

March 16, 2022

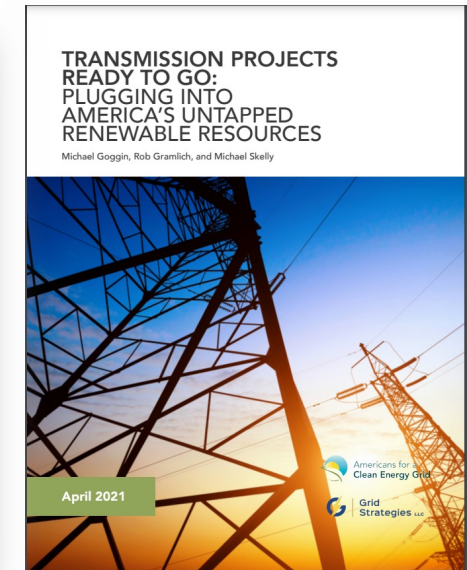
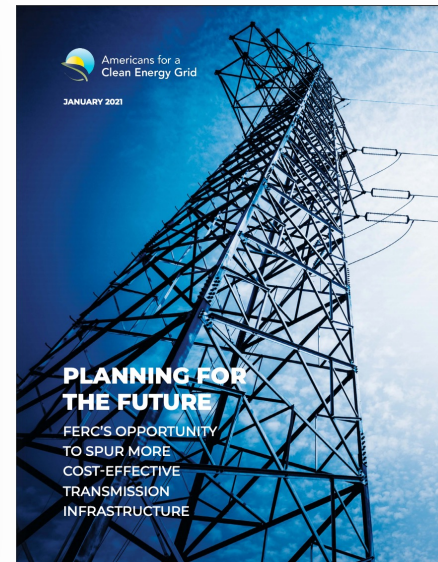
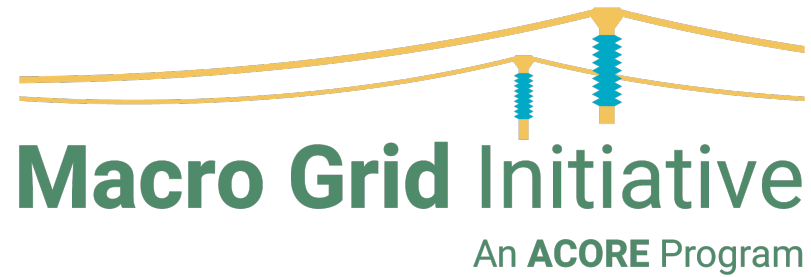
ACEG Presents Transmission Time
**Long-Distance Transmission,
Reliability, and a Clean Energy Future**

ABOUT ACEG

Americans for a Clean Energy Grid (ACEG) is a non-profit broad-based public interest advocacy coalition focused on the need to expand, integrate, and modernize the North American high-voltage grid.



ABOUT ACEG



TODAY'S SPEAKER



Mark Lauby

Senior VP and Chief Engineer
North American Electric Reliability Corporation

Expert Commentators:

Alison Silverstein, Independent Consultant, Alison Silverstein Consulting

Julia Matevosyan, Chief Engineer, Energy Systems Integration Group

Michael Goggin, Vice President, Grid Strategies



NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Long-Distance Transmission, Reliability and a Clean Energy Future

Mark Lauby, Senior Vice President and Chief Reliability Officer
Americans for a Clean Energy Grid: Transmission Time
March 16, 2022

