Facilitating Implementation of the Truckee River Operating Agreement Using the TROA Operations and Accounting Model

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2016 RiverWare User Group Meeting
Tuesday August 23th, 2016
Boulder, CO

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Collaboration

Lahontan Basin Area Office

Federal Water Master Office – Reno, NV

Outline

1. TROA Overview
2. Operations and Accounting Model
3. Interagency Model Use
4. Preparations for Implementation
   a) Mock TROA Meetings
   b) Table Top Exercises
5. Daily Accounting
   a) Reports
   b) Scripts
   c) Development
6. TROA Coordination Monthly Process

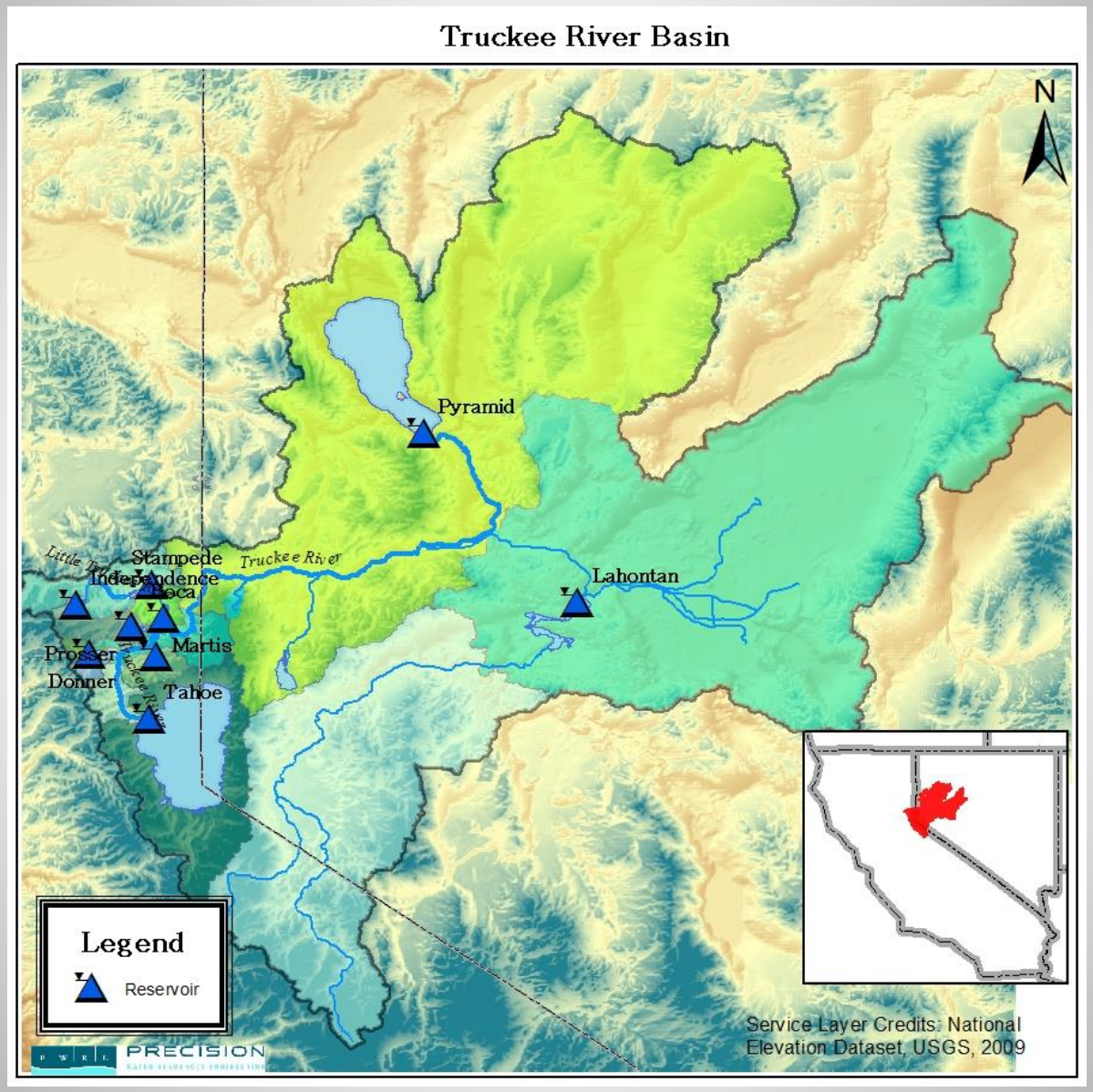
TROA Overview

- Truckee River Operating Agreement (TROA)
- Signed in 2008
- Negotiated for nearly *30* years
- Goals:
  - Improve operational flexibility
  - Improve efficiency of Truckee River Reservoirs
  - Improve instream flows
  - Satisfies water rights in conformance with existing decrees
- Several parties in the system have the ability to:
  - Establish credit water storage
  - Exchange credit water
  - Trade credit water
  - Release water for beneficial use
- Implemented December 1, 2015!

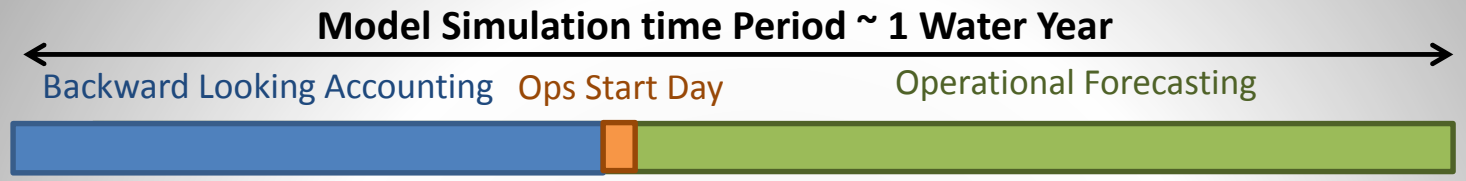
Boca Reservoir, December 2, 2015
Holding TROA's first Credit Water!

