Recent Regulatory Developments in Turkish Electricity Market

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Outline

- EMRA
- Electricity Market Reform
- Market Structure and Figures
- Targets in Electricity Supply
- Interconnections, financial derivatives, renewable energy
- New Electricity Market Law Draft
- Wrap – Up
Energy Market Regulatory Authority (EMRA)

- Sole regulator of Electricity, Gas, Petroleum and LPG markets,
- Autonomous authority
- Monitors, supervises and audits markets & market players
- Approves tariffs
- Main objectives are to provide;
  - Financially viable, stable and competitive energy market
  - Sustainable energy at good quality and low cost, in a reliable and environment friendly manner
Market Structure

- **EÜAŞ**
- **BO-BOT-TOR**
- **IPPs**
- **Autoproducers**

**TETAŞ**
- Wholesale Companies (Private)

**TEİAŞ**
- (Transmission, Market & System Operation)

**Distribution & Retail Sale Companies**

- Captive Customers
- Eligible Customers

**Balancing and Settlement Mechanism**

- Import
- Export

- Market of *bilateral contracts* complemented by a *power pool*
- 25 MWh/year *eligibility threshold* for 2012 (market opening: 78%)
- *Retail unbundling* in 2013

**Generators**

**Wholesalers**

**System/Market Operation**

**Distributors/Retailers**

**Consumers**
Balancing & Settlement Mechanism

First Phase
- Balancing Mechanism
- Monthly 3 Periods Settlement

Second Phase
- Day Ahead Planning
- Balancing Power Market
- Hourly Settlement

Final Phase
- Day Ahead Market
- Balancing Power Market
- Hourly Settlement
- Demand Side Participation
- Enables Market Splitting

Aug 2006 – Nov 2009
Dec 2009 – Dec 2011
Dec 2011 – …..

Day Ahead Market provides:
- Opportunity for the market participants to purchase/sell energy for the following day in addition to their bilateral agreements
- Balanced system to the system operator for the following day

Balancing Power Market is used for real-time balancing of demand and supply
Market Figures

- Installed Capacity: 53.6 GW
  - Renewable: 36%
  - Thermal: 64%

- Consumption (2011): 229.3 TWh
- Generation (2011): 228.4 TWh
  - Renewable: 26%
  - Thermal: 74%

- Peak Load (2011): 36.122 MW

### Installed Capacity (as of March 2012)

- 17359.3, 33%
- 1792.7, 3%
- 117.4, 0%
- 114.2, 0%
- 34179.1, 64%

### RES-E Capacity (MW)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>364</td>
</tr>
<tr>
<td>2002</td>
<td>792</td>
</tr>
<tr>
<td>2003</td>
<td>1,320</td>
</tr>
<tr>
<td>2004</td>
<td>1,729</td>
</tr>
<tr>
<td>2005</td>
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<td>2009</td>
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<tr>
<td>2010</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
</tr>
</tbody>
</table>

### Wind Capacity (MW)

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>364</td>
<td>792</td>
<td>1,320</td>
<td>1,729</td>
</tr>
</tbody>
</table>

### Hydro Capacity (MW)

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13,829</td>
<td>14,553</td>
<td>15,831</td>
<td>17,137</td>
</tr>
</tbody>
</table>
2023 Targets in Electricity Supply

- Ensure security of supply
- Keep the costs & prices at a level suitable to support economical growth
- Decrease the environmental effects to the lowest possible level
- Exploitation of known lignite and charcoal reserves
- Decreasing share of gas in generation mix
- Introduction of nuclear energy
- Achieving 30% share for renewables in generation mix
  - Full utilization of economically and technically feasible hydroelectric potential
  - Reaching 20,000 MW wind capacity
  - Commissioning all of geothermal potential
  - Utilization of solar and other renewable sources
The parallel operation with ENTSO-E has increased the quality and security electricity supply through series of required improvements in the system, and is foreseen to eventually provide full-access to the European Electricity Market.
## TIME TABLE