RELIABILITY | RESILIENCE | SECURITY



A Changing Context for the BPS



Distributed



Decarbonized



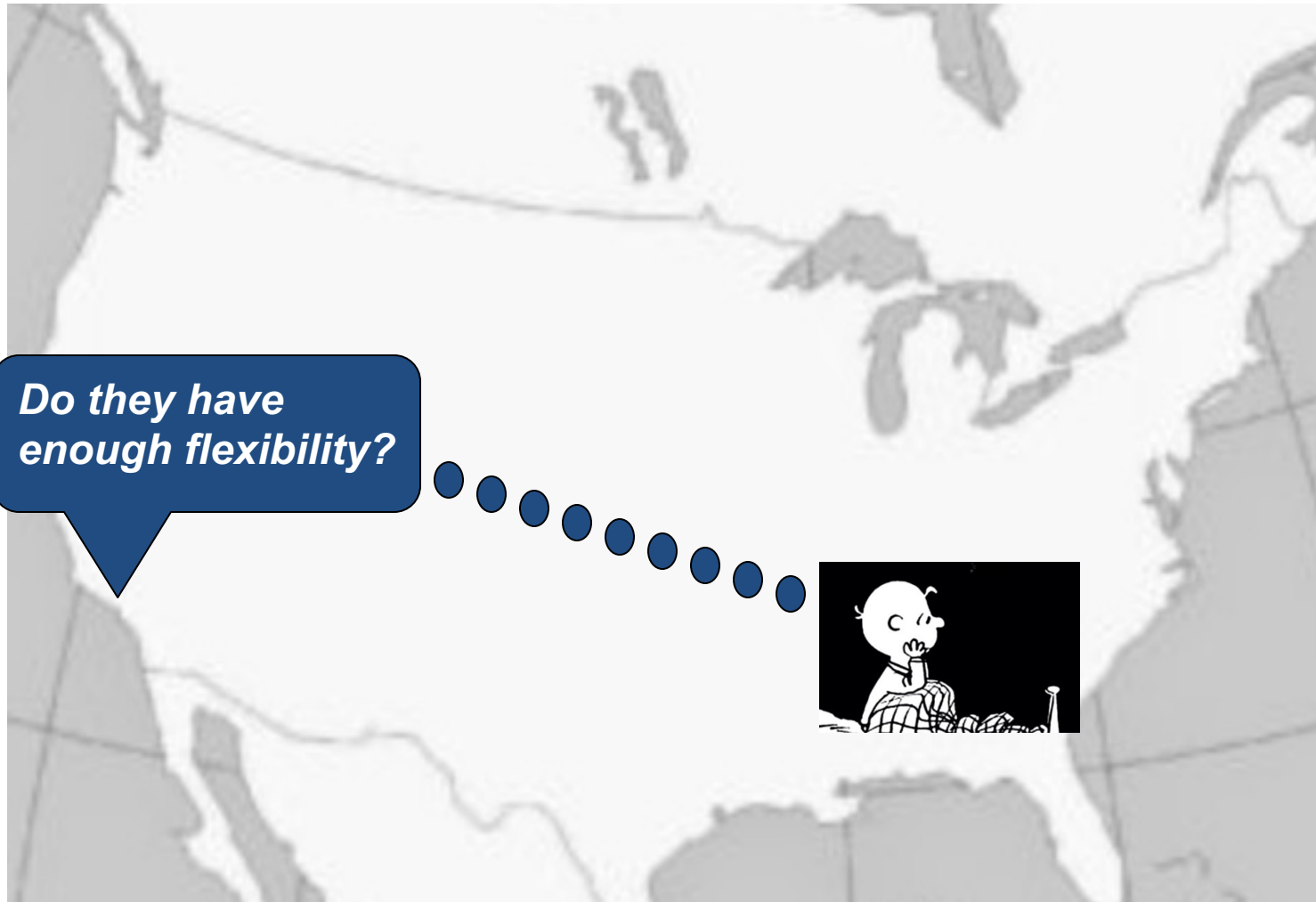
Digitized



What keeps us awake at night?



What keeps us awake at night?



