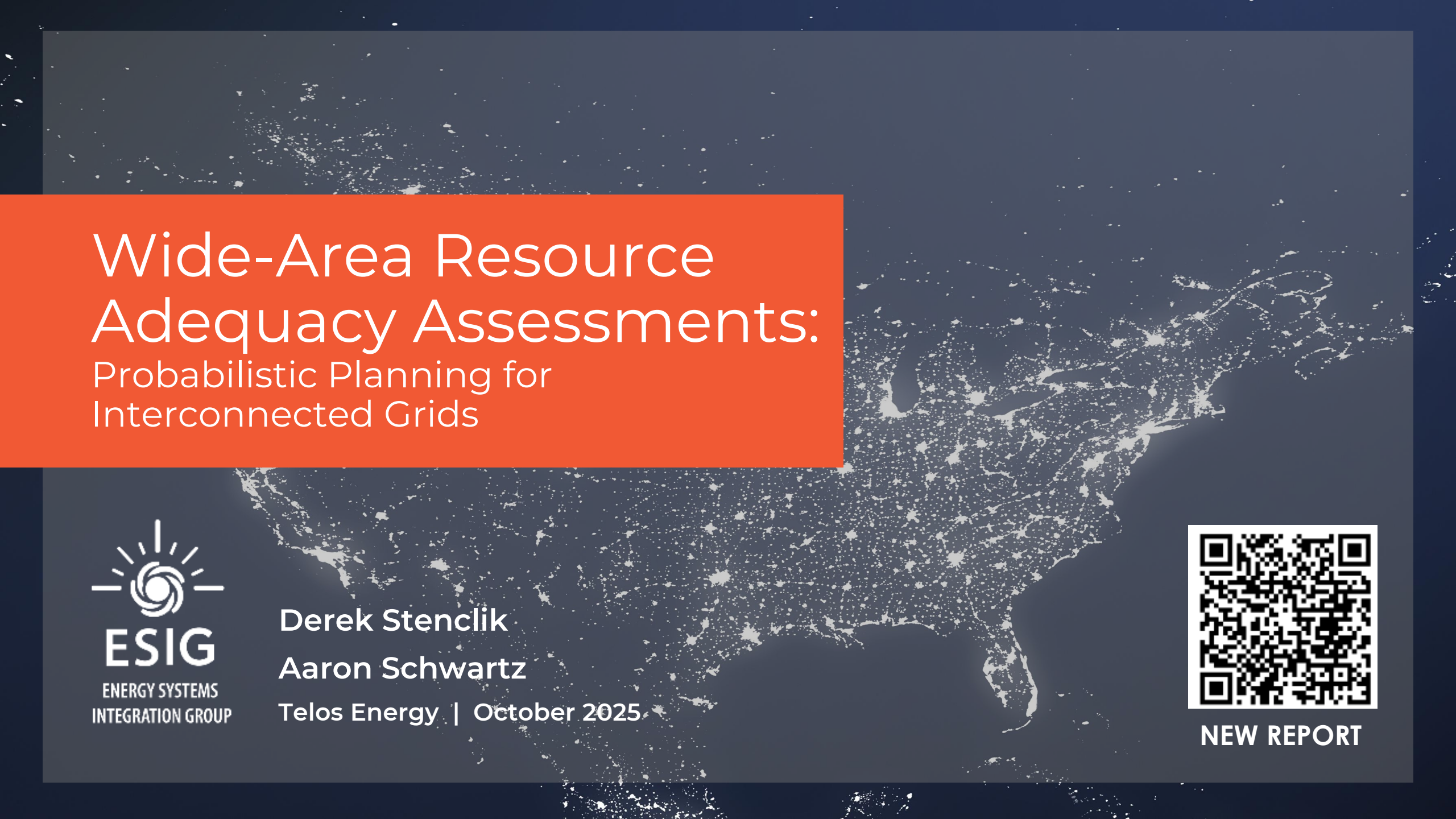


Wide-Area Resource Adequacy Assessments:

