

California Natural Resources Agency proudly presents

# California Climate Adaptation Storybook



## Dear readers,

We know that climate change poses immense threats to our State such as coastal storm surges, drought, wildfires, floods and heat waves. In light of this information, the Fall 2016 Edition of the Climate Adaptation Storybook (Storybook) hinges upon one thing: hope. Working with community leaders, governmental representatives, scientists, foundation officers, elected officials, and artists, the California Natural Resources Agency is shining a light on projects that are helping Californians prepare for these anticipated impacts. In each of the following projects, you will learn about local heroes bringing community members together to protect our state. You will read about ways these projects are reducing the risks of climate change, or in some instances, completely eliminating them. In others, you will read about reactionary projects, particularly in light of the current drought conditions.

Because climate change affects every sector of our economy and every community in our state, we have the opportunity to prepare for the future together. When we have a complex problem like climate change, we must address it using comprehensive solutions. We also must address existing inequities, as we have learned that climate change disproportionately impacts the state's most vulnerable populations.

We thank you for reading the first collection of projects and invite you to share your own story with us for the next edition. We are extremely grateful to these local heroes who have shared their incredible work with us. As we look to the future, we know we will need everyone to play a part in the effort to prepare for climate change.

Sincerely,

The California Natural Resources Agency's Climate Change Team

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## Overview

The 20-page Climate Adaptation Storybook (Storybook) serves as a primer for people who are working in a variety of fields who may not be familiar with climate adaptation in California. The Storybook is a cursory collection of projects, policies and programs to show decision makers, foundations, and community members what preparing for the future can look like. The Fall 2016 Edition also includes a brief explanation of what climate adaptation means, key examples of climate adaptation, and a message from CNRA's Leadership, Secretary John Laird and Undersecretary Janelle Beland, on the 2017 Update to *Safeguarding California*.

## Project Highlights

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## Introduction: Defining Climate Adaptation

There are a variety of definitions for climate adaptation. For example, according to the United States Environmental Protection Agency, “adaptation is the adjustments that society or ecosystems make to limit negative effects of climate change. It can also include taking advantage of opportunities that a changing climate provides.” In the California Natural Resources Agency’s 2014 *Safeguarding California*, climate adaptation refers to “efforts that respond to the impacts of climate change – adjustments in natural or human systems to actual or expected climate changes to minimize harm or take advantage of beneficial opportunities.” The State uses a comprehensive approach, building programs to reduce emissions that cause global warming and implementing strategies to prepare for the worst impacts of climate change.

Many local and regional governments use other terms such as climate resiliency. The City of Berkeley offers a local government’s example, stating “a city’s resilience is defined by the ability of the individuals, institutions, businesses, and systems within the community to survive, adapt, and grow no matter what chronic stress or acute shock it experiences. [It] lives well in good times and bounces back quickly and strongly from hard times.”

Whatever the term may be in each community, we found similarly held values shared by people from all backgrounds. We encourage communities, in every area of California, to continue having these conversations as a way to agree on goals and implement strategies to improve the quality of life for present generations and ensure the opportunity for future generations to call California ‘home’. For purposes of the Storybook, we think it is helpful to highlight three elements of climate adaptation efforts that repeatedly popped up in definitions, stakeholder meetings, and project submissions:

1. Slow down climate change impacts by reducing greenhouse gas emissions.

2. Collect and use best available science to predict what the future will look like in the area.

3. Build community capacity in a way that empowers everyone to take action.



## Return on Investment: Case Projects and Programs



"As Californians, we are lucky to live in one of the most agriculturally productive places in the world...Yet despite this bounty, many Californians remain food insecure...[The Office of Farm to Fork] actively works to follow its mission of serving underrepresented communities by improving access to nutritious foods statewide. Feeding all Californians ensures a healthy, secure future for our state."

–Karen Ross, Secretary of the California Department of Food and Agriculture

### ***Food Security Programs and the California Farmer Marketplace***

The Office of Farm to Fork, California Department of Food and Agriculture

Location: Statewide

**Project Descriptions:** The Office of Farm to Fork (Farm to Fork) brings community members together to address impacts related to California's drought and rising temperatures, noting that these changes disproportionately impact already underserved communities. Notably, Farm to Fork facilitated a series of workshops with Central Valley leaders to address food insecurity to create recommendations, including strategies for farmers who want to donate excess product to nearby food banks. Projects like the Central Valley Food Access Working Group bring community members together to craft solutions for these hard-hitting problems. Farm to Fork also provides trainings and resources to help school officials incorporate seasonal and locally grown foods into their meals. Farm to Fork also provides an online tool, the California Farmer Marketplace, which connects consumers directly with California farmers and ranchers.



