage is a critical and extremely valuable component for managing water supplies where demands and yields tend to vary considerably across seasons, and across years (e.g., summer months when demands tend to be greatest but precipitation and water supply availability tend to be limited). Developing additional on-stream surface water storage (e.g. a new or expanded reservoir) has not been an institutionally feasible option over the past few decades. The current drought and related water bond on the November ballot may facilitate new surface storage efforts. Hence, some surface water storage investigations may be warranted (on stream and/or off-stream) and will remain on our radar screen for possible consideration. Meanwhile, suggested work items addressing two other water storage-related alternatives are provided below.

#### ***a. On-stream (surface) Storage – What if we modify how we operate Loch Lomond?***

WSAC discussions have revealed an interest in assessing whether changes in how the existing Loch Lomond reservoir is managed may better align available supplies with demands. This is a line of inquiry that may be investigated through application of the *Confluence* model to explore various alternative Loch-related management strategies (e.g., sensitivity analyses). This also entails providing WSAC with a better understanding of the inner workings of the *Confluence* model (e.g., transparency regarding required inputs, calculating routines, and outputs). This may best be accomplished through convening a small “Modeling and Forecasting Working Group” (including some of Committee members) to become more familiar with the model and how the Loch is (and might be) managed.

#### ***b. Groundwater storage -- Feasibility of Aquifer Storage and Retrieval (ASR)***

Aquifer systems can provide extremely valuable settings for storing and retrieving water. This can be a viable and valuable approach where hydrogeologic conditions enable ASR (physical and technical feasibility), and where there are waters periodically available for storage. In Santa Cruz, water for possible ASR storage could be provided by high winter season streamflows, and/or by using highly purified reclaimed water (water reuse). Other sources of water for potential storage may also be available.

A key suite of technical questions for Santa Cruz is whether any of the regionally available aquifer systems is suitable for ASR. Some of the applicable technical questions include: Is there underground capacity in any of the regionally available aquifer formations to store a useful quantity of water? Is there a reasonable way to place water into those systems (e.g., recharge basins, injection wells)? Can the water placed in these aquifer systems be stored and retrieved (without large losses)? Will there be undesirable water quality impacts?

We will initiate a technical review of the existing knowledge about regional groundwater systems, to provide WSAC with a summary of what is known, and what key unknowns remain, regarding the potential viability of ASR. Our preliminary understanding is that the groundwater systems in the region are complex, and that there is limited definitive knowledge about several key hydrogeologic issues (i.e., the physical ability of any of these systems to provide a reliable setting for storing and retrieving water). Pueblo Water Resources appears to be best suited to continue this effort, with review and input from Andy Fisher (as available), and with subsequent review and input from the Independent Review Panel (IRP, notably, Mike Cloud). Input and involvement from other hydrogeologists and regional water experts (e.g., John Ricker) may be valuable as well.

### **6. Groundwater Supplies and Management**

#### **a. *Feasibility of Aquifer Storage and Retrieval (ASR)*** (see item 5b, above)

#### **b. *Viability of Developing North Coast Brackish Wells***

In our review of “past alternatives” considered in the region, we found that the option of developing brackish groundwater wells along the North Coast had emerged as the most promising alternative in the mid-1990s. However, the planned investigation of that alternative was aborted before test wells could be developed and pilot tested. We recommend that a review be developed of what is known about the feasibility, potential yields, and potential challenges associated with the possibility of developing this alternative. We believe this should be a low-level effort initially, until and unless the information assembled provides a reasonable indication that this alternative may indeed be technically and institutionally feasible, and may provide reasonably-sized yields. We will investigate which of our team members are best suited to perform this work (this may entail a combination of Brown and Caldwell and one of the hydrogeology specialists).

#### **c. *Seawater intrusion and coastal wellfields – how large a risk, and what might be done?***

Seawater intrusion into coastal aquifer systems is a concern for City wells, as well as for water systems in neighboring communities (most notably, Soquel Creek Water District). Sea level rise and elevated storm surge from climate change are likely to exacerbate challenges associated with current extraction levels. The City has completed a preliminary assessment of what is known about these vulnerabilities (WSAC August agenda); their implications (e.g., for yields, water quality, and treatment requirements), and potential remedies should be further evaluated (e.g., the potential feasibility of hydrologic barrier

wells to recharge coastal aquifers while concurrently managing seawater intrusion). The intent of this work effort is to gather and articulate what is known, and to define what core questions need to be examined in order to more fully assess the risks and potential remedies.

Hydrogeologic expertise is required, and we are in the process of identifying which potential team member(s) may be best suited for this assignment (e.g., HydroMetrics may already have some direct experience). We will seek review and input from Andy Fisher (as available) and anticipate subsequent review and input from the IRP (notably, Mike Cloud). Input and involvement from other hydrogeologists and regional water experts (e.g., John Ricker) may be valuable as well.

### **7. Water Recycling**

Water reuse is an alternative that may be viable and valuable to consider. There are various forms of reuse, typically characterized as

- Nonpotable reuse (NPR, such as may be used for irrigation or industrial processes)
- Indirect potable reuse (IPR, such as may be implemented through ASR, for example, and which is gaining fairly widespread application throughout California and other locations), and
- Direct potable reuse (DPR, for which the State of California currently is developing enabling regulations – due by 2016).

A series of investigations are warranted for water recycling, as described below.

#### ***a. How much reclaimed water might be available (potential yield)?***

A core question is how much water is available for potential reclamation in Santa Cruz. The answer depends on the volume of wastewater effluent discharged from the wastewater treatment plant (which in turn is driven largely by the volume of indoor water use in the City). Other potentially important factors may include the volume of effluent discharge that the City needs to meet regulatory requirements (e.g., dilution, flows, which may vary seasonally), and the percentage of product water generated by the “advanced treatment” process train deployed for reclaimed water. Developing this estimate should be fairly straight-forward, using knowledge already held at the Water Department, coupled with some expertise from one of the engineering team members (e.g., George Tchobanoglous, Trussell Technologies, or Brown and Caldwell).

#### ***b. Potable Reuse: what are the options, public health implications and perceptions?***

Potable reuse is gaining increasing acceptance from the scientific and regulatory community, as well as from the general public (as evident through potable reuse programs in Orange County, San Diego, Santa Clara Valley, Chino Basin, El Paso, Singapore, and elsewhere). We recommend providing WSAC with an overview of the key issues, approaches, and comparative advantages and disadvantages of the various water reuse options (IPR, NPR, as well as DPR). This may take the form of an “enrichment” presentation (e.g., by Rhodes Trussell, see item 9, below), a short written report (which can be based largely on a White Paper being completed by Bob Raucher and George Tchobanoglous for the WateReuse Research



Foundation), and (or) a short briefing presentation in an upcoming WSAC meeting.

The Water Department, in cooperation with the City's Public Works Department, the County of Santa Cruz, and Soquel Creek Water District, is currently applying for several grants to further analyze the potential uses of recycled water.

### **8. Lifecycle Costing and Technical Scoping for Key Alternatives (Water Supply Options)**

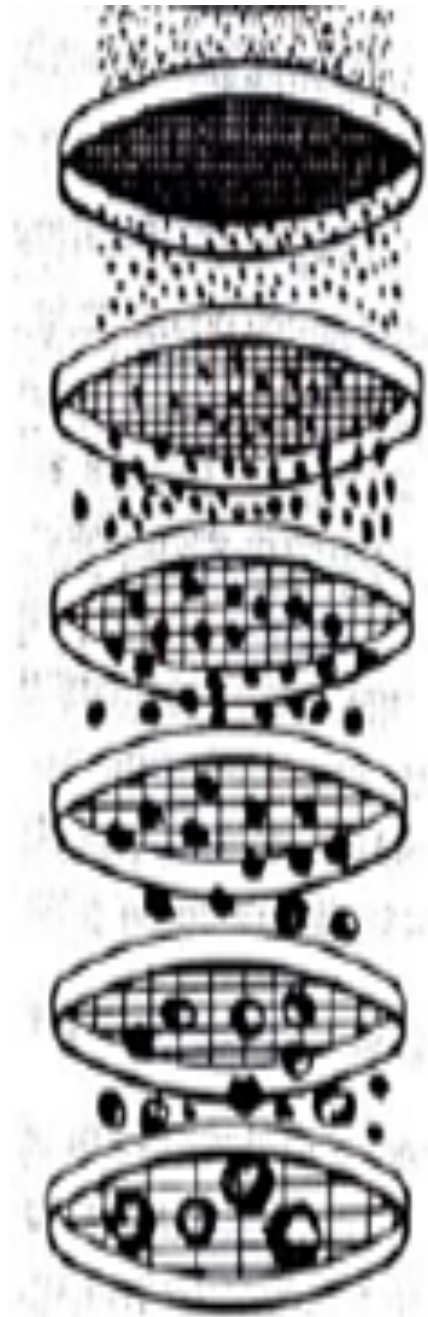
The Committee will ultimately need to have reasonably accurate estimates of the cost, technical feasibility, scalability, and other key aspects of the various water supply (and demand management) alternatives it wishes to consider. Brown and Caldwell can be tasked with initiating this exercise in the near term, so that initial findings can help guide Recon efforts, and more detailed analysis needs for the Real Deal can be better identified and prioritized.

Efforts should include assessments of infrastructure and treatment needs, including pipe/pumping needs, land acquisition, and so forth – as well as permitting costs – as needed to develop preliminary estimates of initial capital outlay (implementation) costs. Operation and maintenance (O&M) costs also need to be characterized, as well as energy and residuals management requirements. Water Department expertise and past reports will help guide and inform this effort. This work also needs to be coordinated with the initial scoping of energy requirements and carbon footprints (item 3a, above). Options to explore should include the baseline, water reuse, water exchanges, seawater desal, and others as put forward by the Committee.

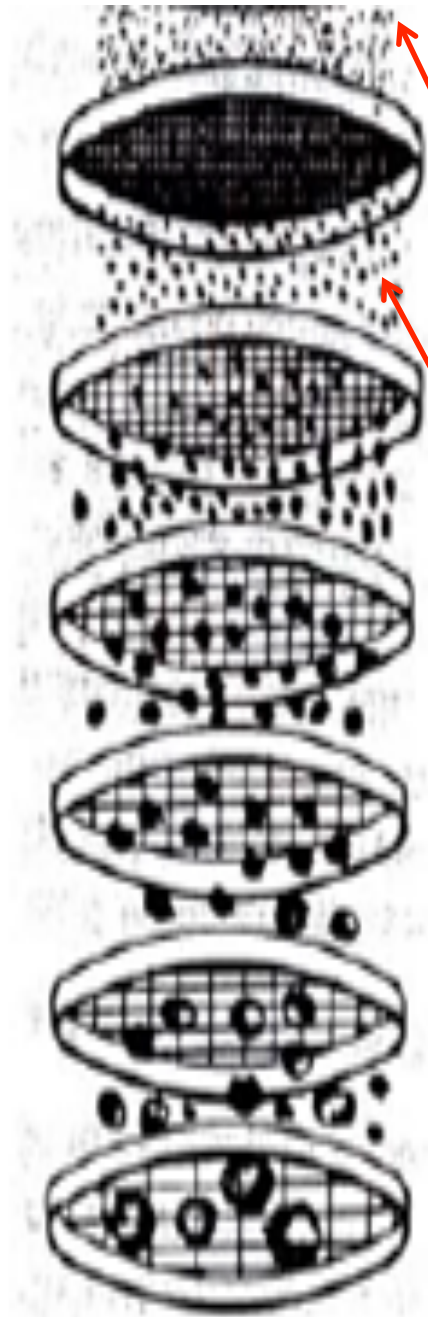
### **9. Enrichment Series**

Because there are many technical analysis issues to be considered within the context of the Committee's deliberations, and because there is limited time available for such presentations and discussions within the constraints and other priorities associated with WSAC meetings, we suggest offering a series of supplemental "enrichment" presentation/discussions. These may be provided immediately preceding the formal WSAC meetings, and/or at other times and venues as convenient for Committee members. Some of the topics that may be considered for the Enrichment Series include:

- a. Water and regional economic vitality (David Mitchell, Friday Sept 26, 1:15 pm)
- b. Conservation/Demand management
- c. History of Water Treatment Technology, and Where we are Headed (membranes, UV and Ozone today, and whether Forward Osmosis likely to be viable in the near future) – perhaps presented by Rhodes Trussell, perhaps in October)
- d. Potable Water Reuse – Water Quality, Regulatory Development, and Public Health Perspectives
- e. Energy requirements and carbon footprints
- f. Others? We are open to suggestions and requests!



