Financing Large-Scale Flood System Improvements: CA’s Central Valley Flood Protection Plan Example

American Society of Civil Engineers: Coasts, Oceans, Ports, & Rivers Institute
Alternative Finance for Waterways and Water Resource Infrastructure San Francisco Workshop

April 6, 2016

Presented by:
Michael Mierzwa, P.E.
Michael.Mierzwa@water.ca.gov
Lead Flood Management Planner
California Department of Water Resources

If you don’t know where you are going, you might not get there.
– Yogi Berra
State Plan of Flood Control: Example of a Large-Scale Public Infrastructure Project

Key Elements:
• 1,600 miles of Federal-State levees
• Extensive system of bypasses & floodways
• 2 completely different river basins, each w/ over 5 major rivers
• 5 major urban centers, plus additional adjacent urban areas
• Dozens of small communities
• Dozens of endangered species
• Over million people living in floodplains
• +$80B property / assets at risk
Central Valley Flood Protection Plan: Example of Large, System-Scale Investment Plan

- Originally (2012) considered 4 different approaches, each with its own implementation time frame.
- Transitioned (w/ 2017 Update) to describing investments needed within a moving 30-year time period.
- Legislation (Senate Bill 5) calls for the comprehensive management plan to be updated every 5-years.

2017 ROADMAP
# 2017 CVFPP Investment Need

## Total Capital and Ongoing Costs, Over 30 Years

<table>
<thead>
<tr>
<th>Area of Interest</th>
<th>Sacramento Low ($M)</th>
<th>Sacramento High ($M)</th>
<th>San Joaquin Low ($M)</th>
<th>San Joaquin High ($M)</th>
<th>Low ($M)</th>
<th>High ($M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systemwide</td>
<td>$5,920</td>
<td>$7,240</td>
<td>$1,910</td>
<td>$2,340</td>
<td>$7,830</td>
<td>$9,580</td>
</tr>
<tr>
<td>Urban</td>
<td>$3,560</td>
<td>$4,350</td>
<td>$1,200</td>
<td>$1,460</td>
<td>$4,760</td>
<td>$5,810</td>
</tr>
<tr>
<td>Rural</td>
<td>$1,860</td>
<td>$2,280</td>
<td>$1,130</td>
<td>$1,370</td>
<td>$2,990</td>
<td>$3,650</td>
</tr>
<tr>
<td>Small Community</td>
<td>$1,540</td>
<td>$1,890</td>
<td>$310</td>
<td>$370</td>
<td>$1,850</td>
<td>$2,260</td>
</tr>
<tr>
<td>Grand Total:</td>
<td><strong>$12,880</strong></td>
<td><strong>$15,760</strong></td>
<td><strong>$4,550</strong></td>
<td><strong>$5,540</strong></td>
<td><strong>$17,430</strong></td>
<td><strong>$21,300</strong></td>
</tr>
</tbody>
</table>

Note: Totals reflect annual ongoing investments converted to present value (2016 dollars) and summed with present value capital investment costs.
Examples of CVFPP Funding Mechanisms Considered

**STATE**
- State General Fund
- SAC/SJ Drainage District
- State River Basin Assessment
- State Flood Insurance Program (New)
- General Obligation Bond

**FEDERAL**
- USACE Programs
- FEMA Programs
- Federal Ecosystem Programs

**LOCAL**
- Benefit Assessments and Special Taxes
Examples of Large-Scale System Improvements

SACRAMENTO RIVER BASIN
Yolo Bypass Multi-Benefit Improvements State Recommended Option

SAN JOAQUIN RIVER BASIN
Paradise Cut Multi-Benefit Improvements State Recommended Option
Examples of Making the Complex Easy

Overall System Objectives Are Accomplished via Incremental Projects
Using Programs to Implement Large-Scale Plans

**PROACTIVE**
- Central Valley Flood Protection Planning
- Delta Planning
- Floodway Ecosystem Sustainability
- Programmatic Permitting
- Statewide Flood Management Planning

**REACTIVE**
- Flood Emergency Response Planning
- Delta Flood Emergency Response Grant
- Flood Forecasting
- State Flood Emergency Response Grant

**ACTIVE**
- Floodplain Risk Management
- Community Technical Assistance
- Floodplain Management Best Practices and Policies
- Floodplain Mapping
- Public Education and Awareness

**FLOOD MANAGEMENT PLANNING**
- Delta Special Projects
- Flood Corridor Program (Wildlife Conservation Board)
- Local Levee Assistance
- Small Community Risk Reduction
- Systemwide Flood Risk Reduction
- Urban Flood Risk Reduction
- Urban Streams Restoration
- Yuba Feather Flood Protection
- Delta Levee Subventions
- Flood Control Subventions

**FLOOD SYSTEM OPERATIONS & MAINTENANCE**
- Flood System Repair Project
- Rural Levee Repair
- Small Erosion Repair Program
Key Policy Areas Identified in CVFPP

- Land Use & Floodplain Management
- Residual Risk Management
- Hydraulic & Ecosystem Baselines & Program Phasing
- Operations & Maintenance of the Flood System
- Development of Multi-Benefit Projects
- Effective Governance & Institutional Support
- Coordination with Federal Agencies
- Finance