*Photo credit Caleb Erkman

TROA Overview



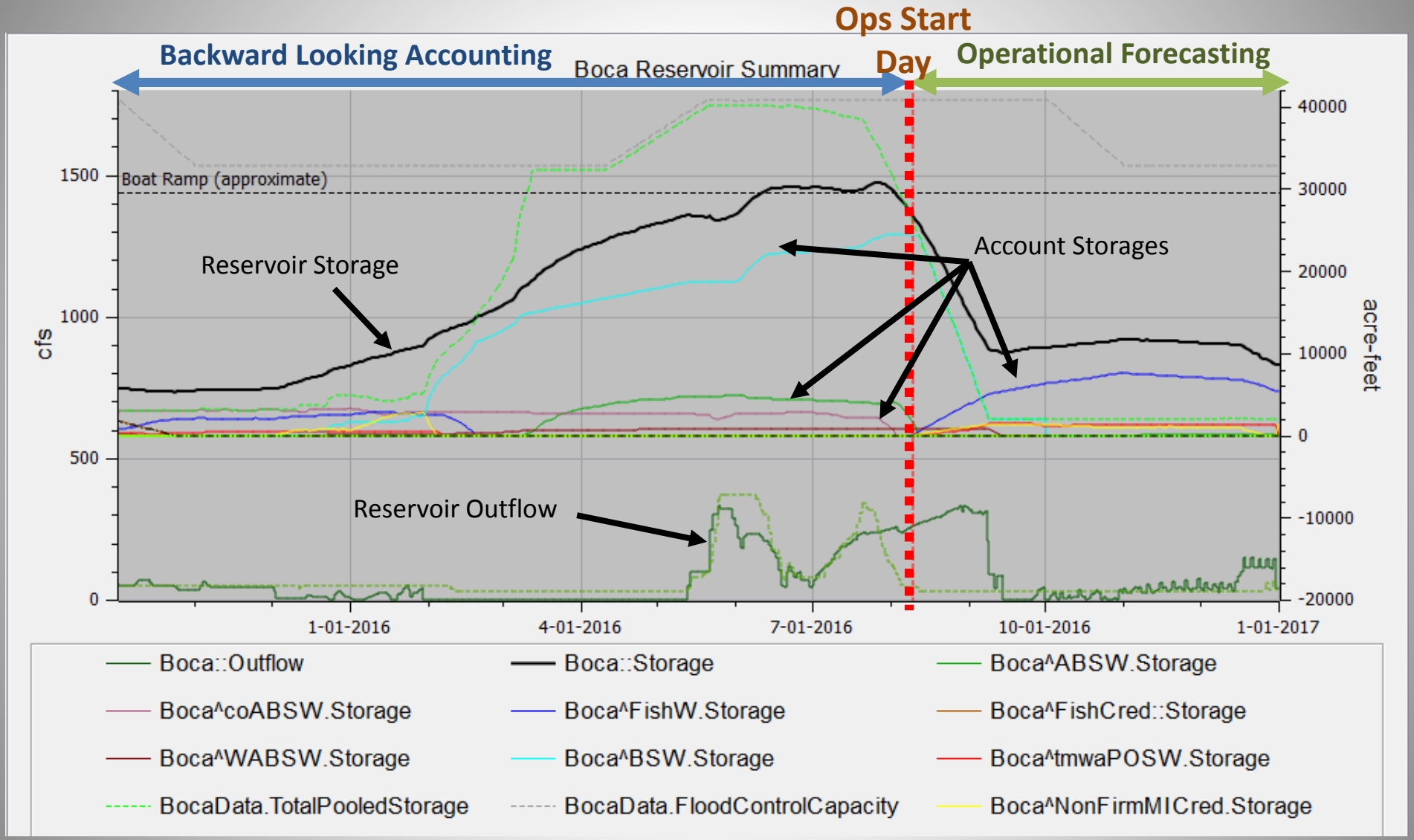
Operations and Accounting Model



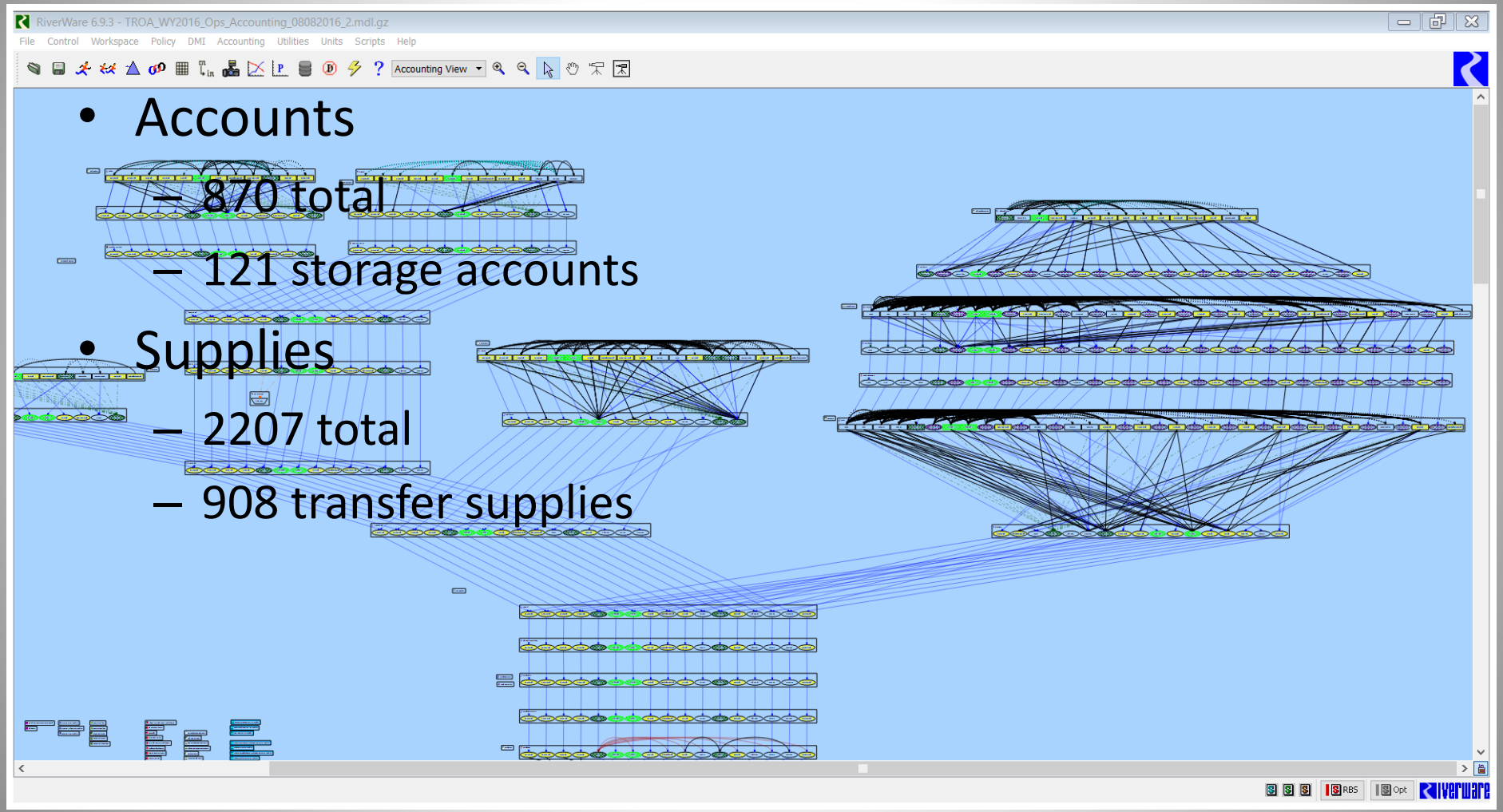
- One model, two purposes
- Specify Ops Start Date
- Seamless transition from *backward looking accounting* to *operational forecasting* in one model run
- Run period stays the same
- RiverWare Accounting done in both modes

