The Electric Power System

- Slovenia -

Version 1.0
Basic facts

- **Area:** [20.273 km²](http://www.stat.si/)
- **Population (31.12.2014):** [2,062,874](http://www.stat.si/)
- **Number of electricity consumers (31.12.2014):** [936,883](http://www.stat.si/)
- **Number of TSOs:** 1
  - ELES, d.o.o. ([http://www.eles.si/](http://www.eles.si/))
- **Number of DSOs:** 1 ([www.sodo.si](http://www.sodo.si))
- **Number of regional Distribution companies:** 5
  - Elektro Celje, d.d. ([http://www.elektro-celje.si/](http://www.elektro-celje.si/))
  - Elektro Gorenjska, d.d. ([http://www.elektro-gorenjska.si/](http://www.elektro-gorenjska.si/))
  - Elektro Maribor, d.d. ([http://www.elektro-maribor.si/](http://www.elektro-maribor.si/))
  - Elektro Primorska, d.d. ([http://www.elektro-primorska.si/](http://www.elektro-primorska.si/))
- **Maximum peak load:** 1988 MW (2014), [2076 MW in 2006](http://www.agen-rs.si/)
- **Average interruption of electricity (2014):** [55 min](http://www.agen-rs.si/)
  
  (Unplanned interruption without exceptional contingencies)
- **First electric power plant in history:** 1883
Global map of the grid and of its interconnections

Interconnectors with:

- Austria
  - OTL 2 × 400 kV
  - OTL 220 kV
- Croatia
  - OTL 2 × 400 kV
  - OTL 400 kV
  - OTL 220 kV
- Italy
  - OTL 400 kV
  - OTL 220 kV
- Hungary
  - No interconnection
Grid facts and characteristics

- The electricity grid in Slovenia is sub-divided into transmission grids and distribution grids
  [http://www.agen-rs.si/]
  - Length of transmission grid: 2.852 km
    - 400 kV: 669 km
    - 220 kV: 328 km
    - 110 kV: 1.842 km
    - Cables: 13 km
  - Length of distribution grid: 64.546 km
    - 110 kV: 850 km
    - 35, 20 and 10 kV: 17.424 km
    - 0.4 kV: 46.272 km
Structure of electrical power system

TSO grid $\geq$ 110 kV
DSO grid $\leq$ 110 kV

Households
Dispersed generation

Slovenian Power System
Map of the high voltage grid

[http://www.eles.si/]
Information on TSO

- Name: ELES d.o.o.
- Network length: 2.852 km [http://www.agen-rs.si/]
- Served area: 20.273 km² [http://www.stat.si/]
- Annual transmitted energy: 23,535 TWh
- Website: [http://www.eles.si/]
Cooperation between TSO and DSOs in Slovenia doesn't change significantly. Level of new dispersed generation (wind and solar) connected at distribution grid is still controllable without special actions.
**Power structure of the country**

**FINAL ENERGY CONSUMPTION (2014):**
Final energy consumption in Slovenia was 4.7 Mtoe (54,661 GWh)

<table>
<thead>
<tr>
<th>Energy sources in 2014</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil</td>
<td>47.4</td>
</tr>
<tr>
<td>Electricity</td>
<td>23.1</td>
</tr>
<tr>
<td>Renewables</td>
<td>13.7</td>
</tr>
<tr>
<td>Natural gas</td>
<td>11.3</td>
</tr>
<tr>
<td>Heating</td>
<td>3.3</td>
</tr>
<tr>
<td>Other</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Energy independency in 2014 was: 56%.
### Power structure of the country

#### ELECTRICAL ENERGY GENERATION BY SOURCES (2014):

<table>
<thead>
<tr>
<th>ELECTRICITY sources</th>
<th>GWh</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydro power</td>
<td>6 640</td>
<td>37.5</td>
</tr>
<tr>
<td>Nuclear* power</td>
<td>6 370</td>
<td>36.0</td>
</tr>
<tr>
<td>Thermal power</td>
<td>4 437</td>
<td>25.0</td>
</tr>
<tr>
<td>Solar power</td>
<td>257</td>
<td>1.5</td>
</tr>
<tr>
<td>Wind power</td>
<td>4</td>
<td>0.02</td>
</tr>
<tr>
<td>Total</td>
<td>17 708</td>
<td>100</td>
</tr>
</tbody>
</table>

* 50% share with Croatia

In 2014 was an excellent Hydrology year.

