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 – Septermber 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
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Rosemary Menard 9/8/14 9:09 PM
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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
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danajaco 9/8/14 6:37 PM
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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

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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

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Rosemary Menard 9/7/14 12:31 PM
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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
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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?

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Main document changes and comments

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Page 1: Comment — **Doug Engfer** — **9/15/14 12:11 PM**

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Page 1: Comment **Doug Engfer** **9/19/14 9:25 AM**

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.

Page 1: Comment **Karen Raucher** **9/19/14 9:25 AM**

Agreed that Conservation is an Alternative – not a criteria

Page 1: Comment **Rosemary Menard** **9/7/14 10:30 AM**

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.

Page 1: Comment **danajaco** **9/8/14 6:41 PM**

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.

Page 1: Comment **danajaco** **9/8/14 6:13 PM**

See comment 1 above

Page 1: Comment **Rosemary Menard** **9/7/14 10:50 AM**

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Page 1: Comment **Rosemary Menard** **9/7/14 10:36 AM**

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.

Page 1: Comment **Karen Raucher** **9/19/14 8:42 AM**

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

Page 1: Comment **Karen Raucher** **9/19/14 8:41 AM**

Suggest making this a Criterion with sub criteria

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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.

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Page 1: Comment **Doug Engfer** **9/19/14 9:25 AM**

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.

Page 1: Comment **Rosemary Menard** **9/7/14 1:01 PM**

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.

Page 1: Comment **danajaco** **9/19/14 9:25 AM**

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.

Page 1: Comment **Rosemary Menard** **9/7/14 12:31 PM**

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.

Page 1: Comment **Karen Raucher** **9/19/14 9:25 AM**

Placed as a sub-criterion under Community Well-being with a slightly diferent defintion -Supports local parks and recreation opportunities

Page 1: Comment **Doug Engfer** **9/15/14 12:30 PM**

Move to community values.

Page 1: Comment **Rosemary Menard** **9/19/14 9:25 AM**

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

Page 1: Comment **Rosemary Menard** **9/19/14 9:25 AM**

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

Page 1: Comment **Karen Raucher** **9/19/14 9:25 AM**

Removed

Page 1: Comment **Doug Engfer** **9/15/14 12:31 PM**

Move to community values and then duck!

Page 1: Comment **Doug Engfer** **9/19/14 9:25 AM**

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 were are better served by rating Portfolios against scenarios? I'm still a bit wobbly on the process flow here...

Page 1: Comment **Karen Raucher** **9/19/14 8:55 AM**

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

Page 1: Comment **Karen Raucher** **9/19/14 8:55 AM**

These can be captured in the scales – I think

Page 1: Comment **danajaco** **9/8/14 7:24 PM**

So these would all be different scenarios?

Page 1: Comment **danajaco** **9/8/14 7:26 PM**

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.

Page 1: Comment **Rosemary Menard** **9/19/14 9:25 AM**

Or part there and part in economic wellbeing?

Page 1: Comment **Doug Engfer** **9/15/14 12:33 PM**

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.

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

Page 1: Comment **Doug Engfer** **9/15/14 12:38 PM**
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.

Page 1: Comment **Doug Engfer** **9/15/14 12:35 PM**
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?

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

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

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

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

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

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

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

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

Page 1: Comment **Rosemary Menard** **9/7/14 11:41 AM**
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