



**California Special
Districts Association**
Districts Stronger Together

2021 SPECIAL DISTRICTS TOUR

TUESDAY, DECEMBER 7, 2021



**THE FOREFRONT OF CLIMATE ADAPTATION AND
RESILIENCE: CONFRONTING DROUGHT, WILDFIRE,
FLOODING, AND EMISSIONS**



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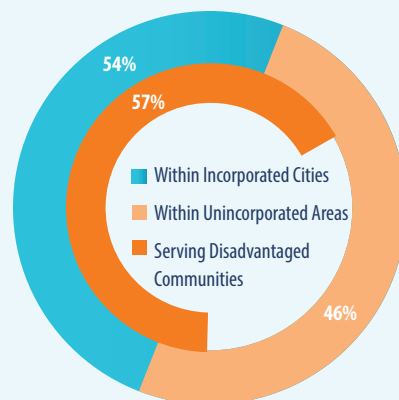
SPECIAL DISTRICTS: COMMUNITY DRIVEN AND FUTURE FOCUSED

Special Districts are Addressing California's Biggest Statewide Problems—At the Local Level

California is the world's fifth largest economy and an integral part in the continued prosperity of the country as a whole. Today, and looking forward, the state is faced with many challenges, any one of which could be considered the biggest issues of our time. Climate change, wildfires, drought, homelessness, and mental health, all require thoughtful approaches built from the ground up, and they are all being tackled, every day, by the locally focused experts of California's special districts.

Special districts, sometimes referred to as special services districts, are locally-formed and independently administered units of local government, created to oversee everything from how people get their water and power to how they enjoy their parks and open spaces, and our state simply could not function without them.

SPECIAL DISTRICTS SERVE VARIED COMMUNITIES



Special Districts Are Truly the Backbone of California's Economy

California's special districts provide essential services that many cities and counties do not, such as fire protection, health and wellness programs, and core infrastructure, including transit, airports, ports and harbors as well as access to reliable water, wastewater, and electricity. Statewide, special districts serve nearly every one of California's 40 million residents and employ more than 120,000 front-line workers who manage this critical infrastructure. Across California more than 2,000 special districts serve the needs of every Californian at some level, and nearly 60 percent of these special districts serve a disadvantaged community.

Special Districts Operate at the Nexus of Cutting-Edge Technology and Community Engagement

Special Districts are addressing the biggest statewide problems by taking what the experts learn at the local level and turning that knowledge into future-focused, long-term solutions. Scientists, firefighters, engineers, healthcare professionals, water operators, lab technicians, environmental analysts, and many other specialists provide special district services. Their expertise allows special districts to respond to a rapidly changing world and develop and implement technologies quickly when evolving needs require new, state-of-the-art tools of the trade.

Whether responding to drought conditions with more effective water conservation and groundwater sustainability technologies, mitigating wildfire, or addressing transportation needs with innovative strategies, or simply serving the physical, mental, and emotional health needs of diverse populations, special districts are developing world-class solutions to the everyday needs of the communities they serve.

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2021 SPECIAL DISTRICTS TOUR RESOURCES

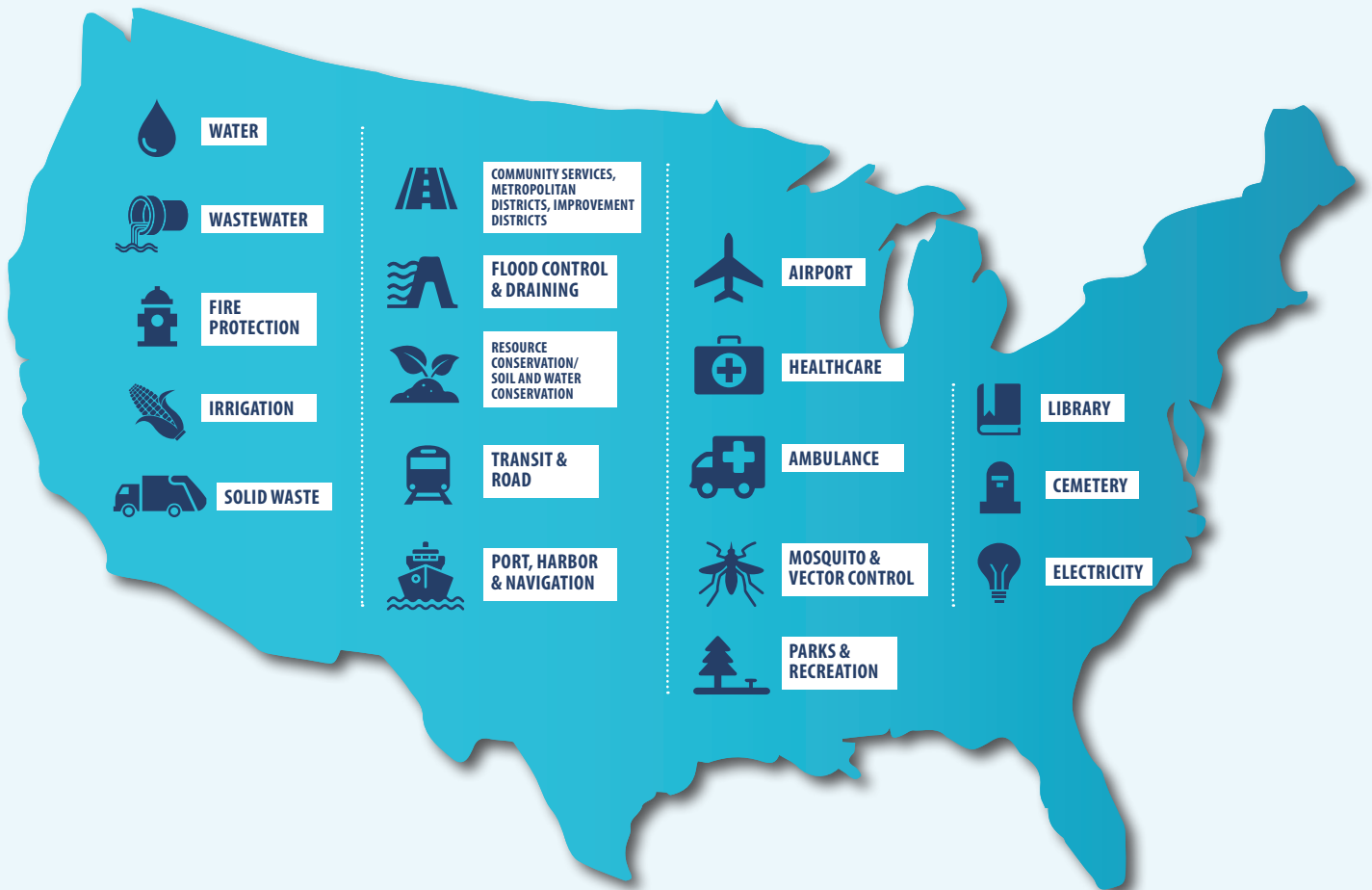
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WHAT ARE SPECIAL DISTRICTS?

There are approximately 30,000 special districts in the United States.

Special districts are local governments created by the people of a community to deliver specialized services that are essential to their health, safety, economy, and well-being.



Special districts are political subdivisions of states, authorized through enabling acts in statute and formed by the communities they serve.

Like cities and counties, special districts are local governments that deliver municipal services; however, **they provide specialized services that their general-purpose counterparts do not provide to their residents.**

Districts are subject to sunshine laws and **governed by a board of directors accountable directly to their residents.**

Special districts serve all kinds of communities from agricultural, rural, and disadvantaged unincorporated to incorporated cities and major metropolitan regions, **driving innovation and achieving efficiency through focused-service and economies of scale.**

HOW ARE SPECIAL DISTRICTS FUNDED?



SPECIAL DISTRICT SERVICES, INFRASTRUCTURE AND CAPITAL NEEDS ARE FUNDED THROUGH A VARIETY OF SOURCES.

- Revenue sources include fees for services, and each state varies on property tax or sales tax revenue.

- Most states demand a strict process for voter approval of the taxes and fees that fund district services.
- Due to strong local oversight and stringent Constitutional provisions enacted in most states, special districts often must find a way to do more with less than other government agencies.

WHY ARE SPECIAL DISTRICTS NECESSARY?



SPECIAL DISTRICTS ARE FORMED BY COMMUNITIES WHEN IT'S SOMETHING:

- The community wants
- The community wants done well
- The community wants done with local control

30K

Approximately 30,000 special districts provide services and infrastructure to **millions of Americans** in all 50 states.



Many districts **provide infrastructure services** the U.S. Department of Homeland Security deems "**critical**", such as water, irrigation, wastewater and agriculture services.

Special districts seek partnership with the state and federal governments to:

- Ensure safe and reliable services our communities depend on.
- Build resiliency to face adversity, such as wildfires and other natural disasters.
- Grow the economy through investment in local and regional infrastructure.



DISTRICT HEADQUARTERS

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Chris Coursey, Vice Chair
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James Gore
Susan Gorin

SONOMA WATER

PROJECT SUMMARY

When big storms hit California, current radar technology does not provide forecasters with the detailed information needed to inform reservoir operations, food protection, combined sewer-stormwater systems, and emergency preparedness. Accurate and timely precipitation information is critical for making decisions regarding public safety, infrastructure operations, and resource allocations. Standard weather radars, originally designed to look up into Midwest thunderstorms, are often unable to give an accurate picture of what is happening in the complex landscape of California's coastal mountain ranges. Improved monitoring and prediction of precipitation in the San Francisco Bay region can enhance public safety through early warning and storm tracking when hazardous weather events come onshore.

The Advanced Quantitative Precipitation Information (AQPI) System is a regional project awarded to Sonoma Water and collaborating partners by the California Department of Water Resources. The AQPI System consists of improved weather radar data for precipitation estimation and short-term nowcasting (0-1 hours); additional surface measurements of precipitation, streamflow, and soil moisture; and a suite of forecast modeling systems to improve lead time on precipitation and coastal Bay inundation from extreme storms—especially high-moisture laden atmospheric rivers.

