




City of Santa Barbara  
Public Works Department

## Interoffice Memorandum

**DATE:** April 11, 2011  
**TO:** Planning Commission  
**FROM:** Rebecca Bjork, Water Resources Manager   
**SUBJECT:** LONG TERM WATER SUPPLY PLAN UPDATE

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We are pleased to be able to join you at your meeting on April 21, 2011 to give a briefing on the update of the City's Long-Term Water Supply Plan. Attached for your information is a copy of the Council Agenda Report for the joint City Council-Water Commission work session held on April 7, 2011. We will give a presentation similar to the one given at the work session and respond to any questions you may have.

We look forward to meeting with you.

BF/bf

Attachment





# CITY OF SANTA BARBARA

## COUNCIL AGENDA REPORT

**AGENDA DATE:** April 7, 2011

**TO:** Mayor and Councilmembers  
Water Commission

**FROM:** Water Resources Division, Public Works Department

**SUBJECT:** Joint City Council And Water Commission Work Session: Water Supply Plan Update

### RECOMMENDATION:

That Council conduct a joint work session with the Water Commission to discuss and provide input regarding the proposed update to the City's Long-Term Water Supply Plan (LTWSP) and Urban Water Management Plan.

### EXECUTIVE SUMMARY:

This report provides background and discussion in support of a joint work session with the City's Water Commission regarding the planned update of the LTWSP. A summary of relevant history is provided for context. The City's water supplies are itemized and key issues related to water demand are identified. Primary water supply issues are discussed and proposed policies of the updated LTWSP are presented. A recommendation to adopt the LTWSP and an updated Urban Water Management Plan, as required by the State of California, will be presented to City Council in June 2011.

### BACKGROUND:

The City's current LTWSP, which was adopted in 1994, followed a particularly challenging period in water supply history:

- The severe drought of 1987 to 1992 had made it necessary to seek emergency water use cutbacks of up to 50%.
- Regional water agencies had signed a landmark agreement to stabilize the yield of Gibraltar Reservoir by providing for "pass through" of City water to Lake Cachuma.
- Two phases of the City's recycled water system had just been completed.
- The desalination facility had been constructed as a temporary emergency water supply in response to a projected 80% shortage in City water supplies.
- City voters had approved bonds to construct a pipeline for delivery of State Water.
- The City had begun development of a comprehensive water conservation program to help address short and long term water supply deficits.

The "normal" year demand at the time was identified as 16,300 acre-feet per year (AFY) based on the last several years of the 1980s before the extraordinary drought cutbacks began.

The 1994 plan incorporated recycled water and State Water into the City's water supply planning. It called for desalination to be converted to a permanent part of the water supply, with usage expected to be limited to periods of severe drought. Normal year demand, not including safety margin, and after adjusting for assumed development and conservation savings, was projected to be 16,400 AFY by 2009.

As the current planning period comes to an end, actual normal year demand is approximately 14,000 AFY, based on an average of the past five years. The significant difference between this amount and the earlier projection of 16,400 AFY can be attributed to a lower rate of development than was projected, increasingly strict water efficiency building codes and appliance standards, relatively high marginal water rates, and a sustained effort to implement a multi-faceted, state of the art water conservation program.

As the *Plan Santa Barbara* process has been underway, Water Resources staff and the Water Commission have undertaken a concurrent effort to update the City's water supply planning policies. The goal is adoption of a LWSP to serve as the policy framework for management of the City's water supply over the next 20 years. A draft of the updated LTWSP is available in the Council reading file and for public review at the City Clerk's Office.

#### **DISCUSSION:**

In developing the draft LTWSP and the water supply analysis for *Plan Santa Barbara*, staff updated information on projected demand and the City's various water supplies. The information was reviewed and discussed with the Water Commission as it became available.

#### **Water Supply Performance**

The City has adequate supplies to meet current and future projected demand with its current water supply portfolio. The primary challenge of the City's water supply is an extended drought, defined by successive years of below average rainfall. This is a relatively infrequent occurrence. During normal years, demand will be met mostly with surface water, along with Mission Tunnel, recycled water, State Water, and limited groundwater pumping. During the critical drought period, surface water supplies would be diminished, groundwater pumping would increase, drought supplies (in the form of banked water, purchased water or desalination) would be used, and customers would be asked to reduce usage by up to 15%. Attachment 1 to this report is a chart showing how demand is projected to be met during a normal year and in a critical drought year.

