

AGENDA

WSAC Planning Subcommittee

Friday, February 20, 2015

**Attendees: Bob Raucher, Colleen Donovan, David Green Baskin, Doug Engfer, Erica Stanojevic, Heidi Luckenbach, Mark Mesiti-Miller, Nicholas Dewar, Rick Longinotti, Rosemary Menard, Sid Slatter**  
**Apologies: Peter Beckmann**

Meeting Desired Outcomes:

- Action on evaluation criteria –
  - Agreement on which criteria and scales to send to the technical team for input; and
  - Discussion and agreement on recommendations for the full Committee on issues identified for Planning Subcommittee action
- Agreement on any steps to improve future meetings based on meeting evaluations for February meeting
- Agreement on recommendations related to Enrichment series
- Agreement on meeting focus on consolidated alternatives for March 6 Planning Subcommittee meeting

**Notes from the meeting are in bold italics (like this text). Note that detailed criteria notes are embedded in the Technical Team report that follows this agenda.**

1. Evaluation Criteria – 9:05 to 10:00
  - Agreement on criteria/scales to send to the Technical Team for input and suggestions
  - Agreement on recommendations for the full Committee on issues identified for Planning Subcommittee action
  - **See the Tech Team feedback for specific notes on the Criteria we discussed.**
  - **Rosemary to round up some volunteers to help with Criteria we didn't get to.**
2. Meeting Evaluation Results – 10:00 - 10:05
  - Review information on meeting evaluation results and any suggestions for improvements to next meeting
  - **Discussion of varying levels of participation at the Cmte level. Not an indication of lack of engagement; more a personal style consideration.**
    - i. **Nicholas offered to work to give folks an opportunity to speak**
  - **No other specific feedback; appreciated opportunity to review.**
3. Enrichment Series discussion – 10:05 - 10:15
  - Proposal for an all-day session on 4/29 at the Civic Auditorium (or other appropriate venue) focusing on Climate Change and Water Supply Options
    - Morning Session:
      - i. Joel Smith – Stratus
      - ii. Bruce Daniels – likely impacts to local watersheds
      - iii. Shawn Chartrand – likely impacts to local hydrology
    - Lunch – on your own
    - Afternoon Session
      - i. Pueblo – Opportunities for aquifer storage and recovery

- ii. John Ricker – Opportunities for water transfers and exchanges
    - iii. **Martha - Legal considerations of transfers and recovery, including whether our water rights will be at risk or permit water transfers, whether there are any legal limitations on the ability to return water to us, particularly if an aquifer is in a state of overdraft.**
  - **Next step: Rosemary to work with Outreach to finalize date/time and venue.**
    - i. **Mark suggested that Outreach consider a weekend date, in order to accommodate folks for whom mid-week dates are challenging**
  - **With Ricker in April, what can we do in March?**
    - i. **Bob R to look at this. There is a one-hour slot now available.**
  - **Mark expressed interest in a fish-flow / fishery-health oriented session at some point**
    - i. **Rosemary noted: 11 April “State of the San Lorenzo” science-based presentation planned (Laird hosting); likely will address some fisheries-related considerations**
4. Update on WSAC work plan and technical work plan, including Stratus Contract Amendment for 2/24 Council meeting – 10:15 – 10:25
- **Rick: Rosenblum’s Windsor CA style approach (packages, “pay as you save”) discussion should inform the work that Maddaus is doing on conservation.**
    - i. **What is our opportunity here? Toby to establish a baseline opportunity comparing our demography to Sonoma’s.**
    - ii. **Doug talking to Ned Orrett about program specifics. To report back to the group, which may help Toby’s work.**
  - **Workplan highlights**
    - i. **Mitchell TO approved; econometric model available in June.**
  - **Council Meeting**
    - i. **WSAC support desired at CC: 24 February meeting (4:30 likely)**
5. Consolidated Alts Focus for March 6 meeting
6. Any Additional Follow Up items for March 6 meeting

EVALUATION CRITERIA

**Criteria to be worked on by Planning Subcommittee:**

- Regulatory Feasibility
- Legal Feasibility
- Political Feasibility
- Regional Water Stability
- Marine, Freshwater, Terrestrial Ecosystem
- Groundwater Resources
- Reliable Supply

See attached input from Stratus for some good discussion on how to proceed to resolve some of the issues related to these criteria, as well as the memo on evaluation criteria handed out at the WSAC meeting last Friday, also attached, which is provided for reference.

**Criteria for Technical Team Input:**

- Local Economy
- Energy
- Scalability

## Technical Team Input on Criteria Questions

*Draft of 19 Feb 2015*

### 1. Technical Feasibility:

- Question: Have technical team include in the descriptive information of the consolidated alternatives their analysis of the technical feasibility of the alternatives.
- Answer: Will do!

### 2. Legal Feasibility: See Political Feasibility

### 3. Regulatory Feasibility: See Political Feasibility

### 4. Political Feasibility: Perhaps more so than technical feasibility, these criteria involve judgment calls about how well or poorly an alternative -- or portfolio of alternatives -- would fare as it moved from an idea through the legal, regulatory and public review processes.

