Role and achievements of EMRC Regarding Renewable Energy in Jordan

Presented by:

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The Law was issued in April 2012

The by-laws and regulations related to RE projects for electricity generation were also issued

(1)- Tax Exemptions By-law

(2)- The Reference Price List which includes the indicative prices for each type of Renewable Source

(3)- Sale of Electrical Energy generated from Small RE Systems (Net Metering – Roof Tops)

(4)- Cost of Connecting RE Facility to Distribution Grid

(5)- Electric Power Wheeling Directives
Jordan Renewable Energy (RE) Policy Targets

**RE, 7%, 2015**
- RE to be contributed in the Primary Energy Mix in 2015

**RE, 10%, 2020**
- RE to be contributed in the Primary Energy Mix in 2020

**RE Schemes**
- Competitive Biddings
- Direct Proposal Submissions
- Energy Net – Metering Applications
- Electric Power Wheeling Applications
- Self-Generation Applications

**Total Targeted Projects by 2020**
- 1200 MW Wind Energy
- 600 MW Solar Energy
- 50 MW Waste-to-Energy
Roles and functions of the Energy & Minerals Regulatory Commission (EMRC) pursuant to RE & EE Law

<table>
<thead>
<tr>
<th>Article (2/A)</th>
<th>ERC shall prepare &amp; Set a Record in cooperation with the relevant authorities for specifying the mechanism of pricing the purchase of electrical power from Renewable Energy Sources.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Article (7/A) (Issuance of Licenses)</td>
<td>ERC shall prepare and issue a generation license from renewable energy sources after completing signing of the project agreements.</td>
</tr>
</tbody>
</table>
| Article (9/B, C) (Issuance of Regulations related to cost of RE Connection) | ERC shall issue new instructions for determining the connection costs of renewable energy facility with the distribution network. 
ERC may waive Renewable Energy Facilities from any provision of the Grid Code or of the Distribution Code where such waiver is necessary, in coordination with the relevant licensees. |
| Article (10/B) (Issuance of Regulations Related to Net Metering Systems) | ERC shall issue new instructions to specify the size and nature of small Renewable Energy Facilities and homes that have Renewable Energy, and the selling price of the generated electrical power to the Bulk Supply Licensees and to the Retail Supply Licensees. |
A. The standard Regulatory Tools that have been prepared by the Electricity Regulatory Commission (EMRC).

- 2 Generation License Procedures for Renewable Generators that would be Connected to the Transmission System and Distribution System
  - (Approved by EMRC Council)

- 2 Standard Generation Licenses for Renewable Generators Connected to the Transmission System and Distribution System
  - (Approved by EMRC Council)

- Standard Transmission Connection Agreements.
  - (STCA – Approved by EMRC Council)
B. The Regulatory Directives that have been Issued by EMRC

1) For small Scale Projects (≤5MW) (Energy Net-Metering):

Regulatory Reference:

<table>
<thead>
<tr>
<th>RE source</th>
<th>Tariff JOD FILS/kWh</th>
<th>Tariff US $ CENTS/kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar Energy</td>
<td>120</td>
<td>17</td>
</tr>
<tr>
<td>Hybrid Systems</td>
<td>95</td>
<td>13.4</td>
</tr>
<tr>
<td>Other sources</td>
<td>85</td>
<td>12</td>
</tr>
</tbody>
</table>

- Any customer can sell the excess of his own small RE System to the electricity network based on the above prices. And if the customer uses Jordanian origin RE systems, he will get a 15% as an incentive to the above mentioned prices.
- The maximum of the overall installed and connected capacity of Renewable Energy Systems to the Low Voltage side of the Distributor’s network shall not exceed (1%) of the maximum electrical load recorded on the network of each Distributor.
- The maximum of the overall installed and connected capacity of Renewable Energy Systems to the Medium Voltage side of the Distributor’s network shall not exceed (1.5%) of the maximum electrical load recorded on the network of each Distributor.
- A 1 & 3-ø (Low Voltage) 3-ø (Medium Voltage) User may install and use Renewable Energy Systems with a capacity not exceeding his average monthly consumption, of the previous year from the date of application for connecting the Renewable Energy Systems.
- The installed capacity of Renewable Energy Systems in a single geographical site shall not exceed (5MW) regardless of the number of applications in such site.
B. The Regulatory Directives that have been Issued by EMRC

2) For Independent RE Generators (Under Direct Proposals and Competitive Tenders)

Regulatory Reference:

- The Reference Pricelist Record for the calculation of Electrical Energy purchase prices from Renewable Energy Sources Issued by the Council of Commissioners of the Council of Commissioners of (EMRC) pursuant to Article (2/A) of the Renewable Energy and Energy Efficiency Law No. (13), for the Year 2012

<table>
<thead>
<tr>
<th>RE source</th>
<th>Tariff JOD FILS/ kWh</th>
<th>Tariff US $ CENTS / kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind Energy</td>
<td>80</td>
<td>11</td>
</tr>
<tr>
<td>Thermal Solar Energy (CSP)</td>
<td>135</td>
<td>19</td>
</tr>
<tr>
<td>PV</td>
<td>100</td>
<td>14</td>
</tr>
<tr>
<td>Bio mass</td>
<td>90</td>
<td>12.7</td>
</tr>
<tr>
<td>Bio gas</td>
<td>60</td>
<td>8.5</td>
</tr>
</tbody>
</table>

- The mentioned Refererence Pricelist Record will be used in order to evaluate the direct proposal for investment in the RE sources.

