MIDWEST RELIABILITY ORGANIZATION

Assessing Reliability Performance

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Midwest Reliability Organization

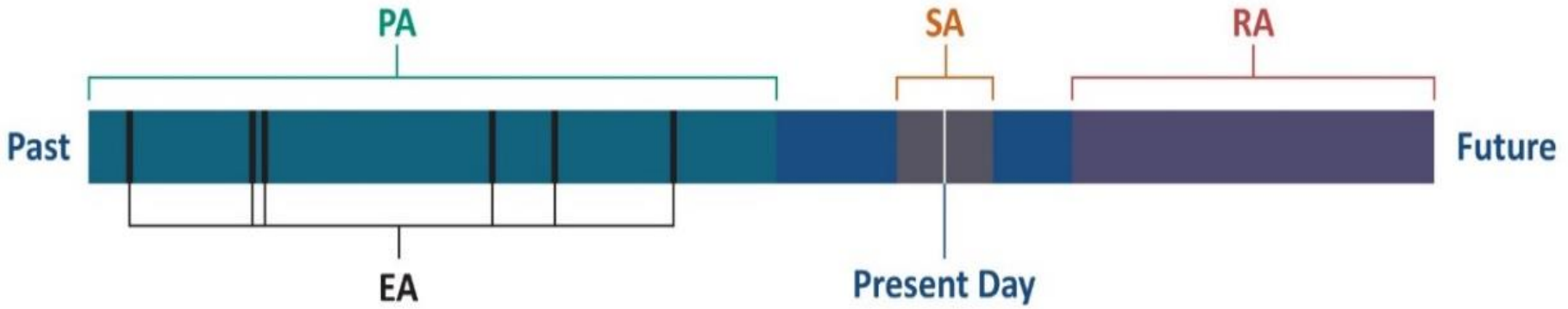
Outline

- **Introduction to RAPA**
- **Introduction to Performance Analysis**
- **Authority source (Rules of Procedure)**
- **Individual Areas:**
  - GADS Conventional
  - GADS Wind
  - TADS
  - MIDAS
- **How PA data is collected and analyzed**
  - Data quality control and reporting oversight
- **How we use PA data at MRO and NERC**
- **PA data groups (PAS, MIDASUG, TADSUG, GADSUG)**

A Regulatory Model That Supports HEROs

- **MRO's RAPA Department is separated from compliance and oversight activities**
  - Provides an independent review of bulk power system events that is separate from compliance oversight
  - Tracks corrective actions to prevent recurrence and provides lessons learned to industry
- **MRO's Compliance, Risk Assessment and Mitigation, and Enforcement Departments implement NERC's CMEP**
  - Provides multiple, independent reviews of a finding to validate noncompliance
  - Work with registered entities on risk assessment and mitigation independent of compliance and enforcement staff

Performance Analysis	Event Analysis	Situational Awareness	Reliability Assessments
			
Focus: past	Focus: specific events	Focus: current events	Focus: future



Performance Analysis

- **Look at past data**
  - System reliability
  - System availability
  - Operational issues
- **Goal to identify**
  - Trends
  - Risks
  - Areas for improvement

Authority to Collect Data

"In accordance with Section 1600 of the North American Electric Reliability Corporation ("NERC") Rules of Procedure, NERC and Regional Entities may request data or information ("Data Request") that is necessary to meet its obligations under section 215 of the Federal Power Act, as authorized by Section 39.2(d) of the Federal Energy Regulatory Commission's ("FERC" or "Commission") regulations."

"Owners, operators, and users of the bulk power system registered on the NERC Compliance Registry shall comply with authorized requests for data and information"

Section 1600 Data Requests

- Demand Response Availaiblity Data System (DADS)
- Generating Availability Data System (GADS)
- GADS Wind (GADS-W)
- Geomagentic Disturbances (GMD)
- Protection System Misoperations (MIDAS)
- Transmission Availability Data System (TADS)

Transmission Availability Data System (TADS)

TADS collects outage data for:

- Bulk Electric System AC Circuits (Overhead and Underground)
- Transmission Transformers (No Generator Step-up Units)
- Bulk Electric System AC/DC Back-to-Back Converters
- Bulk Electric System DC Circuits

Transmission Availability Data System (TADS)