- Backward looking accounting mode
  - *Input PE* and *stream gage* measurements
  - Model solves for *inflows to reservoirs* and *reaches*
  - Reconcile imperfect accounting
- Operational forecasting mode
  - *Forecasted inflows*
  - Logic sets releases
  - RiverWare simulates system

TROA Model Phases



Operations and Accounting Model



Interagency Model Use

- U.S. Water Master's Office
  - Daily accounting
  - Operational planning
  - Facilitate monthly process
- USBR, Lahontan Basin Area Office
  - OCAP calculations (Truckee Canal Operations)
  - Short-term planning studies
  - Forecasting for Newlands Project (TCID)
- Truckee Meadows Water Authority
  - Short and long-term planning studies
  - Used to develop drought plan
- CA, Department of Water Resources
  - Used to identify and recommend TROA exchanges and operations
- Pyramid Lake Paiute Tribe
  - Used for operational planning/scheduling

Preparations for Implementation

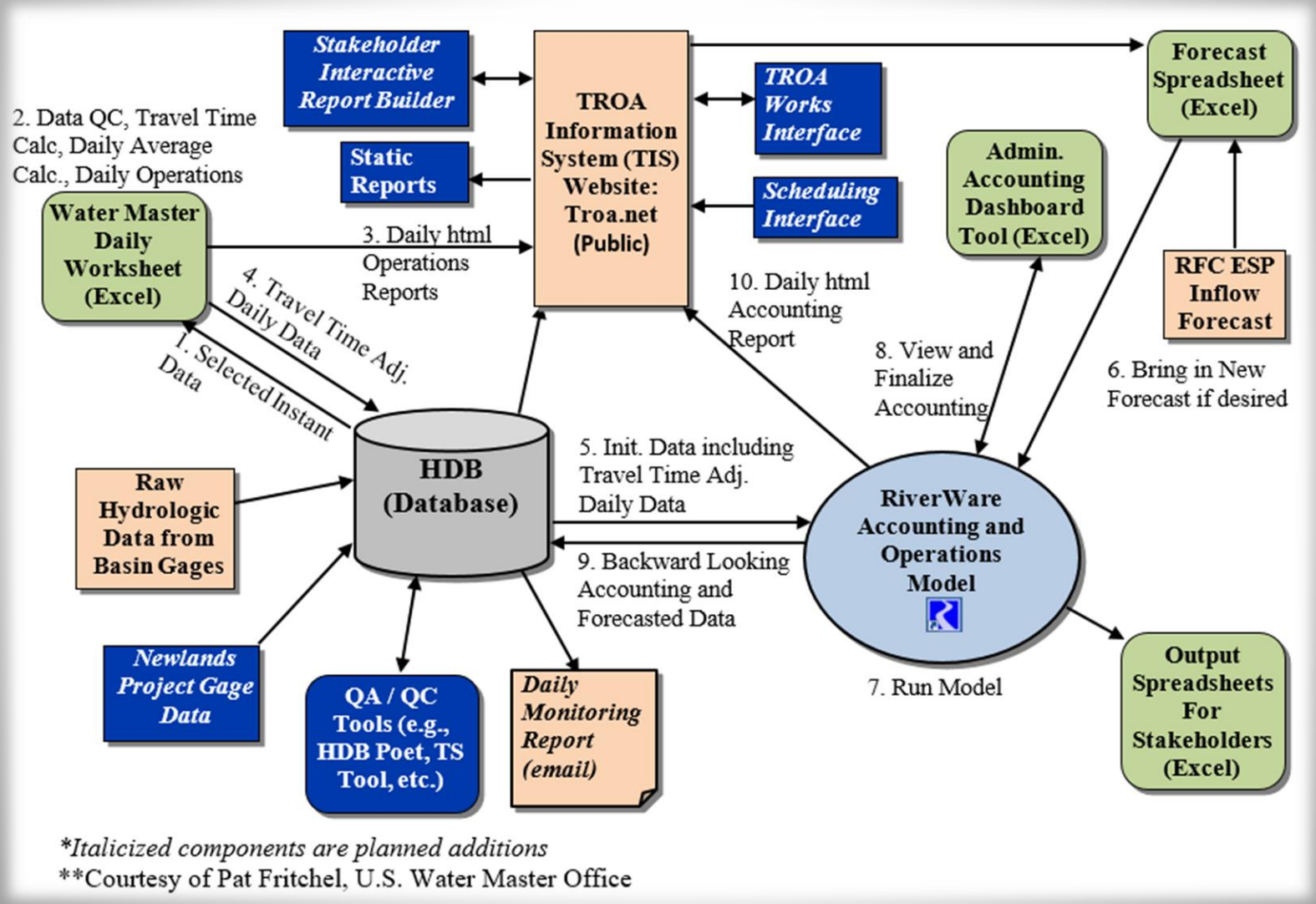
- Mock TROA Exercises
  - Meeting with all TROA parties
  - Met regularly since 2012
  - Discuss modeling of TROA
  - Practice and develop the monthly coordination process with hypothetical scenarios
- Table Top Exercises
  - Meet with USWM staff
  - 9 meetings in 2014 and 2015
  - Discuss and develop accounting procedures
  - Provide training on model and supporting tool use

Daily Accounting

- TROA requires a daily accounting of the reservoir releases and storage
- Accounting drives operations
- Extensive real-time data needs (HDB)
  - Reservoir elevations and releases
  - Stream gage readings
  - Diversion data
  - Etc.