# Using a Multi-Criteria Decision System to Evaluate Options for Improving Water Supply Reliability in Santa Cruz



## Evaluating options with MCDS is like putting material through a sieve

- Phase I (Recon):

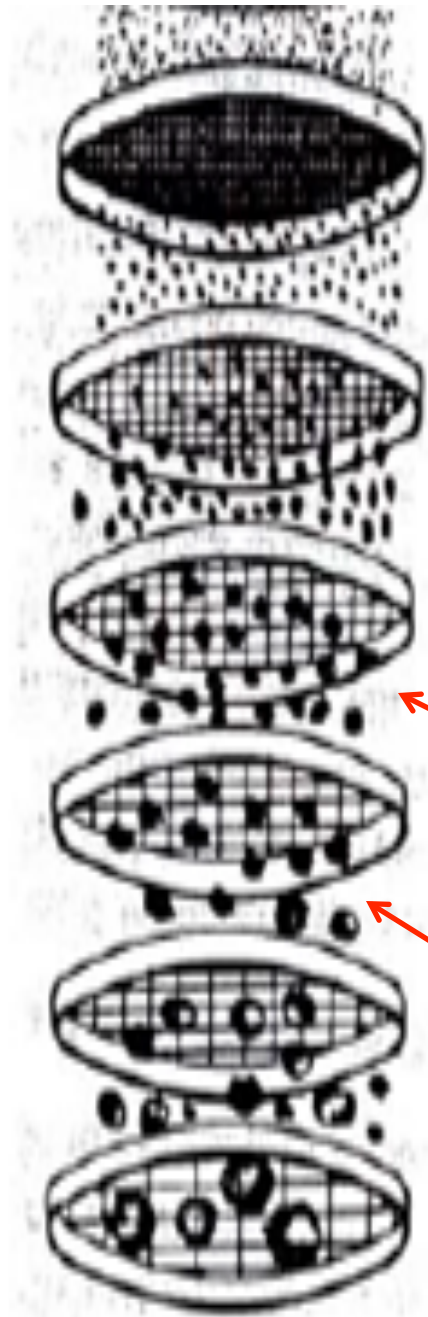
- “Call For Options” in July for the Water Supply Convention in October

Responses submitted included only general info about what the WSAC was looking for.

- Additional information on submittals was requested

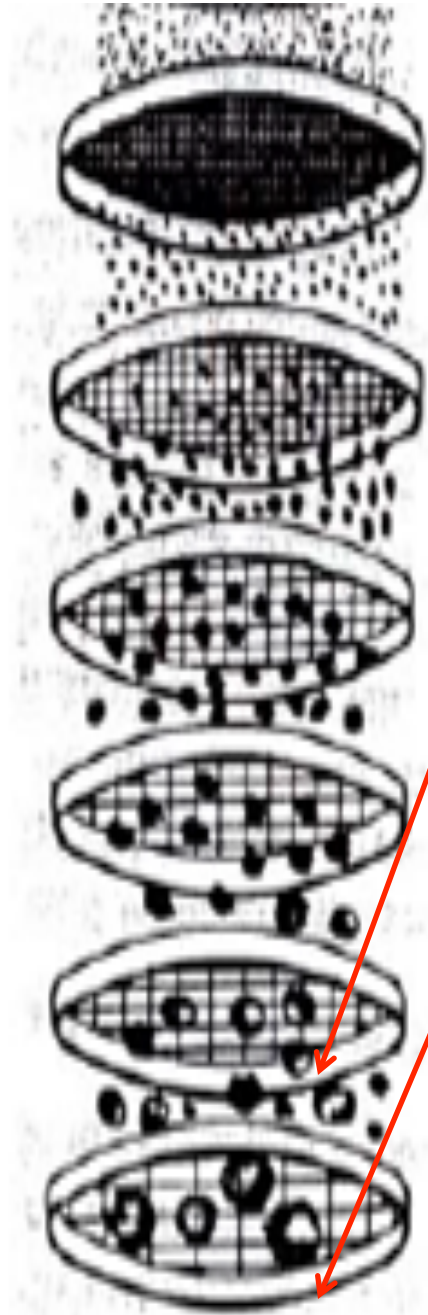
Additional information provided more detail about what the WSAC was interested in (e.g. criteria), but included nothing about how much additional water supply or demand management is needed.

Initial respondents self-selected whether to participate in the second phase.



- Phase 2 (Recon) Analysis:

- Options, including ideas that may ultimately be combined into *packages of options*, that best meet preliminary criteria of practicability, effectiveness, environmental and community impact, will be ranked more highly by Water Supply Convention evaluators.
- Additional technical analyses will provide further needed information about potential options, and possible packages of options, which will allow WSAC to again sort and eliminate options. (Note: additional ideas not presented at the Water Supply Convention may be added during the analysis process.)
- Options and packages of options will be further analyzed for how they relate to various scenarios.
- The best options or packages of options move from Recon to the Real Deal.



- Phase 3 (the Real Deal):
  - Detailed analyses provide additional information to compare options and packages of options.
  - Recommendations are developed for those options or packages of options that the WSAC sees as the best fit for improving the reliability of Santa Cruz's water supply.



**Water Supply Advisory Committee**

**Meeting August 27 and 29, 2014**

**Fellowship Hall, Peace United Church of Christ**

**Meeting Summary**

***Use and Meaning of the Meeting Summary:***

*The Summaries of the Water Supply Advisory Committee are intended to be general summaries of key issues raised and discussed by participants at meetings. The presentation of issues or items discussed is not designed to be totally comprehensive, or reflect the breadth or depth of discussions. However, it is intended to capture the gist of conversations and conclusions.*

*Where a consensus or other agreement was reached, it will be so noted. Where ideas or comments are from only one or several participants, or where a brainstormed list is presented the content of which was not agreed to by all Committee members, the co-facilitators will to the best of their abilities note these qualifiers. Where the co-facilitators believe that the insertion of additional information would be useful to the group they insert it in this summary and indicate that the insertion comes from them, rather than from the Committee.*

*An early draft of this summary is sent to Committee Members so that they may provide comments to the co-facilitators and permit the preparation of a more reliable Presentation Draft for review at the Committee's next meeting. If the Members' comments conflict with each other the co-facilitators do their best to resolve the conflict in the Presentation Draft. When Members raise comments about the meeting Summaries, or make other suggestions or comments following meetings that propose changes that are more than "corrections" to the Summaries, the facilitators add these in a section at the end of the item or at the end of the meeting Summary captioned "Post Script".*

\*\*\*\*\*

This meeting consisted of two consecutive daily sessions. The first lasted 4½ hours, the second lasted 4 hours. Here is a list of the members of the Committee. All members attended both sessions except as specified.

## 10a Materials from August Water Supply Advisory Committee

David Green Baskin, Dana Jacobson (arrived a few minutes late to the first session), Charlie Keutmann (attended the second session, absent from the first), Sue Holt, Rick Longinotti, Sarah Mansergh, Rosemary Menard, Mark Mesiti-Miller, Mike Rotkin (attended the first session, absent from the second), Sid Slatter (absent from both sessions), Erica Stanojevic (absent from both sessions), Doug Engfer, Peter Beckmann, Greg Pepping, David Stearns (Attended the first session, absent from the second).

### **First Session, Wednesday August 27**

#### **Public comment**

There was public comment including the following:

- The materials for this meeting are not available on the website

#### **Committee Member updates**

Mark Mesiti-Miller reported that members of the Chamber of Commerce have noticed no outreach message about the SANTA CRUZ WATER SUPPLY CONVENTION: OUR WATER OUR FUTURE. Mike Rotkin reported that he will be unable to attend the Committee's Friday session and will therefore miss the report of correspondence received from the community. He reported that all correspondence received from the community has been forwarded to the Committee. Members suggested that members should take it in turns to send a regular letter to the editor of the Sentinel to ensure that there are frequent updates of the Committee's progress.

Co-facilitator's note: no specific action was decided for this suggestion so the suggestion has been referred to the Recon Outreach Subcommittee.

#### **Soquel update**

Heidi Luckenbach described recent activities at the Soquel Water District to update the Members.

## **Agenda review**

Co-Facilitator Nicholas Dewar reviewed the meeting's agenda with the Committee. All agreed on the agenda.

## **Independent Review Panel**

Rosemary Menard reported that the IRP Subcommittee had selected four candidates whom they recommend to the Committee for proposal as members of the Independent Review Panel. The candidates are Mike Cloud, Roy Wolfe, Patrick Ferraro, and Brian Ramaley.

In response to questions from Committee Members, Subcommittee members explained that the relationship of candidates to desalination had not been part of the formal grading system used in the selection process. However, some members of the Subcommittee were very concerned about this and so the eventual selections reflect those concerns. Subcommittee members also explained that, although the question of paying for the travel of IRP members to and from the East Coast had been a consideration of the Subcommittee, a greater concern was the availability of each candidate to participate adequately.

The Committee agreed by consensus to recommend all the shortlisted candidates to the City Council for approval as members of the IRP. The Committee also agreed that the IRP Subcommittee should continue with its work concerning the role of the IRP by considering, protocols for assignment of work and communication between the Committee and the IRP, how the IRP might be brought up to speed and what role it will play during Recon and the Real Deal.

## **Recon Report update**

Rosemary responded to questions raised about the Supply/Demand slide deck, and in particular slide #55. She referred to Document P that was included in the meeting packet that provides information regarding the confluence model and the Loch Lomond rule curve. She pointed out that the starting point for the water level in the series of graphs including slide 55 is always the same and is based on November 1 1976.



In answer to questions, she explained that the rule curve can be considered for change as part of proposals recommended by the Committee. She pointed out that the rule curve could be more conservative so that management of Loch Lomond will tend to end each water year with more water in the Loch. However, the current rule curve is considered by the CDFG to be too conservative, because it reduces the amount of instream flows available to fisheries. She drew attention to the tension between different needs that are reflected in discussions about the rule curve.

This discussion is important for future management strategies and it is also important for establishing the baseline.

There is another complication in that the slides in the 55 series do not use the 1977 rule curve; they take 1976-77 hydrology and impose new information about demand and/or apply a more modern rule curve. Teasing this out may be best done between meetings and brought back to the Committee.

