Drake Decommissioning

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December 15, 2017
Drake Planning Discussion

Agenda

• Initial Board Direction
• Board Inputs for Planning
• Community Engagement Summary
• Comparative Costs
• Rate Drivers
• Accelerated Transmission
• Rate Projections
• Risks/Uncertainties
• Other Considerations
• Recommendations
• Board Decision
Initial Board Direction

Study decommissioning Drake Power Plant prior to the Board approved EIRP date of no later than 2035

• Analyze 2025 or 2030 decommissioning dates
• Make Drake decision separate from the next EIRP
• Maintain site for utility use, including generation, substation and other critical infrastructure
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Board Inputs for Planning

Complete December UB
✓ Consider early closure of Drake separately from EIRP
✓ Identify potential redevelopment footprint
✓ Consider decommissioning Birdsall
✓ Include financial metrics
✓ Include phasing decommissioning Drake units 6 and 7
✓ Identify environmental considerations of the Drake site
✓ Identify cost of planned transmission
✓ Include cost to physically decommission and salvage value
✓ Consider with long-range infrastructure funding
✓ Include Regional Transmission Organization implications
✓ Identify incremental rate impacts of building transmission sooner in relation to the scenarios
✓ Rate Impacts of Scenario 3c
✓ Provide potential asset value of the Drake property as an off-set to cost
Community Engagement - Outreach

- Outreach to date:
  - Utilities Board meetings
  - Re: Sources Blog
  - csu.org Website
  - Social Media
  - Insight eNewsletter (CSU employees)
  - Smart Home eNewsletter
  - First Source (business audience)
  - Baseline Survey
  - Connection Newsletter
  - Gazette Reporter Background
  - Gazette and Independent Articles
  - KRDO Radio Interviews
  - KRCC
  - KRDO TV
  - State of the Utilities (Business User Group)
  - Telephone Town Hall
  - In-Person Town Hall
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Community Engagement – Public Opinion

Quantitative Survey Summary (Aug. 31-Sep. 22, 2017)

– High level awareness on no later than 2035 decommission date
– Majorities equally concerned with air quality, health and the environment, and low-cost electricity
– Majority are willing to pay an additional 1-2% on their electric bills to decommission Drake earlier than 2035, in addition to other anticipated rate increases
– No majority opinion on how the Drake site should be used once the power plant is decommissioned.
Qualitative Research Summary

– Telephone Town Hall (Nov. 29, 2017)
  • 1651 Connections
  • Low-cost electricity (56% - 87 respondents) and Air Quality, Health & the Environment (31% - 87 respondents) were primary areas of concern
  • 61% (66 respondents) Not willing to pay more to close Drake early vs. 39% (42 respondents) willing to pay 1% - 5% more to close Drake early
  • Replacement options split between locating new generation at same site (41% - 29 respondents), outside service territory (34% - 24 respondents) and a combination (24% - 17 respondents)

– In-Person Town Hall (Dec. 5, 2017)
  • ~200 in attendance
  • 40 Speakers
  • 30 spoke in support of an early closure of Drake and in favor of more renewable energy
  • 10 spoke in favor of keeping the closure of Drake later and in favor of keeping rates as low as possible
Drake Planning Discussion

### Comparative Costs

<table>
<thead>
<tr>
<th>Generation at Drake</th>
<th>Transmission Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scenario 1</strong></td>
<td><strong>Scenario 3a</strong></td>
</tr>
<tr>
<td>All 128 MW at Drake</td>
<td>128 MW Generation 48 MW at Drake</td>
</tr>
<tr>
<td>Generation Solution</td>
<td></td>
</tr>
<tr>
<td>Transmission Solution</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>% Diff from 2035 base case</th>
<th>Comparative Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario 1</td>
<td>Scenario 3a</td>
</tr>
<tr>
<td>All 128 MW at Drake</td>
<td>0.0%</td>
</tr>
<tr>
<td>128 MW Generation 48 MW at Drake</td>
<td>0.9% ($62M)</td>
</tr>
<tr>
<td>128 MW DG 48 MW at Drake</td>
<td>0.2% ($12M)</td>
</tr>
<tr>
<td>128 MW Generation Outside Service Territory</td>
<td>0.0%</td>
</tr>
<tr>
<td>128 MW Import</td>
<td>1.0% ($72M)</td>
</tr>
<tr>
<td>No Generation Birdsall OR Drake Import &amp; DG</td>
<td>1.8% ($126M)</td>
</tr>
</tbody>
</table>

All scenarios 25 year NPVs

Electricity | Natural Gas | Water | Wastewater
Drake Planning Discussion

Comparative Costs

3c Decommissioning Scenarios

Assumptions

- Costs inflated to year spent
- 5 Yr Plan Rev. Requirement 2023-2035 1% growth
- 0.6% 2019 Energy Vision
- Proprietary Fuel Forecast Current price curves
- Inflation at 1.75%
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Comparative Costs:
Potential Infrastructure Investments (in thousands, in 2017 dollars)
Drake 3c Scenarios

Drake Decommissioning Options

- Electric
- Drake Closure - 2025
- Drake Closure - 2030
- Drake Closure - 2035
- Gas
- Water
- Wastewater
- Common
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3c Rate Drivers

• Fuel Forecast
• Debt Service
• Operation & Maintenance Cost
Drake Planning Discussion

