A Climate Resilient Sacramento Region

A Coordinated Approach to a Resilient Capital Region

The six-county region (El Dorado, Placer, Sacramento, Sutter, Yolo, Yuba) surrounding California's capital is incredibly diverse, including communities that vary in demographics and geography, and have unique climate vulnerabilities. This diversity enables opportunities for multi-benefit planning and partnerships.

Characteristics

Geographically, the region is situated with the Sierra Nevada Mountain range to the east, the San Joaquin Valley to the south, and the Bay Area to the west. The region spans roughly 4 percent of California's total land area with about 6,000 square miles and contains more than 2.5 million residents–about 6 percent of the state's total population.

- Much of the population is concentrated near the city of Sacramento, with significant populations in Placer and Yolo counties.
- Roughly 85% of the region is covered by rural lands and a booming agricultural economy.
- Portions of three U.S. National Forests are within the region and serve as the headwaters for much of the states' developed water supply.
- The region anticipates ~20% population growth by 2050.

A Unique Challenge

The region faces a range of climate-related threats, which have compounding effects on lives and livelihoods. The Sacramento area has seen its share of wildfires, flood events, and other emergencies in recent years. These include the 2017 Oroville dam crisis which led to the evacuation of nearly 190,000 people, the 2021 Caldor Fire which burned 221,835 acres, and record-breaking heat in the summer of 2022 which resulted in the issuance of an energy emergency statewide to avoid rolling blackouts.

These impacts collide with the lives of residents in unpredictable and challenging ways, intersecting with existing vulnerabilities, stesses, and traumas, and thus there is a critical need to strengthen the capacity of community members to respond to these climate impacts.

- Higher extreme and average precipitation levels and changing snowmelt patterns could increase flooding and erosion, in both the more mountainous areas and in downstream drainage basins, threatening lives, infrastructure, and property.
- Sea level rise and storm surge pose flood risks to Delta communities and threaten water supply infrastructure of critical statewide importance. Additionally, sea level rise places pressure on local water supplies to push back salt water from intruding on fresh water infrastructure.
- Deeper and more prolonged droughts threaten reliability of water for today's and tomorrow's residents, while water shortages risk devastating the region's vibrant agricultural economy, from large-scale enterprises to small organic farms.
- Extreme heat poses serious life and infrastructure threats, with cascading implications for grid stability, energy use, air quality, mental and physical health, and even educational performance, productivity, and crime. The combination of extreme heat and drought have already fueled more frequent and hotter wildfires in the region's mountains, foothills, and valleys.
- The mountainous portions of the region have seen a dramatic increase in acreage burned from wildfires. Wildfires decrease air quality, threaten to disrupt critical energy infrastructure, and put stress on evacuation and response transportation options.