Annual consumption in 2014 was 12.719 GWh.
Energy production with reference to primary resources

Electricity net production by YEAR and CATEGORY

[http://www.stat.si/]
Consumption per customer groups

- Electricity consumption 12.719 GWh (for 2014)
- Pump storage hydro power plant: 363 GWh
- Consumers at transmission level: 2.033 GWh
- Distribution consumers at all: 7.198 GWh
- Residential consumers annual average: 3.125 GWh
- Consumption per capita: 6.166 kWh
- Average annual consumption of residential consumers: 3.336 kWh
Location of renewable energy sources

Solar power plants

Wind power plants

Hydro power plants

Other

[http://www.geopedia.si/]
Development of wind power capacity and production since 2010

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production [GWh]</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>2,0</td>
<td>4,2</td>
</tr>
<tr>
<td>Installed power [MW]</td>
<td>0,02</td>
<td>0,02</td>
<td>0,01</td>
<td>2,3</td>
<td>3,2</td>
</tr>
</tbody>
</table>

Slovenian Power System
## Development of photovoltaic power capacity and production since 2010

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production [GWh]</td>
<td>0,1</td>
<td>49,7</td>
<td>121,4</td>
<td>219,5</td>
<td>244,6</td>
</tr>
<tr>
<td>Installed power [MW]</td>
<td>15,4</td>
<td>57,6</td>
<td>170,6</td>
<td>246,4</td>
<td>255,5</td>
</tr>
</tbody>
</table>

[http://www.agen-rs.si/](http://www.agen-rs.si/)
Price development for industry consumers

Electricity prices for industry by QUARTER, PRICE and STANDARD CONSUMER (ANNUAL CONSUMPTION)

IA (<20 MWh)  IB (20 to <500 MWh)  IC (500 to <2 000 MWh)  ID (2 000 to <20 000 MWh)  IE (20 000 to <70 000 MWh)  IF (70 000 to <=150 000 MWh)

[http://www.stat.si/]
Price development for households

Electricity prices for households [EUR/kWh] by HALF-YEAR, PRICE and STANDARD CONSUMER (ANNUAL CONSUMPTION)

Electricity prices [EUR/kWh]

- All taxes included
- Exclusive of VAT
- Exclusive of taxes

[http://www.stat.si/]
Power balance in 2014

- Generation: 16.281 GWh
- Consumption: 12.719 GWh (without losses)
- Imports: 7.254 GWh
- Exports: 9.946 GWh (TSO) and 50 GWh (DSOs)
- Losses: 303 GWh (TSO) and 517 GWh (DSOs)
Power balance in 2014

Electric power transmission
22.475 GWh

Large producers
- HPP 5.521 GWh
- TPP 3.242 GWh
- NPP 6.060 GWh

Hydro Pump Storage
273 GWh

Import
7.254 GWh

Small producers
- 125 GWh
- 1.060 GWh

Export
9.946 GWh

Losses
303 GWh

Electric power distribution
10.890 GWh

PSPP Avce
363 GWh

Consumers at transmission level
7.198 GWh

Industry consumers
7.198 GWh

Household consumers
3.125 GWh

Losses
517 GWh

Export
50 GWh
Energy exchanges (Commercial)

Electricity export and import

[Slovenian Power System](http://www.stat.si/)
Energy exchanges (Physical)

Electricity import

Electricity export

[http://www.eles.si/]

Slovenian Power System
Electricity market organisation

☐ To be add later