- Question: It may be that these individual criteria work better in evaluating individual alternatives than they do in evaluating portfolios because, for example, it might be hard to rate the overall political and/or regulatory feasibility of a portfolio that had both WaterSmart and direct potable reuse in it.
- Tech Team Response: The comment about these three criteria – Legal, Regulatory and Political Feasibility - applying to individual Alts as opposed to Portfolios is spot on. Averaging this kind of information across a set of Alts does not provide additional useful information to WSAC; what does it mean to have a Portfolio that averages “Can probably acquire.” It might mean they can all be reasonably acquired, or that some are an unambiguous yes while others in the portfolio are very unlikely. We recommend adding this information to each individual Alt. This allows the WSAC to know the best available information and use as they select Alts to place in a Portfolio. Then, during the Technical Team’s analysis of the Portfolio for WSAC review, we elaborate on these three criteria; providing WSAC with additional information they can use as they modify or iterate Portfolios.
- Question: Should we combine all three into a single criterion called Ease of Implementation.
- Tech Team Response: This will give you a very nonspecific type of information but this may be useful. For example, a scale of – very easy to implement, unsure of implementation ease, difficult to implement – could help you know if the elements of the Portfolios need to be looked at in more detail. But, you would still need to be able to answer each of the 3 questions - that is a lot of knowledge to bring to the scales.

- Question: Work with the technical team to get additional information on the types of information that might be available to inform Committee member judgment when rating these criteria – for example, numbers of regulatory or permitting approvals required.
- Tech Team Response: Will do! We can also add insights, for example, into how hard these types of permits have been to get approved in the past. We recommend not including in an MCDS run of Portfolios but rather to provide this information for each individual Alt and in the analysis of the Portfolios.
- Question: Look at the Political Feasibility rating scale and determine if there is something more specific that can be added here to make the scale more relevant and less vague.
- Tech Team Response: See above discussion

5. **Regional Water Stability:**

- Question: Ask the technical team to include in its information for consolidated alts any potential for regional benefits. Focus this criterion on the potential for creating regional benefits rather than the number of jurisdictions involved
- *Less concerned about potential than reality. As such, perhaps more relevant to portfolio (since just about anything that's going to help regional has several parts)?*
  - Tech Team Response – Will do! This should be fairly straightforward. Any connection with other agencies has the capability to increase regional water stability. Anything that doesn't has no impact and anything that is taking water that may be used by another regional supplier or that decreases SCWD from accessing its water from other agencies decreases regional water stability. This is probably the level of information that is available.
  - Scale suggestion: Increases regional water stability, provides neither benefits or losses to regional water stability, decreases regional water stability

6. **Local Economy:**

- Question: provide the WSAC with input on what kind of measure might be feasible to connect water and the local economy and what rating scale to use in measuring it.
- Tech Team Response: We have identified that the local economy probably has a threshold effect associated with curtailments: I.e. there is a level of curtailments at which key portions of the local economy can no longer function at the present level. Based on preliminary discussions with local businesses, conducted last

autumn, curtailments in 2014 were reaching this threshold (i.e., indications that another year at Stage 3, or moving to Stage 4, would be very problematic). We are reaching out to the Chamber of Commerce and hope to provide you with additional information on the level of business curtailments that represent this threshold. (Evidence from other Bay Area studies suggests curtailments above 20% or 25% begin to impose proportionally greater impacts on local economies).

- Scale suggestion: This portfolio keeps curtailment at levels that: are well below the threshold for significant impacts (i.e. no local economic impacts are expected), are close to the threshold for significant impacts on the local economy (curtailments could reach levels that effect the local economy), are above the threshold for significant impacts on the local economy (will have significant effects on the local economy).

We can also explore whether there may be some more useful, valid quantitative scales. However, based on our past experience and reviews of the literature, there is limited information upon which to build meaningful quantitative metrics.

**7. Energy:**

- Question: Technical evaluation of the alts seem like it would help. Ask the technical team to review the potential energy use parameters and make recommendations for Committee consideration about energy parameters that are readily calculated with planning level information
- Tech Team Response: We anticipate developing (in conjunction with water Department staff) a basic estimate of energy usage for each Consolidated Alt (e.g., kWh/MG), as well as a simple carbon footprint. This may be complicated by considering how energy use for an Alt may fit within the energy requirements for the existing system.

One question is, “How does WSAC want to use this information?” Do you want to develop/adopt Alts that have low energy usages and low carbon footprints? Or does the Committee want to consider what you need to do to offset additional energy requirements?

This may also be a place where information about individual Alts helps the WSAC develop Portfolios, rather than needing a scale to compare Portfolios. The Tech Team will provide, as part of the Portfolio analysis, energy and carbon footprint information regarding each Portfolio – and the Alts that drive the levels up. This information can be used by WSAC as they modify-iterate their Portfolios.

