NARUC
Summer Committee Meetings

Staff Subcommittees on Electricity & Electric Reliability
NERC’s Short-Term Special Assessment: Operations Risk with Increasing Gas-Electric Interdependencies

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Short-Term Special Assessment: Operational Risk with Increasing Gas-Electric Interdependencies

John Moura, Director, Reliability Assessment and System Analysis
Joint session with the Staff Subcommittee on Electric Reliability
July 24, 2016
NERC’s Annual Long-Term Projection

Total NERC-Wide On-Peak Gas-Fired Capacity

- 2009 LTRA
- 2011 LTRA
- 2013 LTRA
- 2015 LTRA

GW

320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470

Problem Statement

An increased dependence on natural gas for generating electricity can amplify the bulk power system’s exposure to interruptions in fuel supply, transportation, and delivery.

Electric Industry Risks (Managed Elements)

- Resource Adequacy and Planning Challenges
- Dual-Fuel and Storage
- Operator Observability
- Non-Firm Fuel and Gas Scheduling
- Market Options

Natural Gas Risks Impacting Electric Industry

- Single Point of Failure
- Nominal Pipeline Capacity
- Operable Pipeline Capacity
- Gas Production Issues
- Shale Fracking
- Electric Demands (Compressors)

Interdependencies
• Generation Availability Risk Assessment
• Assessment Period: Peak periods for Summer 2016, 2017; Winter 2016/17, 2017/18
• Short-term challenges related to natural gas infrastructure
• Leverage existing studies from industry and Regions (e.g., EIPC)
• Mitigation measures – use of dual-fuel generators and fuel firming
• Risks to natural gas generation during summer season – not just a winter problem
• Expand gas-electric planning and coordination – current industry best practice in some areas
• Operational coordination between gas and electric industries decrease likelihood of wide-spread outage
• Pipelines will interrupt power generation without contracts
• A variety of contracting options available to accommodate unique generator characteristics
• Under severe conditions, even firm contracts may be curtailed
• Additional infrastructure will not be constructed without an identified need (firm contract)
Gas Availability Risk Assessment

Based on 5-Year Historical GADS Performance Data

- **Gas-Fired Capacity**
- **Dual-Fuel Capacity**
- **Non-Gas-Fired Capacity**

**Firm Import Capability**

- **Average Forced Non-Gas Outages**
- **Average Forced Gas Outages**
- **Maximum Forced Gas Outages (in excess of average)**

- **Separate Area-Specific NG Scenario**
  - Refers to loss of a major pipelines during the peak

- **Extreme (90/10) Peak Load Forecast**
- **Normal (50/50) Peak Load Forecast**
Results – ISO-NE

ISO-NE Summer 2016 Gas Operational Risk
NYISO Summer 2017 Gas Operational Risk
ERCOT Winter 2016/17 Gas Operational Risk
CA-MX Winter 2017/18 Gas Operational Risk
Aliso Canyon is a critical element of the Los Angeles Basin natural gas delivery system
  - Supports winter peak heating demand
  - Maintains pressure in gas distribution system (More challenging with rapid power plant ramping)

Aliso Canyon currently has about 15 Bcf of working gas out of a total capacity of 86 Bcf

Injections will not resume until safety testing or isolation of remaining 114 wells is completed
Aliso Canyon: LA Basin Power Supply

**Potential Impacted Generation**

LA Basin:
- 9,800 MW natural gas generation
- ~95% of total local capacity

Rest of Southern California:
- >15,000 MW natural gas generation

**Maximum Import Capacity**

- 5,500 MW DC capacity
- 14,900 MW AC capacity
- 20,400 MW total*

*Typically limited to 17,000 - 18,000 MW
• Fuel availability for local generation may be impacted for upcoming summer
  ▪ Gas system deliverability without Aliso Canyon
  ▪ Gas system outages (SoCal or on interstate pipelines)
  ▪ Exogenous factors affecting supply (e.g., cold weather)
  ▪ Curtailment priorities

• Generation resource adequacy
  ▪ 95% of in-basin generation vulnerable to gas curtailment
  ▪ Adequate generation resources exist to supply imports into the LA Basin, but this does not take into account local deliverability issues

• All eyes on upcoming winter...
Questions and Answers