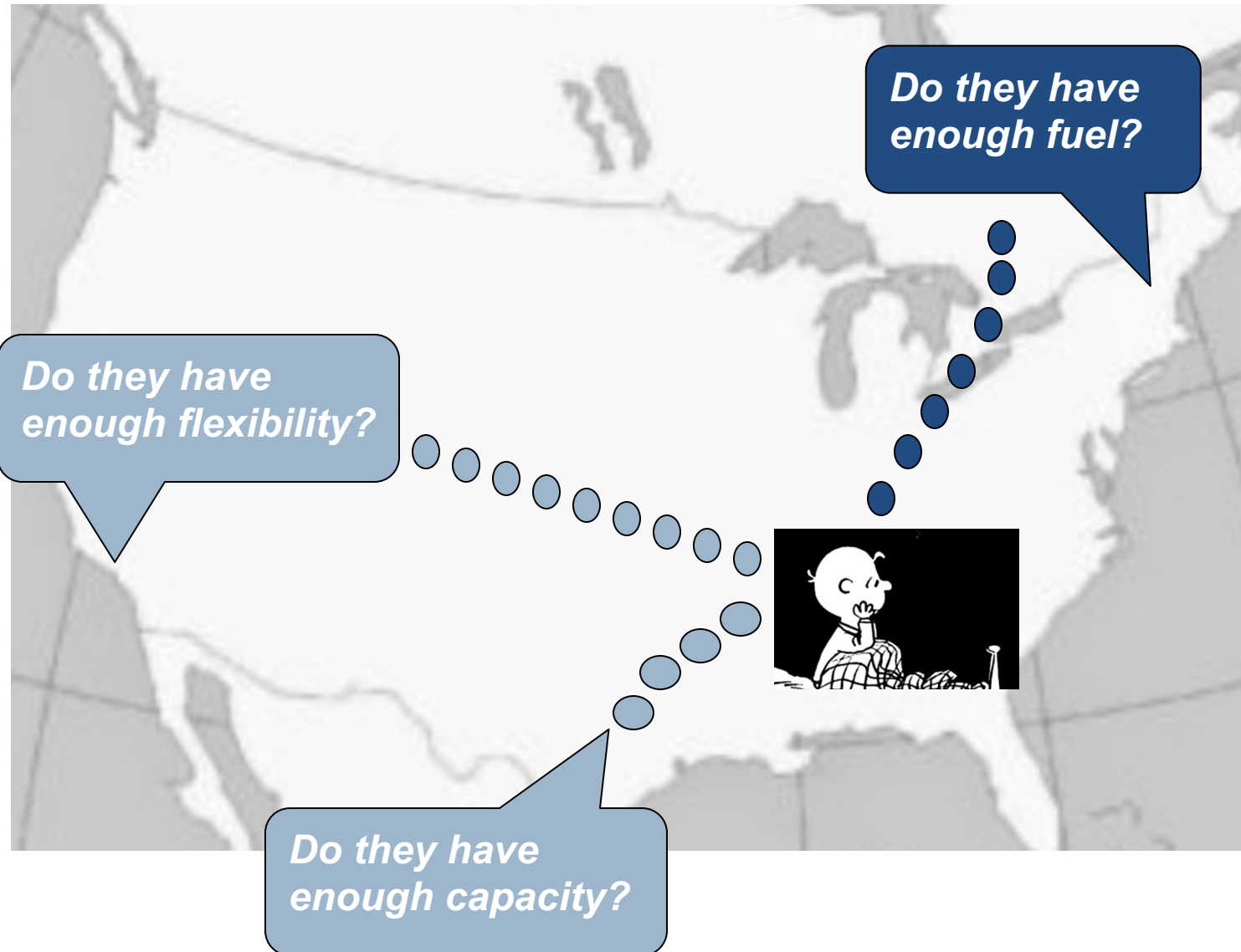
What keeps us awake at night?



Do they have enough flexibility?

Do they have enough capacity?

What keeps us awake at night?

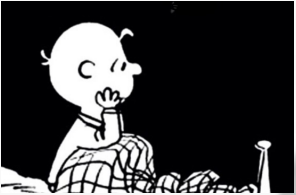


Technology Uncertainty: What keeps us awake at night?



