For customers of
Santa Cruz
Water Department

Planning for Our Water Future

Integrated Water Plan Update

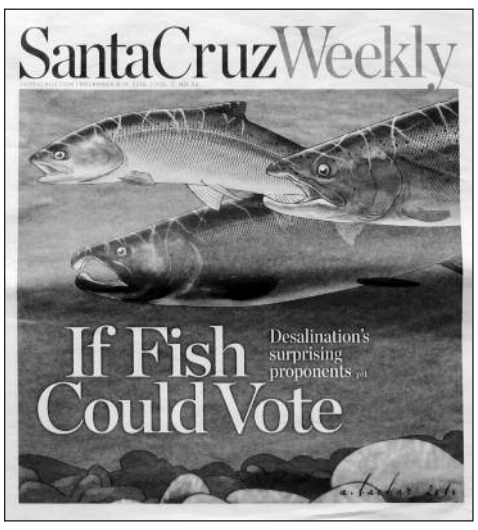
Spring 2011

www.scwd2desal.org

scwd² Collaborating to conserve, protect and create reliable water resources

Santa Cruz Faces Major Water Supply Concerns

The City of Santa Cruz faces two major challenges in meeting its future water supply needs: making sure there is enough water for its customers during severe drought periods and protecting the habitat of endangered fish in the San Lorenzo River, Newell Creek, and North Coast streams. Each of these scenarios means less water in the City's water system and emphasizes the need for a supplemental water supply.



Santa Cruz Weekly writes about NOAA's support of Desal study (published 12/8/2010).

Because the City relies almost entirely on water from rainfall and water stored in Loch Lomond Reservoir, the system is vulnerable to water shortages during severe drought conditions. The second limiting factor on the City's water supply is the likelihood that less water will be available from the San Lorenzo River, Newell Creek, and North Coast streams due to anticipated restrictions that will be required to protect fish habitat. The City is working with state and federal regulators on the development of a Habitat Conservation Plan (HCP) that will require maintaining adequate stream flows to protect endangered fish. The implementation of this HCP will reduce the amount of surface water available for diversion and use by the City.

The Santa Cruz Water Department (SCWD) is currently updating its information on water demands, supply reliability, water conservation measures, and water shortage contingency planning as part of the update to the 2010 SCWD Urban Water Management Plan and the environmental review process for the proposed desalination project. The more current information will be used to update the evaluation of the water shortage problem that the City is now facing and will account for drought conditions as well as reduced surface water supplies.

Desal is Important to Our Water Future

scwd² Collaborating to conserve, protect and create reliable water resources

Our community has a complex water supply problem. It includes the overdraft of freshwater aquifers, the likelihood of severe droughts and the probability that regulators will reduce our water supply from surface streams to protect endangered fish species. We must continue to evaluate the threats and risks to our environment, our households and our local economy—and evaluate potential remedies to our water supply problems.

Critics question whether or not our community should build a desalination plant to meet our water needs. These critics typically identify a number of important issues we need to examine as desalination is considered ... and then jump to the conclusion that desalination should be rejected before the evaluations are completed. Yet by arguing for rejection of desal they are essentially saying that we should "shelve" the project before allowing the community to consider the latest information and the potential for desalination to meet our water supply challenges.

The **scwd²** *Task Force, formed by the Santa Cruz City Council and the board of the Soquel Creek Water District, is working diligently to examine a variety of issues related to the proposed desalination plant, including energy usage; the cost to ratepayers; the impacts to the marine environment; the quality of desalinated water; and the overall question of whether or not desalination is the best approach. A full Environmental Impact Report is currently evaluating many of these issues, and this report, along with public comments, will assist the entire community in understanding them.*

Opponents find it politically useful to claim that specific alternatives should be looked at before a full environmental review of desal is completed—ignoring the fact that elected representatives and citizens that volunteer on local commissions thoroughly examined and considered many alternatives. Those citizens sat through dozens of public meetings with countless hours of public testimony to decide that desalination was a reasonable and necessary approach to explore. No one we know believes desalination alone is a panacea for our water supply problems – rather it could serve as a safety net in our water supply portfolio. Our Integrated Water Plans identified desalination as part of a careful process of exploring new water sources while moving ahead with vigorous conservation measures and preparations for significant restrictions during drought periods.

