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Managing Water in the West

CVP M&I Water Shortage Policy Review

Stakeholder Workshop #7

June 4, 2012

2800 Cottage Way, Sacramento

U.S. Department of the Interior
Bureau of Reclamation

Agenda

Time	Topic
9:30 – 9:45 am	Welcome & introductions, agenda review
9:45 – 10:00 am	Status of CVP M&I Water Shortage Policy EIS
10:00 – 11:30 am	Tools & methods for alternatives analysis
11:30 – 12:00 pm	Question and answer discussion, wrap up

Status of CVP M&I Water Shortage Policy EIS

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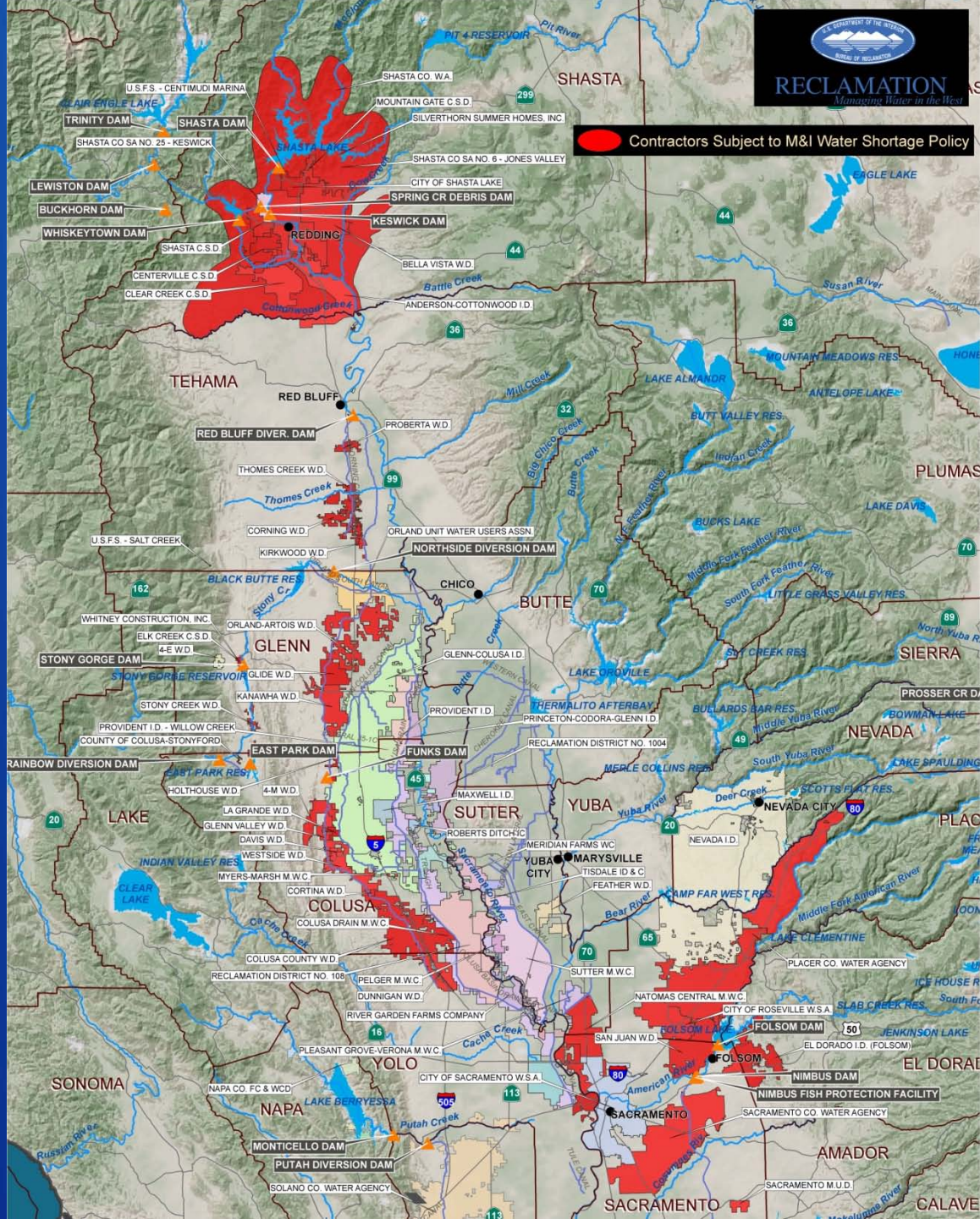
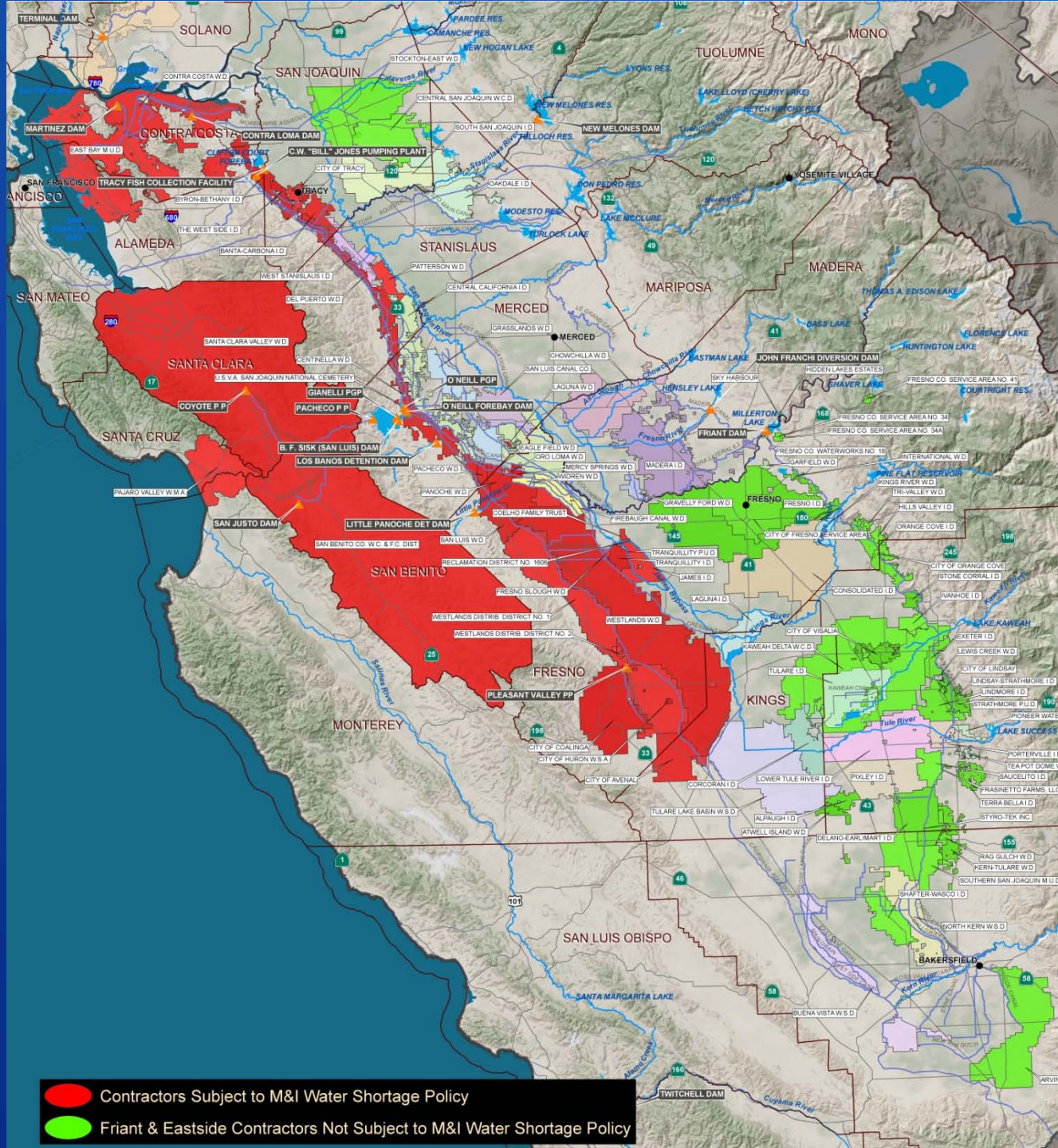
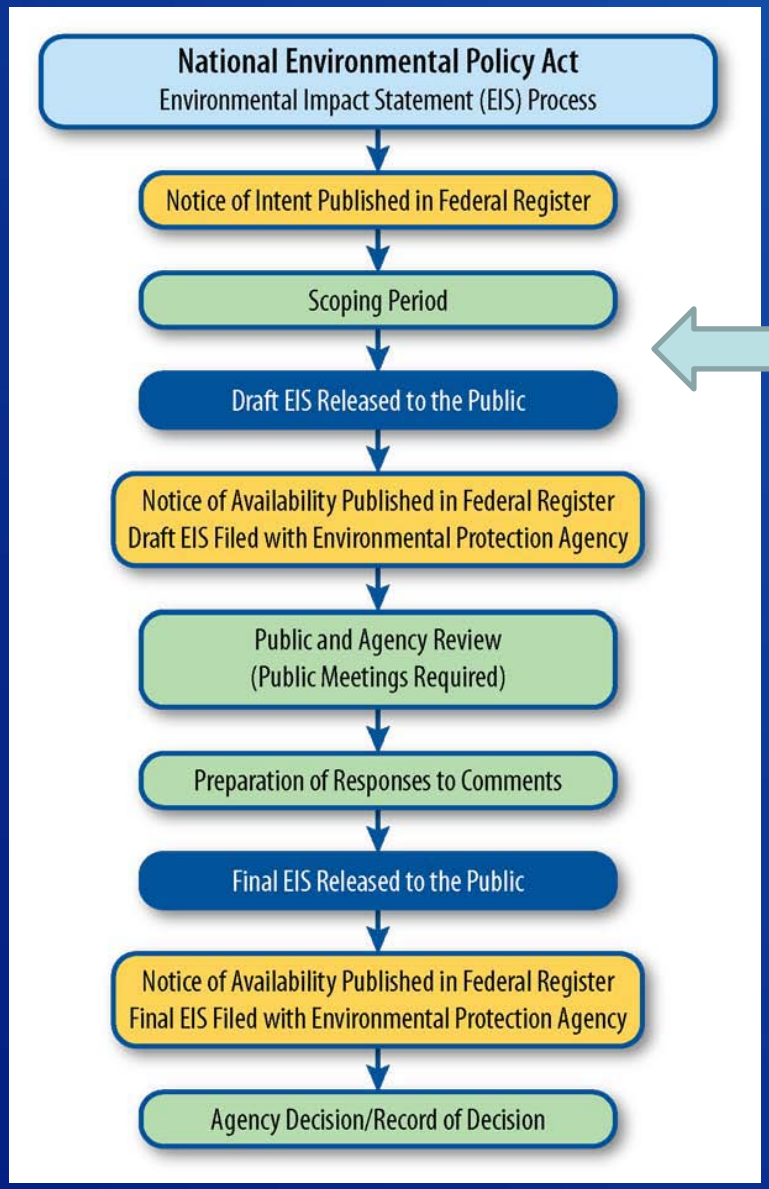
Contractors Subject to CVP M&I WSP – North of Delta