**8. Marine Ecosystem Health:** See Terrestrial Resources

**9. Freshwater and Riparian Health:** See Terrestrial Resources

**10. Terrestrial Resources:**

- Question: How can we refine the rating scales for these environmental indicators?
- Tech Team Response: Your discussion point regarding the inability to degrade the environment – due to the plethora of regulatory requirements - is spot on. This means that it is more important that you understand the level of concern Santa Cruz may have regarding environmental impacts than any real measure of ultimate, unmitigated environmental impacts. A simpler criterion, for example Potential Impact on the Environment, may help you develop a scale measuring the level of concern – rather than any actual impact. This will help you know which issues to examine further. As part of the analysis of the Portfolios the Technical Team may directly address these issues and provide more detailed information, as available that the WSAC can use as they modify-iterate Portfolio development.
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**11. Groundwater Resources:**

- Question: Convey a summary of input to the technical team and seek their input and suggestions for how to refine the rating scales for groundwater resources.
- Tech Team Response: This is similar to Terrestrial Resources and you captured this nicely in your comment about “This criterion seems to be more about the potential...” I actually really like your current scale for this.
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**12. Infrastructure Resilience:** Typically when we talk about infrastructure resilience we talk about the ability of the system to come back after an event. For example, your system is more resilient to the loss of electricity – regardless of the cause - if you have back-up generators that you can bring to a system component that lost electricity. This is slightly different than how well the overall system can withstand natural disasters. That idea is captured by the system’s *robustness* to natural disasters. See discussion about robustness at the end. ***Resilience v robustness – vocabulary distinction w/o a difference?***

It may be useful to have a “System Resilience” criterion that reflects the likely ability of the system to recover quickly to an adverse risk event, with a given portfolio (as well as a “System Robustness” criterion).

**13. Reliable Supply:** This can be nicely captured through Curtailment levels and reflects the entire Portfolio rather than an individual Alt.

Scale idea: Curtailments likely to remain below those seen in 2014, Curtailments likely to be around those seen in 2014, Curtailments will need to be higher than those seen in 2014. (or specific curtailment levels –frequency and severity, per *Confluence* outputs – although these get more complicated). The “Level of Service” notion suggested is also a useful way to approach this.

**14. Scalability:** This is also a criterion that can be applied to a Portfolio as well as to an individual Alt. The idea is: “is this Portfolio easily expanded if additional supplies are needed?” In this case a simple scale works – Easy to scale up, possible to scale up,

difficult to scale up – works fine.

This type of criteria can also be used to address the need for Adaptive Flexibility. For example, if climate conditions change, can this Portfolio be easily altered to meet changing circumstances in a timely and cost-effective manner? In this case the scale would look more like: Provides for adaptive flexibility, has no influence on adaptive flexibility, reduces adaptive flexibility.

**15. Preserves Future Choices:**

You talk about concerns with locking into an option, but you also want to make sure you are not reducing future options. Demand management is an interesting example. If you apply all of your demand management actions up front, then demand management is no longer as effective a tool available for managing droughts – i.e., there is limited demand left to ratchet down in times of drought. It is important to understand the difference between efficiencies – using every drop of water to its maximum – and conservation – reducing demands when supplies are limited.

The discussion of committing to a big project can sometimes be captured in the concept of stranded assets. The idea is you want to make sure you don't invest in projects that are not necessary in the future – that the assets you develop (spend money on) are useful and are not stranded (useless) in the future. A scale for this might be: Potential for large stranded assets, potential for some stranded assets, and no risk of stranded assets. A related concern is about avoiding potentially costly “irreversibility’s”

**16. Yield:** This criterion is applied to Portfolios and can be used very simply. Scale idea: Provides yields beyond the demand-supply gap, Provides yields that meet the demand-supply gap, Yields do not meet demand-supply gap. This type of scale allows Portfolios to be examined under different scenarios. This could also be characterized numerically by the size (and sign) of the potential gap under each Scenario of interest.

*ATTRIBUTE (like COST)*

**17. Flexibility:** You are trying to capture a bunch of stuff here. It might be useful to break it into a couple of smaller criteria.

If this is about providing flexibility in terms of how the system can be managed to address changing circumstances (like periodic droughts, via modifying how the Loch is managed), then perhaps you cast this as “System Management Flexibility.”)

One potential criterion we see as missing is “Efficiency.” This captures the ability of an Alt to decrease demands by increasing how efficiently water is being used. Requiring low flow toilets are a good example of an Alt that increases water efficiency – toilets require less water – they are more efficient. This will ultimately reduce demand in a different way than curtailments do. This is an important distinction.

**18. Addresses Peak Season Demand:** This is important and can probably be dealt with in a simple scale: Directly addresses peak season needs, may address peak season needs,

doesn't directly address peak season needs. Note I used the word need rather than supply or demand as either reducing demands or increasing supplies during peak seasons will address this need.

19. **Cost** – TBD, no comments at this time

**Ideas for Criteria to consider adding:**

**Sustainability.** This concept is evidently very important to the Committee and the public. However, “sustainability” for the WSAC and Water Department context at this time is quite vague and ill-defined. This spills over to notions of “living within our means” in terms of how much water is available, and this notion also is quite ill-defined. Nonetheless, this notion appears to be a key consideration for WSAC members and the community, so perhaps we need to grapple with developing a criterion that reflects this.

**Robustness.** As noted above (in the discussion on “resilience”), the Tech Team has talked about the concept of the ability to withstand or manage a variety of applicable risks (i.e., system robustness reflects the ability of a Portfolio to enable the system to withstand an array of possible future risks (i.e., it works well across a range of relevant risks). One simple way to capture this in a scale is: Does not reduce the City's vulnerability to external risks, reduces the water supply (or city's) vulnerability to one risk, reduces vulnerability to a range of risks.

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DATE: February 13, 2015  
TO: WSAC Members  
FROM: Rosemary Menard  
SUBJECT: Summary of Discussion on MCDS Criteria

These notes, summary and recommendations have been developed by reviewing a variety of available documents and meeting notes. The goal in preparing these notes and recommendations is to provide information needed for the Committee and the technical team to move ahead with refining and evolving these criteria for ultimate use in evaluating portfolios to be developed in scenario planning.