We believe the community is better served if we stick with a thorough examination of all the facts and issues revealed though a rigorous environmental review process and then make an informed decision.

Don Lane
Vice Mayor of Santa Cruz

Dan Kriege,
Board Member, Soquel Creek Water District

Both serve as members of the **scwd²** *Task Force.*

scwd² and the City of Santa Cruz's Integrated Water Plan

Despite current rainfall and snow pack amounts, the State of California faces a long-term water shortage crisis and our coastal community is no different. Despite our customers' commitment to conservation (resulting in some of the lowest per capita water usage in the state), our local water supplies are insufficient to respond to drought conditions, increased water demands for endangered fish, and overdrafted groundwater basins.

To supplement existing supplies and ensure a sustainable and reliable, high-quality drinking water supply, the City of Santa Cruz Water Department (SCWD) and Soquel Creek Water District (SqCWD) have joined together to diversify their water portfolios and evaluate seawater desalination as a supplemental water resource. Because both agencies share the same initials, this joint venture is referred to as **scwd²**.

The City of Santa Cruz's Integrated Water Plan (IWP) provides a flexible, phased approach for providing a reliable supply of water during a drought and ensuring protection of public health and safety. The IWP was the result of a lengthy planning process that included numerous studies of water demand, conservation and alternative water supply options. The SCWD's IWP consists of three major components:

- Conservation — Permanently reduce customer demand for water and increase water-use efficiency to obtain the greatest public benefit from available water supplies.
- Curtailment — Further reduce water use, by up to 15 percent, through temporary water restrictions during times of drought
- Supplemental Supply — Construct a small 2.5 million gallon per day (mgd) desalination plant to provide supplemental water during drought.

Conservation and curtailment will continue to be extremely important components of the IWP. However, even with increased conservation, fluctuations in water supply availability show that there will be insufficient water to meet demand during drought conditions. In combination with use curtailment and conservation, the supplemental water supply provided by a desalination plant would allow the water system to meet the needs of the community.

Desalination would provide SCWD and SqCWD with a weather-independent and drought-proof water source and would provide the flexible supplemental water supply we currently need.

What if We Do Nothing?

If the City of Santa Cruz were to take no action to develop a supplemental water supply, such as the desalination plant, there are a number of consequences that could occur.

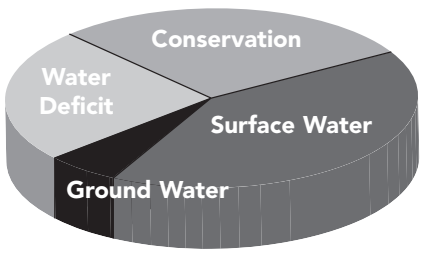
1) During severe drought there would be drastic curtailments of water deliveries, impacts to the local economy and hardships for water customers.

2) A lack of additional water supply would hinder the City's ability to protect the listed endangered species in the San Lorenzo and North Coast watersheds.

3) Failure to comply with the federal Endangered Species Act could result in civil penalties and court-ordered limits on the City's water operations.

Water Conservation Continues to Play Key Role in Water Supply Solution

Water conservation is not a new concept in Santa Cruz County. It's a way of life for our residents and businesses — like recycling, keeping our beaches clean, and preserving our parks and open space. For years, customers in the City of Santa Cruz and the Soquel Creek Water District have been actively and measurably conserving water.



The City of Santa Cruz primarily uses surface water and some groundwater to meet their water needs. During periods of drought, conservation efforts are not enough and a supplemental supply and curtailment are needed.

Water conservation is the cornerstone of the SCWD and SqCWD diversified water portfolios. It's a matter of pride that, on average, our customers use far less water than most California residents and businesses. But doing a good job of conserving our existing water resources doesn't eliminate the need for new water supplies. The bottom line is we can't sustain the local economy, environmental values, quality of life, and health and safety without supplementing our surface and ground water resources.