Probabilistic Planning for Interconnected Grids

ESIG
ENERGY SYSTEMS INTEGRATION GROUP

Derek Stenclik

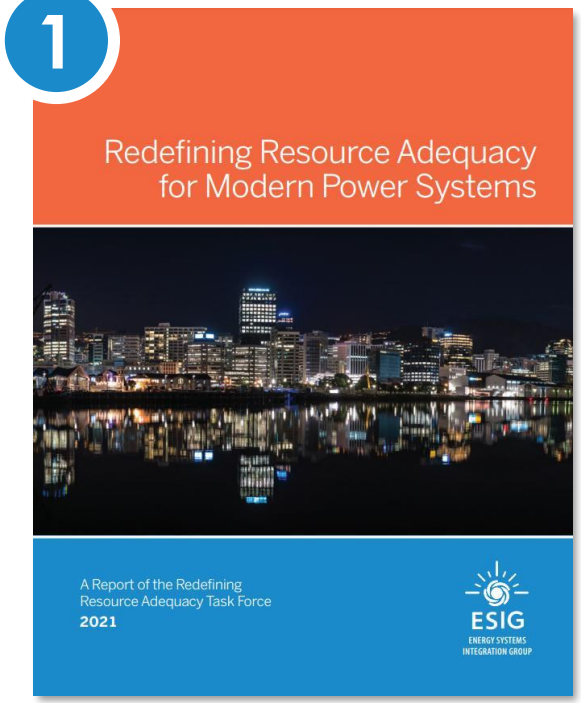
Aaron Schwartz

Telos Energy | October 2025

NEW REPORT

ESIG Redefining Resource Adequacy Task Force

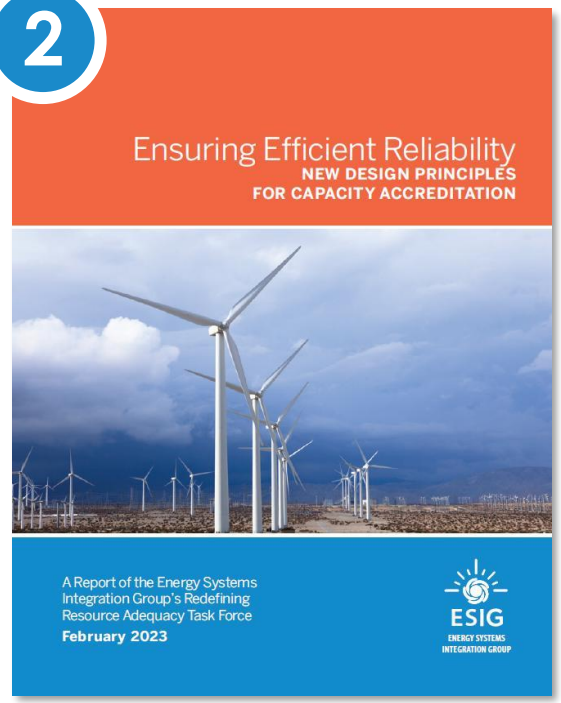
1



Probabilistic Analysis & First Principles

Chronology & Correlation

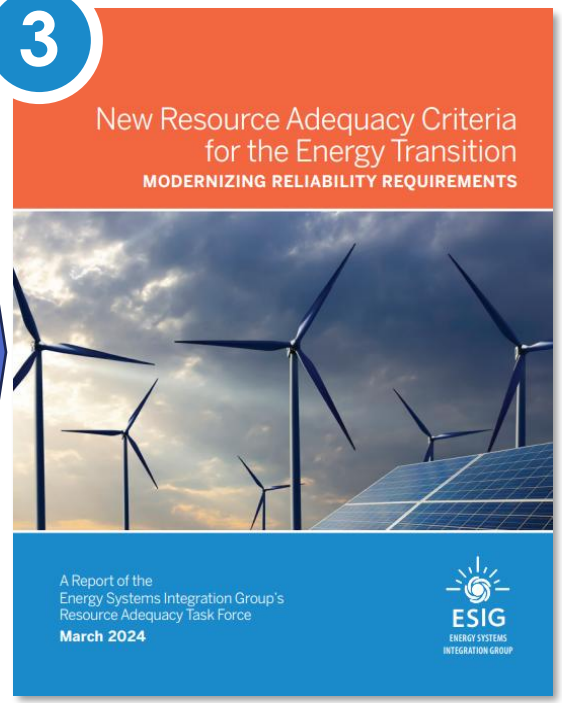
2



Capacity Accreditation and Procurement

Capacity accreditation for all resources

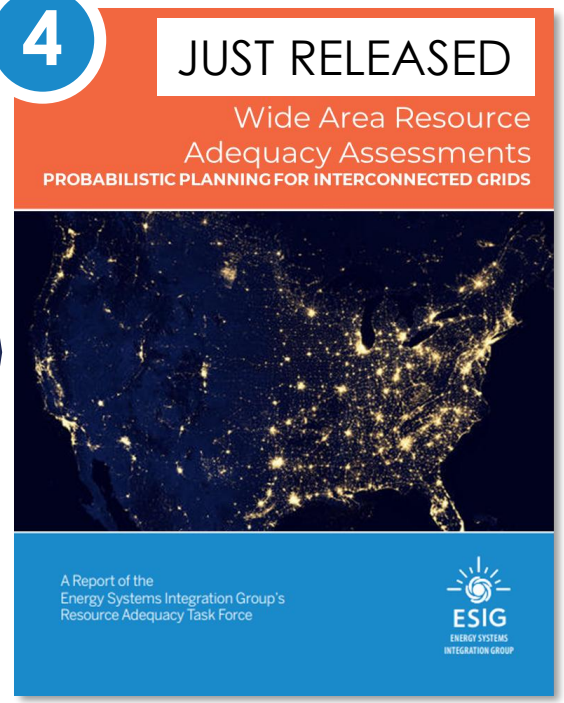
3



New Reliability Criteria & Capacity Needs

Moving beyond 1-day-in-10 LOLE

4

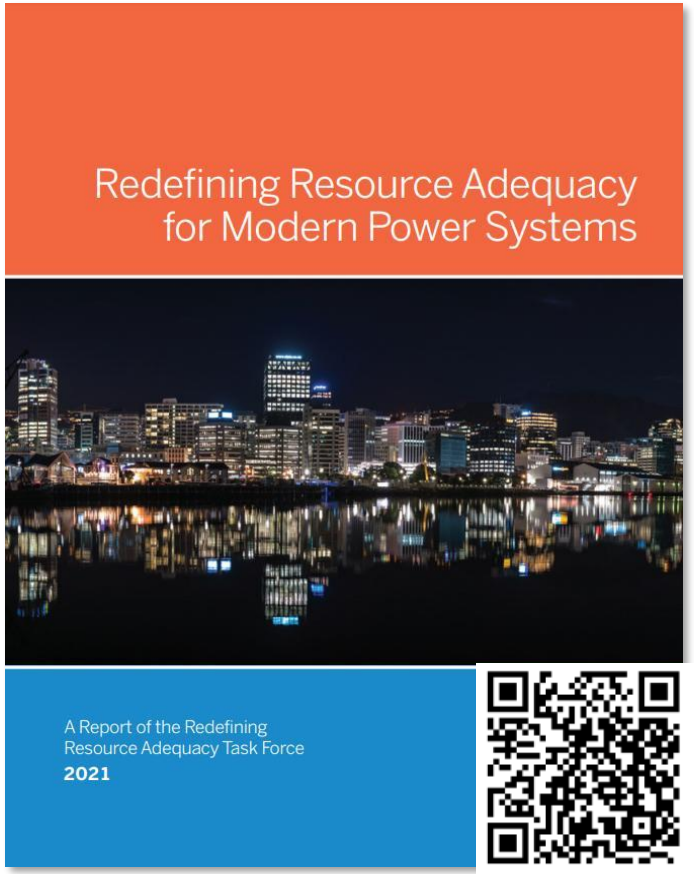


Wide Area Resource Adequacy Assessments

Interregional coordination and transmission

Recapping the **ESIG six principles** of resource adequacy for modern power systems

1. Quantifying size, frequency, duration, and timing of capacity shortfalls is critical to finding the right resource solutions.
2. Chronological operations must be modeled across many weather years.
3. There is no such thing as perfect capacity.
4. Load participation fundamentally changes the resource adequacy construct.
5. Neighboring grids and transmission are a key part of the RA challenge.
6. Reliability criterion should not be arbitrary, but transparent and economic.

