

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

UVIG Gas System Coordination

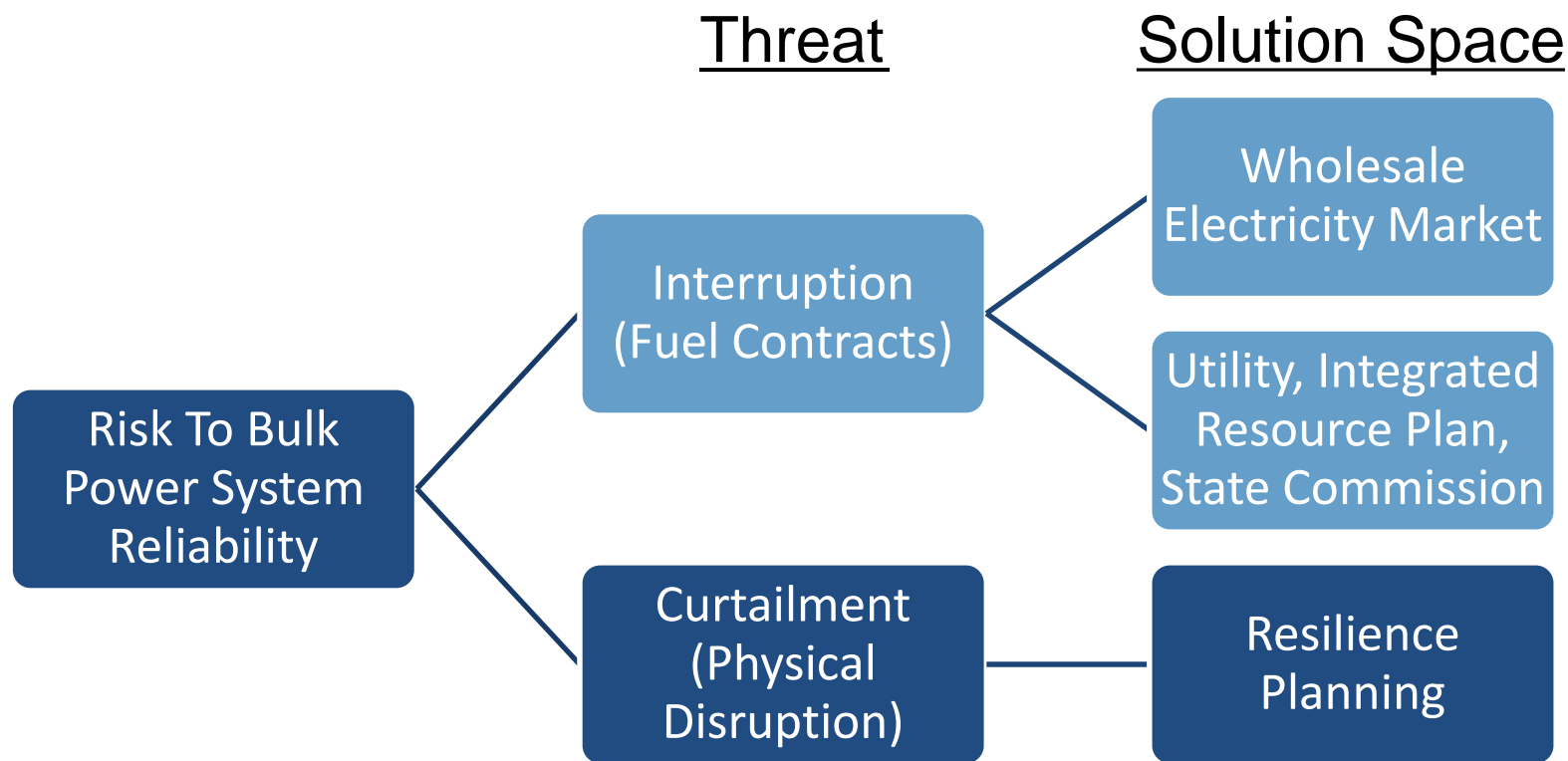
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RELIABILITY | ACCOUNTABILITY