Both agencies rely solely on local water supplies (surface water from streams and rivers and groundwater) and do not receive any state or imported water. With local water supplies severely limited during drought conditions, new regulations to maintain stream flows that will protect fish, and the perilous threat of seawater intrusion due to the overdrafted groundwater basins, we are committed to managing our precious water resources wisely and efficiently.

Existing SCWD water supplies are provided by the same infrastructure that has been in use since the 1970's. Since then, the system's capacity has remained unchanged as population and service connections have continued to increase. Even with our stellar conservation efforts, the City could be faced with a severe water shortage during drought conditions.

Nonetheless, continued and expanded conservation efforts are a critical piece to help solve the water supply shortage — and they save energy. Both agencies will continue to evaluate and implement new water saving programs and encourage the use of more water-efficient technologies and devices that will stretch our existing water supplies and reduce the amount of supplemental supply that is required.

What are the Benefits of the Proposed Desalination Plant?

- Provides the City of Santa Cruz and Soquel Creek Water District with a secure, flexible, and reliable supplemental water supply.
- Diversifies water supply portfolios, in conjunction with water conservation and restrictions during droughts, to best manage the sustainability of existing surface and groundwater resources.
- Protects groundwater aquifers from seawater intrusion by reducing groundwater pumping from wells.
- Protects endangered fish species by maintaining adequate stream flows and reducing the amount of surface water used.
- Safe and proven technology that provides high-quality drinking water that is compatible with existing water supplies.

FAQs — Frequently Asked Questions

Q: Are there any successful desalination projects currently in operation?

A: Desalination is a proven and reliable technology that is used in over 120 countries worldwide including Australia, Japan, China, Saudi Arabia, Greece, Spain, and the United States. It is also often used on islands (such as the Caribbean and our nearby Catalina Island), naval vessels, and cruise ships. Locally, Moss Landing Power Plant, Monterey Bay Aquarium and the City of Sand City operate desalination facilities.

Q: Why is the Santa Barbara desalination facility not in operation?

A: The primary reason that Santa Barbara's desalination facility, which was constructed in the early 1990's, is not in operation is due to their subsequent connection to the State Water Project. That project can deliver up to 3,000 acre-feet-per year of water. Even though the desalination facility was in operation for just a short time, it still serves as an insurance policy. City officials know the facility remains in their long-term water portfolio for emergency purposes such as an extended drought. While imported water was a viable option for Santa Barbara to use in lieu of desalination, this option is not an alternative for the City of Santa Cruz or Soquel Creek Water District. The infrastructure to import any water from outside the Santa Cruz area does not currently exist and would be very expensive to build. In addition, given the current condition of water supplies in the State Water Project and the issues facing the Sacramento-San Joaquin Delta, it is extremely unlikely that any of that water would become available for importation to Santa Cruz.

Santa Barbara's facility is not in operation due to their connection to the State Water Project ... this option is not viable for Santa Cruz.

Q: Is desalinated water actually safe?

A: Desalination is a safe and proven technology. **scwd²** operated a pilot facility in 2008-2009 that tested the reverse osmosis technology for desalinating ocean water from the Monterey Bay. The facility was able to meet and exceed all state and federal drinking water standards and clearly demonstrated that it can provide a clean and reliable source of drinking water.

Q: Will the City of Santa Cruz and Soquel Creek Water District be updating supply and demand figures that were used in previous planning documents?

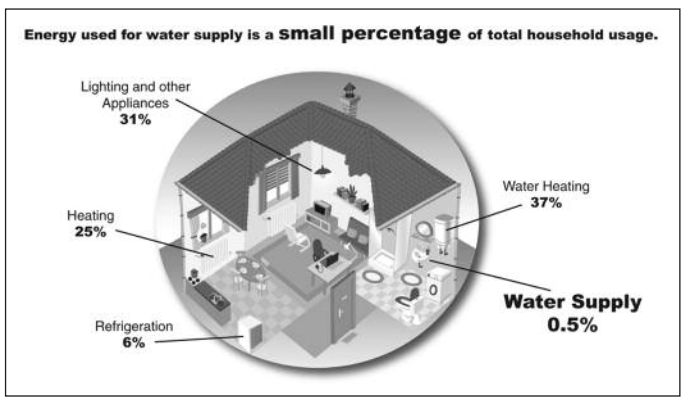
A: Yes, the City and District are updating information on water demands, supply reliability, water conservation measures, and water shortage contingency planning as part of the updates to the Urban Water Management Plans and the environmental review process for the proposed desalination project. This information will be incorporated into the Draft Environmental Impact Report (EIR) that is being developed for the proposed **scwd²** Regional Seawater Desalination Project and the applicable supporting technical studies.