Rosemary also noted that a more conservative rule curve would result in more frequent curtailments. In essence this acceptance of curtailment as a normal management practice would make curtailments part of the conservation strategy.

Referring to the report on water losses a committee member suggested that the apparent 100 MGY of remediable water losses should be valued at the cost of replacement using new sources (supply or conservation) rather than at the marginal production cost of existing sources.

### Scenarios

Karen Raucher led a discussion of Scenarios for the decision making process. As Karen described each of a series of scenarios, Committee Members paused periodically to consider the criteria associated with the various scenarios and created lists of criteria.

The Committee agreed by consensus to post Karen's slide show at the Committee's website and to distribute a link via email.

Karen explained that at the September meeting Stratus will lead a discussion of scenarios reflecting climate change factors and economic factors so that the Committee can run through these and determine the data it will need to properly consider them.

## Criteria

Carie led a further discussion about the criteria and the lists of criteria that the Committee members had compiled. She elicited a list of criteria for the decision model from the Committee members.

### Public Comment

The Committee recognized the significance of their decisions regarding this topic and invited public comment. A member of the public made the following point:

- Include flood control as a criterion

After hearing public comment the Committee agreed by consensus that Mike Rotkin, Sue Holt, Dana Jacobs, David Stearns and Rick Longinotti would meet with Karen and Bob Raucher, Rosemary Menard, Carie Fox and Nicholas Dewar at noon the following day to review a compilation of the criteria collected from the Committee and the members of the public during this exercise so that an organized version of this compilation can be provided to the Committee during the Friday session.

Karen commented that she expected to discuss the ‘thriving economy’ and ‘climate change’ scenarios at the next meeting. She also welcomed an additional scenario Doug submitted, which resonates with the “climate-change adapted” criterion that surfaced in the exercise. This scenario looks at a high quality of life but not necessarily a continuation of the same practices or aesthetics as in the past.

A member asked Rosemary to investigate the greenhouse gas offsets developed in Monterey County.

## Subconsultant needs

Bob led a discussion about the Subconsultants needed to provide technical support to the Committee. Key technical topic areas were identified that emerged from the discussion on Scenarios and from a preview of some water alternatives. These topic areas and associated needs for specific types of technical expertise

were identified and discussed, With input from the Committee he compiled the following list of criteria for selecting the subconsultants:

- Subconsultants must be willing to accept criticism about their findings and respond positively
- They must have experience doing studies of relevant topics
- They must be available to provide technical services within the expedited timeframe driven by the WSAC process.
- Their personal expertise is more important than the expertise of the firm that employs them
- Anyone who is hired to provide technical assistance to the Committee shall reveal their trade organization relationships and lobbying practices relevant to WSAC projects.

Some also recognized that the selection of firms is worthwhile because they have a “deep bench” of experts and that the Committee can expect the prime consultant to manage any problems that arise with the subconsultants.

The Committee agreed by consensus that Stratus should send a list of recommended subconsultants to committee members by close of business on the following day (Thursday) and that the Committee would advise on the subconsultants during the Friday session.

### **Santa Cruz Water Supply Convention**

Doug Engfer and Sarah Mansergh reported to the Committee the progress of the Subcommittee. Eighteen proponents have confirmed their participation in the event. This will result in the receipt of about 40 ideas. Committee members asked if every effort had been made to find anyone with alternatives to provide.

Several Committee members expressed concern that the option to submit proposals to the Convention had not been circulated sufficiently, emphasizing that “we need to know *every* possibility, turn over *every* rock.”

Doug and Sarah described the issues about which the Subcommittee needed the Committees direction and proposed various recommendations.

The Committee reached consensus on the following directives to the Subcommittee:

- The date of the Convention will be changed to Thursday October 16.
- The event will be called the SANTA CRUZ WATER SUPPLY CONVENTION: OUR WATER OUR FUTURE.
- Civinomics will prepare a software tool for participating members of the public to use to assess the proposed alternatives. This will be a relatively simple tool.
- The Committee members will use the online decision model to rate the proposed alternatives.
- The Committee recommends that the City should run advertisements in the press to ensure that all potential proponents and participants are aware of the Convention.
- The September 11 deadline for submittal of proposals may be postponed to an appropriate date later in September.

### **Materials resulting from the previous meeting**

The Committee could not reach agreement about some wording in the Action Agenda for July that relate to the Committee's discussion in July of growth and the General Plan. It was agreed to continue the discussion to the Friday session when growth will again be discussed.

### **Public Comment**

The Committee invited public comment before adjourning. Members of the public made the following points:

- Many items that will be proposed at the Convention are multi-disciplinary so the technical consultants will need to consider them from that perspective.

- The Committees Charter is too narrow because it doesn't allow for consideration of ideas that have not been looked at in the past. The Committee should not repeat the omissions of the past.
- The Committee must look beyond "fatal flaw" conclusions and ask "what will it take to resolve any fatal flaw."
- During the proposed plenary sessions of the Convention, please give proponents more than two minutes each to present their proposals.

### **Evaluation of the session**

Eight Committee Members entered evaluations of this session at SurveyMonkey.

- How well did the session meet your needs?
  - Most, although not all, felt that it met their needs.
  - Some noticed progress with scenarios and criteria so that the decision tool is starting to take shape.
  - One noticed uneven progress and that some segments of the agenda seemed to lack purpose.
- How did this session help the Committee work towards its long-term goal?
  - Some Members noticed that this session helped the Committee forwards.
  - One member felt the session did not advance the Committee towards its goal, and that it demonstrated that reliance on consensus can permit a single Member to hold up the Committee's work.
  - One Member appreciated the process that ensured participation by all Members and the limits imposed on the amount of public comment.
- What were the strengths and weaknesses of the session?

## 10a Materials from August

### Water Supply Advisory Committee

- Although some members felt the time was well spent others reported a lack of efficiency, and an inability to reach decisions that seemed obvious.
- Some called for more assertive facilitation to keep participants closer to the agenda topics. One felt railroaded by the agendas of individual Committee Members.
- One reported too much emphasis on procedures and decision tools instead of substantial water-related items.
- One noted how problems with audio-visual equipment consistently interfere with the Committee's work.
- What would you like to see at the next meeting?
  - Several called for more control of the meetings, more drive and urgency in the facilitation to stay on topic and on schedule and greater clarity about the purpose of each agenda item.
  - One noted a need for more public participation.
  - One appreciated the brownies and hoped for more next time.
  - Some noted the need to reach decisions on critical issues and one felt that the Committee's indecisiveness was producing the appearance that the Committee's consultants are indecisive.

**Adjourn**

## **Second Session, Friday August 29**

### **Public comment**

One member of the public commended the Committee members for their good work. Another recommended participation in a seminar that he will present on September 9<sup>th</sup> and 10<sup>th</sup> from 7 to 9 p.m.

### **Correspondence received from the Community**

As expected, the Corresponding Secretary, Mike, was absent from this session. He had previously told the Committee that he will be absent until September 27. Sue Holt volunteered to temporarily take Mike's place as Corresponding Secretary. The Committee approved her temporary appointment by consensus.

### **Reflections on yesterday's session**

A member of the public praised the quality of the brownies.

Committee members noted the amount of issues that had been carried over to the second session and asked that issues be resolved rather than "kicked down the alley."

Rick Longinotti reflected on Mark Mesiti-Miller's reports about his communications with the stakeholder groups that he represents and felt re-inspired to communicate with the stakeholder groups that he represents.

Bob reflected on the various scenarios that he and Karen have mapped out and the "Sustainable Santa Cruz" scenario that Doug Engfer had helped articulate. He spoke of the scenario that describes Santa Cruz responding to climate change and finite resources by giving up green gardens etc. Others suggested that Santa Cruz could keep its gardens but they would be gardens with different types of plant life.

### **Review agenda for this session**

The Committee reviewed the agenda and agreed by consensus that they would accept discussion of Decision Rules in the form of a white paper and would not discuss it further at this meeting.

A Member asked for discussion about the protocols for managing the use of the IRP and the scope of its work. Members recognized that the IRP Subcommittee will be able to consider this and IRP Subcommittee members reported that the Subcommittee will meet early in September to work on this.

Members asked for the scenarios to reflect uncertainties with respect to the economy and the scarcity of resources as well as considering jobs created by water policies. They asked how to make a connection between the economic resources of the region and the situation of the local water resource.

### **Review updated online decision model and consider Rating Scales**

Carie presented the results of Thursday's working group and asked for comments by e-mail by the Committee members or on posters by the Committee members or members of the public.

The Committee considered the details of the development of criteria and rating scales for the decision model. The Committee agreed by consensus that:

- The criteria presented would be defined by Rosemary and reviewed by Dana, then shared with the Committee if time allows or input directly into the first draft of the model (and edited there by the Committee) if time is short;
- Bob and Karen will add criteria as they see the need;
- Bob and Karen will develop the first draft of the ratings. These are not likely to be reviewed prior to the release of the web model, but of course each committee member can make whatever changes to the ratings s/he wishes;
- Stratus will use the "working group" of Committee Members including Dana, Doug and Sue, consultants, staff and facilitators as sounding board and advisors as they develop these materials.



Committee Members noted that directing Stratus to do all of this work themselves, rather than closely involving the Committee or members of the public, will improve consistency in the initial model.

### **Subconsultant instructions**

The Committee considered the selection of subconsultants that they began in the first session. Committee Members explained how they were unable to perform the due diligence consideration of the candidates listed by Stratus because they had not received information about the specific individuals within large companies, some options had been added late and some of the candidates did not even have information available on the internet.

#### Public Comment

The Committee recognized the significance of their decisions regarding this topic and invited public comment. A member of the public made the following point:

- The Committee should consider people from this community for roles as subconsultants such as Andy Fisher. Including community members would build confidence in any eventual outcome.

In order to respond to the continuing concerns of Committee Members about the need to properly examine the suitability of the proposed subconsultants without further delaying the project, the Committee agreed by consensus that:

- Stratus may proceed with the process of contracting the following subcontractors:
  - John Rosenblum
  - George Tchobanoglous
  - Pueblo Water Resources Inc.
  - Trussell Technologies
  - Hydrometrics
  - Andy Fisher

- Jeff Hagar
  - Shawn Chartrand
  - Martha Lenihan
  - Sean Skaggs
  - Brown & Caldwell
- However, Bob may only task these subcontractors with jobs limited to familiarizing themselves with the work of the Committee and preparing and negotiating scopes of work. Before other tasks can be assigned:
    - Bob will as soon as possible provide sufficient information about these candidate individuals and firms so that Committee Members can satisfy themselves about the suitability of the candidates for the job of technical subconsultant, and
    - Committee members will review this information and will reply to Stratus within 48 hours (these hours being business days) of receiving it either with additional questions or with their conclusion as to the suitability of the candidate.
    - Stratus may assume that, if two business days elapse after it has delivered information about a candidate or provided answers to a Committee Member's questions about that candidate, that Committee Member is satisfied that the candidate in question is suitable as a subcontractor.
    - None of these subconsultants, even after they have been contracted, will be tasked with any job, except for the preparatory tasks described above, until all questions of Committee Members about their suitability have been settled using the time limits described above.