Contractors Subject to CVP M&I WSP – South of Delta



Status of CVP M&I Water Shortage Policy EIS



We Are Currently Here

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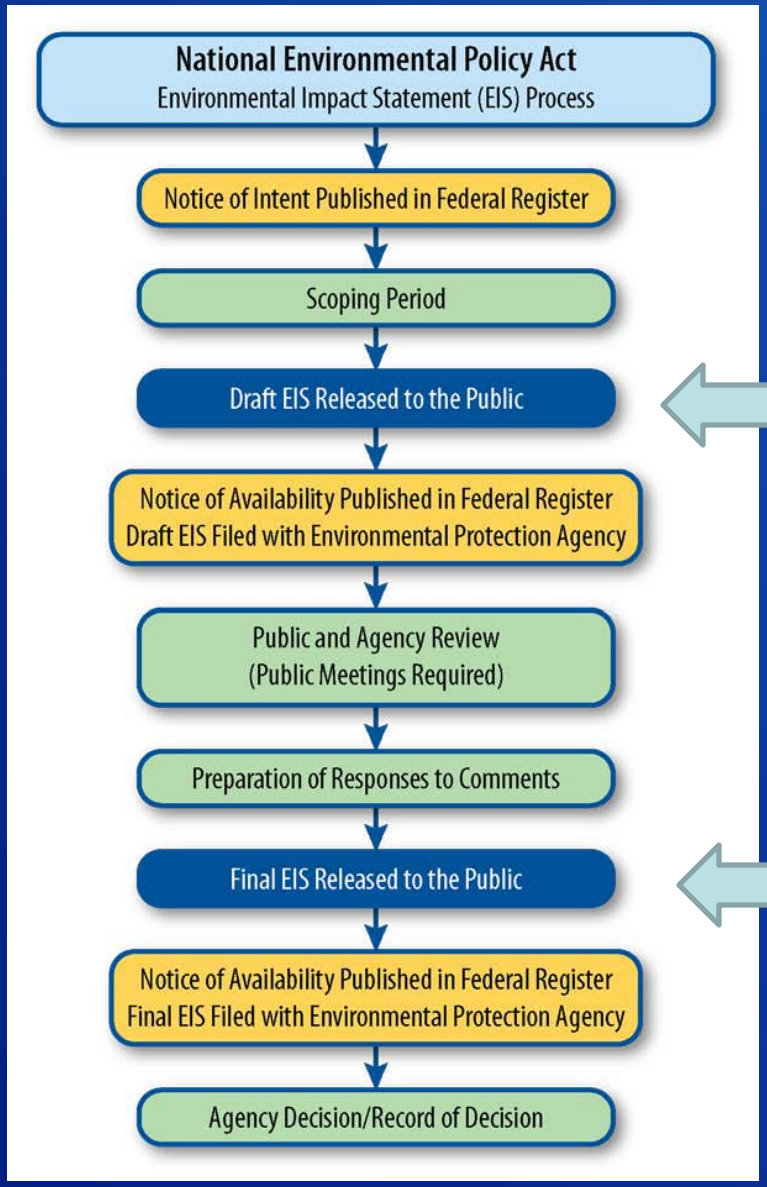
Status of CVP M&I Water Shortage Policy EIS



Public Draft EIS
April 2013

Final EIS
Fall 2013

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Alternatives to Be Considered and Analyzed in EIS

Alternative	Previous	Current
No Action	Equal Ag and M&I Allocation	Current Draft Policy – 2005 EA M&I WSP
Action Alt. #1	100% M&I Allocation	Equal Ag and M&I Allocation
Action Alt. #2	Updated Working Draft M&I WSP	100% M&I Allocation
Action Alt. #3	M&I Stakeholder Recommended Alternative	Updated Working Draft M&I WSP
Action Alt. #4	N/A	M&I Stakeholder Suggested Alternative

Data Development

- **Since Workshop 6, communicated with numerous contractors on data:**
  - **Contract quantity**
  - **Historical use**
  - **Public health & safety values**
  - **Non-CVP supplies**

- **Updated contractor data summary will be available online**

Tools & Methods for Alternatives Analysis

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Proposed Environmental Analyses

- Surface water
- Biological resources
- Cultural resources
- Hydrology
- Groundwater
- Climate change
- Land use
- Hazardous materials & waste
- Air quality
- Water quality
- Safety
- Visual resources
- Indian Trust Assets
- Environmental justice
- Recreation
- Power
- Socioeconomics - Ag and M&I

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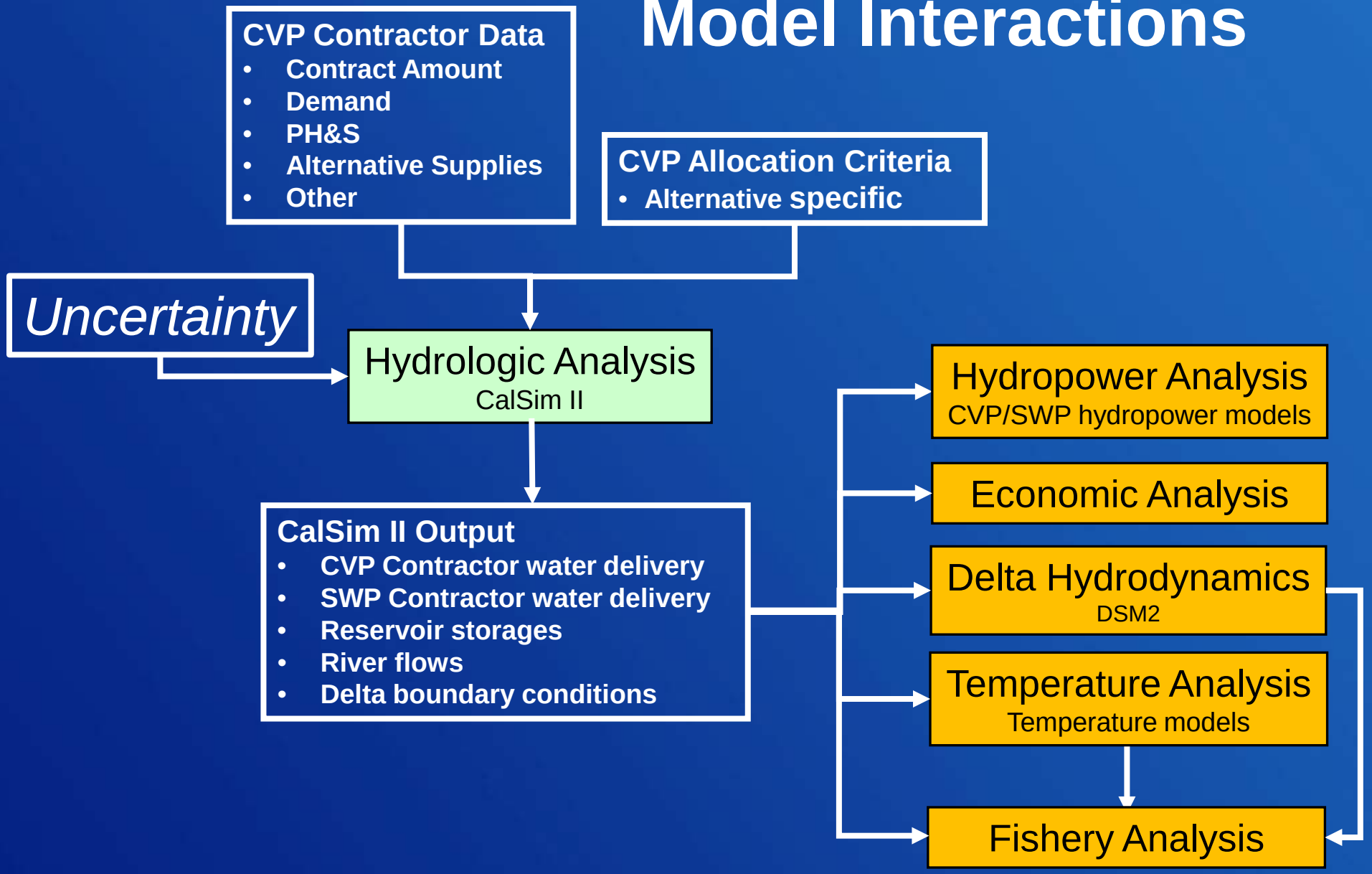
Modeling Analysis Approach

- **Project alternatives will be evaluated using these analytical tools:**
  - **Hydrologic (project operations)**
  - **Hydrodynamic**
  - **Temperature**
  - **Hydropower**
  - **Economic**
- **Simulations of action alternatives will be compared to Future No Action Alternative to derive effects**

Model Interactions



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Use of Contractor Provided/ Verified Data

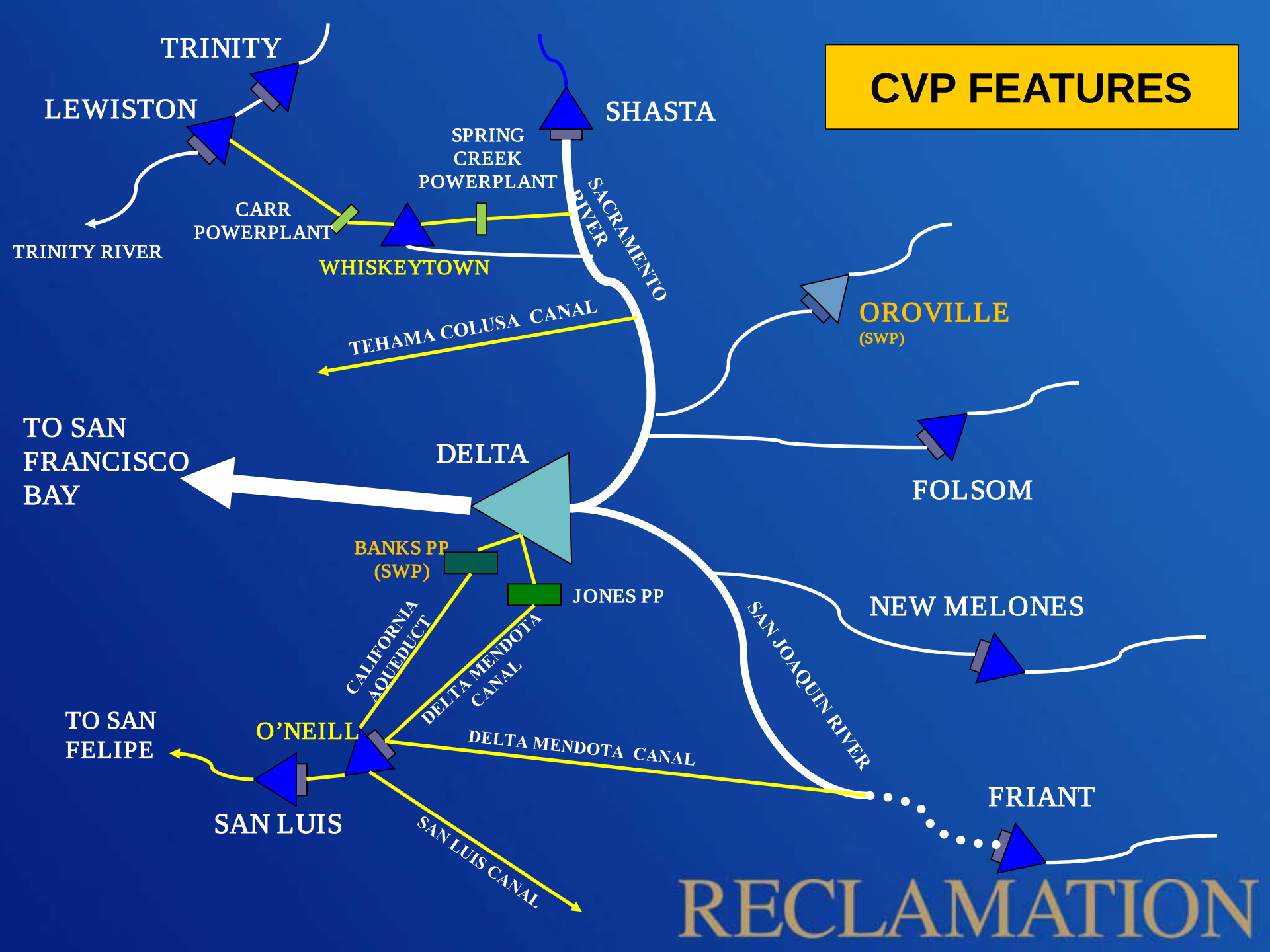
- **Contract amount is used for:**
  - **Upper limit of delivery at 100% allocation**
  - **Assumed demand at future level of development (LOD)**
  - **Assumed future LOD public health & safety (PH&S) is half of contract amount where data unavailable**
- **Historical delivery data is used for:**
  - **Calculation of maximum historical use at existing LOD**

