



RC Coordination Efforts

WECC RC FORUM

JULY 19, 2018

CAISO, Peak, SPP, and AESO Steering Group

Purpose and Participants

- Provide Update on Recent RC Coordination Activities
- Provide Opportunity for Interested Parties to Ask Questions

Participants:

Diana Wilson Alberta Electric System Operator

- Director Interjurisdictional Affairs and Compliance – Panel Moderator

Nancy Traweek California Independent System Operator

- Executive Director, System Operations – Panel Member

Brett Wangen – Peak Reliability

- Chief Engineering and Technology Officer – Panel Member

Bruce Rew – Southwest Power Pool

- Vice President, Operations – Panel Member

Neil Curtis Alberta Electric System Operator

- Director Grid and Market Operations – Panel Member





Approach

- Focus on reliability of the Western Interconnection
- Recognize the changing landscape of the future
- Plan for 3 RCs on July 1/19
- Engage with key entities to identify near-term actions to be taken
- Work through short term transition including coordination between CAISO and Peak
- Plan longer term once footprints have been defined

What We Do Not Know Yet



- Defined footprints
- Detailed long term transition plan
- Long term funding/ governance of shared tools
- Financial mechanisms and cost impacts
- Data sharing structure
- Seams issues and resolution

But we are working on them

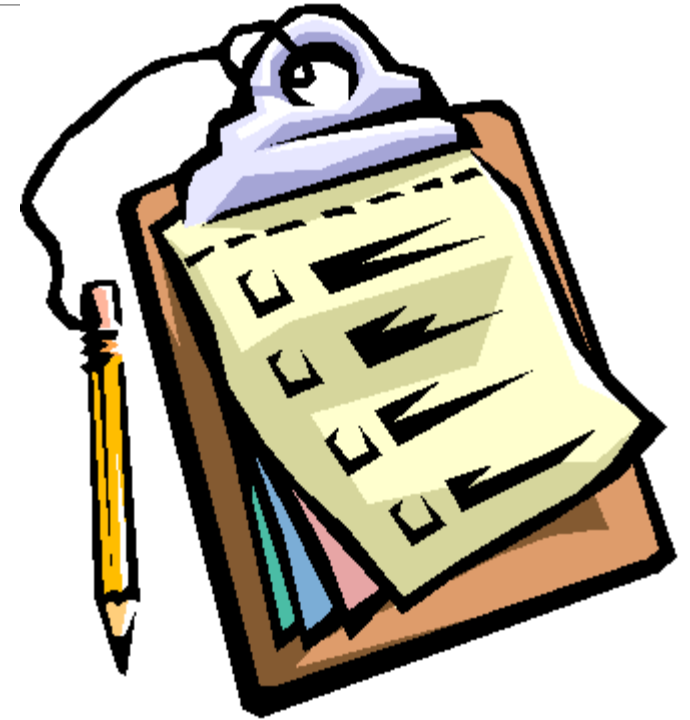
What We Know About the RC Footprints



- Both CAISO and SPP have submitted to WECC their request for certification as an RC
 - CAISO on-site certification date of February/March 2019 for their current BA footprint
 - SPP on-site certification date of August 2019 - footprint to be defined
- Any change to Peak or other RC footprints will require certification review following changes to footprints in the future
- BC Hydro is considering the option of becoming their own RC

Topics for Today

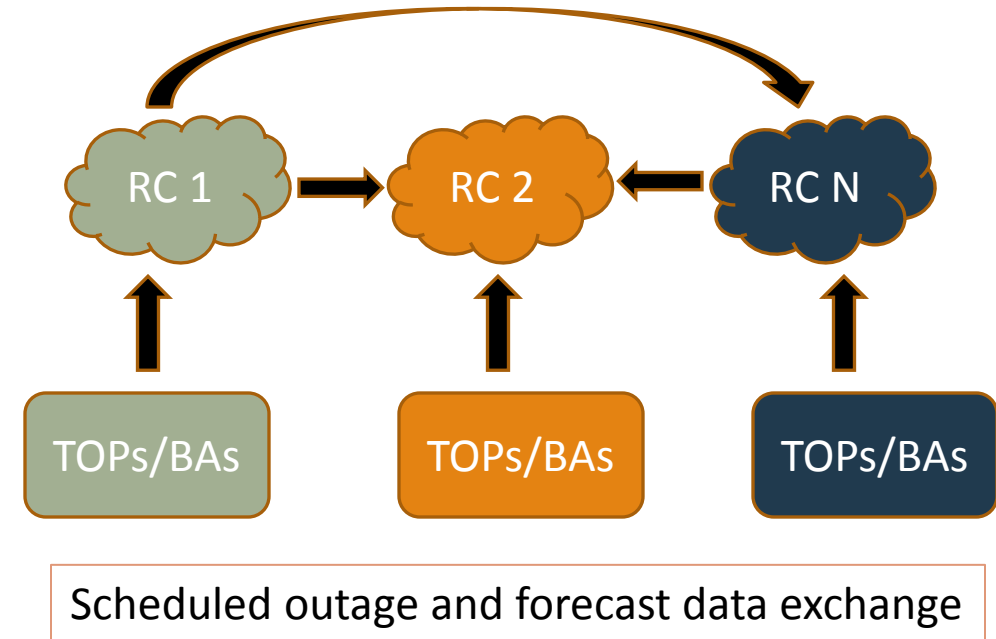
- Operations Planning
- Operations Coordination
- Modeling & Wide area tools
- Technology and data sharing
- Shared tools governance and funding