For continuity, the definition, notes and scales provided to the Committee members for use in the MCDS evaluation that took place in early December have been only minimally edited to remove references to earlier rating results. Two additional sections have been added: A summary of key questions and issues, and recommended next steps.

The work below is very much a work in progress. **The goal for today's discussion is to inform the full Committee of the approaches being pursued, and to spend some time discussing some of the larger issues such as whether there are additional criteria that need to be developed for evaluating portfolios (versus alternatives) and whether the Technical Team has additional ideas or suggestions for criteria to be developed for use in further assessments. Examples of these kinds of additional criteria might include robustness, resource diversity, or improves risk profile.**

### MCDS Criteria

1. **Technical Feasibility:** Technical feasibility is an estimate of whether this approach would work as envisioned. For complex proposals, rated on the basis of core elements. When rating, City staff used the 10-year horizon on the assumption that it would be very difficult to make predictions about what technical innovations would occur more than 10 years out. If you want to change the ratings and look at a longer timeframe, the scale gives you the leeway to do that.
  - a. **Question:** How feasible is this approach technically?
  - b. **Scale:** Widely used, Demonstrated in field, Promising in 3-5 years, Promising in 6-10 years, Maybe 10-20 years, More than 20, Never
  - c. **Summary of Key Questions and Issues for Technical Feasibility:**
    - Generally this definition and scale of this criterion seemed clear and acceptable.
    - One question that came up was whether it is too speculative to include the longer time frames in the scale for this criterion. For example, would it be reasonable to make a decision now to include an alternative that might not be technically feasible in the next decade in a recommended portfolio.
    - Another issue is whether people would characterize the technical feasibility of various alternatives in the same manner.
  - d. **Recommended Next Steps:**

- Exclude longer time frames from the rating scale so the final scale would be: Widely used, Demonstrated in field, Promising in 3-5 years, Promising in 6-10 years, Never;
- Clearer information about technical feasibility would help address the varied interpretations by raters of the technical feasibility of options. Have technical team include in the descriptive information of the consolidated alternatives their analysis of the technical feasibility of the alternatives. If a Committee member disagrees with that analysis, he/she can change it and provide comments as to why they have done so.

**2. Legal Feasibility:** Legal Feasibility addresses siting, water rights, environmental and other legal rights relevant to implementing this approach as envisioned.

- a. **Question:** Within the required timeframe for this approach, are the necessary rights currently held in the form needed or feasible to acquire or modify as needed?
- b. **Scale:** Unambiguous yes, Yes but some ambiguities, Can probably acquire, Difficult to acquire, Very unlikely]
- c. See discussion notes for Legal, Regulatory and Political Feasibility at the end of the Political Feasibility item.
- a. *Need clarity on distinction between legal and regulatory.*
  - i. *Legal has to do with siting (land ownership or access [easement]), water rights, etc.*
  - ii. *Regulatory relates to permitting. Mitigations, EIR, for example.*
  - iii. *Environmental considerations are regulatory, not legal.*
- d. *Need technical input on both legal and regulatory.*
  - i. *Need to define likelihood and the steps involved. On the regulatory side this is easier and more concrete. Legal items will be less-definitive in some/many cases.*
- e. *Include approximate time-frame ranges in the scales*

**3. Regulatory Feasibility:** This addresses environmental and regulatory review. When rating, the City staff looked at the difficulty of getting regulatory approvals under existing regulations as well as the possible necessity of responding to or taking advantage of potential new regulations that might come into place over the next decade. In the scale, the analysis of regulatory feasibility includes the possibility of needing new regs or policies. When rating, City staff used a 10-year horizon on the assumption that it would be very difficult to make predictions about what regulatory innovations would occur more than 10 years out.

- a. **Question:** Is this approach likely to receive easy, quick regulatory approval?
- b. **Scale:** Easy and quick, Slow but relatively sure, V slow no regulatory change, Up to 10 year new reg, Not feasible (regulatory)
- c. See discussion notes for Legal, Regulatory and Political Feasibility at the end of the Political Feasibility item.

**4. Political Feasibility:** Extent to which an approach will claim and retain the support of formal political entities as well as informal social and political groups.

- a. *Rosemary: How does feasibility change over time?*
- b. *David: Do we need to do some surveying? Could we consult with our survey folks to help with scales?*
  - i. *Rosemary to talk to Gene Bregman*
- c. *Mark: Drop time frame consideration – now, varying likelihood at some point, or likely never*
- d. *Rick: Do we need to split this up, or change the scale*
- e. *Does this apply differently for “alts” than for portfolios?*