Use of Contractor Provided/ Verified Data (continued)

- Public health & safety demand is used for:
  - Calculation of “Unmet PH&S Need”
- Alternative supplies is used for:
  - Calculation of “Unmet PH&S Need”
    - Unmet PH&S Need = PH&S Demand minus Alternative Supplies
  - System operational changes

CalSim II Assumptions

- CVP features
- Operating considerations
- Uncertainty
- System requirements
- Use of contractor information
  - Maximum historical use
  - Contract limits
  - Public health and safety
  - Alternative supplies
  - Future demands
- Water supply allocation


CVP FEATURES
TRINITY
LEWISTON
TRINITY RIVER
CARR POWERPLANT
SPRING CREEK POWERPLANT
SHASTA
SACRAMENTO RIVER
WHISKEYTOWN
TEHAMA COLUSA CANAL
OROVILLE
(SWP)
FOLSOM
TO SAN FRANCISCO BAY
DELTA
BANKS PP
(SWP)
JONES PP
CALIFORNIA AQUEDUCT
DELTA MENDOTA CANAL
NEW MELONES
SAN JOAQUIN RIVER
TO SAN FELIPE
O'NEILL
DELTA MENDOTA CANAL
SAN LUIS
SAN LUIS CANAL
FRIANT
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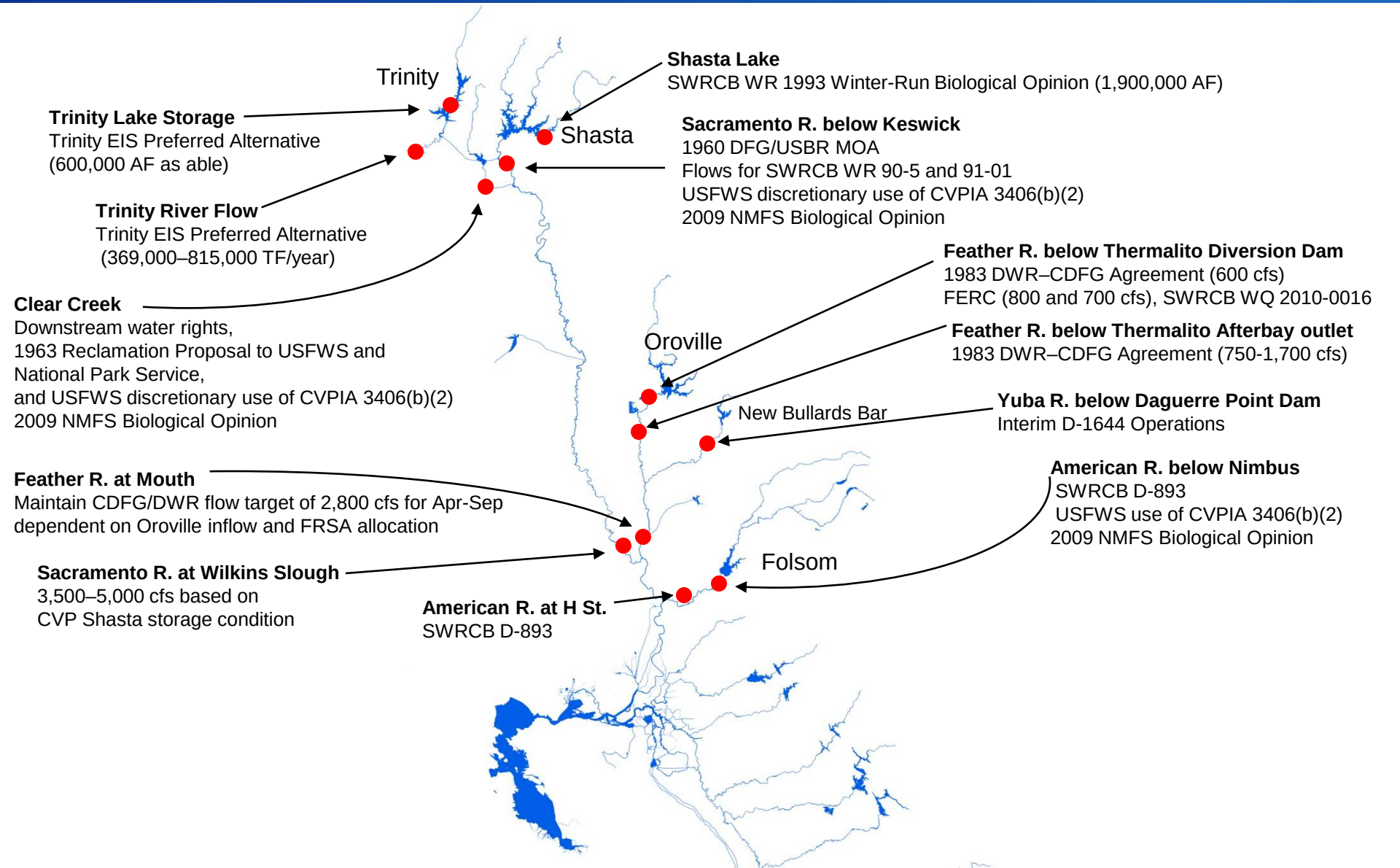
Operating Considerations

- Cold water pools and river temperatures
- Flow requirements
- Contract requirements
- Diversion restrictions
- Hydropower
- Reservoir conditions
- Available water supply by region
- Water demands
- Water quality
- Regulatory agreements
- Numerous others

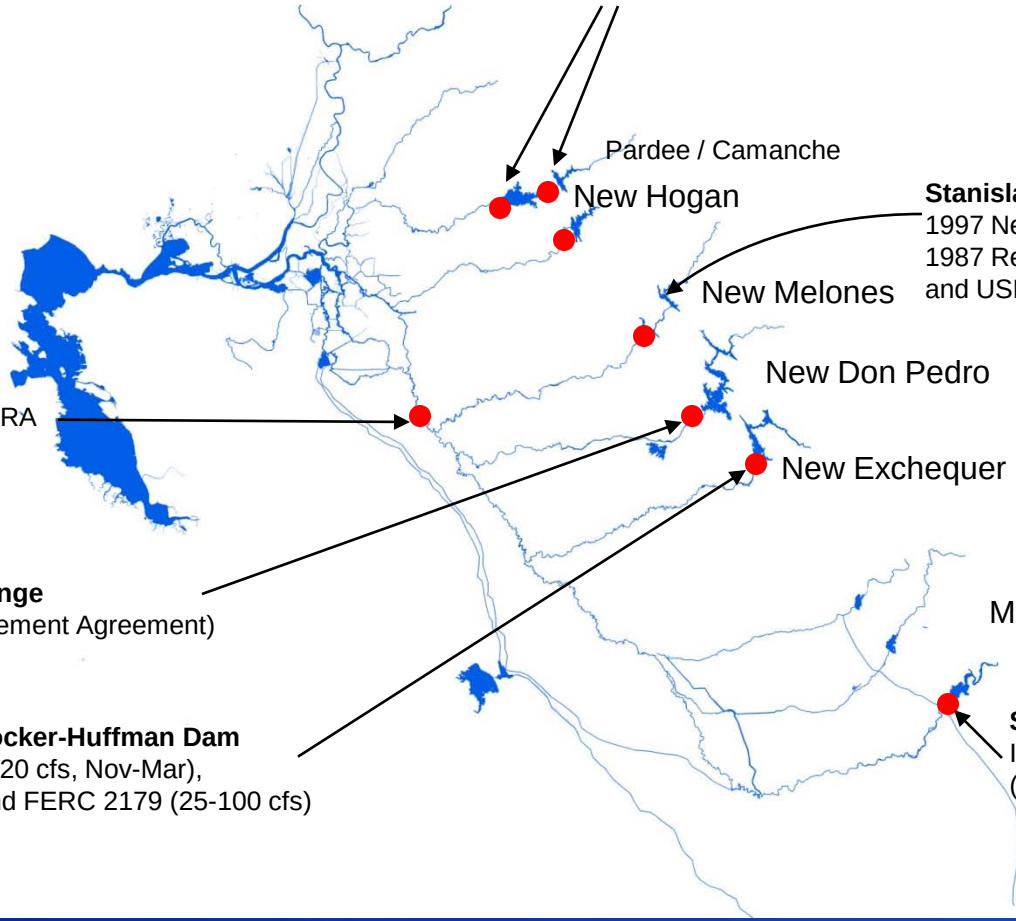
Factors Causing Uncertainty

- NEPA analysis for BO / Wanger implementation has not been completed
  - BO constraints
- COA
  - Sharing of outflow criteria
  - Sharing of export restrictions
- Legal uncertainty regarding sharing of goals (BO and COA) between CVP and SWP
- Assumptions have significant influence on CVP and SWP performance

Existing Flow Requirements
Sacramento Valley Hydrologic Region



San Joaquin River Basin Flow Criteria



Mokelumne R.
FERC 2916-029, 1996
(Joint Settlement Agreement)
(100-325 cfs) below Camanche Dam
(25-300 cfs) below Woodbridge Div. Dam

Stanislaus R. below Goodwin
1997 New Melones IOP with
1987 Reclamation–CDFG agreement,
and USFWS use of CVPIA 3406(b)(2)