<table>
<thead>
<tr>
<th>Process</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isolated test at Maximum Load Conditions</td>
<td><strong>11-25 January 2010</strong>&lt;br&gt;Has been successfully completed.</td>
</tr>
<tr>
<td>Isolated test for Minimum Load Conditions</td>
<td><strong>22 March – 05 April 2010</strong>&lt;br&gt;Has been successfully completed.</td>
</tr>
<tr>
<td>Trial Parallel Operation</td>
<td>• <strong>Stabilization Period (No exchange)</strong>&lt;br&gt;18 September 2010</td>
</tr>
<tr>
<td></td>
<td>• <strong>Non-commercial exchange</strong>&lt;br&gt;21 February 2011</td>
</tr>
<tr>
<td></td>
<td>• <strong>Commercial exchange (Limited)</strong>&lt;br&gt;1 June 2011&lt;br&gt;Planned to be completed by fall 2012</td>
</tr>
</tbody>
</table>
Objectives:
- Trading future electricity prices
- Electricity price risk management
- Reflection of expectations in future electricity prices
- A benchmark for electricity prices

Contract Specifications:
- Underlying Asset: Arithmetic average of the Day Ahead Market Prices announced by TSO for each hour in the contract month.
- Price Quotation: 1 MWh of electricity shall be quoted significant to two decimals.
- Daily Price Limit: ± 10% of base price.
- Contract Months: All calendar months.
- Settlement Method: Cash settlement.
- Last Settlement Price: Arithmetic average of the Day Ahead Market Prices announced by TSO for each hour in the contract month.
- Position Limits: Absolute position limit is 2000 and percentage position limit is 10%.
- Initial Margin: TRY 12,000
- Maintenance Margin: 75% of the initial margin.
<table>
<thead>
<tr>
<th>Incentive</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Licensing fee</td>
<td>▪ Only 1% of the regular licensing fee is paid.</td>
</tr>
<tr>
<td></td>
<td>▪ Exemption from the annual license fee for first 8 years</td>
</tr>
<tr>
<td>Connection to the grid</td>
<td>▪ Priority by TEIAS and the distribution companies</td>
</tr>
<tr>
<td></td>
<td>▪ 85% reduction in system usage fees for 5 years (all plants to be commissioned prior to 31/12/2015 – extension possible)</td>
</tr>
<tr>
<td>Company establishment and licensing exemption</td>
<td>▪ For the generators with a max capacity of 500 kW</td>
</tr>
<tr>
<td>Purchase obligation</td>
<td>▪ All of the suppliers have to procure renewable power in proportion with their share in total supply</td>
</tr>
<tr>
<td>Feed-in tariff</td>
<td>▪ For 10 years (all plants to be commissioned prior to 31/12/2015 – extension possible)</td>
</tr>
<tr>
<td></td>
<td>▪ Different prices for each resource (also for domestically manufactured equipments)</td>
</tr>
<tr>
<td>Fees on land-use for PPs to be commissioned prior to 31/12/2015 (extension possible)</td>
<td>▪ If the property in use is in possession of the Treasury, for first 10 years of operation, 85% deduction is applied to fees related to rent, right of access, and usage permission.</td>
</tr>
<tr>
<td></td>
<td>▪ 85% deduction is applied to fees related to transportation and transmission infrastructure investments.</td>
</tr>
<tr>
<td></td>
<td>▪ Exemption from the special fees like contribution to the development of the woodland villages.</td>
</tr>
<tr>
<td></td>
<td>▪ Free usage of state-owned estates located within the reservoir of HPPs holding a RES certificate.</td>
</tr>
</tbody>
</table>
Application

Project Assessment

Project Approval

Granting License

RES-E Licensing Procedure

Required documents are published on EMRA’s webpage. All applications must include an initial collateral of “10,000 TRY x capacity MW”.

Project assessment and auction (based on fee/kWh in case of multiple applications) for hydro by DSİ before license application.

When the application phase is completed, the projects is assessed for approval:

- Conditions for grid connection are determined by DSO and/or TSO and approved by EMRA
- Technical assessment of the project is done by YEGM for wind solar.
- If there are multiple applications for the same site and/or connection point (exceeding total available capacity) then TSO makes auctions (based on fee/kWh for wind and solar) and winning bidders are licensed.

