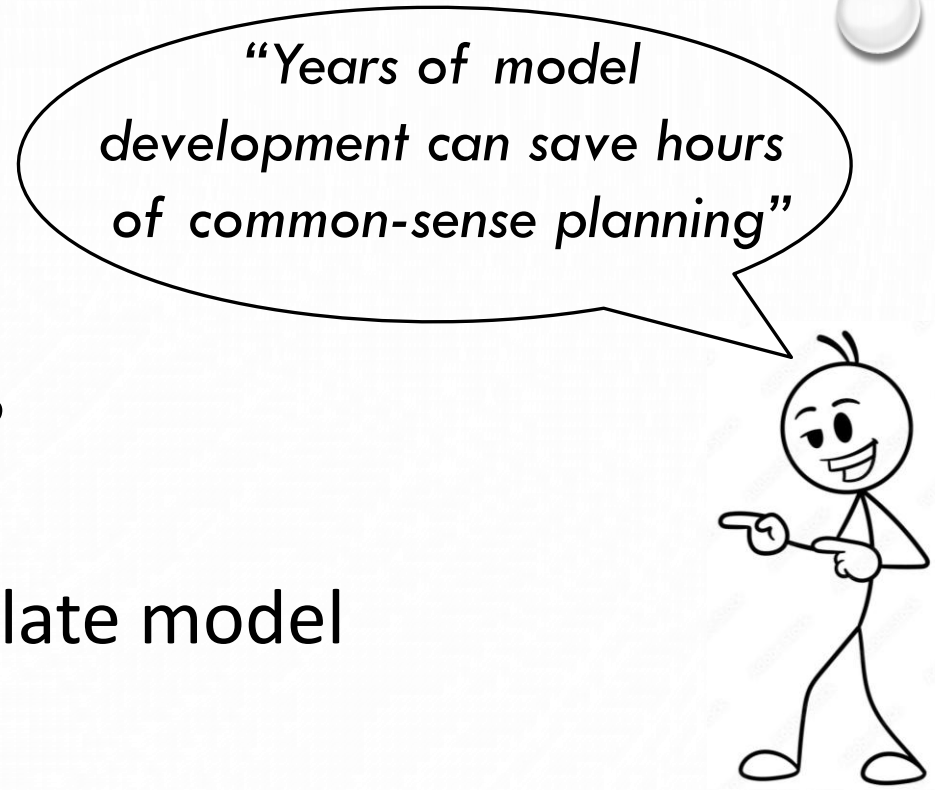
CalSim Improvements to CVP Operations and Allocation

May 12, 2025

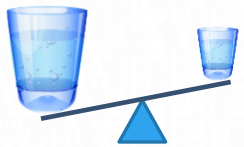
Topics



- Purpose
  - Improve operation of CVP in Calsim 3
- Recent CVP operations
  - Review recent CVP operations and relate model simulation to actual operations
- CalSim 3 CVP simulation and changes
- Results

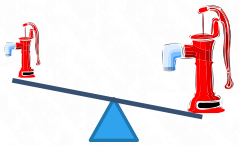
Key Features of CVP/SWP

CVP 8 MAF SWP 3.5 MAF

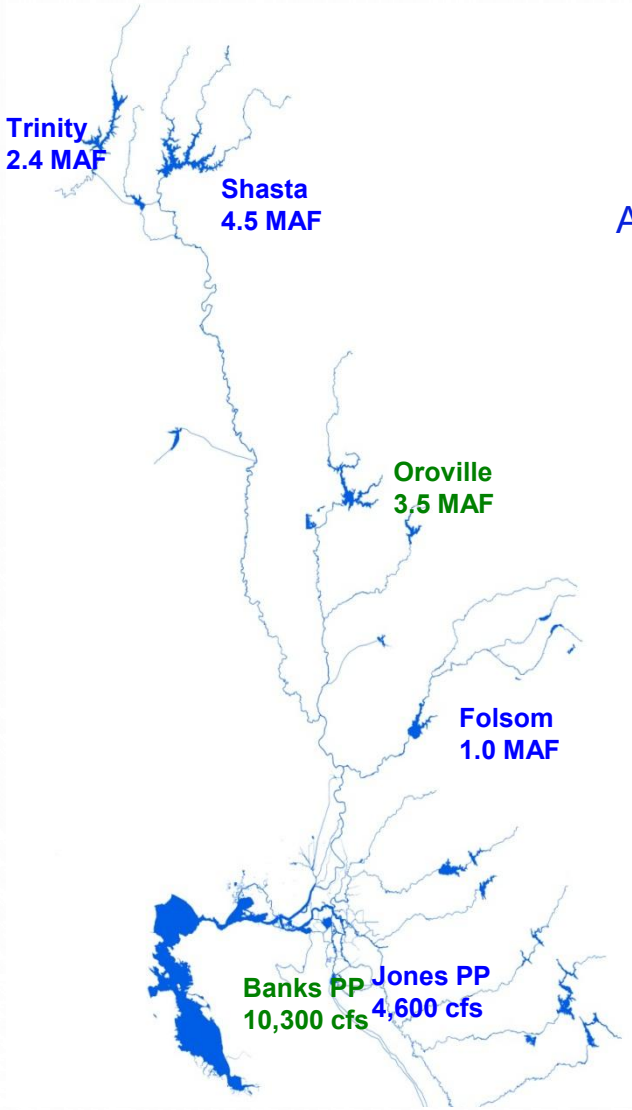


Upstream storage

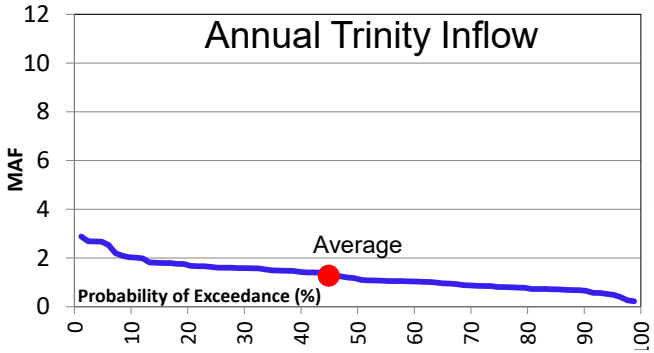
CVP 4600 cfs SWP 6680 cfs 8500 cfs



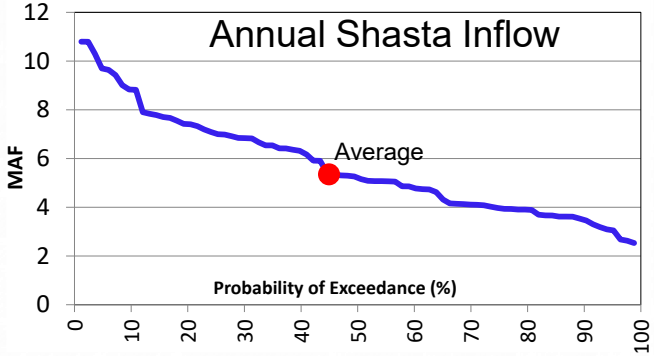
Export Capacity



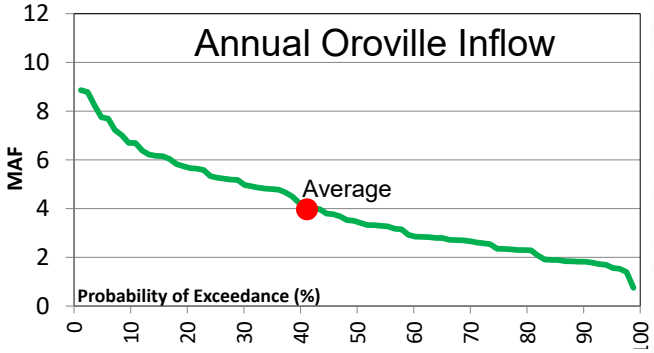
Trinity
Avg inflow = 1.3 maf
Storage = 2.4 maf



