

Intro to PJM Emergency Procedures

PJM State & Member Training Dept.

Objectives



At the conclusion of this presentation, the student will be able to:

- Describe PJM's overall approach to implementing Emergency Procedures

- **Emergency Procedures Introduction**

- PJM's philosophy
- NERC Energy Emergency Alerts

Agenda



- Voltage Emergencies
 - Low Voltage Alert
 - Heavy Load Voltage Schedule
 - High System voltages
 - Reactive Reserve Checks (RRC's)
- Capacity Emergencies
 - Capacity Shortage Alerts
 - Capacity Shortage Warnings
 - Capacity Shortage Actions
 - Supplementary Status Report (SSR)
 - Capacity Excess Alerts
 - Capacity Excess Warnings
 - Capacity Excess Actions

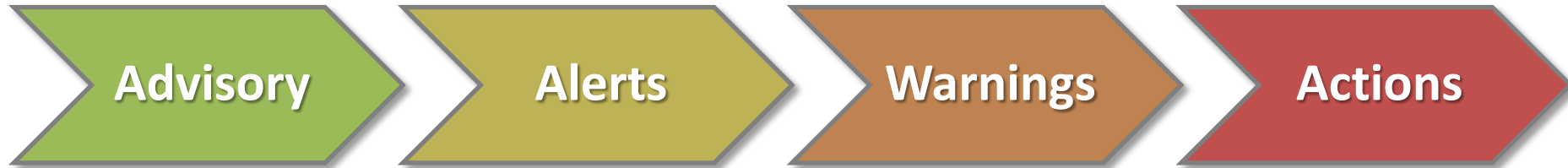
Emergency Procedures

An Emergency in PJM is Defined as:

- An abnormal system condition requiring manual or automatic action to:
 - Ensure the safety of persons or property
 - Prevent loss of firm load, equipment damage or tripping of system elements
 - Maintain system frequency
 - Sustain the reliability of the electric system
- A fuel shortage requiring departure from normal operating procedures
- Abnormal natural events or man-made threats to reliability
 - Including events external to PJM that may require PJM action

Emergency Procedures Introduction

- 4 levels of emergency procedures:



- Most Advisories, Alerts, Warnings and Actions are communicated via:
 - PJM ALL-CALL
 - Posted to various PJM websites
- Advisories and Alerts are issued in advance of the operating day
- Warnings and Actions are issued during the operating day

Emergency Procedures

PJM is Responsible for:

- Declaring the existence of an Emergency
 - Directing the operations of the PJM Members as necessary to manage, alleviate, or end an Emergency
- Transferring energy on the PJM Members' behalf to resolve an Emergency
- Executing agreements with other Control Areas interconnected with the PJM RTO for the mutual provision of service to meet an Emergency

Emergency Procedures

- The PJM dispatcher has the flexibility to:
 - Implement emergency procedures in whatever order is required
 - Exit the emergency procedures in a different order than they are implemented when necessary
- PJM members are expected to implement all emergency procedures immediately

Emergency Procedures

Implementation of Emergency Procedures

- During unconstrained operations:
 - Implemented jointly across all PJM Control Zones, with the exception of Manual Load Dump
 - Manual Load Dump
 - Capacity deficient zone sheds load
 - If all zones are deficient, load shed is implemented proportionally based on level of shortage
- Transmission constraints (common during times of Emergencies):
 - May require implementation on a Control Zone basis

NERC Energy Emergency Alerts (EEAs)

- Alerts issued by Reliability Coordinator (RC) to ensure that all RCs understand potential and actual energy emergencies
 - Provides common terminology to use when explaining energy emergencies to each other
- Issued for capacity and energy shortages
 - Issued via the Reliability Coordinators Information System (RCIS)
- Three Levels
 - Levels may be declared in whatever order necessary, no need to proceed sequentially

NERC Energy Emergency Alerts (EEAs)

- **EEA Level 1 – All Available Resources in Use**
 - Issued when a Control Area “foresees or is experiencing conditions where all available resources are committed”
 - Concern about being able to sustain required Operating Reserves
- When does PJM issue?
 - Maximum Generation Emergency Alert

NERC Energy Emergency Alerts (EEAs)

- **EEA Level 2 – Load Management Procedures in Effect**

- Issued when a Control Area “foresees or has implemented procedures up to but excluding interruption of firm load commitments”

- Public Appeals, Voltage Reduction, Load Management, Interruption of Non-firm contracts

- When does PJM issue?