- a. **Question:** What level of political support is this approach likely to have?
- b. **Scale:** Enthusiasm now, Acceptable now, Active resistance now, Acceptable in 5 years, Acceptable in 10 years, Acceptable in 20 years, Likely never
- c. **Summary of Key Questions and Issues for Legal, Regulatory and Political Feasibility**
  - o Legal, Regulatory and Political Feasibility are all elements of overall implementability of an alternative or portfolio of alternatives. Perhaps more so than technical feasibility, these criteria involve judgment calls about how well or poorly an alternative or portfolio of alternatives would fare as it moved from an idea through the legal, regulatory and public review processes.
  - o It may be that these individual criteria work better in evaluating individual alternatives than they do in evaluating portfolios because, for example, it might be hard to rate the overall political and/or regulatory feasibility of a portfolio that had both WaterSmart and direct potable reuse in it.
  - o The addition of an element of a time frame in political acceptability is interesting. It is not clear what more time achieves that would make an alternative more politically acceptable. There are several possible implications: the public accepts new things slowly, but over time things that had limited support become more generally supported; or if a problem doesn't get solved and conditions worsen over time less acceptable options might become more acceptable.
- d. **Recommended Next Steps:**
  - o Have the Planning Subcommittee work on these three criteria and determine whether it makes sense to combine all three into a single criteria called Ease of Implementation, or
  - o Whether it makes sense to combine Legal and Regulatory into a single criteria.
  - o Work with the technical team to get additional information on the types of information that might be available to inform Committee member judgment when rating these criteria – for example, numbers of regulatory or permitting approvals required.
  - o Look at the Political Feasibility rating scale and determine if there is something more specific that can be added here to make the scale more relevant and less vague.

- 5. **Regional Water Stability:** This criterion gets at approaches that would benefit SC water customers and the region.
  - a. *Portfolio v “alt”*

*b. Is this redundant with Groundwater? At “alt” level, technical details on how may help. At portfolio level we look at regional impacts (which may or may not relate solely to groundwater).*

a. **Question:** Would this approach improve regional water stability?

b. **Scale:** Across County, 4 jurisdictions, 3 jurisdictions, 2 jurisdictions, SC Water only

**c. Summary of Key Questions and Issues for Regional Water Stability**

- Comments on this criterion had mostly to do with differing interpretations of whether an alternative would provide potential benefits to other regional water providers.
- Beyond the obvious benefits of programs or projects that share infrastructure or administrative costs, the question is really whether the alternative or portfolio has the potential to provide regional benefits in less obvious ways.
- For example, one reviewer noted that he/she didn’t see the North Coast Quarry project as something that could provide regional benefits, but might such a project be the source of winter water supply for local jurisdictions dependent on groundwater resources? Would the capacity of such a reservoir be large enough, especially in wet and normal years that it could be the source of water to actively recharge depleted regional aquifers?

**d. Recommended Next Steps:**

- Work with the Planning Subcommittee to explore the potential for revising this criterion and its scale.
- Focus this criterion on the potential for creating regional benefits rather than the number of jurisdictions involved
- Consider a scale similar to the one being discussed for Addresses Peak Season Demand, i.e., “will, could, won’t” rather than using a scale with the number of jurisdictions that could be involved.
- Ask the technical team to include in its information for consolidated alts any potential for regional benefits.

**6. Local Economy:** This criterion is measured in terms of numbers of jobs and is meant to synthesize the effect of water supply, water reliability, confidence and local jobs as they might affect local economy.

a. **Question:** How might this proposal affect Santa Cruz's economy, as reflected in local jobs?

b. **Scale:** Positive local job, Slight positive, No effect, Slight negative, Negative for local jobs

**c. Summary of Key Questions and Issues for Local Economy**

- For this criterion, we have both an ill-defined definition and a rating scale that is difficult or impossible to measure.
- One area of possible emphasis is long term, local jobs. In the Committee’s discussions and some follow-up work, one approach would not be on general job

growth, but rather on job growth related to whatever is implemented to address water supply reliability. So for example, the water transfer project would receive a low rating on this criteria because no or very few additional long term jobs would be created to operate this system. On the other hand, implementing additional water conservation efforts would rate highly because several additional staff are projected to be needed to implement the Long Term Conservation Master Plan.

- Another possible emphasis is the economic impact on the local/regional community of having a more reliable water supply. Finding a metric that links these two things together is the challenge here.
- The challenge is to figure out if there is any way to differentiate the effect on the local economy from different approaches that could be taken to improving the reliability of Santa Cruz's water supply.

**d. Recommended Next Steps:**

- The question of whether or how a criterion on Local Economy would benefit greatly from having the technical team provide the WSAC with input on what kind of measure might be feasible to connect water and the local economy and what rating scale to use in measuring it.

7. **Energy:** In providing some very broad guesstimates for this criterion, the City staff considered the energy usage of the City's current treatment plant as a 4 and rated the others with respect to that. The City recently compared energy intensity of the treatment of desal vs traditional sources (surface and groundwater) as 15, 1.5 and 2.1 kWh/1000 gallons respectively. This subcriterion has gone back and forth between carbon emissions and kWh/1000 gallons; later in the process you will want to look at both.

a. **Question:** How much energy will this approach require per MG of water? (Treating surface water, which the City rated as a 4, is about 1.5 kWh/1000 gallons, see accompanying note.)

b. **Scale:** 5, 4, 3, 2, 1

**c. Summary of Key Questions and Issues for Energy:**

- Key questions are whether this criterion should measure energy use, energy intensity, greenhouse gas emissions, carbon footprint or the energy cost element associated with facility O&M.
- Also need to have clarity about how much, if any, of existing system energy use parameters are included in the analysis if the portfolio actions include the use of existing facilities or infrastructure.

**d. Recommended Next Step**

- Technical evaluation of the alts seem like it would help. Ask the technical team to review the potential energy use parameters and make recommendations for Committee consideration about energy parameters that are readily calculated with planning level information.