- TROA allows for many combinations of complex operations :
  - Exchanges
  - Holdbacks (credit water establishment)
  - Exchanges to meet minimum flows
  - Exchanges to maintain/balance reservoir storage levels
  - Releases of stored water to meet various demands

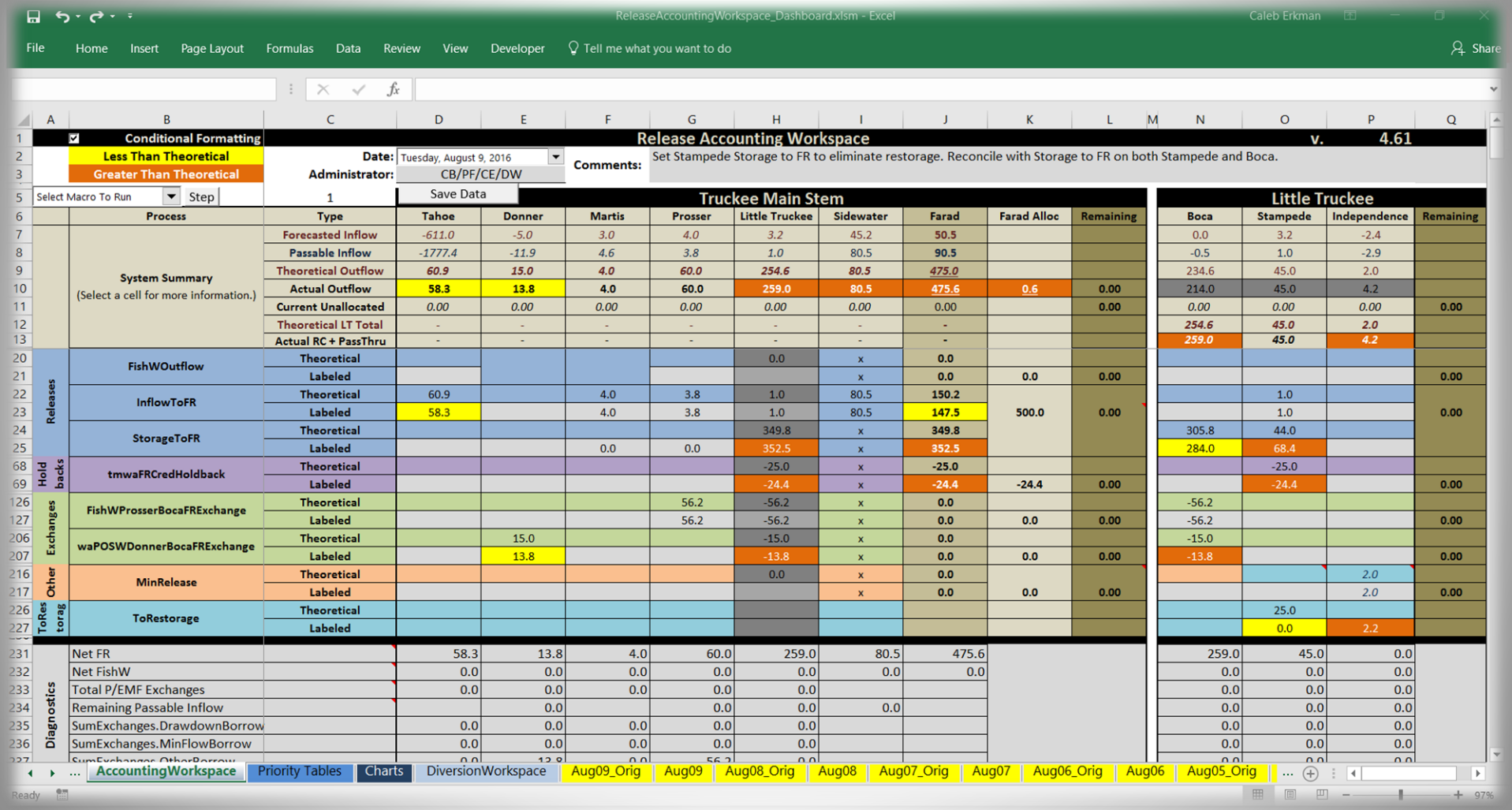
TROA Data Framework



*Italicized components are planned additions

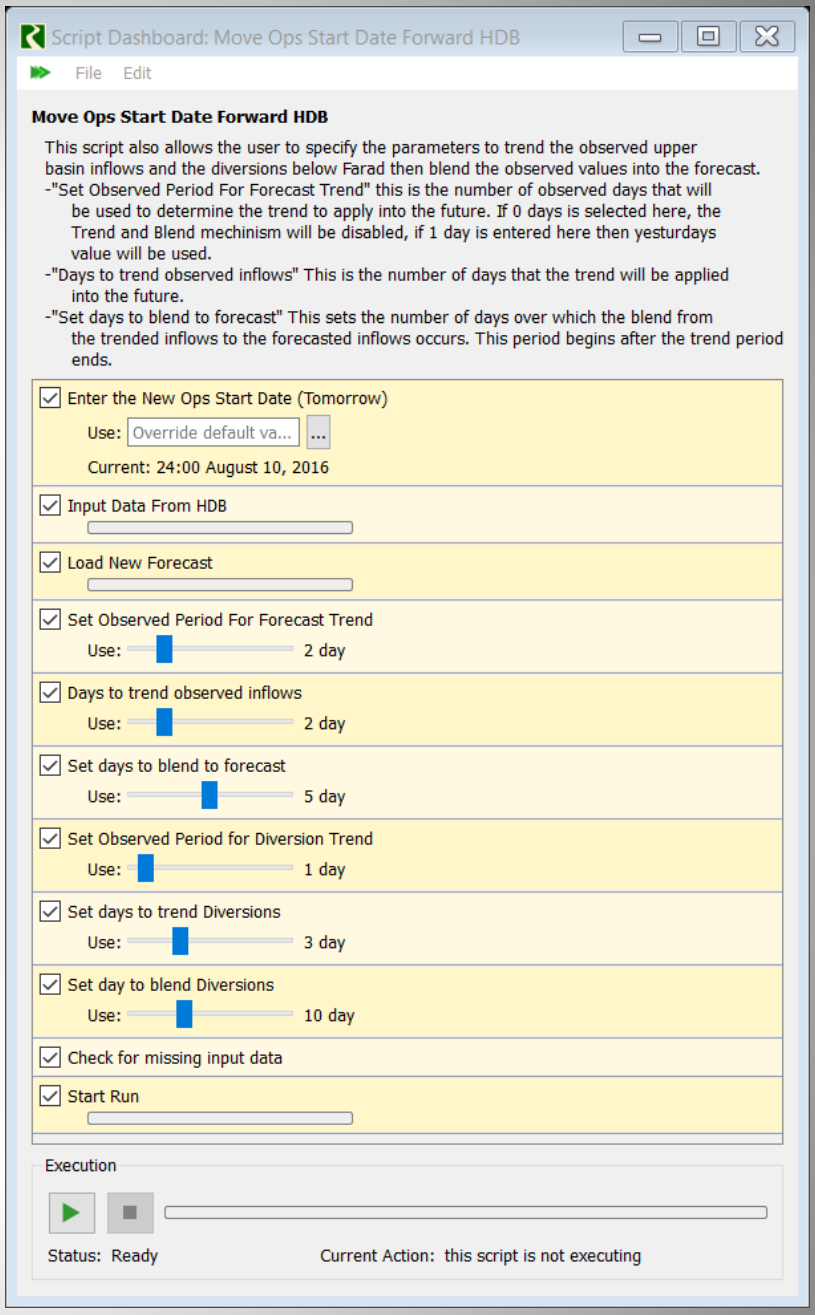
