Power System and Operational Planning

System and Operational Description
Maintenance/Repair
Outage Planning
Emergency Operations

Presented to the visitors from the National Electric Power Corporation of Jordan
May 4, 2009

Arizona Public Service Company
System and Operational Description

• Service Territory
  – 11 counties
  – 1.1 million consumers
  – Approx 35,000 square miles
  – 54 generating units
  – 411 substations
  – 5,234 transmission line miles
  – 28,022 distribution line miles
System and Operational Description

• Operations Description
  – 18 Transmission System Operators
    • 5 work teams, 5 week rotation
  – 4 Outage Coordinators
  – 1 Support Tech
  – 12 Generation/Scheduling System Operators
    • 5 work teams, 5 week rotation
  – 4 Preschedulers
System and Operational Description

• Operations Description
  – APS EHV system and 69 kV system jurisdiction
  – Coordination with intra company distribution operations centers
  – Clearance/Safety coordination with neighboring utilities
  – Clearance/Safety coordination with Construction and Maintenance work teams
Maintenance/Repair Description

• Outage Planning
  – Outage coordinators coordination with construction planners/crews
  – Maintenance work routed through coordinators for inter and intra company affect
  – Long range outage plan communication to WECC reliability coordination center
  – Updates as time slides forward
Maintenance/Repair Description

• Questions?
Emergency Operations

• Weather related outages
  – “War Room” activated
    • Outline areas affected
    • Communicate with media/regulators
    • Updates from Energy Control Center
  – Construction/Maintenance crews call out
  – Community  APS leadership in contact with local public safety and government
  – Executive Management
Emergency Operations

• Equipment outages
  – “War Room” may be activated
    • Outline areas affected
    • Communicate with media/regulators
    • Updates from Energy Control Center
  – Construction/Maintenance crews call out
  – Operational Engineers review for any solutions outside of existing studies
  – Generation redispatch/Transmission resets
Emergency Operations

• Questions?
Operational Reliability and Stability

• Operations, Controls, Rules and Procedures
  – Continual monitoring of 2 major paths within WECC
  – Continual monitoring APS facilities to ensure within Operating Transfer Capability
  – This is done through the Energy Management System and the System Operators
Operational Reliability and Stability

• Operations, Controls, Rules and Procedures
  – Clearance (safety point) issue is from ECC System Operator to field personnel
  – Not returned until equipment is ready to energized
  – Three legged communications-State, Repeat back, Acknowledge
Operational Reliability and Stability

• Training and Tools
  – Operator simulator addition to EMS
  – NERC Certification training
  – WECC Operations training
  – System Dynamic training to supplement continuing education for certification
  – Transmission Operator step level responsibility (12kv, 69kv, EHV) – 3 yr process
Operational Reliability and Stability

• Training and Tools
  – Generally Transmission function only, not generation
  – Scheduling and Generation System Operator 6 month process, not transmission function capable
Operational Reliability and Stability

- Questions?