



HIGHLIGHTS

CENTRAL VALLEY FLOOD PROTECTION PLAN

2022

UPDATE

CLIMATE RESILIENCE | PERFORMANCE TRACKING | ALIGNMENT

NOVEMBER 2022

Prologue: January 2023

The 2022 Central Valley Flood Protection Plan Update was adopted by the Central Valley Flood Protection Board on December 16th, 2022. Just days later, beginning on December 27th, 2022, a series of atmospheric rivers began to impact California. This succession of atmospheric rivers resulted in 34 trillion gallons of water falling across California in 24 days, and 21 forecast points in the Central Valley reaching flood or monitor stage. Governor Gavin Newsom declared a state of emergency on January 4th, 2023; federal emergency and disaster declarations followed soon thereafter. These events underscore the importance of the CVFPP as the State's strategic blueprint for investment in flood risk reduction in the Central Valley, especially in an era of whiplash weather—from drought to flooding—driven by the impacts of climate change.

On the cover: Dos Rios Ranch, June 2019; River Partners @2022.



Top: Members of the California Conservation Corps, overseen by Brooks Weisser, Flood Fight specialist (hard hat), working a levee breach on Deer Creek in Sacramento County. Photo taken January 7, 2023.

Above: Bear Creek at the M Street Bridge in Merced, California. Photo taken January 10, 2023.

Right: Ed Contreras finishing sandbags in Merced's Spaghetti Acres neighborhood in Merced County. Photo taken January 11, 2023.

Left: High flows along the Cosumnes River in Wilton, California. Photo taken January 10, 2023.





Floodwaters from the Sacramento River overtop the Colusa Weir in Colusa County, California, in this drone photo taken January 12, 2023.



A flooded street in Merced. Photo taken Jan 11, 2023



The Central Valley Flood Protection Plan, Update 2022

Executive Message

The 2022 Update to the Central Valley Flood Protection Plan (CVFPP) is adopted at a time when we cannot escape almost daily news of extreme weather impacts in California and across our nation. In just the past few months, we have seen areas suffer devastating drought one day and catastrophic flooding the next. Similar dramatic swings between drought and flood have historically occurred in the Central Valley and will again. We cannot predict the timing, frequency, or location of these events. However, the science is clear: such events will be intensified by ever-higher average global temperatures.

By 2072, climate change is predicted to increase peak flood flows up to five times in the Central Valley compared to past recorded events. The Central Valley already has one of the highest flood risks in the United States, and the anticipated peak flows by 2072 will only exacerbate this risk unless urgent action is taken. At risk are millions of people and billions of dollars of critical infrastructure, commerce, agriculture, and the environment. Catastrophic floods would not only be devastating to California, which has the fourth largest economy in the world, but also to the national economy and beyond. Despite our great strides in reducing flood risk since the first CVFPP was adopted in 2012, climate change is accelerating this risk faster than we have been able to address it.

This Plan Update responds to the increasing flood risk in our region's complex landscape with bold and innovative solutions that demonstrate a need for sufficient and stable funding. Communities in the region, Tribes, landowners, farmers, and

businesses depend on our commitment to act swiftly and invest boldly. We must use every flood risk reduction tool available and connect with other water management sectors to build resilience in our watersheds. Our strategies to achieve this resilience include nature-based solutions such as floodplain restoration wherever practical and possible, as well as infrastructure improvements to reduce flood risk and the social and economic costs of flooding.

The CVFPP serves as California's strategic and financial blueprint to improve flood risk management in the Central Valley. The 2022 Update was developed over the last three years by the California Department of Water Resources (DWR) with significant input from the Central Valley Flood Protection Board (CVFPB), local flood management agencies, and other interested parties.

Three central themes are woven throughout the 2022 CVFPP Update:

- Flood system climate resiliency.
- Accountability and adaptation through performance tracking.
- Strategic alignment with other State water management planning efforts.

We recognize that underserved communities often face disproportionately high flood risk. To begin to address this inequity, the 2022 CVFPP Update identifies the need for new partnerships between the State and vulnerable communities to ensure future flood management strategies promote equity across all Central Valley communities.

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All levels of government share responsibility for implementing the 2022 CVFPP Update to reduce flood risk across the Central Valley. DWR and the CVFPB, as the primary State agencies that oversee and manage the State Plan of Flood Control, will continue to play important roles in this work. We are investing in partnerships that promote integration of water management strategies across water sectors and watersheds to maximize the benefits of State investment.

Investment in flood management as outlined in this Plan, estimated to cost \$25 billion to \$30 billion over the next 30 years, may avoid the astronomical cost of catastrophic flooding in the Central Valley estimated to be as high as \$1 trillion, in addition to an incalculable toll on lives and public well-being. Meeting this Plan's five-year combined State, federal, and local investment need of \$3.2 billion would help address increasing risk.

Implementing this Plan will be a major step towards a climate resilient flood system. Continued work is needed between State, federal, and local partners to meet the projected impacts of climate change, identify strategies to address disproportionate impacts borne by underserved communities, and to implement actions to improve resilience.

We cannot predict when or where the next major flood will be, but we know it will occur and we must become better prepared.



Karla Nemeth, *Director*
California Department of
Water Resources



Jane Dolan, *President*
Central Valley Flood
Protection Board

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About the 2022 CVFPP Update

The Central Valley Flood Protection Plan (CVFPP) is the State of California's (State's) strategic blueprint for Central Valley flood risk management. It guides the State's policies, investments, and partnerships.

The 2022 CVFPP Update marks the 10th anniversary of the first CVFPP and is the Plan's second five-year update as required by the Central Valley Flood Protection Act of 2008 (Act). Much progress has been made in reducing flood risk in the Central Valley since the Act became law and the first release of the CVFPP in 2012. The Plan provides decision-makers at the State, federal, and local levels with information on the investments needed and the resulting benefits to support funding for implementation and further policy development to carry out the Plan's recommended actions.

How the 2022 CVFPP Update Supports Policy and Investment Decisions

The 2022 CVFPP Update:

- Collects and analyzes the best available information on the types of management actions and projects that, as a portfolio, most effectively support the intended outcomes of the Plan and contribute to societal values related to Central Valley flood management.
- Defines and quantifies opportunities to reduce flood risk, provide ecosystem improvements, and adapt to a changing climate, as well as estimate costs associated with implementing different types of management actions.
- Informs State, federal, local agency partners, public and private partners, and elected officials.
- Supports action by the entire Central Valley flood management community and decision-makers to develop policy and pursue funding opportunities.

The 2022 CVFPP Update is not a decisional document and does not:

- Endorse individual projects or programs for funding decisions.
- Directly appropriate funding to individual projects or programs.
- Generate cash flow to grant or direct assistance programs to be administered to individual projects.

Themes of this Update

The 2022 CVFPP Update focuses on climate change resilience and uses updated data and information to evaluate the potential effects of climate change on flood risk management, including related ecological conditions in the Central Valley. This five-year update is developed around three themes:

- Building flood system climate resiliency.
- Increasing accountability through performance tracking and transparency.
- Aligning strategically with other State water management planning efforts.

The 2022 CVFPP Update acknowledges how equity considerations are inherent in all three themes, such as community resources to prepare for, respond to, cope with, recover from, and adapt to floods and the impacts of climate change; capacity to track outcomes for vulnerable communities and benefit from other State programs supporting equity.