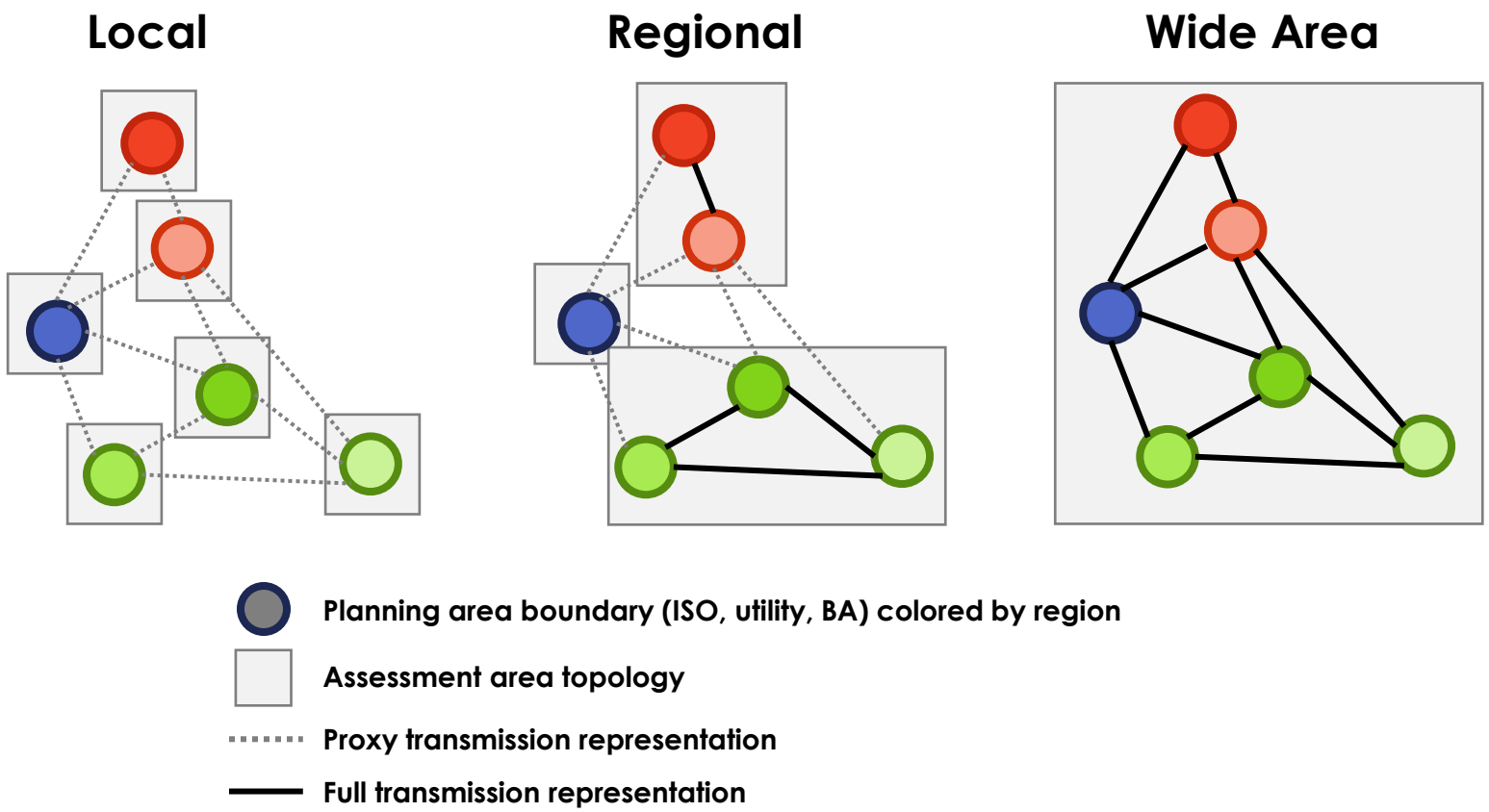


What is “Wide Area?”

