POWER PLANT COMMUNITIES & THE CLEAN ENERGY TRANSITION

Joe Sullivan, Manager
Legislative and External Relations

JTF: The Midwest in Brief
September 18, 2018
Technical Research

Programs & Engineering

Community Energy Planning

Clean Energy Financing
My background in this work

• My first client as a new attorney was representing the cities that host Minnesota’s largest power plants.
• Represented these communities for almost seven years.
• I now work in clean energy.
• In clean energy we celebrate when large coal facilities are decommissioned because this is a win for our climate and environment.
• BUT…there is a very real human cost.
### 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>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP</td>
<td>Boswell Unit 1 &amp; 2</td>
<td>150</td>
<td>2018</td>
<td>Cohasset</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>Hoot Lake Units 2 &amp; 3</td>
<td>129</td>
<td>2020</td>
<td>Fergus Falls</td>
</tr>
<tr>
<td>Xcel</td>
<td>Sherco 1 &amp; 2</td>
<td>1360</td>
<td>2023 &amp; 2026</td>
<td>Becker</td>
</tr>
<tr>
<td>Xcel</td>
<td>Monticello</td>
<td>671</td>
<td>2031</td>
<td>Monticello</td>
</tr>
<tr>
<td>Xcel</td>
<td>Sherco 3</td>
<td>860</td>
<td>2033</td>
<td>Becker</td>
</tr>
<tr>
<td>Xcel</td>
<td>Prairie Island 1 &amp; 2</td>
<td>1100</td>
<td>2033, 2034</td>
<td>Red Wing</td>
</tr>
<tr>
<td>MP</td>
<td>Boswell Unit 3 &amp; 4</td>
<td>923</td>
<td>2035, 2036</td>
<td>Cohasset</td>
</tr>
<tr>
<td>Xcel</td>
<td>Allen S. King</td>
<td>598</td>
<td>2037</td>
<td>Oak Park Heights</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3,936 MW coal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5,791 MW coal + nuclear</td>
<td></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.
In the next 22 years 70% of MN’s current electricity generation will be replaced
Big Takeaways

• Massive Opportunity for Clean Energy Transformation
  • Over 40% of the electricity produced in 2015 to serve Minnesotans comes from fossil fueled plants that are retireable by ~2040
    • Almost 7,000 MWs of capacity
  • These plants emit over 95% of the CO2 emissions attributable to the MN power sector
  • Also must account for potential retirements of 1,771 MW of Nuclear plus any load growth due to electrification
  • There are five Minnesota communities that face the most localized impacts.
  • We need to ensure that these communities "break in case of an emergency" plan is not a gas plant. They need a tool box of options that gets activated when the power plant is facing retirement.
  • **To do that we must address host community and plant worker concerns**
• **Population**
  - Approx. 16,500

• **City Budget**
  - $28,996,732 total/$15,838,254 from PINGP/Xcel
  - 55% of city budget comes from power plant

• **Jobs**
  - Approximately 1,000 people work at the Prairie Island Nuclear Power Plant

“Beyond the plant’s contributions to our city’s tax base—which is significant—it’s the involvement of the utility and its employees in our community. From churches to the chamber of commerce, plant employees are often the ones in leadership roles beyond their responsibilities at the plant.”
• Population
  • Approximately 4,500

• City Budget
  • $16,393,998 total/$12,670,528 from Sherco/Xcel
  • 77% of Becker city budget comes from Sherco

• Jobs
  • Approximately 350 people work at the plant
  • It’s the “Town that Sherco built!”
• **Population**
  • Approximately 13,000

• **City Budget**
  • $25,869,545 total/$15,710,891 from Monticello Nuclear Generating Plant (MNGP)
  • 61% of Monticello City Budget comes from MNGP

• **Jobs**
  • Approx 500 people work on MNGP
Cohasset

- **Population**
  - Approximately 2,700

- **City Budget**
  - $10,169,590 total/$7,215,102 from Boswell
  - 71% of Cohasset budget

- **Jobs**
  - Approx. 200 people
Oak Park Heights

- **Population**
  - Approximately 4,300

- **City Budget**
  - $8,614,420 total/$4,228,710 from King
  - 49% of OPH City Budget comes from King

- **Jobs**
  - Approximately 200 people

- "As soon as I see the stack, I know I'm almost home," Mayor McComber"
Project Goals

• Develop a partnership and working relationship between host communities, utility partners, labor, and environmental NGOs

• Scope and prepare a socio-economic impact study.

• Develop a foundation and shared understanding of what the impacts will be for future action.
Risks

There are lots of reasons for parties not to be involved!

• “Weaponizing the findings”

• Misunderstanding the purpose of the report
  • “The City is working on a plan to shut down the power plant!”

• Lack of trust
Long Term Goals

• Develop a “policy tool-box” for host communities to utilize prior to power plant retirement

• Avoid the “break glass in case of emergency” build a gas plant option!

