PERFORMANCE TRACKING

CALIFORNIA WATER PLAN 2023 UPDATE
CENTRAL VALLEY FLOOD PROTECTION PLAN 2022 UPDATE

California Water and Environmental Modeling Forum
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CALIFORNIA WATER PLAN 2023 UPDATE PERFORMANCE TRACKING

Eric Tsai, P.E.
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Watershed Hub

Regional Atlas

- Sharing accomplishments and value of investments
- Communicating future projects, needs, and priorities
- Collaborating on regional and statewide investments
- Building relationships among DWR and regional and local participants

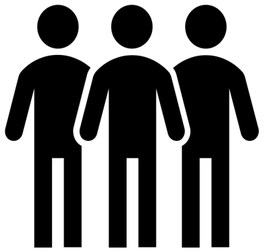
Sustainability Outlook

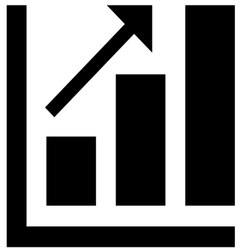
- Tracking progress toward sustainable and resilient water management
- Supports climate resilience planning and adaptive management

Watershed Resilience Indicators and “Watershed Hub” Development Process

1

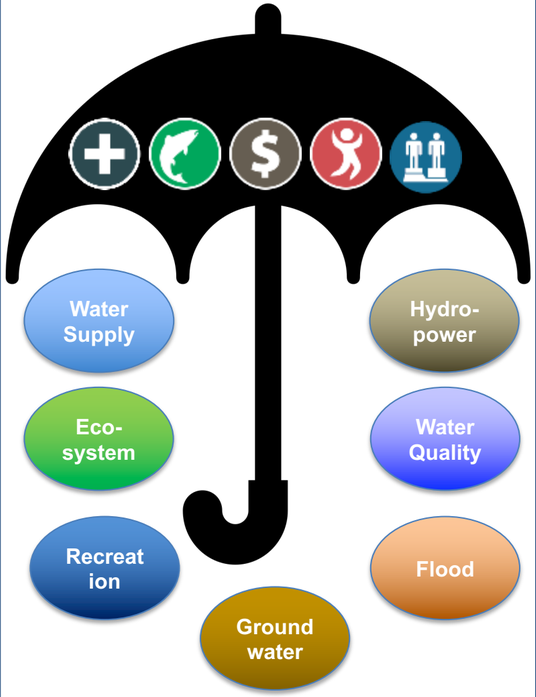
Identify Users and Uses of Information





2

Develop Watershed Resilience Indicators and Metrics

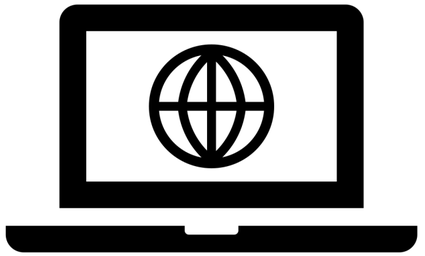


3

Identify Reporting Needs and Formats

4

Develop “Watershed Hub” Application



Users and Uses

California legislative staff, policy maker, or state agency executive:

- Status of current investments, system conditions, and trends to track progress towards sustainability and resiliency
- Inform policies and funding
- Support decision making and define investment priorities
- Show progress toward intended outcomes of the Sustainability Outlook, Resilience Portfolio, and other State programs/initiatives

Users and Uses

DWR program manager or staff:

- Track regional and statewide progress to water sustainability and resiliency
- Explore regional trends (stresses/vulnerabilities)
- Support local agencies in identifying multi-benefit projects
- Assess future projects, develop watershed plans, and evaluate investment opportunities and priorities
- Facilitate regional and project information collection from communities
- Provide informative watershed-specific information to encourage and support the formation of watershed networks

Users and Uses

Regional or local water resources manager:

- Track regional projects, accomplishments, challenges, stressors, and vulnerabilities
- Increase collaboration with other agencies
- Inform adaptive management and prioritize actions to address vulnerabilities
- Better formulate and assess multi-benefit project opportunities, priorities, and concepts
- Develop region-specific performance indicators to better manage unique conditions
- Understand trends in regional water management, demands, and supplies
- Facilitate ease of communication about regional water management
- Show returns on investments
- Share progress toward sustainability and resiliency

