



# Santa Clara Valley Water District

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**File No.:** 16-0169

**Agenda Date:** 5/24/2016

**Item No.:** 6.1.

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## BOARD AGENDA MEMORANDUM

### **SUBJECT:**

Climate Change Adaptation - Update on Progress.

### **RECOMMENDATION:**

Receive and discuss information on the District's activities towards climate change adaptation.

### **SUMMARY:**

As the primary water resources agency for Santa Clara County, the District manages an integrated water resources system that includes the supply of clean, safe water, natural flood protection, and stewardship of streams on behalf of Santa Clara County's 1.8 million residents.

The District's ability to provide those services is challenged by the potential of warmer temperatures, changing precipitation and runoff patterns, reduced snow pack, and rising sea levels. Managing climate change related uncertainties, vulnerabilities, or risks to local water resource management is critical to fulfill the District's mission.

This item provides an update on District's efforts to adapt to climate change. Staff last reported to the Board on the district's mitigation/Greenhouse Gas and Carbon Neutrality efforts on October 27, 2015. This item specifically addresses adaptation activities such as: promoting and supporting a resilient and adaptable water supply, reducing flood risks and flood damages, enhancing ecosystem resiliency, and improving understanding through training and communication. Attachment 2 shows a list of the adaptive measures, including schedule and status, that staff is working on.

### **Climate Change Adaptation**

Staff will report to the Board on the major climate change adaptation efforts underway, organized by the core functions of the District.

#### 1. Activities Related to Water Supply (Water Utility Enterprise)

To address the challenges of an uncertain future and imprecise projections of future conditions and potential impacts on water supplies, the District relies on its long term planning efforts that continually develop and improve resilient and adaptable water supplies and strategies and consider changing conditions. The District is preparing to update its 2012 Water Supply and Infrastructure Master Plan (Water Master Plan) in 2017. The plan is reviewed annually and updated every five years to evolve

to changing conditions. The 2017 update will build upon the Board approved strategies to secure and optimize the use of existing supplies and infrastructure and meet future increases in demands with conservation and recycling. The Water Master Plan will continue to develop elements that adapt well to future climate changes. The current elements are presented below. Specific efforts across the water utility are presented in Attachment 2.

- a. Manage water use demands - Current and planned water conservation programs are projected to achieve about 99,000 acre-feet per year (AFY) of water savings per year by 2030, when demands are projected to be about 410,000 AFY. A new initiative is to work with land use agencies and water retailers to develop a model water efficient development ordinance. More efficient water use in existing and new developments will help manage change in demands due to climate change.
- b. Provide drought-proof supplies - Non-potable recycled water use is projected to expand from about 22,000 AFY in 2014 to 30,000 AFY by 2035. The District is also setting the stage for developing potable reuse, which is anticipated to provide at least 20,000 AFY of drought-proof supply for groundwater recharge and/or injection.
- c. Secure imported water supplies - About 40 percent of the county's water supply is conveyed through the Sacramento-San Joaquin Delta. Reduced precipitation and sea level rise are significant threats to the reliability of these supplies and the Delta ecosystem. The District is working with local, state, and federal agencies to develop solutions to address climate change and other threats to the Delta environment and water supply reliability.
- d. Increase system flexibility - The District's integrated water system provides significant flexibility in managing supplies. Maintaining and rehabilitating the system, including dam retrofits, will be critical for managing the increased frequency of extreme events that are anticipated in a changing climate. In addition, the Water Master Plan includes developing a new reservoir pipeline and additional groundwater recharge ponds to better utilize existing water supplies, especially during high storm flows and wet years. Future strategies may include additional surface and/or groundwater storage.
- e. Compile and analyze data - The District continues to compile and analyze data that could provide insights into potential local changes in runoff, water quality, and water use demands.

## 2. Activities Related to Fluvial and Tidal Flood Protection

- a. In order to better understand the potential impacts of climate change on flood hydrology, the District has contracted with Santa Clara University (SCU) to downscale global climate modeling results to the Santa Clara County area. Various climate-change scenarios for different target years and greenhouse-gas emission levels were considered. This contract service also allows the District to assess statistically the impact of climate change on precipitation amounts. The data was provided in December 2015 for staff review and comment. Staff is working with SCU to provide the final dataset. When complete, this information will support both water utility and watershed planning.