*Do they have
enough flexibility?*

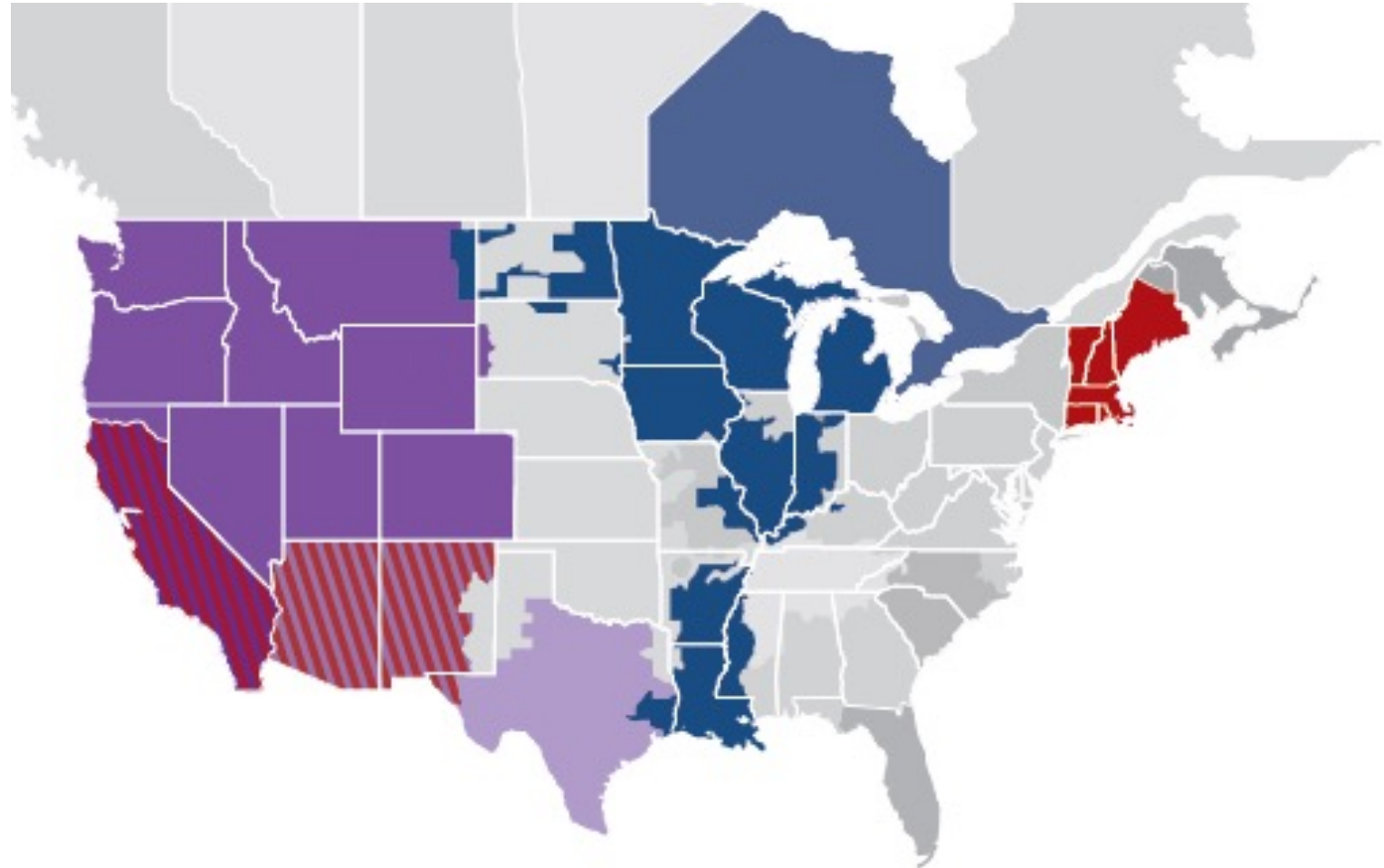
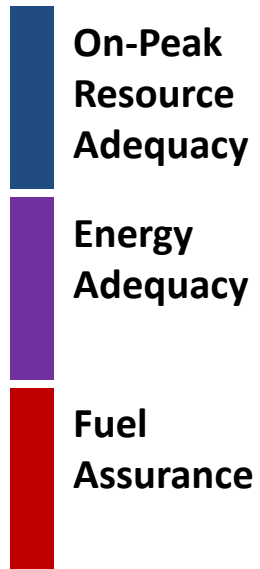
*Do they have
enough fuel?*