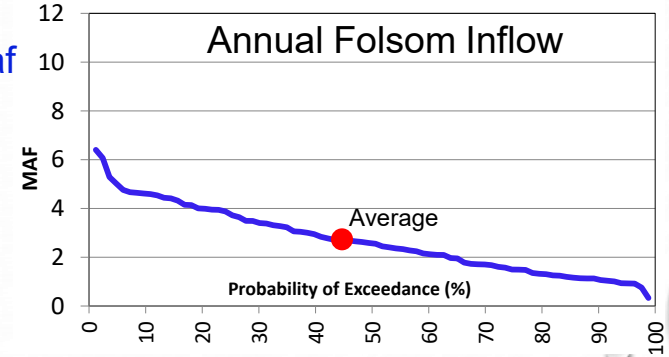
Shasta
Avg inflow = 5.7 maf
Storage = 4.5 maf



Oroville
Avg inflow = 4.0 maf
Storage = 3.5 maf



Folsom
Avg inflow = 2.7 maf
Storage = 1.0 maf



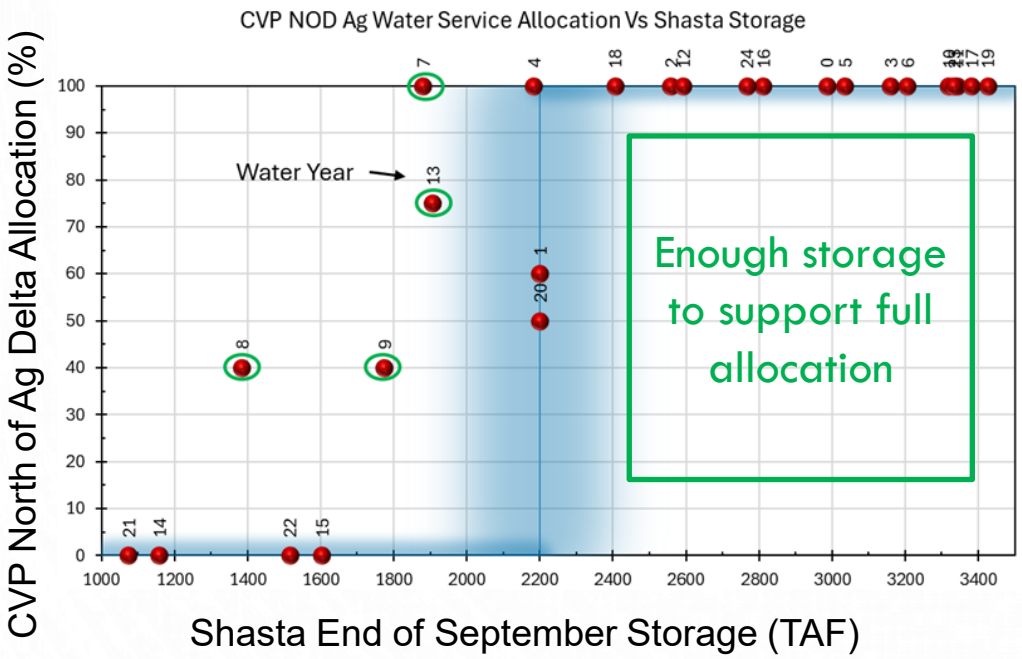
Model changes

- Protect upstream storage
  - Limit Shasta and Folsom release under low storage conditions
- CVP San Luis operational rules
  - Update rules for upstream storage releases for storage in CVP San Luis reservoir
- NOD CVP allocation
  - Update water supply – allocation rules (how much supply to allocate?)
- SOD CVP allocations
  - Revise forecasted export for allocation
  - Reduction to CVP Exchange Contractors and Refuge supply
  - Revise implementation of CVP SOD export limits during TUCP
- AAA
  - Updated and used to guide operational changes

