A Long-Term Approach to Securing Rhode Island’s Energy Future

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How can Rhode Island build a clean, sustainable energy system that provides consumers and businesses with reliable access to low-cost energy?

### Energy Choices for Rhode Island

Based on Rhode Island’s goals for its energy system – cost effectiveness, sustainability, and security – the most promising technologies for the state are advanced nuclear power, land-based wind turbine, and natural gas-fired advanced combined cycle (NGFACC) with carbon control and sequestration (CCS).

<table>
<thead>
<tr>
<th>SUSTAINABILITY</th>
<th>SECURITY</th>
<th>COST EFFECTIVENESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero CO₂ Emissions</td>
<td>Capacity Factor</td>
<td>Transmission Investment</td>
</tr>
</tbody>
</table>

**Coal**
- Conventional
- Advanced
- Advanced with CCS*

**Natural Gas**
- Conventional Combined Cycle
- Advanced Combined Cycle

**Advanced Nuclear**

**Geothermal**

**Biomass**

**Wind**
- Land-Based
- Offshore

**Solar**
- Photovoltaic
- Thermal

**Hydroelectric**

* CCS – Carbon Capture & Sequestration
Rhode Island’s long-term energy plan, Energy 2035, has three primary goals: security, cost effectiveness, and sustainability. How can the state meet these goals?

CHALLENGE
Rhode Island’s electricity price is the fourth highest in the continental U.S. Lowering rates and ensuring that consumers and businesses have access to reliable energy at a reasonable cost could boost the state’s economy and improve residents’ quality of life. Rhode Island produces 11 million tons of CO2 emissions annually, contributing to climate change that could threaten the low-lying state with sea level increases as well as storms and other exceptional weather events. Fortifying the state’s energy infrastructure and reducing its reliance on polluting power sources would help ensure long-term energy security and sustainability.

RESEARCH
The goal of this research is to help Rhode Island evaluate its options for producing electricity and determine which power sources best meet its strategic goals. After reviewing the state’s current sources of power, as well as national and regional trends, the study analyzes options for the state’s energy future. Using data from the U.S. Energy Information Administration, the analysis rates potential energy sources on measures related to Rhode Island’s three key goals of security, cost effectiveness, and sustainability.

FINDINGS
The analysis identifies three promising options for electricity sources that meet the state’s long-term energy goals: advanced nuclear power, land-based wind turbine, and natural gas-fired advanced combined cycle (NGFACC) with carbon control and sequestration (CCS). The first two options produce no emissions and are, or are close to, cost-competitive with traditional sources of energy. While natural gas does produce emissions, it is often seen as an intermediate “bridge” on the path to clean energy. NGFACC with CCS is one of the cleanest, most efficient forms of natural gas.

INSIGHTS
Rhode Island’s primary electricity sources today are natural gas and nuclear energy imported from out-of-state. Going forward, the state will likely need to invest in more advanced energy sources, and associated infrastructure, in order to meet its strategic goals. Rhode Island may want to partner with neighboring states, as it has done in the past, in order to attract large-scale projects that it might not be able to tackle alone. With the right investments, Rhode Island can be a leader in clean energy while growing its economy and ensuring access to stable, low-cost electricity.

Where Rhode Island’s Electricity Comes From
Rhode Island consumes 190 trillion BTUs of energy annually, at a cost of approximately $3.6 billion. A third of that energy goes toward electricity, which comes primarily from natural gas and nuclear energy imported from out-of-state.

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>2004</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Gas</td>
<td>31%</td>
<td>35%</td>
</tr>
<tr>
<td>Nuclear</td>
<td>22%</td>
<td>22%</td>
</tr>
<tr>
<td>Renewables</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Energy</td>
<td>7%</td>
<td>3%</td>
</tr>
<tr>
<td>Coal</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Oil</td>
<td>12%</td>
<td>10%</td>
</tr>
<tr>
<td>Foreign Imports *</td>
<td>1%</td>
<td>19%</td>
</tr>
<tr>
<td>Other **</td>
<td>4%</td>
<td>5%</td>
</tr>
</tbody>
</table>

* Unknown Source ** Mainly Landfill Gas
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