AQPI observing assets include a coastal Doppler C-band weather radar along the Sonoma County coast which will point offshore to improve tracking of incoming storms and four gap-filling X-band radar units strategically located to provide high-resolution coverage over populated and food prone urban areas throughout the San Francisco Bay region. The radar data will be assimilated by atmospheric models to improve short-term prediction of precipitation. The AQPI System also will improve runoff and coastal flooding predictions in and around the Bay. This will be valuable to wastewater and food protection managers, and will provide better inputs to urban hydrologic and hydraulic models. To address climate change and sea level rise with possibly more extreme storms, the AQPI System will implement the Coastal Storm Modeling System (CoSMoS) to forecast flooding around the San Francisco Bay coastline.

DISTRICT OVERVIEW

Clean. Reliable. Essential. That is the mission of the Sonoma County Water Agency, or Sonoma Water. Sonoma Water was created as a special district in 1949 by the California State Legislature to provide flood protection and water supply services to portions of Sonoma and Marin counties. Legislation enacted in 1995 added the treatment and disposal of wastewater to Sonoma Water's responsibilities, such as the Sonoma Valley County Sanitation District.

With more than three hundred dedicated professionals who work for Sonoma Water in a variety of fields ranging from engineering to biology, Sonoma Water strives to look forward, beyond today's issues, to anticipate ways to advance its mission.

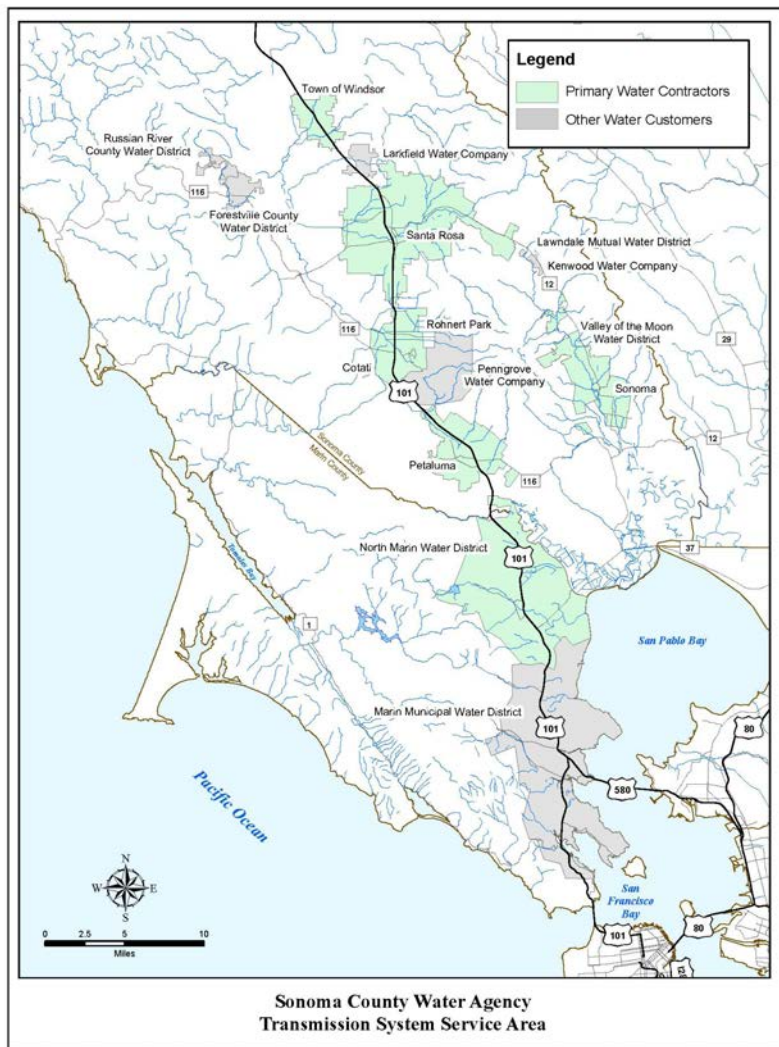
The Sonoma County Board of Supervisors acts as Sonoma Water's Board of Directors. Sonoma Water is a separate legal entity created by State law, having specific limited purposes and powers, and separate sources of funding.

DISTRICT SIZE

Sonoma Water provides wholesale drinking water supplies to 600,000 residents in communities as far north as Windsor and south to the Golden Gate bridge. Sonoma Water manages the water storage for drinking water at Lake Sonoma and Lake Mendocino. Sanitation services are provided to more than 75,000 residents in Sonoma County.

(CONTINUED)

DISTRICT BOUNDARY MAP



SERVICE PROVIDED

Sonoma Water provides wholesale drinking water to 600,000 residents, maintains over 100 miles of flood protection channels, and treats and collects wastewater for more than 75,000 residents in Sonoma County.

ANNUAL REVENUE AND FUNDING SOURCES

Primary source of revenue are water rates from selling water to cities and special districts serving retail water, property taxes, and fees from wastewater districts and flood control zones.

COUNTIES SERVED:

- Sonoma
- Marin

Legislative Districts Served

State Assembly

- Assembly District 2, The Honorable Jim Wood

State Senate

- Senate District 2, The Honorable Mike McGuire

U.S. House of Representatives

- CA Congressional District 2, The Honorable Jared Huffman
- CA Congressional District 5, The Honorable Mike Thompson



Improving Monitoring and Forecasting of Precipitation and Coastal Flooding in the San Francisco Bay Area

THE CHALLENGE

When big storms hit California, current technology does not always provide forecasters with the level of detail needed to inform reservoir operations, flood protection, combined sewer-stormwater systems, and emergency preparedness. Accurate and timely precipitation information is critical for making decisions regarding public safety, infrastructure operations, and resource allocations. Standard weather radars are often unable to give an accurate picture of what is happening in the complex landscape of California's coastal mountain ranges. Experimental monitoring and prediction of precipitation in the San Francisco Bay region is being developed to enhance public safety through early warning and storm tracking when hazardous weather events come onshore.

THE SOLUTION

The Advanced Quantitative Precipitation Information (AQPI) System is a regional project funded by the California Department of Water Resources. The experimental AQPI System consists of improved weather radar data for precipitation estimation; additional surface measurements of precipitation, streamflow and soil moisture; and a suite of forecast modeling systems to improve lead time on

precipitation and coastal Bay inundation from extreme storms—especially high-moisture laden *atmospheric rivers*. These conveyor belts of water vapor in the sky can bring drought-busting precipitation or hazardous storm conditions to the West Coast.

AQPI observing assets include a coastal Doppler C-band weather radar along the Sonoma County coast which will point offshore to improve tracking of incoming storms and four gap-filling X-band radar units strategically located to provide high-resolution coverage over populated and flood prone urban areas throughout the San Francisco Bay region. The radar data will be assimilated by atmospheric models to improve short-term prediction of precipitation. With these additional observations, the AQPI System will also improve runoff and coastal flooding predictions in and around the Bay. This information will be valuable to wastewater and flood protection managers, and will provide better inputs to urban water models.

To address climate change and sea level rise with possibly more extreme storms the AQPI System will implement the USGS Coastal Storm Modeling System (CoSMoS) to forecast flooding around the San Francisco Bay coastline.

NOAA CONTRIBUTIONS

NOAA is responsible for building the experimental AQPI System, deploying surface meteorological and streamflow instrumentation, developing high resolution quantitative precipitation estimation (QPE), quantitative precipitation forecast (QPF), and tributary streamflow forecast products, as well as prototyping AQPI products for delivery to end users. In particular, the new radar data will be assimilated into an experimental version of the NOAA High Resolution Rapid Refresh (HRRR) model.

NOAA's National Water Model will be coupled to the coastal storm model (CoSMoS) developed by the USGS for coastal flooding forecasts in and around the Bay coastline.

ANTICIPATED BENEFITS

The high resolution surface meteorological data and radar-based precipitation observations in complex terrain will provide a process understanding that can be used to improve operational rainfall estimates, identify forecast challenges and inform the NOAA Unified Forecast System model development.

Real-time access to the experimental data will provide forecasters in the National Weather Service Western Region with

AQPI KEY FEATURES

Five new, state-of-the-art radar systems to improve monitoring of precipitation offshore and within the Bay region.

High-resolution precipitation forecasts.

Coastal flooding, storm surge, and tributary streamflow forecasts.

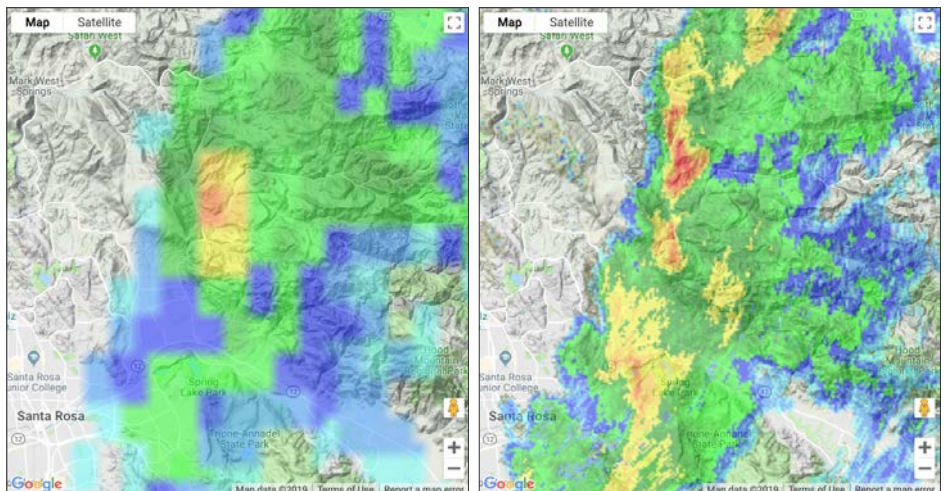
additional data to evaluate operational forecast model performance and to better understand how extreme precipitation events are evolving as storms encounter coastal mountain ranges in the San Francisco Bay area.

The experimental AQPI System can aid water managers in securing water supplies while mitigating flood risk and minimizing potential water quality impacts to the Bay from storm runoff and wastewater infrastructure. The system can be expected to provide benefits exceeding costs by a ratio of at least 4:1. These benefits accrue through:

- Avoided flood damage costs from early warnings.
- Forecast-based operations to maximize reservoir capture for water supply and fisheries flows.
- Minimization of water quality impacts from combined sewer.
- Enhancement of public safety for the various transportation modes (pedestrian, highways, marine and airports).

