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NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

ERO Energy Assessment Strategy Update

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Joint RAC- Reliability Assessment Committee and RRC - Reliability Risk
Committee

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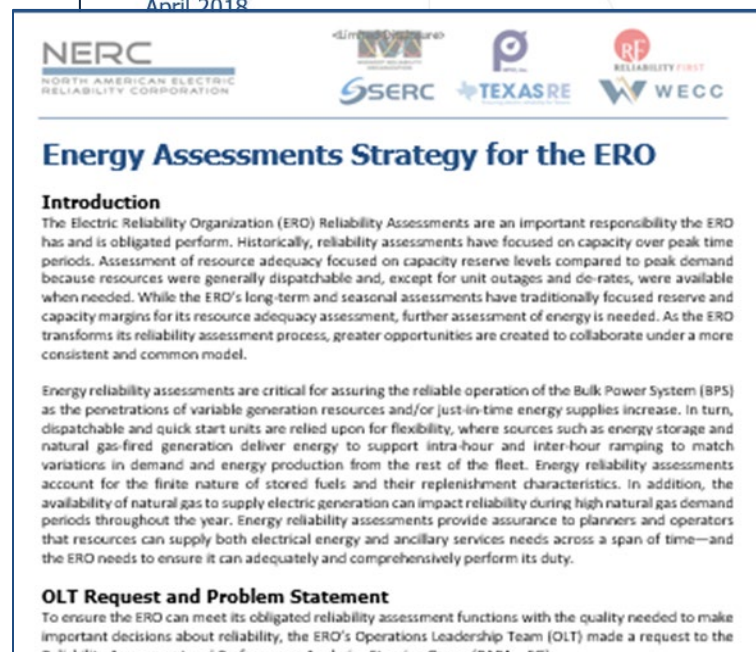
RELIABILITY | RESILIENCE | SECURITY



- Review highlights of the strategy
- Update on the 2024 Probabilistic Assessment (ProbA)
- Status of long-term ERO Energy Assessments Strategy objectives

- Objective: Update ERO processes to enable assessment of reliability risk as the system transitions from a **capacity-limited** power system to a more **energy-limited** power system reliant on variable energy resources and natural gas-fired generators
- Who: NERC and Regional Entities + Reliability Assessments Subcommittee
- How:
 - **Rigid Core/Flexible Edge:** Promote high degree of consistency yet maintain needed regional flexibility
 - Incorporate advances incrementally

<https://www.nerc.com/comm/RSTC/RAS>



ERO Long-Term Reliability Assessment

A complete and common picture of future energy risks

Risk Assessment Inputs

LTRA Data and Narrative Request

- Granular Energy Assessments
 - Performed by NERC Entities (PC/TP/BA)
 - **Specified by NERC Standards** (in development), Tariff, or Planning Area procedures
 - Standards requirements established by industry through NERC's standards process

Assessment Performed by ERO

- Wide Area Energy Analysis
 - **Interconnection-wide**
 - Guided by ERO RA Process Manual
 - Consistent base case, Region-flexible scenario
 - Common assessment metrics and criteria for risk assessment

2025: Software tools and processes for interconnection wide analysis

2026: Interconnection wide analysis incorporated into LTRA and ERO RA Process

2024 ProbA Enhancements

★
You are here

Actions and Next Steps

1. *Obtain constructive feedback*
2. *Adapt ProbA for annual LTRA*
3. *Apply technical improvements incrementally (e.g., EPRI Project output)*
4. *Obtain tools for wide-area assessment*
5. *Develop and Document ERO Processes*

Key tasks

- Determine common tool, model, and data needs for performing interconnection-wide energy assessments
- Establish assessment metrics and criteria
- Determine processes and responsibilities
- Define the Rigid Core/Flexible Edges (process development)

Status

- Workplan initiated by ERO Reliability Assessments (ERO RA) and overseen by RAPA SG
- Considering how to leverage the Interregional Transfer Capability Study (ITCS) to meet energy assessment objectives
- Collaboratively evaluating a suitable common tool for interconnection-wide energy analysis

