

Regulations and Operations in CalLite

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July 18, 2012





Outline

- Regulatory Standards
 - Bay-Delta Plan (WQCP)/ D-1641
 - Biological Opinion RPA's
 - Other Regulations
- System Operations Options
- COA



WQCP / D-1641

- Delta Outflow - NDOI – flow req. by month/wyt
- X2 position requirement
 - # days when X2 must be west of Roe Island, Chipps Island, or SJR/Sac Confluence based on previous month 8-river index
 - Roe trigger – modify X2 days if X2_last > 66.3 km
- Delta Salinity Standards
 - M&I – Rock Slough,
 - Agriculture – Emmaton, Jersey Point
 - F&W - Collinsville
- Export/Inflow Ratio – 35% Feb-Jun, 65% Jul-Jan



WQCP / D-1641

- Delta Cross Channel Gates Closures – days/month
- Sacramento River at Rio Vista – flow req. by month/wyt
- Vernalis
 - Pulse period flow objective
 - Pulse period export restriction = $\max(1500 \text{ cfs}, \text{Vernalis flow})$
 - Bay-Delta Plan baseflow standards Feb-Jun
 - Higher if X2 standard is west of Chipps Island
 - Salinity Standard – 1000 or 700 ppm



D-1641 Regulations



CalLite 2.00 - The Central Valley Water Management Screening Model (v225); Scenario - DEFAULT.cls

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D-1641 Biological Opinion RPAs Others

Interior Delta Flows

- Delta Cross Channel - Default

River Flows

- Sacramento River at Rio Vista Minimum Flow - Default
- San Joaquin River at Vernalis

Delta Outflows

- Minimum Net Delta Outflow - Default
- X2 Requirements - Default
- Roe Trigger

Export Restrictions

- Export-Inflow Ratio - Default
- Vernalis (Vernalis D-1641 Criteria)

Salinity Standards

- Agricultural (at Emmaton)
- Agricultural (at Jersey Point)
- Municipal and Industrial (at Rock Slough)
- Fish and Wildlife (at Collinsville)

Delta Cross Channel

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month	days_open
1	31
2	20
3	16
4	11
5	0
6	0
7	0
8	0
9	26
10	31
11	31
12	30

Access regulation table by selecting or right-clicking on item at left

Help



User-Defined (Modified) D-1641 Regulations

- Delta Cross Channel Gates – set # days open/month
- Sac. River Rio Vista Min Flow – req'ts by month/wyt
- Net Delta Outflow Index – set min flows by month/wyt
- X2 Requirements
 - Modify required location
 - Use Roe trigger or not
- Export/Inflow Ratio – modify required values
- Vernalis-based pulse period export limit – check on or off



Biological Opinion RPA's

- Old and Middle River Flow Restrictions
- Fall X2
 - Requires X2 positions to be met in September-November
- Delta Cross Channel Gate Closures
- Clear Creek 6-day pulse flow in May/June
- San Joaquin River – based Export/Inflow Ratio
 - Pulse period flow objective



BO RPA's



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D-1641 Biological Opinion RPAs Others

Old and Middle River (FWS RPA Actions 1-3)

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- Old and Middle River (FWS RPA Actions 1-3)
- Fall X2 (FWS RPA Action 4)
- Clear Creek (NMFS RPA Action 1.1.1)
- Delta Cross Channel (NMFS RPA Action 4.1.2)
- San Joaquin River Inflow to Export Ratio (NMFS RPA Action 4.2.1)

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No User-Defined RPA's

- Not sensible to “modify” a Service BO
- User may toggle the actions on and off to assess their effects on system behavior



Other Regulations

- QWEST (SJR near Jersey Point)
 - Enter your own set of flow constraints by month/wyt
- Old and Middle River Flows
 - Enter your own set of flow constraints by month/wyt
- San Joaquin River Inflow/Export Ratio with Offset
 - Enter a set of multipliers and offsets to control exports relative to Vernalis flow – vary by month/wyt
 - $\text{Exports} < \text{Offset} + \text{Multiplier} * \text{Vernalis Flow}$
- Delta Flow Criteria – fraction of unimpaired flow
 - Model will report diffs between actual flows and the specified fraction of unimpaired flow