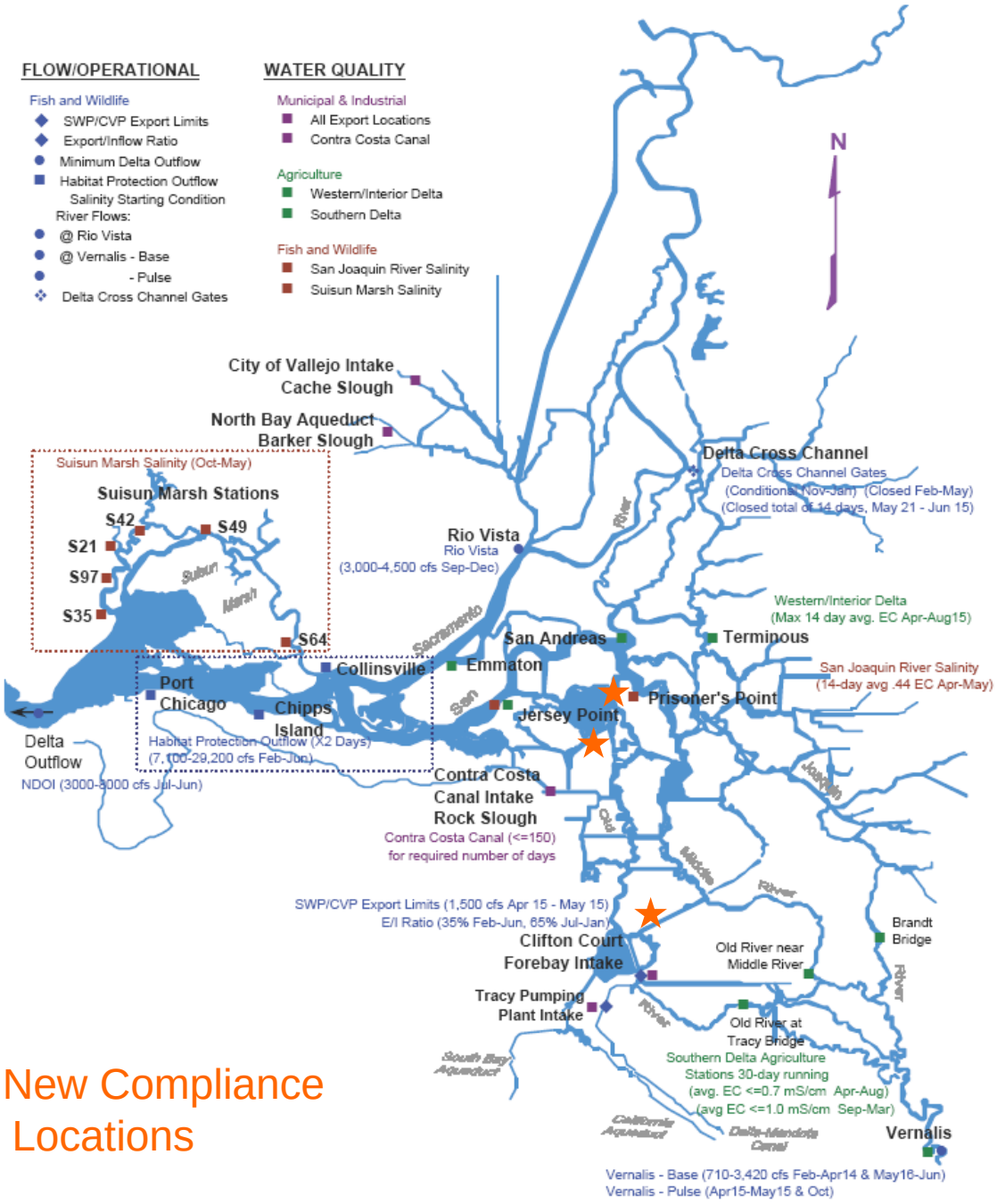
San Joaquin R. at Vernalis
SWRCB D-1641, and *VAMP* per SJRA
Flow and salinity

Tuolumne R. below La Grange
FERC 2299-024, 1995 (Settlement Agreement)
(94,000–301,000 AF/year)

Merced R. below Crocker-Huffman Dam
Davis-Grunsky (180-220 cfs, Nov-Mar),
Cowell Agreement, and FERC 2179 (25-100 cfs)

San Joaquin R. below Friant Dam
Instream fishery and water rights
(117 TAF/year), SJRR flows for FNA

