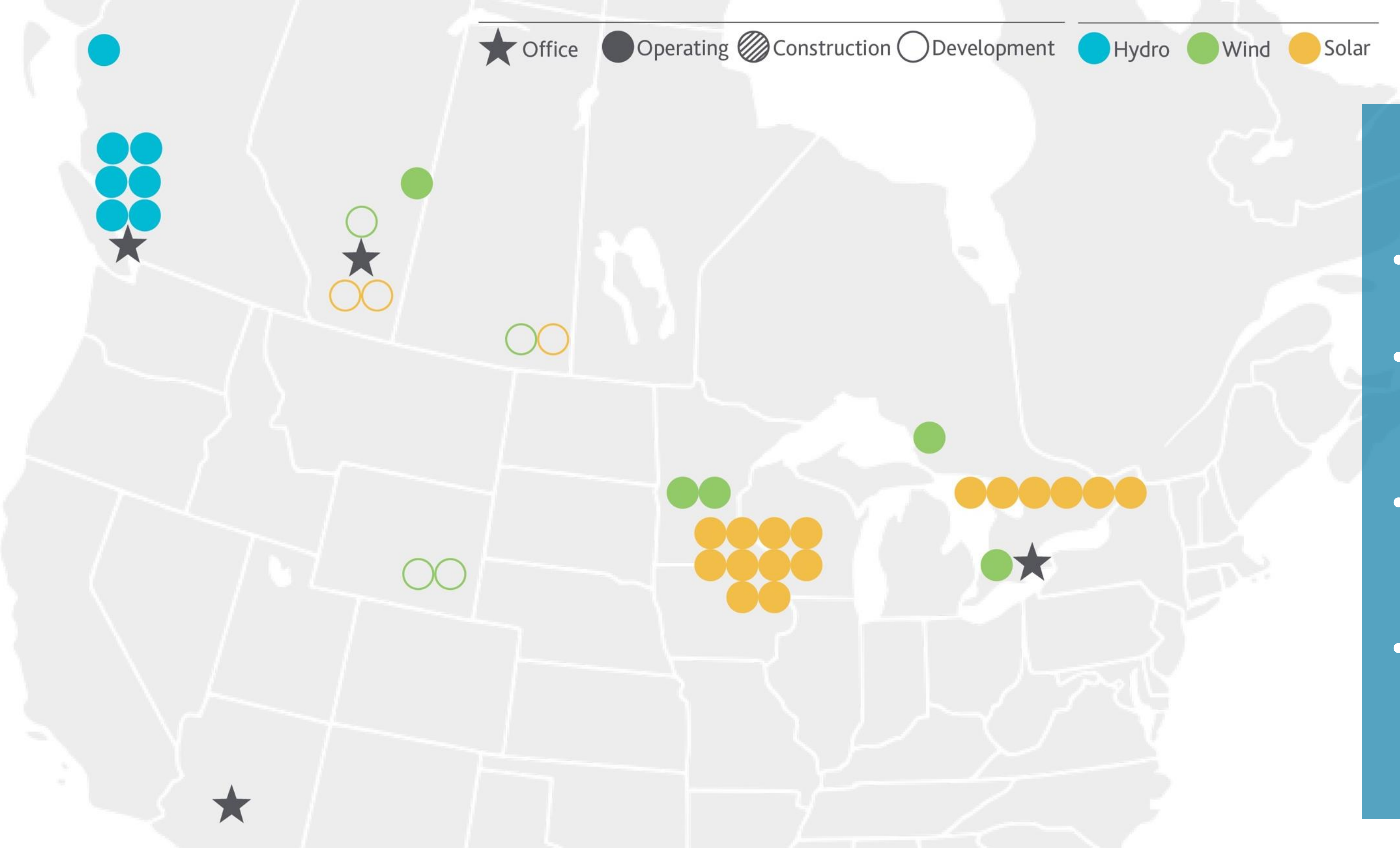
Bull Creek Wind Facility

A Case Study in Substation Fractioning

Agenda

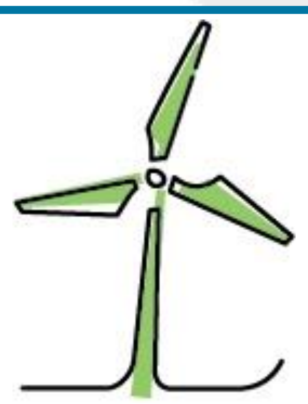
1. Intro to BluEarth
2. Bull Creek Case Study
3. Considerations Highlighted by Case Study