Other Regulations

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D-1641 Biological Opinion RPAs Others

QWEST (San Joaquin River near Jersey Point)

Old and Middle River (OMR)

San Joaquin River Inflow to Export ratio with offset

Fraction of Unimpaired Flow for Delta Flow Criteria

Help

QWEST (San Joaquin River near Jersey Point)

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month	Wet	Above Nor...	Below Nor...	Dry	Critical
1	-99999	-99999	-99999	-99999	-99999
2	-99999	-99999	-99999	-99999	-99999
3	-99999	-99999	-99999	-99999	-99999
4	-99999	-99999	-99999	-99999	-99999
5	-99999	-99999	-99999	-99999	-99999
6	-99999	-99999	-99999	-99999	-99999
7	-99999	-99999	-99999	-99999	-99999
8	-99999	-99999	-99999	-99999	-99999
9	-99999	-99999	-99999	-99999	-99999
10	-99999	-99999	-99999	-99999	-99999
11	-99999	-99999	-99999	-99999	-99999
12	-99999	-99999	-99999	-99999	-99999

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Operations Options

- Cross Valley Canal Wheeling
 - Toggle CVC wheeling on and off
- Joint Point of Diversion Wheeling
 - Toggle JPOD on and off
- Intertie
 - Toggle use of the intertie on or off
- WSI-DI Curves
 - Edit curves to affect CVP and SWP allocations



Operations Options

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CVP Operations and Facilities

- Cross Valley Canal Wheeling
- Joint Point of Diversion
- Intertie

CVP/SVP Allocation Methods

Water Supply Index / Delivery Index (WSI/DI) Curve (model default)

Edit SWP Curves Edit CVP Curves

Forecast Allocation Model

Choose forecast allocation method to use instead of WSI/DI for either or both projects.
Model will search for an optimal allocation percentage.

Use Forecast Allocation Model for SWP

SWP Allocation (%)

Use Forecast Allocation Model for CVP

CVP System (%)

CVP SOD (%)

User-Specified Fixed Allocations

Edit Time Series

Help

Values

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Coordinated Operations Agreement

BACKGROUND

- COA establishes method for allocating water supply in the Sacramento River Basin between SWP (STATE) and CVP (FEDERAL) for in-stream requirements, storage and Delta exports
- 1971-1986 operations based on annual letter of agreement
- “Permanent” agreement approved in November 1986
- Implementation required legislation from U.S. Congress