Watershed Resilience Indicators and Metrics - Criteria

- ✓ “SMART” - Specific, Measurable, Achievable, Relevant, and Time-Bound
- ✓ Water-dependent resources
- ✓ Track equity, sustainability, and resiliency
- ✓ Take a “vital signs” approach
- ✓ Statewide availability and applicability
- ✓ Leverage 2018 Sustainability Outlook, 2022 CVFPP Update, SGMA
- ✓ Leverage federal & state agency indicators and metrics
- ✓ Leverage **available, open, and regularly-updated data** and databases
- ✓ Adaptable to multiple programs

Indicators and Metrics – Under Development

	A	B	C	D	E
1	**CWP Update Resiliency Indicators and Metrics - Water Supply**			Indicators / metrics selected for Watershed Hub application	Currently Unavailable
2				Priority indicators / metrics	Currently Available
3				Unsure if data exists to support this metric	Requires Development (1-2
4	**Intended Outcome:**	**A reliable water supply for domestic needs, sanitation, and fire suppression**			Aspirational (2+ years)
5		**Reliable water supplies of suitable quality for a variety of productive uses, and productive water uses are based on a reliable supply**			
6		**More benefits from economics activities, including from reduced costs to provide a given level of service (including transaction and permitting costs)**			
7					
8	**Condition**	**Indicator**	**Metric**	**Data Link**	**Status**
9	Ensure reliability of water supply for beneficial uses	Domestic water supply reliability	Percent of households with reliable supply	UWMPs; SWRCB; DDW; US DHHS; IHS	Currently Available
10	Ensure reliability of water supply for beneficial uses	Municipal and industrial water supply reliability	Percent of population	UWMPs; SWRCB; DDW; US DHHS; IHS	Currently Available
11	Ensure reliability of water supply for beneficial uses	Agricultural water supply reliability	Undetermined	Undetermined	Undetermined
12	Ensure reliability of water supply for beneficial uses	Delivery reliability of SWP, CVP, and Colorado River Aqueduct systems	Percent difference of actual water deliveries to long-term average	DWR; Reclamation	Currently Available
13	Ensure reliability of water supply for beneficial uses	Ecosystem water supply	Annual volume of water dedicated for ecological flo	Undetermined	Requires Developm
14	Ensure affordability of water	Cost of M&I water	Cost of water to end user ($/AF or $/gallon)	California Public Utilities Commission	Available
15	Ensure affordability of water	Cost of Ag water	Cost of water to end user ($/AF or $/gallon)	California Public Utilities Commission	vailable
16	Ensure safe and clean water supply	Number of public water systems not in compliance with drinking water standards	Population served by public water systems and number of MCF violations by public water systems	State Water Board DDW	lable
17	Ensure safe and clean water supply	Water supplies derived from 303(d) impaired water bodies	Water supply volume	State Water Board e	le
18	Achieve efficient use of water	Comparison of Actual Water use to Proposed Statewide Water Use Targets	Gallons per capita per day (GPCD)	SWRCB and https://pac	
20	Achieve efficient use of water	System (M&I and Ag) leaks and losses	Undetermined	UWMPs; AWWA M36; DW	
21	Achieve efficient use of water	Reuse of water supply (advanced treatment)	Annual volume of recycled water (MAF)	Clean Water State Revolvi	
22	Ensure resilience of water supply to climatic, hydrologic, and other external stressors	Redundancy of water	Percent of population reliant on water from Delta-b	UWMPs	

Eco | Flood | Water Sup | Groundwater | Water Qual | Recreation | Hydropower | Equity | Resilience | Other PT Frameworks | Sus_Outlook_Tracking | USFS_Watershed_Indicators | +