## Return on Investment: Case Projects and Programs

### *Emergency Drought Relief Program*

A Collaboration between the California Conservation Corps, UC Master Gardeners Program of Monterey Bay, the California Landscape Contractors Association, the City of Watsonville, and the Pajaro Valley Water Management Agency

Location: County of Santa Cruz



**Project Description:** The California Conservation Corps' Emergency Drought Relief Program (Program) includes public works projects that reduce water use and create service opportunities for Corpmembers. Here, an 18-member coalition replaced 15,500 square feet of grass in the City of Watsonville with drought tolerant landscaping. The new landscaping now saves 350,000 gallons of water annually, preparing the City for future years with little to no rainfall. In the last three years, the Program has retrofitted old irrigation, installed low-flow urinals and sinks, and completed forest fire fuel reduction projects.





## Return on Investment: Case Projects and Programs



### *Water Security in Monson and Sultana: Part I*

Self-Help Enterprises

Location: Monson and Sultana, Central Valley

**Project Description:** Without a neighboring community close in proximity with an established water system, residents from Monson and the Sultana must work towards a long-term solution that would help both communities. With the help of Self-Help Enterprises workshops, the communities determined that an inter-connection pipeline between Monson and the Sultana Community Service District (CSD) was the best, sustainable solution. This connection is currently in the process of being completed. The inter-connection pipeline will travel from the Sultana CSD system to Monson along Road 104. This is a mutually beneficial, long-term solution which will allow Sultana, who is relying on a single well that meets all drinking water standards and has old meters, to construct a new well, obtain radio read water meters, and also connect the Monson community. By combining resources, the new infrastructure will meet current and future needs as residents in these communities prepare to live in a climate characterized by persistent drought.

The County of Tulare secured approximately \$1.5 million in drought emergency funding to drill a well in Monson and construct a partial water distribution system that will be able to serve homes within the core of the community of Monson. Most recently, the County of Tulare approved the purchase of property for the community well and drilling is expected to start this summer with completion of the partial distribution system (serving 75% of homes) by the end of the year.

## Return on Investment: Case Projects and Programs

### *Water Security in Monson and Sultana: Part II*

An Effort led by Self-Help Enterprises, United Way and Community Services Employment Training, and the County of Tulare

Location: Monson and Sultana, Central Valley

**Project Description:** While construction for the long-term solution takes place, the County of Tulare, in partnership with Self-Help Enterprises, United Way and *Community Services Employment Training* (CSET), are currently providing household water tanks to eligible homes as an interim solution. Self-Help Enterprises efforts address the effects of climate change on water supplies including more cases of water contamination. Self-Help Enterprises' efforts have helped thousands of families stay in their homes. . A certified potable water hauler fills a 2,500-3,000 gallon tank with water. Using a small pump and PVC pipes, the water is pumped directly into a household's plumbing thereby restoring water. To date, 1,019 water tanks have been installed at homes with dry wells, 444 permanent water line connections have been completed, and now, community members organized themselves to share information on how to empower each other to prepare.

Pictured Here: The Luengas Family in Monson, CA



"By approaching the water issues in a comprehensive and collaborative manner, it not only ensures that the solution is sustainable, but can also serve as a replicable model for systemic change. With weather predictions declaring the drought as our "new normal", it's important that successful water consolidation projects be replicated where possible." – Sonia Sanchez, Self-Help Enterprises



## Return on Investment: Case Projects and Programs



### ***Sierra Nevada Headwaters Resilience and Adaptability***

Sierra Native Alliance, Sierra Native Youth Conservation Corps, and the Consumnes, American, Bear and Yuba River Watershed Collaborative

Location: Sierra Nevada Foothills region

**Project Description:** The Sierra Nevadas, a California treasure and traditionally large source of the state's fresh water, is facing immense impacts from climate change. This project, led by the Sierra Native Alliance and its tribal youth as part of its Native Youth Conservation Corps (NYCC), addresses the rapidly receding Sierra snowpack and changing composition of the area's meadows, forests and tributary boundaries. NYCC youth, working with conservation partners, restore mountain meadow groundwater storage capacity, expand and increase wildlife habitat connectivity, preserve valuable cultural resources, and improve ecosystem function and resilience to climate change through consistent community stewardship efforts. NYCC integrates Traditional Ecological Knowledge (TEK) into headwaters management, restoring aspen groves, floodplains and riparian zones along major tributaries in the region as well as improving seven mountain meadows. These mountain meadows also carry cultural significance because they are home to plants that provide food, medicine and materials for some tribal groups.

"The Native Youth Conservation Corps allowed us to reconnect...It is now my responsibility to teach this cultural knowledge to my children." – brother and sister, Austin and sister Lindsay, commenting on the Sierra Native Alliance program's success in connecting each other as well as their Maidu culture.



