



# **Intro to Generation Operator Fundaments (GOF)**

## **Intro to PJM**

**PJM State & Member Training Dept.**



## Objectives

Students will be able to:

- Identify the role and responsibilities of the PJM RTO

## PJM as an RTO

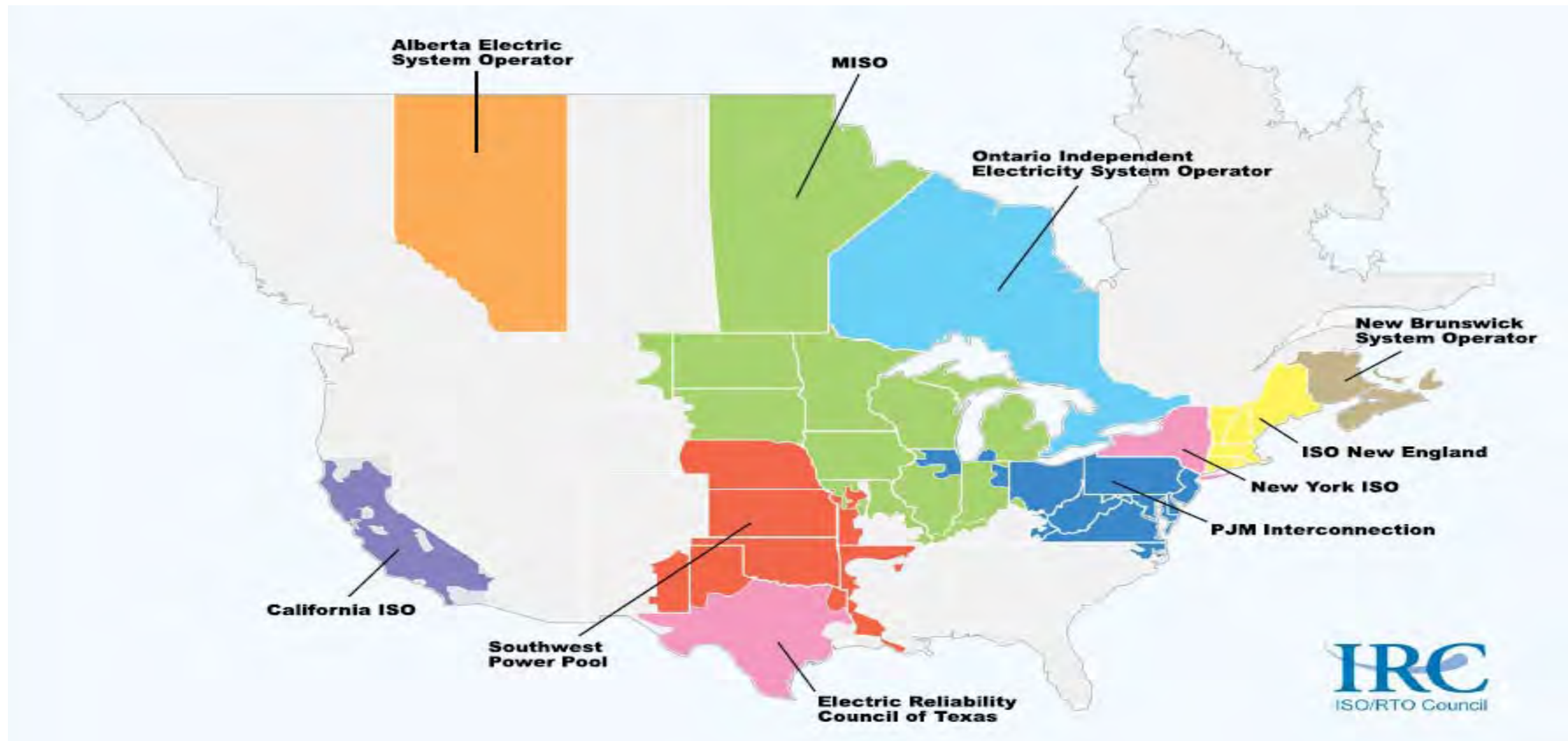
- **What is an ISO/RTO?**
  - Independent from all market participants
  - Independent governance structure
  - Possesses operational authority
  - Responsible for (within the region):
    - Grid operations
    - Reliability
    - Transmission service