### Water Supply Sources

- Lake Cachuma
  - Current entitlement: 8,277 AFY
  - Projected 2030 entitlement: 7,863 AFY
- Gibraltar Reservoir
  - Historical average deliveries of about 4,200 AFY
  - Expect somewhat reduced deliveries under Pass Through Agreement
- Devil's Canyon Creek
  - Small diversion adjacent to Gibraltar Reservoir
  - Counted as part of Gibraltar deliveries
- Mission Tunnel
  - Conveys water from Gibraltar and receives infiltration from percolating groundwater
  - Average infiltration of 1,125 AFY
- Montecito Water District
  - 300 AF (Acre Feet) owed annually as a condition of purchase of Juncal Dam site in early 1900s
- State Water Project
  - Maximum share of water ("Table A" amount) is 3,300 AFY
  - Deliveries subject to availability
- Groundwater
  - Annual supply of 1,300 AF
  - Planned capacity of 4,125 AFY for use in extended drought
- Recycled Water
  - 800 AFY of existing connected demand; additional 300 AFY potential
  - Potable water used for blending to reduce mineral content
- Desalination
  - 3,125 AFY permitted capacity; 10,000 AFY maximum capacity
  - Currently inactive, but available to reactivate for severe drought

### Water Demand

- Current normal year demand is estimated at 14,000 AFY, compared to 16,300 AFY prior to the last drought.
- Estimated demand of 895 AFY from new development is expected to be offset by replacement of existing fixtures and appliances with new and more efficient ones.
- A safety margin of 10% provides for unforeseen changes in supply or demand, resulting in a water supply target of 15,400 AFY.
- State law requires a reduction in per capita water use by 2020 (20 X 2020). Through use of recycled water and the City's water conservation program, it is anticipated that we will meet this requirement.

### Primary Water Supply Planning Issues

*Planned Duration of the Critical Drought:* In the past, our approach to water planning has been to plan for a critical drought period of five years in duration. Such droughts have historically occurred at about 40-year intervals. This approach requires that we begin in earnest to work on restarting the desalination plant or find alternate supplies in year four. To reduce the frequency of expenses associated with drought response, staff is recommending that the future drought planning be based on a six-year drought.

*Role of Desalination:* The facility continues to be an important part of our water supply strategy for coping with severe drought. However, the significant costs of reactivating (\$17.7 million) and operating the facility (\$1,470/AF) encourage deferral of operation until at least the sixth year of a drought.

*Alternate Drought Supplies:* Knowing the cost of operating the desalination facility makes it easier to evaluate the cost of alternate drought supplies. State Water that is in excess of our demand can be "banked" in a groundwater aquifer to be available during times of shortage. Also, we can expect some amount of water to be available for purchase elsewhere in the State that can be conveyed through the SWP infrastructure. This will be expensive water, but likely comparable to or less than the cost of desalination operating costs, and without the cost of facility reactivation.

*Planned Demand Reduction During Critical Drought:* To avoid the need to develop additional water supplies for drought contingency, it is reasonable to plan for some extraordinary reduction in customer demand during the infrequent critical drought period. The drought of the late 1980s required cutbacks of 50%, resulting in significant community impacts. The 1994 water plan assumed reductions of 10% in reaction to such impacts. For the current update, staff is recommending 10% in year four of a drought, and up to 15% in years five and six.

*Sedimentation Management:* Reservoirs are subject to continuing sedimentation, which should be managed to the extent feasible. Staff plans an investigation of sedimentation management options at Gibraltar Reservoir. In addition, it is important for the Cachuma Project members to work in conjunction with state and federal agencies to identify a strategy to preserve valuable storage volume in Lake Cachuma.

*Recycled Water Expansion:* Recycled water is a small but important part of our water supply. It reduces demand for potable water supplies and will help meet the 20 X 2020 mandate. Opportunities to expand the use of recycled water by 300 AFY have been identified. In addition, a policy on the use of potable water for blending should be a part of the final LTWSP. Blending is an economical strategy for addressing mineral content, estimated to have an added operating cost of \$180 per AF. For comparison, a conceptual project to reduce mineral content using reverse osmosis has an estimated cost of \$4.6 million and an added operating cost of about \$341 per AF.