## Return on Investment: Case Projects and Programs

### *Cool Roofs*

Sacramento Municipal Utility District (SMUD)

Location: Sacramento Area



**Project Description:** Climate change impacts include hotter days and more of them. By 2050, Sacramento, CA, will experience an estimated 44 days of extreme heat and 85 days by 2099. These rising temperatures are further exacerbated, creating what's called an urban heat island effect, due to hard, concrete and dark surfaces. SMUD offers a solution for residents in their service district. Cool roofs reflect solar energy and discharge stored heat. This translates to a high reflectivity and high emissivity, staying 50 degrees to 60 degrees cooler on hot summer days compared to standard roof surfaces. Another benefit is a lower energy demand during peak cooling periods, reducing the amount of brownouts or blackouts from air-conditioning on these hot days. These cool roofs also offer the homeowners and tenants benefits: lower cooling costs, reduced air-conditioning equipment maintenance costs, longer roof life, and greater comfort. In early 2016, SMUD doubled its incentives for residential cool roof installation, with participation in the program surging. SMUD also offers community workshops to educate residents about climate change risks and ways to address them.



## Return on Investment: Case Projects and Programs

### *Loan Fund*

Rural Community Assistance Corporation (RCAC)

Location: California's Rural Communities

**Project Description:** RCAC offers a financial resource for rural communities as they prepare for climate change impacts, whether that includes wildfires, drought, and/or changing temperatures. RCAC's loan fund includes opportunities for affordable housing loans, environmental infrastructure loans, community facility loans, small business loans, and household water well loans. In fact, RCAC's water well loan program provided financial assistance for many wells in the Central Valley as Californians face water shortages due to the drought. The interest rates on these loans typically range from 0% to 3% and provide recipients stable cash flow at the beginning of project in order to pay for materials or labor compared to the reimbursement structure (a payment structure often used for funding provided by governmental entities). RCAC also holds a number of workshops and webinar series for recipients, providing guidance on how to leverage resources historically underutilized by rural communities. For example, RCAC and Native Capital Access host a Tribal Housing Excellence Academy to increase financial literacy in Native American Indian communities. By building this capacity and providing low interest loans, RCAC is equipping rural communities to prepare for climate change in a way that stays true to local values and responds to local conditions.





## Return on Investment: Case Projects and Programs



### ***State Water Efficiency and Enhancement Program (SWEET)***

Collaborative Effort between CDFA's Office of Environmental Farming and Innovation, Environmental Farming Science Advisory Panel, State Water Resources Control Board, Department of Water Resources, Air Resources Board, and the U.S. Department of Agriculture's National Resource Conservation Service

Location: Statewide

**Project Description:** In response to the Climate Change Consortium for Specialty Crops' recommendations, SWEET addresses climate change's impacts to agriculture. With drier conditions and more severe droughts in the future, SWEET offers funding for innovations on farms that improve the water and energy efficiency of on-farm irrigation. Projects include soil, plant and weather stations to assist farmers in scheduling irrigation, solar panel installation, and micro-irrigation (drip) system conversion. Many of California's farmer associations and

farmers are organizing efforts to expand the program's reach. Since its launch in 2014, SWEET has been roughly oversubscribed at 300%.

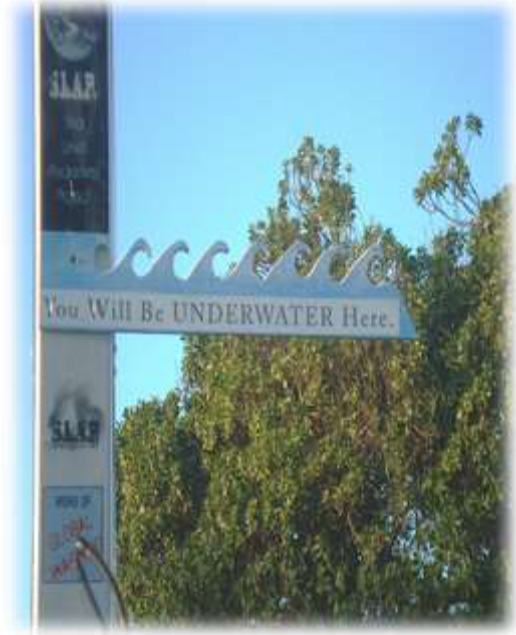


## Return on Investment: Case Projects and Programs

### ***Sea Level Awareness Project (SLAP)***

iMatter Youth Movement (formerly known as Kids vs. Global Warming)

Location: City of Ventura, CA



**Project Description:** In the coastal town of Ventura, CA, Alec Looz organized his fellow middle school students to raise awareness of the changing shorelines. The students erected nine-foot poles in local beaches to show people what their community will look like if they do nothing about climate change. Working with the City of Ventura, the efforts led to City Council action to include sea level rise in its land use planning. The idea of using these poles, complete with pictures of nearby public amenities and landmarks, has now been replicated in other cities in order to create support for climate adaptation efforts.