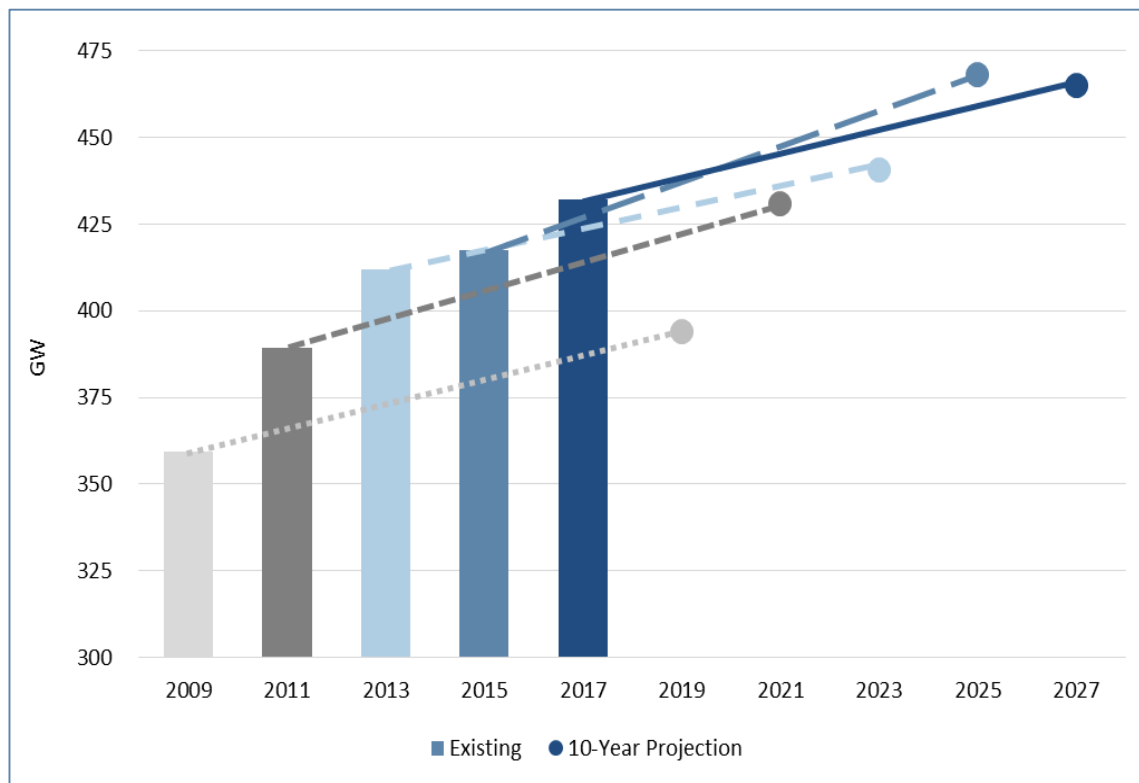
- Conventional generation retirements create BPS reliability concerns when **Essential Reliability Services** and **fuel assurance** mechanisms are not replaced
- Declining reserve margins projected to tighten **operational reliability**, particularly under extreme conditions
- Fuel diversity is a means to fuel assurance, but solutions need to consider **regional differences**
- Finding solutions to the limited pipeline capacity problem should encompass **wholesale electric market** action as well as **natural gas regulatory frameworks**

- Increased dependence on natural gas for generating capacity can amplify the bulk power system's vulnerability to disruptions in fuel supply, transportation, and delivery.