These benefits will become increasingly important as costs associated with extreme weather events continue to escalate. Since 2015, weather-related disasters across the U.S. caused over 3,800 fatalities and \$480 billion in economic damages. Recent examples in the Bay Area include a flooding event in 2017 which produced over \$70 million in damages in Santa Clara, CA, and a series of northern Bay area rainfall events in 2019, resulting in over \$150 million in flood damages and a presidential disaster declaration.

For more information, visit: <https://psl.noaa.gov/aqpi/> and <https://www.sonomawater.org/aqpi/>.



Radar imagery as seen from (left) NEXRAD and (right) AQPI radar near Santa Rosa, CA. The much higher resolution provided by the AQPI radar more accurately shows areas of heavy rainfall (warm colors) and potential flooding.

CONTACT

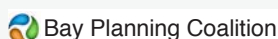
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PARTNERS



[Climate](#)

New \$31 million radar system set to improve Bay Area weather forecasts

[Tara Duggan](#)

Oct. 19, 2021 Updated: Oct. 19, 2021 7:38 p.m.

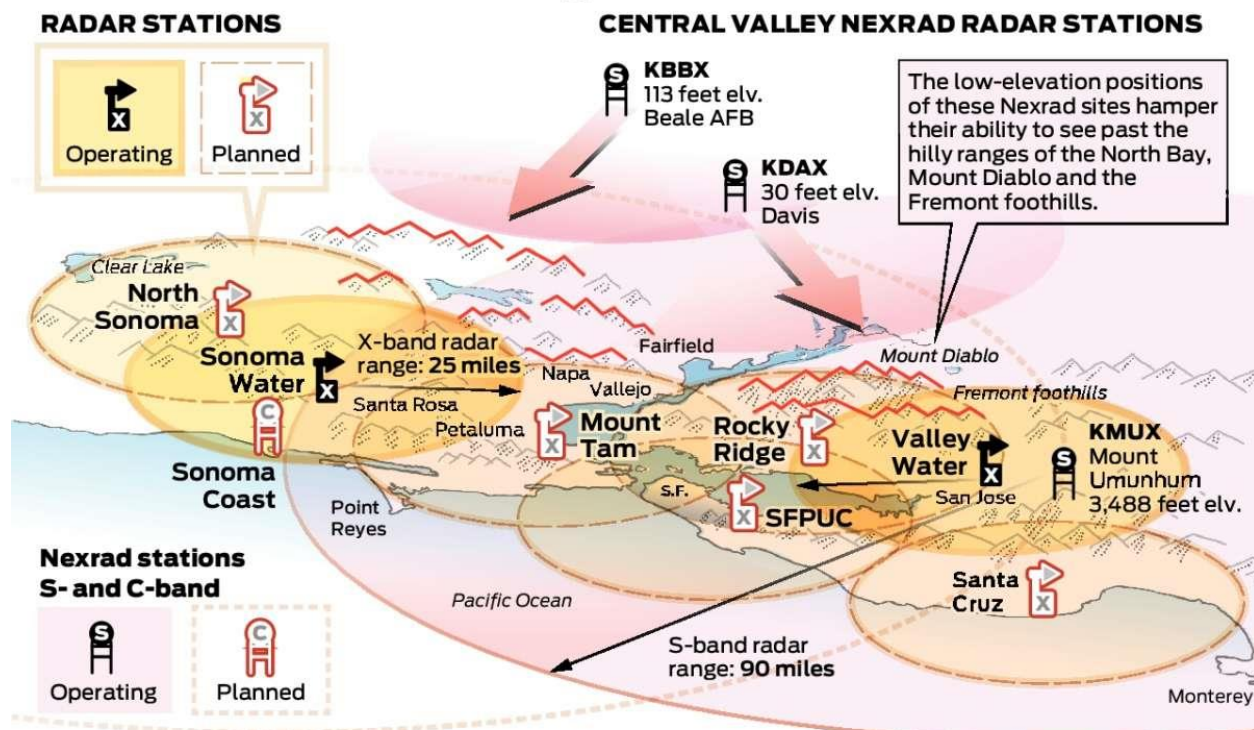


1 of 2

This X-band radar station was installed in San Jose in 2019 as part of a new weather forecasting system being rolled out in the Bay Area.

Provided by Valley Water

New X-band weather coverage area



Sources: Advanced Quantitative Precipitation Information, NOAA

John Blanchard / The Chronicle

- A new radar system coming to the Bay Area promises to greatly improve weather predictions, providing additional warning time to prevent flooding damage and more accurate forecasts of where [heavy rainfall](#) will hit, down to a specific low-lying highway or neighborhood.

The new forecasting system was originally geared to give emergency planners more time to prepare before a sewage plant overflowed or a BART station flooded during an atmospheric river, the often-dramatic weather events responsible for up to half of the region's rainfall. Paid for in part with a \$20 million grant from the California Department of Water Resources and implemented by local water districts, the \$31 million system began rolling out in 2018 with the installation of a new weather radar station in Sonoma County, followed by one in San Jose. By 2024, five more will come to the Bay Area, including one in the East Bay by Thanksgiving. An additional radar station will also be installed in Santa Cruz.

The new tools also hold promise for mitigating effects of global warming besides atmospheric rivers. More accurate forecasts could help water managers strategize reservoir storage to better prepare for drought, and the higher-resolution images could monitor heavy rain that might hit wildfire burn zones and cause mudslides.

Atmospheric rivers, huge airborne bands of water that travel thousands of miles across the Pacific to dump rain and snow as they hit land, are estimated [to inflict \\$1.1 billion in damage](#) annually in California, Oregon and Washington. The forecasting system, called [Advanced Quantitative Precipitation Information](#), or AQPI, could reduce the annual cost of flood damage in

the Bay Area by \$60 million, said Robert Cifelli, research meteorologist at the National Oceanic and Atmospheric Administration and AQPI technical lead.

“We can actually see these atmospheric rivers coming many days in advance,” Cifelli said. “The question is exactly where is it going to hit and how intense is it going to be. And that’s where the devil’s in the details.”

The new X-band radar that was installed in San Jose produces a more high-resolution image of precipitation (right) and is updated more often than the NEXRAD radar (left), in this sped-up video of radar readings from February 2019. Video: San Francisco Chronicle

The forecasting system aims to provide those details, as the new radar stations will cover more ground and provide higher-resolution images and quicker updates. It will especially improve what is called nowcasting — updates on what is happening in the next 30 to 60 minutes — which can be vital in an emergency.

One scenario: AQPI could predict that heavy precipitation will fall around the east entrance to the Bay Bridge during the evening commute — perhaps when there is also a king tide, raising the chance of intense flooding. In that case, an emergency text message could be blasted out, urging people to avoid the bridge.

“With climate change and sea level rise, a lot of the impacts are going to be felt on our interior highways around bridges,” said John Coleman, CEO of the Bay Planning Coalition, an organization that represents the economic interests of governments and businesses in the region. “AQPI can really direct down to almost the neighborhood what the impact of the storm will be.”

The Bay Area has particular weather forecasting challenges. Since precipitation generally moves west to east, it’s difficult to get close enough to storms that are coming from the Pacific. Also, the radar system we have is limited by the area’s hilly topography, Cifelli said.

The Bay Area also has pockets that get hit hard by atmospheric rivers, particularly the Russian River Valley in Sonoma County, which experienced flooding most recently in early 2019. On the flip side, the county has been heavily impacted by drought. Both are reasons that Sonoma County’s water agency took the lead on bringing the state-funded AQPI project to the Bay Area.

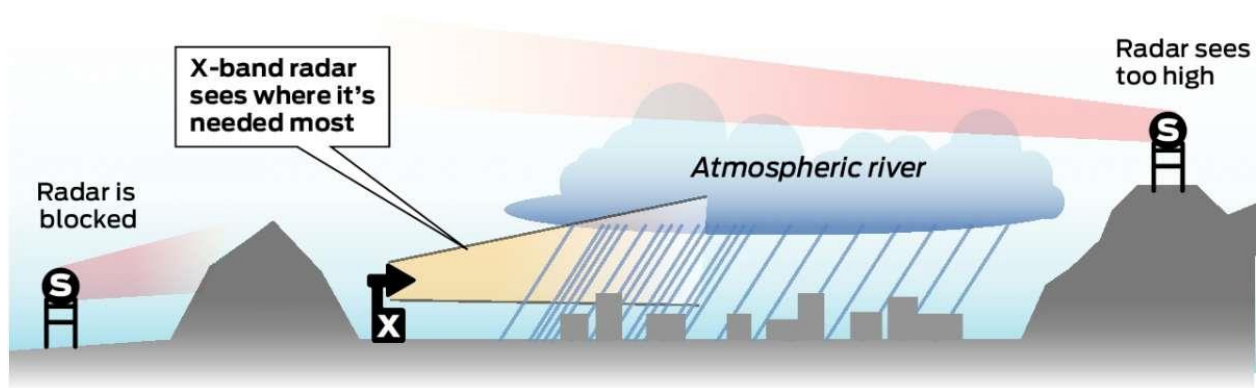
“In February of ’19, we had 2 or 3 feet of water running down the middle of Guerneville, and seemingly it hasn’t rained since,” Sonoma County supervisor and water director David Rabbitt said. “It’s really important to have a better handle (on that). Technology can offer a lot.”

Weather radar works by sending out radio signals that hit raindrops and then bounce back. That data is used to map the location, intensity and direction of the rainfall. That real-time information, along with weather data from other sources — satellites, rain gauges, even buoys at sea — is used for nowcasting and is fed into algorithms that meteorologists use to forecast precipitation. The more information that goes into the models, the better they work during future storms.

Currently, most Bay Area weather forecasting is handled by four main radar stations, called Nexrad, which have some gaps in coverage. The signals from the Nexrad radar station on Mount Umunhum in the Santa Cruz Mountains is at 3,500 feet and can miss rainfall from an atmospheric river heading over San Francisco, for example, because its beams often skirt over the city at too high an elevation because of the curvature of the Earth. Another, in Davis, misses much of southern Sonoma County because mountains block its signals.