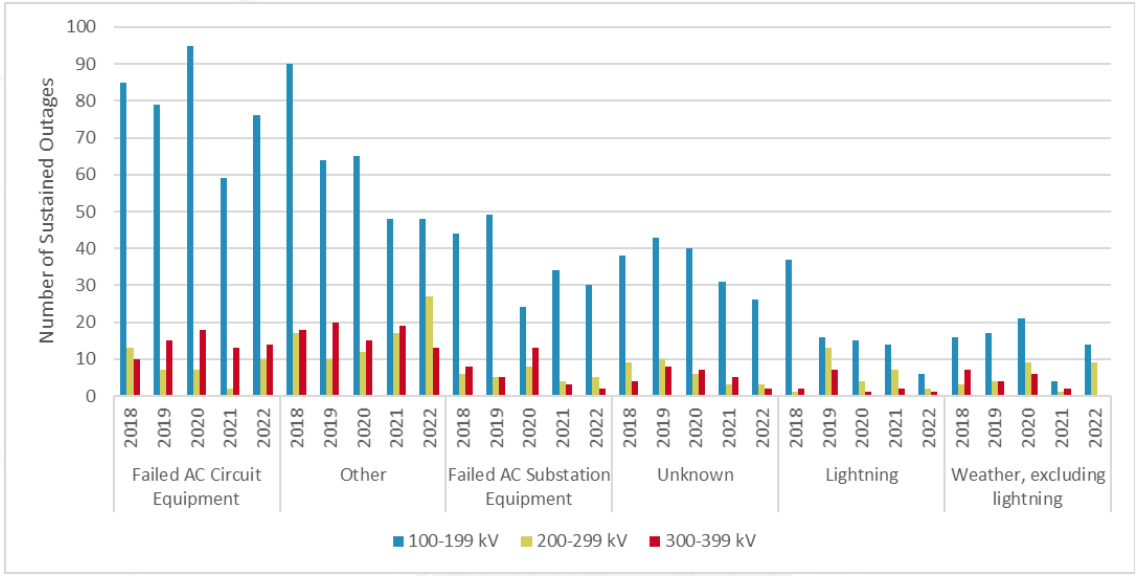
Example data that is collected (automatic):

- Equipment that was outaged
- Outage duration
- Fault type (if fault was present)
- What initiated the outage
- Why was the outage sustained if not automatically restored.
- Multiple equipment outaged for a single event

Transmission Availability Data System (TADS)

FAC-003-4 (Vegetation Management):

"To maintain a reliable electric transmission system by using a defense-in-depth strategy to manage vegetation located on transmission rights of way (ROW) and minimize encroachments from vegetation located adjacent to the ROW, thus preventing the risk of those vegetation-related outages that could lead to Cascading."



Generation Availability Data System (GADS)

GADS (conventional) collects outage data for:

- Generating units that are 20 MW or larger

GADS (wind) collects outage data for:

- Wind plants with total capacity >= 75 MW

GADS (solar) coming 2024?

Generation Availability Data System (GADS)