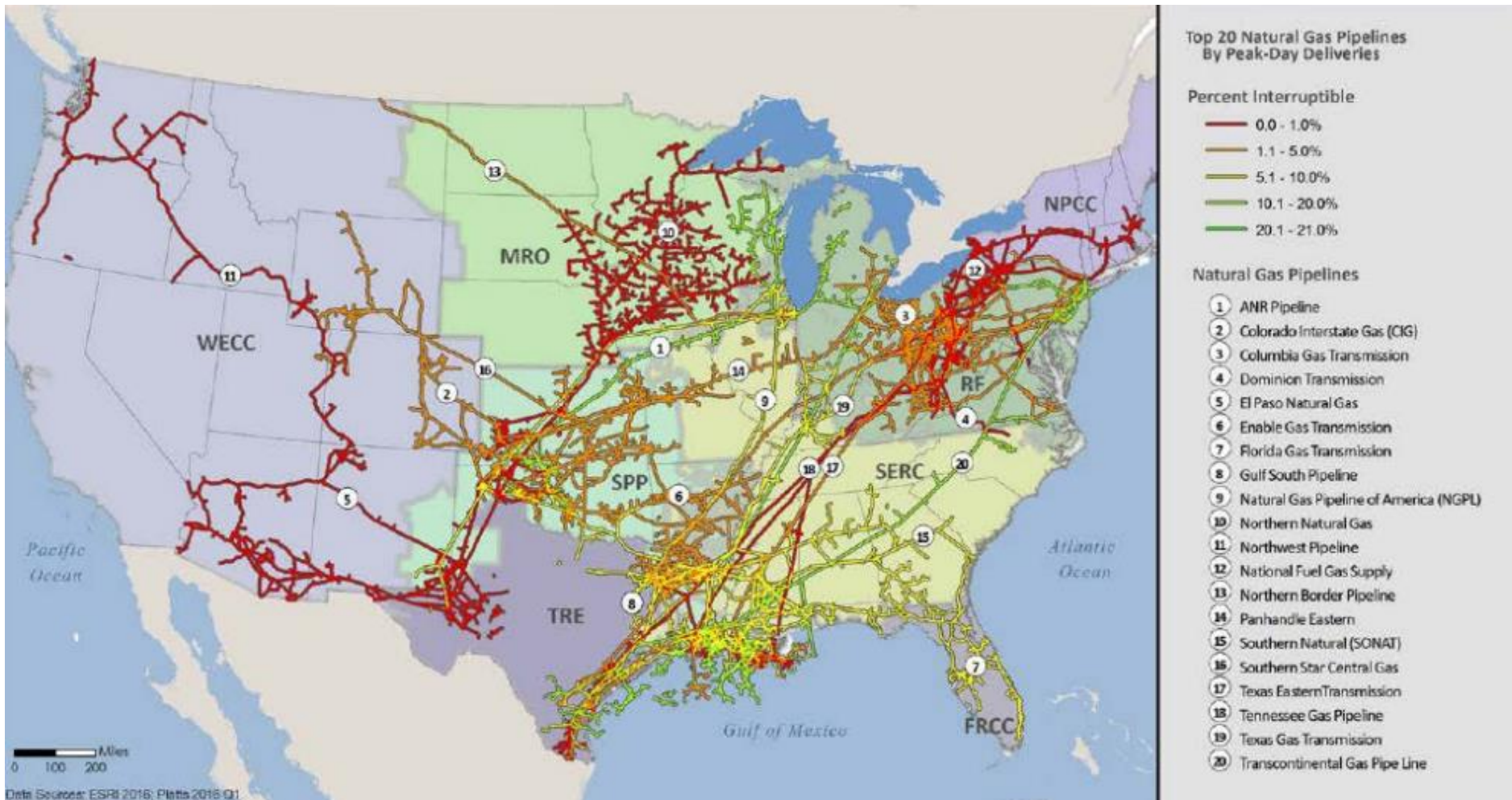
- On-peak natural gas-fired capacity has increased to 442 GW, up from 360 GW in 2009.
- 32 GW of Tier 1 gas-fired capacity is planned during the next decade.

Assessment Area	2022 (%)
FRCC	78.1%
WECC-CAMX	68.2%
Texas RE-ERCOT	63.3%
NPCC-New England	52.3%
WECC-SRSG	51.8%
WECC-AB	51.8%