Adding radar stations to better forecast atmospheric rivers

Existing X-band radar stations were positioned to maximize coverage area. Adding new X- and C-band radar stations will provide higher-quality images and more real-time information about incoming atmospheric rivers, which bring precipitation to lower elevations.



Sources: Advanced Quantitative Precipitation Information, NOAA

John Blanchard / The Chronicle

“We’re trying to fill in as many gaps as we can where those radars are blind,” Cifelli said.

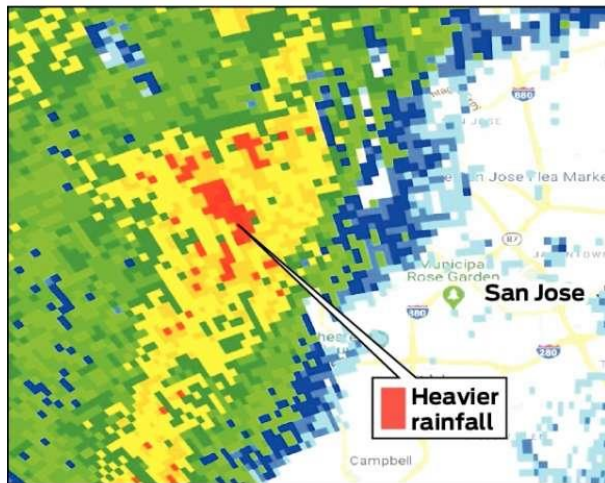
Six of the new radar stations being rolled out are being placed close to dense urban areas. They’re all X-band radar, which has a smaller range than the Nexrad S-band radar but captures a crisper image, down to 200 feet of resolution compared with 0.6 of a mile. X-band radar also updates every two minutes compared with six minutes for the Nexrad, and because the stations will be located at a lower elevation, where precipitation from atmospheric rivers tends to occur, they can also provide a more accurate assessment of where the rain is falling, Cifelli said.

Comparing new and old radar imagery

Here is a comparison of the old (left) and new weather radar (right) used in San Jose during a storm in February 14, 2019.

Nexrad S-band radar

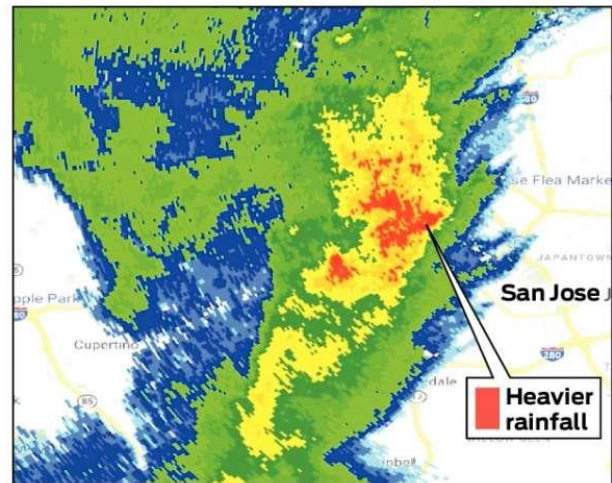
Its resolution is 0.6 miles (1 kilometer), and it is updated every six minutes.



Sources: Advanced Quantitative Precipitation Information, NOAA

New X-band radar in San Jose

It has a resolution of about 200 feet (60 meters) and is updated every two minutes.



Yet meteorologist Jan Null of Golden Gate Weather Services, a 47-year veteran of Bay Area forecasting, is doubtful about the impact the new X-band radar will have because of its limited range. He said he doesn't think the stations will provide enough lead time to prepare for an emergency, unless additional meteorologists were hired to interpret the data.

"With a storm system coming in that's moving at 30 miles an hour, you don't see very far into the future," he said, adding that the new system will not be a "big value add."

"It's not going to make a significant difference in the way forecasts are issued," he said.

However, one of the new radar stations is C-band radar, which has a larger range than X-band, and will be installed on the Sonoma coast to capture atmospheric rivers as they head toward the region.

That new C-band radar station is the one that meteorologist Brian Garcia of the National Weather Service is most excited about. Currently there are only two radar stations that face the ocean without being "beam blocked" by mountains, he said — the one on Mount Umunhum and another in Eureka in Northern California. The new radar station will help forecast weather heading toward Marin, Sonoma and Mendocino, he said.

Even after they're up and running, Garcia said it will take a while for the new AQPI radar stations to improve weather forecasting, but once they do, it will be a big improvement.

"People should not expect this to be like an app on your phone that's going to tell you when it's going to rain and how hard it's going to rain and that you need to evacuate," he said. "What this

is is a huge leap forward in the quantity and quality of data that we are getting on the environment during critical weather situations.”

Tara Duggan is a San Francisco Chronicle staff writer. Email: tduggan@sfgchronicle.com

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Joel Young, Vice President (At-Large)
Jovanka Beckles (Ward 1)
Jean Walsh (Ward 2)
Mark Williams (Ward 4)
Diane Shaw (Ward 5)
H.E. Christian Peeples (At-Large)

ALAMEDA-CONTRA COSTA TRANSIT DISTRICT

PROJECT SUMMARY

Alameda-Contra Costa Transit District (AC Transit) is advancing towards a zero-emission future through clean transit and green jobs. The California Air Resources Board (CARB) requires that all public transit agencies transition to a 100 percent zero emission bus fleet by 2040. AC Transit is the first in the country to complete a Zero Emission Transit Bus Technology Analysis along with development of the AC Transit Clean Corridors Plan and Zero Emissions Bus (ZEB) Rollout Plan to reach this goal.

AC Transit has a proud history of embracing environmental technology in our efforts to better serve our neighborhoods and has long been a recognized leader in this field, both nationally and internationally. Its first hydrogen fueling facility was opened in November 2002. The district has embraced the exhaust emission standards set by CARB for more than 18 years. Since its implementation, the transit district has adopted operational practices and programs that proudly exceed state environmental standards – including building one of the most comprehensive hydrogen fuel cell programs in the United States. Currently, it operates battery electric and hydrogen fuel cell battery buses at two bus yard facilities in Emeryville and Oakland. As funding allows, AC Transit continues to purchase and integrate new ZEBs into its fleet – prioritizing their deployment to several disadvantaged communities through its Clean Corridors Plan. In 2019, AC Transit became the first public transit operator to conduct a side-by-side analysis comparing five types of buses: diesel, diesel hybrid, fuel cell electric, battery electric, and legacy fuel cell. This study has been analyzed in collaboration with Stanford University's Precourt Institute for Energy. This report was released Summer 2021 and can be found at: https://www.actransit.org/sites/default/files/2021-07/EDT-060420_Report-ZETBTA.pdf

The cost of transitioning the AC Transit fleet to zero-emissions is currently estimated to be \$1.1 billion for purchase of zero emission buses and associated infrastructure improvements. This price tag does not include maintenance and operations, nor does it include the workforce development costs associated with this initiative to take the necessary steps to run a 100 percent zero emission fleet. Funding and legislation that supports the purchase of clean vehicles and related infrastructure, as well as equitable access to zero emissions fuel options, is an important way to invest in California's communities, create a healthier environment, and provide for good-paying and secure jobs.

DISTRICT OVERVIEW

AC Transit began service in October 1960, having taken over the Key System and is a stand-alone special district governed by a publicly elected board of directors. The AC Transit board is a seven-member, independent, body with five directors representing specific geographic areas known as wards and two representing the entire district at-large. The board of directors is, by statute, a policy-making body. AC Transit is valued as a leader that helps the Bay Area thrive by connecting East Bay communities to each other and to regional destinations. Its mission is to deliver safe, reliable, sustainable transit service that responds to the needs of our customers and community.

(CONTINUED)

ALAMEDA-CONTRA COSTA TRANSIT DISTRICT (CONTINUED)

AC Transit is pleased to be a recipient of the CSDA 2021 Exceptional Public Outreach and Advocacy Award for the Tempo Bus Rapid Transit (BRT) Project. The District serves 13 cities and eight unincorporated areas across both Alameda and Contra Costa counties providing a low-cost public transportation option. Additionally, service coverage includes regional east/west Transbay, commuter transit connections to San Francisco and parts of the Peninsula. AC Transit prides itself as the largest public bus-only system in California, and the 3rd largest in the United States.

AC Transit has always served as a lifeline for many. Its ridership during the COVID-19 Pandemic is a fraction of what it was before March 2020, however it continues to provide a critical service, especially for the many who have continued to ride during the pandemic. Ensuring the sustainability of AC Transit service is to ensure that the riders it serves, who are 65 percent low income and 75 percent people of color, can continue to make their essential trips to work, school, medical appointments, grocery shopping, etc. In a 2020 rider survey, the district learned that 40 percent of riders are making essential trips, 15 percent identified as essential workers, and 43 percent indicated they don't have access to a car.

DISTRICT SIZE

AC Transit operates 24/7 in a 364-square mile service territory. Prior to March 2020, the district carried approximately 189,000 weekday riders and more than 53 million riders annually. About 30,000 were students and 15,000 Transbay riders. District facilities operate in the following cities: Emeryville, Hayward, Oakland, and Richmond. Approximately 1.5 million people live in AC Transit's service area.

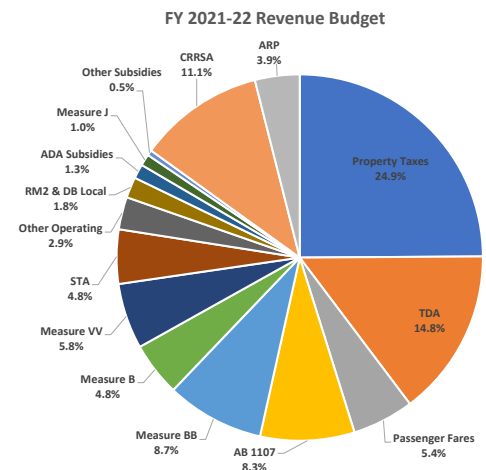
SERVICES PROVIDED

AC Transit provides 158 bus lines, which includes 69 local lines within the East Bay; 33 Transbay lines to San Francisco and the Peninsula; 6 all-nighter

lines, and 46 supplementary service lines to schools. There are approximately 5,400 bus stops and in 2018 buses traveled 20.4 million service miles. AC Transit buses connect with 16 other public and private bus systems, 23 BART stations, 6 Amtrak stations, and 5 ferry terminals. The district is also a contributor to a consortium created to provide paratransit services mandated by the American with Disabilities Act. In August 2020, the District launched Tempo, the East Bay's first-ever bus rapid transit system (BRT). Tempo provides express service between Uptown Oakland and the San Leandro BART Station and Transit Center. At nearly 10,000 riders per day and growing, Tempo is AC Transit's highest ridership line.

