WIRAB Webinar: The Role of Balancing Authorities and the Reliability Coordinator in Maintaining Reliability

February 17, 2017
Outline and Introduction

• Nancy Traweek – California ISO, Executive Director of System Operations
  – Balancing Authority’s (BA) Role

• Tony Burt – Peak Reliability, Manager of Operations – Vancouver
  – Reliability Coordinator’s (RC) Role

• Example Events
  – August 16, 2016 – Blue Cut Fire Event
  – November 9, 2016 – Frequency Event

• Audience Q&A
Balancing Authority’s Role in Reliability

Nancy Traweek
Executive Director, System Operations
Balancing Authority Role ensures reliability of its footprint.

- CAISO Balancing Authority (BA) role in reliability
  - Long term planning studies (2 to 10 yrs.) – determine future transmission and resources needs
  - Short term planning (less than one year) – determine reliability plan needs to accommodate upcoming outages
  - Coordination process with Transmission and Generation Owners, Peak RC
    - Transmission
    - Generation
    - Protection
    - Neighbors
  - Real Time Monitoring
    - Voltage
    - Power flows
Peak Reliability Coordinator & CAISO coordinate daily.

- Peak RC and BA interactions
  - Outage and Engineering Study data sent daily
  - Peak RC and the BA’s in the Western Interconnection communicate frequently, including a nightly conference call *(started after a past event)* to discuss next day’s activities
  - During system events, Peak RC and affected BA’s discuss:
    - threats to the interconnection
    - Mitigation plans
    - Additional actions Peak RC deems necessary
    - New system limits
  - Additional communications via the Reliability Messaging Tool (RMT) to all Western Interconnection entities. Similar to a message board.
CAISO actions to maintain reliability during the August 16, 2016 Blue Cut fire

- Fire in Cajon pass caused three 500kV lines to relay (fail)
- CAISO Response
  - Contacted Peak RC upon first notification of fire in area, plan in case lines relay, and new limits as line relays occurred
  - Dispatched generation to reduce power flow on transmission lines proactively (prior to the line relays)
  - Due to line relay, approximately 1,100 MW of solar generation tripped off-line due to incorrect settings in DC to AC inverters.
  - Dispatched operating reserves to replace lost energy and prepare for next worst contingency
  - Ongoing coordination with Cal Fire and SoCal Edison during fire event, testing and restoration of lines
- RC initiated a conference call with surrounding utilities to keep everyone on the same page (limits, plans to mitigate, next worst contingency, etc.)
CAISO actions to maintain reliability during the November 9, 2016 Frequency Event

• At approximately 11:00 a.m., an incomplete data transfer process occurred causing errors in market results
  – Erroneous market results were blocked from being published to market participants, acceptable results instructed to continue
  – No large imbalance issues at this time.
  – Operators managing system per normal operating practice.
• At 1:33 p.m. Market results indicate a large reduction in generation
  – Operators were unable to block publication of the results
  – Caused an imbalance between load & generation, which caused unusually low system frequency
  – ISO instructed market participants not to follow dispatches, but many generators automatically ramped to latest dispatch
  – Approximately 1,200MW of solar responded to the dispatch, ramping almost immediately to new lower dispatch level
  – ISO dispatched contingency energy to restore load-resource balance
CAISO coordination with Peak RC during the November 9, 2016 Frequency Event

• ISO & Peak RC had several calls to discuss situation, actions being taken, and estimated time to recover.
• Peak RC instructed ISO to shed load to ensure recovery occurred in a timely manner.
• ISO actions taken before load shed instruction returned the system to normal and Peak RC rescinded load shed instructions
In Summary

- Contingencies can have many causes, such as fires, storms, equipment failure, or sudden loss of transmission or generation.
- Key to managing these types of events is:
  - BA’s are always prepared for the next worst contingency, and
  - When the contingency occurs, excellent coordination between the Reliability Coordinator and the BA.
- ISO & Peak RC coordinate daily, gaining situational awareness.
- ISO & Peak RC communicate during significant contingency events.
- The ISO takes immediate action to mitigate and recover from contingencies.
- ISO Operators have authority to take or direct any actions necessary to ensure stable, reliable operation of the Bulk Electric System.
- Peak has the authority to direct ISO actions taken, including load shedding, to ensure the stability of the Western Interconnection.
Questions?
Intro to Peak

Tony Burt
Manager of Operations
Peak Profile

- Geographically the largest and most diverse RC in North America
- PEAK is the RC for the Western Interconnect covering 14 states, British Columbia, and Northern Baja California, Mexico
- 170,000 MW peak load
- 36 Balancing Authorities
- 57 Transmission Operators
- 1.6 Million sq. miles
- 110,129 mi of transmission
- Population of 74 million
Peak Functions - Reliability Coordinator

- Two Reliability Coordination Offices providing situation awareness and real-time supervision of the entire Western Interconnection
  - Loveland, Colorado
  - Vancouver, Washington
The RC Function

- Highest level of authority responsible for the reliable operation of the Bulk Electric System (BES)
- Authority to prevent or mitigate emergencies in next-day analysis/real-time
- Wide Area view of BES (situational awareness)
Operations

Staffing
- RT Operations
  - 6 Reliability Coordinator System Operators (RCSOs)
  - 1 Lead RCSO
  - 1 RT Ops Engineer
- Training
- Operations Coordination
RC Role

• Maintain wide area view
  o Monitor SOLs and IROLs and direct action as necessary
  o Monitor RTCA
  o Monitor BA performance outside the affected area
  o Monitor System Frequency
  o Run studies as necessary
• Send necessary notifications
• Assist entities in arranging assistance as necessary
• Ensure the reliable operation of the BES
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Thank You

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