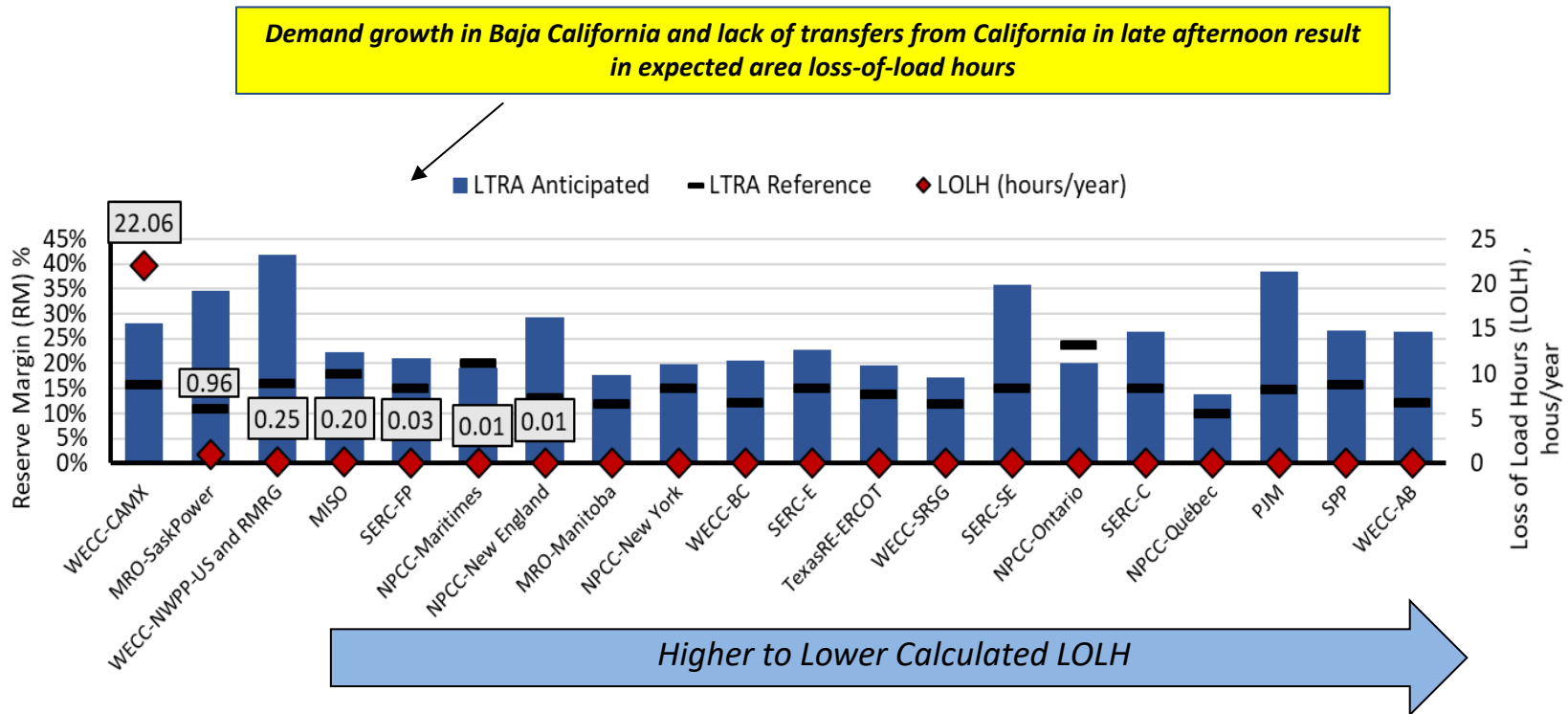
*Do they have
enough capacity?*



Risk Areas

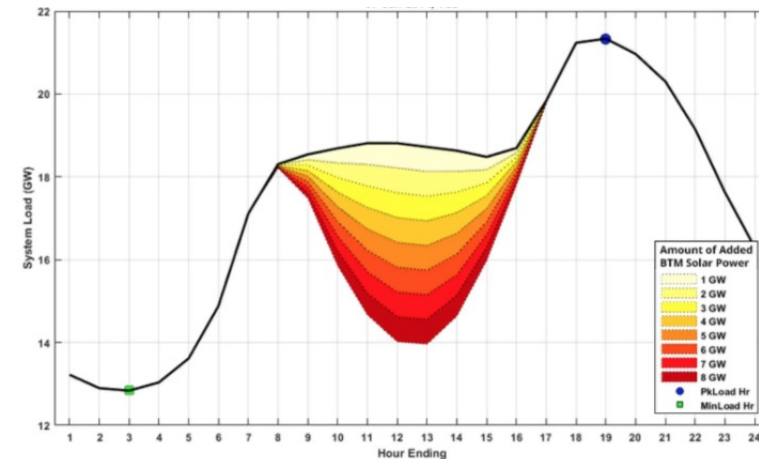
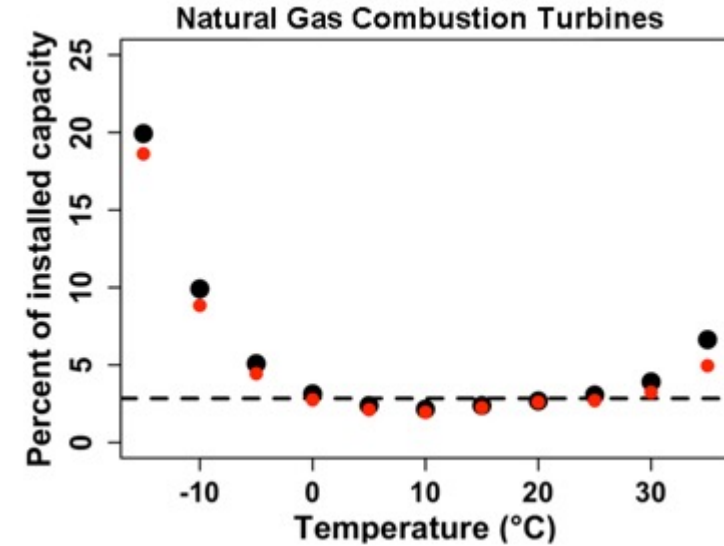