ANNUAL REVENUE AND FUNDING SOURCES

AC Transit is funded by a variety of revenue streams. For fiscal year 21-22, they include: Passenger Fares: 5.4 percent, Sales Tax: 37.6 percent (Measure B, Measure BB, Transportation Development Act [TDA], AB1107, Measure J), Property and Parcel Taxes: 30.7 percent (Measure VV and SB1), State Transit Assistance (STA): 4.8 percent, and a suite of other State, regional and local subsidies: 6.5 percent (ADA, RM2, DB Local, Other operating). In addition, we received emergency federal aid: 11.1 percent (the Coronavirus Response and Relief Supplemental Appropriations Act of 2021 [CRRSSA]) and budgeted 3.9 percent (American Rescue Plan [ARP]) to support the deficit in the District's revenue budget along with additional belt tightening.



COUNTIES SERVED

- Alameda
- Contra Costa

LEGISLATIVE DISTRICTS SERVED

State Assembly

- Assembly District 15, The Honorable Buffy Wicks
- Assembly District 18, The Honorable Mia Bonta
- Assembly District 20, The Honorable Bill Quirk
- Assembly District 25, The Honorable Alex Lee

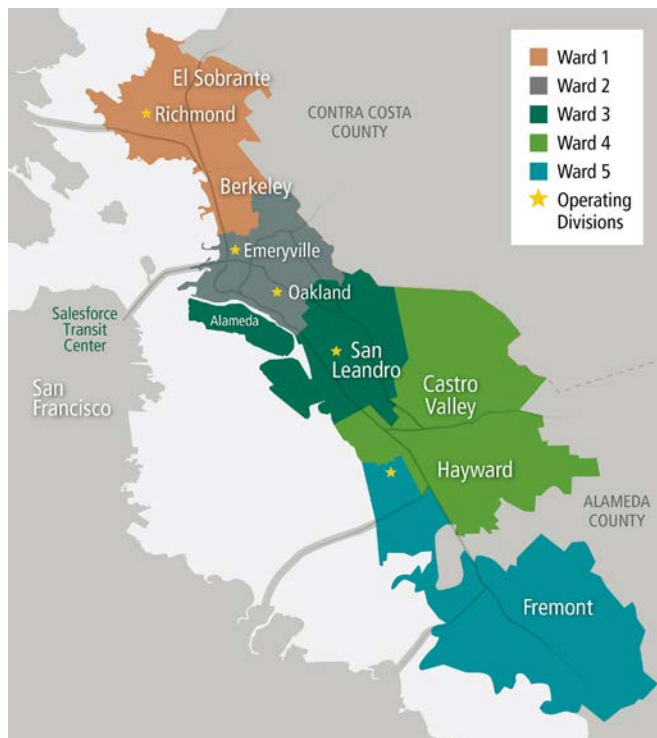
State Senate

- Senate District 7, The Honorable Steve Glazer
- Senate District 9, The Honorable Nancy Skinner
- Senate District 10, The Honorable Bob Wieckowski

U.S. House of Representatives

- CA Congressional District 11, The Honorable Mark DeSaulnier
- CA Congressional District 13, The Honorable Barbara Lee
- CA Congressional District 15, The Honorable Eric Swalwell

DISTRICT BOUNDARY MAP



AC TRANSIT

Zero Emission Funding Needs

A long and distinguished leader in zero emission bus technology

In December 2018, the California Air Resources Board (CARB) adopted its Innovative Clean Transit (ICT) rule – the unfunded mandate requiring Alameda-Contra Costa Transit District (AC Transit) transition to a 100 percent zero emission fleet by 2040. By 2029, all transit agencies' new bus purchases must be Zero Emission Buses (ZEBs), with a requirement to complete transition to ZEBs by 2040. The full transition to zero-emission is expected to cost AC Transit \$1.1 billion dollars including vehicles and infrastructure.

Cost to Implement Innovative Clean Transit (ICT) Rule

To ascertain the magnitude of the task ahead of the agency, the ZEB Rollout Plan also projected the cost of shifting fully to zero-emission, including both vehicles and infrastructure.

ZEB Technology Cost

ZEB Technology	Current Fleet Qty	Fleet Qty at 100% ZEB	Bus Cost	Infrastructure Cost	Technology Total
Battery Electric Bus	5	530	\$580,000,000	\$297,000,000	\$880,000,000
Fuel Cell Bus	20	150	\$195,000,000	\$31,000,000	\$226,000,000
	25	680	\$778,000,000	\$328,000,000	\$1,106,000,000

Timeline

The ZEB Rollout Plan set out an aggressive transition schedule in recognition of AC Transit's (District) commitment to the environment. Beginning in FY2025-2026, AC Transit will only be procuring zero-emission buses with a full fleet transition to zero-emission by the year 2037.

Workforce Development

AC Transit plans to create the foremost clean transit training center in the United States by upgrading its Training and Education Center into an Advanced Learning Lab, where laboratory and academic training activities occur concurrently. This is a quintessential hard and human infrastructure project. **The anticipated cost of this upgrade is \$18 million.**

AC Transit has built its zero-emission workforce development program from the ground up. The District plans to take the lessons learned into the next chapter of its zero-emission program to create an industry-leading training center. Bus operators and transit agency mechanics provide a unique opportunity for people without advanced degrees to obtain a career that pays a wage that can provide for a family with the accompanying benefits, the District plans to focus its recruitment in Disadvantaged Communities (DACs), directly benefiting the communities we serve.

Equity

AC Transit takes its responsibility seriously to alleviate health impacts on those communities disproportionately affected by air pollution. AC Transit wanted to ensure that this enormous investment of \$1.1 billion dollars first benefited those communities with the poorest air quality. The District's Clean Corridors Plan prioritizes deployments of zero-emission buses in eleven (11) disadvantaged communities throughout its service area.

AC Transit's Clean Corridors Plan Prioritizes these 13 corridors in 11 disadvantaged communities: Richmond, San Pablo, West Berkeley, West Oakland, North Oakland, East Oakland, International Blvd./East 14th St., Oakland International Airport, Ashland (San Leandro), Russell City (Hayward), and Union City.

An Investment in Your Community

As AC Transit sets out on this ambitious goal of having a full fleet of Zero-Emission buses by 2040, we are asking policymakers to view this funding request of \$1.1B as a holistic investment in their communities and for their constituents. The \$1.1B that AC Transit requires to complete the build-out of our Zero-Emission bus fleet will bring a cleaner, healthier environment, good-paying and secure jobs, and a true quality of life to your constituents. AC Transit can continue its incredible work, moving our communities and the Bay Area to a brighter tomorrow with your assistance in securing the funding for this essential project.



DISTRICT HEADQUARTERS

Terry Ashe Recreation Center
6626 Skyway, Paradise, CA 95969

DISTRICT MANAGER

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BOARD MEMBERS

Mary Bellefeuille, Chairperson
Steve Rodowick, Vice Chairperson
Robert Anderson, Secretary
Al McGreehan
Dennis Ivey

PARADISE RECREATION AND PARK DISTRICT

PROJECT SUMMARY

The most destructive wildfire in California's history, the 2018 Camp Fire, killed 86 people, destroyed over 14,000 homes, and displaced nearly 50,000 people—mostly in the first few hours.

The Paradise Recreation and Park District (PRPD) has been on the forefront of exploring landscape level defensible space to protect communities within our jurisdiction. The concept is to create protective wildfire risk reduction buffers or "Resiliency Parks" at the wildland urban interface (WUI) that meet multiple community safety, environmental, economic, and health benefits. If implemented, the buffer could provide recreation and tourism based economic activity and meet infrastructure and planning; recreational; health and wellness; healthy forests/land management; climate and fire adaptation; and potentially local food security goals. This innovative approach shows much promise and support from the community.

In 2020, working with an interdisciplinary technical advisory committee and a variety of partners, the effort completed preliminary modeling and an initial study of the approach applied to the local landscape.

The next phase will explore the project feasibility, cost benefit analysis, management, and financing of the endeavor, conduct outreach with key landowners and the public, and develop land management options and a future program blueprint. It is anticipated the approach will yield innovative partnerships to meet and finance long-term wildfire risk reduction and land management goals.

Like many areas of California, Paradise lies in an extreme fire-threat area – one that has burned repeatedly over the last century, and that will burn again. Thoughtful consideration and integration of actions will enable the community to confidently rebuild in a more resilient way and Paradise can serve as a positive model to other rural areas in high fire risk areas.

DISTRICT OVERVIEW

Since 1948, PRPD has provided recreation facilities and programs to the residents of Paradise, the Butte Creek Canyon area, and the unincorporated communities of Magalia/Paradise Pines and Concow/Yankee Hill.

The Camp Fire revealed the limitations of foothill communities to reduce wildfire risks comprehensively and address the aftermath of catastrophic wildfires. The fires also exposed previously hidden poverty, health, and behavioral issues in underserved, disadvantaged communities.