Whiskeytown Lake

Shasta Lake

Lake Oroville

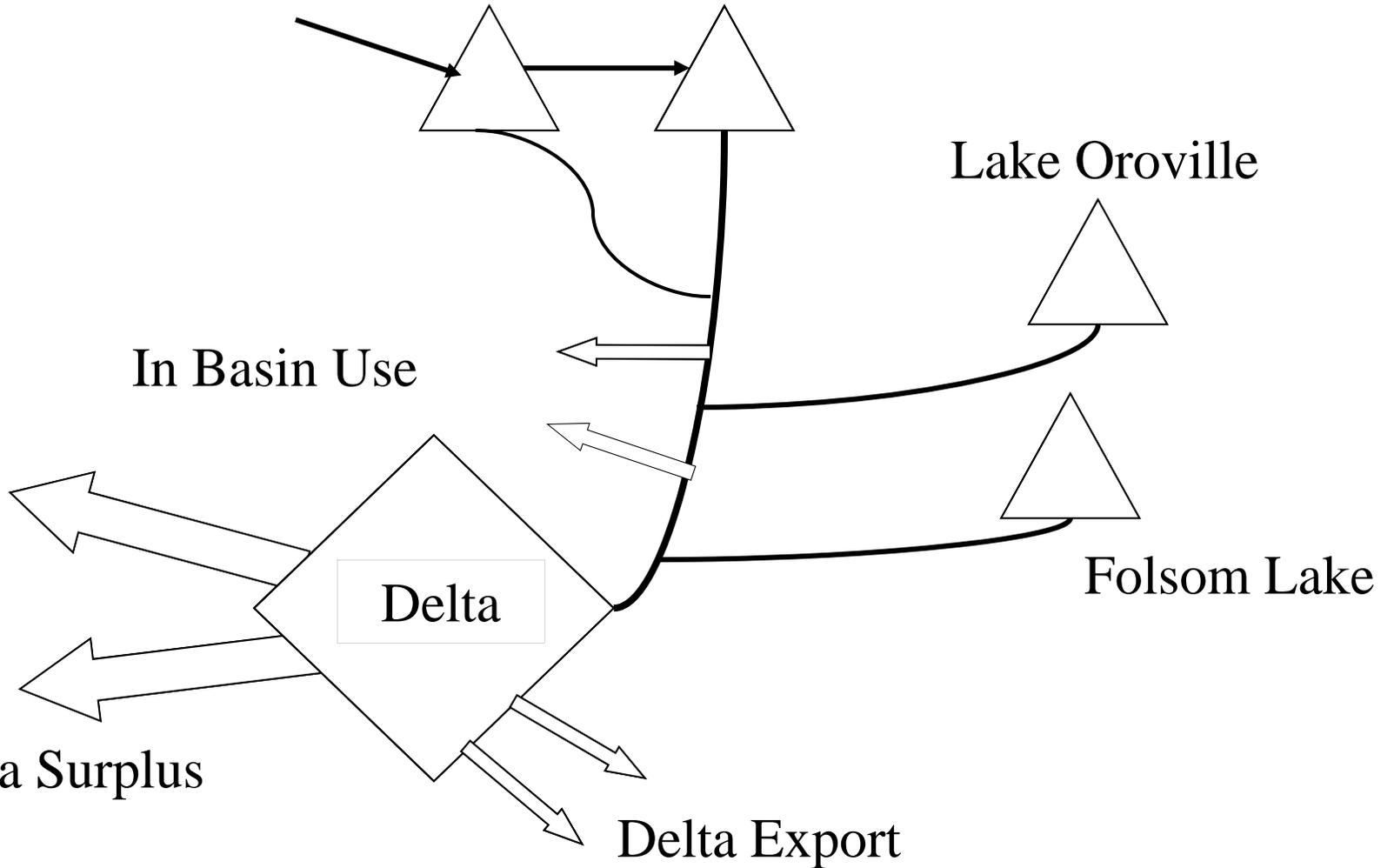
In Basin Use

Folsom Lake

Delta

Delta Surplus

Delta Export





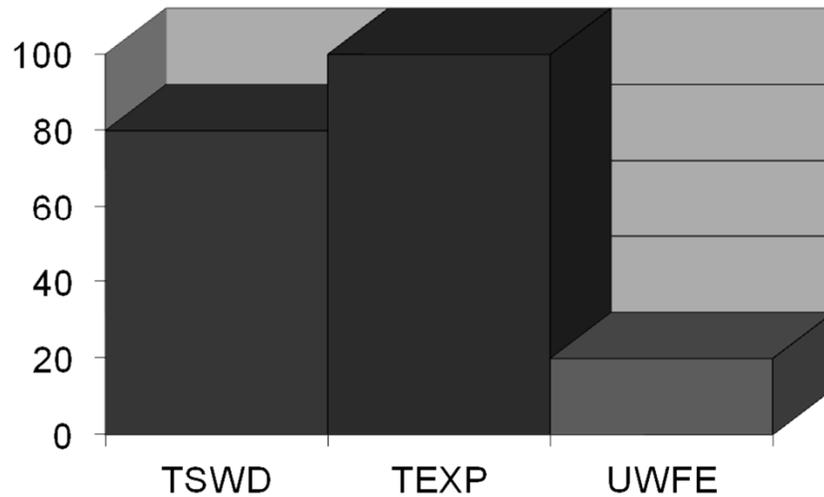
COA Terms

- United States Storage Withdrawal
- State Storage Withdrawal
- In-Basin Uses
- Un-stored Water for Export
- “Balanced” Water Condition
- “Excess” Water Condition
- Sharing Formula – 75/25 or 55/45