- Probabilistic evaluations of all demand hours identify resource adequacy risks at peak and off-peak periods



Reserve Margins and Loss-of-Load Hours (LOLH) for 2022 Peak Season

- Correlation in generator outages
- Climate trends
- Ensuring flexible resources to support ramping requirements
- Ensuring sufficient energy within fuel assumptions
- Energy assurance plans
- Ensuring appropriate targets and mechanisms
- Transmission



Wintry cold snaps constrain the natural gas available to meet New England's increasingly steep evening ramps. (ISO-NE)

- Where will the balancing resources really come from?
- How will we get the needed infrastructure built?
- What resiliency tools are needed to protect against extreme weather events that impact generation availability AND deliverability?
- How do we build cyber security into a system that will undoubtedly have more digital controls and devices for an ever larger attack surface?
- Are we protecting adequately critical assets from physical attack?
- Overall — do we have tools to model, assess, plan and operate a system that increasingly requires stochastic analysis, with much poorer operator visibility into loads and resource availability?



Thank You.

RTOs on reliability, resilience, and transmission (1/2)

- ISO-New England: “The system’s ability to withstand various transmission facility and generator contingencies and move power around without dependence on local resources under many operating conditions..., results in a grid that is, as defined by the Commission, resilient.” [\(ISO-NE filing in FERC Docket No. AD18-7, p. 15\)](#).
- NYISO: The Commission must “... recognize the critical importance of maintaining and enhancing grid interconnections. These interconnections support and bolster reliability and resilience by creating a larger and more diverse resource pool available to meet needs and address unexpected and/or disruptive events throughout an interconnected region.” [\(NYISO filing in FERC Docket No. AD18-7, p. 10-11\)](#).
- PJM: “Robust long-term planning, including developing and incorporating resilience criteria into the RTEP, can also help to protect the transmission system from threats to resilience.” [\(PJM filing in FERC Docket No. AD18-7, p. 49-50\)](#).



RTOs on reliability, resilience, and transmission (2/2)

- SPP: “...additional transmission has enabled resources of all fuel types to help meet customer demand during a range of potential threats to reliability and resilience...[t]he construction of new transmission facilities pursuant to modern design standards enhance the robustness of the system.” ([SPP filing in FERC Docket No. AD18-7, pp. 3 & 5](#)).
- ERCOT and the Public Utility Council of Texas (PUCT): “[o]ne of the most critical elements of system resilience is ensuring that the transmission system is planned in such a way as to ensure continued operations following an unexpected outage of one or more generators or transmission elements.” ([ERCOT and PUCT filing in FERC Docket No. AD18-7, p. 7](#)).
- CAISO: “Having a robust transmission system allows the CAISO to re-dispatch generation as necessary. Locational diversity of transmission and generation is important as is the ability to accommodate flows in multiple directions.” ([CAISO filing in FERC Docket No. AD18-7, p. 84](#)).
- MISO: “The Commission should actively support more effective interregional operations to increase the tools and resources available to support grid resilience.” ([MISO filing in FERC Docket No. AD18-7, p. 2](#)).



NERC on reliability, resilience, and transmission

- “The right combination and amount of resources and transmission together maintain adequacy of the system.” [NERC filing in FERC Docket No. RM18-1, p. 2](#).
- “The adequacy of the system is maintained by having the right combination and amount of resources and transmission to deal with unexpected facility outages or extreme weather events that increase system demand.” [NERC, Synopsis of NERC Reliability Assessments, p. 2](#).



Q&A Discussion