INCREASED FLOOD RISK

VOLATILITY IN WATER RESOURCES

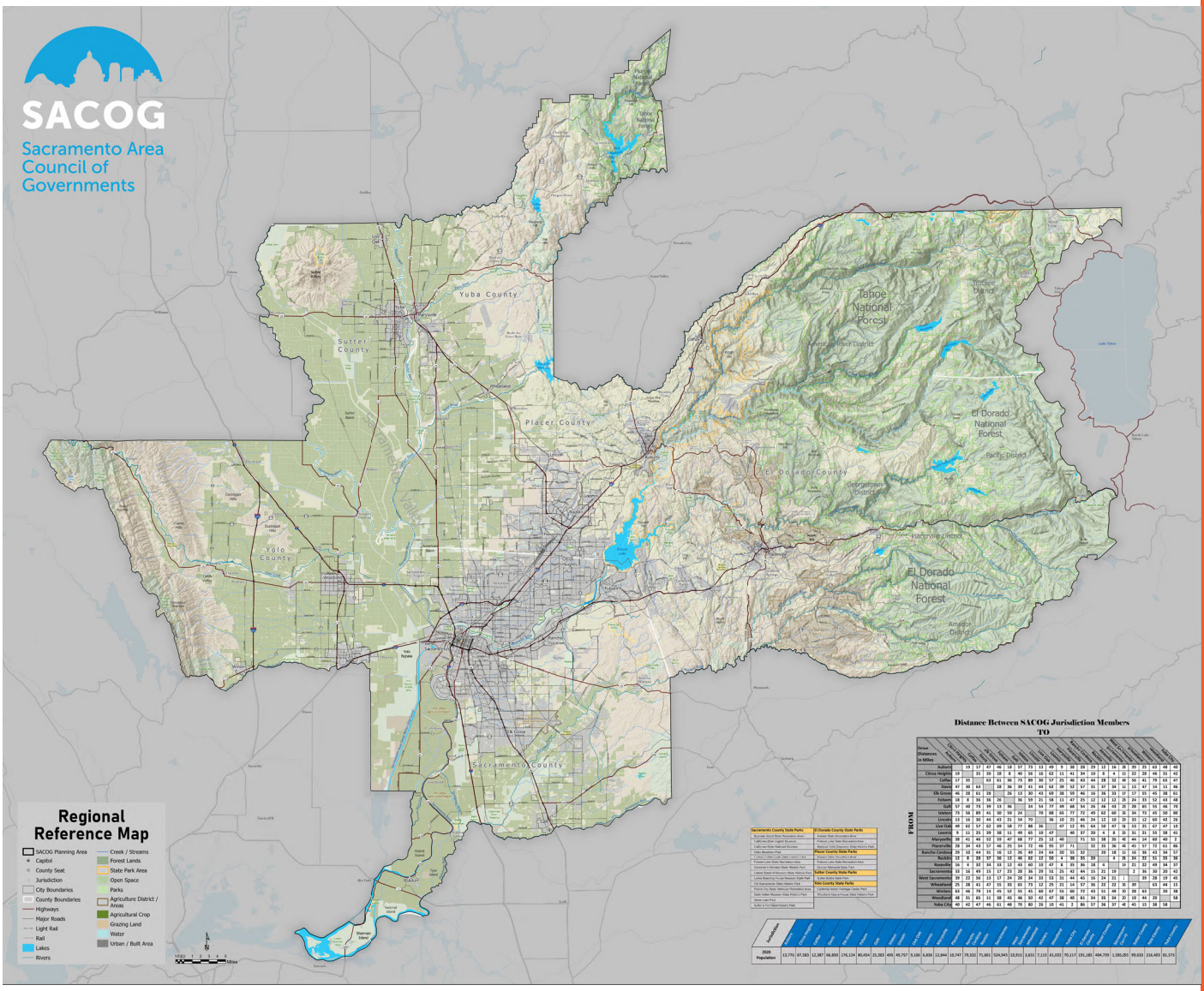
WARMER TEMPS AND EXTREME HEAT

INCREASED WILDFIRE RISK

WORSENING AIR POLLUTION

A Multi-agency Approach to a Resilient Capital Region

SACOG SMAQMD SacRT SMUD SAFCA PCWA El Dorado RWA



The forests to the east of the region are a source of water, power, carbon sequestration, and natural habitat which need investment to prevent the devastating effects of wildfire.

Sponsor	Project Title	Fed Agency	Potential Program	Type	Total Project Cost ($ millions)
El Dorado County	El Dorado County Fire Adapted Communities	BLM	Fuels NOFO L23AS00286	Fire	10
El Dorado County	Defensible Space for Low-Income Residents	USDA Forest Service	Community Wildfire Defense Grant	Fire	3
El Dorado County	Bioenergy and Wood Utilization Campus			Fire	16
El Dorado County	Development of a Clean Energy Freight Rail Line from El Dorado County to Existing Freight Rail Line in Sacramento County.			Fire	Under Development
El Dorado Water Agency	American River Water Instrumentation Network (ARWIN)			Water	4.5
El Dorado Water Agency	Alder Creek Reservoir and Conservation Project			Water	Modify Feasibility Study
Placer County Water Authority	Ophir Biomass & Carbon Negative Energy Project			Fire	160
Regional Water Authority	Sacramento Regional Water Bank	Bureau of Reclamation		Water	300
SAFCA	Yolo Comprehensive Study	U.S. Army Corps of Engineers	U.S. Army Corps of Engineers Investigations Appropriations	Water	0.6
SAFCA	American Reiver Watershed Forecast Informed Reservoir Operations	Funding will be at the State Level	State Dam Safety or FIRO Funding	Water	200
SAFCA	Upper American River Flood to Managed Aquifer Recharge	U.S, Bureau of Reclamation and U.S. Army Corps of Engineers	Likely need Congressional authorization and appropriation actions	Water	1.4
SMUD	Wildfire and Resiliency Strategy Advancement	FEMA	Hazard Mitigation Grant	Fire	

