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
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:
  - Advisory
  - Alerts
  - Warnings
  - Actions

• 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

25% 25% 25% 25%