NERC Responsibilities

- Perform reliability assessments of the North American BPS required by NERC RoP
- Oversee the reliability assessment process specified in the ERO RA Process Document and ERO Energy Assessments Strategy

Regional Entity Responsibilities

- Perform energy analysis envisioned in the ERO Energy Assessment Strategy
 - Collaborate with Regional Entities and NERC staff for interconnection-wide energy analysis (e.g., ERAG in Eastern Interconnection)
- Perform reliability assessments and collect data as specified in delegation agreements and regional entity procedures

Work collaboratively to meet the Key Attributes of the ERO Energy Assessments:
Valuable and Effective | Transparent and Precise | Independent and Objective

Item	Task	Description	Phase (I, II, III)
1	Prototyping	Develop a concept of the future LTRA and its visualizations for energy risks	I
1.A	Alignment – NERC Standards and Committees	Understand developments in standards and technical white papers that are relevant to future ERO Reliability Assessments	I, II, III
1.B	Alignment – Industry Capabilities	Understand the evolution in capabilities coming from EPRI, ESIG, Vendors that is relevant to future ERO Reliability Assessments; incorporate state-of-the-art incrementally	I, II, III

Item	Task	Description	Timeframe
2	ERO Tool Needs	Determine the tools that the ERO needs for performing their own assessments to meet the strategy	I, II
2.A	Data and Model Needs	Determine the data and models required by the ERO for performing assessments to meet the strategy	I, II
3	Metrics and Criteria Development	Determine metrics and criteria for use in assessing risk and delivering the needed level of consistency in reporting	II

Item	Task	Description	Timeframe
4	Assessment Process Design	Determine the responsibilities, process, coordination, and timelines for incorporating the enhancements in the LTRA	II
5	Document	Document revisions to the ERO RA Process Document and provide for approval.	III

- What are Energy Assessments?
 - The systematic evaluation of the ability for resources to reliably and adequately deliver energy to meet the demand under an assumed timeframe and set of system conditions, including the chronological impact of constrained energy due a variety of factors including, but not limited to:
 - Physical unit constraints
 - Variability of fuel
 - Regulatory/Environmental
 - Fuel transportation arrangements
 - Resource outage probability
 - Transfer capability
 - Inter-Area Transfers
- Answers the question: “Does a system have enough energy to generate and deliver power to serve demand at all hours?”
- Two part evaluation: 1) probabilistic and 2) deterministic scenario