Context for the 2022 CVFPP Update

While investments totaling approximately \$4.1 billion from 2007 to 2021 have reduced flood risks, improved operation and maintenance (O&M), and enhanced ecosystems throughout the Central Valley, flood risk in the Central Valley continues to grow due to the effects of increased extreme weather events caused by climate change.

This risk underscores the importance of the CVFPP and its recommended actions. The pace and scale of implementation must increase to meet the flood management-related challenges from accelerating climate change. These risks include the following:

- Communities throughout the Central Valley are threatened by the current and future effects of climate change on hydrology, such as extreme precipitation events and loss of snowpack.
 - ▶ Extreme events (flood and drought) are anticipated to increase in frequency and intensity.
- Flood risks for more than 1.3 million Central Valley residents remain high and will increase with projected growth. Over a 50-year period (2022 through 2072), estimates of the annual lives lost more than doubles in the Sacramento River Basin and quadruples in the San Joaquin River Basin without the recommended flood system investments.
- More than \$223 billion of structures and their contents are at risk, according to 2021 data.
- Agriculture-based communities and the \$17 billion agricultural economy could be significantly affected and flood events during the growing season could disrupt national and international food supplies.
- Socially vulnerable populations bear a disproportionate share of adverse effects of flooding, yet recovery spending underserves those populations that need it most.
- Backlog of deferred maintenance (including repair, rehabilitation, and replacement activities) continues to increase, despite significant recent investments for this purpose, resulting in new and more expensive capital improvement needs.
- Despite recent progress on implementing projects that improve environmental conditions at specific locations, the configuration and management of the flood system and other factors, such as infrastructure and land uses adjacent to rivers, continue to inhibit natural processes, fragment riverine habitats, and contribute to the decline of native species.

California has among the highest flood risks in the United States

The cost of catastrophic flooding in the Central Valley would impact the entire state and be felt across the nation.



1.3 million
people live and work in
Central Valley floodplains



\$17 billion
of agricultural economic
activity is based in the
Central Valley



\$223 billion
of homes, businesses and
other structures are at risk in
the Central Valley



5%
of historical wetlands and
riparian habitat is all that
remains in the Central Valley

CVFPP Implementation Progress to Date

Since 2012, the CVFPP has guided State investments to reduce flood risk throughout the Central Valley and implementation progress has been steady over the past 10 years.

In 2007, some flood improvements began through an early implementation program when bond funding provided a down payment toward improvements and extensive evaluations of State Plan of Flood Control (SPFC) facilities that were later included in the CVFPP. From 2007 through 2012, on-the-ground construction began addressing levee deficiencies, and management of the flood system began to improve. Since adoption of the CVFPP in June 2012, implementation has been enabled by the continued influx of bond funding for capital projects and recent general fund allocations targeted at urban flood risk reduction projects and deferred maintenance. Overall, since 2007, approximately 361 miles of urban and 120 miles of non-urban SPFC levees have been repaired, rehabilitated, or improved, providing public safety and economic outcomes. In addition, multi-benefit and restoration projects completed between 2016 and 2021 resulted in a net gain in floodplain inundation and restored riparian habitats, and modified one priority fish passage barrier.

Collaboration with stakeholders and partner agencies is essential for flood management programs in the Central Valley. Partnerships enable agencies to work collaboratively and with stakeholders to plan and implement projects, and they are critical to coordinating integrated and regional activities and collaboratively addressing flood management issues.

Since 2017, \$4.3 billion has been appropriated from State and federal sources for accomplishments including, but not limited, to the following:

- Growing partnerships and collaborative efforts to advance flood risk reduction priorities.
- Advancing and piloting climate change analysis approaches to gain further understanding of system vulnerabilities and potential adaptation strategies.
- Improving the flood system and addressing policy issues.
- Aligning the CVFPP and its implementation with other State efforts.
- Developing and piloting an outcome-based framework to track performance.
- Developing and implementing multi-benefit and habitat restoration projects to enhance ecosystems and provide greater flood system resiliency.

Lower Elkhorn Basin Levee Setback

The Lower Elkhorn Basin Levee Setback project increases the size of the Yolo Bypass by roughly 900 acres by setting back a 7-mile stretch of levee 1,500 feet, which almost doubles the width of the Sacramento Bypass. The project expands inundated floodplain and includes on-site mitigation for environmental impacts and preserves agriculture for the region. The project will increase the level of flood protection for multiple communities and is a key component to a larger vision for multi-benefit projects in the region. Construction began in 2020 and is anticipated to be completed in 2024.

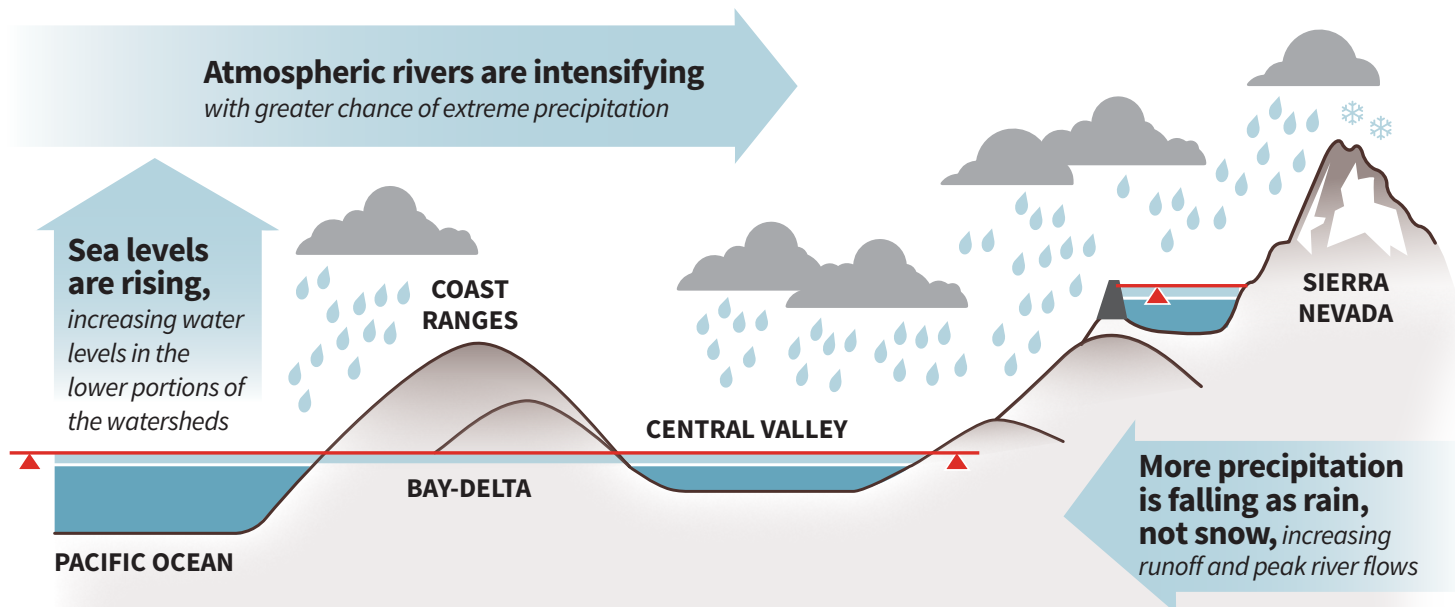


Climate Change is Making Both Floods and Droughts More Extreme

Although progress has been made to reduce flood risks and support multiple benefits, much remains to be done to provide a sustainable, resilient flood system for the 21st century, and protect and enhance habitat and water resources.