*Facilitator's note: In any event, under the May agreement about subcontracting, Bob may only task subconsultants with work after discussion with the Committee. Under the same agreement, ongoing tasks will be discussed at each meeting.*

The Committee further agreed by consensus that:

- As tasks are identified for any subconsultant, Bob, via Rosemary, will circulate to all Committee Members copies of substantive correspondence describing this tasking (including relevant emails and Task Orders) and will also forward to all Committee Members all substantive communications received from subconsultants regarding the tasking process and products delivered by the subconsultants in response to those tasks.
- As an exception to this agreement Stratus will not forward to the Committee any correspondence with the ESA attorney or the water rights attorney if that correspondence is considered privileged.
- Committee Members will communicate with members of the consulting team by sending all such communication to Rosemary. She will send copies of such correspondence to the rest of the Committee and communicate it to the Committee's consulting team.

Discussion of this topic included questions about the use of members of the IRP as a resource to help Committee Members evaluate the candidate subconsultants. Rosemary asked Committee Members not to separately engage with members of the IRP, but to send any questions for the IRP to her so that she will act as the IRP's point of contact.

One of the Committee members pointed out that asking the same group of people to weigh in on the choice of consultants and subsequently to evaluate that person's work creates a potential conflict of interest.

In order to provide less hurried opportunity for subconsultant-committee dialog, while giving the full Committee the opportunity to hear the dialog, the Committee Members also discussed the use of subconsultants to make presentations about specific topics as part of an "Enrichment Forum" activity parallel to the work of WSAC. This would include presentations and question & answer sessions; this could be scheduled to take place immediately before a regular session of the Committee or could be sponsored by another organization.

### **Technical consultant for Real Deal**

To ensure time for sufficient discussion of this topic, and because it was running behind schedule, the Committee agreed to move this agenda item from later in the agenda to this point.

Committee Members described concerns about foregoing the opportunity to evaluate a wide range of candidates for the Real Deal. Some felt that this decision should be delayed so that the Committee could get to know Bob and Karen's capacities better. Some had specific concerns about Bob who had not yet shown the capacity that was expected of him. Another was concerned that Stratus had been originally selected based on a RFP for an economic analysis of a specific project rather than the provision of technical support for the Committee's consideration of Santa Cruz's future water situation. He would prefer to compare Stratus with the entire field of consultants available for this general technical support role. They felt that an opportunity for such a comparison would only be made available by issuing a RFP/RFQ describing the tasks at hand. Another was concerned that two members who had expressed reservations in May were absent and should have an opportunity to weight in.

Others argued that changing from Stratus to another consultant at the end of Recon would significantly delay the progress of the Committee.

After significant discussion, the Committee was unable to agree by consensus to approve Stratus for the Real Deal at this time, so it agreed by consensus to ask the Water Department to conduct a consultant selection process that will permit it to compare Stratus with other firms capable of providing the necessary expertise during the Real Deal. They acknowledged that this might result in the re-selection of Stratus. It further agreed by consensus to ask Rosemary to explain to Bob the concerns of some Committee Members about his performance so that he can demonstrate his true capacity.

### **Santa Cruz Water Supply Convention**

The Committee agreed by consensus that the deadline for receipt of proposals should be postponed to September 18. Carie explained the importance of the process of reducing the number of proposals for consideration by the Committee, and explained that the Convention Subcommittee will need to be part of the development of that process and the presentation of that process to the Committee at its September meeting.

In September there will be a Committee “dry run” of parts of the Convention process.

### **Recon Outreach Subcommittee update**

Charlie Keutmann reported that Sue participated in his radio show in August, that the Subcommittee has further developed the concept of a speakers’ bureau and is looking for volunteers to take part in outreach activities.

### **Attitudinal Survey Concept Paper**

The Committee agreed by consensus to recommend the Attitudinal Survey to the Council. It also agreed by consensus to direct the Recon outreach Subcommittee to monitor the development of this survey on behalf of the Committee. Greg, Sue and Doug asked for an opportunity to review the survey instrument.

### **Update to Council**

David Baskin volunteered to represent the Committee in presenting the Update to the Council. The Committee Members by consensus accepted his offer with grateful applause.

Committee members noted that the draft of the Staff Report includes documentation that is out-of-date such as the RFQ for IRP members. Rosemary agreed to remove such out-of-date material and include information about the development of criteria and the selection of the IRP.

### **Growth**

Toby Goddard presented a selection of graphs from the report of “Historic Water Demand Related to Growth” and answered questions. Members asked for an economic analysis of the water intensity of the local economy showing any trends over time. Rosemary replied that there maybe a suitable study recently prepared for Santa Barbara that she will be able to draw from and find comparable local data.

## 10a Materials from August

Water Supply Advisory Committee

PRESENTATION DRAFT

### **Materials resulting from the previous meeting**

The Committee considered this item that was continued from the Wednesday session. The Committee approved by consensus the Summary for the July meeting.

The Committee considered changes proposed to the Action Agenda for July and agreed by consensus to approve the Action Agenda including an amendment to the agreement in the Action Agenda regarding growth so that it corresponds with the wording used in the Summary. This wording is as follows:

The Committee agreed by consensus that using water scarcity to change the GP growth levels is *not* part of the Committee's decision space. However, there are several growth issues that are still part of the Committee's discussion:

- Impacts to growth beyond the GP's planning horizon
- The relationship between GP growth and increased water needs
  - The effect of additional water-neutral policies
  - Analysis of existing policies which might be water-neutral

### **Agenda for September**

Carie facilitated a brief discussion about the agenda for September. She described the draft agenda as follows:

Main items:

- Further development and discussion of two of the scenarios: Economy and Climate Change
- Improvements to the decision model
- Dry-run of the Convention

Other items:

- Recon Report update (includes slide-deck)
- Real Deal Subcommittee

- IRP: how to use it
- Growth: information related to jobs, economic growth, etc.
- Outreach activity
- Attitudinal Survey update
- Vulnerability
- Subconsultants
- RFQ for Real Deal Consultant

### **Oral communication**

Members of the public made the following comments:

- The Committee must ensure that it complies with the Brown Act
- The Committee discusses growth as if it exists in Santa Cruz, but there is no growth here. The only small population growth is the result of some additional students at UCSC

### **Evaluation of the session**

Two Committee Members entered evaluations of this session at SurveyMonkey.

- How well did the session meet your needs?
  - Although saying that the session was better than the Wednesday session, one Member lamented the inability to complete all items on the agenda.
- What were the strengths and weaknesses of the session?
  - One member appreciated the continued progress, but regretted the time spent on some agenda items that necessitated the curtailment or deletion of some agenda items.
- What would you like to see at the next meeting?



## 10a Materials from August

### Water Supply Advisory Committee

- One Member asked for better time budgeting on potentially controversial topics or topics that induce discussion in order to avoid having to rush through topics to stay on schedule.

**Adjourn**

PRESENTATION DRAFT

Peace United Church of Christ  
Fellowship Hall  
900 High St.  
Santa Cruz, California 95060



**WATER SUPPLY ADVISORY COMMITTEE (WSAC) AGENDA**

**Regular Meeting**

**August 27 & August 29, 2014**

**ACTION Agenda prepared September 4, 2014 with action taken in bold type.**

**5:00 P.M. REGULAR MEETING - SESSION ONE (AUGUST 27): FELLOWSHIP HALL**

**2:00 P.M. REGULAR MEETING - SESSION TWO (AUGUST 29): FELLOWSHIP HALL**

**Statements of Disqualification:** Section 607 of the City Charter states that "...All members present at any meeting must vote unless disqualified, in which case the disqualification shall be publicly declared and a record thereof made."

The City of Santa Cruz has adopted a Conflict of Interest Code, and Section 8 of that Code states that no person shall make or participate in a governmental decision which he or she knows or has reason to know will have a reasonably foreseeable material financial effect distinguishable from its effect on the public generally.

**General Business:** Any document related to an agenda item for the General Business of this meeting distributed to the WSAC less than 72 hours before this meeting is available for inspection at the Water Administration Office, 212 Locust Street, Suite A, Santa Cruz, California. These documents will also be available for review at the WSAC meeting with the display copy at the rear of the Council Chambers.

**Appeals:** Any person who believes that a final action of this advisory body has been taken in error may appeal that decision to the City Council. Appeals must be in writing, setting forth the nature of the action, the basis upon which the action is considered to be in error, and addressed to the City Council in care of the City Clerk Administrator.

**Other - Appeals** must be received by the City Clerk Administrator within ten (10) calendar days following the date of the action from which such appeal is being taken. An appeal must be accompanied by a fifty dollar (\$50) filing fee.

**City Councilmember Attendance:** Four or more members of the City Council may be in attendance at this meeting.

**August 27, 2014 - 5:00 PM**

**SESSION ONE**

Call to Order - Co-Facilitator Nicholas Dewar called the meeting to order at 5:06 p.m.

Roll Call - Committee Members Present: Baskin, Stearns, Engfer, Pepping, Mesiti-Miller, Rotkin, Beckmann, Longinotti, Menard, Mansergh and Holt. Committee Members absent: Keutmann, Stanojevic and Slatter. Committee Member tardy: Jacobson.

Welcome to the Public and Public Comment

Co-facilitators Fox and Dewar welcomed the public. One member of the public commented on matters related to the WSAC's website.

Committee Member Updates

Three Committee Members discussed matters related to outreach and schedules.

Soquel Updates

The Water Department Deputy Director/Engineering Manager Heidi Luckenbach updated the Committee Members on significant events and news within the Soquel Creek Water District.

Agenda Review

Co-Facilitator Dewar led the Committee Members in a review of the agenda for the WSAC's fifth meeting.

Independent Review Panel

Water Director and members of the IRP Subcommittee led Committee Members in an overview of the list of candidates to serve as members of the IRP. By consensus, the Committee agreed to recommend all of the shortlisted candidates to the Water Department as members of the IRP and that the IRP Subcommittee should continue its work concerning the IRP by considering how the IRP might be brought up to speed and what role it will play in the Real Deal.

### Recon Report Update

Water Director Rosemary Menard responded to questions raised about the Supply/Demand slide deck and discussed curtailment's role as a conservation strategy.

### Scenarios

WSAC Consultant Karen Raucher led a discussion of Scenarios for the decision making process. **By consensus, the Committee agreed to post Karen's slide show on the Committee's website and to distribute a link to it through email.**

### Criteria

Co-Facilitator Carie Fox led Committee members in a discussion about the criteria and lists of criteria that the Committee Members had compiled.

### Public Comment

One member of the public spoke on matters relating to their desire to include flood control as a criterion.