**Courtesy of Pat Fritchel, U.S. Water Master Office

Accounting Dashboard



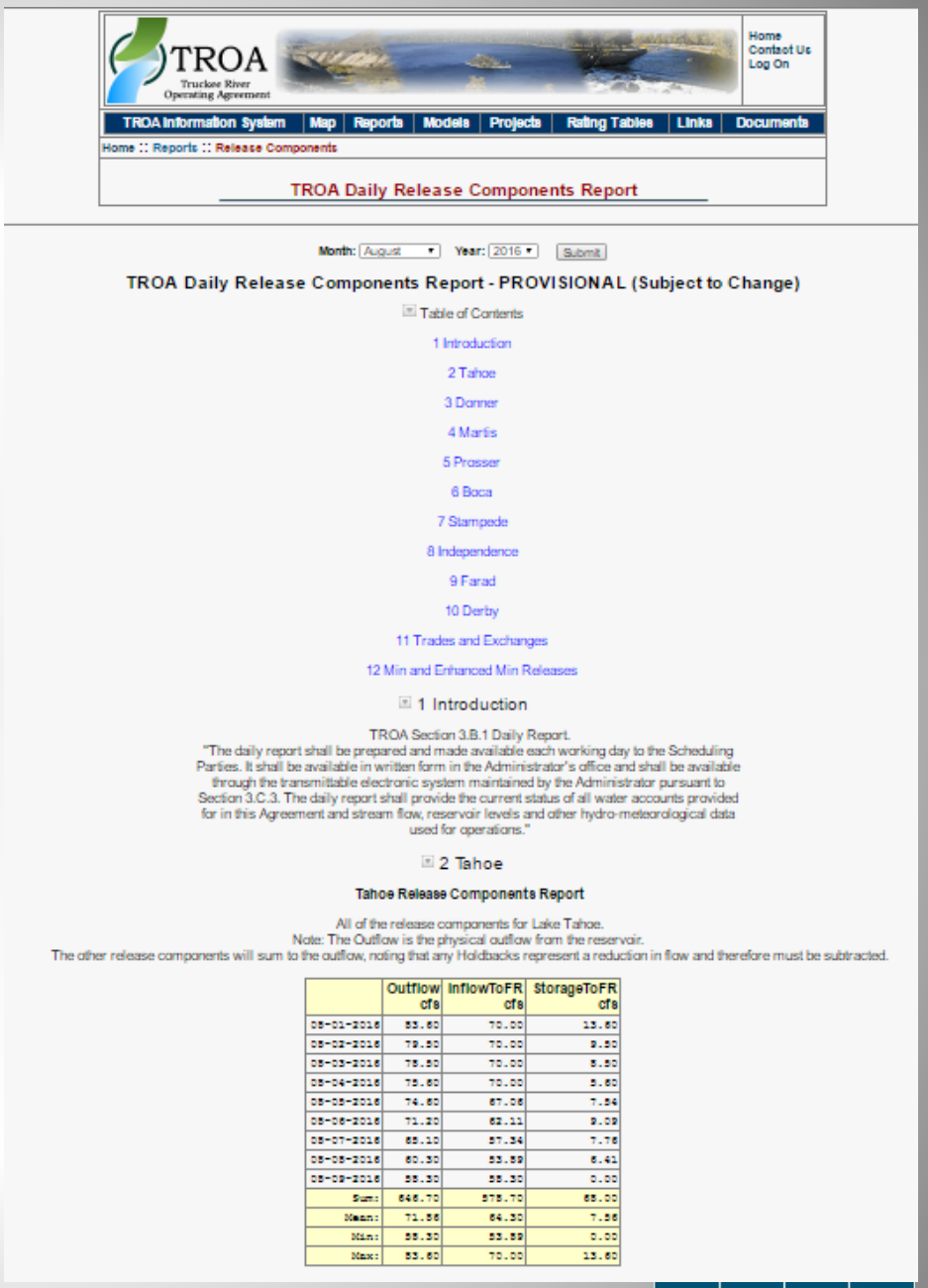
Scripts

- Enable semi-technical users to:
  - Step the Ops Start Date forward
  - Override release allocations
  - Clear out inputs from model
  - Set short-term forecast parameters
  - Generate reports
  - Etc.
- Several scripts used to streamline daily process



