Overview of the Russian Electric Power Sector

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of the Russian Energy Agency
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Key Indicators of the Russian Electric Power Sector

- **Installed Capacity (GW)**
  - 2014: 240.3
  - 2015: 243.2
  - Increase: +2.9 (1.2%)

- **Electricity Consumption (TWh)**
  - 2014: 1040.4
  - 2015: 1036.4
  - Decrease: -4.0 (0.4%)

- **Maximum Load (GW)**
  - 2014: 157.7
  - 2015: 150.3
  - Decrease: -7.4 (4.7%)

- **Electricity Production in 2015**: 1049.9 TWh

- **Revenue**: 3 trillion roubles (47.6 bln US$)

- **5th in the global ranking**

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1. China
2. USA
3. India
4. Japan
5. Russia
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Installed capacity exceeded the level of maximum load in 1.29 times in 1990, and in 1.62 times – in 2015 (or by 93 GW)

2015:
Electricity consumption and maximum load are comparable to the levels reached in 1990

Installed capacity exceeded the level achieved in 1990 by 41.8 GW

Total annual hours of thermal plant’s operation
• 1990 г → 5673 hours
• 2015 год → 4136 hours, installed capacity utilization factor - 47.2%

Reasons for growing excess of generation capacity:
• Drastic reduction of electricity consumption while maintaining the existed level of old generation capacities during the period of economic decline in the 1990s
• Changes in the structure of electricity consumption in the period of recovery economic growth
• Low growth rate of electricity consumption, substantial increase in new generating capacities commissioned under the concluded regulated capacity contracts, and lower decommissioning of old inefficient power plants during the post-reform period of 2005-2015
Legal & Regulatory Basis

- **Federal Law №35-ФЗ «About Electric Power Sector»**
- Electricity & Capacity Markets Rules & Procedures
- Tariffs Formation Rules (based on fair return of investments) in the Electric Power Sector

Laws & Regulations on:
- Energy Security
- Entrepreneurship
- Labor
- Competition
- Non-Discriminatory Network & Services Access
- Environmental Protection
Structure of the Russian Electric Power Sector

Power Delivery Infrastructures, System & Market Operators

JSC «System Operator»
- 7 Uniform Dispatch Centers
- 50 Regional Dispatch Centers

JSC «Russian Electric Grids»
- JSC «Federal Grid Company»
- JSC «MOESK»
- JSC «Lenenergo»
- JSC «Янтарьэнерго»
- JSC «Тюменьэнерго»
- JSC «ТРК»
- JSC «МРСК Волги»
- JSC «МРСК Центра и Приволжья»
- JSC «МРСК Юга»
- JSC «МРСК Центра»
- JSC «МРСК Северо-Запада»
- JSC «МРСК Северного Кавказа»

Partnership «Market Council»
- Seller’s Chamber
- Buyer’s Chamber
- Expert’s Chamber
- Infrastructural Organization’s Chamber:
  - JSC “Financial Settlement Center”
  - JSC «Trade Administrator»
  - JSC «System Operator»
  - JSC «Federal Grid Company»

Generation Companies

LLC «Газпром энергохолдинг» (JSC «Мосэнерго», JSC «МОЭК», JSC «ТГК-1», JSC «ОГК-2») 38 GW
- JSC «РусГидро» (51 HPP, 3 PSPP, 3 GTPP) 38,5 GW
- JSC «Росэнергоатом» 25,2 GW (16 NPP)
- JSC «ИНТЕР РАО» 22,9 GW (18 TPP)
- JSC «Т Плюс» 16,2 GW (62 TPP)
- JSC «Юнипро» 4,7 GW (5 TPP)
- JSC «ЭС Востока» 9 GW (40 TPP)
- JSC «Сиб. ГК» 7,1 GW (17 TPP)
- JSC «Фортум» 3,8 GW (8 TPP)
- JSC «Квадра» 3,6 GW (22 TPP)
- JSC «Кузбасэнерго» 2,5 GW (2 TPP)
- JSC «ТГК-11» 1,5 GW (6 TPP)

Guaranteeing Suppliers, Non-regulated Supply Companies

> 300 companies are participating in the wholesale&retail electricity markets (guaranteeing suppliers, non-regulated supply companies)
Market Structure

Retail electricity markets in the regions of the Russian Federation
Since 2005 electricity consumption has increased by 12.1% and reached 1036.4 TWh in the Russian Federation (source of data: Ministry of Energy of RF)
Since 2005 electricity production has increased by 12.2% and reached 1049.9 TWh (source of data: Ministry of Energy of RF)
## Capacity Additions & Investments in 2011-2015