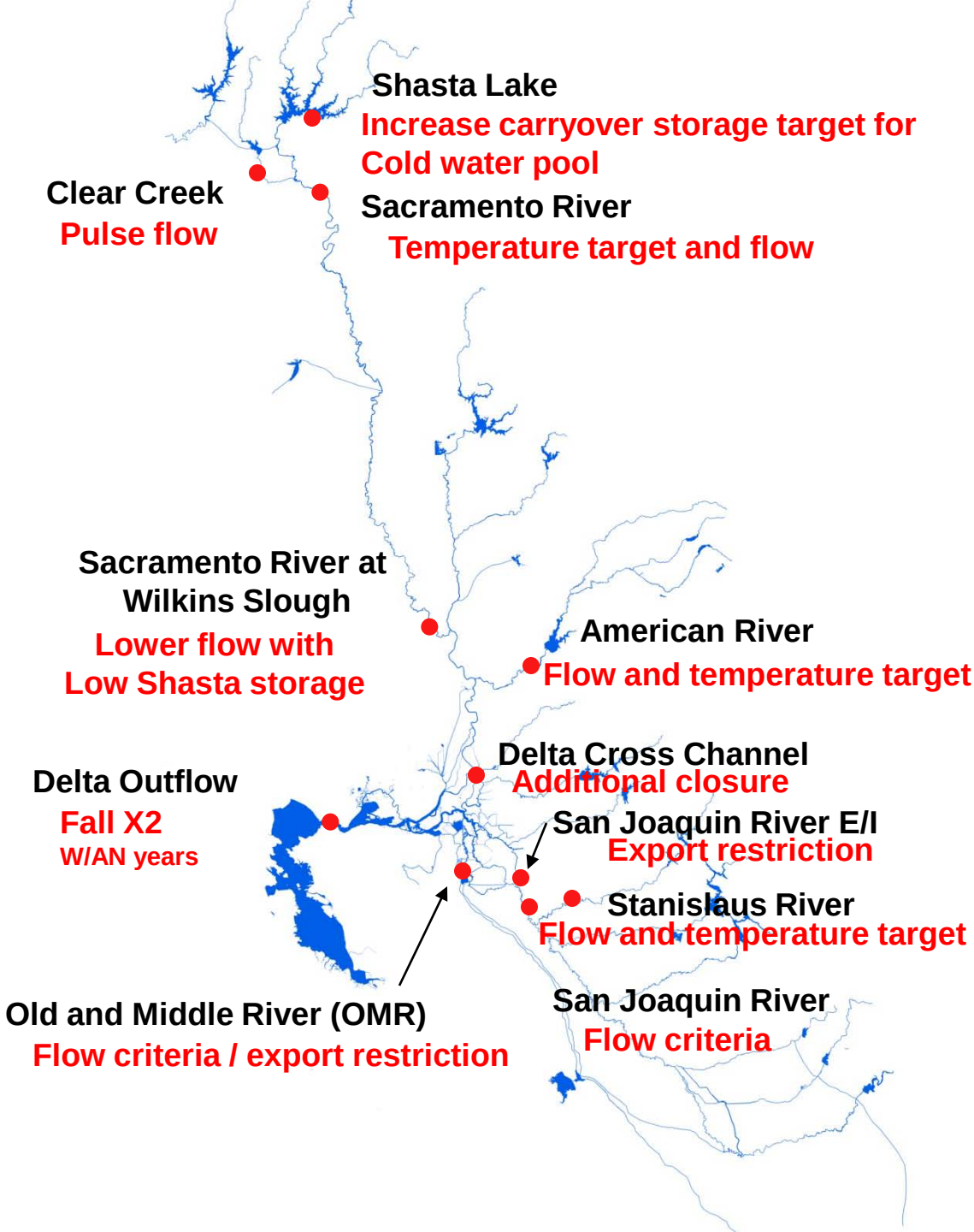
D-1641 Bay-Delta Standards Stations

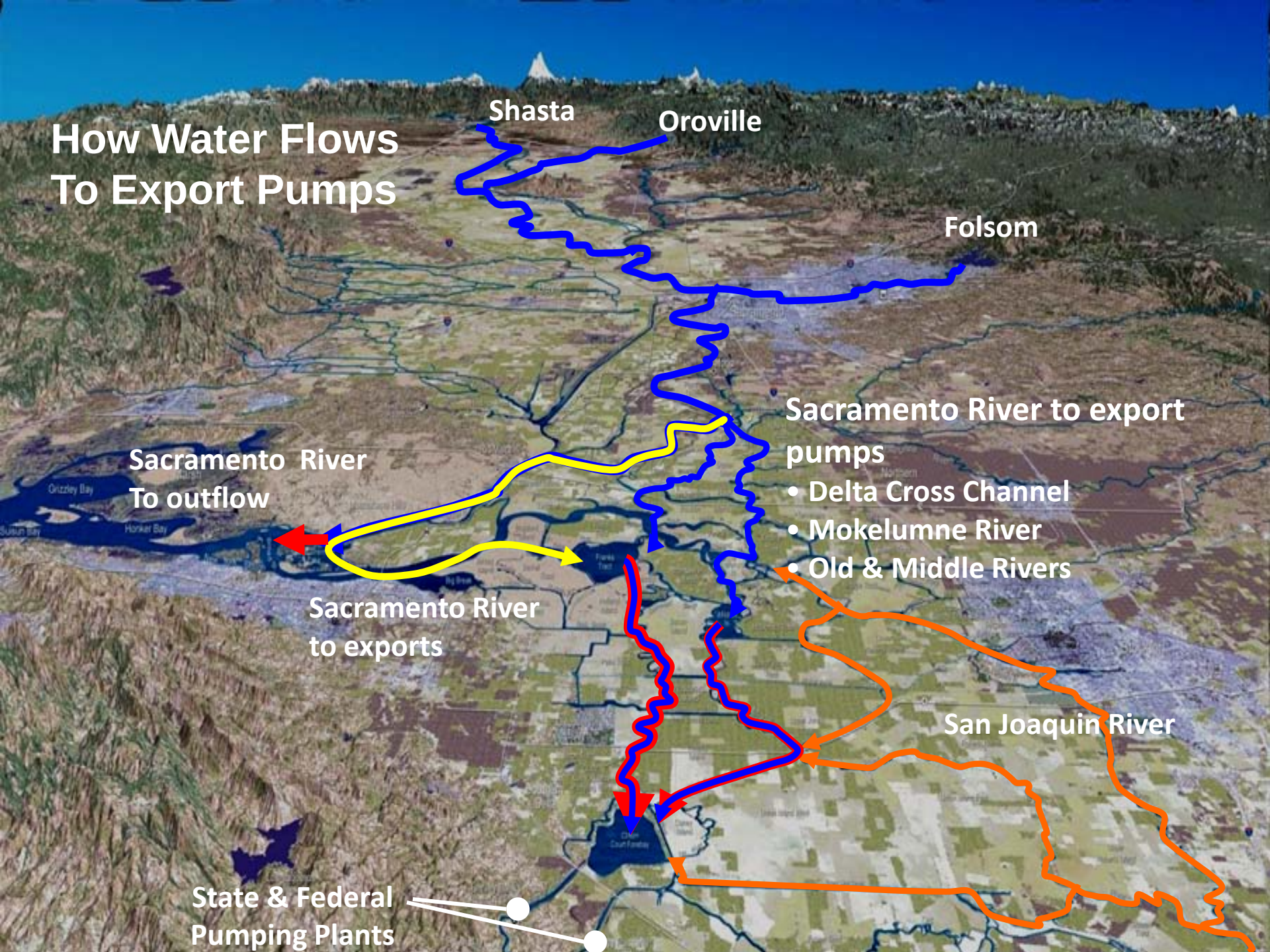


★New Compliance Locations

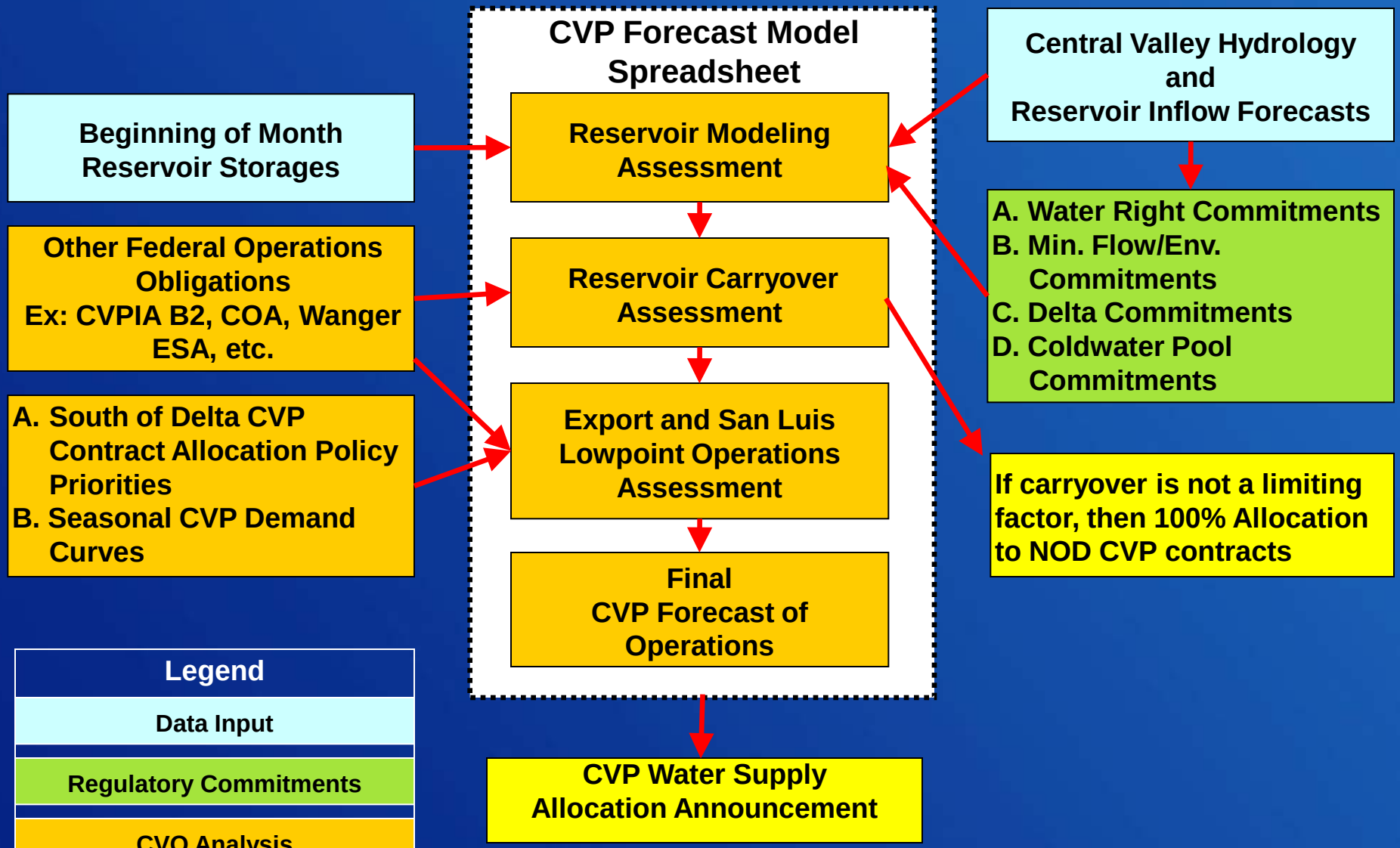
New Criteria From BOs

- Salmon BO RPAs
- Smelt BO RPAs




How Water Flows
To Export Pumps
Shasta
Oroville
Folsom
Sacramento River to export pumps
• Delta Cross Channel
• Mokelumne River
• Old & Middle Rivers
Sacramento River
To outflow
Sacramento River
to exports
San Joaquin River
State & Federal
Pumping Plants

CVP Allocation Analysis Process



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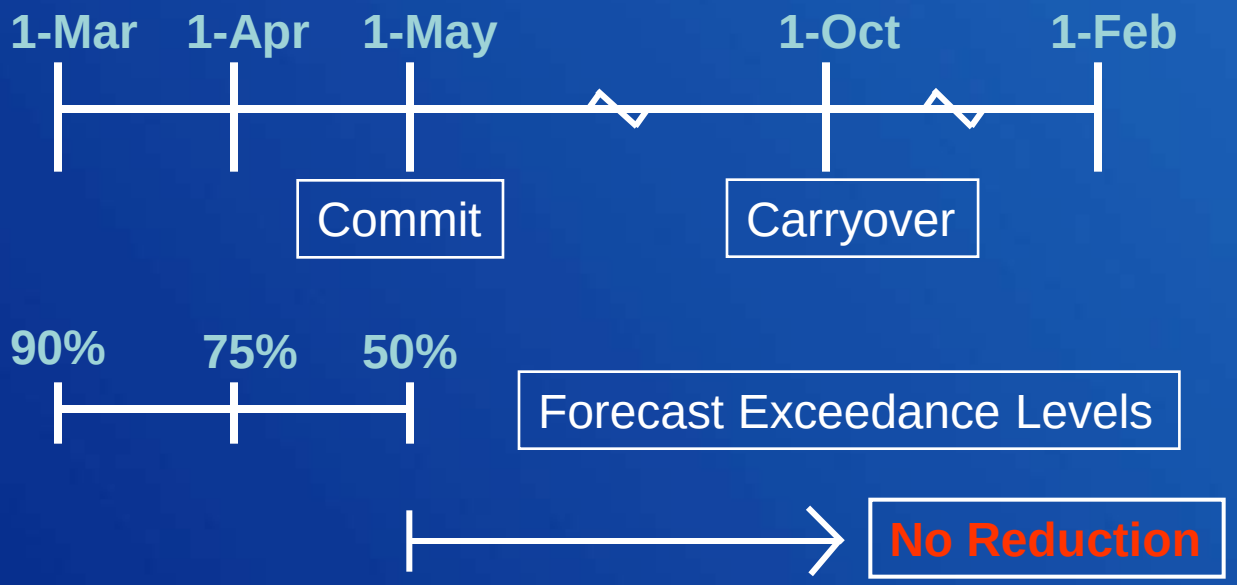
CalSim Modeling
Characteristics of Delivery Decision Process

- Try to mimic the decision process used by the CVP and SWP each year
- Uses forecast inflow information and uncertainty
- Uses delivery vs. carryover risk curve
- Uses a standardized rule in estimating the total water available for delivery and carryover storage
- Uses a calendar year (Jan - Dec) for SWP and contract year (Mar - Feb) for CVP as the delivery year
- Provides increasing firmness in delivery decision

CVP Decision Timeline

The dates when the delivery levels are updated:
1-Mar, 1-Apr, 1-May



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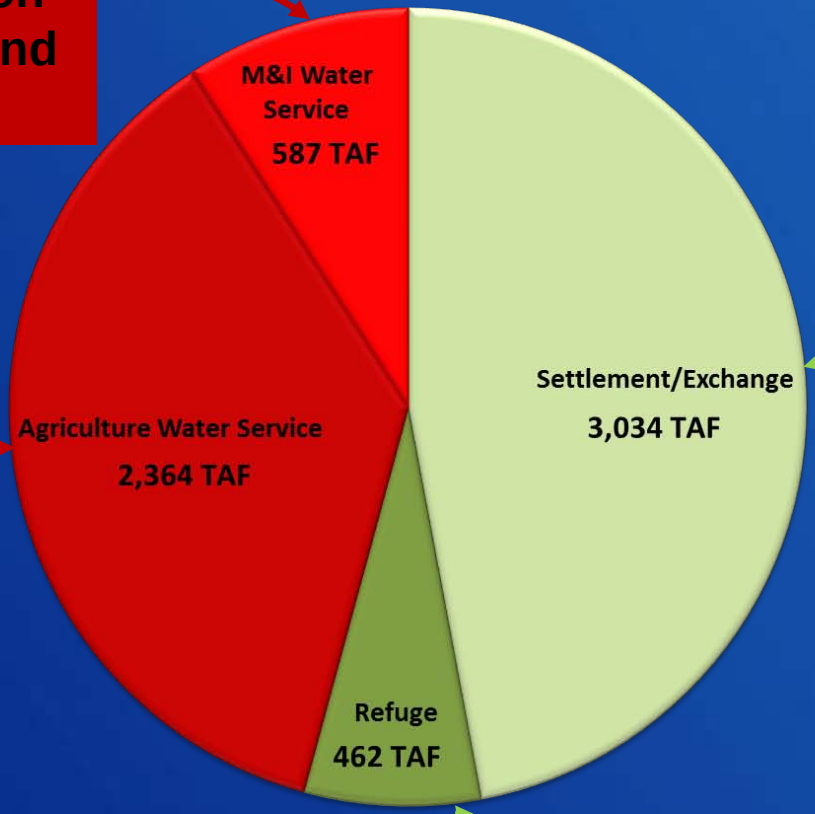
CVP Contract Summary

Allocation based on available supply and ability to deliver



Allocation based on Shasta inflow

Settlement/Exchange Contracts do not include Schedule II water rights
Includes assumptions on split between agricultural and M&I amounts for mixed use contractors
M&I does not include dry year contract for up to 133,000 acre-feet with EBMUD

