2014 Long-Term Reliability Assessment

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Assessment Staff

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Long Term Reliability Assessment

• Widely-read continent-wide publication
• Projected 10-year long-term outlook (2015-2024)
• Primary objectives:
  – Qualitative outlook of region’s reliability
  – Make recommendations for mitigations/actions as needed
Long Term Reliability Assessment

• Provides high-level overview for SPP Planning Coordinator assessment area
  – Demand growth
  – Capacity adequacy
  – Operational reliability
• Does not include Integrated System, CLECO, LAFA, or LEPA
• Includes Nebraska
Assessment Process

• Created with data/information submitted by SPP Reporting Entities

• SPP staff validates and cross-checks data to verify consistency

• SPP staff and stakeholders have the opportunity to provide input

• Assessment undergoes peer review process at NERC prior to finalization
Coincident Peak Demand

- ~49,710 MW projected 2015 Total Internal Demand
- ~56,990 MW projected 2024 Total Internal Demand
- Modest load growth projected over next 10 years
Demand Response 2015-2024

- Demand Response (DR) consists of:
  - Interruptible
  - Critical Peak Pricing with Load Control
  - Direct Control Load Management

- ~1,280 MW in 2015
- ~1,330 MW in 2024
Member Demand Response Programs

• Forecast modest average annual growth of ~3.5% in Energy Efficiency and DR programs through 2024
• DR programs are voluntary and are primarily targeted for summer peak load reduction use
• Members include their own DR and Energy Efficiency programs as reductions in their load forecasts
Generation

- ~3,150 MW nameplate generation expected to be retired 2014-2024
  - Do not expect any reliability issues
- ~7,500 MW of new “Tier 1” generation projected coming into service 2015-2024
  - Coal (75 MW)
  - Natural Gas (1058 MW)
  - Biomass (6 MW)
  - Solar (10 MW)
  - Wind (6261 MW)
  - Nuclear (67 MW)
Available Capacity

• ~65,500 MWs Existing Certain Capacity in 2015
• ~62,400 MWs Existing Certain Capacity in 2024
  – Includes Existing Certain generation available
  – Reserve margin based on expected Existing Certain generation and Net Firm Transfers
  – Decrease in capacity due to retirements
Existing Certain + Net Firm Transfers Reserve Margin

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<th>Year</th>
<th>SPP Reserve Margin</th>
<th>Target Reserve Margin</th>
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Anticipated Capacity

• ~66,100 MWs Anticipated Capacity in 2015

• ~63,750 MWs Anticipated Capacity in 2024
  – Includes Existing Certain and Planned “Tier 1” expected capacity
  – Reserve margin based on expected Existing Certain, Net Firm Transfers, and Planned “Tier 1” expected capacity
Anticipated Capacity Reserve Margin

- SPP Reserve Margin
- Target Reserve Margin

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Capacity Adequacy Study *

• SPP bi-annual study process
  – Four-year look ahead for reliability issues
  – Weekly snapshots through the four years
  – Scheduled outages taken into account

• Current studies indicate there will be adequate time to perform generator retrofits necessary to comply with known environmental regulations
  – Retrofits are expected to impact generation supply economics more than the ability to reliably serve load

* Formerly called “EPA Study”
Reserve Margins

• Reserve margins are adequate
  – SPP members required to maintain 12% capacity margin, which translates to a 13.6% reserve margin
  – Forecasted anticipated reserve margin is ~36.5% in 2015, decreasing to ~14.5% in 2024

• Reliability issues not expected
Transmission

• ~3,500 miles 100+ kV expected over 10-year assessment period
• Particular emphasis on western part of grid due to influx of renewable generation
Emerging Reliability Issues

• Currently managing reliability concerns regarding exchange of energy between MISO Central/North and MISO South
Long-Term Reliability Issues

• High-Priority Incremental Load Study showed load growth due to oil and gas drilling
  – Substantial load growth concentrated in TX and NM
  – Localized growth has created need for new transmission and generation in specific areas
  – Working with stakeholders to ensure reliability needs are being addressed
Long-Term Reliability Issues

• Coal delivery delays due to railroad congestion could potentially reduce fuel supplies

• Drought and flooding conditions continue to be concerns
  – Current drought conditions in the western portion of region are projected to continue
  – 2015 Integrated Transmission Planning 10 study includes a future scenario with a decreased baseload capacity in which units susceptible to drought are de-rated
Long-Term Reliability Issues

• Wind will continue to cause operational challenges
  – During off-peak periods, there may be higher wind output with not enough transmission to handle the increased output
  – 2015 ITP 10 study is assessing its members’ renewable portfolio standards and modeling the SPP Assessment Area to account for these mandates and goals
Summary

• Generation fleet is diverse in terms of location, fuel type, and capability

• SPP reporting area shows modest load growth, sufficient resources, and adequate reserve margins for 2015-2024 assessment period

• Long-term challenges include integration of variable generation