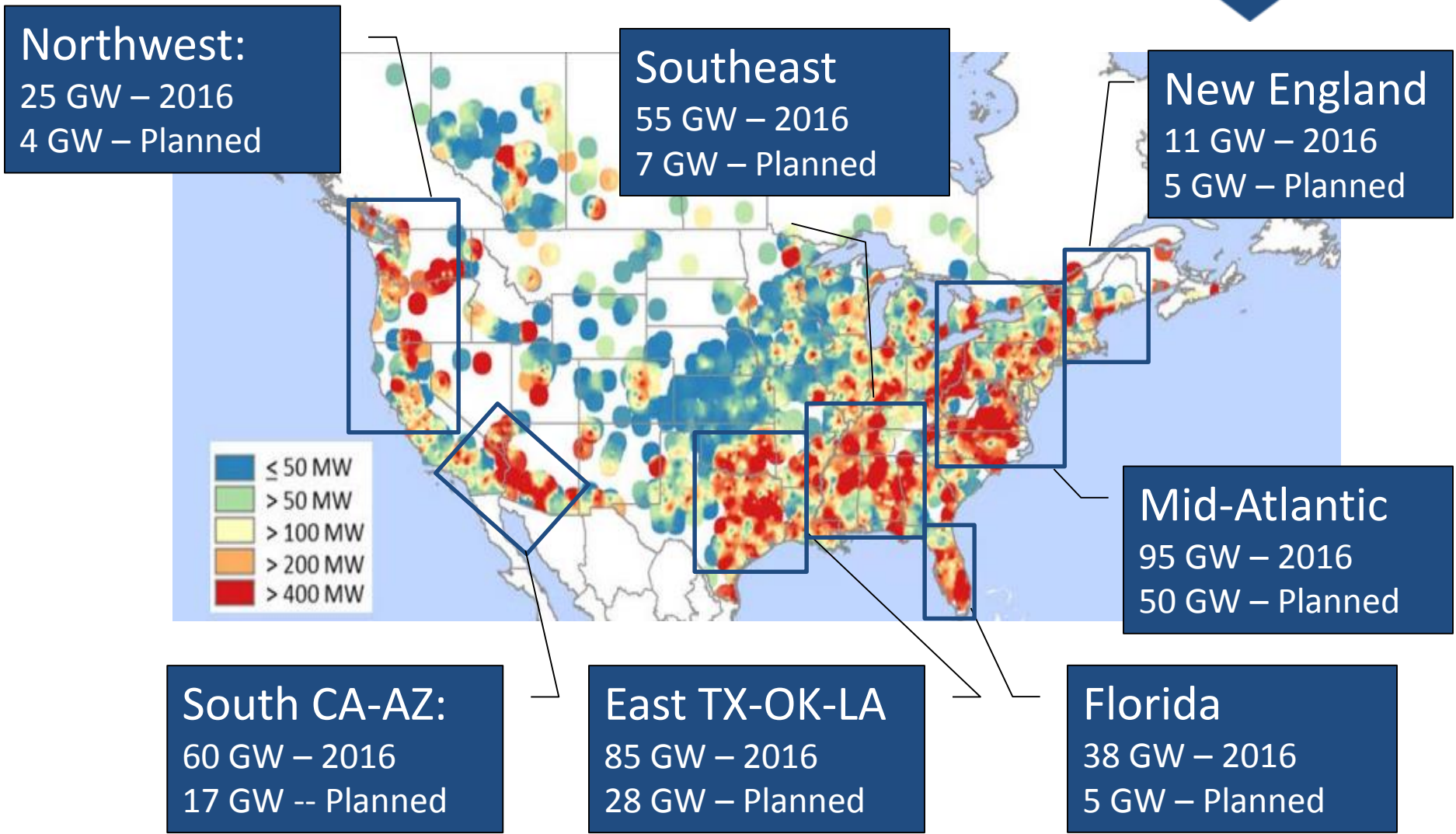


Top-20 Gas Pipelines by Peak-Day Delivery Arrangement

Red pipelines mean there were no interruptible flows on-peak

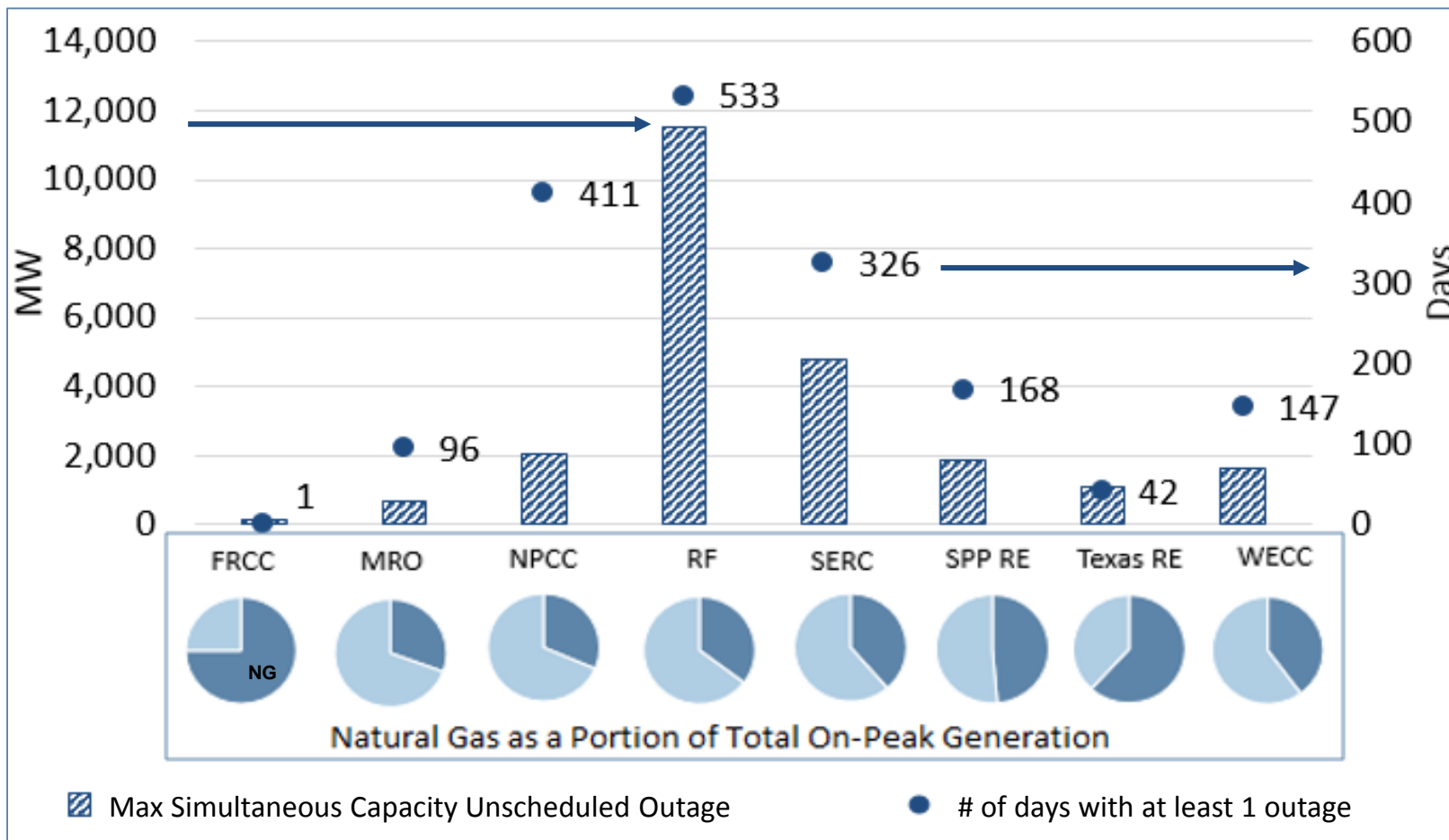


Identifying Generation Risk Clusters



NERC Independent Analysis Results: Require Further Analysis





**Reported GADS Outages of Natural Gas Generation Due to “Lack of Fuel”
(2012-2015)**

- Expeditious consideration of air permit waivers
- Cyber and physical security to be diligently considered by regulators
- The Energy Information Administration (EIA) should collect data on fuel storage inventories
- NERC registered entities should consider the loss of key natural gas infrastructure in their planning studies.
- Testing of dual fuel generators
- Additional data granularity in NERC GADS cause codes



Questions and Answers