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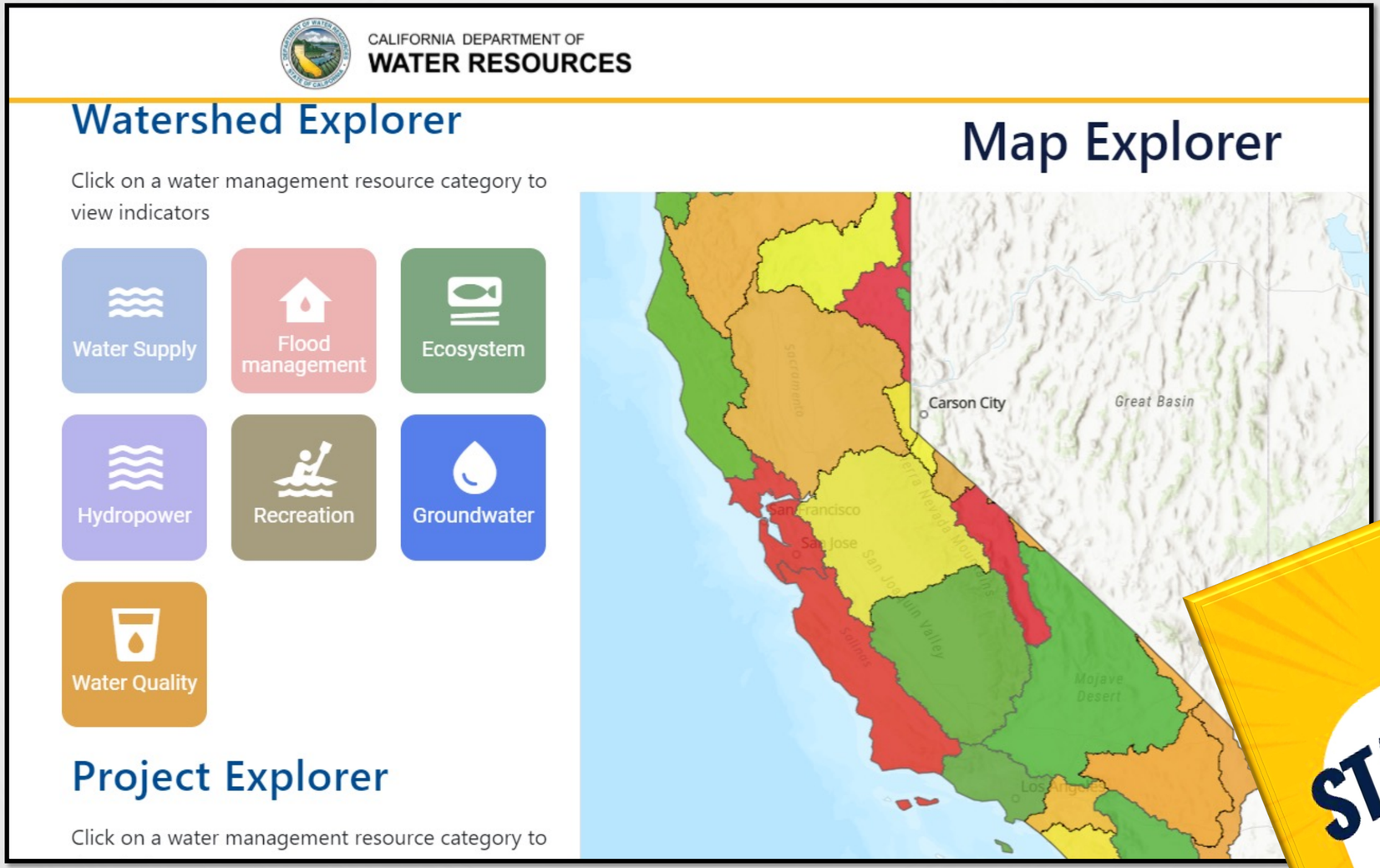
Watershed Hub Application – Under Development