### Return to Criteria

Co-Facilitator Carie Fox continued leading Committee members in a discussion about the criteria and lists of criteria that the Committee Members had compiled. **By consensus, the Committee agreed that Mike Rotkin, Sue Holt, Dana Jacobson, David Stearns, Rosemary Menard and Rick Longinotti would meet with WSAC consultants Karen and Bob Raucher and co-facilitators Nicholas Dewar and Carie Fox the following day to review a compilation of the criteria collected from the Committee and the members of the public during this exercise, and to return with an organized version of criteria by the Friday session.**

### Sub-consultant Needs

WSAC consultant Bob Raucher led the Committee in a discussion about the sub-consultants needed to provide technical support to the Committee. **By consensus, the Committee agreed that Stratus should send a list of recommended sub-consultants to Committee Members by the close of business the following day, and that the Committee would advise on the sub-consultants during the Friday session.**

### Santa Cruz Water Supply Convention

Santa Cruz Water Supply Convention Subcommittee Members Doug Engfer and Sarah Mansergh reported to the Committee the progress of the Subcommittee. 18 proponents have confirmed their participation in the event so far. **By consensus, the Committee agreed on the following directives to the Subcommittee: the date of the Convention will be changed to Thursday October 16, 2014; the event will be called the Santa Cruz Water Supply Convention: Our Water Our Future; Civinomics will prepare a software tool for participating members of the public to use to assess the proposed alternatives; Committee Members will use the online decision model to rate the proposed alternatives; and the September 11 deadline for submittal of proposals may be postponed to an appropriate date later in September. Also by consensus, the Committee agreed to recommend the City run advertisements in the press to ensure that all potential proponents and participants are aware of the Convention.**

### Materials Resulting from the Previous Meeting

Committee Members reviewed the Meeting Summary and Action Agenda of the Committee's July meeting. The Committee could not reach an agreement about particular wording in the July Action Agenda. The Committee agreed to continue the discussion during the Friday session.

### Public Comment

Two members of the public spoke on items regarding technical consultants, the Committee's Charter, how the Committee reviews flaws in alternatives and the Convention.

### Written Review and Wrap Up

Co-Facilitator Nicholas Dewar requested that participants complete written reviews of the meeting.

**Adjournment - At 9:33 p.m. the Water Supply Advisory Committee adjourned from its first session on August 27, 2014 of the fifth regular meeting to its second session on August 29, 2014 at 2:00 p.m. in the Fellowship Hall, at the Peace United Church of Christ.**

## Water Supply Advisory Committee

August 29, 2014 - 2:00 PM

### SESSION TWO

Call to Order - Co-facilitator Nicholas Dewar called the meeting to order at 2:12 p.m.

Roll Call - Committee Members Present: Menard, Longinotti, Mansergh, Mesiti-Miller, Baskin, Jacobson, Pepping, Engfer, Beckmann, Keutmann and Holt. Committee Members absent: Stanojevic, Stearns, Rotkin and Slatter.

#### Public Comment

Two members of the public spoke on matters commending the Committee and of a seminar that will be held on September 9<sup>th</sup> and 10<sup>th</sup>.

#### Correspondence Received from the Community

Corresponding Secretary Mike Rotkin was absent from this session. He will be absent until September 27. Until then, Committee Member Sue Holt volunteered to temporarily hold Rotkin's position as Corresponding Secretary. **By consensus, the Committee approved of Committee Member Sue Holt's temporary appointment as Corresponding Secretary.**

#### Review of Previous Session

Committee Members noted the number of issues that were carried over from the previous session and asked that issues be resolved rather than postponed.

#### Review Agenda for this Session

Committee Members discussed matters related to this session. **By consensus, the Committee agreed that they would accept discussion of Decision Rules in the form of a white paper rather than discussing it further during this session.**

#### Review Updated Online Decision Model

Committee Members reviewed the details of the development of criteria and rating scales for the decision model. **By consensus, the Committee agreed that the criteria presented would be defined by Water**

Director Rosemary Menard and reviewed by Committee Member Dana Jacobson, then shared with the Committee if time permits; WSAC consultants Bob and Karen Raucher will add criteria as they see the need; Bob and Karen Raucher will develop the first draft of the rating scales for all of the criteria, which will be reviewed if time permits; Bob and Karen Raucher will develop the first draft of the ratings; and Stratus will use the “working group” comprised of Committee Members Dana Jacobson, Doug Engfer and Sue Holt, consultants, staff and facilitators as advisors as they develop these materials.

#### Sub-Consultant Instructions

Committee Members continued exploring the selection of sub-consultants from Wednesday’s session.

#### Public Comment

One member of the public spoke on matters regarding the consideration of members of the community as potential sub-consultants.

#### Sub-Consultant Instructions Continued

Committee Members continued exploring the selection of sub-consultants. By consensus, the Committee agreed to direct Stratus to proceed with the process of contracting the following subcontractors: John Rosenblum, George Tchobanoglous, Pueblo Water Resources Inc., Trussell Technologies, Hydrometrics, Andy Fischer, Jeff Hagar, Shawn Chartrand, Martha Lenihan, Sean Skaggs and Brown & Caldwell. By consensus, the Committee agreed to hire those sub-contractors under the following conditions: Stratus may only task these subcontractors with jobs limited to familiarizing themselves with the work of the Committee and preparing and negotiating scopes of work. Before Stratus can assign other tasks Stratus will, as soon as possible, provide sufficient information about these candidates so that Committee Members can satisfy themselves about the suitability of the candidates for the job of technical sub-consultant; Committee Members will review this information and will reply to Stratus within 48 hours (these hours being business days) of receiving it with questions or conclusions; Stratus may assume that, if two business days elapse after it has delivered information or provided answers about that candidate, the inquiring Committee Member is satisfied that the candidate in question is suitable as a sub-contractor; and none of these sub-consultants will be tasked with any job, except for the preparatory tasks described above, until all Committee Member questions regarding their suitability have been settled using the previous condition. Also by consensus, the Committee agreed that

Stratus will circulate to all Committee Members, via Water Department Director Rosemary Menard, copies of substantive correspondence describing this tasking and will also forward to all Committee Members all substantive communications received from sub-consultants regarding the tasking process and products delivered by the sub-consultants in response to those tasks; and as an exception to this agreement, Stratus will not forward to the Committee any correspondence with the ESA attorney or the water rights attorney if that correspondence is considered privileged.

#### Technical Consultant for Real Deal

Co-Facilitator Nicholas Dewar led the Committee in a discussion regarding technical consultants for Real Deal. Committee Members described concerns about foregoing the opportunity to evaluate a wide range of candidates for the Real Deal. **By consensus, the Committee agreed to ask the Water Department to conduct a consultant selection process that will permit it to compare Stratus with other firms capable of providing the necessary expertise during the Real Deal and for Water Director Rosemary Menard to discuss with Bob Raucher concerns over his performance.** The Committee acknowledged this may result in the re-selection of Stratus.

#### Santa Cruz Water Supply Convention

Santa Cruz Water Supply Convention Subcommittee Members Doug Engfer and Sarah Mansergh continued the discussion regarding the SCWSC from Wednesday's session. **By consensus, the Committee agreed the deadline for receipt of proposals should be postponed to September 18, 2014.**

#### Recon Outreach Subcommittee Update

Recon Outreach Subcommittee member Charlie Keutmann reported that Committee Member Sue Holt participated in his radio show in August, the Subcommittee has further developed the concept of a speaker's bureau and is looking for volunteers to take part in outreach activities.

#### Attitudinal Survey Concept Paper

Members of the Committee discussed the Attitudinal Survey to be proposed for later implementation. **By consensus, the Committee agreed to recommend the Attitudinal Survey to the Council; to direct the Recon Outreach Subcommittee to monitor the development of this survey on behalf of the Committee; and approved the addition to**



**the Recon Outreach Subcommittee of Committee Members Greg Pepping, Sue Holt and Doug Engfer.**

### Update to Council

Committee Members discussed the need to report to Council during Committee Member Rotkin's absence and noted that the draft of the Staff Report includes out of date material. Committee Member David Baskin volunteered to represent the Committee in presenting the update to the Council. **By consensus, the Committee agreed to accept Committee Member Baskin's assignment to report to Council.**

### Growth

Water Department Administrative Services Manager Toby Goddard presented a selection of graphs from the report of "Historic Water Demand Related to Growth." Members of the Committee asked for an economic analysis of the water intensity of the local economy which may show trends over time.

### Materials Resulting from Previous Meeting

The Committee continued its discussion on the July meeting's Action Agenda and Meeting Summary. **By consensus, the Committee approved the Meeting Summary for the July meeting and agreed to change the agreement regarding growth in the Action Agenda so that it corresponds with the wording used in the Summary as follows: "By Consensus, the Committee agreed that using water scarcity to change the General Plan (GP) growth levels is not part of the Committee's decision space. However, there are several growth issues that are still part of the Committee's discussion: impacts to growth beyond the GP's planning horizon, the relationship between GP growth and increased water needs, the effect of additional water-neutral policies and the analysis of existing policies which might be water-neutral."**

### Agenda for September

Co-Facilitator Carie Fox guided the Committee Members in a brief discussion regarding the agenda for September's meeting.

### Oral Communication

Five members of the public spoke on matters regarding the Brown Act, growth and the General Plan.

### Written Review and Wrap Up

Co-Facilitator Carie Fox guided the Committee Members in identifying any incomplete issues that need to be carried to the next session as well as what was completed during this meeting.

**Adjournment - At 6:00 p.m., the Water Supply Advisory Committee adjourned from the regular meeting of August 27 & 29, 2014 to its next meeting on September 24 & 26, 2014 in the Fellowship Hall, at the Peace United Church of Christ.**

September 18, 2014

TO: WSAC members and staff  
FROM: Sue Holt, interim corresponding secretary  
SUBJECT: Public Correspondence Report

During the time that Mike Rotkin, corresponding secretary, has been away, only one comment was received. It and my response are below.

From: "Sue Holt" <suholt@cabrillo.edu>  
Subject: Re: Water Management  
Date: Thu, 18 Sep 2014 11:37:54 -0700  
To: "Erik Eriksen" <e.f.eriksen@gmail.com>  
"Nicholas Dewar" <ndewar@ppcollab.com>, "Carie Fox"  
Cc: <Carie.Fox@daylightdecisions.com>, "Clark McIsaac" <CMcIsaac@cityofsantacruz.com>, "Rosemary Menard" <RMenard@cityofsantacruz.com>, "Mike Rotkin" <openup@ucsc.edu>

Dear Mr. Eriksen,

Thank you for the comments you submitted at the Water Supply Advisory Committee website.

Rainwater catchment, pervious surfaces, and grey water systems and incentives are among the proposals the Committee is considering to increase the reliability of our water supplies. During the current period the Committee is conducting a reconnaissance of water supply difficulties the City might face in the next few decades and their potential solutions. Your comments support the breadth of our considerations.

You may be particularly interested in our upcoming event at the Civic Auditorium. On October 16 the Committee and the City will host "Our Water, Our Future! The Santa Cruz Water Supply Convention."

You can expect to see several dozen potential solutions profiled there (including the ones you've identified), with proponents providing information and answering questions. We encourage you to attend, discuss options at poster sessions, and give us your appraisals.

Yours,  
Sue Holt  
Interim Corresponding Secretary  
Water Supply Advisory Committee

From: Erik Eriksen <e.f.eriksen@gmail.com>  
Date: Mon, Sep 15, 2014 at 1:27 PM  
Subject: Water Management  
To: santacruzwatersupply@gmail.com

To Whom It May Concern,

I am in full support of desalination! It's this amazing process known as the hydrologic cycle and it occurs naturally! We are provided with fresh water every year, and somehow we haven't realized how to properly manage that gift.

Impervious surfaces combined with gutters that flow straight to the bay mean that we waste an incredible amount of fresh water every time it is given to us. Our natural aquifers are not given the opportunity to recharge because of poor planning and management. It is very possible to utilize rainwater in a much more efficient manner. "Slow it, Spread it, Sink it" as my man Brock Dollman likes to say. If we spent half as much money on properly and efficiently managing our rainwater supply as we would on a desal plant our long-term water security problems would all but be eliminated. It is possible and it has been proven to work.

