Main directions of the Russian Federation’s state policy on energy security

- securing reliable and stable energy supply to the consumers in Russia
- contributing to global energy security
- reducing negative impact on the environment and providing environmental safety
- promoting energy savings and improving energy efficiency

THE ENERGY SECURITY DOCTRINE IS THE KEY DOCUMENT FOR STRATEGIC PLANNING IN THE SPHERE OF NATIONAL SECURITY OF THE RUSSIAN FEDERATION
The energy mix and the electricity mix in Russia

**PRIMARY ENERGY CONSUMPTION**
- Coal: 16%
- Gas: 53%
- Oil: 21%
- Hydro: 2%
- Nuclear: 7%
- Other RES: 0.1%

**ELECTRICITY PRODUCTION**
- Thermal (gas): 47%
- Thermal (other): 17%
- Nuclear: 19%
- RES: 0.2%
- Hydro: 17%

Data: International Energy Agency

Environmental safety — one of the priorities of Russia’s national development

The number of gas fueling stations

<table>
<thead>
<tr>
<th>2013</th>
<th>2018</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>239</td>
<td>381</td>
<td>+142 (+59.4%)</td>
</tr>
</tbody>
</table>

Specific fuel equivalent consumption in electricity (proportional method), in gr. of fuel equivalent/KWh

<table>
<thead>
<tr>
<th>2013</th>
<th>2018</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>321.3</td>
<td>309.8</td>
<td>-11.5 (-3.6%)</td>
</tr>
</tbody>
</table>

Petrol and K5 class diesel production, mln t

<table>
<thead>
<tr>
<th>2013</th>
<th>2018</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>72.0</td>
<td>77.5</td>
<td>+5.5 (+7%)</td>
</tr>
<tr>
<td>38.7</td>
<td>38.4</td>
<td>-0.4 (-1%)</td>
</tr>
</tbody>
</table>

Utilization rate of oil associated gas, %

<table>
<thead>
<tr>
<th>2013</th>
<th>2018</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>80.1</td>
<td>85.1</td>
<td>+5 p.p.</td>
</tr>
</tbody>
</table>

Images of gas fueling stations and environmental safety measures.
Enacting the principles of best available technologies (BAT) in Russia

FIRST STAGE
(2015-2018)
- Drafting sectoral BAT reference documents
- Creating national energy technology forecast system
- Developing the regulation package required

SECOND STAGE
(2018-2022)
- Introducing complex environmental licensing for major industrial polluters
- Increasing charges for negative environmental impact to the cost of environmental protection measures
- Banning the projects of constructing new and modernization of old enterprises in case of non-compliance of energy and environment indicators to BAT

THIRD STAGE
(2022 onwards)
- Full-fledged implementation of measures to enact BAT and introducing innovative technologies

Renewable energy development in Russia
847.36 MW new renewable capacity commissioned since 2014

Commissioning new RES capacity, MW

Reducing construction costs of renewable generation, thousands of rubles per kW

DESCRIPTION
THE LARGEST OBJECTS BUILT IN 2014-2019
- solar power stations (SPS)
- wind power stations (WPS)
- hydroelectric power station (HPS)
Priorities in developing renewables — enrooting advanced technologies and competences with the aim to export hi-tech production and improving energy supply in remote and isolated areas

“Hevel” factory producing solar modules with the efficiency factor of over 23% in Chuvashia (world’s top 3 in efficiency)

The production site for wind generator components in Rostov region

A solar power plant remote control project in Bashkortostan

Windfarm integrated into intermittent generation system in Kaliningrad region

State aid to renewables

FEDERAL LAW “ON ELECTRICITY”

WHOLESALE ELECTRICITY AND CAPACITY MARKET
(for RES generation >25MW)

- Selling capacity under Capacity Contracts for RES and solid household waste

- Compensation of technological connection to electricity grids for RES generation from the federal budget

RETAIL ELECTRICITY AND CAPACITY MARKET
(for RES generation <25MW)

- The responsibility of default supplier to buy electricity from RES in technologically isolated energy areas
- The responsibility of grid companies to buy electricity from RES under regulated tariffs to compensate for losses

Long term measures are coming to support the RES-based generation in the wholesale electricity and capacity market, as well as measures to stimulate renewable micro-generation
# Development of digital technologies in the energy sub-sectors

## OIL AND GAS COMPLEX
- Digital gas and oil field
- Cognitive systems to support experts’ decisions in upstream
- Integrated management of added-value chain in downstream

## COAL INDUSTRY
- Digital mine
- Digital open pit
- Digital logistics
- Digital management of the supply chain

## POWER GENERATION
- Electricity supply management and monitoring system
- The platform to accumulate, process and use big data
- Future (strategic and investment) planning, as well as risk planning
- Client services for consumers

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**THANK YOU FOR YOUR ATTENTION!**