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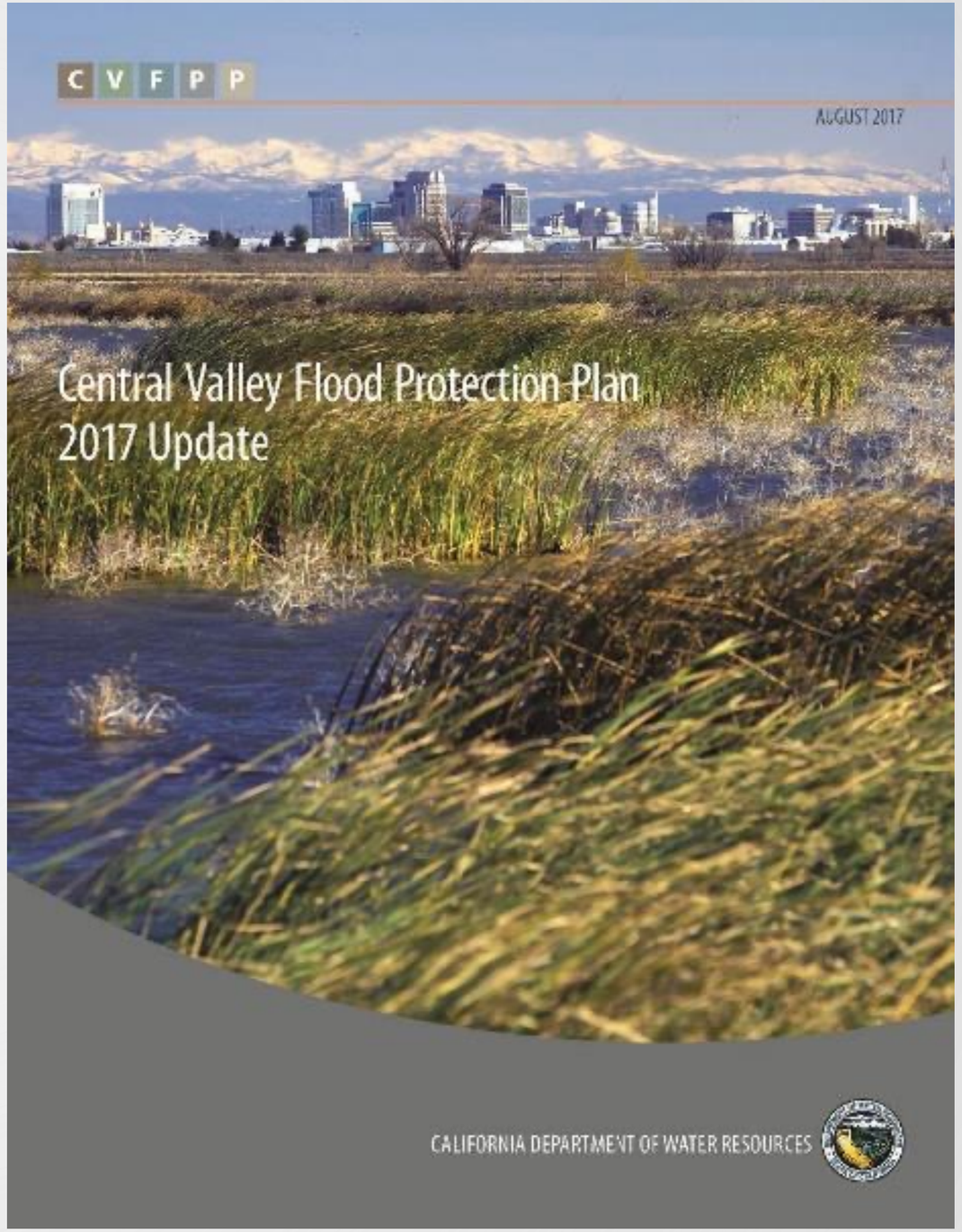
CENTRAL VALLEY FLOOD PROTECTION PLAN 2022 UPDATE PERFORMANCE TRACKING

Jason Sidley, P.E.
Department of Water Resources

The Central Valley Flood Protection Plan (CVFPP) is

- Descriptive, not decisional
- Not a funding or permitting decision for specific projects
- Prioritizes the State's investment in flood management over the next three decades
- Promotes multi-benefit projects
- Integrates and improves ecosystem functions associated with flood risk reduction projects