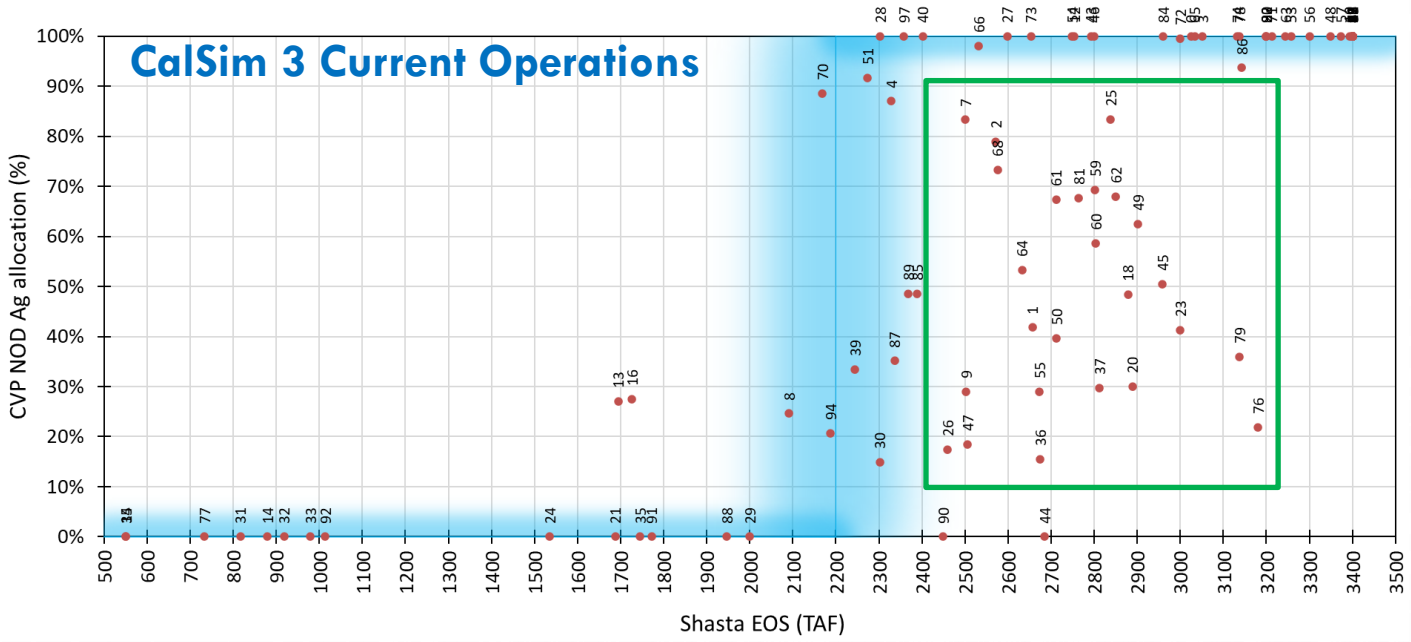
Historical and Model Operations

North of Delta CVP Water Supply Allocation

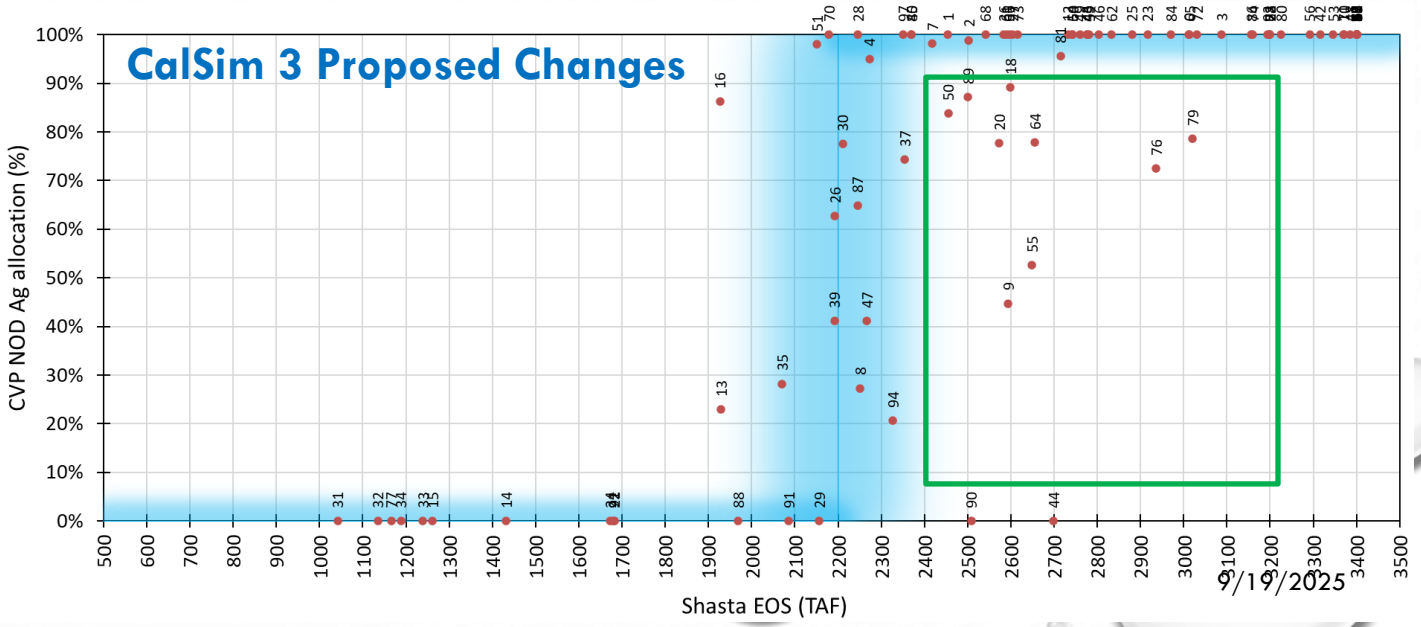
Historical



CalSim 3 Current Operations



CalSim 3 Proposed Changes



Export Forecasts and CVP South of Delta Allocations

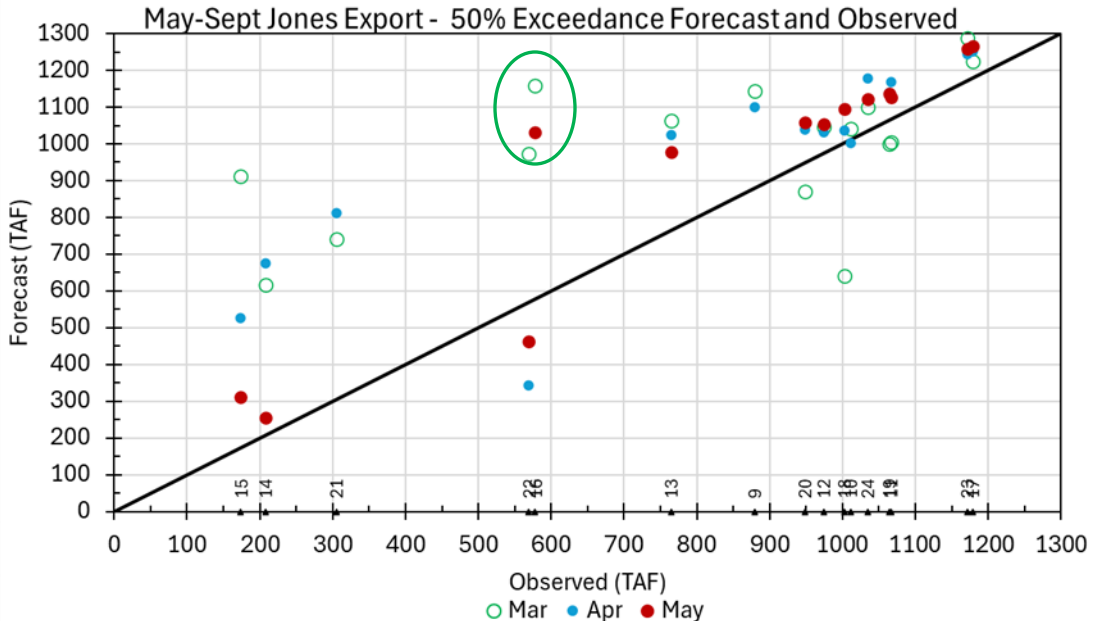
CVP South of Delta water **Allocation Volume** $_{\text{May 1 to Low Point}}$ =

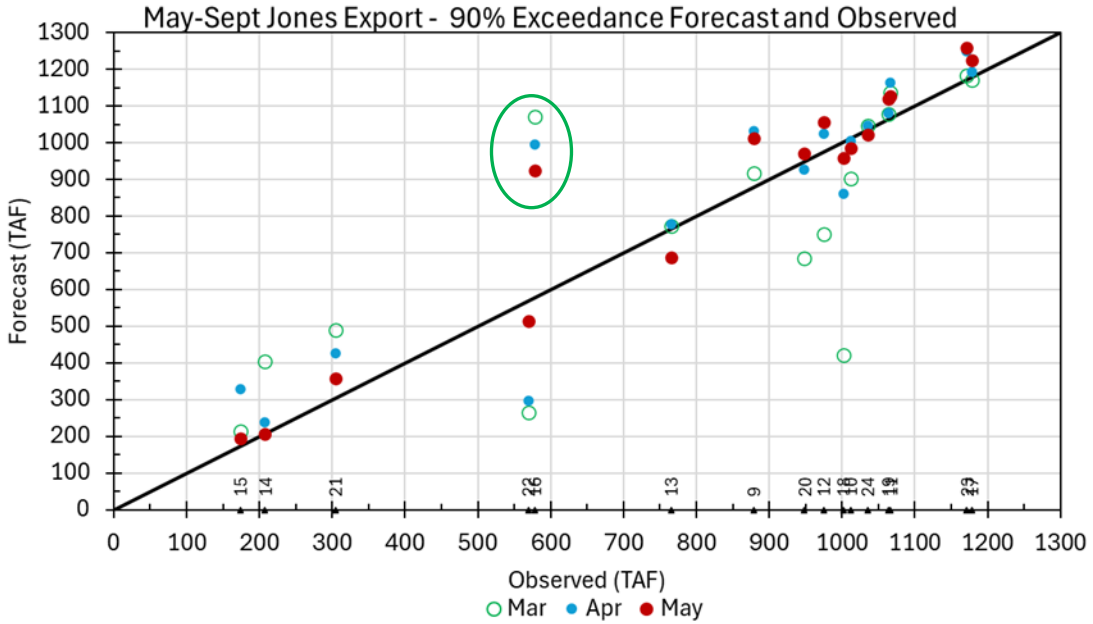
+ CVP San Luis Storage $_{\text{May 1}}$
+ Forecasted CVP Export $_{\text{May 1 to Low Point}}$ ←*Focus of change*
- Loss $_{\text{May 1 to Low Point}}$
- M&I PH&S $_{\text{May 1 to Low Point}}$
- Low point storage target