Water Supply Policies

The LTWSP update includes policies that will guide the ongoing management of the City's water supply for the next twenty years. The draft policies are included as Attachment 2.

**ATTACHMENTS:** 1: Normal Year and Critical Drought Year Water Supplies  
2: Draft Water Supply Plan Policies

**PREPARED BY:** Rebecca Bjork, Water Resources Manager/ BF/mh

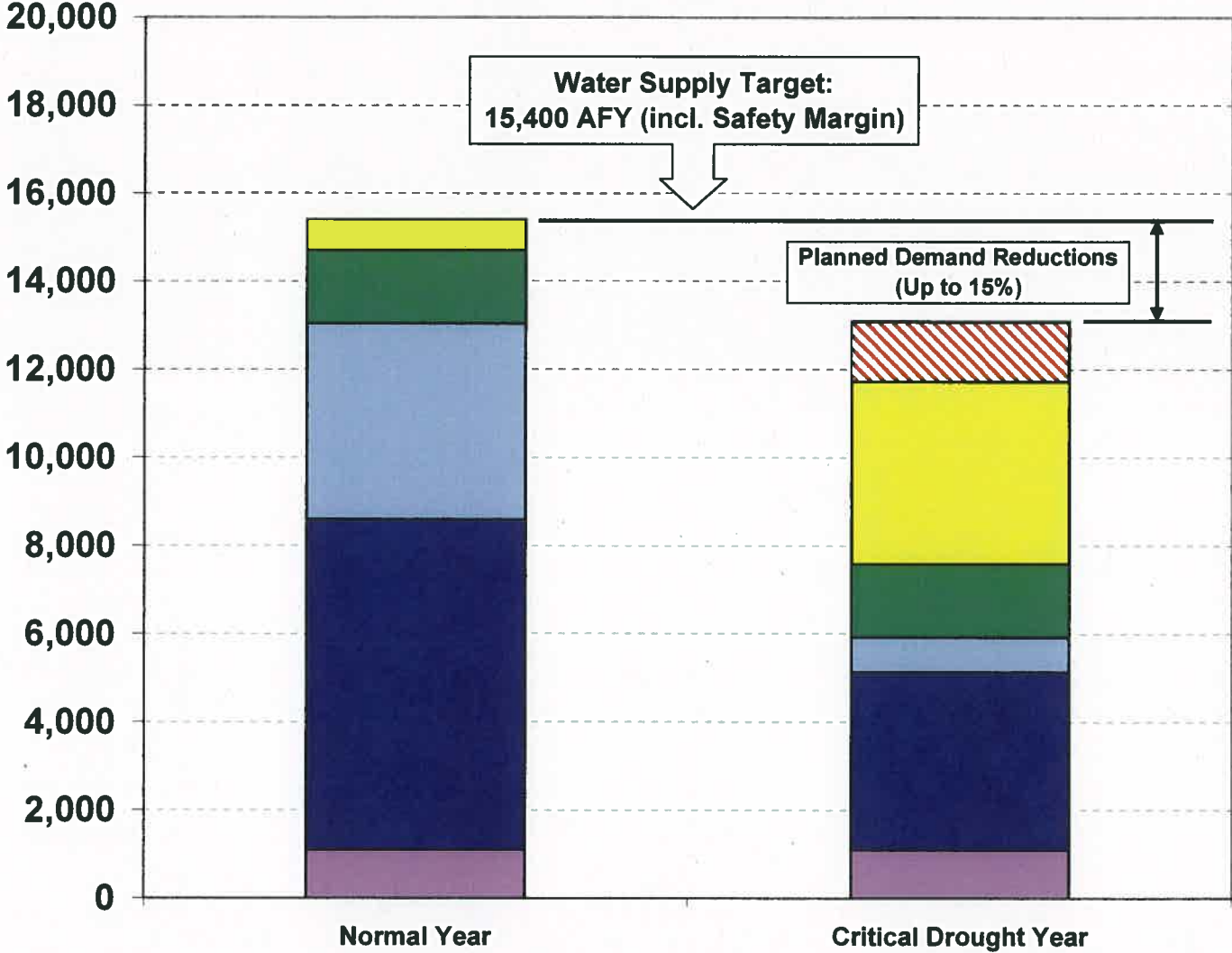
**SUBMITTED BY:** Christine F. Andersen, Public Works Director