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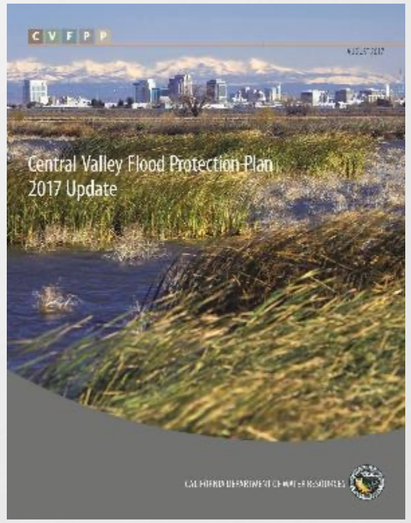
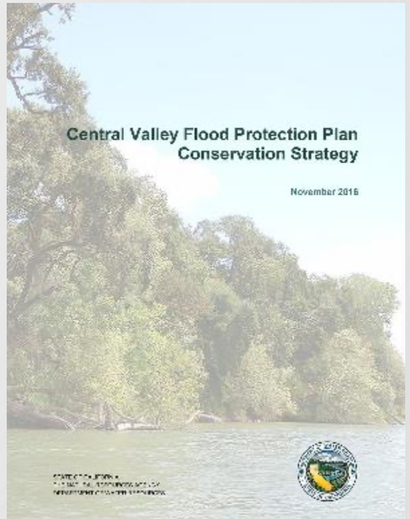
CVFPP Performance Tracking and Adaptive Management

"**Achieved outcomes** must be tracked, measured, and compared to **intended outcomes**." *Page 2-14, 2017 CVFPP Update*

Performance tracking keeps the 5-year planning cycle on track for each update

- Informs new potential actions
- Enables evolution toward resiliency
- Provides a system of accountability





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Tracking Progress Towards Societal Values

- **Public Health and Safety**
- **Ecosystem Vitality**
- **Healthy Economy**
- **Enriching Experiences**
- **Equity and Social Justice**

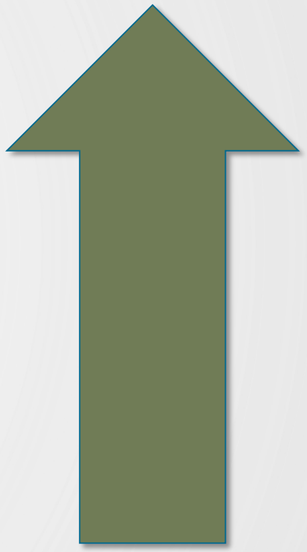




Tracking Progress Towards Intended Outcomes

Levels of Outcome	What We Are Tracking
Sustainability	Progress Toward Societal Values, like Public Health and Safety and Ecosystem Vitality
Societal Benefits	Progress in Enhancing Protection by Increasing Flood System Performance
Assets and Actions	Projects and Activities Being Delivered
Enabling Conditions	Funding, Policy, Making Permitting Easier

Outcomes Build On One Another



Outcome: - Result of an action taken. Outcomes are distinguished as intended outcomes (intent) and actual outcomes (result).