The 2022 CVFPP Update climate change analysis advances the science and confirms the following key findings from the 2017 CVFPP Update:

- Increased warming across the entire planning area.
- Extreme precipitation – the driver for most flood events – is likely to intensify, even with projections of overall drier conditions. In a warmer climate, extreme atmospheric rivers, the primary source of major flood events in the Central Valley, will become more intense as they become wetter, longer, and wider, increasing their potential to cause catastrophic events that could overwhelm many parts of the current flood system.
- Changes in flood magnitudes and frequencies are projected to vary from north to south in the Central Valley. Watershed characteristics and system performance strongly influence the hydrological response to climate change, with the high-elevation San Joaquin watersheds showing the largest percentage increases in flood volumes because of a reduction in precipitation as snowfall and more rapid snowpack melting.
- Overall changes in the timing, duration, and magnitude of flows can change river geomorphic functions, floodplain activation, sediment mobilization, and the distribution of riverine habitats and adversely affect specific target species that depend on those processes.

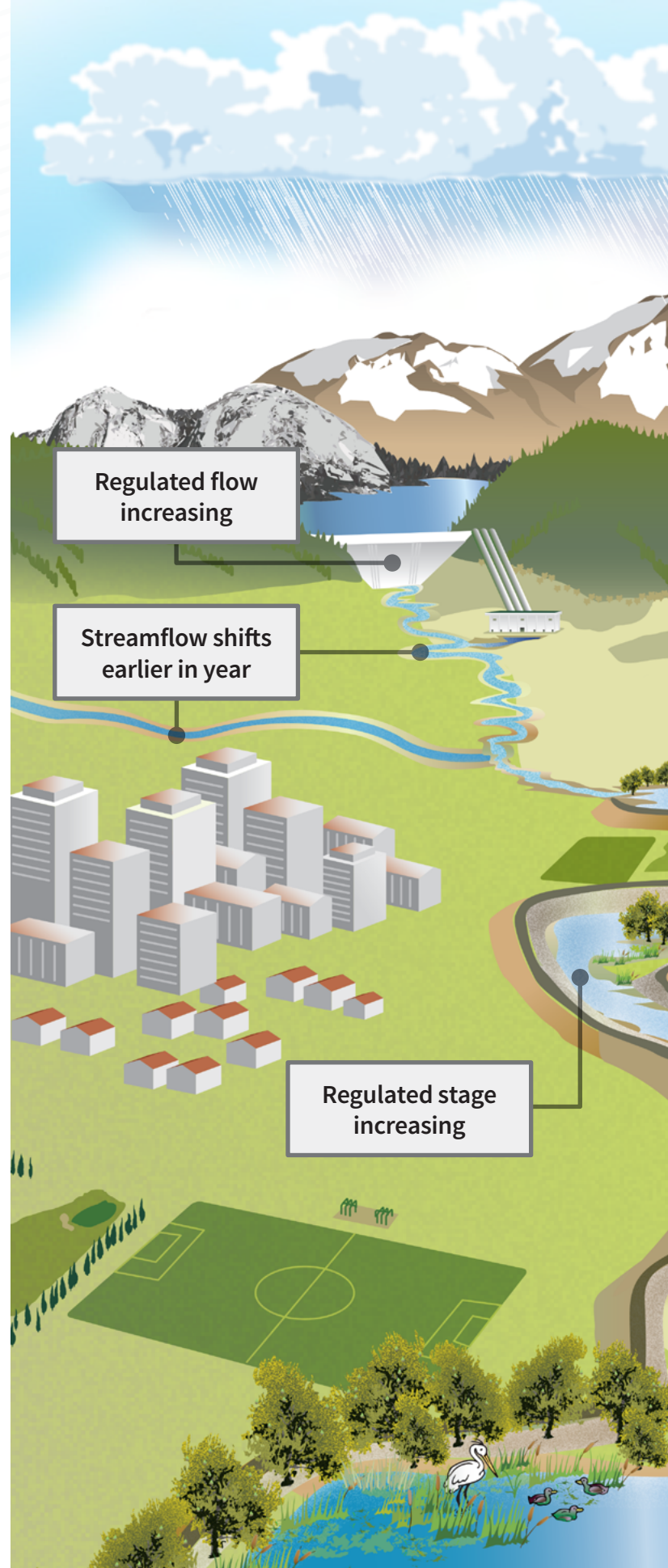


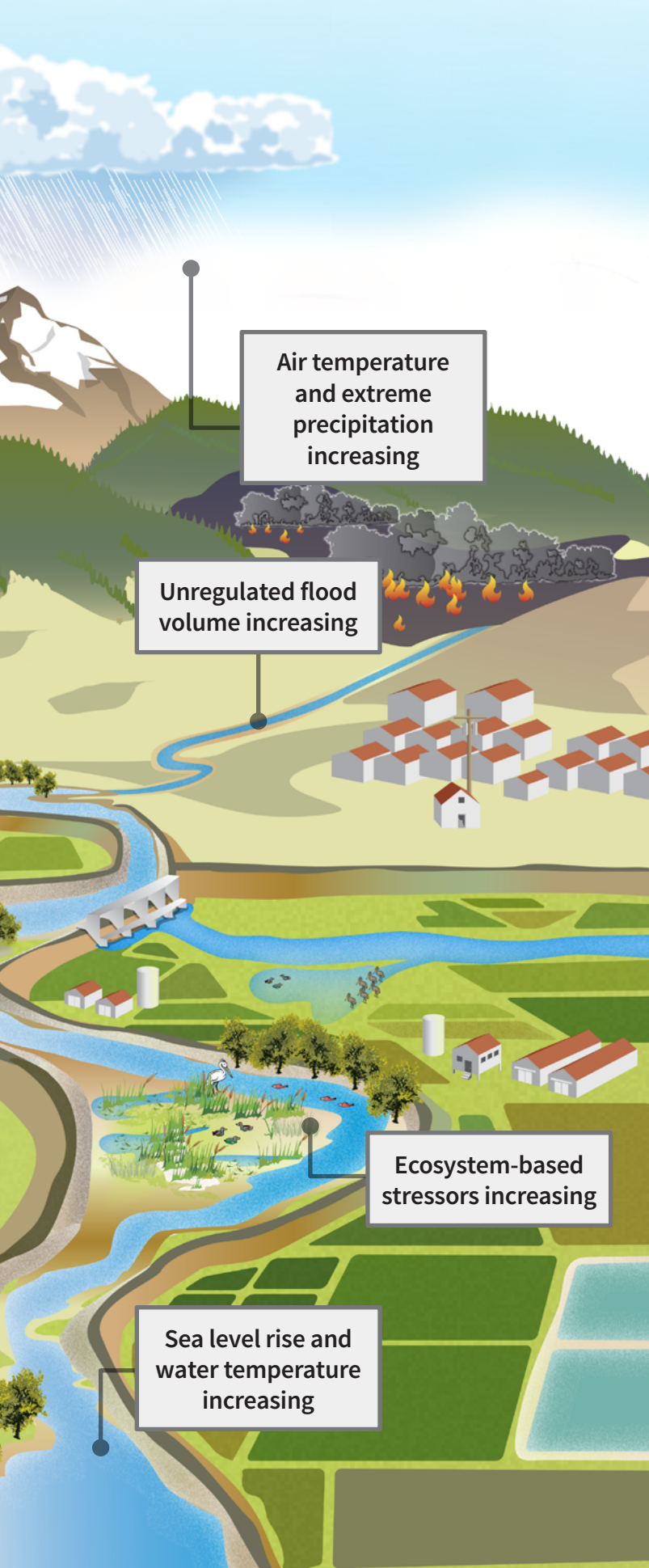
Projected Climate Change Impacts

The analyses for the 2022 CVFPP Update evaluated system performance over a 50-year planning horizon (from 2022 to 2072) to understand how flood risk is expected to change and to assess climate resiliency over the long-term.