BluEarth Background



Highlights

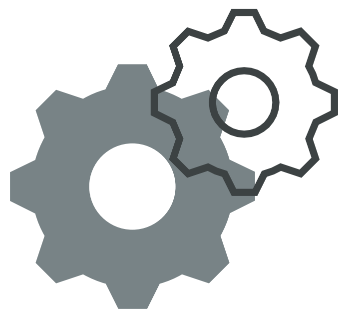
- Headquartered in Calgary
- 24/7 Remote Operations Centre in Calgary
- Over 115 employees, 58% located in Alberta
- Over 170 MW of development projects in Alberta



160 MW
Wind in Operation (gross)

126 MW
Solar in Operation (gross)

120 MW
Hydro in Operation (gross)



1+ GW
Advanced Development

Bull Creek

29.2MW
Capacity

2015
COD

$80M
CAPEX

- **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.**
  - P1495 – Substation Upgrade: New Transformer Installation (In Service September 2015)
  - P1782 – Transmission Reliability Project (Expected In Service 2020)

Project 1495: New Transformer Install at Hayter Substation

Sept 2015
New transformer in service

Dec 2015
Bull Creek COD

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

Sept 2018
Fortis Letter – First Notification of any potential payment requirement

Oct 2018
Revised CCD
STS Cost: $2.2 Million

Source: Exhibit 22942-X0539

BluEarth RENEWABLES

Project 1782: Reliability Upgrade

Dec 2015
Bull Creek COD

Sept 2016
CCD
STS Cost: $0

Nov 2017
CCD
STS Cost: $0

Aug 2018
CCD
STS Cost: $9 Million

Sept 2018
Fortis Letter – First Notification of any potential payment requirement