Project Description
The Fire Adapted Communities Project will fund public outreach to engage landowners with defensible space and home hardening information. Additionally, it will provide direct funding to homeowners for defensible space work with priority given to structures adjacent to BLM land. The project will maintain existing fuel breaks and initiate new fuel breaks adjacent to BLM where strategic to protect adjacent communities.
The project will fund the El Dorado County Fire Safe Council which will provide defensible space assessments and follow up treatments for low-income residents in El Dorado County.
The project will fund the acquisition of approximately 177 acres encompassing the former sawmill operation owned by Sierra Pacific Industries (SPI) in Camino, CA. The SPI property, uniquely situated in close proximity to abundant biomass feedstock, will be the future site of a bioenergy project, sawmill and wood products campus. This will provide the following benefits: utilization of forest biomass resulting from public and private forest restoration projects, reduction of catastrophic wildfire and improved watershed health, prevent pile-burning and associated air pollution and GHG emissions, permanent sequestration of CO2 through the production of biochar, and workforce development.
The existing rail infrastructure in El Dorado County requires repair and upgrading to be able to carry freight. Additionally, a new freight rail line is required to connect El Dorado County to the nearest available freight line in Sacramento County (former Aero Jet property). This proposed rail line would allow for biomass feedstock to be efficiently transported to bioenergy facilities in western El Dorado County (e.g. SMUD/Mote Hydrogen project) and/or Sacramento County, as well as the transportation of products produced by these bioenergy facilities (e.g., clean hydrogen, renewable natural gas, diesel, aviation fuel, carbon for sequestration, biochar, etc.) to off takers. The proposed rail line would allow for the import and export of other goods to and from eastern Sacramento County and El Dorado County. Lastly, hydrogen powered locomotives, combined with battery storage, are currently under development and could ultimately be used to replace fossil fuel locomotives resulting in a clean energy freight line.
This project will install hydrologic monitoring stations in the upper American River watershed in collaboration with various, state, federal, and local entities. The objective is to establish hydrometeorological monitoring stations and accessible data for the Upper American River parties to provide a comprehensive review and assessment of multiple stations; avoid redundancy of data collections; reduce maintenance and replacement costs of existing hydrometeorological monitoring for all project partners; and upgrade and replace archaic and labor-intensive snow pillow and other single point measurement technologies when appropriate. Project is ongoing, with two stations already installed.
The upper American River plays an integral role in the upper and lower portions of the American River watershed regarding water supply, flood protection, recreation, and environmental resiliency. The need for high-elevation, off-stream storage, upstream of Folsom Reservoir, will continue to be critical to address declining snowpack, recurring drought, and flooding events. The American River Basin Study, conducted by the U.S. Bureau of Reclamation and local partners, identified off stream high-elevation reservoir as an important climate adaptation strategy to address both water supply and flood vulnerabilities. Alder Creek Reservoir will serve as an adaptation measure and also provide a new source of upstream storage for water supplies to for local residents, agriculture, and businesses; enhance storage for downstream recreation; and improve operational flexibility for the U.S. Bureau of Reclamation's operation of Folsom Reservoir, which provides water supplies and flood protection within the Basin. Currently estimating a 168 TAF off-stream reservoir with 110MW new hydropower generation. Reclamation is authorized in Public Law 108-361, Title II, Section 202, dated October 2004, to conduct feasibility studies for the project. The WRDA request is to amend the local project sponsor to El Dorado County Water Agency to reflect that this is a county-wide beneficial project, and increase appropriation authorization from $3M to $12M consistent with costs of more recent similar studies.
The Ophir Biomass & Carbon Negative Energy Project will install a state of the art 3 megawatt energy plant at a critical waterworks location. This will provide the following benefits: water supply reliability, electric grid resiliency, utilization of forest biomass resulting from ecological forest management projects, prevent pile-burning and methane emissions, and permanent sequestration of up to 75,000 tons per year of CO2 contained in the biomass.
The Sacramento Regional Water Bank is a system of groundwater wells, pumps and pipelines that allow local water providers to pump out and refill underground water reserves to serve local water customers. The aquifers underlying the Sacramento region have enough capacity to store twice the volume of water as Folsom Reservoir. Groundwater banking is proven effective climate adaptation in times of megadrought and local water providers are working to expand water banking in the Sacramento region as we face the ever-familiar impacts of climate change, which creates a Catch 22 for our water system—the need to release water from Folsom Reservoir to protect our community from flood rather than storing water for drier days.
The study is critical to the flood protection of the Sacramento and other urban areas, the agricultural sustainability of the land in the Yolo Bypass, which is critical for Yolo and Solano Counties, and the improvement of the ecosystem potential of the habitat crucial to a number of threatened and endangered species and required for the operation of Federal and State water supply facilities. This is a critical component of developing resiliency in the system to address the impacts of climate change.
This project will add low level release capability to Hell Hole and Union Valley Reservoirs and begin implementing a Watershed FIRO for Hell Hole, Union Valley, and French Meadows Reservoirs to provide climate change resiliency for downstream flood control, as well as benefiting water supply, hydropower and other reservoir purposes.
This project, in conjunction with the Upper American River Watershed FIRO, move water ahead of forecast flood events into a groundwater recharge aquifer.
SMUD is looking to advance critical strategies to mitigate wildfire risk and improve community resilience if fires occur. Plans include deploying new technologies to support vegetation management, expanding communication pathways to remote areas, equipping under resourced communities with resilient resources and investing in regional workforce development and emergency response.

