IEA assessment framework for emergency response reviews

Cuauhtemoc Lopez-Bassols (consultant)
Content

1. Background

2. Assessment framework: oil and gas

3. Assessment framework: electricity

4. Assessment framework: data
BACKGROUND
Background

• IEA conducts Emergency Response Reviews (ERR) of its member countries on a 5-year cycle.

• ERRs form the basis of Emergency Response Assessments (conducted on non-member countries).

• ERRs assess member country’s emergency response capabilities to deal with sudden supply shocks (oil and gas) and electricity security.

• ERRs initially just oil, designed to test countries’ ability to participate in collective actions, have progressively evolved to incorporate gas and electricity.

• ERRs, although led by IEA Secretariat, are peer-reviews.
Background: Assessment framework

- ERR Questionnaire consists of 5 sections:
  - Recent Developments
  - Oil
  - Natural Gas
  - Electricity
  - Data
ASSESSMENT FRAMEWORK: OIL AND GAS
Assessment framework: oil and gas

- Oil/ gas market
  - Supply/demand outlook
  - Import dependency
  - Oil market structure

- Oil/gas infrastructure
  - Ports
  - Pipelines
  - Storage
  - Refining for oil
Assessment framework: oil and gas

- Oil/Gas Emergency Policy
  - Energy policy and security of supply/ emergency response
  - NESO structure/ Decision-making in an emergency
  - Legal basis

- Oil and gas Stockholding System
  - Stockholding regime
  - Monitoring and penalties
  - Bilateral stockholding/ Ticket agreements
  - Emergency drawdown of oil/gas stocks

- Oil demand restraint and other measures for gas
ASSESSMENT FRAMEWORK: ELECTRICITY
Assessment framework: electricity

• Ability of power system to maintain reliable power supplies in real-time response to:
  - unexpected shocks
  - sudden disruptions
    - Loss of largest generation
    - Loss of largest network components
  - rapid changes in aggregate, load & fuel supply conditions
    - Variable renewable energy
    - Distributed generation
Transmission infrastructure resilience

- levels of spare capacity on transmission lines and international interconnectors
- levels of redundancy in the transmission network (i.e. the ability of the TSO to reroute electricity flows in the event of an outage on a transmission line or substation transformer)
- spare domestic generation capacity or import capacity
- level of interconnectedness with adjacent electricity networks
- bottlenecks in the domestic transmission (or distribution) network that could hinder the ability of the TSO to use spare generation capacity/ increase power flows to particular regions during an emergency
Governance and regulatory arrangements

• Roles, responsibilities and accountabilities for power system security should be clearly allocated to specific entities

• Accountability for power system security should be aligned with functional responsibilities. Usually the TSO is ultimately accountable for power system security – a reality that should be enshrined in regulation or statute

• Regulatory institutions should have the necessary resourcing, technical capacity, objectivity and access to timely, relevant and accurate information to effectively monitor and enforce the rules

• Coordination and communication
Power system security

- spare generation capacity (including “spinning” reserves).
- interruptible contracts for demand response purposes (usually with large industrial consumers);
- load shedding protocols (automatic and manual).
- automatic “tripping” protocols
- “black start” services

• Situational awareness
  - SCADA systems
ASSESSMENT FRAMEWORK: DATA
Assessment framework: data

- **Data Collection Framework**
  - Oil data collection framework
  - Natural gas data collection framework
  - Electricity data collection framework

- **Data Collection Process**
  - Normal monthly oil data collection process
  - Normal monthly natural gas data collection process
Assessment framework: data

- Reporting Obligations
  - Reporting obligation on industry for oil
  - Reporting obligation on industry for natural gas

- Quality
  - Data Quality

- Emergency Data Collection
  - Emergency oil data collection
  - Emergency natural gas data collection
  - Emergency electricity data collection