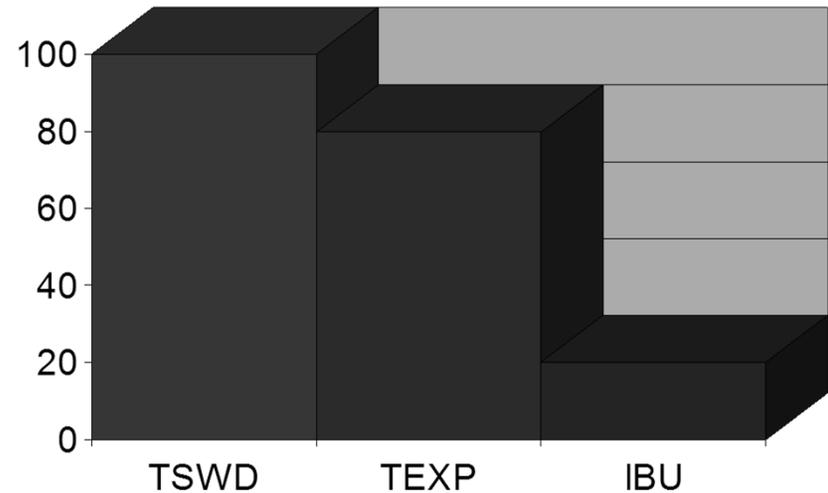


Key COA Definitions

Unstored Water For Export



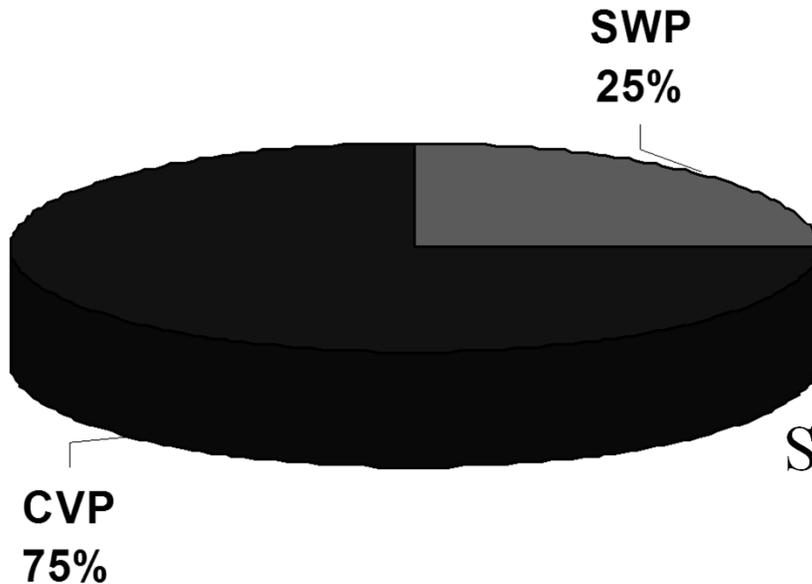
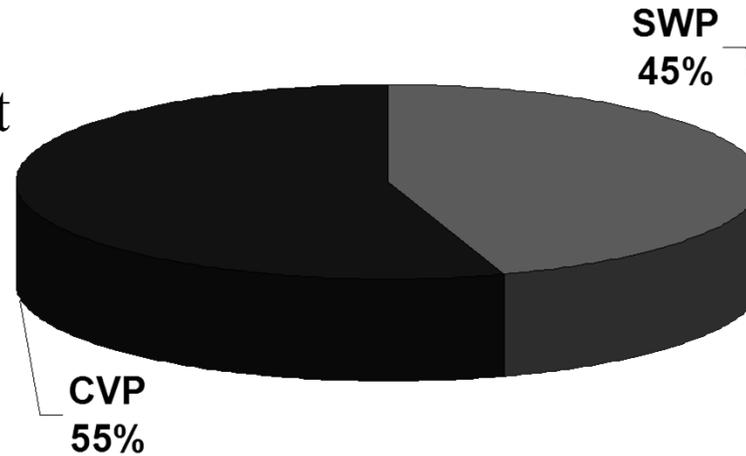
Storage Withdrawal for In Basin Use





Sharing Arrangements

Sharing Formula:
Unstored Water For Export



Sharing Formula:
Storage Withdrawal for In Basin Use



COA Balance Equation

$$\mathbf{UWFE - IBU = TEXP + \text{Delta Surplus} - TSWD + TSI}$$