- b. The District started coastal flood mapping for various sea level rise (SRL) scenarios. The mapping was completed in November 2015. A meeting with the cities has been scheduled for April 20, 2016 to communicate the inundation maps and parcel counts for cities' planning purposes.
- c. Flood warning systems for four watersheds, San Francisquito, Upper Guadalupe, Thompson and West Little Llagas creeks, were completed in FY15. The storms of December 11, 2014 and March 4-6, 2016 provided opportunities to test and verify the system operation. The system will be expanded to include Uvas (FY16) and Coyote-Upper-Penitencia creeks (FY17). For this effort, the Flood Management Association bestowed the District the Award for Outreach and Communications in its 2015 annual conference.
- d. The District is partnering with Colorado State University and National Oceanic and Atmospheric Administration's National Weather Service to conduct a pilot project using a ground-based radar system that can provide more accurate rainfall forecast and mapping. This additional information with data from a network of District's rain gauges and stream gauges can improve the District's ability to predict, coordinate for, and respond to creek flooding. This pilot project will run from February to April 2016.
- e. To prepare for the rising tides and potential coastal flooding along the South Bay shoreline, the District is developing a memorandum of understanding with the US Fish and Wildlife Service (USFWS), owner of most of the salt ponds in the South Bay. The purpose of this memorandum of understanding is to develop a procedure for the District and USFWS to coordinate levee maintenance activities for the period of time until construction of the Shoreline flood protection project is completed. In FY15, the District spent \$250,000 to repair the salt pond levees to maintain their flood protection function.
- f. The District is also preparing working guidelines for staff to incorporate SLR into planning and design of flood protection projects. This guidance will provide a consistent approach for considering SLR effects on design of District's flood protection projects.

### 3. Activities Related to Ecosystem Resiliency

The District has multiple restoration and enhancement projects that strive to improve vegetative communities for local wildlife and native plant diversity, increase native canopy cover and carbon dioxide (CO<sub>2</sub>) sequestration to reduce climate change effects, increase in-stream shading to lower water temperatures for fish, and enhance habitat connectivity for wildlife migration. These projects utilize adaptive management strategies to more readily address changing climatic conditions in the future.

- a. Current projects that support ecosystem resiliency include the South Bay Salt Pond Restoration Project which will minimize bayfront impacts from sea level rise by providing a wetland buffer and attenuation of high tides.

- b. The Shoreline Flood Protection Project will not only enhance flood protection for our bayfront communities but also provide improved ecotones and habitat connectivity for wildlife.
- c. The District awarded the San Francisco Bay Bird Observatory a grant of \$690,000 to plant native vegetation on the South Bay Salt Pond levee slopes to enhance wildlife habitat connectivity and reduce wave damage.
- d. The District's water conservation program provides rebates to homeowners and businesses for converting high water use landscapes to climate appropriate plants and permeable landscapes.
- e. The District recently completed all required land preservation for its Stream and Watershed Preservation Program. Over 3,600 acres of upper watershed lands in various parts of Santa Clara County have been protected as a part of this program. Ongoing monitoring and land management activities continue to ensure that the conservation values of the preserved land are maintained.

#### 4. Training and Communication

Two training sessions for District staff were conducted in FY15:

- a. Professor Ed Maurer of SCU provided a training workshop on January 14, 2015, entitled Climate Disruption and Water: what is happening, why it matters, and what to do.
- b. Susanne Moser of Stanford provided a workshop on May 5, 2015, entitled Training in Climate Change Impacts, Risk, Vulnerability and Responses.

The next training session is being planned for May 2016, and will focus on Climate Change Adaptation Plan development topics, such as:

- Engaging leadership and management
- Encompassing and incorporation of policy considerations,
- Developing stakeholder inclusion elements,
- Integrating external regulation or guidance.
- Collaboration with stakeholders and local gov't, etc.
- Actionable action development for adaptation

#### 5. Next Steps for Climate Change Adaptation

Most of the climate-change adaptation activities will continue in FY16. More communication with District staff, the city and county staff on flood risks, especially from SLR, will occur.

#### **FINANCIAL IMPACT:**

There is no direct fiscal impact with this item. Each project described herein has its own fiscal consideration.

**CEQA:**

The recommended action does not constitute a project under CEQA because it does not have a potential for resulting in direct or reasonably foreseeable indirect physical change in the environment.

**ATTACHMENTS:**

Attachment 1: PowerPoint

Attachment 2: Climate Change Adaptation Measures

**UNCLASSIFIED MANAGER:**

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