Creating thriving, low carbon, communities of the future means adjusting where we develop and how we travel.

Sponsor	Project Title	Fed Agency	Potential Program	Type	Total Project Cost ($ millions)
SACOG	Green Means Go	EPA, DOT	Climate Pollution, Reconnecting Communities	Growth	360
SMUD	SMUD's Neighborhood Electrification Project			Growth	3
SMUD	Urban Canopy and Heat Mitigation Projects		PRO, DOT, EPA	Growth	1.6

Fleet and Charging /Fueling: From energy production to operations, the Sacramento Region has worked collaboratively on the Zero Carbon Transportation Strategy to align the region on the transition.

Sponsor	Project Title	Fed Agency	Potential Program	Type	Total Project Cost ($ millions)
SacRT	Light Rail Modernization Project	DOT	RAISE, Rail car vehicle replacement program	Zero Carbon Transportation	400
SacRT	SacRT EV Fleet Transition	FTA	Low-No	Zero Carbon Transportation	10
SacRT	ZEV Bus Maintenance & Hydrogen Hub	FTA	Low-No, Bus Facilities	Zero Carbon Transportation	75
SacRT	Downtown Riverfront Streetcar Project (West Sacramento Light Rail Extension)	DOT	RAISE/CIG	TOD, Fixed Guideway Expansion	130
SacRT/SMAQMD	CarShare	EPA; STEP (CARB)		Zero Carbon Transportation	52
SMAQMD/SMUD	EV Charging Networks	DOE, DOT		Zero Carbon Transportation	282
SMUD	Green Hydrogen			Growth	Cost included within 282