8. **Marine Ecosystem Health:** This criterion assesses whether and how a particular approach might affect the health of marine ecosystems.

a. *(Discussion of Marine, Freshwater, Terrestrial)*

b. *Any mitigation costs are to be captured (estimated) in budgets, clearly.*

- c. *Erica voiced concerns about mitigation process – doesn't blindly trust the mitigation process, because she's seen mitigations fail or fall short.*
- d. *Rosemary pointed out that you first work to minimize impacts, then to mitigate any impacts that remain. At the end of the day, it's a question of how much impact you're willing to live with, and that they are fully disclosed.*
- e. *Have the technical team disclose the potential impacts in each area for each "alt", and then develop a combined criterion of "environmental impact" that subsumes them all at the portfolio level using a relatively general scale ("none", "some; acceptable", "unacceptable"). Note that these may go beyond the sub-criteria we have here (light, noise, etc.). Weighting allows values to come through as before.*
  - i. *As a test-flight, include some qualitative information about this factor in the Consolidated Alts that we look at on 6 March.*

- a. **Question:** How would this approach affect marine ecosystem health?
- b. **Scale:** Positive effect, does not harm, may harm, cumulative harm, Sig harm to population
- c. See combined analysis for Marine, Freshwater and Terrestrial ecosystem criteria following the Terrestrial criterion.

9. **Freshwater and Riparian Health:** This criterion assesses whether or how a particular approach would affect the health of freshwater and riparian ecosystems.

- a. **Question:** If this approach were implemented, how would it affect freshwater and riparian ecosystems?
- b. **Scale:** Plentiful healthier water, About as it is now, Degraded ecosystem health
- c. See combined analysis for Marine, Freshwater and Terrestrial ecosystem criteria following the Terrestrial criterion.

10. **Terrestrial Resources:** This criterion assesses whether or how a particular approach would affect the health of terrestrial ecosystems. No scale was created for this criterion, so one would need to be created if this criterion is to be used in future analyses.

a. **Summary of Key Questions and Issues for Marine, Freshwater, and Terrestrial Ecosystem Health**

- Relatively little in the various sources of notes on these three indicators of environmental impact.
- There is a philosophical question here about what is being measured in rating these criteria. The scales as now configured pretty much look at a continuum between improving or sustaining the ecosystem attribute to degrading it in some fashion.
- Environmental laws do not require that all environmental impacts be avoided, but they do require that if there are to be impacts they be minimized or mitigated.
- There is a high likelihood that any kind of supplemental water supply project or any project that has land disturbance as part of its implementation, for example construction of a new water treatment plant, will have some environmental impacts. And, it is a certainty that any such project will be required to take steps

to minimize and/or mitigate for those impacts. Knowing this to be the case, is a rating scale that includes worsening of ecosystem health a realistic portrayal of the potential impact of any project on one of these environmental indicators?

- If the goal is to relatively compare the impacts of various alternatives or portfolios of alternatives, how should the requirements of environmental protection laws and regulations be taken into account in designing the rating scales for the elements being reviewed?
- Would a rating scale that focuses on the likely success of measures to minimize or mitigate for impacts be more realistic?

**b. Recommended Next Steps:**

- Discuss philosophical question with the Planning Subcommittee.
- Based on their discussion, convey a summary of input to the technical team and seek their input and suggestions for how to refine the rating scales for these environmental indicators.

**11. Groundwater Resources:** This criterion looks at the potential for beneficial, neutral or negative effects of a particular approach on groundwater resources. The word "active" in the scale means putting water back not just resting wells.

a. **Question:** How would this approach affect groundwater resources?

b. **Scale:** Actively restores, Allows restoration, Does not affect, Depletes Resource, Greatly Depletes Resource

**c. Summary of Key Questions and Issues for Groundwater Resources**

- As with the environmental indicators above, there was no real feedback about this criterion in the materials reviewed.
- This criterion seems to be more about the potential for an alternative or portfolio of alternatives to play a positive role in aquifer restoration at one end of the spectrum and to negatively affect groundwater resources at the other end.
- Again, environmental laws and regulations, including the new law on groundwater sustainability, would seem to limit the ability to implement a project that has truly negative effects on local groundwater.
- Is the goal of this criterion more like the Regional Benefits criterion – the benefit that is being assessed is the potential for a project or portfolio to support/allow regional aquifer restoration even though the amount of groundwater both for the general “good policy” benefits of healthy aquifers as well as the potential benefits to Santa Cruz of having a more sustainable groundwater supply to draw on in drought years? Can these two goals be measured on the same scale?

**d. Recommended Next Steps:**

- Discuss philosophical question with the Planning Subcommittee.
- Based on their discussion, convey a summary of input to the technical team and seek their input and suggestions for how to refine the rating scales for groundwater resources.

**12. Infrastructure Resilience:** Infrastructure resilience relates to the extent to which this approach will help the overall system to withstand natural disasters such as earthquakes,

fires, floods, tsunamis and or systemic power outages related to the above--but not drought.