- Emergency Mandatory Load Management Reductions Action, a Voltage Reduction Action, or a Deploy All Resources Action (whichever issued first)

NERC Energy Emergency Alerts (EEAs)

- **EEA Level 3 – Firm Load Interruption Imminent or In Progress**
 - Issued when a Control Area “foresees or has implemented firm load obligation interruption”
 - Prior to declaring:
 - All generation on-line, regardless of cost
 - All purchases made, regardless of cost
 - All non-firm sales recalled
 - All contractually interruptible load curtailed
- When does PJM issue?
 - Manual Load Dump Action

Questions?

PJM Client Management & Services

Telephone: (610) 666-8980

Toll Free Telephone: (866) 400-8980

Website: www.pjm.com

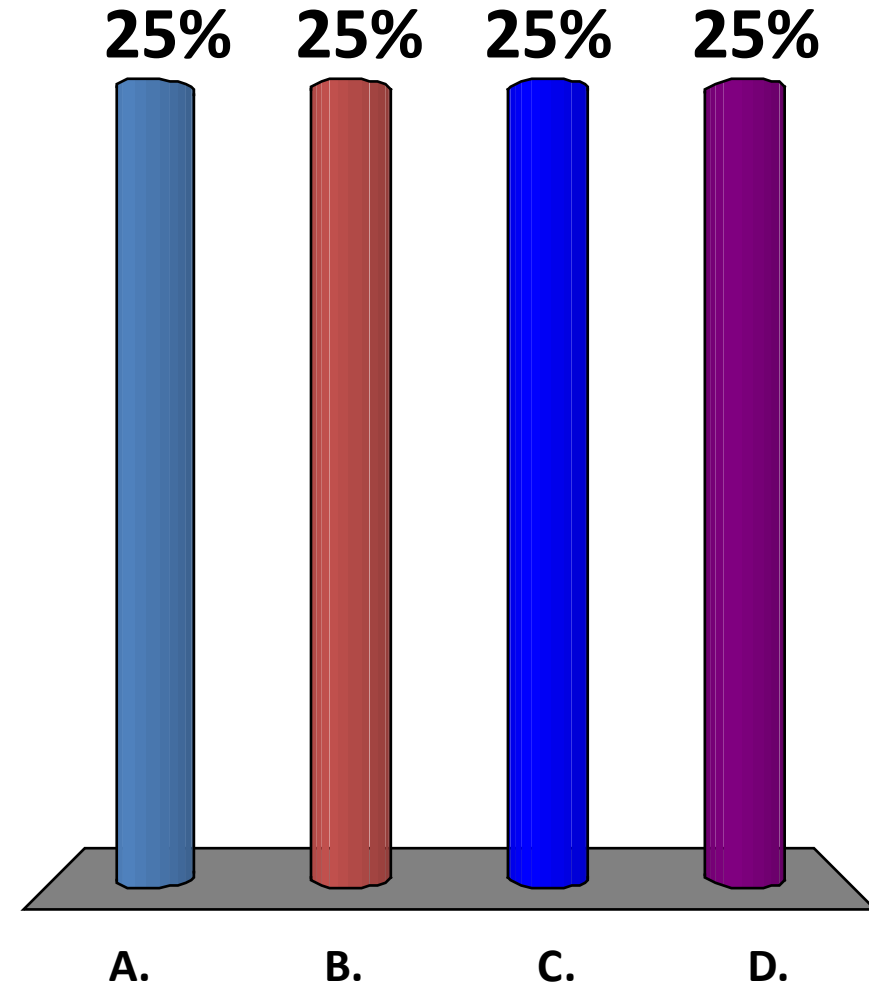


The Member Community is PJM's self-service portal for members to search for answers to their questions or to track and/or open cases with Client Management & Services

What type of Emergency Procedure is issued in advance of the operating day?

- ✓ A. Alert
- B. Warning
- C. Declaration
- D. Action

Response Counter



Energy Emergency Alerts (EEAs) are issued to keep what entities aware of system conditions?

- A. Transmission Operators
- B. Generation Operators
- ✓ C. Reliability Coordinators
- D. NERC

Response Counter