DISTRICT SIZE

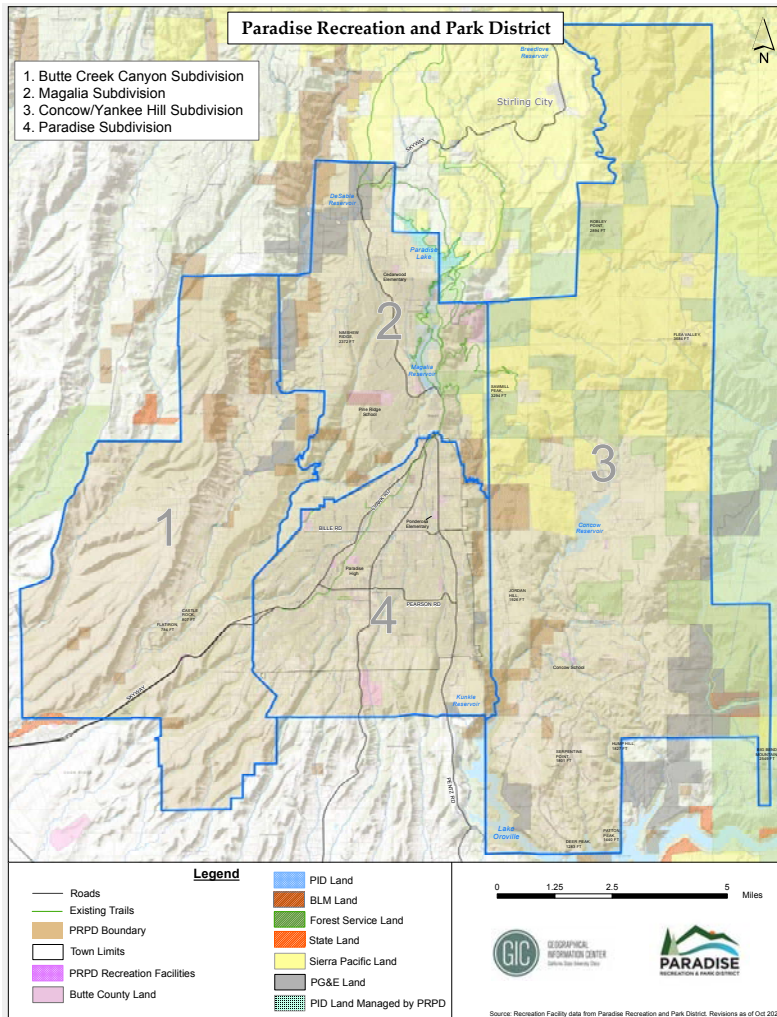
Prior to the 2018 Camp Fire, PRPD served 50,000 people living in a 170-square mile area. The current population is estimated at 25,000 people. The district manages over 1,000 acres of parkland and facilities.

SERVICE PROVIDED

PRPD is a full-service park and recreation district and provides a variety of programs to the community. The district's parks and facilities (recreation centers, parks, playgrounds, ballfields and other sports facilities, 2 pools, and wildland parks) are well-maintained and integrated into the fabric of the community.

(CONTINUED)

DISTRICT BOUNDARY MAP



ANNUAL REVENUE AND FUNDING SOURCES

Historically, two-thirds of the district's roughly \$2 million revenue came from property taxes while the remainder mostly came from rentals and programs. Property tax revenue fell precipitously with the destruction of structures and reassessment. This was fortunately "backfilled" by the State of California until the 2021-2022 Fiscal Year. Projections indicate that it will take another 20 years for recovery to pre-Camp Fire funding levels. PRPD is moving toward a more diverse income stream and promoting events and facilities. The district may consider other instruments in the future (assessment tax, bonds, etc.).

COUNTY SERVED

Butte

LEGISLATIVE DISTRICTS SERVED

State Assembly

- Assembly District 3, The Honorable James Gallagher

State Senate

- Senate District 4, The Honorable Jim Nielsen

U.S. House of Representatives

- CA Congressional District 1, The Honorable Doug LaMalfa



Camp Fire Aftermath:

A Local Agency Response to Community Building, Hazard Reduction, and Resiliency.

Dan Efseaff
District Manager
defseaff@ParadisePRPD.com

Introduction

The long shadow of the Camp Fire has brought on an acceleration of opportunities and a rethinking of how the development of parks, recreation, and managing wildland areas within the District boundaries will contribute to fire and climate adaptation.

Out of the ashes of the destruction, we are working with citizens to develop solutions that fortify and expand fire adaptation, recreational and economic opportunities, and protect resources. Because of the unique circumstances, this is a fast-moving process that creates a unique (urgent) opportunity to expand existing recreation and park properties in underserved communities.

For the District to thrive long-term, we are pursuing a “Destination” Park and Recreation model to foster the return of residents, sustain resources, and generate new economic opportunities. This poster highlights some of the efforts:

1. Expand Parks to Improve Fuels Management, Road Connectivity and Access and Recreation.

2. Explore the importance of and create Buffers (Rim and Watershed) to protect the Community (study underway).
3. Develop Community Centers and a Sport Fieldhouse/Auditorium Complex to provide recreational and economic opportunities and improve resiliency.
4. Protect private property and provide staging areas as part of the Butte Creek Canyon Park Expansion
5. Extend Butte County Rail Trail project and Expand Fuels Management Projects.
6. Foster Forest Healing Training and develop a program to train students and landowners in Watershed Protection, Restoration, and Fire Protection Skills.
7. Establish the District Develop a new Adventure Park.
8. Re-establish Recreation Programs and Facilitate Coordination of Youth Services in the Healing Through Nature Program.
9. Develop new Partnerships and Programs, Classes, and Events to meet community needs and help expand District Offerings.

Camp Fire Stats

- Size: 153,336 acres, 1st Day: 70k acres.
- Rate: 0.8 acres per second or 48.6 acres per minute or 1 Football field/ (at fastest growth, about double)
- Civilian Fatalities: 85
- Destroyed: over 19 K buildings most of them homes
- Total Personnel: 1,065 Engines: 74 Water Tenders: 3 Helicopters: 2 Hand Crews: 11 Dozers: 3 Air Tankers



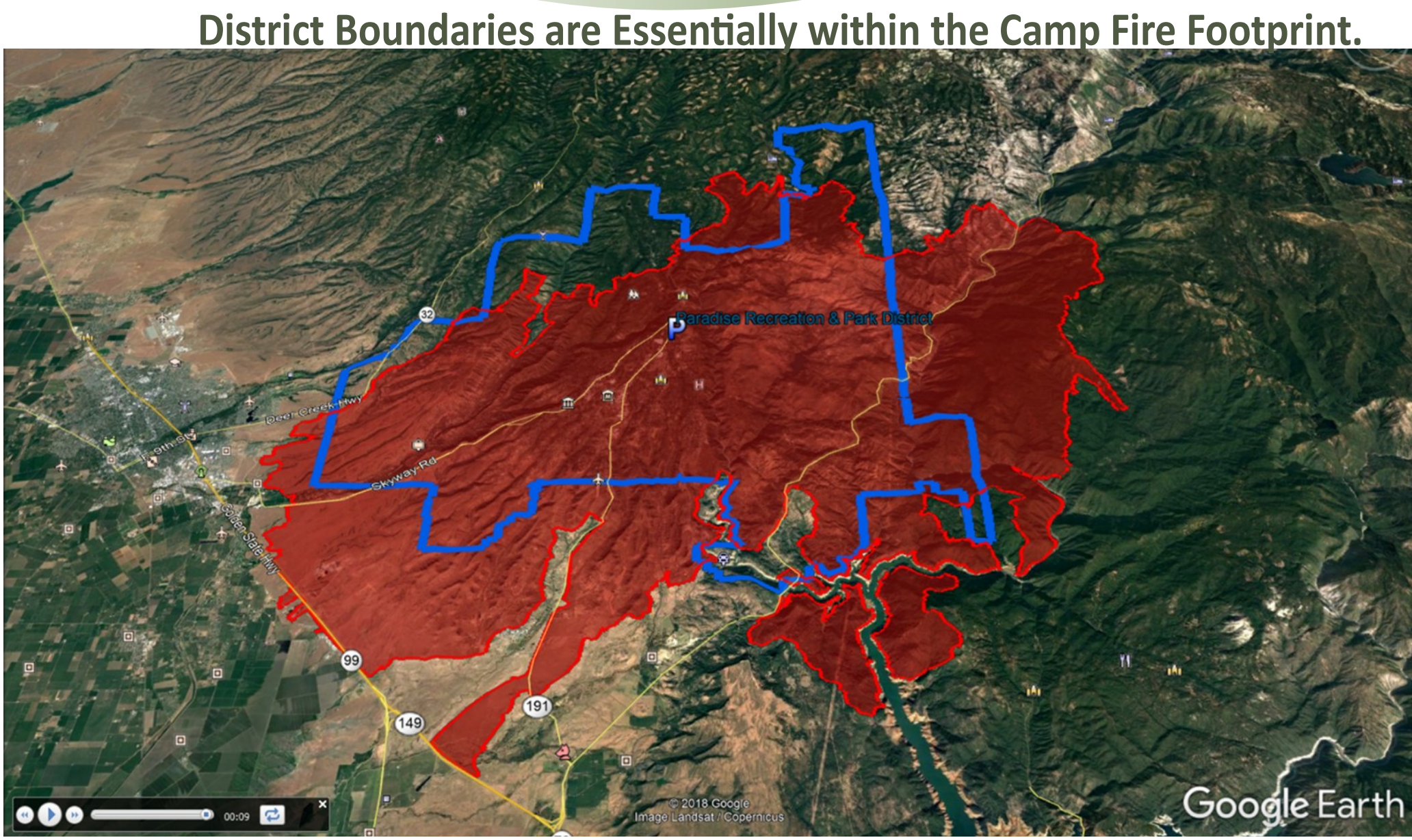
Lesson Learned: Parks Make Life Better —And Save Lives as Parks Became Refuge Areas During Camp Fire .



The green grass, tended grounds, and non-flammable buildings materials allowed this Park Pavillion (left) to protect over 100 people during the fire.

The homes in back of this area (right) were essentially vaporized.

The District is now exploring the role of well-designed park facilities and land to save lives and protect property.



PRPD will Become a Destination Park and Rec District

OUTDOOR DESTINATION

Recovery Priority



Tier 2

The parks fared well in the fire, sustaining relatively minor damage. However, improving the park and path system is important to the recovery as a baseline amenity. Parks are a secondary community priority, fitting with Tier 2 recovery projects.

Project Description
An opportunity could exist for the Paradise Recreation and Park District (PRPD) to leverage Paradise's unique natural beauty and outdoor lifestyle to make the town an outdoor destination for both residents and visitors. Existing building blocks including the Memorial Trail, Bile Park, Upper Ridge Nature Preserve, Lakeridge Park, Coulter's Park, Paradise Lake, etc. form the foundation. New components of this initiative could include:

- Repairing fire damage to parks and recreation facilities (replacing the maintenance shop and burned playgrounds plus salvage logging of standing burned trees)
- Linking parks and amenities together with a path network along roads
- Connecting the Yellowstone Kelly Trail to Chico and Sterling City
- Creating neighborhood parks in evacuation zones and exploring "shelter in park" options. Consideration should be given to accepting donations of potential future park land. This could leverage paths along streams and away from roads.
- Exploring trails along the canyon rims for recreation and forest management access. These trails could be

- linked through state and federal lands to create a contiguous trail network
- Investigating access to the Flumes
- Service learning
- Adding a field house and/or sports park to the system
- Developing an outdoor destination communication strategy to highlight the portfolio of resources (mapping, online tools, etc.)