- a. **Question:** How well would this approach contribute to the system's ability to withstand natural disasters and other disturbances? (The top of the scale is "meets most challenges well.")
- b. **Scale:** Most challenges well, Many moderately well, Some somewhat, Few barely, Doesn't improve resilience, Slightly degrades, Significantly degrades
- c. **Summary of Key Questions and Issues for Infrastructure Resilience**
  - No input on this criterion in any of the notes.
  - The Committee has noted in various conversations the vulnerability of the Santa Cruz water system to a variety of external natural threats.
  - The opportunity for improving the system's resilience through the implementation of actions to improve water supply reliability is what this criterion needs to measure.
- d. **Recommended Next Steps:**
  - Consider changing the scale to something like "significantly reduces the system's vulnerability to one or more natural threats; somewhat reduces the system's vulnerability to one or more natural threats; does not impact system vulnerability positively or negatively; somewhat increases the system's vulnerability to one or more natural threat; significantly increases the system's vulnerability to one or more natural threat."

**13. Reliable Supply:** Reliability of water supply relates to how much water can be produced under various climate conditions such as drought or extreme precipitation. Remember that in the extreme climate change simplified scenario (the billion gallon shortfall), less rainfall isn't the only issue: turbidity, timing of storm events or other factors may also affect the supply.

- a. **Question:** How much will this approach help the existing system to produce consistently?
- b. **Scale:** Makes system sig more rel, Somewhat more reliable, Slightly more reliable, No change, Makes system less reliable
- c. **Summary of Key Questions and Issues for Reliable Supply**
  - Considerable discussion of this topic in the notes. Key topics raised included what does reliability mean? How does it relate or does it relate to peak season demand and yield?
- d. **Recommended Next Steps:**
  - Have a discussion with the Planning Subcommittee on the following concept:
    - One way to think about reliability is that it is an agreed upon level of service. A reliable system would be one that has the resources needed to deliver the specified level of service on an ongoing basis. In this case "resources" can mean both supply side and demand management type actions, assets that allow the utility to meet the system's needs at the agreed upon level 24/7/365.
    - If the Subcommittee accepts this concept, then proceed with the remaining steps, if not continue working the problem until a common understanding is reached.

- Discuss with the Planning Subcommittee the IWP policy on reliability and determine whether the Planning Subcommittee would like to recommend to the full Committee that revisions be considered.
- Evaluate both the results of the Confluence model runs giving information on system reliability and the implications of annual decision-making by staff on recommended levels of curtailment given system conditions in the late winter/early spring each year.

**14. Scalability:** Scalability measures the extent to which an approach can be scaled up as needs change.

- a. **Question:** How easily can this approach be scaled up within the overall system? (The tilde~ in the scale is shorthand for 'might not meet by itself but sure would help a lot.')
- b. **Scale:** Scales up w no limit, Can scale to ~1BG gap, Can scale to ~650 MG gap, Can scale to ~ 300 MG gap, Not scalable
- c. **Summary of Key Questions and Issues for Reliable Supply**
  - Is the basic goal to assess whether or how well an alternative or portfolio of alternatives would adapt to changing conditions? For example, designing an intake structure to be larger than immediately needed so that the plant could be expanded at some future time without having to upsize the intake.
  - Or is the basic goal to identify those kinds of things that created for one purpose and adaptable for another – for example WaterSmart is typically focused on single family residential, can it be scaled (adapted?) to a different customer group such as multi-family residential or business?
  - With respect to a technology or program, what metrics are important to determining scalability?
  - Does a project or alternative scalability metric transfer to evaluating a portfolio, or would a scalability option for a portfolio relate more to some other criterion, for example, risk management, or keeping future options open?
  - Does scalability inherently have an economic element, as is often referred to when we use the term “economies of scale” or is the economic element separate?
  - Can we or should we have a different scale for rating infrastructure or technological scalability versus the scalability of a program?
  - What information is going to be available about the various types of alternatives that would help us rate them for scalability? As for the rating scale, would a better scale be a simpler one, such as “will, can, won’t” approach or could you build a scale around the degree of difficulty, for example, easily upscaled, upscalable with some constraints, limited scalability, not scalable.
- d. **Recommended Next Steps:**
  - Ask the technical team for input on the scalability metric and whether one metric can work for different types of projects or programs.

**15. Preserves Future Choices:** In general, this criterion is about the extent to which large capital investments might lock the city in to a certain set of “alts”. What is missing in the structure of the model is a way to send a signal about options lost by INaction.

- a. **Question:** How well does this approach preserve future choices?
- b. **Scale:** Increases choice, Somewhat inc choice, No effect, Reduces choice, City locked in
- c. **Summary of Key Questions and Issues for Preserves Future Choices – TBD**
- d. **Recommended Next Steps – TBD**

**16. Yield:** This criterion measures reduction in demand or increase in supply.

- a. **Question:** How much water will this approach save or produce?
- b. **Scale:** Worst - 17.00; Best - 1800.00
- c. **Summary of Key Questions and Issues for Yield – TBD**
- d. **Recommended Next Steps – TBD**

**17. Flexibility:** The degree to which this approach increases management flexibility that in turn helps the system "get by with less" while still meeting resilience, reliability and other goals. (This is particularly designed for approaches that don't actually increase supply or reduce demand, but might nevertheless be useful.) In rating 'flexibility,' the City staff looked at an approach's ability to provide diversity, the ability to create a cushion in terms of water availability and other factors. For instance, reuse and desal were seen as "adding another treatment plant" and therefore tended to rate well for flexibility.