Fuel Price Forecast

Source: ABB Consulting
## Drake Planning Discussion

### 3c Retirement Scenario

<table>
<thead>
<tr>
<th>Year</th>
<th>Low Fuel</th>
<th>Base</th>
<th>High Fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>2025</td>
<td>$25M</td>
<td>$110M</td>
<td>$215M</td>
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<tr>
<td>2030</td>
<td>$15M</td>
<td>$65M</td>
<td>$125M</td>
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</tbody>
</table>

* Table represents changes in **fuel commodity costs** only
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3c Estimated Annual Debt Service - $12M

Electric Debt Service

Dollars in Thousands

Electricity | Natural Gas | Water | Wastewater
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Operation & Maintenance Costs

10yr Avg Non-Fuel O&M Cost
$ in 000's
$1,413

$23,773

Estimated Annual O&M Impact

Drake/Birdsall O&M Reduction
($21)

Estimated 3c O&M
4

Annual Net O&M Impact
($17)

Drake
Birdsall
### Drake Planning Discussion

#### 3c Rate Drivers

<table>
<thead>
<tr>
<th>Item</th>
<th>$ MM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt Service on New Generation*</td>
<td>$12</td>
</tr>
<tr>
<td>Debt Service Coverage*</td>
<td>10</td>
</tr>
<tr>
<td>Non-Labor O&amp;M Cost Reductions</td>
<td>(17)</td>
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</table>

#### Annual Non-Fuel Rate Drivers

<table>
<thead>
<tr>
<th>Item</th>
<th>$ MM</th>
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<tbody>
<tr>
<td>Additional Fuel Cost (base)</td>
<td>13</td>
</tr>
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</table>

#### Estimated Annual Rate Impact

<table>
<thead>
<tr>
<th>Item</th>
<th>$ MM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Annual Rate Impact</td>
<td>$18</td>
</tr>
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</table>

* $280 million, 70% debt funded at 5% over 30 years
Scenario #3c: Distributed Generation – No Generation at Drake or Birdsall

- Requires 192MW initially and an additional 80MW over 30 years inside or outside service territory

**Transmission Estimated Costs**

<table>
<thead>
<tr>
<th>Year of Decommission</th>
<th>Project A for $26M</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

**Advantage**

- Downtown aesthetics
- Portion available for redevelopment
- No generation at Drake or Birdsall, but generation at military bases and import
- Allows transmission solution and gives flexibility

**Disadvantage**

- Potential permitting and siting challenges
- Gas availability unknown
- Back-up fuel
- Constrained gas pipeline capacity
- Microgrids are complex
- Transmission project
- Operation of multiple sites
Accelerated Transmission

• $26M additional capital spread from 2020 – 2023
• 0.25% incremental rate impact
Projected rate increases for Drake decommissioning only
using 2017 cost of service study

<table>
<thead>
<tr>
<th>Rate Schedule</th>
<th>Base Case</th>
<th>Increase/Decrease</th>
<th>% Change</th>
<th>2025 - 2035 Cumulative Increase</th>
<th>2030 - 2035 Cumulative Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Residential</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric - Non-fuel</td>
<td>$ 69.70</td>
<td>$ 1.81</td>
<td>2.6%</td>
<td>$ 489.74</td>
<td>$ 244.87</td>
</tr>
<tr>
<td>Fuel Capacity &amp; ECA</td>
<td>18.69</td>
<td>2.27</td>
<td>12.1%</td>
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<td></td>
</tr>
<tr>
<td>Electric Service Total</td>
<td>$ 88.39</td>
<td>$ 4.08</td>
<td>4.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Commercial</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric - Non-fuel</td>
<td>$ 421.03</td>
<td>$ 3.79</td>
<td>0.9%</td>
<td>$ 2,762.28</td>
<td>$ 1,381.14</td>
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<tr>
<td>Fuel Capacity &amp; ECA</td>
<td>158.40</td>
<td>19.23</td>
<td>12.1%</td>
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<tr>
<td>Electric Service Total</td>
<td>$ 579.43</td>
<td>$ 23.02</td>
<td>4.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Industrial</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric - Non-fuel</td>
<td>$ 22,401.74</td>
<td>$ 89.61</td>
<td>0.4%</td>
<td>$ 159,020.11</td>
<td>$ 79,510.06</td>
</tr>
<tr>
<td>Fuel Capacity &amp; ECA</td>
<td>10,177.60</td>
<td>1,235.56</td>
<td>12.1%</td>
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<td></td>
</tr>
<tr>
<td>Electric Service Total</td>
<td>$ 32,579.34</td>
<td>$ 1,325.17</td>
<td>4.1%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Drake Planning Discussion

Risks/Uncertainties

- Fuel Price Volatility
- Regional Transmission Organization
- Regulatory Requirements
- Tax Policy
- Breakthrough Technologies
- Net Land Value
- Plant Investment
- Workforce Planning
Other Considerations

- Economic development
- Community reputation
- Air quality, health and environment
- Downtown aesthetics
- Military resiliency
Recommendations

- Support Scenario 3c - distributed generation and import power options
- No replacement generation at Drake or Birdsall
- Accelerate transmission projects (2023)
  - Provides maximum flexibility on all scenarios and all closure dates (2025-2035)
  - Retain consultant to advance transmission projects (2018)
- Complete Site Assessment Studies (2019)
  - Appraisal
  - Phase 2 Environmental
  - Salvage Value
- Complete RTO effort (2019)
- Conduct EIRP (2020)
Board Decision