If the assessment phase is finalized positively, then the projects is approved and some obligations are determined for being licensed:

- Environmental impact assessment (EIA)
- Contract with TSO if a tender was made
- Increasing the amount of initial collateral (details on EMRA webpage)
- Required amendments in the main status of the company
- Capital increase for the company (to 20% of the total investment for all projects that have been approved) (obligations must be fulfilled within 90 days. If a comprehensive EIA is required then 300 days apply for EIA only)

If the obligations are fulfilled then the project is licensed.
## Renewable Feed-in-Tariffs

<table>
<thead>
<tr>
<th>Plant Type</th>
<th>Prices Applicable (USD ¢/kWh)*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Schedule I **</td>
</tr>
<tr>
<td>a. Hydro</td>
<td>7,3</td>
</tr>
<tr>
<td>b. Wind</td>
<td>7,3</td>
</tr>
<tr>
<td>c. Geothermal</td>
<td>10,5</td>
</tr>
<tr>
<td>d. Biomass (including landfill gas)</td>
<td>13,3</td>
</tr>
<tr>
<td>e. Solar</td>
<td>13,3</td>
</tr>
</tbody>
</table>

* Before Law No: 6094, feed-in tariff was 5 - 5,5 €¢/kWh for all of the renewables (Law No:5346)

** 10 years for plants to be commissioned until 31/12/2015

*** Additional Incentive for Domestic Production - 5 years for plants to be commissioned until 31/12/2015

- Potential beneficiaries apply until 31 October EMRA to be listed in the RESUM portfolio for the next year.
- Mechanism starts in 1st calendar day (exc. 2011) of the next year and lasts for 1 year. So, beneficiaries cannot leave/enter the mechanism until next year.
- Beneficiaries are paid based on the unit prices indicated in Schedule I + applicable portion of Schedule II.
- Financial settlements are done in invoice periods (monthly) by Market Financial Settlement Center (MFSC - market operator). MFSC calculates whole cost of the RESUM portfolio and reflects this cost to the invoices of load serving suppliers in proportion with their share in total consumption. Thus, all consumers goes GREEN!
- 28 generators were in RESUM for Dec. 2011. This number increased to 78 in 2012 implementation.
RES-E generators up to 500 kW capacity, micro-cogenerators and high-efficient cogenerators are exempt from licensing

- EMRA has issued secondary legislation towards proper implementation of the mechanism.

- Distributed generation is encouraged towards better utilization of the sources.

- RES-E generators are integrated to RESUM portfolio and benefit from FITs based on resource type.
Auctions for intersecting (site or connection point) wind energy applications have been completed. Fast wind penetration is expected in the upcoming years.

Solar grid connection capacity was limited to 600 MW until 2014 by law. Accordingly, capacities were announced on a substation basis. Opening of applications is underway.

New license applications of wind or solar energy are required to submit standardized measurement data:
  - Data sets have to cover at least 1-year
New law is expected to make significant changes:

- Combining autoproduction and generation under a common generation license
- Issuance of a temporary license for generation that will cover the pre-construction period (siting, required permits, etc.)
- Authorization of EMRA to extend the scope of licensing exemption (e.g. increasing RES-E limit up to 1 MW from its current level of 0.5 MW)
- Unbundling of market and system operation activities carried out by TSO and establishing an independent market operator
New law is expected to make significant changes (cont):

- Combining retail and wholesale activities under a supplier license
- Opening import/export to generators (also to retailers via the supplier license)
- Retail unbundling is stressed and supplier-of-last-resort is defined
- Price equalization mechanism (i.e. uniform retail price) will end by 2016.
Turkish electricity market is developing fast in terms of both size and liberalization.
Investors are very eager to enter the market as confirmed by the developments in the installed capacity.
Market structure is deepening with new mechanisms.
Utilization of domestic sources, especially renewables, is a strategic goal for energy supply in many aspects.
New Electricity Market Law will make significant changes in the market mechanism.
Thank you for your attention.

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