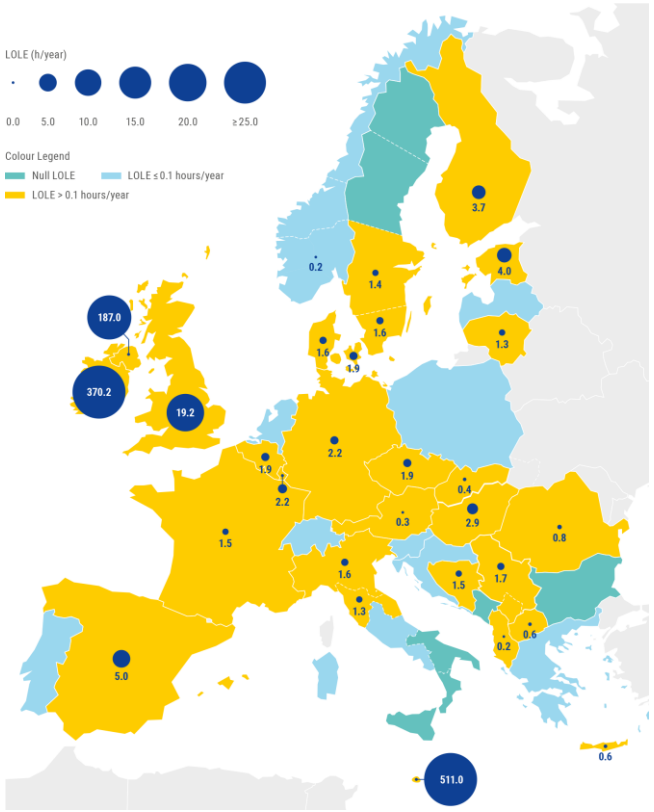
Local: assessment conducted by an individual resource planning entity, such as a vertically integrated utility or independent system operator

Regional: coordinated assessment conducted by a group of neighboring local entities

Wide Area: Interconnection-wide or continental assessment that spans multiple regional entities. Geographic scale larger than typical weather systems and capable of evaluating interregional transmission and resource adequacy interactions across jurisdictional boundaries



Lessons Learned from Europe



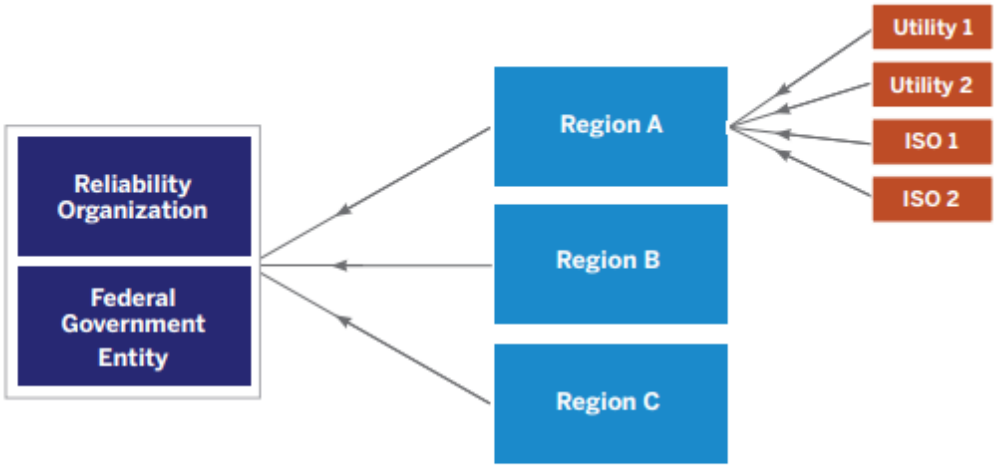
- **ENTSO-E membership includes 40 Transmission System Operators in Europe, representing 36 countries**
- The ERAA is an annual, pan-European monitoring assessment of power system resource adequacy of up to 10 years ahead.
- Detailed, continent-wide, probabilistic resource adequacy assessment using consistent assumptions, methods, and continental weather datasets.
- *North America does not have a comparable process today*

https://www.entsoe.eu/eraa/

Reasons to conduct wide-area resource adequacy assessments

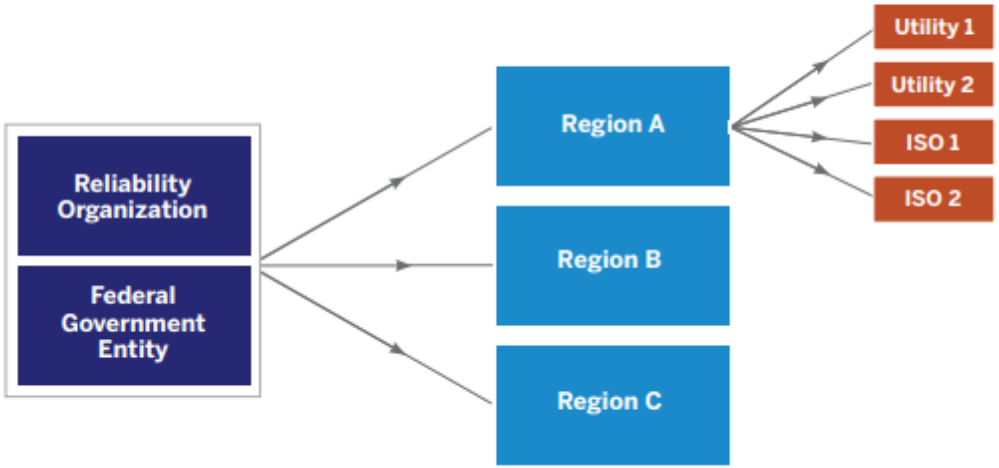
1. Interregional Transmission Planning
2. Scenario Consistency in Local/Regional Planning
3. Neighboring System Visibility
4. Assessing Policy Impacts
5. External Assistance Evaluation
6. Extreme Weather Event Evaluation
7. Methodological and Metric Alignment