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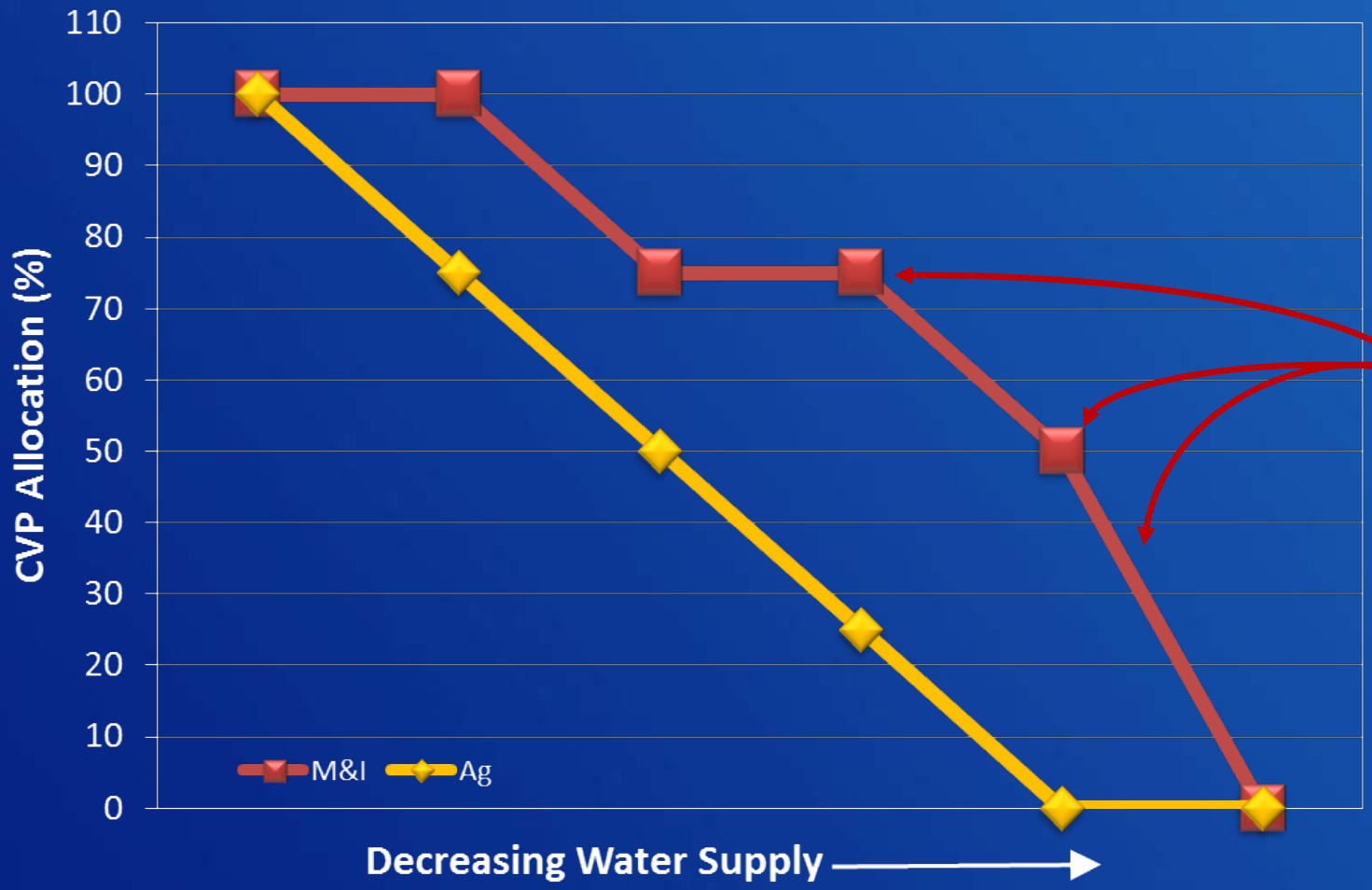
CVP Water Supply Allocation

FNA, Alternative 3, Alternative 4



Consideration for Unmet Need to satisfy PH&S

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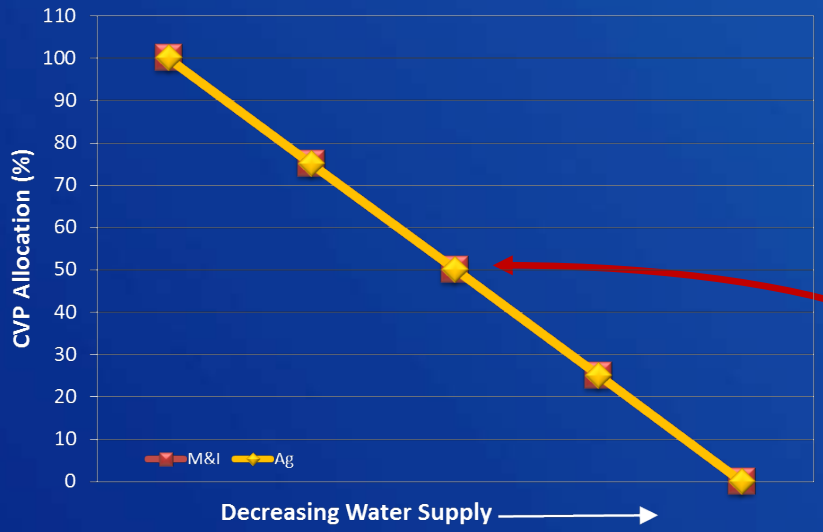
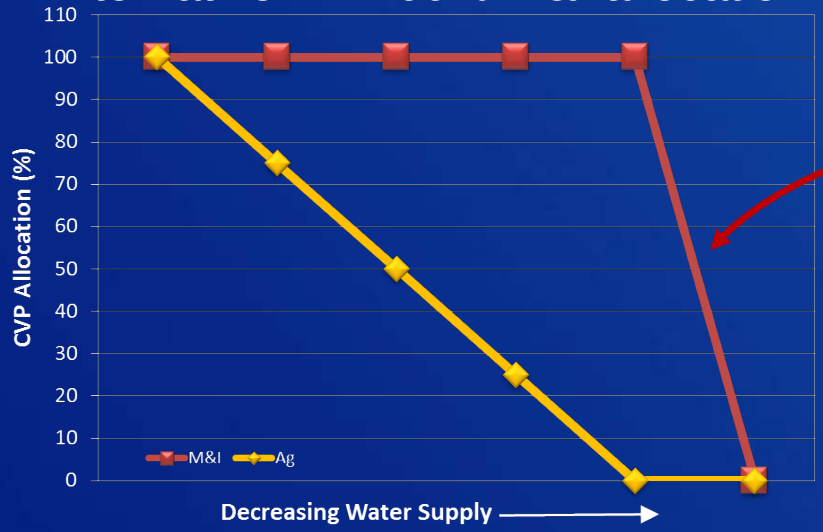
CVP Water Supply Allocation

Alternative 1 – Equal M&I and Ag allocation



Consideration for Unmet Need to satisfy PH&S

Alternative 2 – 100% M&I allocation



Attempt to fully satisfy Unmet Need

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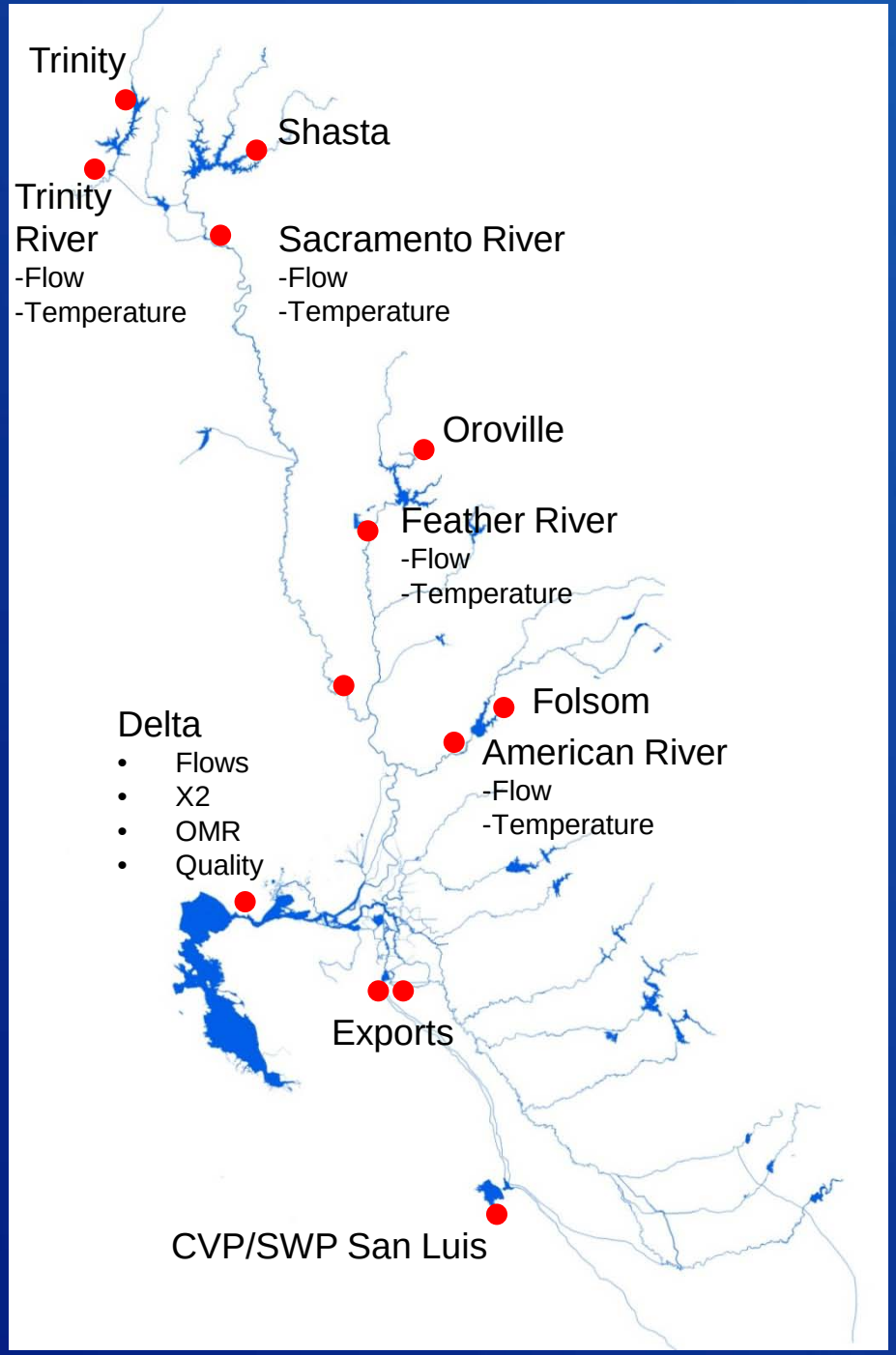

Key Model Outputs

- **CVP M&I contractor delivery**
  - **Shasta**
  - **Folsom**
  - **Delta**
  - **South of Delta**
- **CVP Ag delivery**
  - **North of Delta**
  - **South of Delta**
- **SWP south of Delta delivery**

