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## **Kazakhstan: Power Sector Reform**

Organization and Implementation of Power POOLs

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**TOPICS**

- ▶ **Organization of a Power POOL**
- ▶ Membership Agreement
- ▶ Market Rules
- ▶ Other Agreements

### **Organization of a Power POOL**

- ▶ Stakeholders
- ▶ Licensing Arrangements
- ▶ Technical Arrangements
- ▶ Operating Documents

### **Organization of a Power POOL-Stakeholders**

- ▶ Generating Companies
- ▶ Grid Company (ies)
- ▶ Distribution Companies
- ▶ POOL
- ▶ Customers

**Organization of a Power POOL-Licensing Arrangements**

- ▶ Generators
  - Generation License
  - Independent Electricity Supply License
  
- ▶ Grid Company (ies)
  - High Voltage Network Operators License
  
- ▶ POOL
  - POOL License
  
- ▶ Regional Distribution Companies
  - Generation License (if applicable)
  - Low Voltage Network Operators License
  - Local Electricity Supply License
  - Independent Electricity Supply License
  
- ▶ Potential Independent Electricity Suppliers
  - Independent Electricity Supply License

**Role of POOL is an Expansion of Role of Grid Company**

Role of a Grid Company

- ▶ System Operation
- ▶ System Maintenance
- ▶ Dispatch
- ▶ Ancillary Services
- ▶ System Planning-High Voltage Network Additions

Role of a POOL

- ▶ All of the Above, plus
- ▶ Contracting With a Grid Company for Transmission
- ▶ Principal in POOL Transactions
- ▶ System Planning-Capacity Additions
- ▶ Settlement System

### **POOL License**

- ▶ This license allows the licensee to carry out the activities of
  - Grid controller
  - High Voltage network planner and procurer
  - Power and electric resource procurer
  - Ancillary services procurer
  - Settlement system administrator
  
- ▶ It requires the licensee to
  - Plan high voltage system and dispatch generation at least cost
  - Operate the wholesale electricity market
  - Schedule generation to match forecast demand
  - Arrange for development, maintenance, and operation of efficient high voltage system

**Organization of a Power POOL-Technical Arrangement**

- ▶ Purpose
- ▶ Scope
- ▶ Role and responsibilities of a POOL

### **Organization of a Power POOL- Technical Arrangements**

#### Purpose

- ▶ To satisfy market rules
- ▶ To provide transparent and reproducible technical procedures
- ▶ To satisfy technical conditions of POOL licensing
- ▶ To set technical standards required by market members

### **Organization of a Power POOL-Technical Arrangements**

#### Scope

- ▶ Unit commitment, scheduling, and dispatch
- ▶ System operations
- ▶ Quality of supply
- ▶ Connection standards
- ▶ Operational metering standards

### **Organization of a Power POOL-Technical Arrangements**

#### Role and responsibilities of a POOL

- ▶ To review/update technical procedures and standards
- ▶ To seek approval for revisions from market member and State Regulatory Commission
- ▶ To ensure compliance with license conditions and all relevant external standards and procedures

## **Organization of a Power POOL-Operating Documents**

### Commercial Documents

- ▶ Document containing members' agreement
- ▶ Documentation of market rules
- ▶ POOL charter

### Technical Documents

- ▶ Documentation of system operating guidelines
- ▶ Documentation of high voltage maintenance guidelines

### Regulatory Documents

- ▶ Licenses

## TOPICS

- ▶ Organization of a Power POOL
- ▶ **Membership Agreement**
- ▶ Market Rules
- ▶ Other Agreements

## **Membership Agreements**

- ▶ Key Features
- ▶ Requirements
- ▶ Rights and Obligations of Market Members

### **Membership Agreements-Key Features**

- ▶ Multilateral agreement among all market members
- ▶ Commits signatories to trade through the POOL
- ▶ Governs operation of market rules and processes and the changes to them
- ▶ Contains rules for sharing liability for default among market members

### **Membership Agreements - Requirements**

- ▶ Membership compulsory for license holders
  - Avoid possibility of free riders
  - Voluntary for entities exempt from licensing
  
- ▶ Agreement is multilateral
  - Changes must be agreed to by majority
  - Each part bound to all others by contract
  - Implications for liability and default

### **Membership Agreements-Rights and Obligations of Market Members**

#### Rights

- ▶ Generators-to sell energy at POOL prices
- ▶ Suppliers-to buy energy at POOL prices
- ▶ To vote on changes to arrangements and other POOL matters
- ▶ To appeal to State Regulatory Commission

#### Obligations

- ▶ To abide by market rules
- ▶ Not to trade outside POOL unless exempted
- ▶ To make security deposits

## TOPICS

- ▶ Organization of a Power POOL
- ▶ Membership Agreement
- ▶ **Market Rules**
- ▶ Other Agreements

### **Market Rules**

- ▶ Bidding by Generating Plants
- ▶ Calculation of POOL Price
- ▶ Capacity Charges
- ▶ Collection of Metered Data
- ▶ Ancillary Services
- ▶ Settlement

### **Market Rules- Bidding by Generating Plant**

- ▶ Frequency of Bidding
- ▶ Bid Price
- ▶ Maximum Availability

### **Market Rules-Calculation of POOL Price**

- ▶ Based on satisfying last unit of demand
- ▶ May or may not be location specific
- ▶ Information transparent-encourages short-term trades
- ▶ Tend toward competitive price

### **Market Rules-Capacity Charges**

- ▶ Capacity charge contribution to generator's fixed costs
- ▶ Capacity constraint may appear in either generation or transmission
- ▶ POOL mechanism increases the role of market forces in long-term decisions about building generating capacity

### **Market Rules-Collection of Metered Data**

- ▶ Initial calculations based on operational (telemetered) data
- ▶ Generation of each block integrated for each settlement period
- ▶ Demand metering correspondingly integrated
- ▶ Adjustments made for low voltage losses and wrongly located meters
- ▶ Transmission losses measured on difference between generation and demand

### **Market Rules-Ancillary Services**

#### **Definition Services required to control system reliability**

- ▶ Reactive power
- ▶ Frequency control
- ▶ Black start
- ▶ Fast start
- ▶ Stand-by reserve

#### **Requirements**

- ▶ Generators have obligation to supply ancillary services
- ▶ Services will be subject to contract between POOL and generators
- ▶ Penalties for non-provision

**Market Rules -Settlement**

- ▶ Supplier payments
- ▶ Generator payment by settlement period with monthly reconciliation
- ▶ Allow for barter settlement
- ▶ POOL plays administrative role

## TOPICS

- ▶ Organization of a Power POOL
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- ▶ Market Rules
- ▶ **Other Agreements**

### **Other Agreements**

- ▶ High voltage service agreements
  - Bilateral agreement for transmission services between the POOL and the transmission company
  - Bilateral agreement for transmission services between a purchaser outside the POOL and the transmission company
  
- ▶ Agreement for purchase and sale of power at specified price
  - Power purchase and sale through POOL
  - Power purchase and sale outside POOL