- a. **Question:** To what extent does this approach increase flexibility?
- b. **Scale:** Greatly increases, Moderately increases, Somewhat increases, Does not increase, Decreases
- c. **Summary of Key Questions and Issues for Flexibility – TBD**
- d. **Recommended Next Steps – TBD**

**18. Addresses Peak Season Demand:** This criterion addresses the extent to which a proposal reduces peak season demand or provides water that is not dependent on winter rains.

- a. **Question:** To what extent would this approach help address peak season demand?
- b. **Scale:** Yes, Maybe, No
- c. **Summary of Key Questions and Issues for Addresses Peak Season Demand – TBD**
- d. **Recommended Next Steps – TBD**

**Note for Cost Effectiveness Criteria –** The Committee received a presentation from Bill Faisst of Brown and Caldwell at the 12/19 WSAC meeting that proposed various approaches to measuring Cost Effectiveness. This information will inform the additional work that will be done on refining and evolving these criteria. In addition, the Committee's discussion on whether to include the cost to individual customers of various demand management strategies will be reflected.

**19. Cost to City: Upfront Costs:** This includes siting, permitting, installation or construction and other start-up costs.

- a. **Question:** What are the upfront costs of this proposal?
- b. **Scale:** Worst - 2.00E+5; Best - 0.00

**Cost to City: Operation and Maintenance**

**Notes:**

**Scale:** Worst - 2.00E+6; Best - 1.00E+5

20. **Cost to Customer in Rates:** This cost is based on a simplified lifecycle cost (capital cost divided by the life of the project plus annual O&M converted to cost per gallon) and compared to estimates of the cost of a gallon of water to an average single family residential customer in 2018, which is about 1 penny per gallon. An average single family residential customer uses 8 ccg (6,000 gallons) per month. Had to make scale in "per 100 gallons" to stay on the good side of the software.

- a. **Question:** How does the cost of this option compare to the cost of an average single family residential customer's cost for a gallon of water in 2018?
- b. **Scale:** Worst - 6.00; Best - 0.00

21. **Cost to Customer: Individual Purchase:** This criterion gets to the cost to an individual of buying, installing and maintaining a system that helps reduce demand or provide storage or supply for that particular household. Example: installing a cistern.

- a. **Question:** What is the cost to the individual of buying, installing and maintaining this system?
- b. **Scale:** None, Small, Significant

**Summary of evaluations of February Committee Meeting**

**First session**

Nine Committee Members and one member of the public entered evaluations of this session at SurveyMonkey or by handing in written evaluations.

- How well did the session meet your needs?
  - Comments indicated that the meeting met the needs of the participants who used terms such as “great meeting,” “very well,” “perfectly” and “sufficient.”
  - Participants said in particular that the session “refined my understanding of the baseline model,” made progress, shifted the emphasis of the meeting towards a discussion among Committee members to talk about ideas, and felt more structured and organized than some past meetings.
  - One participant noted that the tech team was very accessible and answered all questions clearly.
- How did this session help the Committee work towards its long-term goal?
  - All respondents appreciated that agreement on the baseline condition is fundamental to progress in the Committee’s work
  - The participating member of the public noted that the Committee didn’t really take account of the community’s opinions.
- What were the strengths and weaknesses of the session?
  - Participants appreciated the Committee Members’ flexibility and willingness to listen to each other. They noted that they cleared a challenging hurdle in this session by reaching agreement on the use of the Confluence model. The clarity of technical presentations was noted, as was the useful mixture of presentations and Committee-led discussions.
  - Weaknesses included the fact that some Committee Members participated rarely, the meeting, although it ended within its schedule, still lasted late into the evening, and the Committee deferred some decisions. One also noted that some microphones still don’t work.
  - One noted a preference for Wednesday/Friday meetings.
  - The participants graded the session with a weighted average of 3.9 out of 5.0. Most graded it as “surpassed expectations.”
- What would you like to see at the next meeting?
  - Most respondents asked for more time for discussion among Committee members. One hoped for opportunities for members to share their “honest concerns.”
  - One participant asked for fewer sugary snacks and more salty ones.

**Second session**

Eight Committee Members and no members of the public entered evaluations of this session at SurveyMonkey or by handing in written evaluations.

- How well did the session meet your needs?

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- Comments indicated that the meeting met the needs of the participants who used terms such as "very well," "well enough" and "solid progress."
  - Participants said in particular that the session improved their understanding of the risks to the City's system.
  - One participant noted the good quality of the IRP discussion about "Water 4.0".
- How did this session help the Committee work towards its long-term goal?
  - Some noted how the interrelationship of the various decision process is becoming clearer, and the Committee's path is becoming clearer
  - One considered that the issue of decentralization had been eliminated and that this will allow time for progress exploring other issues
- What were the strengths and weaknesses of the session?
  - Participants appreciated that the meeting started the Committee's conversation about the risks confronting the system, that the Committee's time was well managed and that the material presented by the technical team was good.
  - Weaknesses included the fact that there was not much discussion among Committee Members and that not all Committee Members participated in what discussion there was.
  - One noted that consultants included in their presentations material that they had provided in the documentation distributed in the packet.
  - The participants graded the session with a weighted average of 3.5 out of 5.0. All graded it as "satisfied expectations" or "surpassed expectations."
- What would you like to see at the next meeting?
  - Many respondents asked for more time for discussion among Committee members, and more involvement by quiet Members.
  - One asked for a hard copy of every slide deck in advance of the sessions
  - One participant asked for more salty snacks (rather than sweet ones).