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Balancing Authority Consolidation

Board of Directors/Members Committee

June 12, 2007

Agenda

- Balancing Authority Responsibilities
- Approach to Consolidation of SPP BAs
- Benefits of BA Consolidation
- BA Consolidation Timeline

Definitions

- **Balancing Authority (BA)** – The responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a Balancing Authority Area, and supports Interconnection frequency in real time.
- **Balancing Authority Area (BAA)** – The collection of generation, transmission, and loads within the metered boundaries of the BA. The BA maintains load-resource balance within this area.

Balancing Authority Responsibilities

BA Responsibilities/Requirements

- The NERC functional model describes 13 areas of responsibility applicable to the BA function
- NERC Reliability Standards specify approximately 440 requirements for the BA function

BA Functional Responsibilities

1. Control of at least one of the following combinations
 - Load and generation
 - Load and scheduled interchange
 - Generation and scheduled interchange
 - Generation, load, and scheduled interchange
2. Calculate Area Control Error (ACE)
3. Maintain load-interchange-generation balance

BA Functional Responsibilities

4. Review generation commitments, dispatch, and load forecast
5. Formulate an operational plan for reliability evaluation
6. Approve interchange transactions from ramping ability perspective
7. Implement interchange schedules
8. Support interconnection frequency through tie-line bias

BA Functional Responsibilities

9. Monitor and report control performance and disturbance recovery
10. Provide balancing and energy accounting and administer inadvertent energy paybacks
11. Determine need for reliability-related services
12. Deploy reliability-related services
13. Implement emergency procedures

Approach to Consolidation of SPP BAs

BA Consolidation Approach

- SPP would be responsible to ensure that all BA requirements are met
 - SPP will directly perform most BA tasks
 - SPP may delegate performance of certain BA tasks to Transmission Operators and/or Generation Operators within the SPP BAA
- Appropriate agreements would have to be developed to ensure performance of any tasks to be delegated and/or ensure SPP has necessary data to perform its BA tasks
- Existing BAs would become Regulating Zones
- Detailed consolidation specifications in progress

1. Control of ...Generation and Scheduled Interchange...

- SPP would calculate and send dispatch instructions for each resource in the SPP BAA
- Could rely on existing infrastructure (RSS, MOS, SPP EMS and EMS at existing BAs) for large part of this
- Need to add regulation component based on SPP ACE

2. Calculate ACE

- $ACE = (NAI - NSI) - 10B (FA - FS) - IME$
- SPP already has necessary infrastructure and/or data to determine certain components (NSI, FA, FS)
- Will have to add/acquire data to calculate other components (NAI, B, IME)

3. Maintain Load-Interchange-Generation Balance

- SPP will have to develop a mechanism to allocate the SPP ACE to regulating zones within the SPP BAA
- Although SPP has much of the needed data and displays, SPP will take a more active role in monitoring ACE

4. Review Generation Commitments, Dispatch, and Load Forecasts

- SPP already doing this to a large extent with its Day-Ahead and Hour-Ahead Supply Adequacy and Simultaneous Feasibility Analyses
- SPP currently has infrastructure and is getting most of the data needed to do this
- Will take more active role in instructing commitment of generation

5. Formulate an Operational Plan for Reliability Evaluation

- Generator and Transmission Operators will submit information to SPP by which SPP will formulate an Operational Plan for the SPP BAA and share with the appropriate NERC reliability entities
- Can rely largely on existing infrastructure and analytical tools to receive data and evaluate plans

6. Approve Interchange Transactions

- Can rely on RTOSS infrastructure for approval actions
- Will likely change how schedules are tagged
- Will need to consider development of ramp limits for the SPP BAA

7. Implement Interchange Schedules

- Will be able to rely on existing infrastructure to implement approved schedules
- Will need to change logic to include approved schedules in the SPP BA ACE
- May have to make changes in NERC registry and IDC

8. Support Interconnection Frequency

- SPP already monitors frequency and receives scheduled frequency as an RC
- SPP would need to start calculating frequency bias setting for the SPP BAA based on historical BAA load, initially could use sum of current settings for the Regulating Zones

9. Monitor and Report Control Performance and Disturbance Recovery

- SPP must begin calculating and monitoring the CPS1, CPS2, and DCS measurements for the SPP BAA
- SPP will report these measures to NERC and the SPP reserve sharing group

10. Provide Balancing and Energy Accounting and Administer Inadvertent Energy Paybacks

- SPP currently calculating Inadvertent Energy and administering paybacks on behalf of the market footprint
- Will likely delegate to the Regulating Zones or Transmission Operators the task of checking out interconnect meters

11. Determine Need for Reliability-Related Services

- SPP will need to calculate a regulation requirement for the SPP BAA and for each Regulating Zone
- SPP could continue to calculate reserve requirements for each Regulating Zone much like it does today

12. Deploy Reliability-Related Services

- SPP could either send a regulation instruction to each Regulating Zone or send regulation instructions directly to those resources offering regulation
 - Will likely do the first option initially
 - Second option requires establishment of a regulation market
- Already deploying reserves through schedules in RTOSS

13. Implement Emergency Procedures

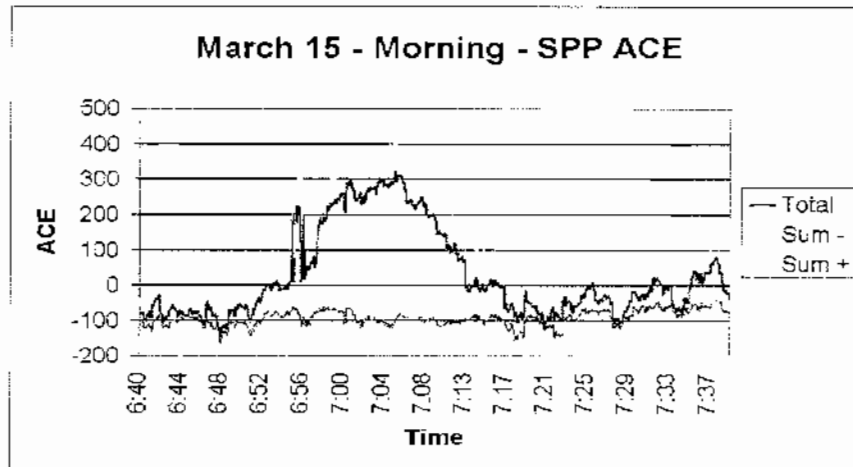
- SPP will be responsible for implementing emergency procedures such as insufficient generation, IROL violations, load shedding, and system restoration by coordinating with the Regulating Zones
- SPP will have to take a more active role in communicating, reporting and responding to emergencies

Benefits of BA Consolidation

BA Consolidation Benefits

- Reduced regulation “effort”
 - Previous studies indicated 30% reduction in energy required to regulate
 - Should also result in capacity savings
- Better control performance
- Transfer of liability from many entities to one
- Facilitation of ancillary service markets
- Net reductions in training, certification, staffing

Example of ACE Diversity Impacts



BA Consolidation Timeline

BA Consolidation Timeline

- Currently drafting business plan that will include a detailed description of how SPP would perform each of the BA responsibilities
- Will present draft business plan to Stakeholders in early July
- Targeting completion of project implementation plan in early November
- Will first target consolidation of BAs within Market footprint by mid- to late-2008