Although this information provides an estimation of what may be expected for all possible events, these model results simulate a condition based on the best available information at this time and are not predictive of actual events. The risk analysis for the CVFPP is a watershed-based multidisciplinary analysis primarily focused on supporting the societal values of public health and safety, and a healthy economy. The 2022 CVFPP Update climate change analysis includes a wider range of potential climate change projections than the 2017 CVFPP Update to better understand the range of uncertainty associated with projections in different Central Valley watersheds. These estimates present a range of climate predictions over a 50-year planning horizon and are described as a “low,” “medium,” and “high” projections for 2072. Watershed responses to climate change and findings of the 2022 CVFPP Update climate change analysis include:

- More warming projected for all future scenarios, resulting in less of the watershed below freezing temperatures and a reduction of snow accumulation.
 - ▶ Freezing elevations in both Sacramento and San Joaquin River basins will increase.
 - ▶ Increasing and warmer rainfall and less snow from major storms will result in decreasing and shifting snowmelt to earlier in the season and most snow melting by early spring.





- The increased frequency and magnitude of wildfires heighten the risk for dangerous flood conditions, and there is additional risk to people and property below burn-scarred hills.
- Future floods are expected to have increased peak water surface elevations and cause more damage in tidally influenced areas of the lower San Joaquin and Sacramento River watersheds because of sea level rise.
- Frequency and magnitude of emergency response actions are expected to increase as a result of sea level rise, even in dry conditions.

Climate change is also exacerbating declines in ecosystems already affected by other stressors. The 2022 CVFPP Conservation Strategy Update considers climate risks and vulnerabilities to ecosystem processes, habitats, and target species. Appendix H of the Conservation Strategy Update provides data and resources to better understand flood and ecosystem management-related consequences and vulnerabilities associated with climate change. It also provides a set of recommendations and measures with a focus on adding resiliency to the flood system through nature-based solutions including multi-benefit projects.

Flood Management Equity

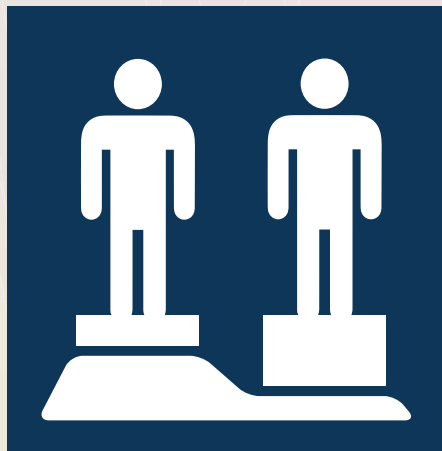
A renewed spotlight on equity and social justice has accelerated overdue assessments in many public sectors, and the flood management sector is no exception.

Flood management agencies and organizations nationwide have acknowledged that socially vulnerable populations face disproportionate flood risk because of a variety of social, economic, and political factors, and that flood events exacerbate existing racial and social inequities.

For example:

- Low-income and minority communities are often located in areas with higher exposure to flooding.
- Communities with limited budgets or capacity often lack flood management expertise and/or local staff have reduced ability to mitigate and address flooding.
- Many State, federal, and local flood agencies and nongovernmental organizations (NGOs) are investing in diversity, equity, and inclusion initiatives that can inform the CVFPP, including:
 - ▶ The Capitol Collaborative on Race & Equity is a community of California State government entities working together to learn about, plan for, and implement activities that embed racial equity approaches into institutional culture, policies, and practices.
- ▶ The California Natural Resources Agency is committed to incorporating justice, equity, diversity, and inclusion into everything the agency does, including connecting with marginalized communities and giving more voice to different perspectives across the state, committing to eradicate racism and inequity, and developing a clear agenda to confront racism, inequity, and unconscious bias to impact decision-making across the agency at all levels.
- ▶ Through the Justice40 Initiative, federal agencies, including the U.S. Army Corps of Engineers and the Federal Emergency Management Agency, are directed to deliver 40 percent of the benefits of their investments to underserved communities.
- ▶ The Association of State Floodplain Managers has committed to equity and inclusion in floodplain management through approval of a social justice policy statement and commitment to efforts that ensure equitable treatment and equal opportunity for all individuals at risk of flooding.

Building upon these efforts to develop tracking of equity outcomes will continue to support the 2027 CVFPP Update and beyond.



State Systemwide Investment Approach

The foundation of the CVFPP is the **State Systemwide Investment Approach (SSIA)**. The SSIA provides guidance for State investments in flood management in the Central Valley.

This strategic approach helps ensure that limited public resources are directed to actions that will

deliver the highest value for each investment and align with legal requirements. The SSIA includes a broad range of management actions to improve flood management systemwide and in urban areas, rural-agricultural areas, and small communities.

Management Action Category	Ongoing Management Actions	Capital Management Actions
Systemwide	<ul style="list-style-type: none"> • State operations, planning, and performance tracking. • Systemwide risk assessments. • Emergency management. • Reservoir operations. • Annual operation and maintenance. • Flood management policy actions. 	<ul style="list-style-type: none"> • Multi-benefit flood improvement programs. • Reservoir and floodplain storage. • Groundwater recharge and flood managed aquifer recharge (Flood-MAR). • Deferred maintenance.
Urban	<ul style="list-style-type: none"> • Risk awareness, floodproofing, and local land use planning. • Studies and analysis. 	<ul style="list-style-type: none"> • Levee improvements for 200-year level of protection. • Other infrastructure and multi-benefit flood improvements.
Rural	<ul style="list-style-type: none"> • Risk awareness, floodproofing, and local land use planning. • Studies and analysis. 	<ul style="list-style-type: none"> • Levee repair and infrastructure improvements. • Small-scale levee setbacks and floodplain storage. • Land acquisitions in fee or easements. • Habitat restoration/reconnection.
Small Community	<ul style="list-style-type: none"> • Risk awareness, floodproofing, and local land use planning. • Studies and analysis. 	<ul style="list-style-type: none"> • Levee repair and infrastructure improvements for up to 100-year level of protection. • Small-scale levee setbacks and floodplain storage. • Land acquisitions in fee or easements. • Habitat restoration/reconnection.