Lead

- Paradise Recreation and Parks District (PRPD)

Partners

- Town of Paradise

Action Steps

- Park repairs to infrastructure damaged by the disaster
- Board & staff strategic planning: Accelerate the Park Master Management Plan (PMMP), including town and community engagement
- Supporting studies (detailed plans) based on PMMP recommendations
- Funding applications for park development based on PMMP recommendations
- ADA improvements

Cost Estimate

Improvements \$3.50-\$8.50 per square foot (depending on surface material)

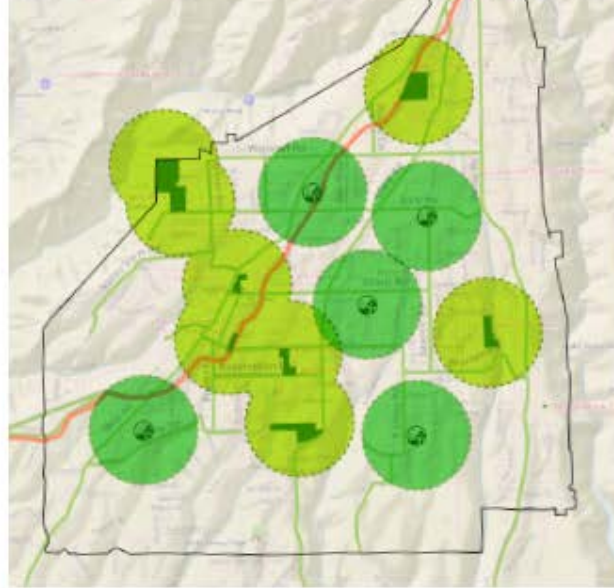
Potential Resources

- Federal and State Agencies
- Foundations
- Insurance
- Paradise Recreation and Parks District (PRPD)

Return on Investment
More diverse recreational amenities for both residents and visitors that should lead to an improved quality of life.

Timeline

0 to 5 years



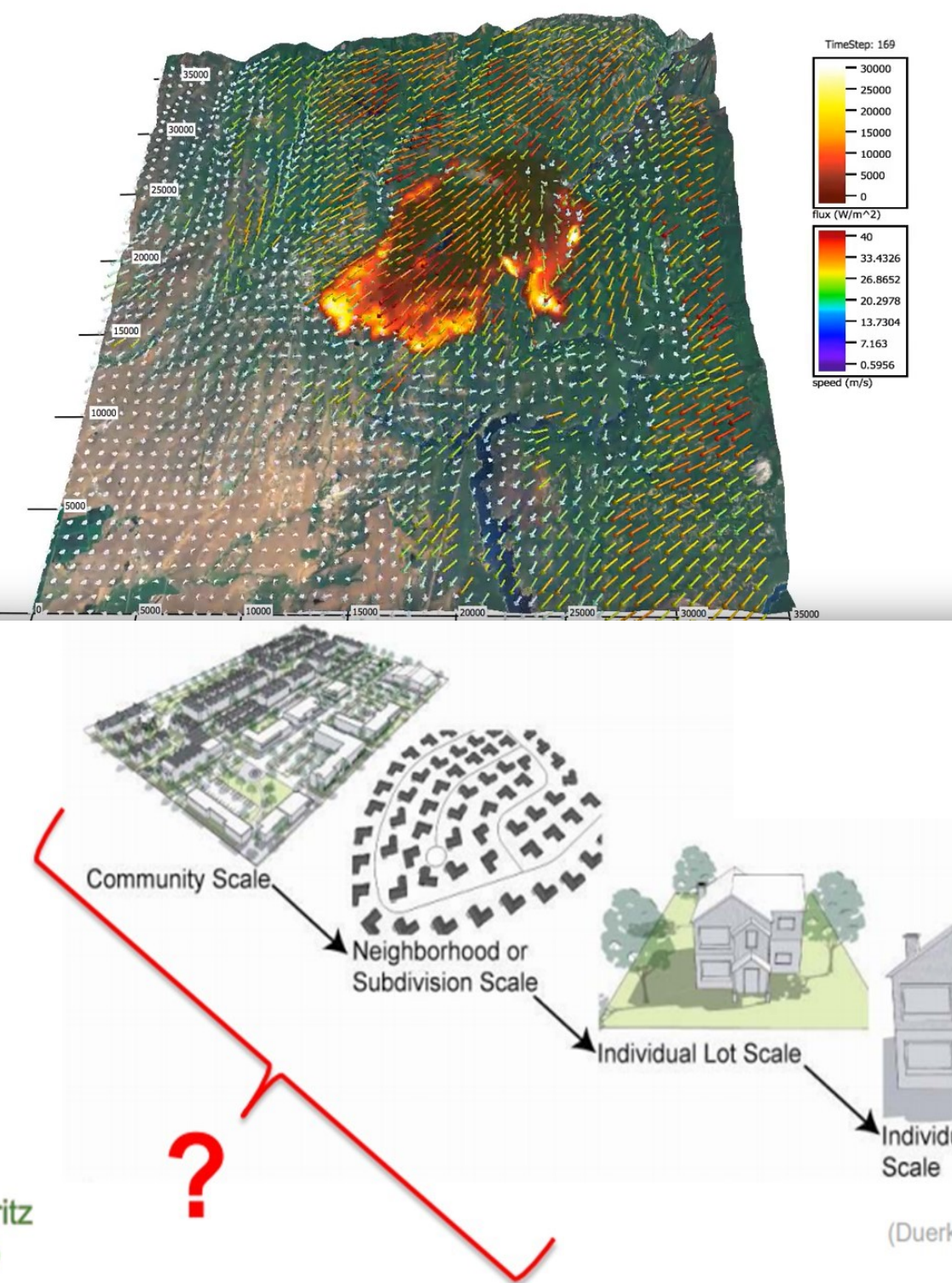
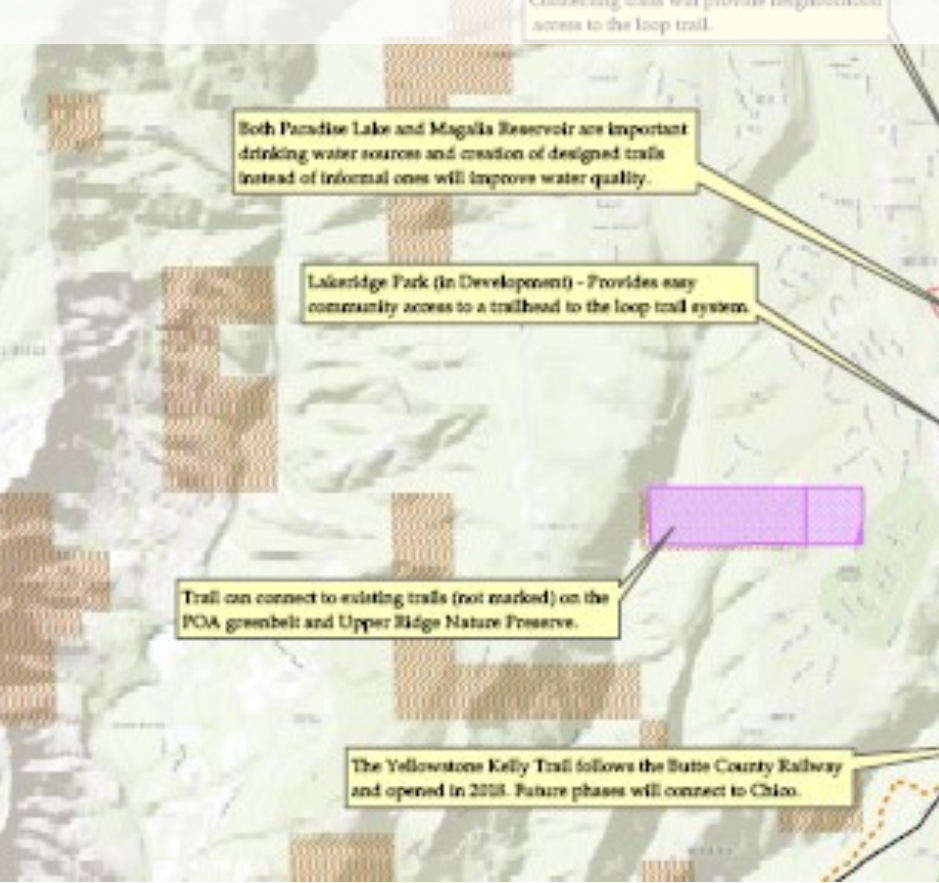
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PARADISE, CALIFORNIA

Recovery Projects / Partner-Led Projects 69

Recreation and Park Amenities Increase Community Connections and Resiliency

Community facilities allow neighbors to connect and help each other in rural area and also provide venues for services and events. District is looking at creating facilities in Paradise (Field House) Magalia and Concow and Yankee Hill (Community Centers).

Trails also provide community connections and shaded firebreaks.



Applying Science to Develop Wildfire Risk Reduction Buffers

The District is working with The Nature Conservancy (TNC) and Conservation Biology Institute (CBI) on a new innovative project to evaluate the scientific basis for nature-based fire risk reduction.

The project will:

Complete a literature review, evaluating the scientific evidence for natural or designed buffers (such as recreation areas, community gardens, parks or preserves, as well as agricultural and silvicultural lands to reduce fire risk.

Identify key uncertainties or data gaps for the efficacy of using natural, semi-natural, or human-created (soccer fields, golf courses) land uses to minimize wildfire risk to communities.

Using Paradise, CA as a model, design a wildfire risk-reduction buffer (WRRB) that will produce a prioritization rubric for guiding acquisition of vacant, agricultural or minimally developed land.