Q: Is the City able to transfer surface water during winter months to Soquel Creek Water District?

A: The City is presently unable to transfer surface water to Soquel, but opportunities such as this are being investigated by the water agencies. Challenges with this option include lengthy water right amendments, potential impacts to endangered fish species, and the annual variability and unreliability of a sufficient water supply available to transfer. John Ricker, Water Resources Division Director for Santa Cruz County, who is overseeing this study, acknowledges that "the possibility of a water exchange is not a near-term solution in the water supply shortage faced by the City and District and is not considered an alternative to developing a new reliable and flexible supplemental supply."

Q: Does desalination use a lot of energy?

A: The process of desalination does use more energy than traditional water treatments (such as groundwater and surface water), but the amount of energy that would be attributed to water supply would continue to be a very small fraction of the total energy requirements for a typical household. For example, if the energy required to produce and deliver water (desalination, surface water and groundwater) during drought conditions was divided by the number of households within the City's water service area, it would be approximately one to two percent of the total household energy demands. A white paper on Energy Use is available on our website and provides more information on energy use and comparisons for the proposed project. The graphic below illustrates the breakdown of typical household energy uses.



Q: Will the mixing of desal water with surface water and groundwater cause water quality issues?

A: All new water supplies must be extensively evaluated to ensure they can be 1) treated to all state and federal drinking water standards and 2) don't have unanticipated impacts either on the distribution system or with other water supplies it may be mixed with. **scwd²** evaluated all required constituents, as well as constituents that are not currently regulated but that may be in the future. For example, trihalomethanes (THMs) is a regulated constituent which forms when organic material in any surface water combines with chlorine during disinfection. **scwd²** successfully demonstrated that desalinated water could be treated and mixed with surface water and groundwater supplies and comply with regulations related to THMs. As is currently required and performed, the City would continue monitoring programs at treatment facilities and within the distribution system to ensure compliance with water quality standards. For more information on the pilot study and water quality testing, visit scwd2desal.org.

Q: Will the marine life in the Monterey Bay be harmed by pulling in ocean water and pushing out the brine produced in the desalination process?

A: **scwd²** recently completed technical studies that evaluated the intake effects of bringing ocean water into the desalination plant and mixing the brine with existing treated wastewater effluent that currently goes to the Bay. Both studies concluded that effects would be minimal based on newer technologies that could be implemented. Technical Working Groups, which included scientists, academics, and regulators, advised and oversaw these complex and detailed studies. To access the technical studies, visit scwd2desal.org.