- "Allocation Volume" is used to determine SOD water supply for allocation %
- Export forecast needed in spring months to set annual allocation
  - Current rules relate Sacramento River Index (SRI) to export forecast
  - Update rules:
    - Month-specific export forecast
      - March to June based on SJR flow
      - July and August based on available stored water

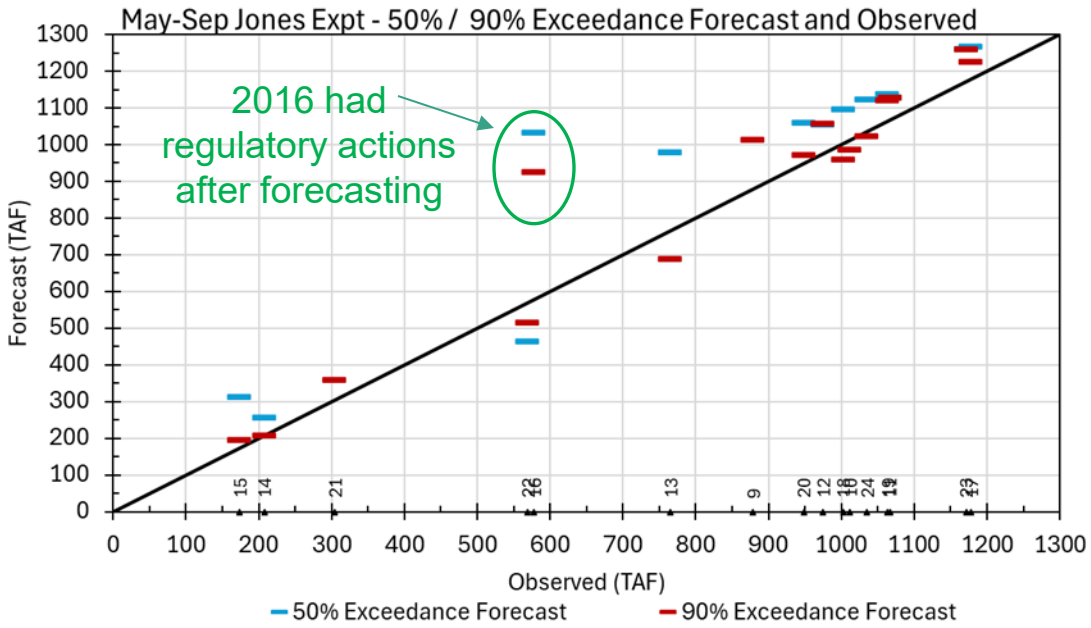
Historical Operations Forecasts

Jones Export Forecast



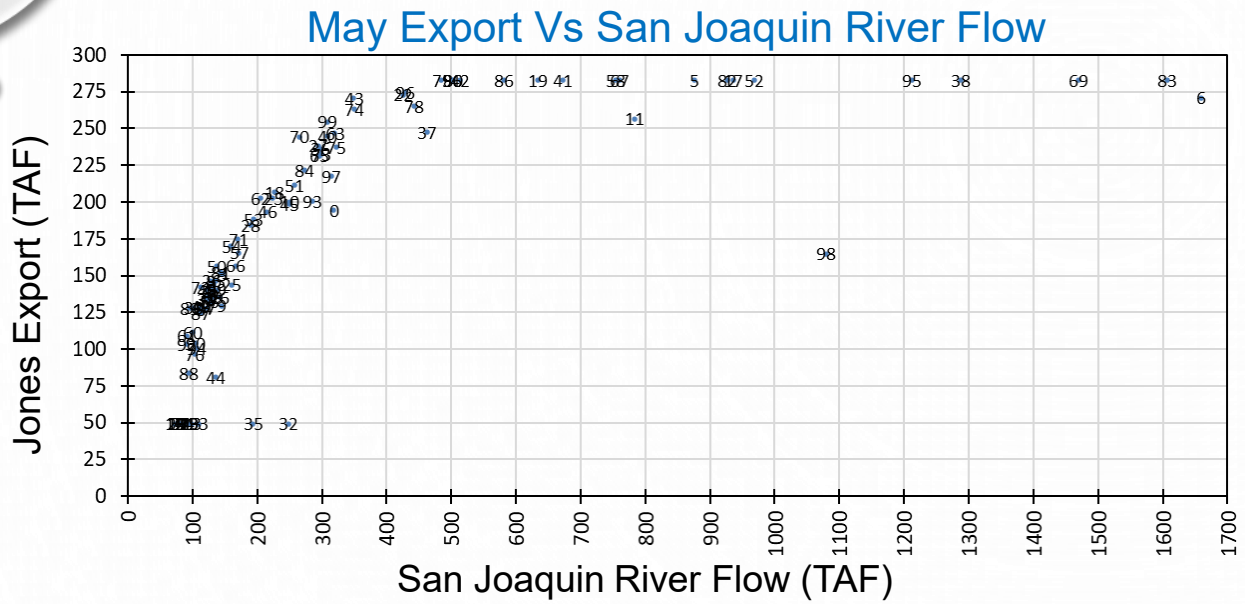


May 1st Forecast



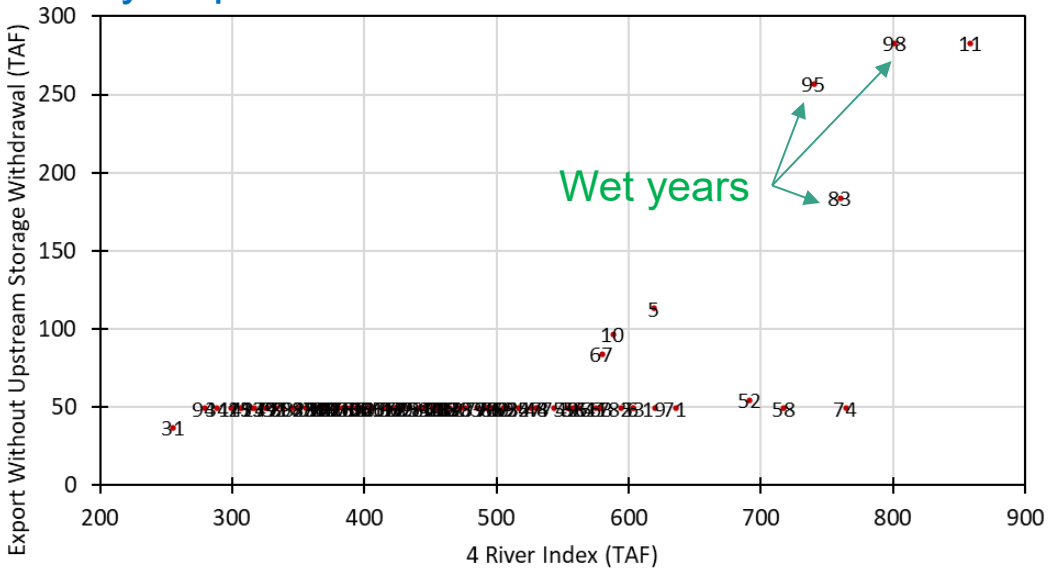
Note: Operators do an excellent job forecasting

CalSim 3 Export Forecasts - Examples



Export during Export (OMR, SJR I/E) controlled period (January through June) is related to SJR flow

