

## Scenario Example: Santa Cruz Economy Thrives – No Need to Commute

- A. **Vision:** What the Santa Cruz community will look like in 25[?] years if the Water Supply Advisory Committee (WSAC) selects supply alternatives that ensure that adequate and reliable water is available to support a sustainable, locally based economy.

### Example of Vision Statement (*to be developed by WSAC*)

The Santa Cruz community will use water supply to support the kinds of growth and economic vitality that makes our community less of a bedroom/commuter-based economy – without making significant changes the population growth estimates developed as part of the city's vision process.

Under this scenario, WSAC selects management alternatives that ensure that the water supply is sufficient to support economic growth that provides local employment opportunities and reduces the need for residents to commute to jobs elsewhere. This vision allows the WSAC to understand a complete range of criteria – including financial, social, environmental, and other benefits and costs – associated with selecting water management alternatives that support this vision.

- B. **Measure of success:** How will WSAC measure success for this vision, i.e., what criteria and associated ratings metrics will WSAC use to define success?

### Measure of Success Criteria Examples

- ▶ **Supply level criteria:** What water supply levels are needed to build and sustain a local economy that reduces commuting?  
*Expressed as:* Supply availability of x million gallons of water over z time period.
  - Sub-criteria examples:
    - *Tourist industry criteria:* What water supply levels are needed to support a robust tourist economy?
    - *Expressed as:* Supply availability of x million gallons of water, in y number of times, over z time period (e.g., 4 MGY in 16 years out of the next 20 years).

- ▶ **Population growth criteria:** What is the impact of using the water supply to support economic growth – on population growth – if any?  
*Expressed as:* What other conditions have to change for Santa Cruz (e.g., land use planning laws) for water supply levels to have an undesirable (as defined by the City Vision) impacts on population growth?
- ▶ **Curtailment criteria:** What severity and frequency of curtailments can be sustained by the economy without negative effects?  
*Expressed as:* reduction in supply availability of x million gallons of water, in y number of times, over z time period.

### Measure of Success Rating Metric Examples

- ▶ **Example of ratings metric that could be used with supply level criteria:** What percentage of time over a specific time period will the water supply level not be provided at the expressed level?  
*Expressed as:*
  1. Meets the supply level 95–100% over all time periods
  2. Meets the supply level 95–100% over x time periods
  3. Meets the supply level 80–95% over all time periods
  4. Meets the supply level 80–95% over x time periods
  5. Meets the supply level less than 80% over x time periods.

### C. Alternatives

Eventually WSAC will identify a single or set of alternatives that can be used to meet this vision. The questions/criteria below can all be used to help WSAC identify the associated benefits and costs associated with using a particular set of alternatives to meet this vision.

This will be handled as part of the alternatives discussion.

### D. Questions of critical concern about this vision

What does WSAC need to understand about this vision to ensure that their selection of alternatives supports this vision? What are the criteria WSAC will establish? This is laid out below using the Triple Bottom Line (TBL) frame as an example. (There are many ways to frame this discussion; TBL is only one). When selecting a frame it is important that to select one that: (1) is comprehensive, (2) makes it clear to the community that WSAC is concerned with a wide range of benefits and costs – not just financial ones, and (3) that no areas are double-counted.

**Financial questions/criteria:** What is the set of cost and benefit questions/criteria – to the Water Department and ratepayers related to finances – that are important to understand?

### Financial Criteria Examples

- ▶ ***Water Department cost criteria:*** What is the change in Water Department costs, above baseline costs, for the sets of alternatives considered by the WSAC to meet this vision?
- ▶ ***Ratepayer cost criteria:*** How does the cost of water to ratepayers change?
- ▶ ***Water Department benefit criteria:*** What are the financial benefits to the Water Department associated with this scenario, if any?

**Social questions/criteria:** What is the set of cost and benefit questions/criteria – related to social impacts – that is important to understand?

### Social Criteria Examples

- ▶ ***General economic criteria:*** What is the impact on the Santa Cruz economy, in comparison to the baseline, of providing water at a level that supports the local and regional economy?
  - ***Tourism criteria:*** What are the additional tourism and recreational benefits to the community from this vision? Would there be additional tourism draws created that require additional water supply (e.g., conference centers, amusement parks, restaurants)?
- ▶ ***Economic impact of curtailments criteria:*** This question addresses the expected frequency, level, and duration of curtailments under the set of alternatives considered to support this vision. What is the economic impact to the local economy from this set of curtailments?
- ▶ ***Economic impact of increase in water rates criteria:*** What is the impact on the general economy of an increase in water rates? If alternatives that support this vision minimize future curtailments but impose higher water supply costs on customers, how will the higher costs impact the local economy and household affordability concerns?
- ▶ ***Affordability criteria:*** What are the affordability-related impacts, on the community, of the increase in water rates that are likely to occur?

