

# 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



# Translating the Energy Assessments Strategy into Action

- 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



NERC







#### **Energy Assessments Strategy for the ERO**

#### Introduction

The Electric Reliability Organization (ERO) Reliability Assessments are an important responsibility the ERO has and is obligated perform. Historically, reliability assessments have focused on capacity over peak time periods. Assessment of resource adequacy focused on capacity reserve levels compared to peak demand because resources were generally dispatchable and, except for unit outages and de-rates, were available when needed. While the ERO's long-term and seasonal assessments have traditionally focused reserve and capacity margins for its resource adequacy assessment, further assessment of energy is needed. As the ERO transforms its reliability assessment process, greater opportunities are created to collaborate under a more consistent and common model.

Energy reliability assessments are critical for assuring the reliable operation of the Bulk Power System (BPS) as the penetrations of variable generation resources and/or just-in-time energy supplies increase. In turn, dispatchable and quick start units are relied upon for flexibility, where sources such as energy storage and natural gas-fired generation deliver energy to support intra-hour and inter-hour ramping to match variations in demand and energy production from the rest of the fleet. Energy reliability assessments account for the finite nature of stored fuels and their replenishment characteristics. In addition, the availability of natural gas to supply electric generation can impact reliability during high natural gas demand periods throughout the year. Energy reliability assessments provide assurance to planners and operators that resources can supply both electrical energy and ancillarly services needs across a span of time—and the ERO needs to ensure it can adequately and comprehensively perform its duty.

#### OLT Request and Problem Statement

To ensure the ERO can meet its obligated reliability assessment functions with the quality needed to make important decisions about reliability, the ERO's Operations Leadership Team (OLT) made a request to the



# Aspirations for Energy Assessments (2026 and later)

#### **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

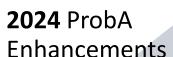
- Wide Area Energy Analysis
  - Interconnection-wide
  - Guided by ERO RA Process Manual
  - Consistent base case, Regionflexible scenario
  - Common assessment metrics and criteria for risk assessment



#### **Actions and Milestones**

**2025**: Software tools and processes for interconnection wide analysis

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





#### **Actions and Next Steps**

- Obtain constructive feedback
- 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



# Long-Term Energy Assessment Strategy Objectives

#### 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)

#### <u>Status</u>

- 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 and Regional Entity Responsibilities

#### **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



#### **Work Plan Overview**

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	1, 11, 111
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	1, 11, 111



#### **Draft Work Plan Overview**

Item	Task	Description	Timeframe
2	ERO Tool Needs	Determine the tools that the ERO needs for performing their own assessments to meet the strategy	1, 11
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



#### **Draft Work Plan Overview**

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

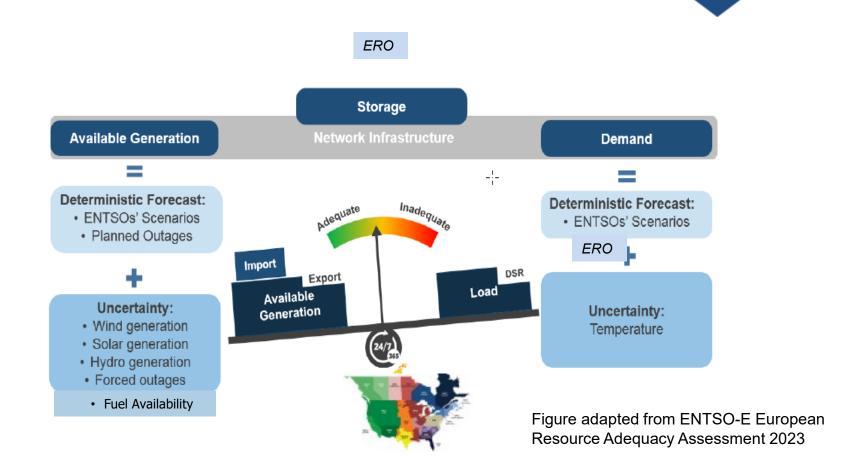


### **Defining Energy Assessments**

- 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

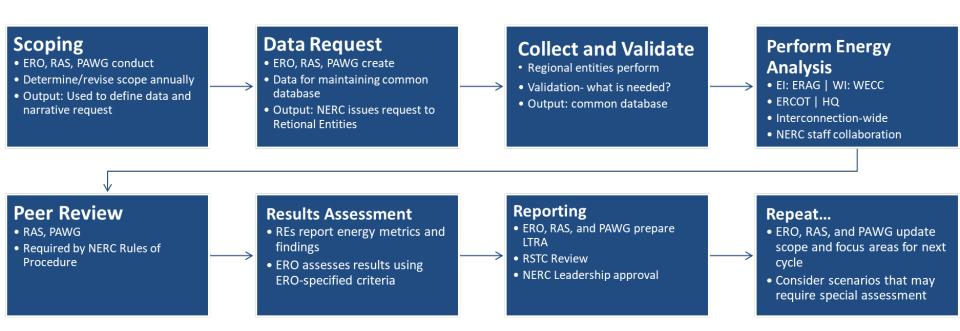


## **Conceptual view of energy analysis**





# **ERO Energy Assessment Process and Responsibilities**







- 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

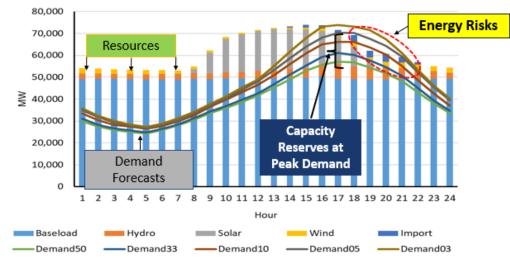
#### **Solutions implemented:**

- Collect 8,760 hourly demand, <u>aggregate</u> 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



## Near-term Improvement: ProbA Energy Risk Evaluation

- 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