### New Capacity Additions in 2011-2015

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</thead>
<tbody>
<tr>
<td>Total Capacity Additions</td>
<td>4,7</td>
<td>6,3</td>
<td>4,0</td>
<td>7,6</td>
<td>4,9</td>
<td>27,5</td>
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<tr>
<td>incl. added due to regulated capacity obligations (thermal PP)</td>
<td>3,9</td>
<td>3,6</td>
<td>1,9</td>
<td>4,9</td>
<td>2,9</td>
<td>17,2</td>
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### Investments in the Russian Electric Power Sector in 2011–2015

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<tbody>
<tr>
<td>Largest Generation &amp; Electric Network Companies</td>
<td>893,4</td>
<td>851,3</td>
<td>867,0</td>
<td>807,7</td>
<td>646,5</td>
<td>4065,9</td>
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<tr>
<td>Largest Generation Companies</td>
<td>523,7</td>
<td>522,8</td>
<td>522,2</td>
<td>492,5</td>
<td>375,8</td>
<td>2437,0</td>
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<tr>
<td>incl. invested due to regulated capacity obligations (thermal PP)</td>
<td>151,1</td>
<td>172,2</td>
<td>185,9</td>
<td>165,8</td>
<td>96,1</td>
<td>771,1</td>
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In 2013-2015, electricity price growth was rather even for all customer groups - 6-7% per year. The rate of growth was lower the inflation rate (11% in 2014, 13% in 2015).

Electricity prices in US cents are decreasing in the last years due to depreciation of the Russian currency against the U.S. dollar.

High prices for non-industrial electricity customers and roughly equal prices for industrial and residential customers suggest that residential electricity tariffs are still cross-subsidized. By assessments of Ministry of Energy of RF, the level of cross-subsidization in the electric power sector was around 238 billion rubles. This problem is most acute in the regions of the Russian Far East.
## Capacity additions and dismantling capacity in 2016-2022

### Capacity additions in 2016-2022 (mW)

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<tbody>
<tr>
<td>Total Capacity Additions</td>
<td>5671,5</td>
<td>5994,0</td>
<td>4439,6</td>
<td>1713,6</td>
<td>565,0</td>
<td>2453,8</td>
<td>70837,5</td>
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<tr>
<td>Nuclear power</td>
<td>1195,4</td>
<td>2268,8</td>
<td>1195,4</td>
<td>1198,8</td>
<td>1195,4</td>
<td>2453,8</td>
<td>2453,8</td>
<td>8312,2</td>
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<tr>
<td>Hydro power</td>
<td>351,8</td>
<td>11,6</td>
<td>350,2</td>
<td>49,8</td>
<td>49,8</td>
<td>49,8</td>
<td>49,8</td>
<td>763,4</td>
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<tr>
<td>Pumped-storage hydroelectricity</td>
<td>140</td>
<td>420</td>
<td>420</td>
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<td></td>
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<td>980</td>
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<td>Thermal power plant</td>
<td>3589,3</td>
<td>2948,6</td>
<td>2174</td>
<td>195</td>
<td>565</td>
<td></td>
<td></td>
<td>9471,9</td>
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<td>Renewable energy</td>
<td>395</td>
<td>345</td>
<td>300</td>
<td>270</td>
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<td>1310</td>
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### Dismantling capacity in 2016-2022 (mW)

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<tr>
<td>Total dismantling Capacity</td>
<td>1674,1</td>
<td>1383,0</td>
<td>1617,0</td>
<td>300</td>
<td>1000</td>
<td>1000</td>
<td></td>
<td>6974,1</td>
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<tr>
<td>Nuclear power</td>
<td>417</td>
<td></td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
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<td>3417</td>
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<tr>
<td>Thermal power plant</td>
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<td>1383</td>
<td>617</td>
<td>300</td>
<td></td>
<td></td>
<td></td>
<td>3557,1</td>
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New Trends and Proposed Projects

- Grid development for power interchanges Russia-Azerbaijan-Iran
- Development large wind park in Sakhalin Island for supply electricity to Japan
- Development large wind park in the South of Siberia-the North of Kazakhstan to supply electricity for the region of «Silk Roads Project» implementation
- Pilot innovation projects – National technological initiative «Energy Net»
- Implementation of the energy management systems and informational systems in regions of Russia
Thank you for your attention!