Minnesota’s Aging Power Plant Fleet and the Clean Energy First Opportunity

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The Transformation So Far...

- **1990**
  - Coal: 49%
  - Nuclear: 22%
  - Wind: 17%
  - Nat. Gas: 5%
  - Other: 2%

- **2007**
  - Coal: 49%
  - Nuclear: 22%
  - Wind: 17%
  - Nat. Gas: 5%
  - Other: 3%

- **2014**
  - Coal: 49%
  - Nuclear: 22%
  - Wind: 17%
  - Nat. Gas: 5%
  - Other: 7%
2013 MN Electric Generation Resources including Energy Efficiency

- Coal % Natural Gas: 51%
- Renewables and Nuclear: 35%
- Utility Efficiency Programs: 14%
## Minnesota’s Largest Power Plants

<table>
<thead>
<tr>
<th>Utility</th>
<th>Power Plant</th>
<th>Plant Capacity in MW</th>
<th>Projected End of Life or Announced Retirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP</td>
<td>Taconite Harbor</td>
<td>168</td>
<td>2016*</td>
</tr>
<tr>
<td>MP</td>
<td>Boswell Unit 1 &amp; 2</td>
<td>150</td>
<td>2018</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>Hoot Lake Units 2 &amp; 3</td>
<td>129</td>
<td>2020</td>
</tr>
<tr>
<td>Xcel</td>
<td>Sherco 1 &amp; 2</td>
<td>1360</td>
<td>2023 &amp; 2026</td>
</tr>
<tr>
<td>Xcel</td>
<td>Monticello</td>
<td>671</td>
<td>2031</td>
</tr>
<tr>
<td>Xcel</td>
<td>Sherco 3</td>
<td>860</td>
<td>2033</td>
</tr>
<tr>
<td>Xcel</td>
<td>Prairie Island 1 &amp; 2</td>
<td>1100</td>
<td>2033, 2034</td>
</tr>
<tr>
<td>MP</td>
<td>Boswell Unit 3 &amp; 4</td>
<td>923</td>
<td>2035, 2036</td>
</tr>
<tr>
<td>Xcel</td>
<td>Allen S. King</td>
<td>598</td>
<td>2037</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td></td>
<td><strong>4,104 coal</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>5,959 coal + nuclear</strong></td>
</tr>
</tbody>
</table>
Announced & Projected Retirements

Baseload Retirements* to 2040

*MWs based on publicly announced utility retirements, reported facility “book life” in PUC depreciation filings and date nuclear operating licenses expire.
Minnesota 2020 Electricity Profile

Coal Retirements Create a 5% Clean Energy Opportunity

- 73% Coal Gas Imports Nuclear Other
- 21% Wind
- 5% Solar
- 1% Clean Energy Opportunity

Based on projected Minnesota total retail sales of 72,012,000 MWhs/year
Based on projected Minnesota total retail sales of 83,360,000 MWhs/year.
2030 Opportunity is defined “Announced & Projected Retirements” calculation based on 64% capacity factor)
Based on projected Minnesota total retail sales of 84,750,000 MWhs/year.

Coal & Nuclear Retirements Create Another 30% Clean Energy Opportunity

- 33% Coal Gas Imports Other
- 27% Wind
- 10% Solar
- 30% Clean Energy Opportunity

*Based on projected Minnesota total retail sales of 84,750,000 MWhs/year.*
By 2040, 70% of MN’s Electricity Generation will need to be Replaced

**Megawatt Hours: 2013-2040**

- Coal
- Nuclear
- Natural Gas
- Hydroelectric
- Wind/Solar/Renewables
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