- *Monthly export estimate is based on SJR flow*

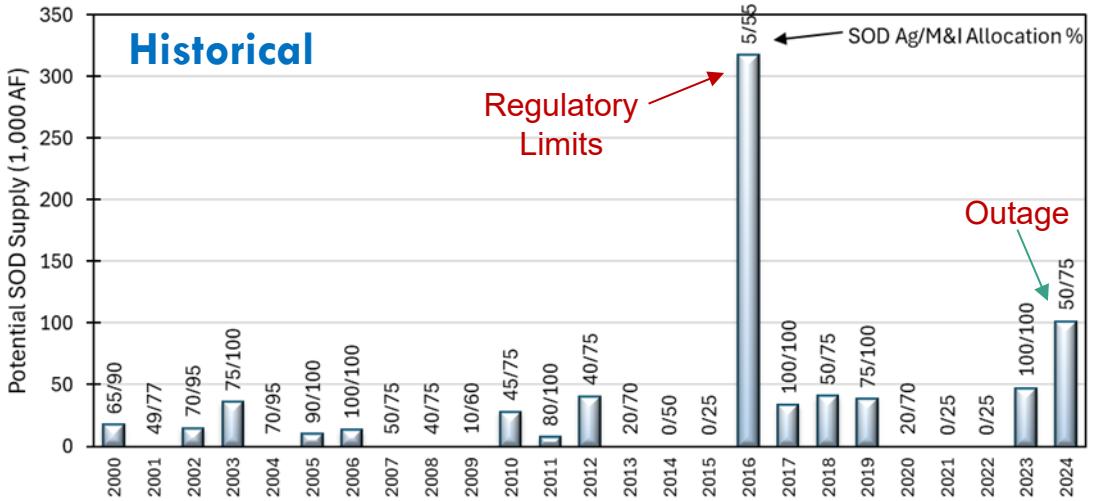


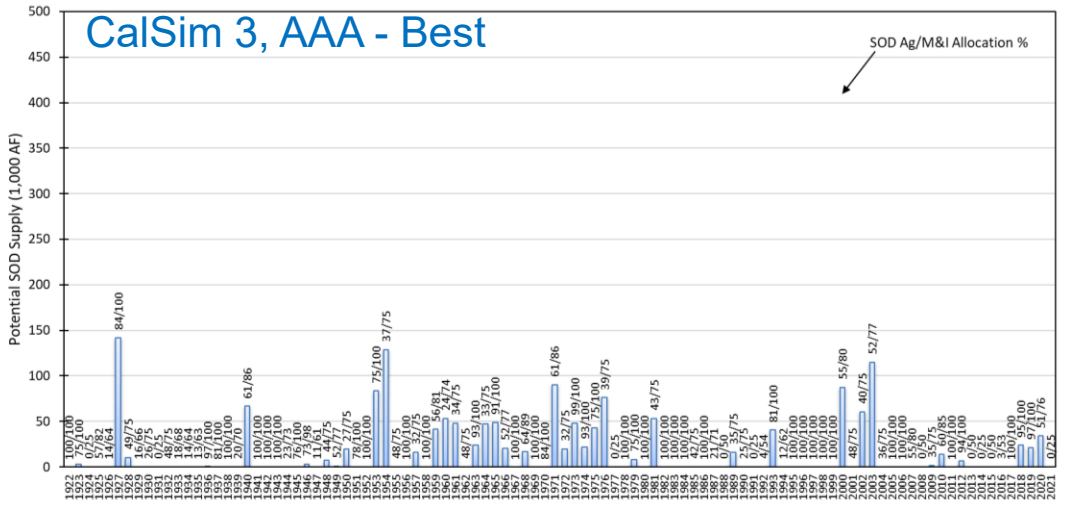
Export during most July and August periods are supported by upstream storage withdrawal and there is little export of incidental flow

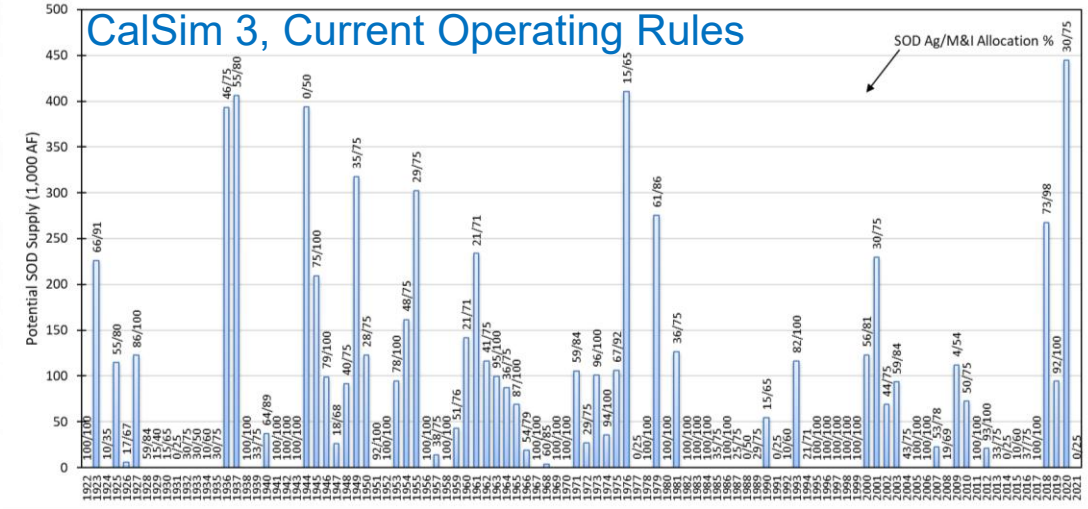
- *Monthly export estimate is based on upstream storage*

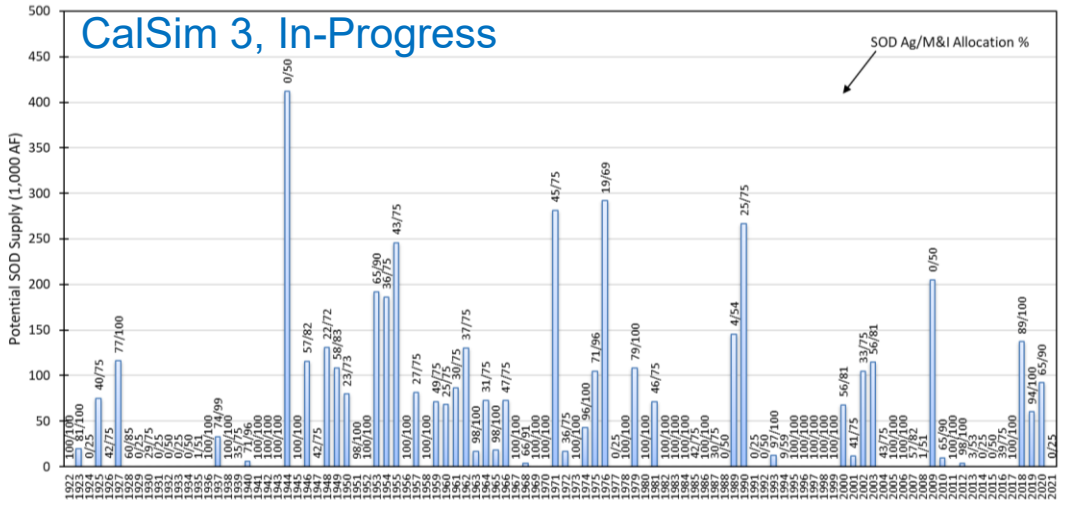
"Operational Efficiency"

Minimum of Shasta Plus Folsom Carryover over Target and Available "Summer" Export Capacity