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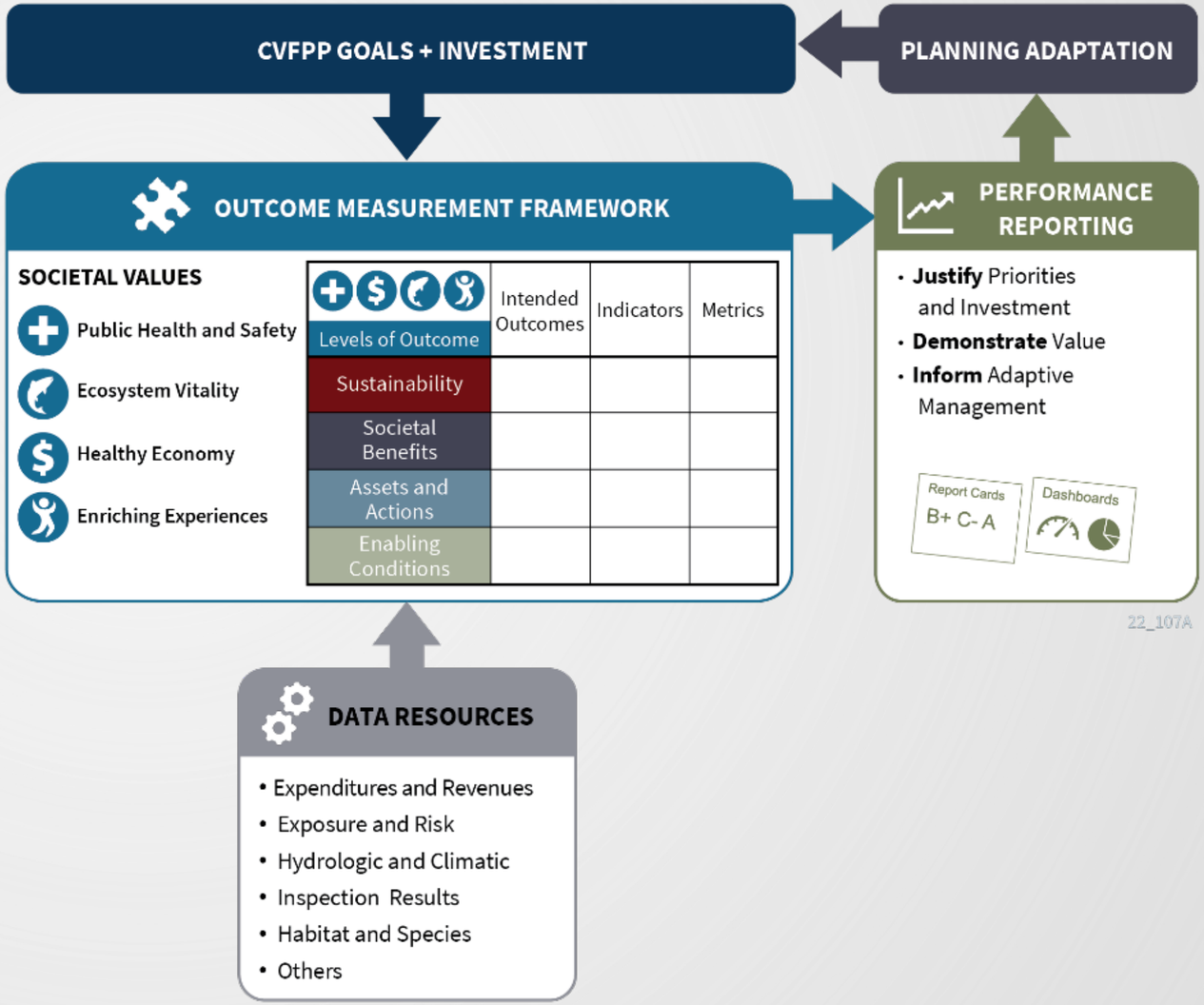
Performance Tracking Enabled by Flexible Framework

- Framework can be added to or refined over successive cycles
- Designed to roll upward from policy and resourcing actions, through project portfolios toward the outcomes that the Central Valley and California needs



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Sustainability
Across California

Provide for
Public Health & Safety

Societal
Benefits

Risk Reduction for People in the Floodplain

- **Expected Annual Life Loss**
- **Properties in Floodplains with 1% Chance of Flooding in Any Given Year**
- **Frequency of "Danger Stage" Exceeded Near Populated Areas**

Ability of People to Evacuate or Otherwise Avoid Harm in the Case of a Flood

- **Critical Facilities Flooded**
- **Population Served by Local Hazard Mitigation Plans / Emergency Response Plans**
- **Flood Warning Times**
- **Population Evacuated Before Flooding**

Reduction in the Probability of Dangerous Flooding as a Result of Enhanced Flood System Performance and Robustness

- **Number of Deficient Storage Facilities That Need Repairs or Modifications**
- **Total Length of Levees and Channel Improved (Urban and Rural)**
- **Probability of Flooding**

Assets
& Actions

Implementation of Projects, Actions, and OMRR&R

Enabling Conditions

CVFPP POLICY ISSUES


Land Use and Floodplain Management


Coordination with Federal Agencies


Funding


Governance and Institutional Support


Operations and Maintenance of the Flood System


Multi-benefit Projects

Greater Hydraulic and Ecosystem Baselines and Program Phases


Comprehensive Residual Risk Management


Climate Change and Flood System Resilience


Equity

Sustainability Across California

Support a **Healthy Economy**

Societal Benefits

Risk Reduction for Property and Assets

- Expected Annual Damage
- Properties in Floodplains with 1% Chance of Flooding in any Given Year
- Frequency of "Danger Stage" Exceeded near Populated Areas
- Repetitive Loss
- Properties and Assets in Deep Floodplains

Ability of Property or Asset to be Floodproofed or Otherwise Avoid Harm in the Case of a Flood

- Amount of Deferred Maintenance and Backlog of O&M
- Number of Properties and Assets Floodproofed
- Number of Critical Facilities Relocated or Reinforced