This rubric should be guided by principles of maximizing risk reduction, aggregating acquisitions (minimizing inholdings), maximizing ecological co-benefits (including habitat and GHG sequestration), and minimizing costs (including acquisition and

management costs)

The project will create 3-5 alternative scenarios and will quantify the degree to which each achieves the principles articulated above, and outline a management profile for each, the acquisition and management costs.

Designs may contemplate a mix of compatible human uses, some of which may generate revenue, including recreational fees, leases, events, camps/classes, commercial leases (concessions), agriculture, grazing, selected harvest, etc.

Quantify any additional benefits (water quality, wildlife habitat, GHG mitigation) provided by the buffer. Duration of the contract is four (4) months.

This project may yield the scientific basis from which we can develop buffers that provide recreational, economic, environmental, and public safety benefits. This project may demonstrate how several priorities may align to improve the long-term health of the Paradise area.

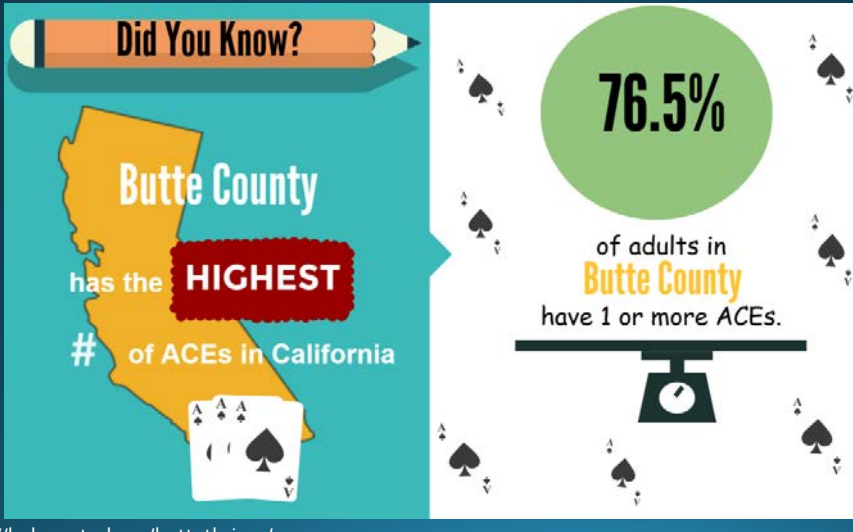
As the District and our partners recover from this disaster, we look forward to developing lessons for other communities that will enable them to recover and prepare for natural disasters and climate change.

Healing Through Nature Program: Bringing Partnerships Together to Address Adverse Childhood Experiences (ACEs) in Butte County.

ACEs study linked these childhood experiences to a higher risk of problems, including:

Behavioral	No exercise	Smoking	Alcoholism	Drug Use
Missed Work	Health	Morbid Obesity	Diabetes	Depression
Suicide	Heart Disease	Cancer	Stroke	And many more

2013 Survey – Butte County Results



The New York Times

After Climate-Driven Fires, Finding a Way to Return Home

When people come back after wildfires, what can a community do to keep them safe?



Construction workers are building new homes in Paradise, Calif., to replace the ones that were destroyed in the Camp Fire in 2018. Credit...Jim Wilson/The New York Times

By Grace Mitchell Tada

Published Oct. 31, 2021 Updated Nov. 8, 2021

This article is part of a special report on [Climate Solutions](#), which looks at efforts around the world to make a difference.

PARADISE, Calif. — When Hope Bolin heard she had to evacuate her home, she saw it as an inconvenience. She had too much to do that day. The fire was in Pulga, still 10 miles off. She walked back to her bedroom, washed her face and brushed her teeth.

Then, with [shocking speed, the sky became black.](#)

Soon after, immobile in gridlocked traffic with her young sons, Ms. Bolin feared they wouldn't make it out of Paradise alive. [Houses along the road were ablaze.](#) Combusting gas tanks shook their vehicle with each explosion.

Ms. Bolin contemplated off-roading her 4Runner, plowing through fences to another road or down into a canyon. Maybe getting out of the vehicle and running. At one point, she found herself scanning the inside of her car for an object to knock her boys unconscious; she didn't want them to suffer if the fire became inescapable.

Eventually, they sheltered in a parking lot where the flames couldn't reach them. That evening in nearby Chico, Ms. Bolin sat on the curb outside her brother-in-law's house, traumatized, unable to stop shaking. "I was like, 'I'm never going back there again,'" she remembers thinking.



Hope Bolin fled Paradise with her two boys as the Camp Fire ripped through the community, but has returned to a new home there. Credit...Jim Wilson/The New York Times

That was Nov. 8, 2018. Eventually, she did return. Ms. Bolin and her husband rebuilt their home on the same plot of land in Paradise. They could have moved somewhere safer using insurance

money, but that wasn't enough to buy another home in California. And, said Ms. Bolin, "When it's all said and done, this is my home."

In the Camp Fire, even now California's [deadliest](#) and [most destructive](#) wildfire, 85 people died and 90 percent of the structures in [Paradise burned down](#), ravaging a town already [struggling economically](#). Three years later, the population, formerly some 26,000, now hovers around 6,000. The town is a checkerboard of vacant lots, piles of debris, rebuilt homes, and trailers where homes once stood. Flammable vegetation is already growing back among the stumps.

Yet many residents, like Ms. Bolin, are bound to the place. Researchers and local nonprofit leaders say people — Indigenous communities, multigenerational farmers, people in search of affordability, among others — don't want to let places like Paradise go, despite the risk.

Against this backdrop, in an unassuming yet radical experiment, the Paradise Recreation and Park District is buying up private lots ringing the community to form a buffer. The hope is that it will better protect the town from the next big fire.

From her rebuilt home, Ms. Bolin now has a view of the canyon through which the fire tore into Paradise. Her home, like tens of millions more from California to Argentina to France, sits in what is known as the wildland urban interface, or "W.U.I.," a swath of land where human development and wilderness commingle, and where [69 percent](#) of wildfire-destroyed buildings in the United States are. Convincing people not to live there, some researchers say, is the most fail-safe way to save lives.



In her new home, Hope Bolin can see reminders of the devastating Camp Fire: burned trees along a ridge line of the West Branch of the Feather River Canyon. Credit...Jim Wilson/The New York Times

But it's not that simple. As more places around the world face climate risks, there will be fewer safe and affordable places to live. That's especially true in California, a state deep in a housing crisis. As outsiders increasingly question the logic of rebuilding in dangerous places like Paradise, could reimagining where and how people live on the landscape help protect communities?

The Paradise ridge, long a seasonal home to the [Maidu Tribes](#), started attracting gold prospectors in the mid-19th century. Upon arriving, they transformed the landscape as they — like others in settlements throughout the Sierra Nevada mountains — forged trails. Decades later, these trails served as blueprints for modern roads, retaining their “one way in, one way out” gesture — or, in the presence of fire, said Dan Efseaff, district manager of park district, “one way in, and no way out.”

The layout of the roads, unchanged since the earliest days, reflected the hands-off attitude that attracted many inhabitants to Paradise. But in 2018, that proved fatal when overlaid with Paradise's particular fire risk: situated atop steep hillsides overgrown with vegetation, and subjected to increasingly strengthening wind patterns in a changing climate. As the fire overtook the town with unexpected speed, many people trapped on its roads perished.

Mr. Efseaff understood this confluence of hazards, and wondered if better planning could work with nature to give fire “a little bit of elbow room,” much like how wetlands can absorb waves and water during storms.

He realized “[home-hardening](#)” — steps like installing ember-resistant vents and noncombustible siding — wasn't enough. He'd seen homes employing fire-safe building codes catch fire, then act as fuel for the next home. This happened in Paradise. Research, too, supports that housing arrangement tends to be one of the top predictors of [whether a structure burns](#).



Paradise's Bille Park, which overlooks the canyon where the Camp Fire burned through, has been reconstructed. Credit...Jim Wilson/The New York Times

Through collaboration already underway with the Northern California Indian Development Council, the vegetation could be restored to its pre-colonial state.

On a recent morning, Mr. Efseaff surveyed the canyon along the eastern edge of Paradise — the same canyon behind Ms. Bolin's home. He stood on a lot empty but for a small putting green and a wrought-iron fence, all that remains of the property's burned-down home. "This is the area that we identified," Mr. Efseaff said. "We want to contact the landowners along this edge."

The idea is to persuade them to sell their homes to the park district at market value. The district has received funds from several sources, including the Nature Conservancy, the Sierra Nevada Conservancy and the North Valley Community Foundation to help make that possible. One incentive for homeowners, aside from a way out if they want it, is that the cost of insuring homes in fire-prone areas is on the rise.

Not everyone in Paradise knows about the plan yet; the park district is just beginning its targeted outreach. Some people have already cashed out, however, tired of living under the constant threat of fire evacuations.

For the plan to have an effect, it needs about 1,000 strategic acres along this hazardous rim; since the fire, the park district has already added about 300 acres throughout the district, with 500 more in process. It's likely that in the next five years, Mr. Efseaff said, "We may not have the buffer, but we'll have a string of pearls."



Homes, parks and roads were among the structures destroyed in the 2018 Camp Fire. A crew is making street repairs. Credit...Jim Wilson/The New York Times

That string of pearls could significantly change an approaching fire's behavior along the town's perimeter, reducing flame heights and intensity. The buffer won't prevent fire, nor is it meant to, given that prescribed burns will help manage certain forested areas. And it likely won't stop wind-driven fires, like the Camp Fire, that can blow embers for miles. But, said Jim Broshears, Paradise's emergency operations coordinator and former fire chief, "If you can bring the fire to the ground, firefighters have a much better chance of being able to protect structures or establish control lines."

If successful, the model could help people across the state stay in their communities.

Ms. Bolin said she was unfamiliar with the park district plan, but supports making Paradise safer. She remains fearful, she said, and barely sleeps on windy nights. But she also struggles to imagine long-term plans when she wishes first for an emergency alarm system, or road repairs so she's not constantly triggered when driving over rough asphalt patches where cars burned — a fate almost her own.

Yet having experienced what she did, she's also gained a certain equanimity. During last summer's fire evacuations, she said she was unfazed by the risk of losing her home again, adding: "We've rebuilt our life once, we could do it again."

A version of this article appears in print on Nov. 8, 2021, Section B, Page 5 of the New York edition with the headline: After Climate-Driven Fires, Looking for a Way Home.