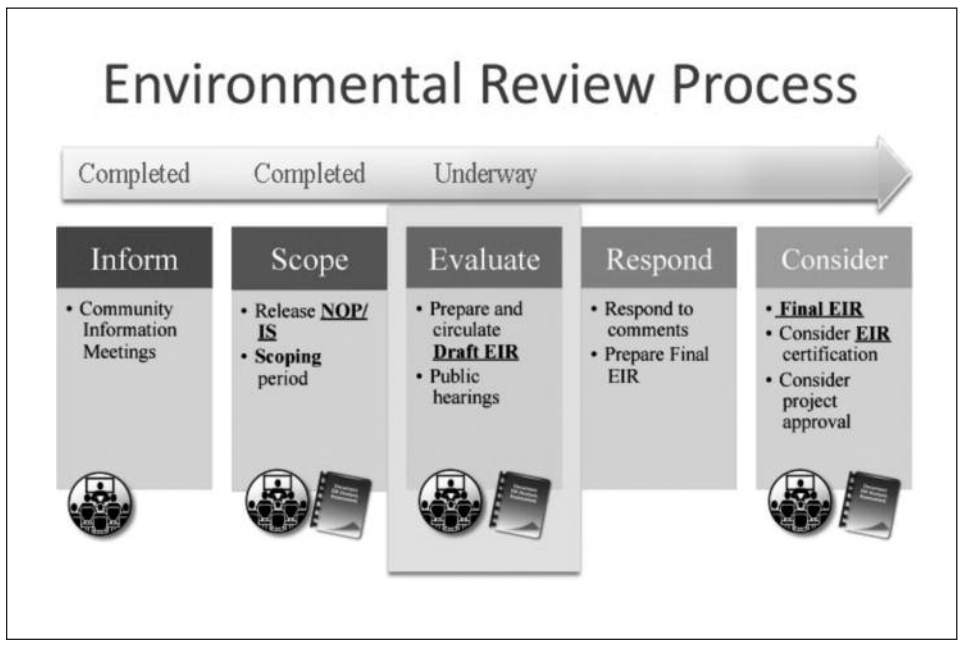
Q: What type of conservation rebates and incentives are available to City of Santa Cruz customers?

A: The City currently offers numerous conservation rebates and incentives to their customers that include, but aren't limited to, free on-site water surveys, rebates/incentives for toilets, urinals, front-load washers, and rain barrels and cisterns. For a list of incentives, visit www.cityofsantacruz.com/index.aspx?page=395. Conservation information is organized by residential, commercial, and landscape uses. The City also offers a suite of free conservation items such as showerheads, faucet aerators, garden shut-off nozzles, shower timers, and garden hose timers.

How the Environmental Review Process Works

The purpose of the project Environmental Impact Report (EIR) that is currently under way is to identify and evaluate potentially significant effects that the regional desalination project could have on the environment, to identify alternatives to the project, and to indicate how and whether the significant effects can be mitigated or avoided. This will ensure that the governing bodies and permitting agencies consider any potential environmental impacts when deciding whether to approve a project.

The first step in the EIR process was scoping, which is used to define the issues to be evaluated in the EIR. Release of the Notice of Preparation/ Initial Study (NOP/IS) launched the scoping period in November of 2010. The NOP/IS identified the potential environmental effects that will be evaluated in the EIR. During the scoping comment period (November 15, 2010 - January 10, 2011) the public provided input on the environmental topics, potential effects, mitigation measures, and range of alternatives to be analyzed in the project EIR. A Scoping Report of all comments received is available on the project website and the next step in the process is preparation of the Draft EIR.



The Environmental Review Process allows several opportunities for people to provide their input.

The **scwd²** agencies are working closely with the project team responsible for preparing the EIR. The project team will continue to seek input at various stages of the environmental review process. The next opportunity for public input will be during the public review of the Draft EIR, which is currently being prepared. The public will have the opportunity to provide formal comments on the Draft EIR during this public review period, anticipated for early winter 2012. The project team will then respond to comments submitted during the public review period in the Final EIR and make any revisions necessary to the EIR. Upon completion of the Final EIR, the City Council and District Board of Directors will consider certification of the EIR and approval of a project.

Why Desalinated Water is Being Studied

Desalination is a weather-independent source of water because, unlike surface water, it is not affected by droughts, and can be used when existing supplies are extremely limited. During wet years, the desalinated water would be produced in smaller amounts to help restore groundwater levels in the Soquel Creek Water District.

A joint desalination plant is not a "quick-fix solution" to solve our water shortages. Both SCWD and SqCWD have been investigating supplemental water supply options for more than 20 years. Desalination technology has evolved to where it can be a very viable, safe and reliable component of a diversified water supply portfolio.