The iMatter movement continues its organizing efforts, offering students online resources to take action on climate change in their community. iMatter calls for youth organizing, a climate record card, local impact poles, and a government resolution to consistently include youth in City and County plans related to climate change.



## Return on Investment: Case Projects and Programs

### *Omnibus – The San Bernardino Transit Center*

San Bernardino County Public Transit

Location: San Bernardino County, CA

**Project Description:** As part of the Inland Empire’s actions to prepare for hotter days and more of them, the San Bernardino Transit Center (SBTC) offers shelter, purified water fountains, and air-conditioning to over 6,000 passengers per day. It also provides a break room complete with lockers and showers for bus drivers. SBTC incorporates solar panels and water-efficient landscaping, qualifying it for LEED’s Gold Standard. SBTC connects its riders to local transit routes as well as regional transit services, such as MARTA Over-the-Mountain routes and the VVTA BV-Link. As the region develops, the SBTC serves as a starting point for more transit-oriented development in line with the goals of the San Bernardino Associated Governments and the Future Redlands Rail.





## Return on Investment: Case Projects and Programs

### *Environmental Justice on the Central Coast*

Central Coast Alliance United for a Sustainable Economy (CAUSE)

Location: Central Coast, CA

**Project Description:** Through civic engagement, direct service, and policy change, communities long burdened by pollution are working to create and defend natural assets that will serve as buffers against drought and sea level rise. Oxnard is working towards a vision of removing industrial infrastructure from its coast and replacing it with restored wetlands habitat, which can help buffer rising seas that threaten our city, which is a low-lying coastal area. Santa Paula is working to create a river parkway, with public access for local residents, while pushing for sustainable water management that would bring back the river's natural flow and promote resilience in the face of drought. CAUSE also encourages hundreds of members of these low-income communities of color to participate in public hearings, neighborhood outreach, restoration work, and local advocacy and prepares them to be leaders for climate justice.



## Return on Investment: Preparing our Next Generation

Future generations face extraordinary challenges in natural resource management. Indeed, the California Department of Public Health identifies youth as a population most vulnerable to effects from climate change. There are more and more efforts, however, to empower the next generation and include these voices in decision-making.



### *Green Focus Program*

The California Center for Civic Engagement

Location: Sacramento Area, CA

“Participating in this program was extremely beneficial because it exposed me to different environmental policies and laws. I will definitely continue to educate others and myself because they are extremely crucial in protecting and learning about the environment. Furthermore I will be getting everyone I know who is 18+ to vote because it is extremely important to make the change we want to see.”- Aisha, Participant in the Green Focus Program

**Project Description:** High school students from all over Sacramento metropolitan region come together for all-day workshops to learn about California’s environmental policies. Each year, youth are immersed in policies related to water resources, waste management, energy efficiency, public transportation funding, air quality, and environmental justice. Green Focus Program offers youth the opportunity to learn about state government processes through legislative hearing simulations, field trips to energy efficient buildings, and hands-on activities. The program also offers youth a chance to learn college application processes and career-building skills.



## Return on Investment: Preparing our Next Generation

### *Project Water Education for Teachers (WET)*

California Department of Water Resources (DWR) and the Water Education Foundation (WEF)

Location: Statewide

**Project Description:** DWR and WEF collaborate to present a series of workshops to create lesson plans that incorporate climate change into lesson plans with teachers. Project WET, or Water Education for Teachers, provides the basics of climate science, the ways that DWR is addressing climate change impacts related to water supply, and clarity around climate adaptation and mitigation. The activities are aligned to Common Core and Next Generation Science Standards and supplement existing curriculum, including the California Education and the Environment Initiative curriculum units. Workshop locations have spanned communities like Oroville, Visalia, Los Angeles, Redding, Fresno, Riverside, Bishop, and West Sacramento. From these efforts, almost 60,000 California K-12 students learned from 89 teachers who are familiar with the community and who build trust with youth on a daily basis.



"I am not a scientist, but Project WET provides enough information to aid me in developing as an educator as well as [hands-on activities] for my students." – 2016 Workshop Attendee





## Return on Investment: Preparing our Next Generation

### *Reef Check's California Program*

Reefcheck

Location: Los Angeles Area, California



**Project Description:** Reef Check offers Eco-Tours for middle and high school students and the general public. An Eco-Tour is an interactive marine conservation program that offers students the chance to become a "Marine Biologist for the day" where they board ships out of San Pedro and Marina del Rey. Participants learn about California marine ecosystems by using touch tanks filled with sea creatures. They also learn how to identify sea lions, seals, sea birds and whales. Students participate in scientific testing of water quality and observe swimming plankton using a video microscope. Designed to raise awareness about the value of ocean resources, threats to ocean health and solutions to these problems, the program specifically recruits members of the next generation so they can understand these issues and enjoy these activities.