Two-way flow of information and outputs from regional and wide-area assessments



Local utilities, ISOs, and regions to share:

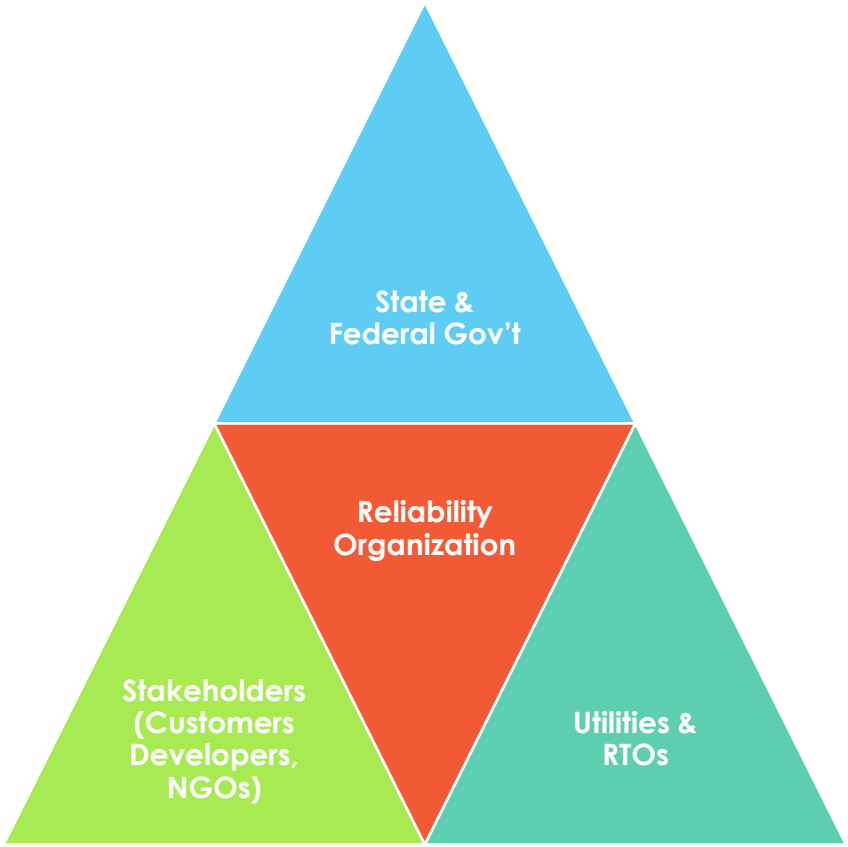
- Regional planned resource additions
- Regional planned retirements
- Regional load forecast
- **Intra**regional transmission limits
- Jointly / remotely owned resources



Reliability organization to share:

- Aggregated resource additions
- Aggregated retirements
- Aggregated load forecasts
- **Inter**regional transmission limits
- Meteorological time series data (correlated, consistent, chronological)
- Common scenarios

Who should be involved in wide-area assessments?