<http://www.rcdsantacruz.org/stormwater>

<http://sonomarc.org/programs-services-water-resource-management.php>

<http://bairwmp.org/projects/s3-implementation-program-of-southern-sonoma-and-napa-counties>

[http://www.okwaterwise.ca/pdf/HomeDrainageGuide\\_Okanagan.pdf](http://www.okwaterwise.ca/pdf/HomeDrainageGuide_Okanagan.pdf)

[http://www.igrowsonoma.org/sites/default/files/u70/Rainwater\\_Management.pdf](http://www.igrowsonoma.org/sites/default/files/u70/Rainwater_Management.pdf)

Beyond simple management of rain water in order to recharge our aquifers, we should most definitely be investing in grey water infrastructure. Provide incentives to homeowners and businesses that wish to implement grey water systems. There are many water using systems that do not require potable water. Every time we flush a toilet with potable water, or irrigate landscape with potable water we are being extremely wasteful. Grey water is an amazingly simple way to reduce fresh/ potable water use. Invest in grey water pipes and incentivize it's construction/ use.

A desal plant demonstrates a supreme lack of understanding of the world we live in and our impacts upon it. There are so many things wrong with even considering an idea like that before we pursue every other option available to us. The wastefulness of such a precious resource as water is staggering and there is so much we can do to reverse that, it's mind blowing. Please consider managing our rainwater in a more efficient manner, and investing in grey water infrastructure. Not only are they incredibly simple, relatively low cost, and long-term solutions, they fix the core problem rather than putting a band-aid on it.

I am banking on people smarter than I to suggest similar measures, with more detailed proposals. For the love of the Universe, please do not spend another dime on fucking desal. It's so ass backwards it makes me depressed that there are so many misguided and uninformed people out there.

Thank You for your consideration.

Sincerely,

Erik Eriksen

-Erik Eriksen

<<http://www.linkedin.com/in/eferiksen/>>



**Water Supply Reliability and Economic Values**

Bob Raucher

Sept 19, 2014

There is considerable interest in how a reliable water supply may contribute to economic vitality and community well-being. At the Friday WSAC meeting (Sept 26), we will touch on this topic through the “Enrichment” session provided by David Mitchell. His talk, at 1:15 pm, will be based on his work for the California Water Foundation. Then, in the general meeting, we will delve into this topic more deeply and broadly.

There is a widely held, logical intuition that a more reliable water supply contributes to a more robust and stable regional economy (e.g., contributing to employment, income, tax revenues, and so forth). There is also inherent recognition that a reliable supply contributes to the general well-being of the community (e.g., by supporting green spaces, personal and public gardens, athletic fields and other amenities and resources used and valued by local citizens and visiting tourists).

The conceptual foundation for this linkage between water reliability and economic vitality / community well-being is strong, and is backed by interviews with business leaders, investors, and others. The empirical relationship between degrees of reliability and economic results is a bit more limited, however. This is due to a number of critical data limitations and methodological constraints. It is not a straightforward task to quantitatively estimate the link between water supply reliability and economic vitality or community well-being. Nonetheless, there are several avenues from which valuable empirical insights can be gleaned, and we will share these with the Committee.

The discussion during the Friday meeting will provide an overview of the various ways in which water reliability and economic value have been examined, and the empirical evidence that has emerged. The objective of this session is to provide the Committee with sound background information on this technical issue, discuss work in progress (and anticipated) for Santa Cruz on this topic, and provide empirical evidence on what has been estimated locally and elsewhere. It is largely an informational session, to be followed with general brainstorming about what questions the Committee would like us to address, and how this fits within the Technical Work Plan we have submitted and the overall evaluation process.

Topics to be addressed include:

1. Defining water supply reliability, and how it may be measured.
2. Examining water supply reliability within the context of residential customers
3. Examining water supply reliability within the context of commercial, industrial and institutional (CII) customers
4. Moving from direct economic impacts to broader regional economic impacts (including indirect and induced impacts -- a.k.a. “multiplier” effects)
5. Discussing what efforts we have underway for Santa Cruz
6. Discussing possible additional analyses that may be implemented
7. Discussing what else the Committee may wish us to examine

A related topic pertains to the “affordability” of water service. There will not be adequate time on Friday to delve into affordability, but it is a topic that we can address in a subsequent session.

DATE: September 17, 2014  
TO: Water Supply Advisory Committee  
FROM: Nicholas and Carie  
SUBJECT: Consultant selection process for the Real Deal

We understand from City staff that the Committee has at least three ways to approach the selection of a technical support consultant for the Real Deal:

- Keep Stratus as the lead technical support consultant (e.g. because you have seen more of their work you may have come to believe that this is the best option for the Committee).
- Proceed with a Request for Information (RFI). Use the information provided in response to the RFI together with your longer experience with Stratus to decide whether to go ahead with a Request for Qualifications (RFQ) or to keep Stratus as the lead technical support consultant. (See the attached draft RFI)
- Immediately proceed with an RFQ. (See the attached draft RFQ)

Please review the attached draft RFI and RFQ. If you have comments about these documents please send them to Nicholas and Carie in advance of the meeting.





Request for Qualifications  
for a  
Phase 2 Technical Team for the  
City Council Appointed  
Water Supply Advisory Committee  
City of Santa Cruz Water Department



Vern Fisher/Herald Archive

**RFQ opens: Wednesday, October 9, 2014**

**Statements of Qualifications Due no later than 3:00 PM, Wednesday, October 29, 2014**

## I. Request for Qualifications

The City of Santa Cruz Water Department is soliciting Statements of Qualifications (SOQs) from a team of technical experts to support the Phase 2 work of the City Council appointed Water Supply Advisory Committee (WSAC or Committee). Phase 2 work involves working the Committee to fully evaluate a limited range of potential alternatives or portfolios of projects and programs for their suitability to be included in policy recommendations to the Santa Cruz City Council on ways to improve the reliability of Santa Cruz's water supply.

Areas of technical expertise likely to be needed to complete this work include, but are not limited to the following:

- Public policy including policy analysis and policy analysis techniques such as scenario planning, multi-criteria decision making, and communication and outreach to stakeholders to inform, educate and involve community interests and stakeholders in work related to this critical community issue
- Water resources planning and management related the full range of resource planning and management topics including hydrology, hydrogeology, the impacts of climate change, environmental compliance, in the form of fish flows, supply and demand forecasting, supply reliability, hydrologic and system modeling, long term demand management strategies as well as water use curtailment strategies associated with supply shortages and alternative water supply strategies using wastewater effluent and/or brackish groundwater;
- Water system engineering and analysis including water quality and treatment, water facility cost estimating for source, transmission, treatment facilities, on stream, off-stream and aquifer storage facilities, water facility design and construction, and methodologies for comparing and evaluating alternative or portfolios of alternatives;
- Public health and water quality and treatment related to emerging contaminants, new and emerging technologies and the preserving and enhancing public health benefits for our community;
- Economic analysis including triple bottom line analysis, benefit-cost and life-cycle cost analysis, risk analysis, decision making in the face of uncertainty, economic implications of an unreliable water supply for our community, affordability analysis,
- Environmental analysis, including carbon emissions and efforts to minimize or mitigate for additional greenhouse gases associated with some options to improve the reliability of the City's water supply, the impacts or potential benefits of various alternatives on aquatic and terrestrial resources and their protection and enhancement;
- Permitting, land use and right of way issues and regulatory compliance related to development and construction of new water supply facilities;
- Experience working with and supporting a citizens committee working; and
- Experience working in a collaborative partnership with professional facilitators, City staff, a citizens committee and an Independent Review Panel established to provide quality assurance and quality control of all technical work produced as part of this project.

## II. Water Supply Advisory Committee Overview

### A. Project Description

The City of Santa Cruz Water Department (SCWD) is a municipal utility that provides water service to a geographic area that includes the entire City of Santa Cruz, adjoining unincorporated areas, a small part of the City of Capitola, and coast agricultural lands north of the City limits. The current population served is approximately 94,000.

The SCWD's water supply comes entirely from local sources. Surface water accounts for over 95% of the SCWD's total water supply. Groundwater pumped from wells comprises the remaining 5% of SCWD's water sources. Due to this, the region's water supply is extremely vulnerable to fluctuations in seasonal rainfall. Frequent water shortages and restrictions exemplify the region's vulnerability.

In response to the region's water supply reliability issues, the City has spent decades observing, researching, and reporting on new water supply opportunities and conservation methods. In 2010, after multiple studies, evaluations and reports, SCWD (partnered with Soquel Creek Water District) proposed a sea water reverse osmosis desalination plant (desal) as a potential solution to the region's water shortages.

The public responded to the proposed desalination plant by requesting that it be put to a vote, and gathered enough signatures to qualify a measuring requiring a public vote before funding for construction or acquisition of a desal project could commence. This measure, known as Measure P, was placed on the November 2012 ballot and passed with 72% of the vote.

In the fall of 2013, following continuing expressions of concern about a possible desal project by community interests, the City stepped back from the path it had been on and decided to create a citizens committee to consider the water supply issues, alternative strategies and solutions, and the public policy implications for Santa Cruz and provide recommendations to the Santa Cruz City Council. The Water Supply Advisory Committee (WSAC or Committee) was formed in early 2014 and began meeting in late April. It is made up of 14 citizens with diverse backgrounds and professions and the Santa Cruz Water Department Director is an ex officio member of the committee.

The Committee convened in April 2014 and spent two months establishing its charter and workplan (see Attachment A – report to council on June 24, 2014). The structure of the work plan called for the work to be divided into two phases: a reconnaissance phase (recon) and a “real deal” phase.

The recon phase of work was initiated in June of 2014 and concluded in November 2014. During recon, the Committee toured the water system and its facilities, received informational briefings on current supply and demand, future supply and demand and challenges facing the system related to climate changes and fish flow releases. Many presentations, reports, meeting agendas and summaries related to this work can be found at the following websites:

- [www.santacruzwatersupply.com](http://www.santacruzwatersupply.com) – this is the WSAC's website;

- <http://www.cityofsantacruz.com/departments/water/city-water-commission/meetings-and-agenda/-toggle-allpast> – this is the website of the City’s Water Commission. Presentations from meetings in 2014, in particular, include detailed discussions about long term water conservation planning and analyses and fishery issues;
- <http://www.cityofsantacruz.com/departments/water/online-reports> -- a variety of reports related to water planning can be found at this site.

During recon, the Committee also developed and applied a multi-criteria decision support model, and defined and agreed upon criteria to use in the model as well as rating scales to be used with each criteria. The Committee members became familiar with the use of this kind of evaluation tool by applying various versions of the model at several stages of the Phase 1 work. For example, a simple version of the model will be used by Committee members to evaluate several dozen ideas that were developed and submitted in response to the “call for ideas” for the Santa Cruz Water Supply Convention that is planned for October 16, 2014. The model will also be used in November 2014 as a key element in the planned process of winnowing down the range of potential alternatives, or portfolios of projects and ideas. To progress from the recon phase of the work to the second phase of the work that will involve detailed evaluations.