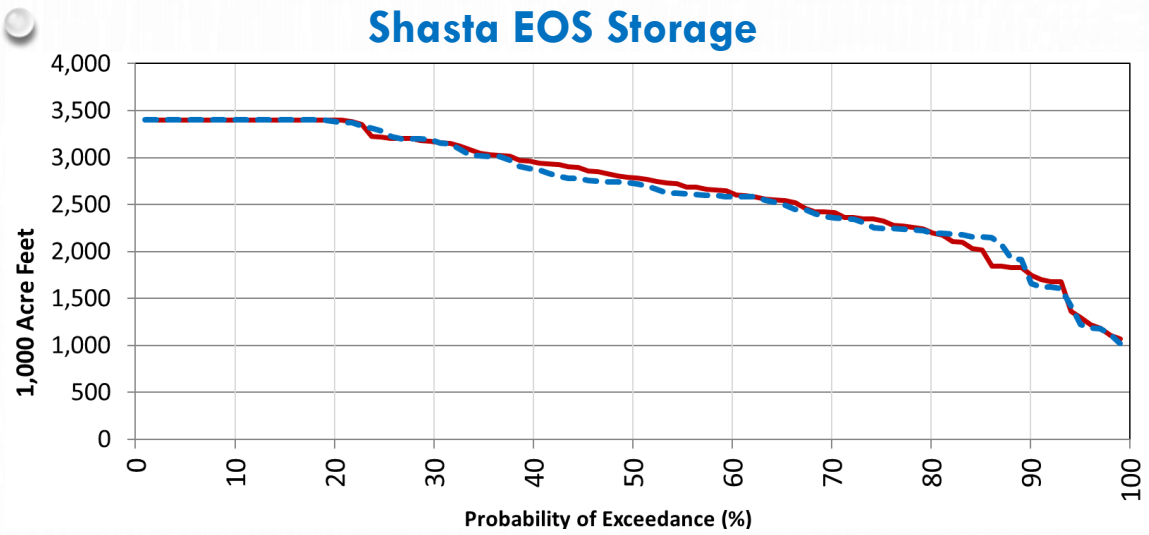


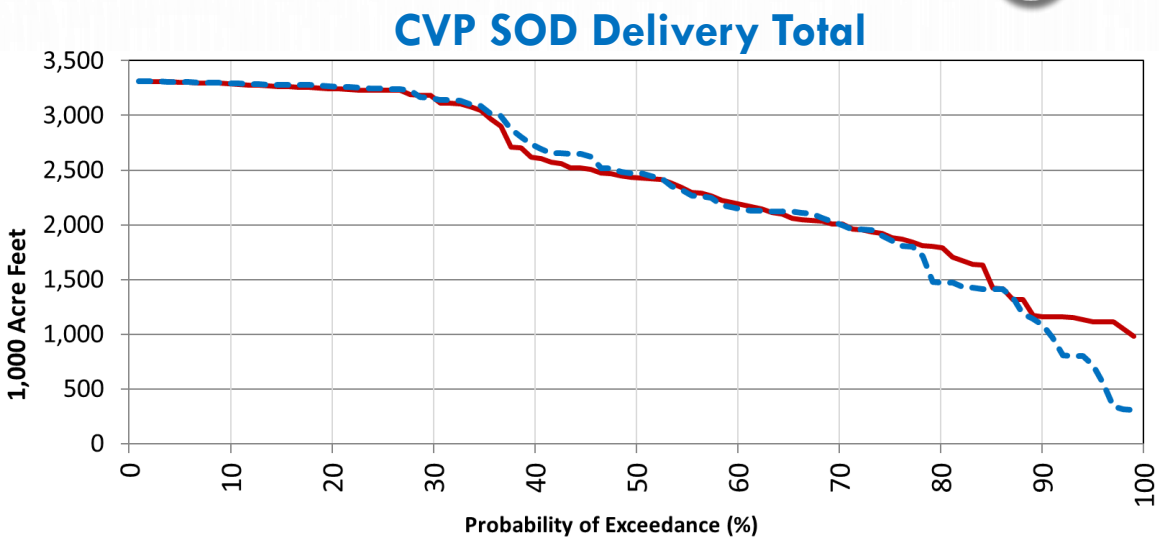


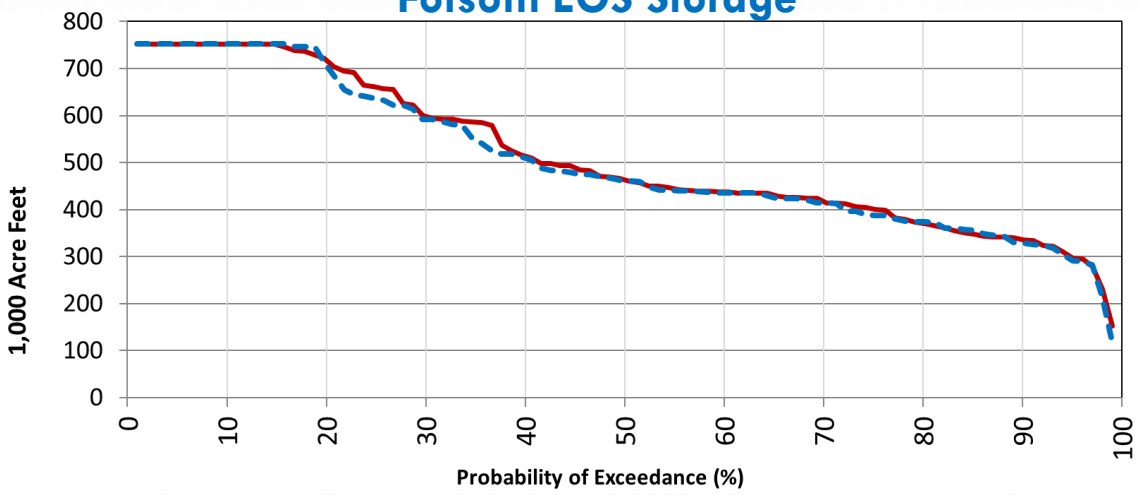




Result Sample





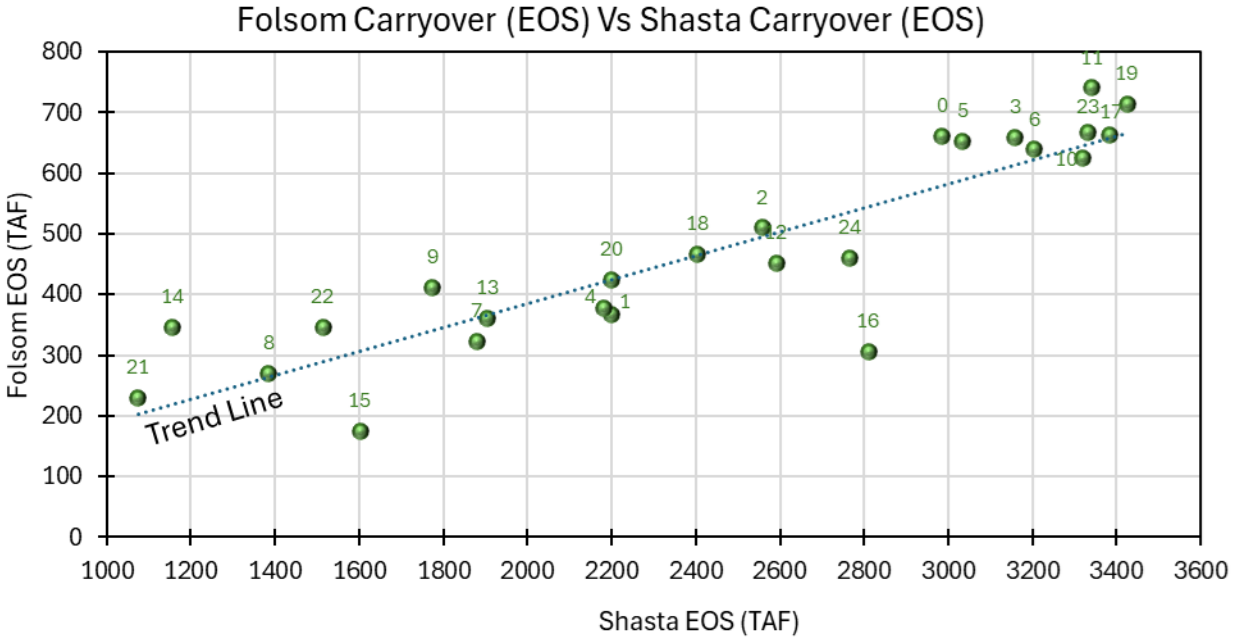


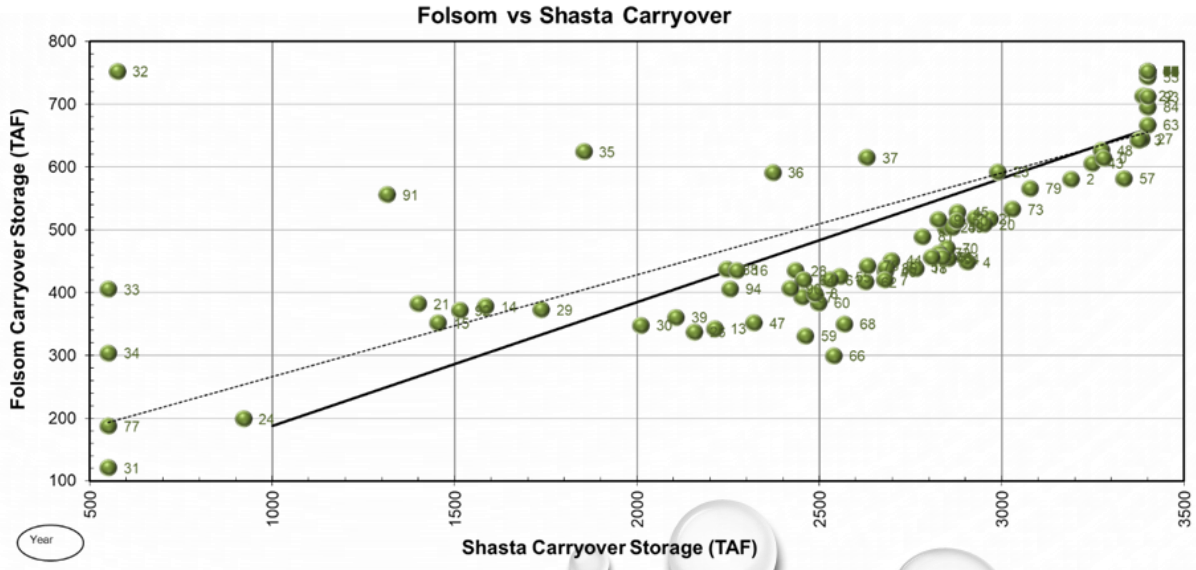