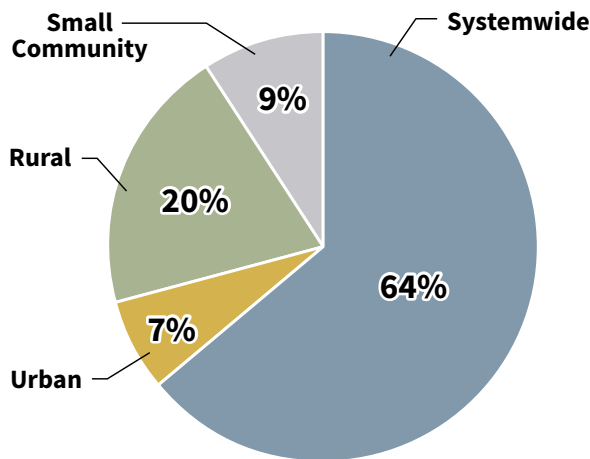
Central Valley Flood Management Actions

Management actions are necessary for achieving the CVFPP goals and contributing towards societal values, and they inform State priorities for implementation at the program level.

Mapped locations express the geographic diversity of in-progress or planned management actions in the 2022 SSIA portfolio within the Sacramento and San Joaquin river basins. Percentages express the distribution of the number of actions for each basin.

Sacramento River Basin Actions

- ◆ Systemwide Actions
- Small Community Actions
- Rural Actions
- ▲ Urban Actions



Left: Sacramento Weir and Bypass (California Department of Water Resources, 2011). **Top right:** Oroville Wildlife Area (California Department of Water Resources, 2021). **Bottom right:** Hallwood Side Channel and Floodplain Restoration Project (cbeco engineering, 2021).

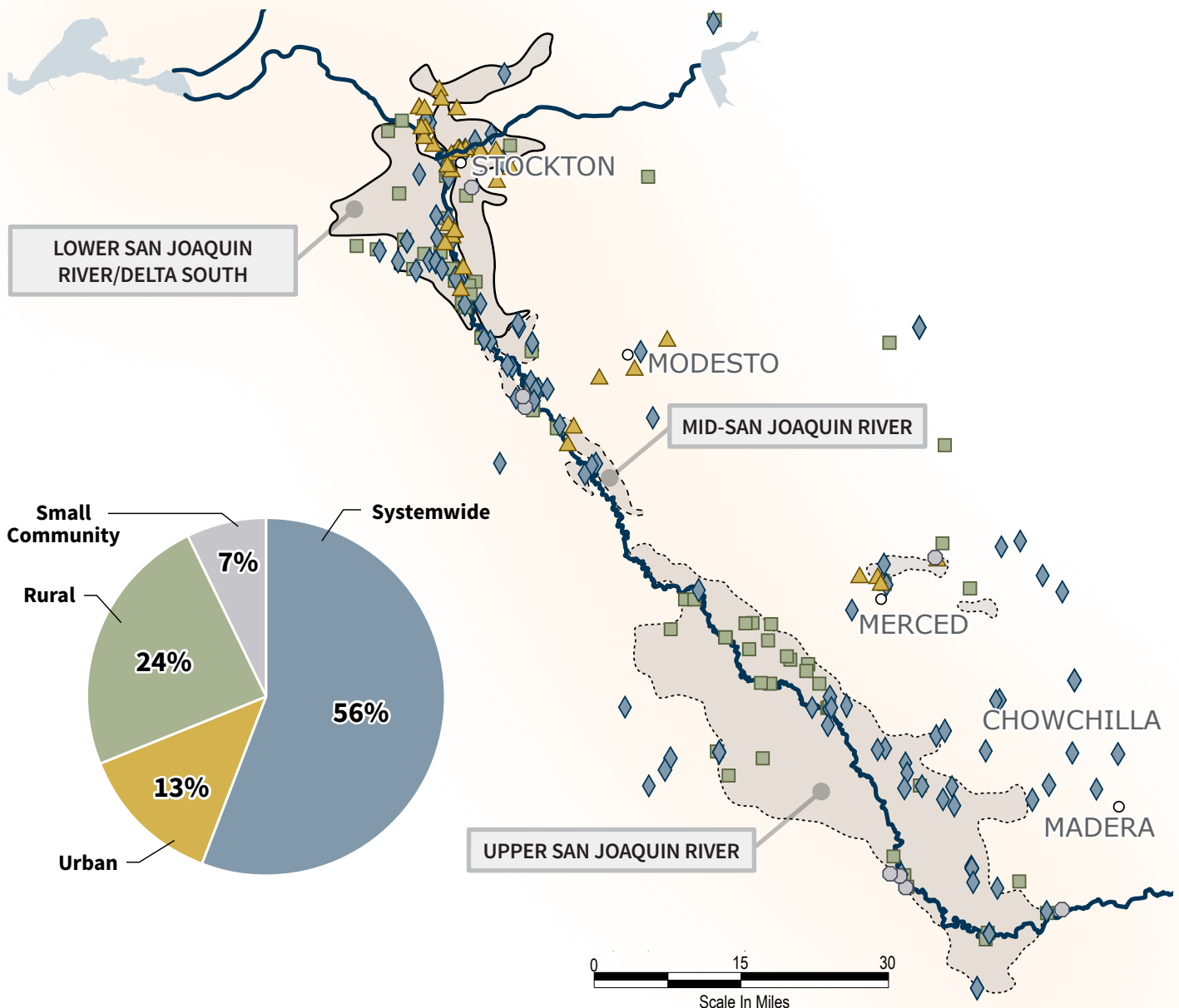




San Joaquin River Basin Actions

- ◆ Systemwide Actions
- Small Community Actions
- Rural Actions
- ▲ Urban Actions

Top left: Dos Rios Ranch Floodplain Expansion and Ecosystem Restoration Project, Phase 1 (River Partners, 2020). **Right:** San Joaquin Area Flood Control Agency Smith Canal Gate Project (Kjeldsen Sinnock Neudeck, 2020). **Bottom left:** Reclamation District 17 100-Year Levee Seepage Project (Peterson Brustad, Inc., 2020).



CVFPP Funding Plan

Successful implementation of the CVFPP over the next 30 years will require clear priorities that are updated every five years based on new information, collaboration with partners and public interests, and improved understanding of evolving flood risk.

The 2022 CVFPP Update provides updated investment needs derived from refinements of key components of the Plan, and improvements that are necessary to address climate resilience needs.

The CVFPP updates represent a rolling 30-year plan, and each five-year update uses a 30-year investment planning horizon. Near-term priorities included in years 2022 through 2032 generally include greater detail than longer-term priorities, with future updates expected in each CVFPP cycle as implementation progresses and needs are reassessed.

- **Years 2022 through 2032.**

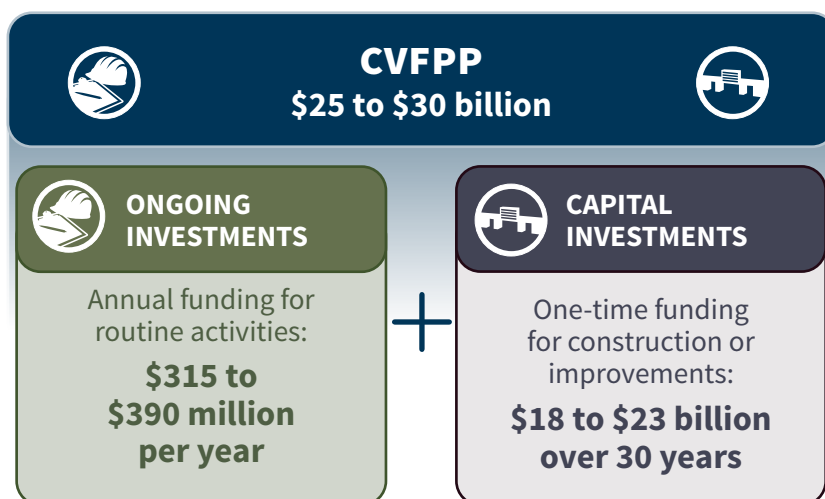
Continue to responsively address the highest levels of risk to lives and assets concentrated in the densely populated areas, and concurrently transition towards more balanced and multi-benefit flood risk management.