The WSAC has created an Independent Review Panel (IRP) to assist it in effectively interacting with its consultant support team. To achieve this goal, the Panel would:

- Provide critical review, on an as assigned or as needed basis, of products created by the WSAC technical support team. The goal of the Panel's work is to offer feedback to the Committee on work provided by its technical support team. Specifically, review of the work produced by the technical support team would focus on:
  - The accuracy and appropriateness of analytical, scientific, and technical methods;
  - The clarity and accuracy of statements of assumptions; and
  - The appropriate characterization of the strengths and weaknesses of the analyses, especially with respect to uncertainty, data quality, or other factors that, if different, could affect the results in a significant manner.
- Offer advice or suggestions to the WSAC regarding lines of inquiry or technical questions that should be evaluated by the technical team.

## B. Schedule

The WSAC technical team will begin work immediately on the City Council’s approval of the contract and run through the completion of the WSAC’s work. Anticipated start date for this contract would be December 12, 2014. The WSAC meets at least monthly as a full committee and typically several sub-committees and working groups meet between monthly meetings. The WSAC is scheduled to complete its work by spring of 2015 unless the work is extended by the City Council.

### III. RFQ Process

#### A. Process

Parties interested in being considered to provide these services are requested to submit their SOQs on or before 3:00 pm, Wednesday, October 29, 2014. SOQs will be evaluated by a Panel selection team made up of City of Santa Cruz staff and WSAC members using the criteria established in Section V. The panel selection team may make its selection entirely based on the SOQs or top rated candidates may be asked for supplemental information or may be invited to interview with the panel selection team. During the interview phase, if it is used, semi-finalists may be asked to:

- Make an oral presentation, and/or
- Respond to pre-established questions.

All responsive teams will be given equal opportunity to provide any requested additional information to the City. Any interviews will be scheduled on a mutually agreed upon date and will be at no cost to the City. The Evaluation Committee will use all available information to rank the semi-finalists in order of their ability to best meet the needs of the City.

#### B. Timeline

The tentative timeline for the selection process is as follows.

3:00 pm, October 29, 2014 -----	SOQs Due
Week of November 17, 2014 -----	Interviews, if applicable
Friday, December 12, 2014 -----	Contracts with Technical Team in place

#### C. Information Disclosure to Third Parties

SOQs are a matter of public record and are open to inspection under the California Public Records Act. If any respondent claims any part of its SOQ is exempt from disclosure and copying, they shall so indicate in the transmittal letter. By responding to this RFQ, respondents waive any challenge to the City's decision in this regard.

If any SOQ contains confidential information, the respondent shall clearly label and stamp the specific portions that are to be kept confidential. The respondent is urged to identify the truly confidential portions of the SOQ and not simply mark all or substantially all response as confidential. Notwithstanding the foregoing, respondents recognize that the City will not be responsible or liable in any way for losses that the respondents may suffer from the disclosure of information or materials to third parties.

#### D. City Rights and Options

The City, at its sole discretion, reserves the following rights:

1. To reject any, or all SOQs or information received pursuant to this RFQ;
2. To supplement, amend, substitute or otherwise modify this RFQ at any time by means of written addendum;
3. To cancel this RFQ with or without the substitution of another RFQ or prequalification process;
4. To request additional information and/or schedule interviews as part of the selection process;
5. To verify the qualifications and experience of each respondent;
6. To require one or more respondents to supplement, clarify or provide additional information in order for the City to evaluate SOQs submitted;
7. To hire multiple contractors to perform the necessary duties and range of services if it is determined to be in the best interests of the City: and
8. To waive any minor defect or technicality in any SOQ received.
9. City reserves the right to determine the extent, duration and limit of Panel member service

E. Questions/Clarification Request

For the City, the primary contact is:

Rosemary Menard  
Water Director  
City of Santa Cruz Water Department  
212 Locust Street, Suite A,  
Santa Cruz CA 95060  
Email: [RMenard@cityofsantacruz.com](mailto:RMenard@cityofsantacruz.com)  
Phone: (831)420-5205

During the SOQ process, interested parties shall direct all questions via email to the City's primary contact listed above.

**IV. Submittal of SOQs**

The SOQs shall provide the information requested and be organized into sections as follows:

- Cover letter
- Statement of qualifications covering
  - The qualifications and experience of the firms involved in proposed technical team in working on similar projects;
  - A listing of all of the industry associations, for example, Water Environment Foundation, to which each firm belongs;
  - The qualifications and experience of the individual technical team members, particularly emphasizing their experience working on similar projects;
  - Availability of the team members to begin work immediately following the approval of the contract and to dedicate the time necessary to complete the necessary work by the late spring of 2015
- Resume or curriculum vitae for each member of the proposed team.
- Three references for work of a similar nature for each key members of the proposed team.

## **V. Evaluation Criteria and Selection**

The City will evaluate each respondent's experience and expertise in relation to the required experience and expertise outline in panel characteristics described in section I above. Final selection may be based on the SOQ as well as any supplemental information or interviews conducted. Evaluation factors used to select the semi-finalists shall include the following:

1. Technical experience and qualifications and capacities of the firms that are proposed as part of the Phase 2 technical team as they relate to this project (30%)
2. Technical experience and qualifications of the proposed individual members of the technical team (30%).
3. Experience of the lead consultant and key members of the consultant members who will interact directly with the WSAC in supporting a citizen committee working on a major public policy question that has a substantial technical component, and involves significant uncertainty. (20%)
4. Experience of the lead consultant and key members of the consultant team in working in a collaborative problem solving process designed and supported by professional facilitators and using a consensus approach to develop recommendations. (20%)

## **VI. Response Format**

One hard copy and one electronic copy of the Statement of Qualifications shall be submitted. Excluding resumes or curricula vitae, responses are to be no longer than 20 individual sheets in length including any attachments. Proposal may be printed on both sides of sheet and submitters are encouraged to use a double-sided format and recycled paper when possible.

Parties interested in being considered for this project are requested to submit their Statements of Qualifications **by 3:00 pm, Wednesday, October 29, 2014** to:

City of Santa Cruz Water Department  
212 Locust Street, Suite A  
Santa Cruz, CA 95060  
Attention: Rosemary Menard  
[rmenard@cityofsantacruz.com](mailto:rmenard@cityofsantacruz.com)

**Attachment B**

**Request for Information for Consultants Interested in Providing Technical and Analytical Services for the City Council Appointed Water Supply Advisory Committee's Phase 2 Work.**

**1. Intent**

The intent of this Request for Information ("RFI") is to identify consultant teams interested and qualified to provide technical and analytical services for the Water Supply Advisory Committee's (WSAC or Committee) Phase 2 work. The City is specifically interested in looking at teams prepared to provide the full range of technical and analytical support that will be needed to support the Committee in completing its work.

All responses are greatly appreciated and will be utilized in the best interests of the City. Information submitted to the City may or may not be used to develop a Request for Qualifications (RFQ), or a Request for Proposal (RFP).

**Please submit your response prior to Wednesday, October 29<sup>th</sup> at 3 pm.** Responses may be emailed to bids to [rmenard@cityofsantacruz.com](mailto:rmenard@cityofsantacruz.com) or mailed to City of Santa Cruz Water Department at 212 Locust, Suite A, Santa Cruz, CA 95060. The City will not be liable for any expenses incurred by participants in preparing a response to this RFI.

**Questions regarding this RFI should only be directed to Rosemary Menard, at 831-420-5205 or at [rmenard@cityofsantacruz.com](mailto:rmenard@cityofsantacruz.com).**

**2. Overview of the Water Supply Advisory Committee**

The City of Santa Cruz Water Department (SCWD) is a municipal utility that provides water service to a geographic area that includes the entire City of Santa Cruz, adjoining unincorporated areas, a small part of the City of Capitola, and coast agricultural lands north of the City limits. The current population served is approximately 94,000.

The SCWD's water supply comes entirely from local sources. Surface water accounts for over 95% of the SCWD's total water supply. Groundwater pumped from wells comprises the remaining 5% of SCWD's water sources. Due to this, the region's water supply is extremely vulnerable to fluctuations in seasonal rainfall. Frequent water shortages and restrictions exemplify the region's vulnerability.

In response to the region's water supply reliability issues, the City has spent decades observing, researching, and reporting on new water supply opportunities and conservation methods. In 2010, after multiple studies, evaluations and reports, SCWD (partnered with Soquel Creek Water District) proposed a sea water reverse osmosis desalination plant (desal) as a potential solution to the region's water shortages.

The public responded to the proposed desalination plant by requesting that it be put to a vote, and gathered enough signatures to qualify a measuring requiring a public vote before funding for



construction or acquisition of a desal project could commence. This measure, known as Measure P, was placed on the November 2012 ballot and passed with 72% of the vote.

In the fall of 2013, following continuing expressions of concern about a possible desal project by community interests, the City stepped back from the path it had been on and decided to create a citizens committee to consider the water supply issues, alternative strategies and solutions, and the public policy implications for Santa Cruz and provide recommendations to the Santa Cruz City Council. The Water Supply Advisory Committee (WSAC or Committee) was formed in early 2014 and began meeting in late April. It is made up of 14 citizens with diverse backgrounds and professions and the Santa Cruz Water Department Director is an ex officio member of the committee.

The Committee convened in April 2014 and spent two months establishing its charter and work plan. The structure of the work plan called for the work to be divided into two phases: a reconnaissance phase (recon) and a “real deal” phase.

The recon phase of work was initiated in June of 2014 and concluded in November 2014. During recon, the Committee toured the water system and its facilities, received informational briefings on current supply and demand, future supply and demand and challenges facing the system related to climate changes and fish flow releases. Many presentations, reports, meeting agendas and summaries related to this work can be found at the following websites:

- [www.santacruzwatersupply.com](http://www.santacruzwatersupply.com) – this is the WSAC’s website;
- <http://www.cityofsantacruz.com/departments/water/city-water-commission/meetings-and-agenda/-toggle-allpast> – this is the website of the City’s Water Commission. Presentations from meetings in 2014, in particular, include detailed discussions about long term water conservation planning and analyses and fishery issues;
- <http://www.cityofsantacruz.com/departments/water/online-reports> -- a variety of reports related to water planning can be found at this site.

During recon, the Committee also developed and applied a multi-criteria decision support model, and defined and agreed upon criteria to use in the model as well as rating scales to be used with each criteria. The Committee members became familiar with the use of this kind of evaluation tool by applying various versions of the model at several stages of the Phase 1 work. For example, a simple version of the model will be used by Committee members to evaluate several dozen ideas that were developed and submitted in response to the “call for ideas” for the Santa Cruz Water Supply Convention that is planned for October 16, 2014. The model will also be used in November 2014 as a key element in the planned process of winnowing down the range of potential alternatives, or portfolios of projects and ideas. To progress from the recon phase of the work to the second phase of the work that will involve detailed evaluations.

The WSAC has created an Independent Review Panel (IRP) to assist it in effectively interacting with its consultant support team. To achieve this goal, the Panel would:

- Provide critical review, on an as assigned or as needed basis, of products created by the WSAC technical support team. The goal of the Panel's work is to offer feedback to the Committee on work provided by its technical support team. Specifically, review of the work produced by the technical support team would focus on:
  - The accuracy and appropriateness of analytical, scientific, and technical methods;
  - The clarity and accuracy of statements of assumptions; and
  - The appropriate characterization of the strengths and weaknesses of the analyses, especially with respect to uncertainty, data quality, or other factors that, if different, could affect the results in a significant manner.
- Offer advice or suggestions to the WSAC regarding lines of inquiry or technical questions that should be evaluated by the technical team.

