Lessons from Kazakhstan’s Successful Electricity Reform

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http://bcvia.ksg.harvard.edu/publication.cfm?program=CSP&ctype=event_reports&item_id=105
SCHEME OF ELECTRICITY GRID 1150-500-220-110 KV OF THE REPUBLIC OF KAZAKHSTAN

Ministry of Energy and Mineral Resources of the Republic of Kazakhstan

State Energy Supervision Commission

Strategy, technical policy and licensing

Supervision of activities

Price control

Agency on Regulation of Natural Monopolies

Representation and protection of joint interests of power industry participants

Kazakhstan Electric Power Association

Rendering services on power transmission and dispatching

Main power grid operation and maintenance

System/Technical Operator
"Kazakhstan Electricity Grid Operating Company" OJSC ("KEGOC" OJSC)

9 Branches of "Interregional transmission networks"
Directing Branch "Kazakhstan SPG National Dispatch Centre" with Regional Dispatch Centres

Power Reserves POOL

On-line replacement of failed facilities

Power generation

Market Operator
"Kazakhstan Electric Energy and Electric Power Market Operator" CJSC (KOREM)

Commercial dispatching, spot trading

Eligible industrial consumers

Regional Electricity Grid Companies (REGC)

Electric power sale and distribution

Retail consumers

Construction and installation organisations (JSC)

Specialised maintenance and repair enterprises (JSC)

Specialised research institutes (JSC)

Legends:
- Day-to-day management
- Contractual relationship
- Other relationship
- Power market participants
Scheme of relationships on the wholesale electricity market of the Republic of Kazakhstan

Ministry of Energy and Mineral Resources of the Republic of Kazakhstan

KEGOC
System/Technical operator – owner of the main transmission grid
- power transmission
- centralized dispatch control

KOREM
Market operator
- Centralized spot trading

Regulatory agency

Reserves POOL
- On-line replacement of failed facilities

Physical deliveries of electric power

Electricity sellers
- Big power plants in main transmission grid
- Industrial power plants
- Combined power plants in REGCs
- Power systems of neighboring countries

Contractual relationships

Electricity buyers
- Eligible customers
- Traders

Regional Electricity Grid Companies (REGC)
Participants of the Wholesale Electricity Market of Kazakhstan

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>a) Wholesale sellers of electricity</td>
<td>1) Power plants in Kazakhstan having surplus electric power for sale on the wholesale market;</td>
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<tr>
<td></td>
<td>2) Power systems of neighboring countries;</td>
</tr>
<tr>
<td>b) Wholesale buyers – resellers</td>
<td>1) Regional Electricity Grid Companies (REGC) - owners or operators of regional distribution grids;</td>
</tr>
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<td></td>
<td>2) Power supplying companies – owners of distribution grids;</td>
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<td></td>
<td>3) Trading intermediary companies (traders) – legal entities that do not own and lease electricity distribution grids;</td>
</tr>
<tr>
<td>c) Wholesale buyers – consumers</td>
<td>1) Wholesale consumers – enterprises with average daily power consumption not less than 5MW.</td>
</tr>
<tr>
<td></td>
<td>2) Power systems of neighboring countries importing electric power from the Wholesale Electricity Market (WEM) of Kazakhstan</td>
</tr>
<tr>
<td>d) State Control and Regulation</td>
<td>1) Ministry of Energy and Mineral Resources of the Republic of Kazakhstan;</td>
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<tr>
<td></td>
<td>2) State regulating authority – Agency on Regulation of Natural Monopolies;</td>
</tr>
<tr>
<td>e) Organizations of the market infrastructure</td>
<td>1) Market Operator;</td>
</tr>
<tr>
<td></td>
<td>2) System/Technical Operator;</td>
</tr>
<tr>
<td></td>
<td>3) Electric power reserves POOL.</td>
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</tbody>
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Changes of the prices for the electric power for the period 1990-2002 years,

cent/kwh
Advanced model of Kazakhstan competitive wholesale electricity market

Bilateral forward market (90% of total volume of electricity sales)

Spot market on a “day ahead” basis

Real time balancing market for intra-day physical and financial balance settlement

Note: Mostly available features of the competitive electricity market:
- Market based on forward bilateral contracts for electricity purchase and sale (scheduled dispatching), supplemented with financial contract trade (futures)
- Spot market of available power exchange trade on a “day ahead” basis
- Real time balancing market, controlled by System/Technical Operator
- Power reserves market for System/Technical Operator to purchase operating power reserves
Exchange spot trade of available power hourly volumes on a “day ahead” basis