- **Years 2032 through 2042.**

Continue implementation of multi-benefit flood risk management and focus investments on reducing remaining residual risk.

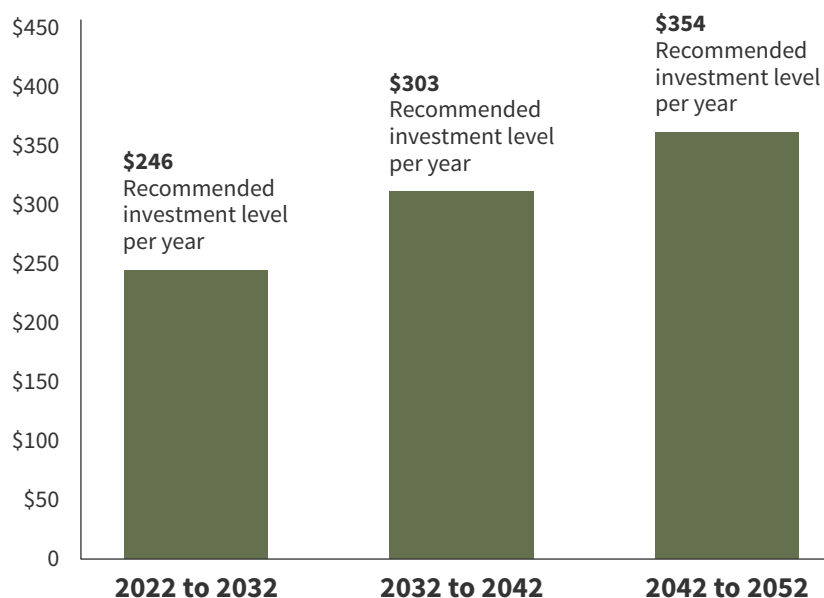
- **Years 2042 through 2052.**

Sustainably fund a balanced portfolio of both ongoing and capital activities including actions with previously unresolved funding and policy barriers.



Trend of recommended ongoing investments for routine activities

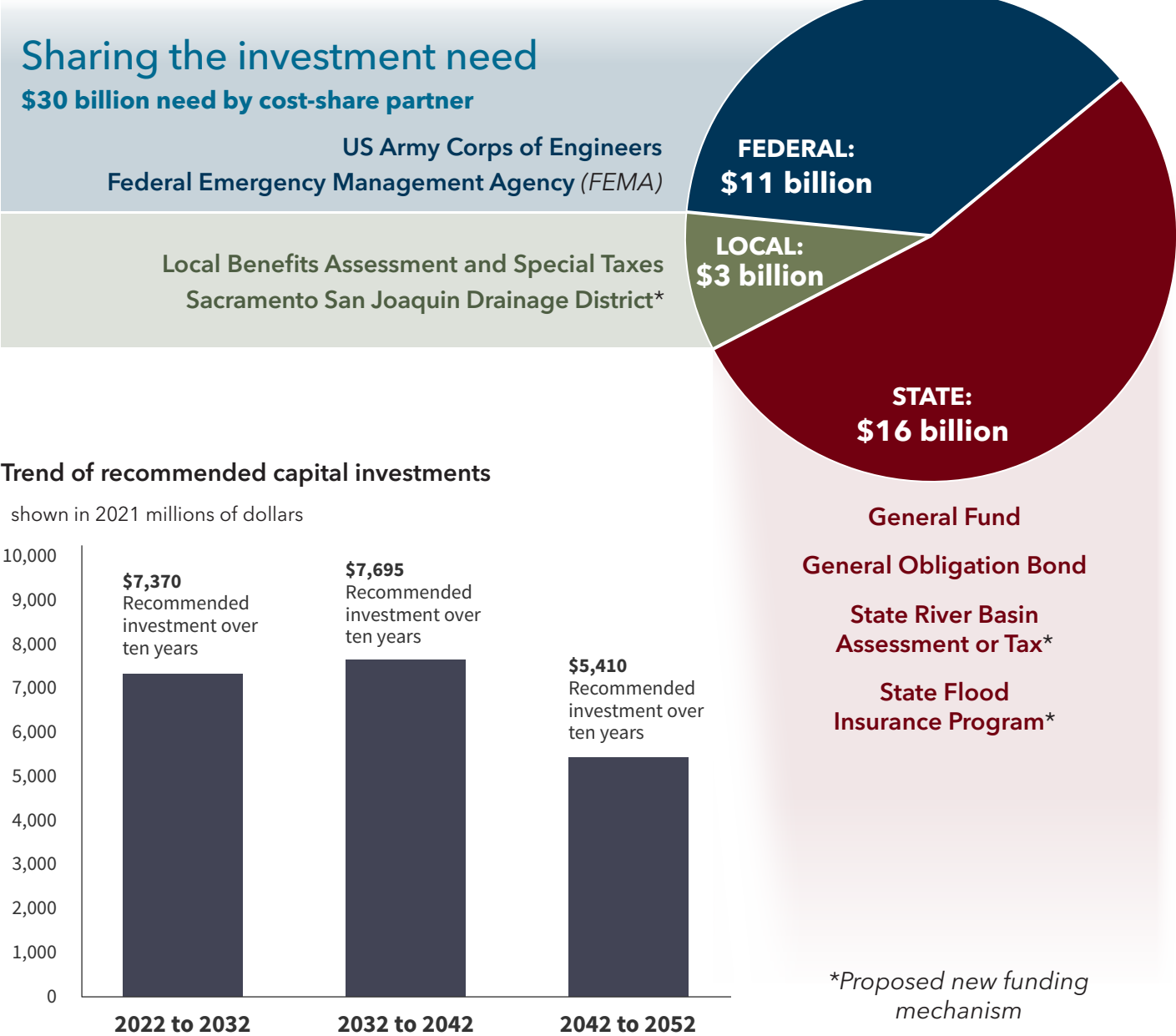
shown in 2021 millions of dollars



Recommended Funding Plan

To achieve the flood risk reduction goals and societal values articulated in the CVFPP over the next 30 years, much larger contributions are required from all cost-sharing partners. The recommended CVFPP funding plan would leverage existing funding sources and indicate

where increases in revenue generation capacity are needed. Additionally, institutional capacity for State, federal, and local partners will need to expand to support additional programs and project activities. To accommodate this, the CVFPP funding plan ramps up over time to provide time to create additional institutional capacity.



Supporting Documents

There are nine supporting documents to the 2022 CVFPP Update, including the State Plan of Flood Control (SPFC) Descriptive Document Update, Flood System Status Report (FSSR), and Conservation Strategy Update.

The supporting documents generally present detailed results of various planning, engineering, environmental, and financial studies that have been conducted to assist with the development of the 2022 CVFPP Update.