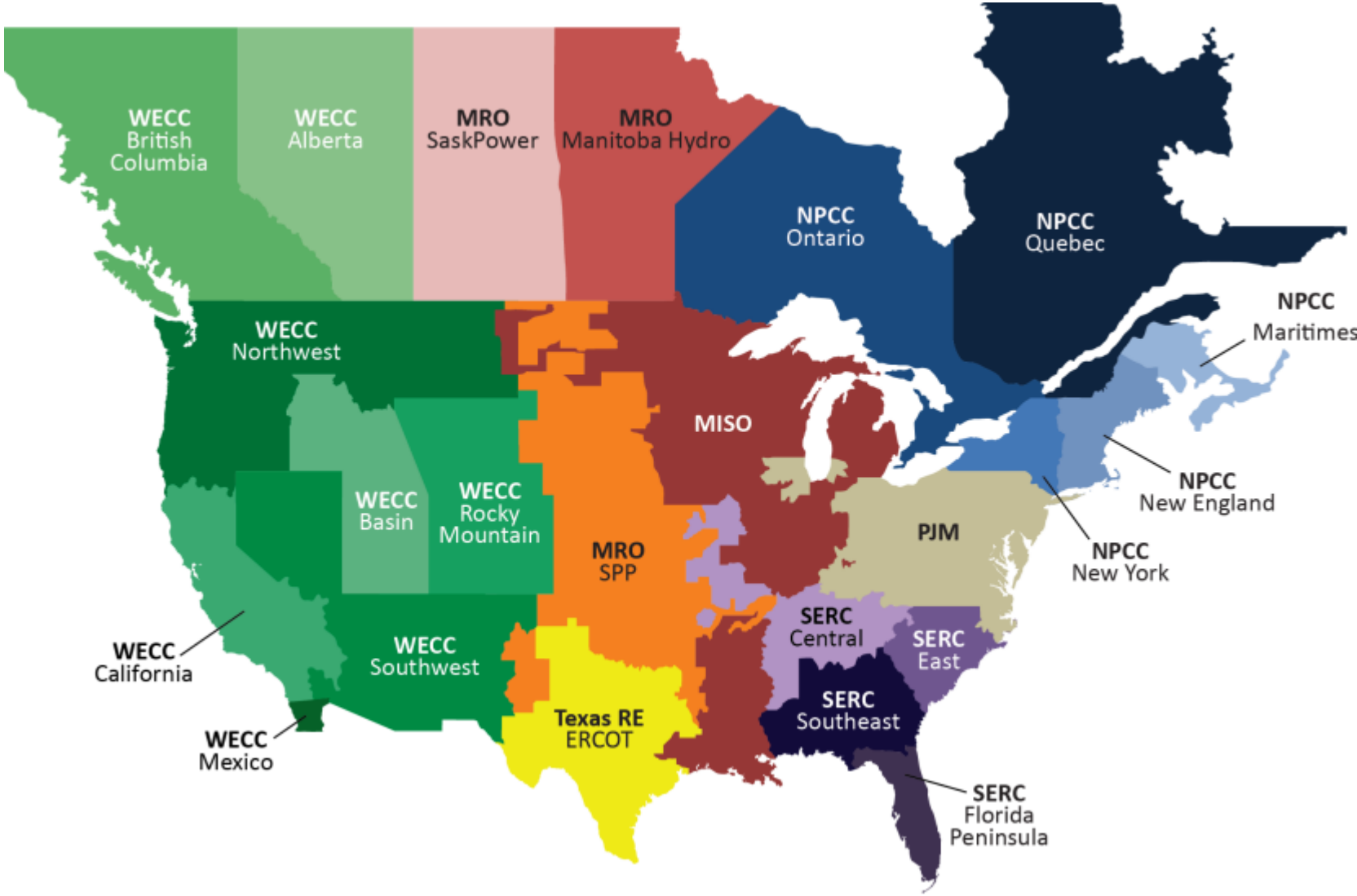


- **State and local regulatory entities:** to inform energy policy (retirements, incentives for new generation, interregional transmission, emissions).
- **Federal Entities:** while not charged with ensuring adequacy, can support by advancing common datasets, establishing modeling workflows, and coordinating.
- **Reliability Organization(s):** i.e., NERC & ENTSO-E to administer the process and coordinate with regional entities and utilities.
- **Utilities and RTOs:** to provide data, assumptions, modeling methods, but also use results in regional/local planning.
- **Stakeholders:** including customers, developers, and NGOs that can voice concerns in adequacy and preferences for criteria.

NERC's progress on wide area assessments

NERC Long Term Reliability Assessment

- **Long-term and Seasonal Reserve Margin Analysis**
- **Regional ProbA Studies**
- **Interregional Transfer Capability Study (ITCS)**
- **North American Adequacy Assessment [New Interconnection-Wide Assessment]**



Check out the full report

THANK YOU

Derek Stenclik, Aaron Schwartz

TELOS ENERGY