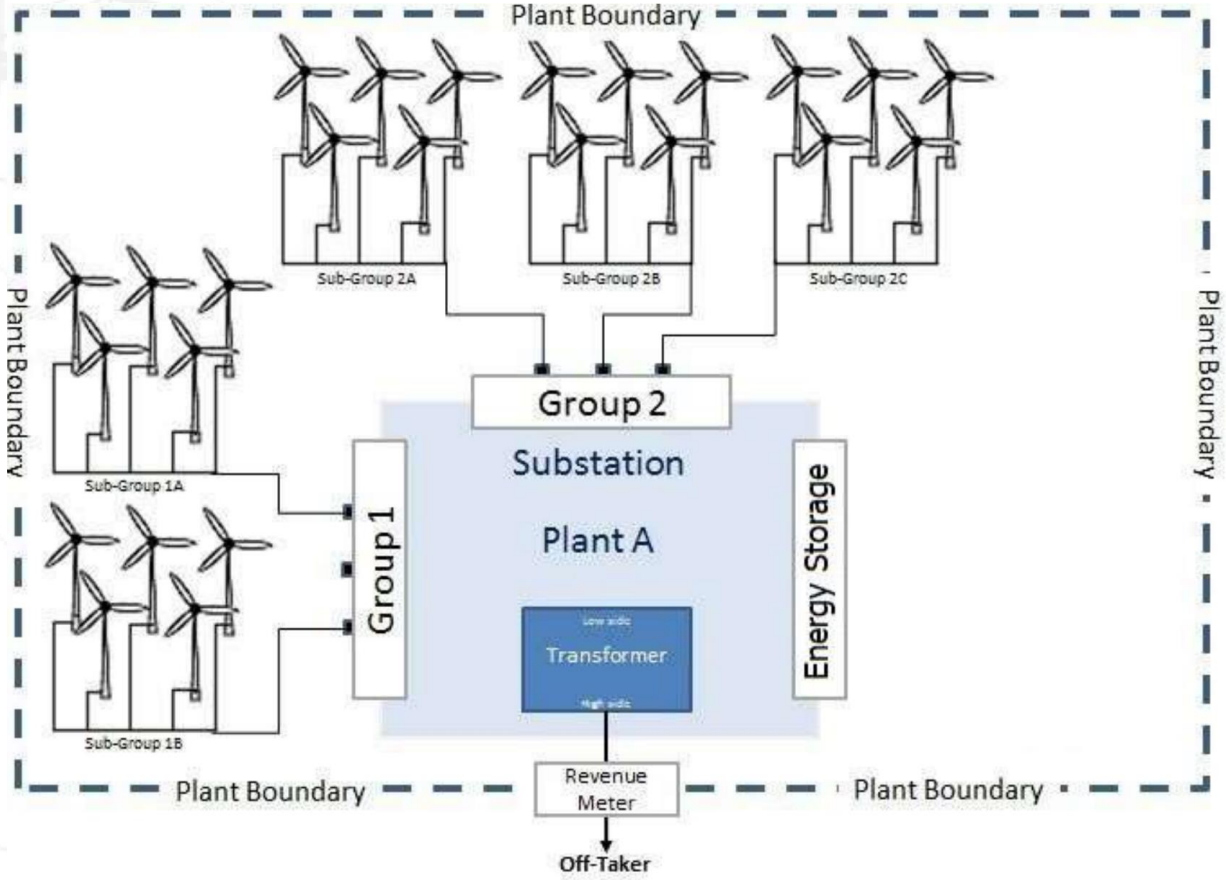
GADS (conventional) collects data on:

- Event – change in status or capability
- Performance – monthly unit operational performance
- Design – unit description

Generation Availability Data System (GADS)

GADS (wind) collects data on:

- Outages – reason for component outages
- Performance – monthly plant operational performance
- Configuration information – sub-group description



Generation Availability Data System (GADS)

Misoperation Information Data System (MIDAS)

MIDAS collects:

- Protection system misoperation data
- Protection system operation counts

Misoperation Information Data System (MIDAS)

Example data that is collected:

- **Protection system operation counts**
- **Protection system misoperation data**
  - Equipment removed
  - Fault type (if applicable)
  - Information on protection scheme
  - Cause of the misoperation
  - Corrective action plan

Misoperation Information Data System (MIDAS)

MIDAS data is reviewed quarterly by the MRO Protective Relay Subgroup (PRS)

- Key metric is misoperation rate (# misoperations/# total operations)
- Look for areas to address in webinars, white papers, and workshops

Data Quality and Control

Data quality and control tools:

- NERC developed portals and templates
- Data Reporting Instructions (DRIs)
- Annual training

GADS, TADS, and MIDAS data is reviewed quarterly by MRO engineers

- MIDAS data is also reviewed quarterly by the MRO Protective Relay Subgroup

Data Use at MRO and NERC

- Providing value in return to those that provide the data is critically important!
- Data is used to support MRO's Seasonal (Summer and Winter) assessments as well as NERC's annual State of Reliability Reports
- Data supports other efforts (webinars, workshops, papers, GWP, RRA, COP inputs, etc.)
- Always looking for new ways to utilize data!

PA Data Groups

- **User groups (GADSUG, TADSUG, MIDASUG)**
  - Recommend new data to collect
  - Maintain Data Reporting Instructions
  - Analyze, assess, and report on data
- **Performance Analysis Subcommittee (PAS)**
  - User groups report to PAS
  - Supports NERC's RAPA program

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Questions?