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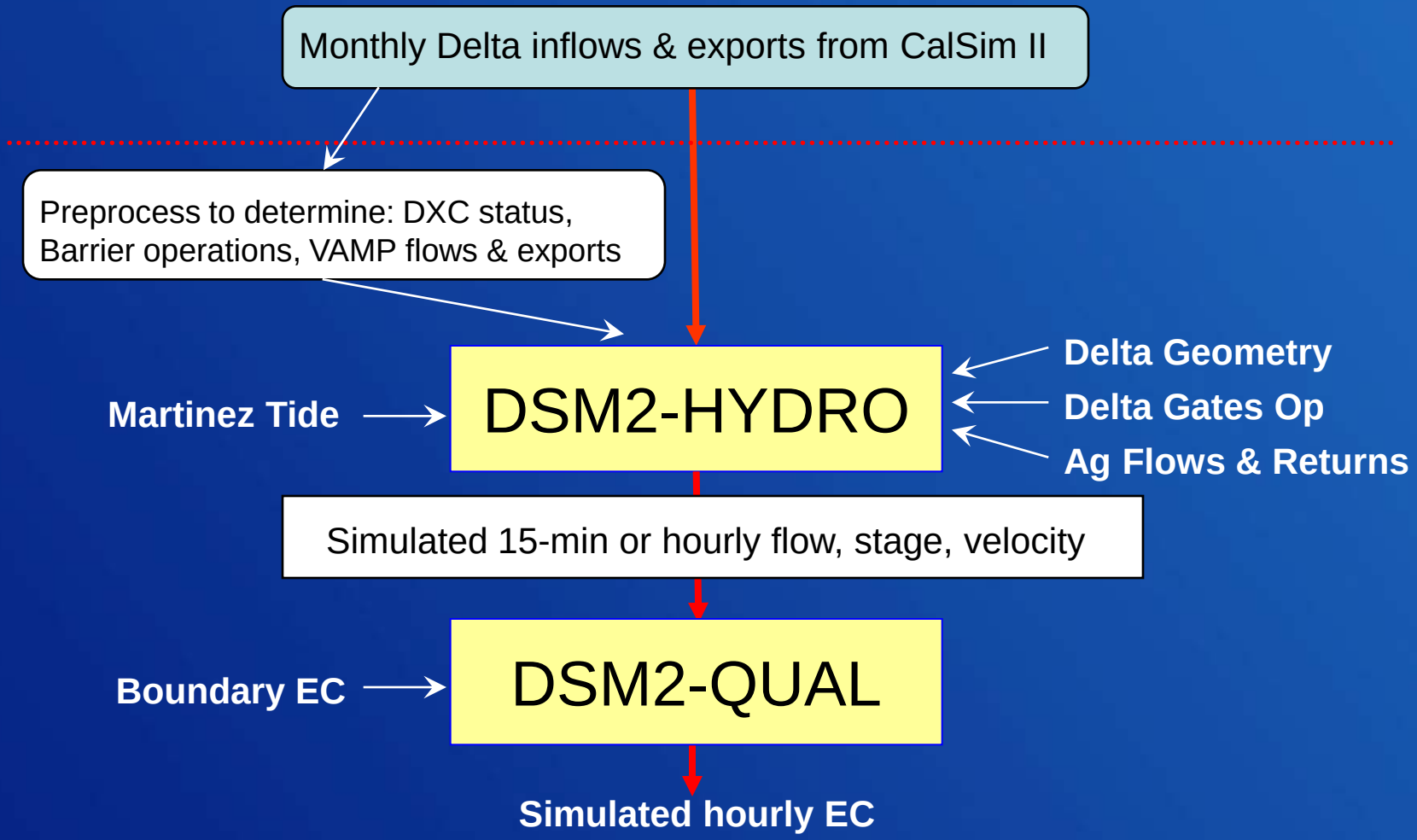
Delta Flow and Salinity

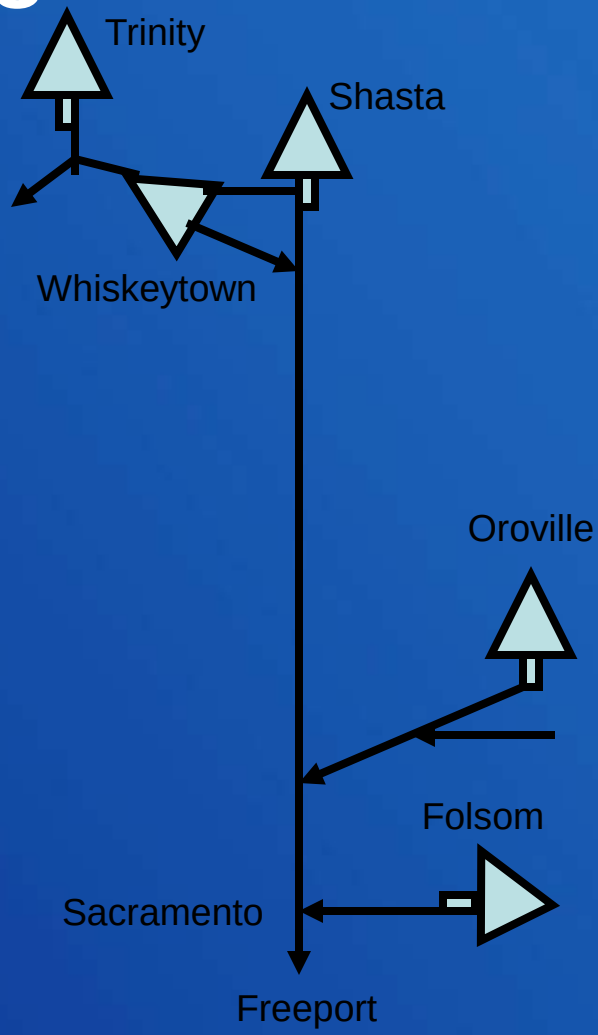
- DSM2 Delta Simulation Model
- Sacramento–San Joaquin River Delta
  - Delta channels and bathymetry
  - Downstream boundary at Martinez
- Descriptive physical process simulation
  - Hydrodynamic (velocity, stage)
  - Salinity (EC +)
- Infrastructure
  - Delta island diversions, drainage, and seepage
  - Project export facilities
  - South Delta channel flow and stage controls

Flowchart of DSM2 Modeling Process



Reclamation Temperature Models for Long-term Planning Studies

- Suite of Reclamation temperature models intended as a tool for evaluating the effects of proposed project operations on mean monthly temperature in the basin
- Extends from Shasta and Trinity Lakes to Freeport
- Uses CalSim II water resources model output (Oct 1921–Sep 2003 study period)
- Consists of Reservoir & River Components
  - One-dimensional model
  - Monthly time-step
- Shasta TCD operation - Uses a set of seasonal Shasta Dam tail-bay temperature targets to simulate temperature operations
- Useful tool for comparative analysis of proposed alternatives



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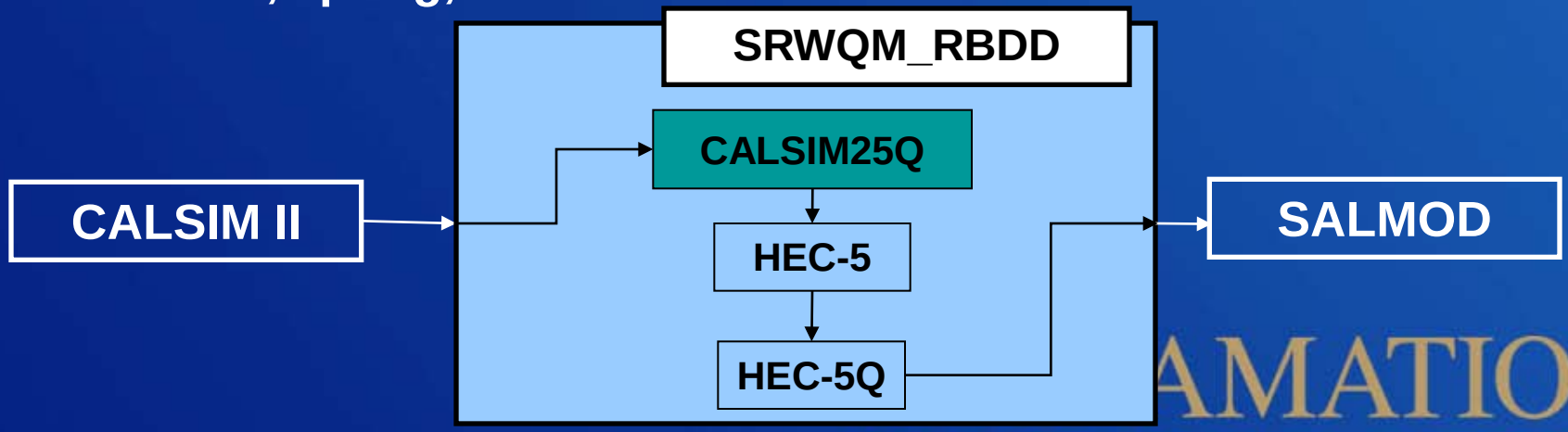
Sacramento River and Salmon

- SRWQM: Sacramento River Water Quality Model
  - Keswick Dam to Red Bluff Diversion Dam
  - Daily hydrologic routing of Keswick Dam releases and tributary inflows
  - Shasta Dam temperature-control device
- SalMod: Salmon Population Models
  - Keswick Dam to Red Bluff Diversion Dam
  - Potential salmon production subject to temperature- and flow-based mortality factors
  - Winter, spring, fall and late-fall runs



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Hydropower models
Based on CalSim output

CVP Power (LTGEN)

Generation Facilities

- Trinity
- Lewiston
- Carr
- Spring Creek
- Shasta
- Keswick
- Folsom
- Nimbus
- New Melones
- CVP San Luis
- O'Neill

Pumping Facilities

- Jones
- CVP Banks
- Contra Costa
- O'Neill
- CVP San Luis
- San Felipe
- CVP Dos Amigos
- Folsom
- Corning
- Red Bluff
- DMC Intertie
- San Luis Relift
- DMC Relift
- Tehama-Colusa Relift

SWP_Power

Generation Facilities

- Oroville
- Thermalito
- SWP San Luis
- Alamo
- Mojave
- Devil's Canyon
- Warner
- Castaic

Pumping Facilities

- SWP Banks
- SWP San Luis
- SWP Dos Amigos
- Buena Vista
- Teerink
- Chrisman
- Edmonston
- Pearblossom
- Oso
- South Bay
- Del Valle
- Las Perillas
- Badger Hill