Conceptual view of energy analysis

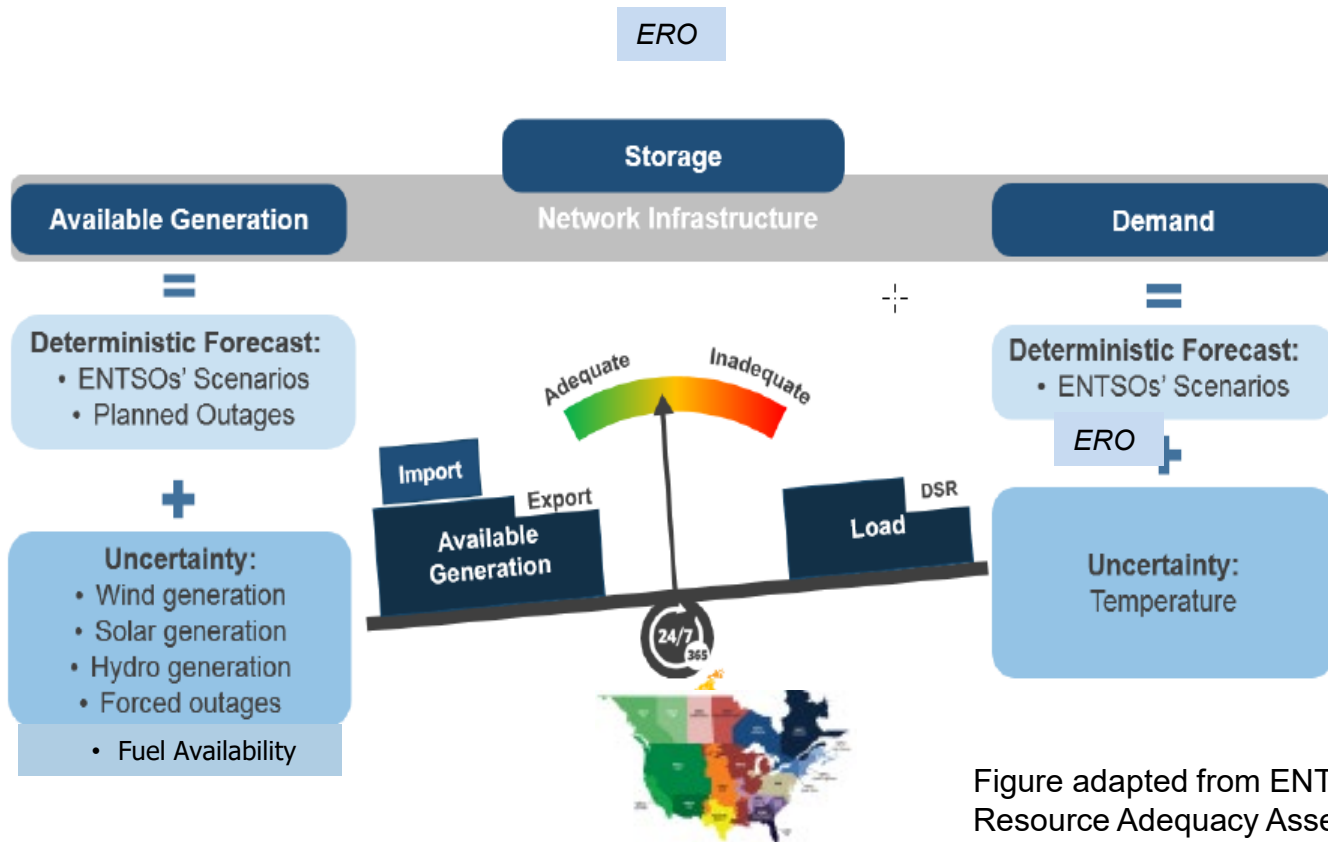
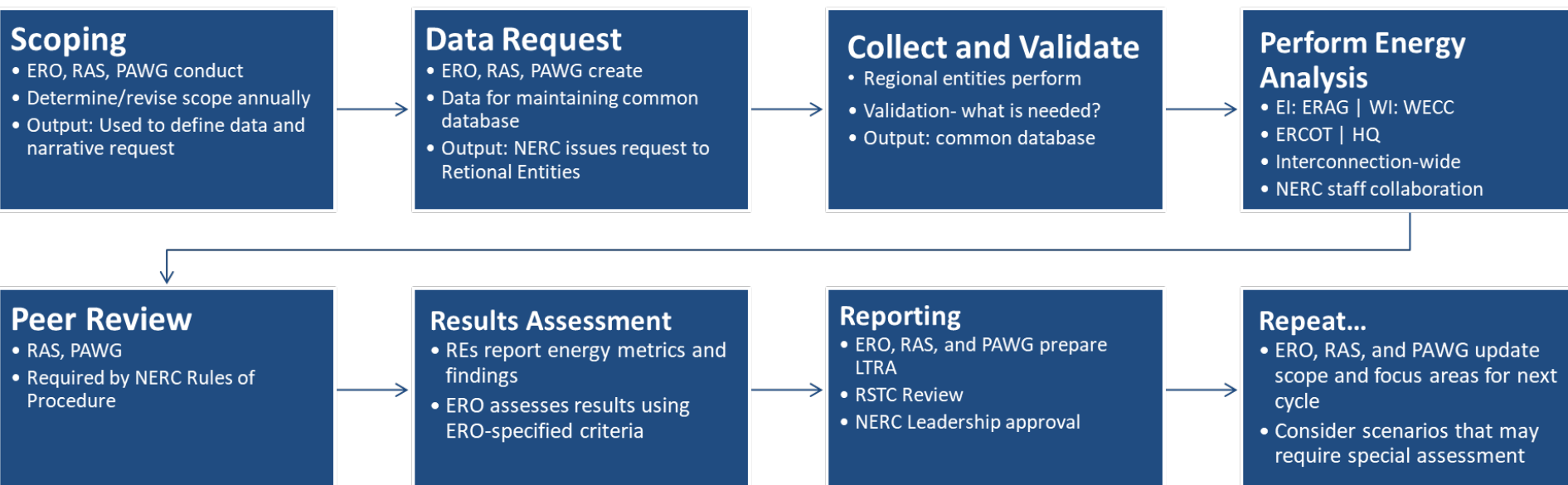