Nov 2018
CCD
STS Cost: $9 Million

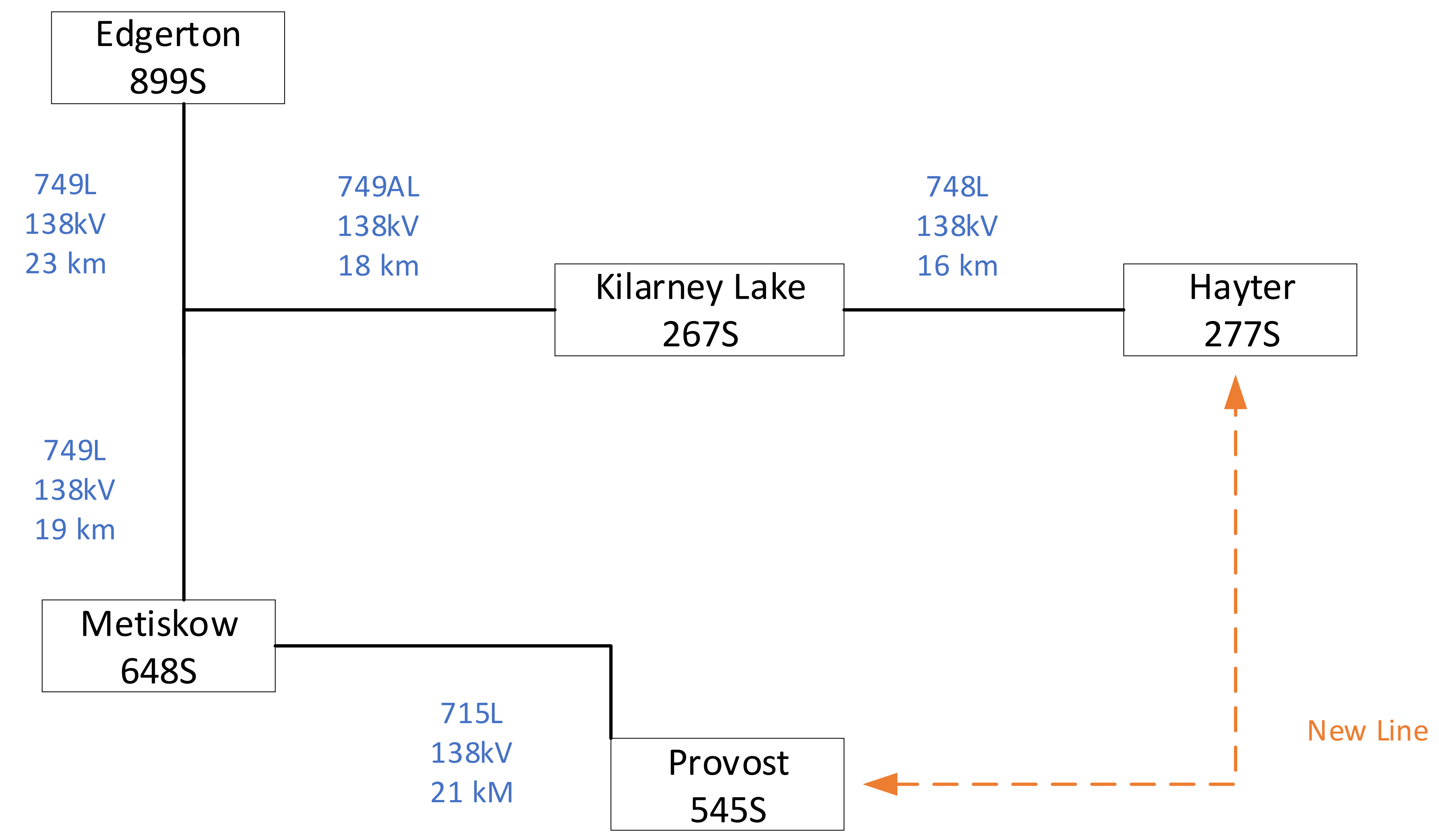
2020
Project Projected to be In Service

Source: Exhibit 22942-X0539

BluEarth RENEWABLES

Project 1782 – Provost to Hayter Reliability Upgrade

- Cause – Load Reliability Project
  - With load increasing the 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



Source: *Needs Identification Document, NID Appendix E: DFO Need for Development Report*

Project 1782 Costs Allocated to STS

CCD issued September 2016

- Project Type: DTS
- STS cost :$0

Line	Description	Reference	Required Facilities Demand-Related	Required Facilities Supply-Related	In Excess of Good Practice	Section
(h)	Participant-Related Costs	From (g) and (e)	$35,201,000		$0	8:6(3)
(i)	Operations and Maintenance Charge	Estimated by Market Participant	NA		$0	8:9
(j)	**Total Costs Allocated to Market Participant**	(h) + (i)	**$35,201,000**		**$0**	8:6
(k)	Substation Fractions	Other Participant NA	1.00000	0.00000	NA	8:6(3)
(l)	Allocated Costs (j) × (k)	Other Participant NA	$35,201,000	$0	$0	8:6
(m)	Less: Maximum Local Investment	Investment Term of 20 Years	$0	NA	NA	8:8
(n)	Construction Contribution Required	(l) – (m)	$35,201,000	$0	$0	8:7
(o)	**Total Construction Contribution Required**		**$35,201,000**			8:7

CCD issued November 2018

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

Line	Description	Reference	Required Facilities Demand-Related	Required Facilities Supply-Related	In Excess of Good Practice	Section
(h)	Participant-Related Costs	From (g) and (e)	$19,394,495		$0	8:6(3)
(i)	Operations and Maintenance Charge	Estimated by Market Participant	NA		$0	8:9
(j)	**Total Costs Allocated to Market Participant**	(h) + (i)	**$19,394,495**		**$0**	8:6
(k)	Substation Fractions	Other Participant NA	0.53663	0.46337	NA	8:6(3)
(l)	Allocated Costs (j) × (k)	Other Participant NA	$10,407,669	$8,986,826	$0	8:6
(m)	Less: Maximum Local Investment	Investment Term of 20 Years	$0	NA	NA	8:8
(n)	Construction Contribution Required	(l) – (m)	$10,407,669	$8,986,826	$0	8:7
(o)	**Total Construction Contribution Required**		**$19,394,495**			8:7

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

Year	No. Transmission Related Outages	Lost MwH
2016	0	0
2017	3	184.5
2018	7	143.5
2019	1	1.9

Total, 4 years	329.9
Average per year	82.5

What is 82.5 MWH / Year in Dollars?

Present Value

MWh	82.5			
Years	20			
		Price (CAD/MWh)		
		40	60	80
Discount Rate	7%	$34,950	$52,424	$69,899
	10%	$28,086	$42,129	$56,172

BluEarth RENEWABLES

Bull Creek Cost / Benefit

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

QUESTIONS?