### 3. Scope of Services

Phase 2 of the WSAC's work plan involves providing technical and analytical support to the Committee as it fully evaluates a limited range of potential alternatives or portfolios of projects and programs for their suitability to be included in policy recommendations to the Santa Cruz City Council on ways to improve the reliability of Santa Cruz's water supply.

Areas of technical expertise likely to be needed to complete this work include, but are not limited to the following:

- Public policy including policy analysis and policy analysis techniques such as scenario planning, multi-criteria decision making, and communication and outreach to stakeholders to inform, educate and involve community interests and stakeholders in work related to this critical community issue
- Water resources planning and management related the full range of resource planning and management topics including hydrology, hydrogeology, the impacts of climate change, environmental compliance, in the form of fish flows, supply and demand forecasting, supply reliability, hydrologic and system modeling, long term demand management strategies as well as water use curtailment strategies associated with supply shortages and alternative water supply strategies using wastewater effluent and/or brackish groundwater;
- Water system engineering and analysis including water quality and treatment, water facility cost estimating for source, transmission, treatment facilities, on stream, off-stream and aquifer storage facilities, water facility design and construction, and methodologies for comparing and evaluating alternative or portfolios of alternatives;
- Public health and water quality and treatment related to emerging contaminants, new and emerging technologies and the preserving and enhancing public health benefits for our community;
- Economic analysis including triple bottom line analysis, benefit-cost and life-cycle cost analysis, risk analysis, decision making in the face of uncertainty, economic implications of an unreliable water supply for our community, affordability analysis,
- Environmental analysis, including carbon emissions and efforts to minimize or mitigate for additional greenhouse gases associated with some options to improve the reliability of the

City's water supply, the impacts or potential benefits of various alternatives on aquatic and terrestrial resources and their protection and enhancement;

- Permitting, land use and right of way issues and regulatory compliance related to development and construction of new water supply facilities;
- Experience working with and supporting a citizens committee working; and
- Experience working in a collaborative partnership with professional facilitators, City staff, a citizens committee and an Independent Review Panel established to provide quality assurance and quality control of all technical work produced as part of this project.

#### **4. Submittal Instructions**

A specific format is not required for response to this RFI. Information that will be most useful to the City in conducting its evaluation would include:

- Information about the firms that would be involved in the proposed team, such as existing descriptive materials about the kinds of work the firm does;
- A listing of all of the industry associations, for example, Water Environment Foundation, to which each firm belongs;
- Information about individuals who would be part of the proposed team, such as a resume or curriculum vitae; and
- A list of references for key team members for clients for which work of a similar nature was performed.

**To be considered, please submit your response prior to Wednesday, October 29<sup>th</sup> at 3 pm.**

As background to your discussion about the consultant hiring, Nicholas and I have gathered your interests, facts and assumptions about this issue and summarize them here. Please let us know if we missed something vital or got something wrong.

The question about agreeing to keep Stratus as the Real Deal consultants or going out with an RFQ or RFI is complicated. Partly it is complicated because the option of looking for another lead contractor has different junctures: you could look over the field and decide not to proceed. You could continue with the process and decide on Stratus. You could hire someone different. Understanding the cost of going forward or not going forward is confusing because going forward could take several twists and turns.

1. What are the interests related to the choice of going out with a solicitation at all?

**a. Procedural Interests** are key here:

- i. Honoring the agreement made in May.
- ii. Providing a solid basis for a consultant decision. If solicitation of proposals had been for the actual job--lead contractor--rather than for a narrower job--providing economic analysis--there may have been candidates who would provide a better fit for the ctte's work.
- iii. Continuing in a timely, well-organized manner.
- iv. Interest in *not* using urgency or efficiency as a lever to quash the agreement made in May (avoiding such quashing was part of the May agreement).
- v. Avoiding something that will clog the ctte agenda and demand considerable subctte member time.
- vi. Advantage, as a ctte, of working through these issues.
- vii. In decision theory, there is a basic notion that one should keep one's options open so long as significant new information will be forthcoming and the risks of waiting are comparatively low. In your case the new information would be:
  1. Knowing Stratus better, being able to judge their 'fit' to the ctte better
  2. Knowing more about who might have applied had the original solicitation been ctte-tailored.

**b. Substantive Interests** include:

- i. Avoiding the risk of inviting a built-in economic bias.
- ii. Not having to re-integrate and re-familiarize another team.
- iii. Not losing the work done in choosing the subconsultants who now work for Stratus.
- iv. Avoiding expenditure of labor, energy, focus of staff and ctte on solicitation and evaluation of proposals, putting together contract, etc.
- v. Avoiding interruption of the ctte momentum.
- vi. Avoiding duplication of effort if Stratus (and their team of subs) is replaced. This isn't just the consultant effort but the ctte's and staff's. (It costs upwards of \$50,000 to support a single ctte meeting, so this is not a trivial question.)

**c. Relationship Interests** include

- i. Relationships among ctte members, especially for Peter who "stood aside" before and has deep concerns about a well-framed procedure.
- ii. Trust between the ctte members and the City.
- iii. Trust between the ctte members and the consultant.

- iv. Trust between the ctte members and the public (that the ctte can claim “this was our process; these are our results” and the public feels confidence in that.)
  - v. Depth of relationship between ctte and Stratus vs ctte and a new set of players.
2. What are the issues about the solicitation? (These issues lean towards substantive stuff but that in no way implies that the procedural interests are less important.)
- a. A submitter typically spends 10% of the contract amount on a bid; they do a fair amount of research before committing to an RFQ. Proposers may see this situation as a bit iffy (e.g. because Stratus already has an ‘in’) and choose not to bid. Thus, the interest in finding out who might actually bid may not be met. (On the other hand, an RFI, though it is peculiar and will likely raise some eyebrows, is inexpensive to prepare so the field for an RFI may be oddly large.)
  - b. Doing an RFI would slow the ctte process more than an RFQ.
  - c. The RFI is less formal and doesn’t have evaluation criteria, which may mean a hodge-podge of submittals that are difficult to compare rigorously.
  - d. To mitigate the disruption of hiring a different consultant, one idea is to ask the proposers to articulate their team and pick the *team* not just the lead.
  - e. Because the RFI/RFQ costs money, it will be on the Council’s agenda for their October 14th meeting.
3. What are the issues at different junctures?
- a. In the ‘interests’ section I tried to outline the key issues you have in choosing whether to go forward with a solicitation this month.
  - b. The next ‘junction’ might be at the RFI stage, if you choose to go that route. By that time you will have very brief descriptions of the lead (general contractor), team and approach and of course you can google them to your heart’s content. You will also know Stratus better. At that point you have to choose whether to go on to an RFQ or not, perhaps shortlisting the RFI submitters. Here are some issues that may be relevant:
    - i. Will you then have an answer to the question “how broad might the field be?” If not, then what?
    - ii. What process will you put in place to make the decision about whether to proceed? A subctte empowered to make decisions?
    - iii. When you compare the field of candidates to Stratus, do you take into consideration Stratus’s putative advantage in experience and familiarity with you and your work? (Is it legitimate to say “these consultants seem equally good but we will choose to continue with Stratus because they know more about the project?”)
    - iv. When you compare the field do you then take into consideration the efficiencies of sticking with the existing Stratus contract (is it fair to say “yeah I might have liked Smith better but it isn’t worth the hassle?”)
  - c. If you go forward to an RFQ you have to choose whom to interview. Subctte again?
  - d. Interview, presumably 2 or 3 ctte members-- empowered to opine?
  - e. Building the contract-- subctte involved?

## WSAC IRP Policy, Role and Procedures Protocols

### IRP Policy Statement:

The IRP is a resource intended to support the WSAC as a whole by providing an independent source of quality control and quality assurance on the technical work being developed by the WSAC technical team, which includes both technical consultants and City staff. To maintain the effectiveness of the IRP in playing this role, individual WSAC members may not substantively communicate with or assign critical review or other tasks to individual members of the IRP or to the IRP as a whole.

Work tasks may only be assigned to the IRP by the action of the Committee (or a subcommittee if duly authorized by the Committee) or as a result of the procedures provided in this document.

The IRP may occasionally engage with the Committee, at the full Committee's request, in a Question and Answer session during a Committee meeting. In making the invitation, the Committee will first clearly outline the scope and intent of the discussion.

### IRP Role:

The role of the Independent Review Panel (Panel) is to assist the Water Supply Advisory Committee (WSAC or Committee) in effectively interacting with its consultant support team. To achieve this goal, the Panel would:

- Provide critical review, on an as assigned or as needed basis, of products created by the WSAC technical support team. The goal of the Panel's work is to offer feedback to the Committee about its work plan and the work provided by its technical support team. Specifically review of the work produced by the technical support team would focus on:
  - o The accuracy and appropriateness of analytical, scientific, and technical methods;
  - o The clarity and accuracy of statement of assumptions; and
  - o The appropriate characterization of the strengths and weaknesses of the analyses, especially with respect to uncertainty, data quality, or other factors that, if different, could affect the results in a significant manner.
- Offer advice or suggestions to the WSAC regarding lines of inquiry or technical questions that should be evaluated by the technical team.

### IRP Procedure:

1. Critical Review:
  - a. Technical work products prepared by the Technical Team (including both consultants and City staff) and presented to the WSAC, including power point presentations, reports, white papers, including related calculations and analyses, will be assigned to one or more members of the IRP for review and comment after their submittal or

- presentation to the WSAC or as otherwise requested by the WSAC technical and facilitation team.
- b. Critical review assignments will be made on the basis of IRP technical team subject matter expertise and/or to IRP members who volunteer to review various products.
  - c. If more than one IRP member is involved in reviewing a product, they may collaborate on their comments.
  - d. IRP members may contact either the lead technical consultant, Bob Raucher, or Water Director, Rosemary Menard with questions for clarification during the review process and may be referred by Bob or Rosemary to technical team or City staff members for additional information or responses to questions.
  - e. Any feedback provided will be reported the full WSAC and responded to by the technical team.
2. WSAC members wishing to have the Committee consider assigning work to the IRP will contact the WSAC technical team (Rosemary and Lead Technical Consultants) and facilitation team (Nicholas and Carrie) to have their request acted upon.
  3. Advice on Lines of Inquiry or Technical Questions for Evaluation by the Technical Team:
    - a. IRP members with suggestions on lines of inquiry or technical questions to be evaluated by the technical team will make their suggestions preferably in writing in advance of WSAC committee meetings or orally at a WSAC committee meeting. Written suggestions will be directed to the WSAC and copied to the lead consultant, Bob Raucher, or the Water Director, Rosemary Menard and the WSAC's facilitation team, Nicholas Dewar and Carie Fox.
    - b. The technical team will have an opportunity to consider suggestions and will report back to the WSAC and may confer with the IRP member(s) providing the suggestion to clarify issues or work on strategies for appropriately and effectively responding to the suggestions.
    - c. The technical team will report back to the WSAC on the technical team's response to IRP advice and suggestions.
  4. General Input from the IRP to the WSAC Technical Team or Facilitation Team:
    - a. IRP members wishing to provide input on topics not covered under items 1 or 2 above, for example on topics related to scenario planning, which are process or planning approaches and not technical work products or potential lines of inquiry on technical topics, may do so informally by approaching the lead technical consultant, Bob Raucher, the Co-facilitators Nicholas Dewar or Carie Fox, or the Water Director, Rosemary Menard. Such input will be considered but need not be acted upon by either the technical team or the facilitation team.

[illegible]