Bull Creek Wind Facility

A Case Study in Substation Fractioning
Agenda

1. Intro to BluEarth
2. Bull Creek Case Study
3. Considerations Highlighted by Case Study
BluEarth Background

**Highlights**
- Headquartered in Calgary
- 24/7 Remote Operations Centre in Calgary
- Over 115 employees, 58% located in Alberta
- Over 170 MW of development projects in Alberta

- **160 MW** Wind in Operation (gross)
- **126 MW** Solar in Operation (gross)
- **120 MW** Hydro in Operation (gross)
- **1+ GW** Advanced Development
Bull Creek

• Connected at 25kV in Fortis territory to the Hayter Substation

• The only STS contract at the Hayter substation
  ○ STS of 25.3 MW
  ○ DTS of 29.3 MW

• Alerted by Fortis in September 2018 to potential exposure to two substation fractioning costs.
  ○ P1782 – Transmission Reliability Project (Expected In Service 2020)

29.2 MW Capacity
2015 COD
$80M CAPEX
Project 1495: New Transformer Install at Hayter Substation

- **Sept 2015**: New transformer in service
- **March 2016**: Final CCD
  - STS Cost: $0
- **May 2017**: Revised CCD
  - STS Cost: $5 Million
- **June 2017**: Revised CCD
  - STS Cost: $5 Million
- **Oct 2017**: Revised CCD
  - STS Cost: $5 Million
- **Oct 2018**: Revised CCD
  - STS Cost: $2.2 Million
- **Dec 2015**: Bull Creek COD
- **Sept 2018**: Fortis Letter – First Notification of any potential payment requirement

Source: Exhibit 22942-X0539
Project 1782: Reliability Upgrade

- **Sept 2016**: CCD STS Cost: $0
- **Nov 2017**: CCD STS Cost: $0
- **Aug 2018**: CCD STS Cost: $9 Million
- **Nov 2018**: CCD STS Cost: $9 Million
- **2020**: Project Projected to be In Service

- **Dec 2015**: Bull Creek COD
- **Sept 2018**: Fortis Letter – First Notification of any potential payment requirement

Source: Exhibit 22942-X0539
Project 1782 – Provost to Hayter Reliability Upgrade

• Cause – Load Reliability Project
  • With load increasing in the area, there is expected to be potential for transmission outages to create unacceptable amounts of unsupplied load.
  • No generation (either cause or benefit) mentioned in the DFO Need for Development Report or the AESO Needs Identification Document.

• Description
  • Add one 138 kV transmission line to connect the existing Hayter 277S substation and the existing Provost 545S substation
  • Associated required upgrades at affected substations
  • Construction not yet started

• Project Cost
  • $41,877,164

• Portion of Project Cost Assigned to Hayter Substation
  • $19,394,495
### Project 1782 Costs Allocated to STS

**CCD issued September 2016**

- **Project Type:** DTS
- **STS cost:** $0

<table>
<thead>
<tr>
<th>Line</th>
<th>Description</th>
<th>Reference</th>
<th>Required Facilities</th>
<th>Demand-Related</th>
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**CCD issued November 2018**

- **Project Type:** DTS / STS
- **STS cost at Hayter (Bull Creek cost):** $8,986,826

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Benefit of Increased Reliability

Increased reliability from reliability projects has been presented as a benefit to DCG; however, the actual magnitude of that benefit has not been evaluated in recent proceedings.

With the Bull Creek example, we have the opportunity to evaluate benefit vs. proposed SF cost allocation.
Bull Creek Lost Opportunity from COD to Present Related to Transmission Down Time

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<th>Year</th>
<th>No. Transmission Related Outages</th>
<th>Lost MwH</th>
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<tr>
<td>2016</td>
<td>0</td>
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<tr>
<td>2017</td>
<td>3</td>
<td>184.5</td>
</tr>
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<td>2018</td>
<td>7</td>
<td>143.5</td>
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<tr>
<td>2019</td>
<td>1</td>
<td>1.9</td>
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<tr>
<td></td>
<td>Total, 4 years</td>
<td>329.9</td>
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<td>Average per year</td>
<td>82.5</td>
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What is 82.5 MWH / Year in Dollars?

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<th>Present Value</th>
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<tbody>
<tr>
<td>MWh</td>
</tr>
<tr>
<td>Years</td>
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<tr>
<td>Price (CAD/MWh)</td>
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<tr>
<td>Discount Rate</td>
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<td>40</td>
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<td>60</td>
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<td>80</td>
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Bull Creek Cost / Benefit

COST
$9M

BENEFIT
~$50,000
Transmission Project Exposure to Costs after COD

$0

Once a transmission project is tapped onto a transmission line that project is not required to pay for costs they did not cause.
Considerations Highlighted by this Case

• **Substation fraction methodology is flawed**
  • Considers neither the cause of the cost nor the benefit to relevant parties
  • Unequal treatment between distribution and transmission connected customers – inappropriate allocation of costs means generation is exposed to load driven costs and vice versa

• **Substation fraction use risks future investment in new and existing generation of all types**
  • Precedent setting for all types of generation that unknowable costs can be applied after COD
  • Halting of shovel ready projects due to unreasonable risk of inappropriate and unknowable costs being applied to DCG projects
  • Unmitigable market participant risk to existing facilities due to overwhelming substation fraction costs

• **Counter to market efficiency and red tape reduction goals**
  • Creates DCG Opposition to Reliability Projects as DCG incented to intervene against projects that may be required by load customers in order to protect their investment and mitigate unforeseen costs
  • Unfair allocation of costs using the substation fractioning method means load is also exposed to the potential to pay for costs caused by generators
  • Inefficient energy pricing as generators increase the price of energy sold to allow for unknown costs or fluctuations. Uncertain future costs would also affect access to capital, thereby increasing the cost of capital

• **Ratemaking principles not being met**
  • Cost causation, fairness, efficiency