- ▶ ***Regional economic impacts criteria:*** What is the impact on the *regional* economy, including Soquel Creek, of selecting the set of alternatives that support this vision?
  - Same as above but for regional economy. Also examines if Soquel Creek (and/or other neighboring communities) receive any water out of a potential choice of alternatives.
- ▶ ***Other ideas of social costs criteria:*** What are the costs to the community? For example, would the Water Department or city provide financial incentives (e.g., reduced rates, tax incentives) to draw business and jobs to the community?
- ▶ ***Other ideas of social benefits criteria:*** What other community benefits result from supplying water at this level?
- ▶ ***Community vision criteria:*** What else in the city's vision process requires water supplies? Does WSAC want to consider these other needs? Does WSAC want to base their future vision of the economy on the vision document recently completed by the city?
- ▶ ***Comfort and social well-being criteria:*** How does the community's well-being change from the baseline under this vision of the future?
  - *Health/safety/comfort criteria:* Provides for and sustains individual and community health, safety, and physical and psychological comfort
  - *Social fairness and equity criteria:* Establishes and maintains social fairness and equity
  - *Comfort and recreation criteria:* Supports comfort and recreation.
- ▶ ***Good governance criteria:*** Some of these are captured in the social costs and benefits criteria above – others to consider include:
  - Complies with law and policies
  - Public support
  - Political support.
- ▶ ***Direct impact criteria:*** What are the direct impacts on the community and individuals of the alternatives selected to meet this vision (e.g., construction disruption)?

**Environmental questions/criteria:** What set of criteria regarding the environment are important to understand?

## Environmental Criteria Examples

- ▶ **Carbon footprint criteria:** How does the carbon footprint change under this scenario, in comparison to the baseline?
  - **Energy use:** How much energy is used as part of the set of alternatives needed to meet this vision (e.g., from pumps to access the source, to pumps to convey the water to treatment, as part of the treatment process)?
  - **Energy sources:** What are the energy sources used for the set of alternatives needed to meet this vision?
  - **Energy offsets:** Are energy offsets being planned as part of the set of alternatives that need to be considered?
- ▶ **Adaptive Capacity Criteria:** When the future is highly uncertain – as ours is due to climate change – it is important that all decisions allow for changes in our understanding of the problem and the associated needs.
  - **Flexibility criteria:** Provides opportunities for making changes along the way when new information is identified or current identified needs change.
  - **Timing criteria:** When would the alternatives need to be implemented to meet this vision? Have signposts or other trigger points been identified to tell Santa Cruz when it is necessary to revisit the plan?
  - **Signposts criteria:** What factors do we need to understand and monitor to establish when a new alternative would need to be in place?
- ▶ **Ecosystem criteria:** What changes will occur in the ecosystem associated with meeting this vision?
  - **Groundwater criteria:** Impacts on groundwater associated with possible additional pumping that affect the natural environment
  - **Fish criteria:** Impacts on fish associated with desalination or other alternatives
  - **Wastewater criteria:** Impacts on the ecosystem from the new businesses
  - **Air pollution criteria:** Other impacts associated with newly created businesses (e.g., additional air pollution associated with industry)
  - **Other ecosystem criteria:** Other additional benefits or costs to the ecosystem from this vision

## Other Questions/Potential Criteria

- ▶ **Feasibility criteria:**

- ***Feasibility of meeting this vision criterion:*** Is there a set of water supply alternatives that can really affect this vision?
- ***Alternative Feasibility:*** Are the alternatives selected to meet this vision technically feasible now, or likely to be when the technology is needed?
- ▶ ***Risk criteria:*** What are the risks associated with the selection of alternatives to meet this vision?
  - Supply adequacy risk criteria
  - Quality risk criteria
  - Reliability of system criteria
  - Implementation and operations cost risks
  - Risk to Water Department and city bond ratings (and other financial ratings metrics).
- E. **Research needs:** Based on the questions of critical concern – the criteria outlined above – what technical research tasks are needed to understand the financial, social, environmental, and other criteria (and ratings) established for this scenario? And how could we effectively undertake these analyses?

### Example of Potential Research Needs for Alternatives

- ▶ WSAC will need to understand, for each of the financial, social, environmental, and other criteria established by WSAC, the benefits and costs associated with each alternative. Whenever possible, quantitative information should be sought for each criterion to inform rankings. Some of this information cannot be developed until further identification of specific criteria. However, based on the July meeting, Stratus Consulting identified the following partial list of potential research needs concerning the alternatives for discussion at the August meeting:
  - Hydrogeology: Groundwater management to address the following set of questions of concern:
    - Supply criteria: How much water is really available to the city from the northern/coastal groundwater basins? How reliable or variable will these yields likely be over time?
    - Financial criteria: How much will it cost to develop and operate the northern groundwater basins?
    - How feasible is it to develop and operate wells in the northern groundwater basins?

- Will operating these wells to help supply the city adversely impact other wells in the area?
- Hydrogeology: Aquifer storage feasibility and potential
  - Leakage/feasibility criteria: Is there a suitable local aquifer system that has hydrogeological conditions such that it can be used to effectively store and retrieve water (either captured during peak flow periods or for recycled water)?

### Example of Potential Research Needs for Measures of Success

- ▶ ***Economic criteria – supply levels:*** What supply levels are needed to build and sustain a local economy that reduces commuting by providing attractive employment opportunities locally?  
*Expressed as:* Supply availability of x million gallons of water, in y number of times, over z time period.
  - Sub-criteria examples:
    - Tourist industry criteria: What level of water supply is needed to support a robust tourist economy?  
*Expressed as:* x million gallons of water, in y number of times, over z time period
- ▶ Potential research needs:
  - How does the current water supply affect the local economy?
  - How does the local economy respond to curtailments?
  - How much do different levels and durations of curtailment affect the local economy, and in what ways?
  - What kinds of changes (e.g., what kind of commerce could occur in the local economy) would reduce the need and desire for residents to commute?
  - How do curtailments affect the areas of commerce identified above?
- ▶ ***Economic criteria – supply levels:*** How does the potential selection of alternatives needed to support this vision change the water supply available to the community – all other things being equal?
  - For example, if you consider developing water reuse to provide water for local employment opportunities, how much additional water would the reuse alternative make available to the community?