Conservation Strategy 2022 Update

The CVFPP Conservation Strategy provides actionable and measurable objectives to improve riverine, aquatic, wetland, and riparian habitat in the flood system through the integration of ecological

principles with multi-benefit flood risk reduction projects, O&M activities, institutional support, and other means.

Data, information, and guidance in the Conservation Strategy guides development of multi-benefit flood infrastructure improvement projects by integrating project components and management strategies that benefit natural physical processes, native species and their habitats.

The 2022 Update builds on significant science and collaborative work completed since the 2012 Conservation Framework, which provided the

basis for the comprehensive 2016 Conservation Strategy. The 2016 Conservation Strategy developed measurable objectives for physical processes and key habitat types. The 2022 Update:

- Provides a system to track how progress is being made toward achieving the measurable objectives.
- Includes details regarding the measurable objectives tracking system and five-year status update of progress made since 2016.
- Adds four new species to the target list – delta smelt, yellow-breasted chat, tricolored blackbird, and monarch butterfly – and provides comprehensive information regarding new scientific data and listing status.

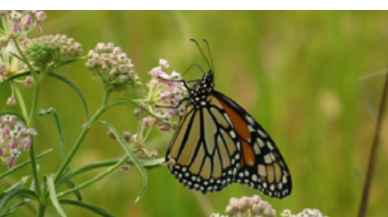
The 2022 CVFPP Conservation Strategy Update guides implementation with five key components, each accompanied by a set of prioritized actions and recommendations.

1. Coordination, Collaboration, and Alignment.

Implementation of the CVFPP and Conservation Strategy relies on coordination, collaboration, and alignment among State, federal, and local agency partners and other stakeholders, including landowners, land conservancies, and NGOs. Projects are most successful in being efficiently implemented when a strong collaboration and alignment exists among partners, especially at a landscape scale.

2. Outreach and Engagement.

Outreach and engagement will continue to focus on existing, successful venues, such as the CVFPB Advisory



Committee and regional flood management plan (RFMP) engagements, while increasing the level of engagement and participation with California Native American Tribes.

3. Funding. Achieving the Conservation Strategy's measurable objectives through implementing multi-benefit projects and ecological restoration is an integral part of implementing the CVFPP and the 2022 SSIA portfolio of management actions.

4. Regulatory Compliance. Actions to implement the CVFPP and Conservation Strategy need to comply with a variety of federal and State environmental laws. Consideration of streamlining this process through collaborative arrangements with agencies is a key component to implementing multi-benefit projects.

5. Adaptive Management. Adaptive management uses new information to adjust plans and practices. The CVFPP and Conservation Strategy promote a flexible approach to be able to quickly adapt to new information, including new project and program outcomes. Adjustments are made at five-year intervals as part of the CVFPP updates.

- Updates for ongoing State-federal projects.
- Descriptions of changes to SPFC project works or facilities.
- Descriptions of changes to Sacramento-San Joaquin Drainage District land holdings, types of property rights, agreements for use of easements and properties, lands of designated floodways, and ongoing evaluations.
- Updated information about repair projects, O&M, and O&M manuals.

2022 Flood System Status Report Update

The 2022 Flood System Status Report (FSSR) Update describes the current physical condition of SPFC facilities as of 2021 at a systemwide level. The information contained in 2022 FSSR guides future inspection, evaluation, reconstruction, and improvement of SPFC facilities. The FSSR documents the multiple levee systems that have been improved within the urban levee evaluation (ULE) and non-urban levee evaluation (NULE) study areas and incorporates data supplied by ongoing DWR inspections and evaluations.



State Plan of Flood Control Descriptive Document 2022 Update

The 2022 Descriptive Document includes a description for the SPFC as of June 30, 2021, and provides:



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Overview of Regional Flood Management Plans

Funded in part by DWR, the regional flood management plans (RFMPs) are developed by collaborations of flood management agencies and other stakeholders. The RFMPs identify and describe region-specific priorities and challenges and offer valuable insight from the perspective of local and regional flood management groups. RFMPs help support DWR in planning efforts across the Central Valley, inform and align with CVFPP

implementation and its investment strategy, and provide an important foundation for regional and local engagement. The RFMPs are separated into six planning areas throughout the CVFPP Systemwide Planning Area. The regional overviews included in the 2022 CVFPP Update provide an overview of the priorities and perspectives of the six RFMPs and do not necessarily reflect the priorities of the State.



Upper San Joaquin River region covers approximately 660 square miles of the San Joaquin Valley, including areas protected by SPFC facilities along the San Joaquin River from Gravelly Ford to the confluence of the Merced River. Major tributaries within the region include Ash and Berenda sloughs; Fresno River; and Black Rascal, Owens, and Bear creeks. One-third of the region is native vegetation and riparian habitat with contiguous wetland complexes. Productive agricultural lands account for a large portion of the economy in the San Joaquin Valley.

Mid San Joaquin River region comprises six non-continuous areas within Stanislaus and Merced counties. It extends along the mainstem San Joaquin River between the Merced and Stanislaus rivers, including tributaries with lower reaches protected by SPFC facilities and adjacent floodplain areas with a nexus to the SPFC. Most of the region is rural and agricultural. A network of connected floodplains and waterways, many managed by non-SPFC facilities, influences the performance of SPFC facilities. This region is part of the traditional Tribal territories of the Northern Valley Yokuts and Miwok. More than 500,000 people reside within the region; Modesto is the region's largest city.



Lower San Joaquin River/Delta South region covers 260 square miles and comprises distinct urban and rural-agricultural areas. The region extends along the mainstem of the San Joaquin River from the Stanislaus River to Bear Creek. Land use acreage is approximately 25% urban and 75% rural. The San Joaquin Area Flood Control Agency's (SJAFCAs) jurisdiction encompasses the entire region. SJAFCAs support other agencies that deliver flood risk management services, but in some cases, it will lead projects and programs. The region's urban population is approximately 400,000, and the remaining area is primarily rural, with flood management facilities maintained by 29 reclamation districts and by the San Joaquin County Flood Control and Water Conservation District. A large portion of this region is designated as disadvantaged communities or severely disadvantaged communities. The region covers traditional Tribal territories of the Northern Valley Yokuts and the Miwok.

REGIONAL OVERVIEWS

Lower Sacramento River/Delta North region is approximately 630 square miles and includes portions of Solano, Yolo, Sacramento and Sutter counties along the Sacramento River, and tributaries and bypasses from the Knights Landing Levee Basin to the Delta near Collinsville. The local agencies that routinely meet as a working group include the West Sacramento Area Flood Control Agency, Yolo County, Solano County, Solano County Water Agency, RD 2068, and Sacramento Area Flood Control Agency. This region contains the largest concentration of developed lands protected by the SPFC, and accounts for the largest share of the flood system's exposure to property damage and loss of life in case of catastrophic flooding. This region covers the traditional Tribal territories of Miwok, Nisenan, and Patwin.



Feather River region includes approximately 470 square miles that encompass Sutter, Butte, Yuba counties along the main stem of the Feather River, and a small portion of Placer County along the Bear River. The region spans from Thermalito Afterbay to the confluence of the Feather and Sacramento rivers, and has a population of approximately 160,000. Roughly 76% of land use is farmland, 16% percent is native vegetation or grazing land, and 8% is urban. It is of great regional importance to promote flood-compatible land uses (such as the floodplain's agricultural, recreational, and wildlife areas) and reduce the risk of flooding and allowing regional economic prosperity. Multi-benefit projects that create or enhance these land uses are equally as important. This region also provides habitat to various threatened and protected species and covers the traditional Tribal territories of the Patwin and two groups of Maidu, the Konkow and Nisenan.