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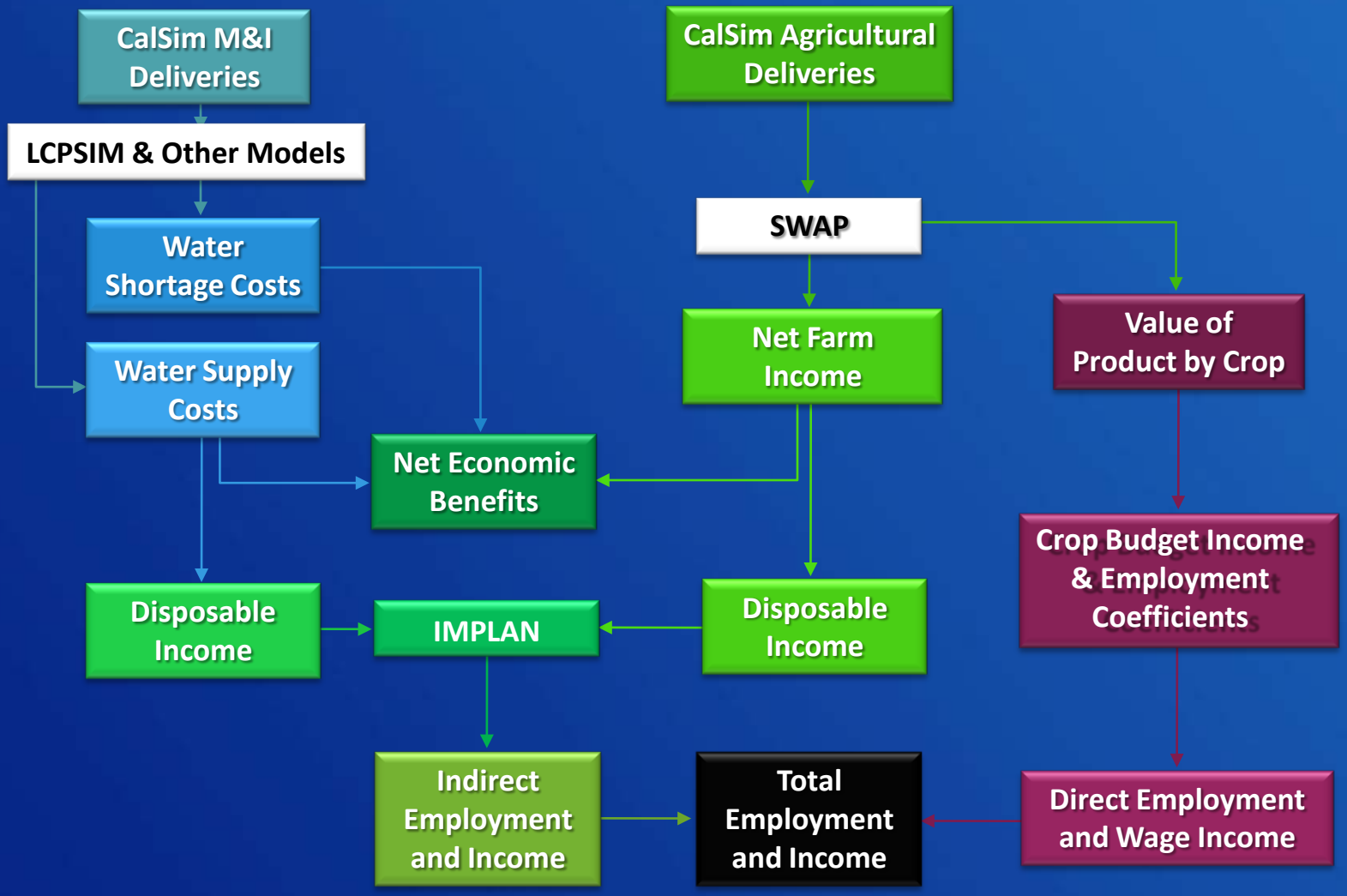
Economic Analysis



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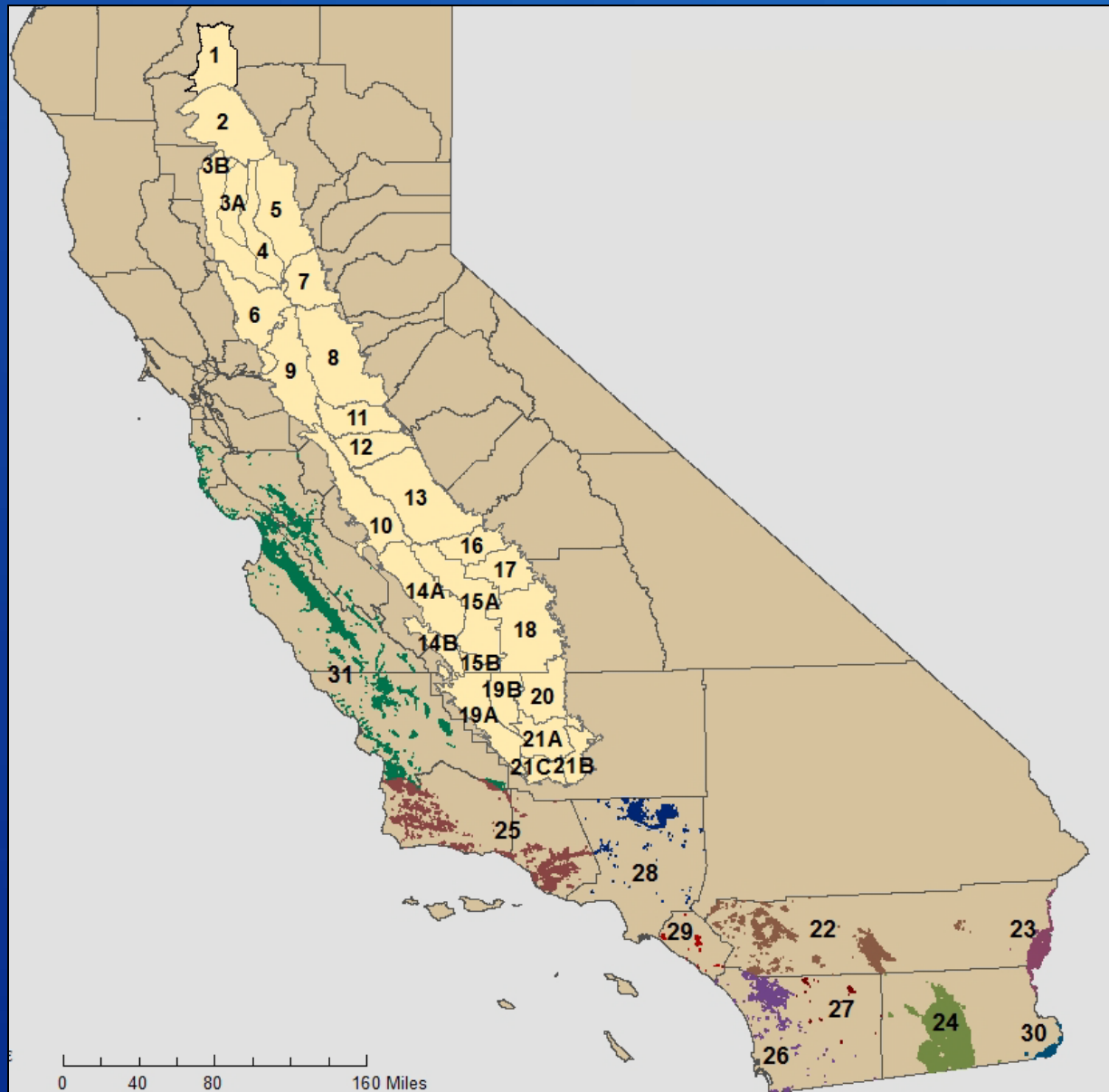
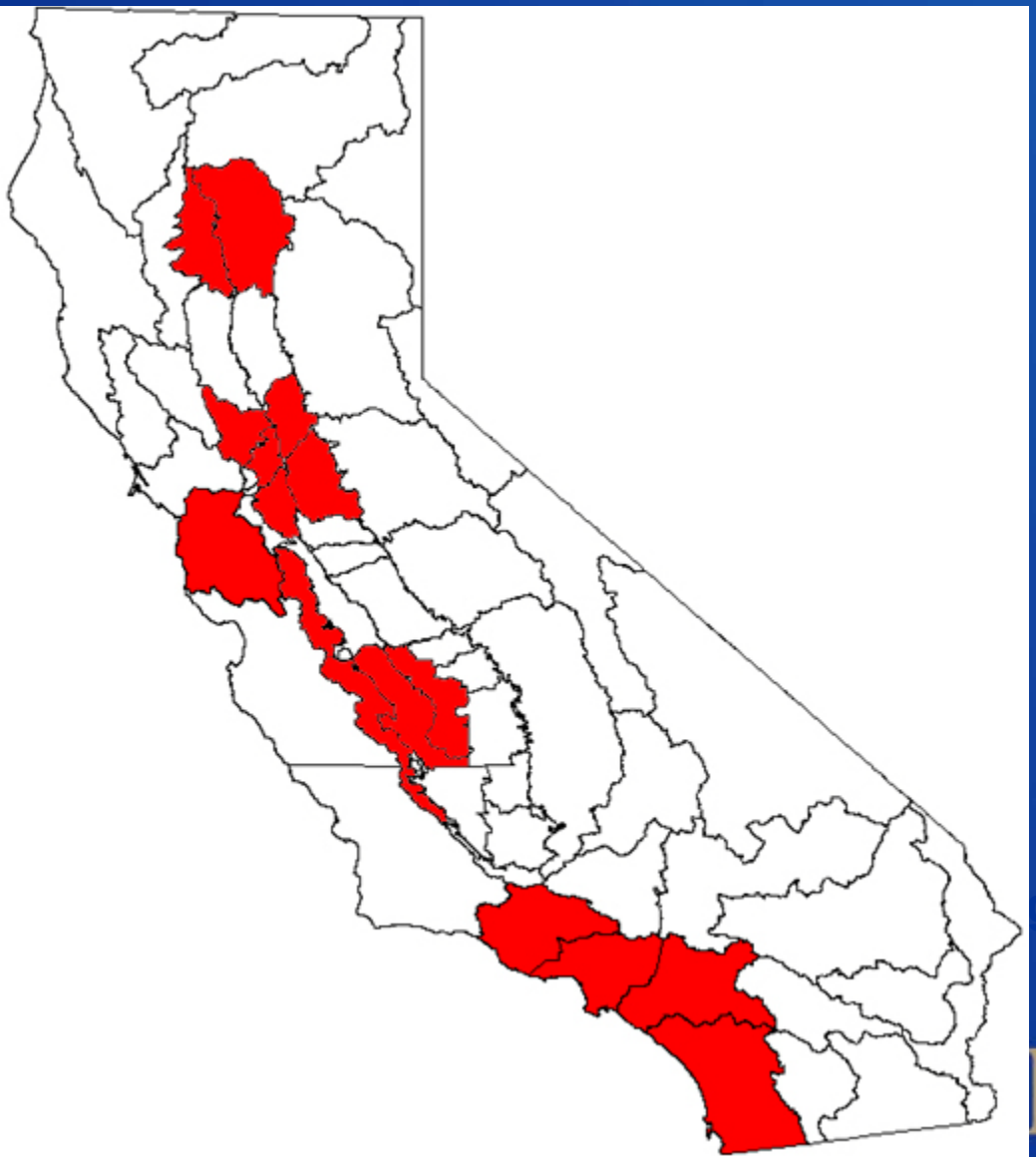
SWAP Study Area

- 27 regions in the Central Valley
- Central Coast, South Coast, & Imperial Valley
- 20 crop categories



Urban Areas Modeled by LCPSIM and Other Models



- **LCPSIM: Bay Area and South Coast**
- **Evaluating other models that cover remaining M&I contractors**

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Q&A Period

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Contacts

- Michael Inthavong, MInthavong@usbr.gov
- Updates and new information available on M&I WSP Website: http://www.usbr.gov/mp/cvp/mandi/index.html

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Thank you