**APPROVED BY:** City Administrator's Office





# Normal Year and Critical Drought Year Water Supplies (AFY)



- ▨ Drought Supplies
- Groundwater
- SWP (Table A)
- Gibraltar/ Mission Tunnel/ MWD
- Cachuma Project
- Recycled Water



### **Draft Water Supply Plan Policies**

The purpose of the LTWSP is to establish policies to guide the management of the water supply. Based on analysis in the draft LTWSP update, the following draft water supply policies have been developed:

1. **Safety Margin**: A safety margin of 10% above projected demand will be used for planning purposes to accommodate unplanned increases in demand or decreases in available supply.
2. **Demand Reductions During Drought**: Planned short-term reductions of up to 15% in customer demand will be a part of the City's response during a critical drought period. Such reductions will be in addition to the ongoing promotion of long-term water use efficiency and will be achieved by measures such as restrictions on landscape irrigation and other water uses, a modified water rate structure, and intensive public information efforts to promote the community goal of reduced water use. This policy of planned cutbacks is established in recognition of short-term elasticity in customer demand that can be tapped during rare emergency conditions to avoid the cost of 100% reliability of the water supply.
3. **Recycled Water**: State and City regulations requiring use of recycled water where available will be implemented. Capacity in the City's Water Reclamation Project will be utilized to continue to serve existing connected demand plus an additional 300 AFY of expanded use, for a total of approximately 1,100 AFY. The use of potable water for blending will be tracked, with a goal of maintaining the potable blend content at or below \_\_\_\_%. Blending is expected to be used primarily during the summer irrigation season, and to be suspended during extended drought. A contingency plan for eliminating the need for blending will be developed upon completion of the current analysis of the City's wastewater treatment process, with the goal of being ready to implement the plan if economic, water supply, or regulatory conditions dictate.
4. **Water Conservation**: The City will operate a water conservation program aimed at minimizing the use potable water supplies, meeting the requirements of the California Urban Water Conservation Council Best Management Practices, and achieving of compliance with 20 X 2020 per capita water use limitations. Conservation measures will be evaluated for cost effectiveness based on avoided cost of additional water supplies.
5. **Groundwater Management**: Groundwater production capacity of at least 4,125 AFY will be maintained in Storage Unit No. 1 and the Foothill Basin to augment depleted surface water supplies during a severe drought. Ongoing modeling will assess strategies for groundwater management, including optimal use of available recharge, injection of potable water for artificial recharge, and injection of recycled water as a barrier to sea water intrusion. Sites for new or

replacement production wells will be evaluated with the goal of minimizing sea water intrusion. The City will develop a Groundwater Management Plan, consistent with state law, to provide for the orderly and responsible use of the City's groundwater resources.

6. Gibraltar Pass Through Operations: Pass Through operations will be implemented for storage of Gibraltar water in Lake Cachuma, pursuant to the 1989 Upper Santa Ynez Rive Operations Agreement. An updated analysis of sedimentation management will be conducted to assess whether efforts to arrest or reverse the sedimentation process at Gibraltar Reservoir are feasible.
7. Sedimentation Management at Lake Cachuma: To address ongoing reduction in capacity at Lake Cachuma due to sedimentation, the City will promote development of a long-term strategy to minimize sedimentation in conjunction with Cachuma Project Member Units and other appropriate parties and agencies, including state and federal agencies.
8. Water Banking: The City will investigate opportunities to bank unused State Water, with the goal of using this water to reduce the amount of drought water purchases that may be needed during a critical drought period, and deferring the potential need for production from the desalination facility at least until the sixth year of a critical drought period.
9. Desalination Facility: The City's desalination facility is an important component of the City's water supply, despite the significant cost of activating and operating the plant. The desalination facility will be retained as an official part of the City's water supply for use as may be needed during extended drought.
10. Management of Water Fund Assets: Land and equipment assets purchased with Water Fund resources will be managed for the purpose of optimizing the economic and sustainable operation of the water system.
11. Monitoring and Reporting: Ongoing monitoring and reporting of the City's water supply status will be conducted, including annual reports to City Council on the near-term drought outlook, preparation of 5-year updates of the City's Urban Water Management Plan, and an update of this plan in approximately 2030, or sooner as may be appropriate.

### Finding

Based on implementation of the above policy elements, the City's water supply is determined to be adequate to serve anticipated demand for the duration of the planning period.