Online Reports

- Built-in RiverWare Reporting
- Group plots and tables
- Used to meet TROA's reporting requirements
  - Three reports published to web daily, directly from RiverWare
  - Referenced by parties for daily accounting information



TROA
Truckee River Operating Agreement

Home
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TROA Information System | Map | Reports | Models | Projects | Rating Tables | Links | Documents

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TROA Daily Release Components Report

Month: August Year: 2016 Submit

TROA Daily Release Components Report - PROVISIONAL (Subject to Change)

Table of Contents

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1 Introduction

TROA Section 3.B.1 Daily Report.
"The daily report shall be prepared and made available each working day to the Scheduling Parties. It shall be available in written form in the Administrator's office and shall be available through the transmittable electronic system maintained by the Administrator pursuant to Section 3.C.3. The daily report shall provide the current status of all water accounts provided for in this Agreement and stream flow, reservoir levels and other hydro-meteorological data used for operations."

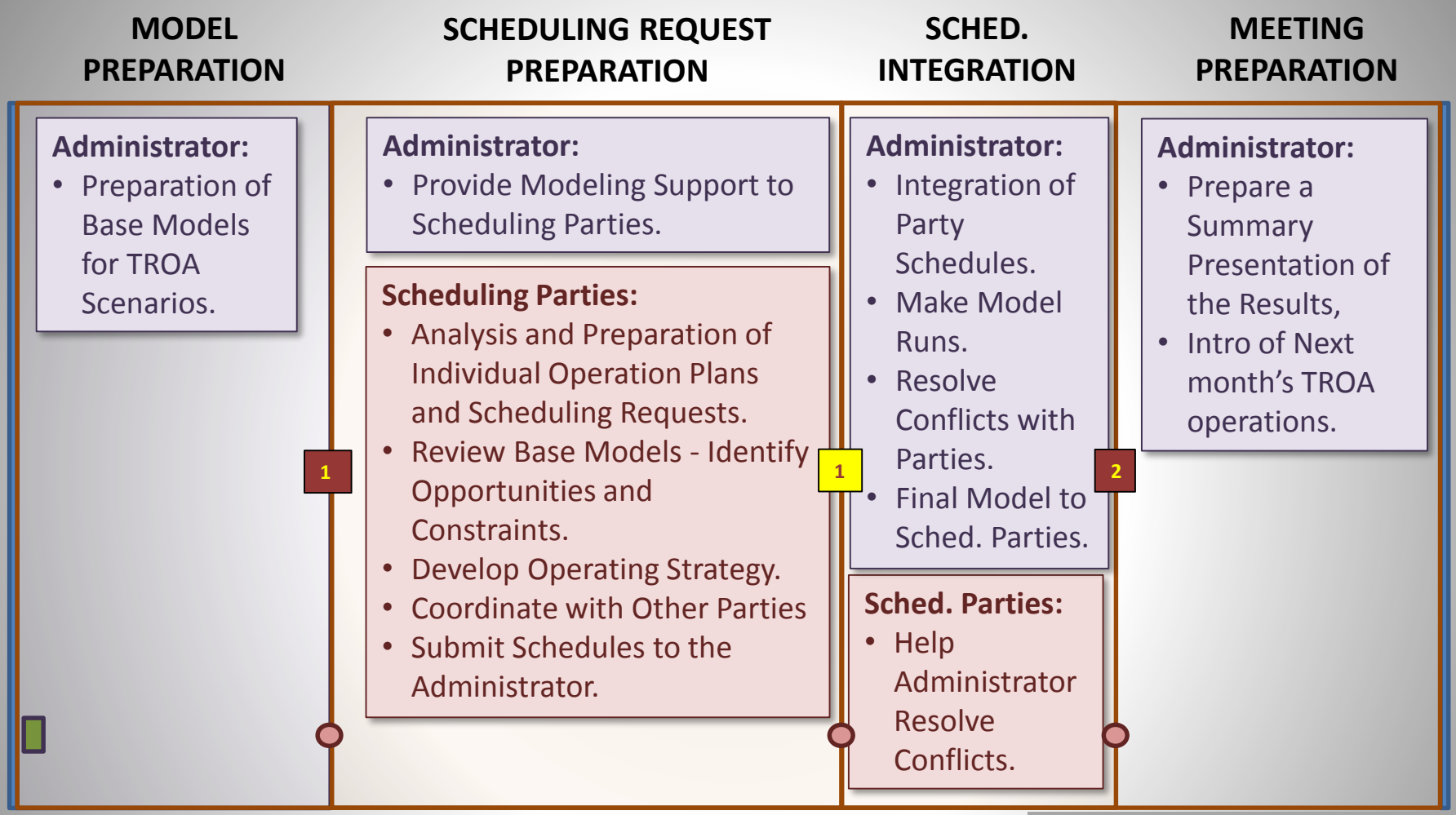
2 Tahoe

Tahoe Release Components Report

All of the release components for Lake Tahoe.
Note: The Outflow is the physical outflow from the reservoir.
The other release components will sum to the outflow, noting that any Holdbacks represent a reduction in flow and therefore must be subtracted.