Mid and Upper Sacramento River region covers roughly 1,000 square miles across Tehama, Glenn, Lake, Colusa, Butte, Sutter, and Yolo counties. The Sacramento River and several of its tributaries intersect the region, with multiple National Wildlife Refuges. Key components of the Sacramento River Flood Control Project, such as the Sutter and Tisdale bypasses, are located in the region. More than 90% of the region is non-urban, with almost 70% of the region designated as Prime and Statewide Important Farmland. This region covers traditional Tribal territories of the Nomlaki, Pomo, Miwok, Patwin, and two groups of Maidu: the Konkow and Nisenan. Chico, the region's largest population center north of Sacramento, is an urban area with a population of approximately 121,000. The region contains a diverse set of stakeholder groups.



Communications and Engagement

Development of the 2022 CVFPP Update was informed by a robust, multi-year communications and engagement process that involved frequent discussions with State, federal, Tribal, regional, and local partners.

Outreach efforts and engagement strategies provided partners and other public interests with the familiarity and consistency that fosters shared understanding and effective collaboration. Ongoing discussions have yielded important and valuable insights about different perspectives on flood management needs, challenges, and opportunities across the Sacramento River and San Joaquin River basins.



Partnerships and Collaborative Efforts

Flood management in California is a shared responsibility among State, federal, and local agencies.

Collaboration with stakeholders and partner agencies is essential for flood management programs in the Central Valley. Partnerships enable agencies to work collaboratively and with stakeholders to plan and implement a

framework for developing an integrated and systemwide plan that built broad support among State, federal, and local agency partners; Tribal governments; NGOs; and other key interests in Central Valley flood management. Effective partnerships are critical to efficiently and effectively managing the flood system for multiple benefits over the long-term future across system, regional, and local scales.



Alignment with Other State Efforts

The development of the 2022 CVFPP Update was influenced by many statewide plans and policies.

The California Water Resilience Portfolio, California Water Plan Updates 2018 and 2023, and implementation of the Sustainable Groundwater Management Act provided vision and strategic direction for integrated, sustainable, and resilient water resources management.

The 2022 CVFPP Update continues a commitment to integrated watershed management (IWM) emphasized in the 2017 CVFPP Update with respect to flood management and promotes system flexibility and resiliency to accommodate changing conditions such as climate change impacts, regional priorities, ecosystem needs, flood or drought events, groundwater sustainability, and funding capabilities.

Many other State plans, policies, and legislation influence the planning and implementation of the CVFPP such as the San Joaquin River Restoration Program, Delta Stewardship Council's Delta Plan and Delta Adapts, and EcoRestore. Continued efforts to strengthen alignment between the CVFPP and other State efforts results in broader multi-benefit outcomes for the Central Valley.

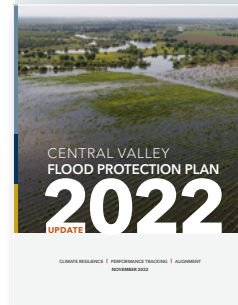
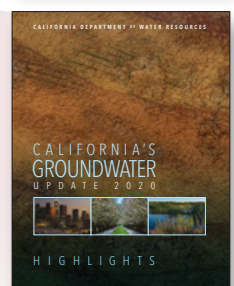
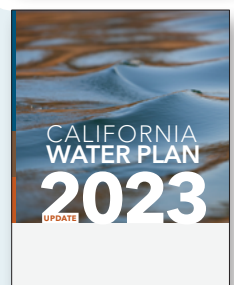
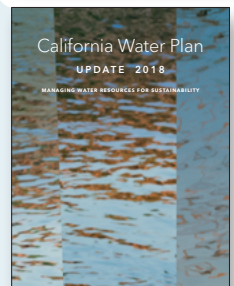
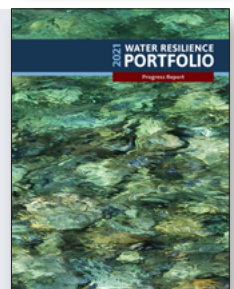
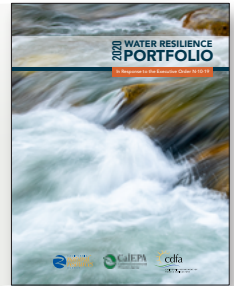
The 2022 CVFPP Update acknowledges the importance and function of flooding as a natural part of riverine and floodplain ecosystems and the natural and beneficial functions of floodplains as natural infrastructure. This understanding is in alignment with State priorities for nature-based solutions, as well as the opportunity to use floodwaters to support groundwater recharge efforts and greater water sustainability and climate resilience throughout the Central Valley.

State and local flood managers are partnering with non-governmental organizations and

academia to demonstrate the potential for innovative flood management to deliver significant water supply and environmental benefits. For example, watershed-scale climate vulnerability and adaptation studies led by DWR, local, and federal reservoir operators, and downstream local flood agencies are revealing some of the most promising benefits of co-management.

Coordinated management of floodwaters with water supply can support drought preparedness, sustainable groundwater management, and watershed resilience through actions such as reservoir operations, conjunctive management, and using floodwaters for managed aquifer recharge (also known as Flood-MAR). Further, opportunities for landscape-scale floodplain restoration, where land use changes are occurring in response to the Sustainable Groundwater Management Act, can provide wise use of floodplains and recharge over-drafted groundwater basins in some areas. This opportunity is being demonstrated by ongoing pilot studies in the San Joaquin River Basin.

Many State agencies are investing in diversity, equity, and inclusion initiatives, the 2022 CVFPP Update reflects these initiatives with the addition of equity and social justice as a societal value and as part of future performance tracking. The 2022 CVFPP Update seeks to advance equity in flood management, increase collaboration with vulnerable communities, and support alignment of State efforts to help vulnerable communities prepare for, respond to, cope with, and recover from flood events.



CALL TO ACTION

Key Takeaways

- Climate change is affecting California now and increasing flood risk.
- Catastrophic flooding in the Central Valley will occur; the only question is when.
- While the proposed investments are significant, the cost of inaction is many times greater and growing fast.
- More investment is needed.
- We need to continue to act, but with renewed shared purpose and urgency.

Recommendations

- **Act swiftly.** We must act swiftly to implement innovative cross-sector flood management strategies, valuing a resilient flood system's contribution to broader policy challenges such as groundwater management and ecosystem stewardship.
- **Invest boldly.** We must invest boldly over the next 30 years, building institutional capacity, moving projects forward, and leveraging each flood system partner's unique capacity for financing and advocacy.
- **Prioritize the most vulnerable communities.** We must protect the Central Valley's most vulnerable communities, while acknowledging and correcting historic inequities in investment and policy.
- **Work with nature.** We must continue the evolution away from practices that constrain nature and towards strategies that work with nature, recognizing the risk reduction and ecologically regenerative power of a multi-benefit flood system.
- **Value and foster our partnerships.** We must continue to invest in partnerships, forging personal and institutional relationships based on mutual understanding and trust.

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