

Texas Renewables Integration Plan

ERCOT Board of Directors Workshop

October 19, 2009

Agenda

1. Status Report – Wind Integration Issues
2. Report on RTWG activities
3. Status Report – TRIP development
4. Next Steps – TRIP timeline and ownership

1. Status Report – Wind Integration Issues

- 57 issues identified
 - 13 market design
 - 32 system operations
 - 8 system planning
 - 4 workshop / training
- 20 issues completed
 - 5 market design
 - 12 system operations
 - 1 system planning
 - 2 workshop / training
- 37 identified issues currently open

1. Status Report – Wind Integration Issues

- Milestones since last report to Board of Directors in June 2009
 - Wind Workshop III
 - focus on telemetry requirements (existing and developing) for WGRs
 - begin review of Nodal Protocols applying recent lessons learned re: wind integration
 - PRR 812 Wind Generator Forecast Scheduling
 - requires WGR QSEs to update Resource Plans hourly
- Major issues nearing resolution
 - PRR 811 Real Time Production Potential
 - PRR 824 Primary Frequency Response from WGRs
 - PRR 833 Primary Frequency Response from Existing WGRs
 - PRR 830 Reactive Power Capability Requirement
 - further revisions to Ancillary Services Procurement Methodology

1. Status Report – Wind Integration Issues

- Major issues in progress
 - Voltage Ride-Through Study
 - includes Reactive Power Capability component
 - New Loss of Load Probability Study
 - updated Effective Load Carrying Capability study for WGRs
 - revisit WGR contribution to capacity available at system peak demand for annual CDR Report
 - Ancillary Services Cost Allocation Methodology
 - Development of Wind Ramping Tool for ERCOT Operations

2. Report on RTWG activities

- Identification and tracking of renewables integration issues
 - tracking sheet updated monthly
- Facilitate communication across stakeholder groups
 - each TAC, WMS, and ROS meeting includes renewables integration update, discussion, and/or action items
- Development of white papers to develop integration solutions
 - Defining the Ramping Challenge
 - Managing Wind Ramp Rate Events
 - Energy Storage Applications in ERCOT
- Stakeholder education on emerging technologies related to renewables integration
 - solar generation technologies (concentrating, thermal, photovoltaic)
 - energy storage technologies (CAES, flywheel, battery)

3. Status Report – TRIP development

- Presented outline of draft Texas Renewables Integration Plan (TRIP) to Board of Directors in June
- Incorporated feedback from that meeting into working draft
 - identified party responsible for implementation of solution (i.e., ERCOT, Market Participants, etc.)
 - provided impact assessment for each issue (high, medium, low) for ERCOT and / or Market Participants
 - incorporated follow-up schedule for implemented solutions where appropriate to ensure results of actions are analyzed for effectiveness
 - reviewed NERC Report “Accommodating High Levels of Variable Generation” for applicability to ERCOT renewables integration efforts and adopted some of the report’s framework and recommendations
 - re-opened ancillary services cost allocation issue

3. Status Report – TRIP development

- Basic structure and function of the TRIP remains the same
 - identification of issues: market design, planning, operations, training
 - identification of knowledge gaps
 - data gathering and analysis
 - study development and execution
 - solutions development and follow-up evaluation
- Philosophical challenges
 - market rules
 - planning assumptions
 - operational standards
- Resource constraints
 - ERCOT
 - Stakeholders

4. Next Steps – TRIP timeline and ownership

- Discussion: Resource constraints
- Discussion: Stakeholder process limitations
- Discussion: Role of ERCOT Staff
- Discussion: ERCOT budgeting and work prioritization
- Discussion: Ownership of the TRIP – Staff or Stakeholders?