	Outflow cfs	InflowToFR cfs	StorageToFR cfs
08-01-2016	83.60	70.00	13.60
08-02-2016	79.50	70.00	9.50
08-03-2016	75.50	70.00	5.50
08-04-2016	75.60	70.00	5.60
08-05-2016	74.60	67.06	7.54
08-06-2016	71.20	62.11	9.09
08-07-2016	65.10	57.34	7.76
08-08-2016	60.30	53.89	6.41
08-09-2016	55.30	55.30	0.00
Sum:	646.70	575.70	65.00
Mean:	71.56	64.30	7.56
Min:	55.30	53.89	0.00
Max:	83.60	70.00	13.60

TROA Coordination Schedule Monthly Template



Distribute Models
Tuesday
Second week of Month

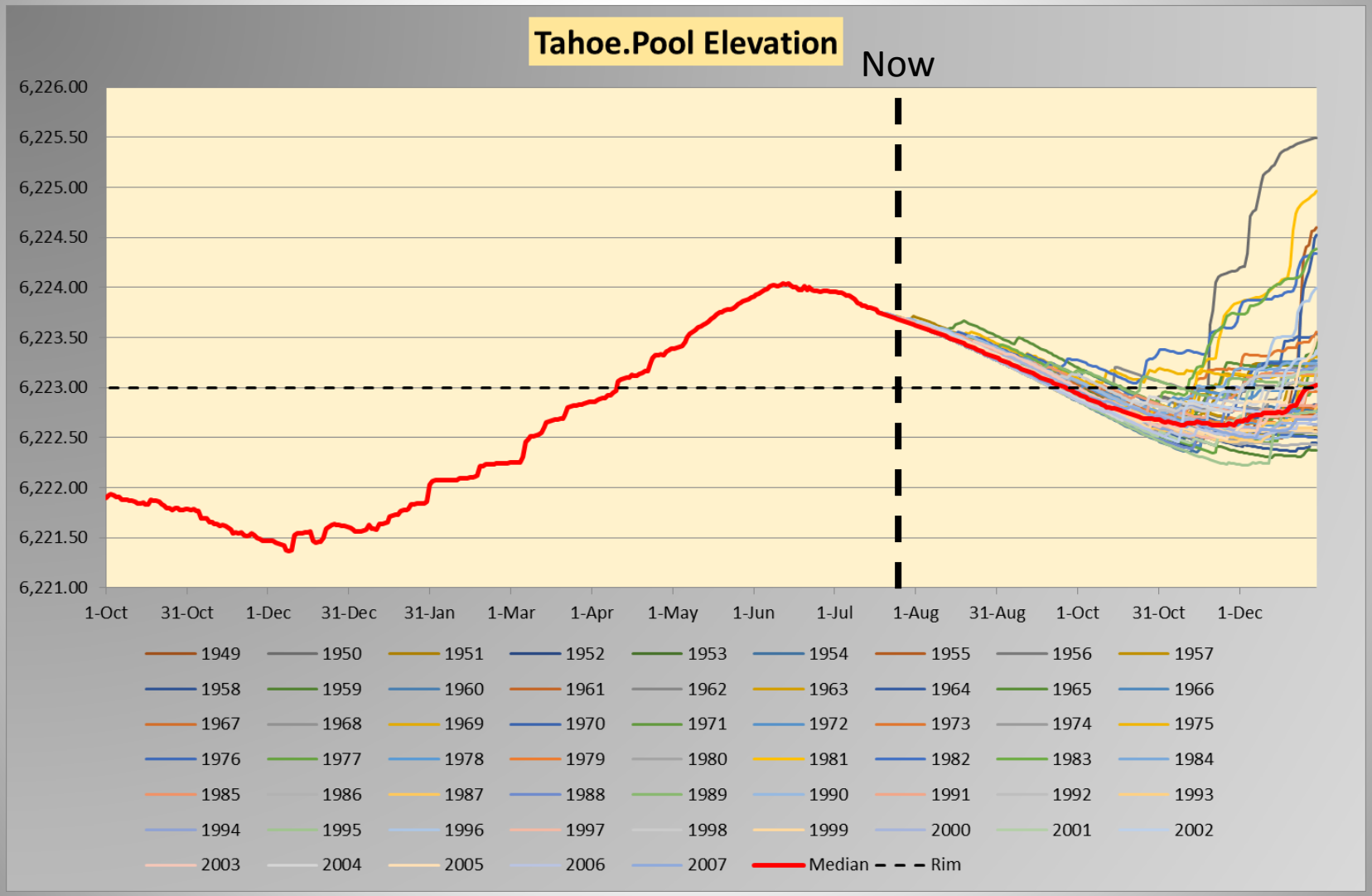
Schedules Due
Friday
Second week of Month

Meeting
Thursday
Third week of Month

TROA Coordination Monthly Meeting

- Discuss operations relevant to each party
- Update model to represent updated schedules
- Use CNRFC's 59-ESP traces to conduct MRM with the RiverWare model
- Present summary of MRM results