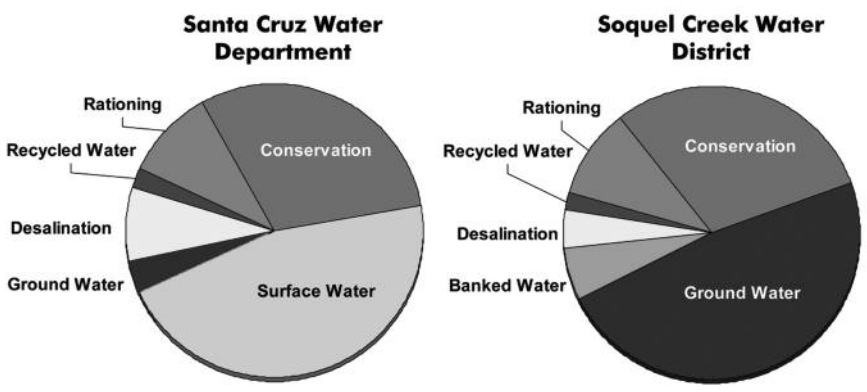
SCWD and SqCWD have conducted lengthy and exhaustive evaluations of water supply options and potential new water sources. The results were the City's Integrated Water Plan (IWP, 2005) and the SqCWD Integrated Resources Plan (IRP, 2006).

Through those efforts, more than 30 projects were identified, including building one or more new reservoirs, substantial use of recycled water, groundwater recharge, water exchanges, and importing water. After thoroughly evaluating the alternatives, both agencies concluded that a desalination plant was the preferred option for providing a reliable water supply that meets long-term needs while ensuring protection of public health and safety.

Desalination is a weather-independent source of water ... it is not affected by droughts, and can be used when existing supplies are extremely limited.

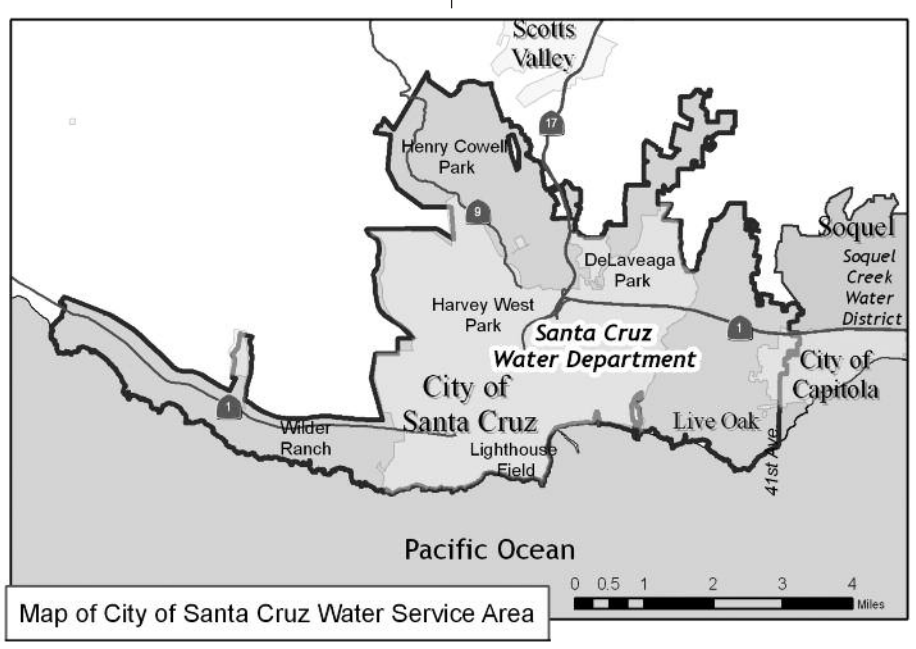
The potential environmental impacts of the desalination project proposed by **scwd²** are currently being studied in a project level Environmental Impact Report (EIR). The EIR will include a variety of studies related to energy, marine impacts and water quality. The EIR must be completed and certified before any decision is made on the project.

Desalination Would Help Supplement Existing Water Supplies



Charts illustrate the proposed diversified water portfolios for each agency during drought conditions.

Diversified water portfolios enable us to provide a reliable supply of water during drought, preserve our coastal aquifers from seawater intrusion, and ensure protection of public health and safety.