Reduction in the Probability of Flooding as a Result of Enhanced Flood System Performance and Robustness

- Number of Deficient Storage Facilities That Need Repairs or Modifications
- Total Length of Levees and Channel Improved (Urban and Rural)
- Probability of Flooding
- Backlog of Routine O&M Efforts

Produce or Maintain Sustainable Economic Benefits on Floodplains

- Acres Preserved from Residential Development for Agricultural or Industrial Productivity
- Acres Preserved as Habitat for Key Commercial Species
- Property Taxes
- Landvision Appendix

Assets & Actions

Implementation of Projects, Actions, and OMRR&R

Enabling Conditions

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Equity

Sustainability Across California

Attain **ecosystem vitality** and resilience and recovery of native species

Societal Benefits

Improve Dynamic Hydrologic and Geomorphic Processes

- Total Amount of Inundated Floodplain
- Length of Natural Bank
- River Meander Potential

Increase and Improve Quantity, Diversity, and Connectivity of Riverine Aquatic and Floodplain Habitats

- Riparian Habitat in Floodways
- Shaded Riverine Aquatic (SRA) Cover – Natural Bank
- Marsh Habitat in Floodways

Reduce Stressors Related to the Development and Operation of the SPFC that Negatively Affect at-risk Species

- Fish Passage Barriers
- Invasive Plants in Channel Maintenance Areas

Assets & Actions

Implementation of Projects, Actions, and OMRR&R

Enabling Conditions

CVFPP POLICY ISSUES

- Land Use and Floodplain Management
- Coordination with Federal Agencies
- Funding
- Governance and Institutional Support
- Operations and Maintenance of the Flood System
- Multi-benefit Projects
- Greater Hydraulic and Ecosystem Baselines and Program Phases (2017 – 2047)
- Comprehensive Residual Risk Management
- Climate Change and Flood System Resilience
- Equity

Sustainability Across California

Providing Opportunities for **Enriching Experiences**

Societal Benefits

Provide Greater Amounts of Recreational Benefits
- Recreational Area
- Access Points to Floodplains

Support and Preserve Societal/Aesthetic Values
- Sustained Acreage of Wetland, Marsh, and Natural River Channels

Provide Education and Public Awareness
- Facilities with Educational Signs/Displays Devoted to Public Awareness of Water Ecosystems
- Number of Visitors to Educational Facilities

Protect Societally Significant Lands
- Area of Culturally Significant Farmland Exposed to Flood Damages
- Area of Tribal Land Protected from Flooding
- Acreage of Parks and Public Lands Protected from Flooding

Assets & Actions

Implementation of Projects, Actions, and OMRR&R

Enabling Conditions

CVFPP POLICY ISSUES


Land Use and Floodplain Management


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Equity

Sustainability Across California

Creating **Equity and Social Justice** for Vulnerable Communities - **Draft**

Societal Benefits

- **Provide Equitable Investment in Vulnerable Communities**
  - **Proportional Investment in Flood Mitigation**
  - **Economic Opportunities in the Form of Training and Jobs**
- **Reduce Disproportionate Risk to Flooding**
  - **Communities Susceptible to Damages Due to Residence/ Place of Business Within 100-year floodplain**
- **Improve Outreach and Engagement Activities for Project Planning and Siting Decisions**
  - **Access to Community Engagement Needed to Obtain Input from Vulnerable Communities is Tailored to Community Needs**
- **Increase Representation of Vulnerable Communities in Decision Making Process**
  - **Proportion of Representation in Legislature, Boards, and Leadership of Flood Management Agencies**