TROA Coordination Monthly Meeting



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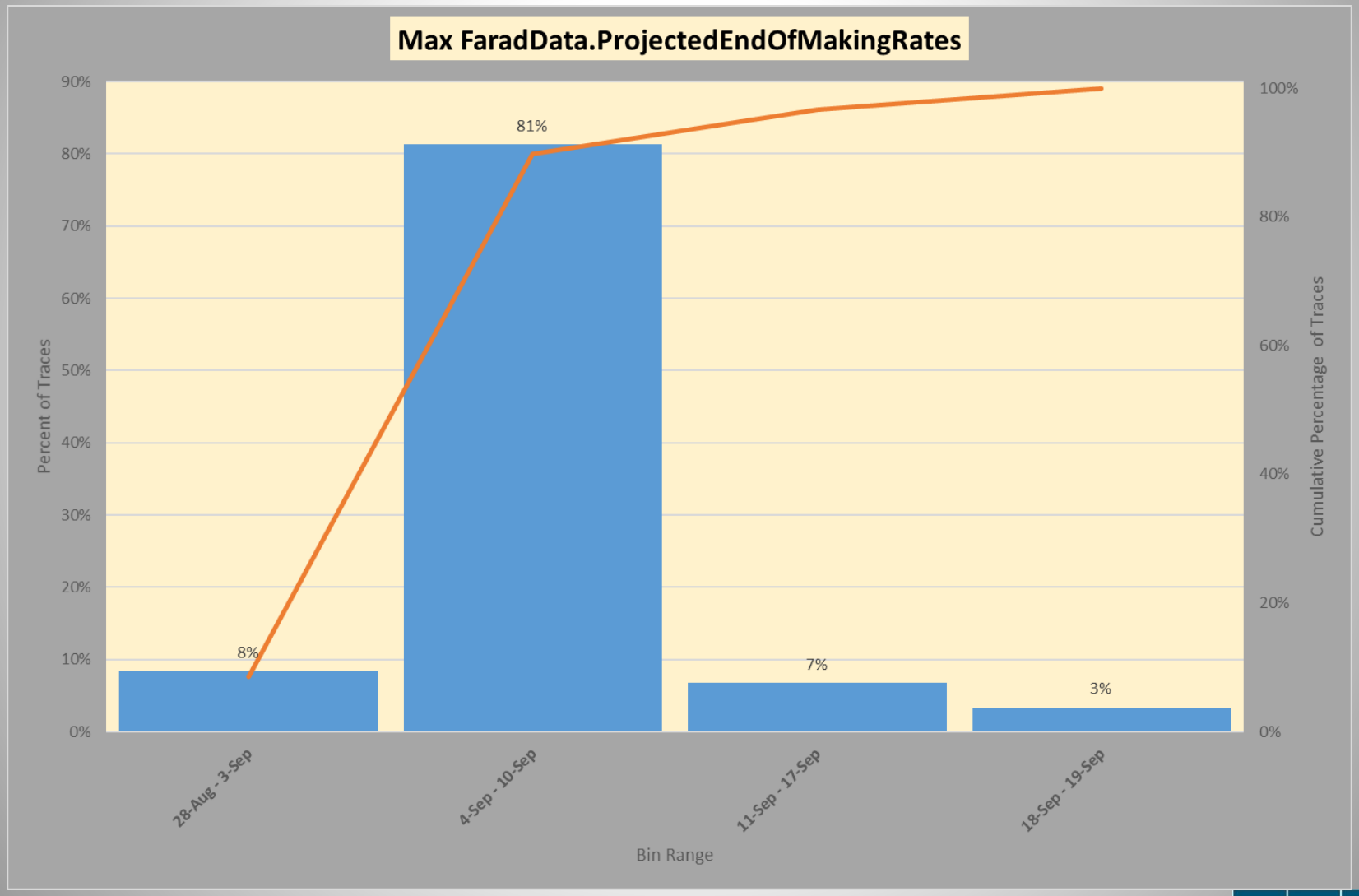
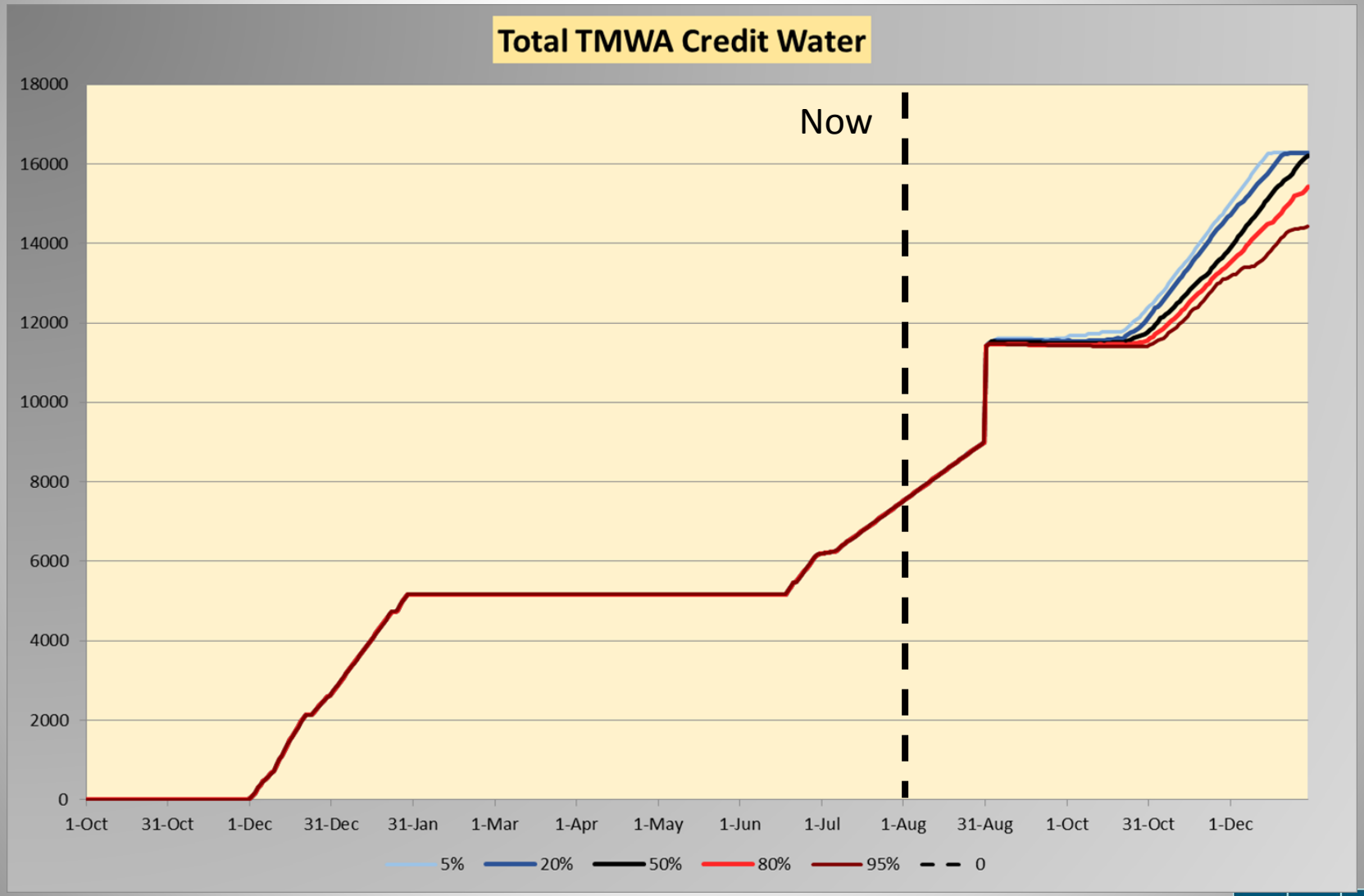


TROA Coordination Monthly Meeting



Questions?

*Photo Credit Tony Powel

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