Figure adapted from ENTSO-E European Resource Adequacy Assessment 2023

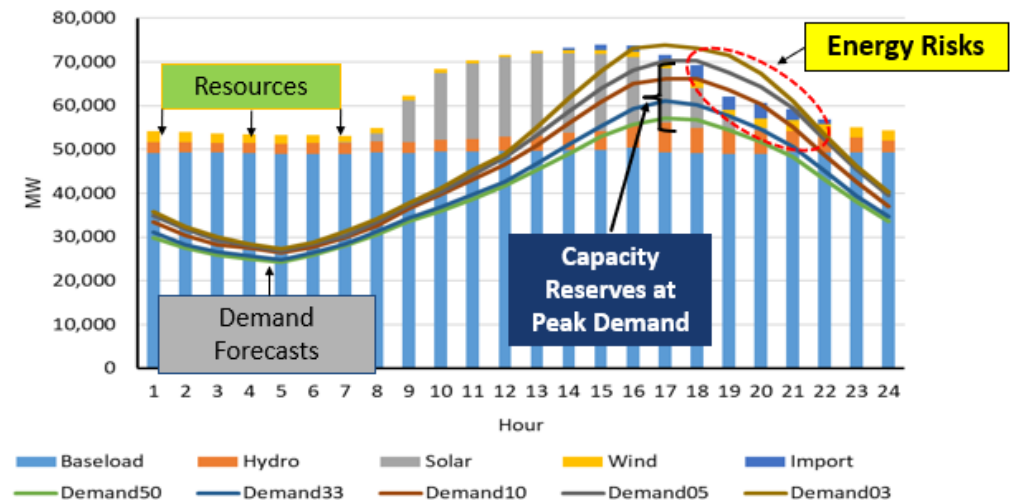


- Tools do not consistently provide **hourly resource distributions** (e.g., mean, 90/10 or similar) by resource type (e.g., wind, thermal, etc) in output data
- Data volume and file size makes it prohibitive to collect complete resource data set for full 8,760 hours for study years

Solutions implemented:

- Collect 8,760 hourly demand, aggregate resource, surplus, and EUE
- Additional hourly data will be collected for periods when probabilistic analysis indicates risk of unserved energy
- New hourly data form provides necessary flexibility required by current tools

- ERO, RAS, and PAWG have developed 2024 ProbA request material to improve consistency and reporting of energy risk
- Two enhancements:
 - New narrative request form with VER modeling details
 - New hourly data form for demand, resource, and unserved energy during events
- ProbA will be performed **annually**
- Request materials will be released in April



Hourly Demand and Resources for 2024 Peak Risk Day (September)

2022 LTRA graphic describing risk hours in a Western Interconnection Assessment Area



Questions?

A stylized map of North America is centered on the slide. The map is divided into three horizontal color bands: a light blue band across the top representing Canada, a dark blue band across the middle representing the United States, and a light gray band at the bottom representing Mexico. The word "Questions?" is written in a large, bold, black sans-serif font, centered over the United States portion of the map.