Assets & Actions

Implementation of Projects, Actions, and OMRR&R

Enabling Conditions

CVFPP POLICY ISSUES

- Land Use and Floodplain Management
- Coordination with Federal Agencies
- Funding
- Governance and Institutional Support
- Operations and Maintenance of the Flood System
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- Greater Hydraulic and Ecosystem Baselines and Program Phases (2017 – 2047)
- Comprehensive Residual Risk Management
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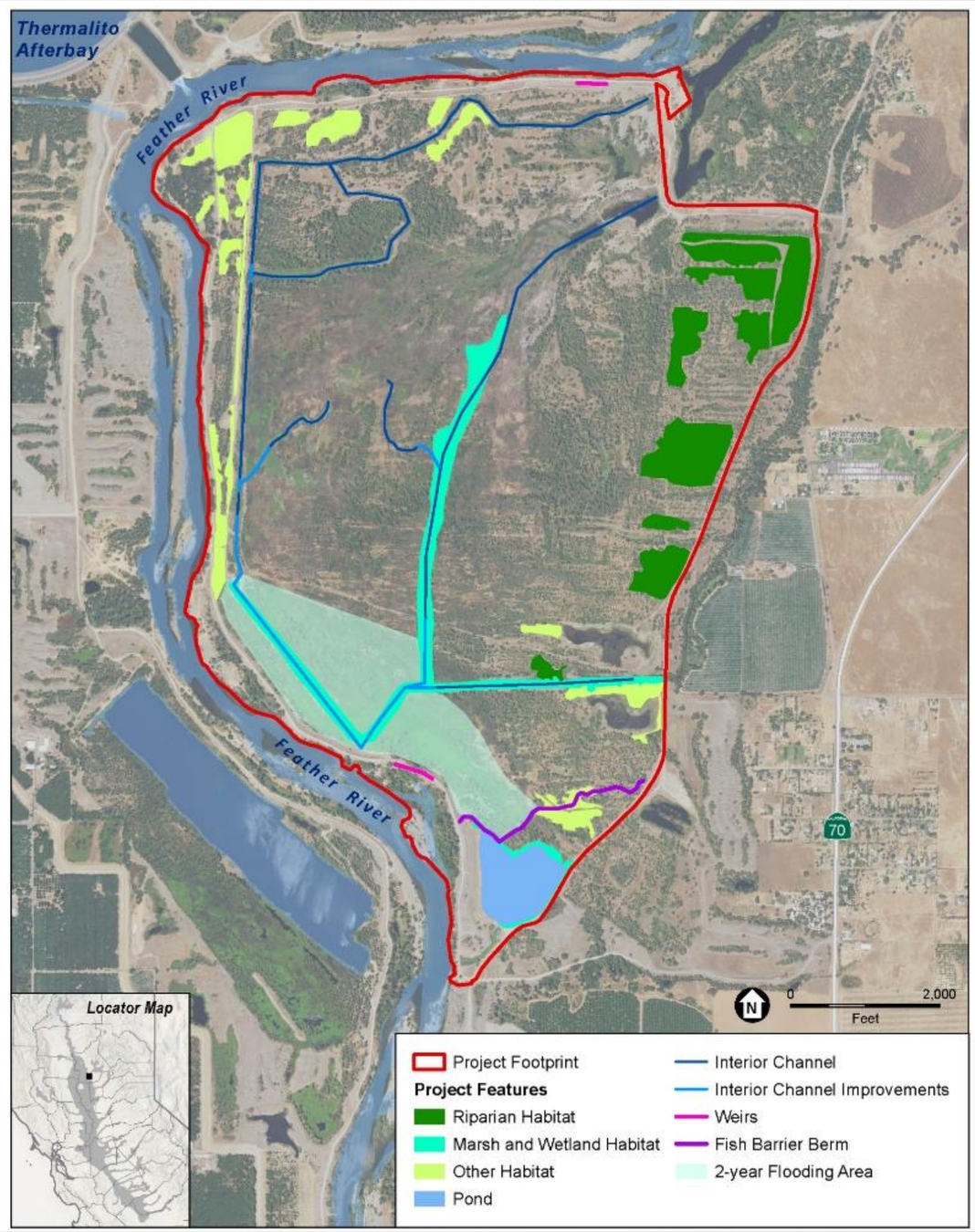
- Equity

AN EXAMPLE

How projects will contribute to indicators

Example: Where would Oroville Wildlife Area Flood Stage Reduction Project be accounted for?

- Reconnected the Feather River floodplain
- Augmented the existing system of inflow and outflow weirs
- Reduce flood stages within the main channel



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Example: Where would Oroville Wildlife Area Flood Stage Reduction Project be accounted for?

Project Feature		Outcome
• Reconnected the Feather River floodplain	➡	Increased floodplain inundation
• Augmented the existing system of inflow and outflow weirs	➡	Improves system performance
• Reduce flood stages within the main channel	➡	Contributes to reduction in flood risk

Thank You!

Questions?