## PJM as an RTO

- **Functions**

- Administer tariff
- Administer regional wholesale electric markets
- Provide independent market
- Provide for comprehensive regional transmission expansion planning
- Manage congestions
- Supply ancillary services
- Operator OASIS
- Plan and coordinate transmission additions and upgrades

## Nine Major North American RTOs/ISOs



## Working Together

- Agreements are developed with stakeholders to ensure reliability of the electric power grid
- Stakeholders include:
  - Members
  - ISOs/RTOs
  - FERC
  - NERC
- ***PJM Operating Agreement***
  - Governs operation of PJM
  - Defines roles & responsibilities
  - PJM Membership requires signing of PJM Operating Agreement

# NERC Functional Model



## NERC Functional Model – Generator Operator

Definition - The functional entity that operates generating unit(s) and performs the functions of supplying energy and reliability related services

### *Relationships with Other Functional Entities*

- Ahead of Time
  1. Provides generation commitment plans to the Balancing Authority
  2. Provides Balancing Authority and Transmission Operators with requested amount of reliability-related services
  3. Provides operating and availability status of generating units to Balancing Authority and Transmission Operators for reliability analysis
  4. Reports status of automatic voltage or frequency regulating equipment to Transmission Operators



## NERC Functional Model – Generator Operator

- Ahead of Time (continued)
  - 5. Provides operational data to Reliability Coordinator
  - 6. Receives reliability analyses from Reliability Coordinator
  - 7. Receives notice from Purchasing-Selling Entity if Arranged Interchange approved or denied
  - 8. Receives reliability alerts from Reliability Coordinator
  - 9. Receives notification of transmission system problems from Transmission Operators
- Real Time
  - 10. Provides Real-time operating information to the Transmission Operators and the required Balancing Authority
  - 11. Adjusts real and reactive power as directed by the Balancing Authority and Transmission Operators

## NERC Functional Entity – Generation Owner

Definition - The functional entity that owns and maintains generating units

*Relationships with Other Functional Entities*

- 1.Provides generator information to the Transmission Operator, Reliability Coordinator, Balancing Authority, Transmission Planner, and Resource Planner
- 2.Provides unit maintenance schedules and unit retirement plans to the Transmission Operator, Balancing Authority, Transmission Planner, and Resource Planner
- 3.Develops an interconnection agreement with Transmission Owner on a facility basis.
- 4.Receives approval or denial of transmission service request from Transmission Service Provider
- 5.Provides reliability related services to Purchasing-Selling Entity pursuant to agreement
- 6.Reports the annual maintenance plan to the Reliability Coordinator, Balancing Authority and Transmission Operator
- 7.Revises the generation maintenance plans as requested by the Reliability Coordinator

# Training & Certification Requirements

# Member Generation Operator Requirements

- **Initial Training Requirements**

- PJM Generator Operator Fundamentals (GOF) Course
  - Training is linked to each shared task on the Generator Operator Task List
  - PJM provides training on all shared tasks; member companies provide training on company-specific tasks

# Member Generation Operator Requirements

- **Certification Requirements**

- PJM Generation Certification
  - Certificate good for 3 years
  - May be renewed in 2 ways:
    - Re-test before the prior certificate expires
    - Over the 3 year period, accrue 140 CE hours (of which 30 must be simulation related)

## Member Generation Operator Requirements

- **Continuing Training Requirements**
  - Each operator must complete **54 hours** of CE hours on a rolling three-year basis
- How can you meet these requirements?
  - PJM-provided training (in-person, online via LMS)
  - Company-provided NERC-approved CE training
  - Third-party, NERC-approved CE training (i.e., vendor supplied training)