Operations Planning



- Data
 - Scheduled Outages
 - Short term – COS
 - Long term – COS, SDX, or others
 - Load, generation, interchange
 - Short term – EIDE
 - Long term – EIDE, SDX, or others





Operations Planning, cont'd.

- Each RC performs its own analysis across the operations horizon (seasonal, outage coordination, next-day)
- SOL Methodology
 - Common principles, but each RC has its own methodology
- Seasonal Coordination – adopt Peak's existing process

Operations Planning, cont'd.



- Outage Coordination
 - Seams conflict resolution
 - COS
 - Enhancements needed to accommodate multiple RC inputs
 - Central source of scheduled outages

Operations Coordination



- WIUFMP Activities
 - IRO-006-WECC-1, R1 language – “Each RC will approve...”
 - Each RC responsible for assessing WIUFMP actions impact on their RC footprint
 - ECC changes needed to support multiple RCs
- IROL & Stability Limit Coordination
- External System Monitoring
- RAS Coordination

Operations Coordination, cont'd.



- RC to RC agreements
- Operating Plans
- Restoration Plans
- Time Error Correction
- “Shadow” Operations

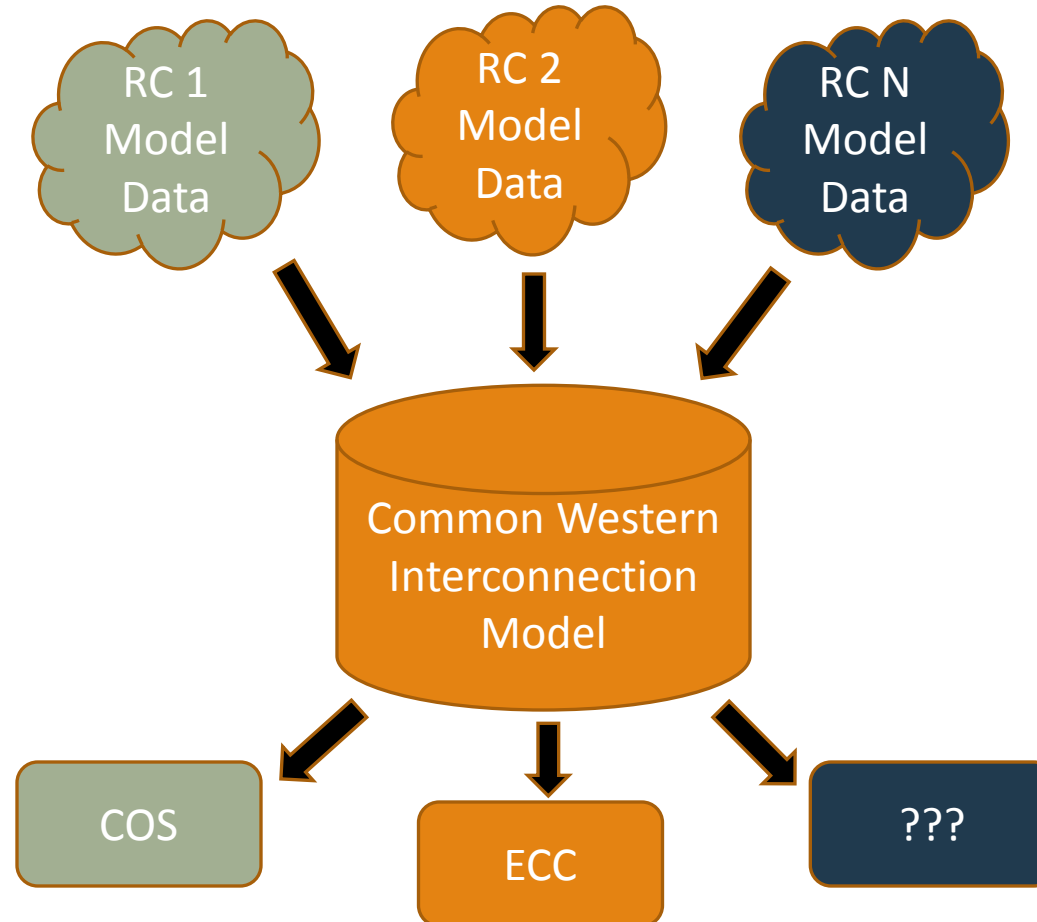
Operations Coordination, cont'd.