- Current
-- With Updates

Questions

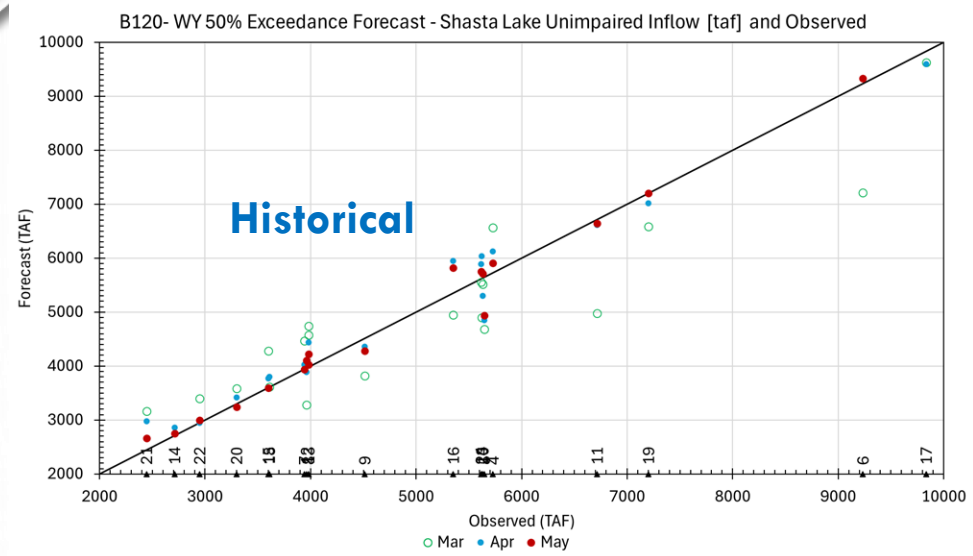
Thank You

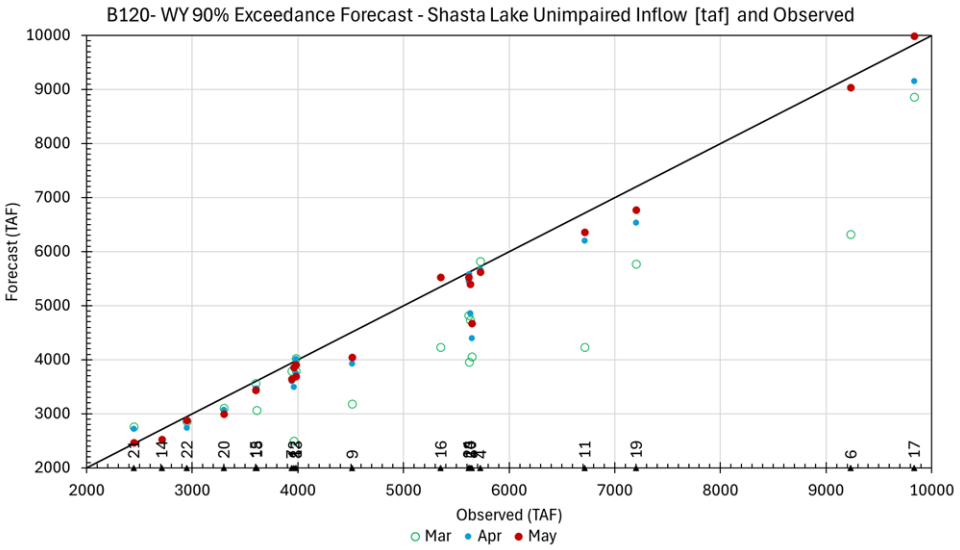
Historical and Model Operations

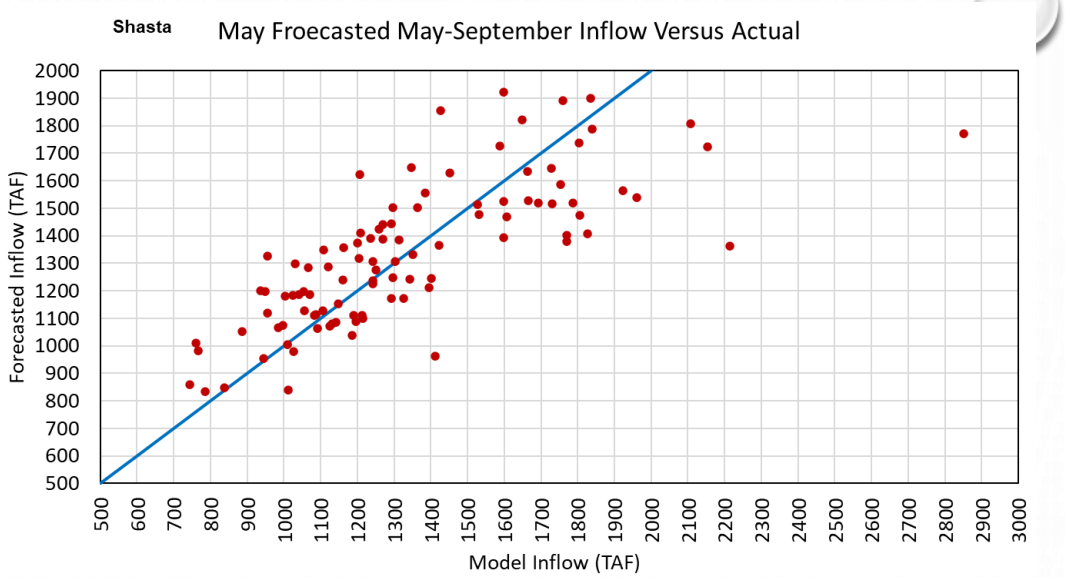