• A retirement and engagement model that can be exported to other similarly situated states and communities
THANK you!

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Center for Energy & Environment

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What “Retireable” Means

• The generation unit is either in MN or its output is transmitted here via HVDC transmission (Coal Creek Station)

• And, by its “retireable date”:
  • Will be fully depreciated
  • Will be over the average life span for a generation unit of that type and/or
  • Its power purchase agreement or license to operate will be expiring
## Retireable Coal Generation

<table>
<thead>
<tr>
<th>Utility</th>
<th>Plant</th>
<th>Fuel</th>
<th>Capacity (MW)</th>
<th>% of Total State MW</th>
<th>Retireable Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP</td>
<td>Hoot Lake 2 &amp; 3</td>
<td>Coal</td>
<td>140</td>
<td>0.8%</td>
<td>2020&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>MP</td>
<td>Taconite Harbor</td>
<td>Coal</td>
<td>225</td>
<td>1.3%</td>
<td>2020&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>OTP</td>
<td>Boswell 1 &amp; 2</td>
<td>Coal</td>
<td>135</td>
<td>0.8%</td>
<td>2022&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Xcel</td>
<td>Sherco 1 &amp; 2</td>
<td>Coal</td>
<td>1360</td>
<td>8.0%</td>
<td>2023, 2025&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>GRE</td>
<td>Coal Creek</td>
<td>Coal</td>
<td>1100</td>
<td>6.5%</td>
<td>2028&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>Xcel</td>
<td>Sherco 3</td>
<td>Coal</td>
<td>876</td>
<td>5.2%</td>
<td>2033</td>
</tr>
<tr>
<td>MP</td>
<td>Boswell 3 &amp; 4</td>
<td>Coal</td>
<td>940</td>
<td>5.6%</td>
<td>2035, 2036</td>
</tr>
<tr>
<td>Xcel</td>
<td>Allen S. King</td>
<td>Coal</td>
<td>511</td>
<td>3.0%</td>
<td>2037</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>5,287</strong></td>
<td><strong>31.4%</strong></td>
<td></td>
</tr>
</tbody>
</table>

FN 1: Includes all MN electric capacity, plus Coal Creek  
FN 2: Retirement dates announced, approved  
FN 3: Date based on accelerated depreciation schedule announced by GRE
Retireable Natural Gas Generation

<table>
<thead>
<tr>
<th>Utility</th>
<th>Plant</th>
<th>Fuel</th>
<th>Capacity (MW)</th>
<th>% of Total State MW</th>
<th>Retireable Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xcel-PPA</td>
<td>Mankato Energy Center 1</td>
<td>Gas</td>
<td>375</td>
<td>2.2%</td>
<td>2026</td>
</tr>
<tr>
<td>Xcel</td>
<td>Black Dog</td>
<td>Gas</td>
<td>282</td>
<td>1.6%</td>
<td>2032</td>
</tr>
<tr>
<td>Xcel</td>
<td>High Bridge</td>
<td>Gas</td>
<td>540</td>
<td>3.2%</td>
<td>2038</td>
</tr>
<tr>
<td>Xcel</td>
<td>Riverside</td>
<td>Gas</td>
<td>470</td>
<td>2.8%</td>
<td>2039</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>1,667</td>
<td>9.9%</td>
<td></td>
</tr>
</tbody>
</table>
Almost 7,000 MW of Capacity

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Capacity (MW)</th>
<th>% of Total State MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retireable Coal</td>
<td>5,287</td>
<td>31.4%</td>
</tr>
<tr>
<td>Retireable Gas</td>
<td>1,667</td>
<td>9.9%</td>
</tr>
<tr>
<td></td>
<td><strong>6,954</strong></td>
<td><strong>41.3%</strong></td>
</tr>
</tbody>
</table>
But wait, there’s more!

## Retireable Nuclear Generation

<table>
<thead>
<tr>
<th>Utility</th>
<th>Plant</th>
<th>Fuel</th>
<th>Capacity (MW)</th>
<th>% of Total State MW</th>
<th>Retireable Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xcel</td>
<td>Monticello</td>
<td>Nuclear</td>
<td>671</td>
<td>3.9%</td>
<td>2031</td>
</tr>
<tr>
<td>Xcel</td>
<td>Prairie Island 1</td>
<td>Nuclear</td>
<td>550</td>
<td>3.2%</td>
<td>2033</td>
</tr>
<tr>
<td>Xcel</td>
<td>Prairie Island 2</td>
<td>Nuclear</td>
<td>550</td>
<td>3.2%</td>
<td>2034</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>1,771</td>
<td>10.5%</td>
<td></td>
</tr>
</tbody>
</table>

- Plus any additional generation needed to address load growth from strategic electrification
Over 75% of 2015 Electricity Production⁴

- Retireable Coal: 49%
- Retireable Gas: 9%
- Retireable Nuclear: 18%
- Other Generation: 24%

FN 4: Includes all MN electric production, plus Coal Creek