- The Reference Pricelist Record work as the Feed in Tariff but it is considered as a Ceiling Tariff and developers can compete under this upper limit.

- In case that the winning bidder from direct proposals installs a fully Jordanian origin Renewable Energy Facility, then an extra of (15%) on the tariff that has been submitted in advance, shall be awarded.
B. The Regulatory Directives that have been Issued by EMRC

3) The Allocation of the Costs of Connecting Independent RE Generators – (Under Direct Proposals and Competitive Tenders)

Regulatory Reference:

- **The Distributor** shall be responsible for all costs related to equipments and networks installed at the Distributor side up to the Connection Point with the Renewable Energy Facility.

- **The owner of the Renewable Energy Facility** shall be responsible for all costs related to equipments and networks installed at the owner side up to the Connection Point with the Distributor’s network.

- The **Connection Point** shall be located at the bushing on the high voltage side of the Step up Power Transformer

- The **Metering point** for electrical energy generated by Renewable Energy Facility shall be the Connection Point
B. The Regulatory Directives that have been Issued by ERC

4) The Electric Power Wheeling Directives

- **Electric Power Wheeling Scheme** is a methodology under which electric power generated by Renewable Energy System and delivered over transmission and/or distribution lines and its associated facilities to a specific customer, which may be used to offset the electric power provided by the electrical company to the same customer during a billing period (as Jordan case).

- **This scheme (Jordan Case)** working under the provisions of the directive regulating the wheeling of electric power generated from renewable energy sources for self-consumption and not for saling to others, which issued by (EMRC) dated 14/7/2013 and published in the Official Gazette dated 1/8/2013) Pursuant to Article 7/B/3 and Article 9/B from the General Electricity Law No. 64 of the year 2002 and its amendments.

- **This Approved Directive allows** the customer to install Renewable Energy Systems for electric power generation from Renewable Energy Sources in different location (not the same (allocated) location of the consumer premise that connected with grid) and connect them to the electric grid (Transmission or Distribution).

- **A Customer or Authorised Party by the same customer**:

  May design, procure, and install at its own cost the Renewable Energy System and its associated facilities such as the Export meter and the interconnection facilities to connect the Renewable Energy Plant to electric grid (Transmission or Distribution), and shall be complied with Grid Code or Distribution Code, as appropriate.
4) The Electric Power Wheeling Directives

- The capacity of renewable energy system that to be installed and connected to the electric grid has no technical limitations except of the capability of electric grid (this will be discussed with related electric company).
  - **Generation Capacity ≤ 5 MW** - Does not need for a license.
  - **Generation Capacity > 5MW** - Must apply for a license.

- There will a monthly financial settlement, where;

  1. The total monthly produced energy (sent out Energy) from Renewable energy system (RES) shall be subjected to a physical losses reduction as follow:
     - 2.3% only - if RES connection direct with Transmission network to feed the same customer connected with transmission network;
     - 6% only - if RES connection direct with Distribution network to feed the same customer connected with Distribution network; or
     - 2.3% plus 6% - if RES connection direct with Transmission network to feed the same customer connected with Distribution network;

  2. The total monthly produced energy (sent out Energy) from RES shall be subjected for a wheeling charge as follow:
     - 4.5 f/kWh only - if RES connection direct with Transmission network to feed the same customer connected with transmission network;
     - 7 f/kWh only - if RES connection direct with Distribution network to feed the same customer connected with Distribution network; or
     - 4.5 plus 7 f/kWh - if RES connection direct with Transmission network to feed the same customer connected with Distribution network.
## Renewable Energy – Competitive Biddings

<table>
<thead>
<tr>
<th>Tender</th>
<th>Status</th>
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<tbody>
<tr>
<td>Maan wind project 65-75 MW EPC Basis</td>
<td>Under execution stage Operation by 3Q of 2015 - Expected</td>
</tr>
<tr>
<td>Azraq PV Solar Project 2.3 MW (Atersa) + 3 MW (Enera) EPC basis</td>
<td>Under execution stage Operation by Mid of 2015- Expected</td>
</tr>
</tbody>
</table>
Renewable Energy - Direct Proposal Submissions

1st Round

- Photovoltaic (PV) Projects
- 210MW Under Execution Stage

- Concentrated Solar Power (CSP) Projects
- 2 CSP Projects = 75 MW Request for MOM Extension

- Wind Projects
- 9 Wind Projects = 395 MW
- 4 Applications Under Evaluation Process

- Tafieleh Wind Project
- 117 MW Under Construction stage

2nd Round

- Photovoltaic (PV) Projects
- 45 Applications
- Expected Final Submission: 20/01/2015
Renewable Energy – Energy Net-Metering Applications

Net-Metering Operated Systems
Up to Date

≈ 15 MW

Net-Metering Expected at end of 2015

<table>
<thead>
<tr>
<th>No of Consumers</th>
<th>Capacity (MW)</th>
</tr>
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<tbody>
<tr>
<td>≈ 1000</td>
<td>≈ 30</td>
</tr>
</tbody>
</table>
Thank you