- Seams issues to consider
 - TOP/BA boundary “Swiss cheese”
 - TOPs with multiple RCs
 - IROL calculations (primary, secondary)

Modeling & Wide Area Tools

- Vision for common model to drive shared tools
- Common model is key to automating processes



Modeling & Wide Area Tools, cont'd.

- WECC SAR to drive wide area modeling requirements
- Network model
 - Data exchange
 - Modeling of entire Western Interconnection BES
 - RCs to model own area and exchange with other RCs
 - Integration methods to be determined by each RC
- Consistent modeling approach by all RCs of key importance

Modeling & Wide Area Tools, cont'd.

- Remedial Action Schemes
 - Each RC will need to model sufficiently to support OPAs and RTAs
- RAS coordination to continue through WECC RASRS
- Each RC will need to define process for future PRC-012-2 compliance

Modeling & Wide Area Tools, cont'd.

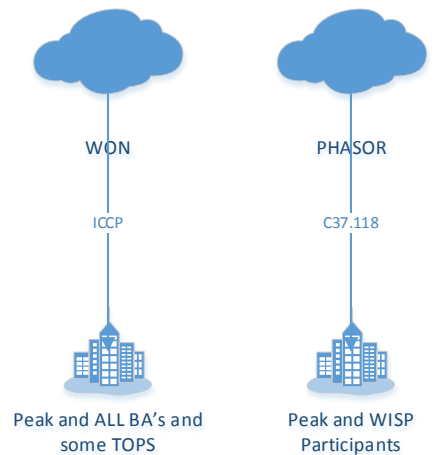
- Tools to be shared by multiple RCs
 - WECC Interchange Tool (WIT)
 - Enhanced Curtailment Calculator (ECC)
 - AESO does not participate in ECC activities or funding
- Other wide area tools for each RC to address individually
 - Reliability Messaging Tool (RMT)
 - Synchrophasor tools
 - Transient stability
 - Visualization/Situational Awareness tools



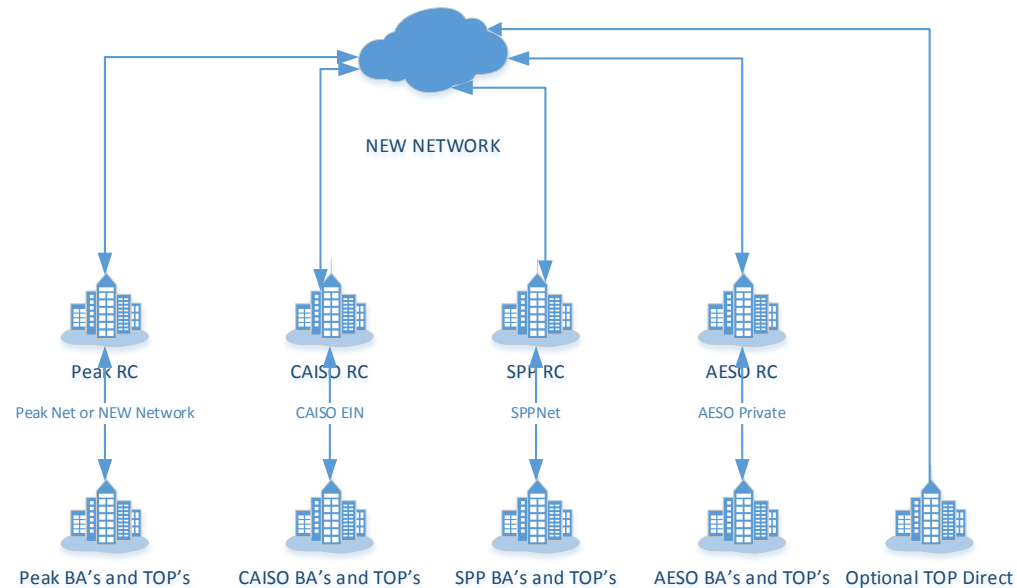
Technology and Data Sharing

- Networks
 - Real-time data exchange
 - WISP WAN (Harris network)
 - WECC Operations Network (WON)
 - SPPNet
- Short term – focus on WISP WAN replacement
- Long term – RCs consolidate all traffic under their respective RC
- Coordination with WECC SASMS underway

Networks – Short and Long Term



Current Day - Short Term



Long Term Consolidated Network:
Each Entity sends ICCP and Phasor data directly to their RC, and RC forwards on to other RC's.

NOTE: BA's and TOP's could also send direct to each other if they wish to maintain a network connection to both the NEW NETWORK and their RC's private network. Its envisioned all WISP Participants will connect directly to the new network for continued operations.



Transitional Funding Needs for Tools

- Short term funding needs include
 - Tool modifications to create multiple RC environment (ECC, WIT, COS, others?)
 - Shared cost for Peak to support shared tools

Q & A

