Energy Saving Practices and Enlightenments in State Grid Corporation of China (SGCC)

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1 Drivers to develop Energy Saving Service

2 Energy Saving Practices of SGCC

3 Achievements of SGCC’s Energy Saving Service
1. 1 Electric Demand Side Management Regulations

Issued by NDRC and other 5 authorities in November 2010.

• States that power grid enterprises are the main implementation body of electric demand side management, with the obligation to promote energy saving among electricity consumers clearly.

• Point to the amount of energy saving should be larger than the 0.3% of last year’s total electricity consumption and peak demand.
1.2 Develop Value-added Services

Energy saving services are recognized as the new point of profit growth of SGCC. Returns will continuously increase with the growing of market share of SGCC Energy Service Companies (ESC).

1.3 Advantages of SGCC

- Marketing Advantage
- Technological Advantage
- Capital Advantage
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2 Energy Saving Practices of SGCC

2.1 Energy Saving Service Company (ESCO)

- SGCC established one ESCO at the headquarter level in January 2013. At present, SGCC has found the SGCC ESCO and 27 provincial scale ESCOs.

By the end of Oct. 2015
- **550 new project contracts** signed
- All of SGCC ESCOs and planed to invest **more than 2 billion CNY**
- These projects are expected to make the **revenue** of about **2.8 billion CNY** and a total **energy saving of 4.8 TWh**
2 Energy Saving Practices of SGCC

2.2 ESCO Business Modes

3 business modes. In common, ESCOs offer the investment costs. The profits and the ownership of energy saving projects belong to consumers after the end of contracts.

• **Energy Saving Profits Shared.** ESCOs take a proportion of the profits, as agreed by consumers.

• **Energy Saving Profits Guaranteed.** ESCOs guarantee a certain amount of energy saving. If not achieved, ESCOs compensate consumers. If over-fulfilled, ESCOs share the profits with consumers.

• **Energy Cost Trusted.** The energy cost and maintenance cost are paid based on an agreed settlement price.
Demand response was carried out in Foshan, Jiangsu and Beijing, with the participation of SGCC in the summer of 2015. A subsidy of 100 CNY/kW was granted to the reduced peak hour electric demand by the central government.

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Number of Demand Responders</th>
<th>Reduced Electric Demand/MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 30</td>
<td>Foshan</td>
<td>33 end users, 3 electricity service providers</td>
<td>42</td>
</tr>
<tr>
<td>July 30</td>
<td>Suzhou</td>
<td>24 end users, 5 load integrators</td>
<td>230</td>
</tr>
<tr>
<td>August 4</td>
<td>Jiangsu</td>
<td>513 end users, 8 load integrators</td>
<td>1658</td>
</tr>
<tr>
<td>August 12</td>
<td>Beijing</td>
<td>74 end users, 17 load integrators</td>
<td>70</td>
</tr>
</tbody>
</table>
2.4 Enhance end use energy efficiency (2014)

- **Energy Performance Contracting (EPC)**
- **23,840 GWh** electricity saved
- **18.4 Mt CO\textsubscript{2}** emission reduced

- 248 million smart meters
- 256 million end-users, the electricity consumption information collected automatically. The coverage rate is 68%.
- Energy saving suggestions provided to end-users.
- Training in environmental protection (118 in 2014)
2.5 Energy Saving Service Network

Energy Saving Service Group (ESSG)
• **ESSG members** are electricity consumers who join in voluntarily.
• **ESSG invited members** are advisory consultants, ESCOs and invited electricity consumers.
• **695 ESSGs with 6024 members** (until 2015.10)

2.4 Energy Efficiency Evaluation Organization

**6 energy efficiency evaluation organizations** granted energy audit qualifications, nationally or locally. (until 2015.10)
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3.1 Reduce power line losses (2014)

- Saved electricity energy up to 17.1 TWh
- Equivalent to savings on 5.5 Mt of standard coal consumption
- Reduction of CO2 emission by 13.7 Mt.

- **UHV transmission technology.** (3 UHVAC projects and 4 UHVDC projects)
- **Smart substations**
- **Distribution network reconstruction**

The length of UHV transmission lines in operation and under construction is over 15,000 km. The **annually transmit energy** on these lines is 136.7 TWh, increased by 88%. 
3.2 Promote clean energy substitution (in 2014)

- **13,000** electricity replacement projects (accumulated)
- **50.3 TWh** energy replaced by electricity
- **618** charging and battery swap stations.
- **24,000** EV charging poles

Total facility numbers top the world. The fast charging network of intercity highway has almost been completed.

<table>
<thead>
<tr>
<th>Grid infeed clean energy (TWh)</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emission Reduction by clean energy (Million ton)</td>
<td>447</td>
<td>442.85</td>
<td>552.65</td>
<td>668.29</td>
<td>740</td>
</tr>
<tr>
<td>Number of charging and battery swap stations for electric vehicles</td>
<td>87</td>
<td>243</td>
<td>353</td>
<td>400</td>
<td>618</td>
</tr>
<tr>
<td>Charging poles for electric vehicles</td>
<td>7000</td>
<td>13000</td>
<td>15000</td>
<td>19000</td>
<td>24000</td>
</tr>
</tbody>
</table>
Global Energy Interconnection Map
Thank you for your attention!