Map of City of Santa Cruz Water Service Area

Map shows Water Service Area Boundaries

Minimizing Environmental Impacts

Santa Cruz County residents are passionate about the environment and the community. There are a number of studies and evaluations that have or will be conducted as part of the **scwd²** Desalination Program to minimize any adverse environmental impacts from the proposed desalination project.

Several technical studies have concluded that:

- The brine (highly saline water that is a byproduct of the desalination process) can be safely disposed of by blending it with the existing treated wastewater that flows to the Monterey Bay.
- A properly designed intake system is capable of bringing seawater to the desalination plant without affecting marine life.
- Overall energy use to provide water to our customers, which includes desalination plus existing water resources, would be equivalent to approximately one to two percent of a household's overall energy demand, much less than the individual energy demands of household heating, refrigeration, lights, and water heaters.
- Desalinated water is a clean and safe water supply that can meet all local, state, and federal drinking water quality standards.

A project-level Environmental Impact Report (EIR) is currently being conducted for the proposed project that will thoroughly evaluate the environmental impacts associated with the project. This study is anticipated to be released in early winter 2012.

A project-level Environmental Impact Report (EIR) is currently being conducted…

scwd² will continue to work with all of the regulatory agencies that oversee potable water resources and the Monterey Bay including, but not limited to, California Department of Public Health, Regional Water Quality Control Board, California Coastal Commission, National Marine Fisheries Service, Monterey Bay National Marine Sanctuary, U.S. Fish and Wildlife Service, and California Department of Fish & Game.

Santa Cruz Water Department
212 Locust Street, Suite C
Santa Cruz, CA 95060

New Regulations and Drought Protection Create Need for Additional Water Supply Options

- What you need to know about Desal
- Ensure we have adequate water during a drought
- Restore groundwater levels and prevent seawater intrusion
- How we can make sure there's enough water for endangered fish too

Printed on recycled paper

How to Stay Informed

scwd² is committed to educating the community about the need for a supplemental source of water, and the environmental review process for the proposed desalination project. There will be ample opportunities for public input throughout the project planning and environmental review process. Here are some ways to stay informed:

Web
www.scwd2desal.org

Email
To receive monthly project updates, send an email to:
melanies@soquelcreekwater.org

Call
(831) 475-8501 x153

facebook
www.facebook.com/scwd2news

twitter
twitter.com/scwd2news

Esta información está disponible en español.
Por favor llame al (831) 475-8500.

Energy Efficiency and Reducing Greenhouse Gases

SCWD and SqCWD recognize that energy use and greenhouse gas emissions (GHGs) are a major concern regarding desalination. There have been many advances in desalination technologies over the past two decades, which have reduced the energy required to desalt water. Advancements in reverse osmosis materials and energy recovery devices have reduced the energy usage for desalination.

Still, providing additional water supply with desalination does present energy challenges and that is why **scwd²** is conducting an Energy Minimization and Greenhouse Gas Reduction Study. This study will ensure that the most advanced and energy-efficient technologies and approaches are identified and incorporated into the proposed project as well as explore renewable energy projects to offset power requirements of the project. As part of this study, the agencies will:

- Calculate the amount of energy required for the proposed project.
- Establish greenhouse gas mitigation goals based on an understanding of regulatory status, future regulatory direction and input from the GHG Technical Working Group.
- Identify options to meet the GHG mitigation goals including making the project carbon neutral.
- Develop a list of potential GHG mitigation projects based on each agency's energy use. Various types of options will be evaluated to understand which actions would best offset GHG emissions associated with the proposed desalination project. These actions may include, but are not necessarily limited to: green energy producers such as solar, wind, wave and geothermal; power purchase agreements; restoration projects; and salinity gradient power generation.

This comprehensive study will help to ensure the project is developed in a way that minimizes any impacts to the environment while providing a supplemental source of water.

scwd² *will be evaluating additional local solar power opportunities similar to this system on the Graham Hill Water Treatment Plant.*

Proposed Project Timeline

2008-2009 . . . . . Pilot Plant Testing
2010-2012 . . . . . Desalination Facility Environmental Impact Report Preparation and Certification
2010-2012 . . . . . Desalination Facility Design
2012-2016 . . . . . Desalination Facility Construction

Schedule subject to change.