Project Description
Green Means Go, a program to incentivize housing in infill areas, which will reduce vehicle trips, increase transit oriented development, and improve air quality. Green Means Go is focused on bridging the funding gap for housing development in these established areas by helping right-size the needed underground infrastructure, like water and sewer. Also needed is the establishment of a funding source that breaks existing grant silos and allows for innovative building solutions. $360 million is needed to implement the zones which have been identified.
SMUD's Neighborhood Electrification Project will provide clean energy technology for up to 300 single family homes in underserved neighborhoods, aiming for 100% electrification of homes when feasible. The project will increase home values as well as reduce customers' utility bills, maintenance costs and pollution, fostering the health and welfare of the people in the community.
This program will increase tree canopy in under-canopied areas, decrease the Urban Heat Island effect and can promote active transportation modes, beautify communities, and can assist in carbon capture. In the first year, a comprehensive study will be conducted, including community focus groups, test sites, and future site mapping. Goals include decreasing the Urban Heat Island effect by planting 400 trees a year in disadvantaged communities that directly shade impervious surfaces (streets, parking lots, playgrounds) for 4 years. Tree care education to residents, businesses, and public services to promote a healthy and sustainable urban forest.

Project Description
SacRT is modernizing its 30-year-old light rail system with low-floor trains and stations to increase boarding speed, capacity, reliability, and safety, and greatly enhance access for everyone. This project includes converting nineteen (19) light rail stations on the Blue Line to accommodate the new low-floor LRVs. Without these conversions, SacRT is unable to operate its new cars on the Blue Line. SacRT's service area is 53% minority and 28% low-income with communities of color make up 60% of transit riders. The majority of SacRT's riders are transit dependent, with 65% from low-income households earning an annual household income of less than $24,000. The investment will encourage ridership, increase safety, enhanced access and mobility for people with disabilities and eliminate 1,170,128MT of CO2 emissions over the useful life of the project.
SacRT provides public transportation via light rail and bus service. SacRT is looking to transition its fleet to zero emission buses by 2040. The bus fleet consists of 259 buses: 193 powered by Clean Natural Gas (CNG), 53 by gasoline, seven by diesel, and six battery electric buses (BEBs).
The proposed project converts SacRT's existing into a ZEB facility, purchase 60 40' BEBs and develop a workforce development training program for bus operators, mechanics, and first responders to ensure safe and efficient operations of its electric bus fleet. This project will support SacRT's plans to accelerate its transition to a fully zero-emission bus fleet. The Project will reduce GHG by helping convert 100% of SacRT's CNG and diesel fleet to zero-emission ZEBs by 2040 and construct a ZEB infrastructure that will support the transition of 100% of SacRT's fleet to zero-emission technology by 2040, with enough capacity to support the zero-emission fueling needs of local partner agencies and "over-the-fence" customers.
SacRT is seeking a $30M to support a comprehensive station and corridor capital project that consists of a new 1.5-mile light rail connection between West Sacramento and downtown Sacramento, featuring nine stops and the procurement of two vehicles. Notably, the project includes multimodal enhancements such as 1.2 miles of new Class IV cycle track, pedestrian safety upgrades at each intersection, and signal technology advancements. This project aims to seamlessly interconnect intercity rail and local multi-modal systems by linking two of the nation's largest infill development sites and offering multimodal connections at the termini of the system in both Yolo and Sacramento counties. The project will also integrate and expand the Sacramento Intermodal Transportation Facility, facilitating direct connections to Amtrak, SacRT light rail, and regional bus services. The project, combining all project components, will account for 25,533 metric tons of reduction in GHG over the entire life of the project.
This program will provide transportation access for underserved communities.
Seeking funding in support of regional charging networks, including public-private partnerships to accelerate the planning and deployment of equitable EV infrastructure, deploying regional charging hubs and zero emission goods movement. Many of the efforts are in collaboration with private and public partners, including SacRT, SACOG and AQMD.
Green Hydrogen-Northern California can play a role in the strategy. Hydrogen created from growing bioresources or other renewable means can be a transportation fuel and aid in power generation and energy storage.

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