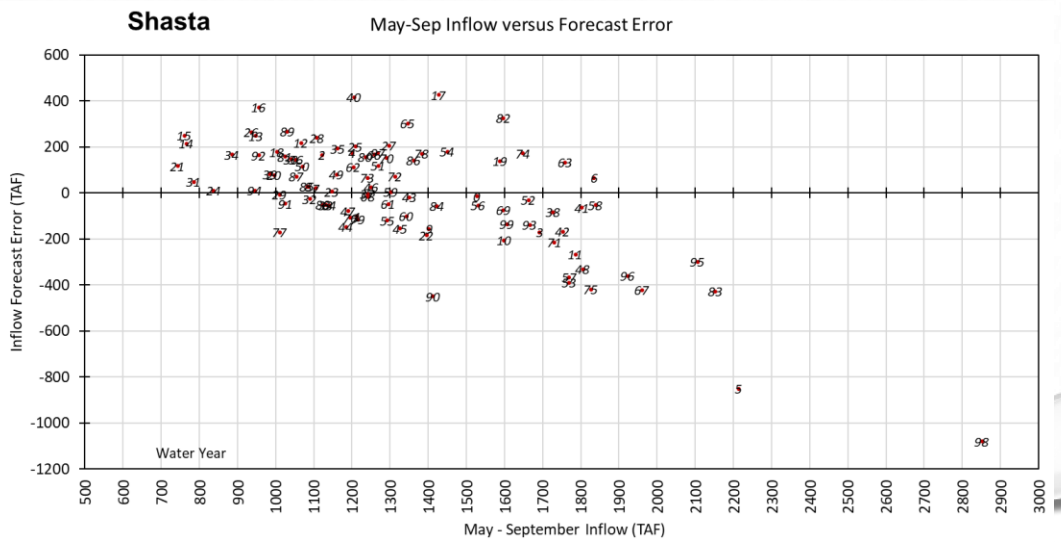


Historical Operations Forecasts

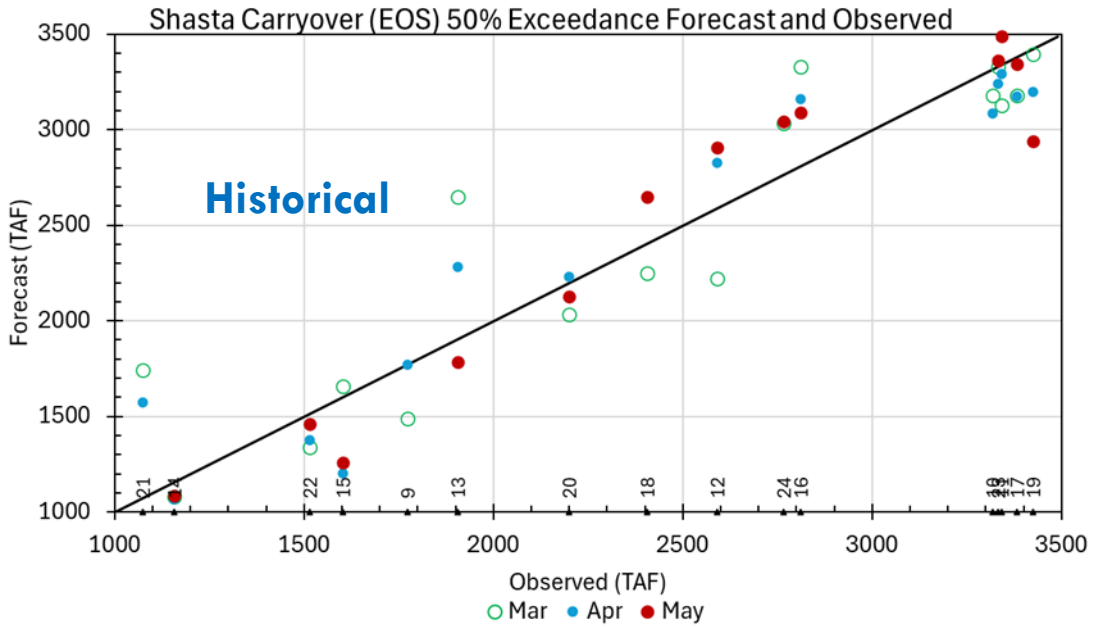


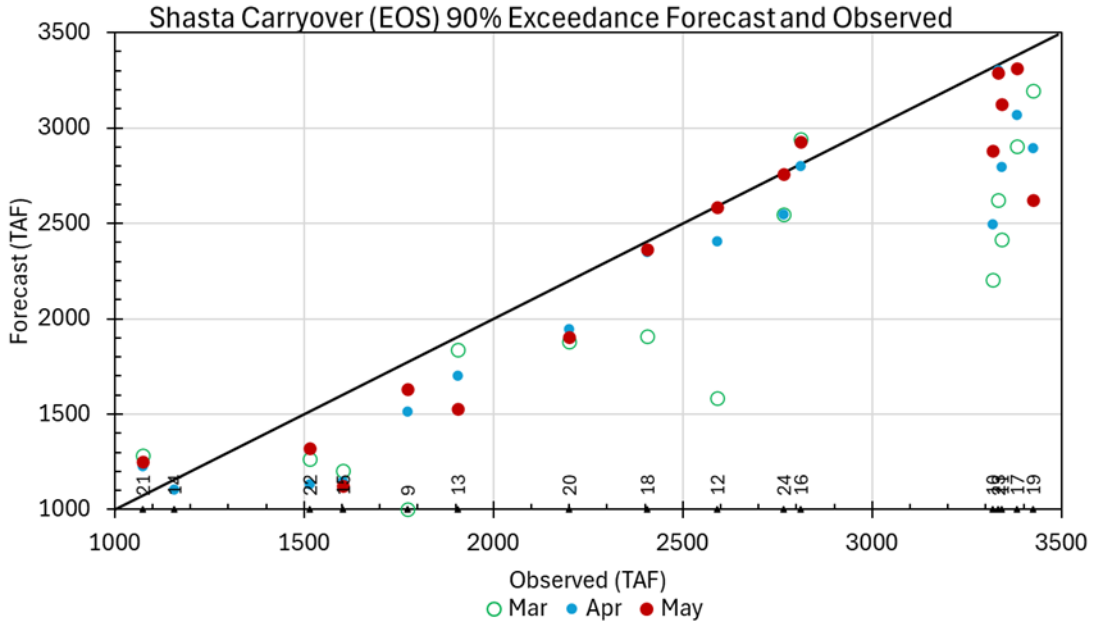






Historical Operations Forecast





Historical Operations

Historical