



Transmission Capability and SASR Support Stakeholder Information Session

April 20, 2022

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 - Click “Lower Hand” to lower it if needed.
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OUR ENGAGEMENT PRINCIPLES

Inclusive and Accessible

Strategic and Coordinated

Transparent and Timely

Customized and Meaningful

Welcome & Introduction

Time	Discussion Item
9:00 – 9:10	Welcome, introductions, purpose, and session objectives
9:10 – 10:15	Overview of transmission capability maps
10:15 – 10:40	Q&A
10:40 – 11:05	Overview of enhanced System Access Service Request (SASR) support
11:05 – 11:20	Q&A
11:20 – 11:30	Session summary and next steps

- Share the AESO's Transmission Capability Maps
 - High-level assumptions and methodology
 - How to use the map information
 - Answer questions on the map

- Share the AESO's plans for additional SASR Support

Transmission Capability Map

Introduction

- Provide current available indicative generation capability signals to help optimize integration to the existing transmission system
- Provide Market Participants (MPs) awareness of directional connection complexity based on capability
- Provide MPs with information links to future projects and distribution feeder hosting capacity
- Seek improvement feedback to incorporate into next phase



The map's use is as a guide to identify potential locations to integrate future generation.



The capability values are directional and not guaranteed. They are site independent and not cumulative. Comparing the project size to the site capability will signal the level of complexity expected in the connection process



Capability maps will be utilized in SASR support, informing customers on capacity availability to make more informed project planning decisions ahead of submitting a SASR.



The connection process is the official process to facilitate system access service and transmission connections

Transmission Capability Map

Methodology

Historical Data

Merit Order



Load



Interchanges



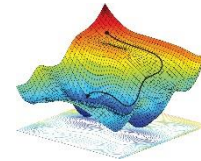
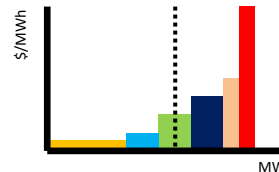
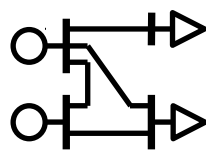
Installed Transmission System



- All elements in service
- TFO provided line ratings
- No projects or upgrades

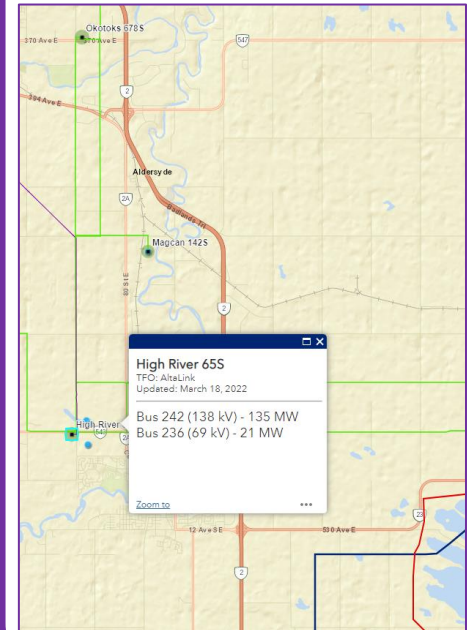
Capability Assessment

- DC power flow analysis (thermal)
- Hourly market simulation
- Economic generation dispatch
- Optimization techniques to determine capability

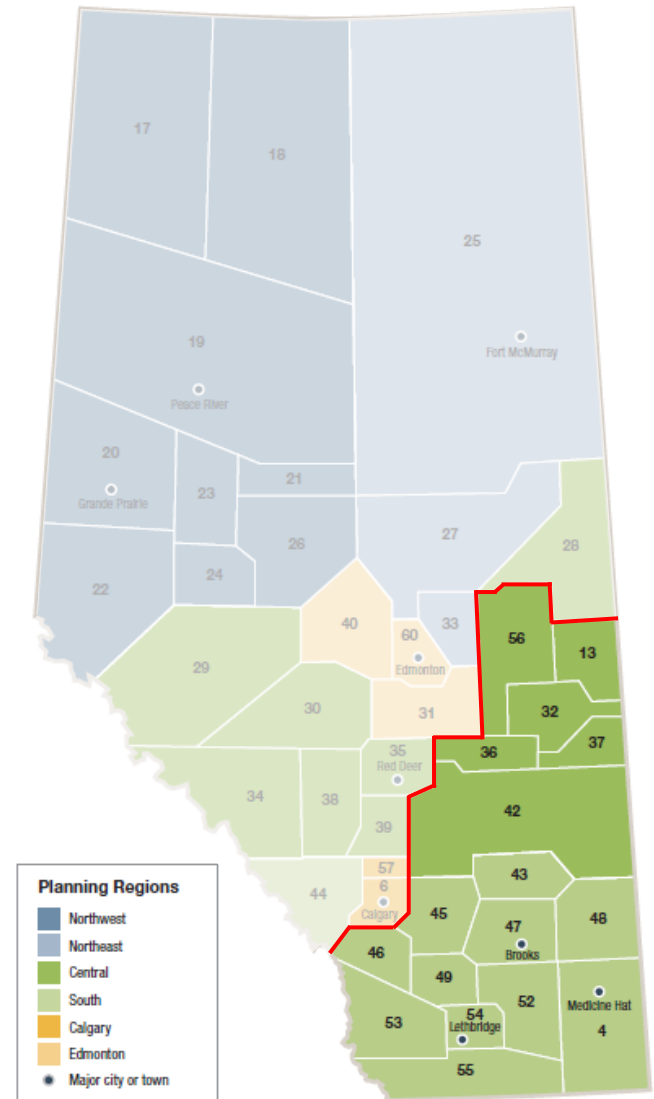


Results

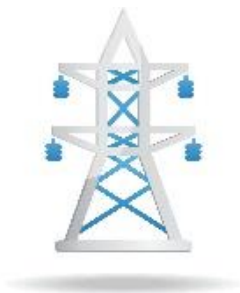
- Capability by bus
- Size of bubbles
- Aligns with planning practices

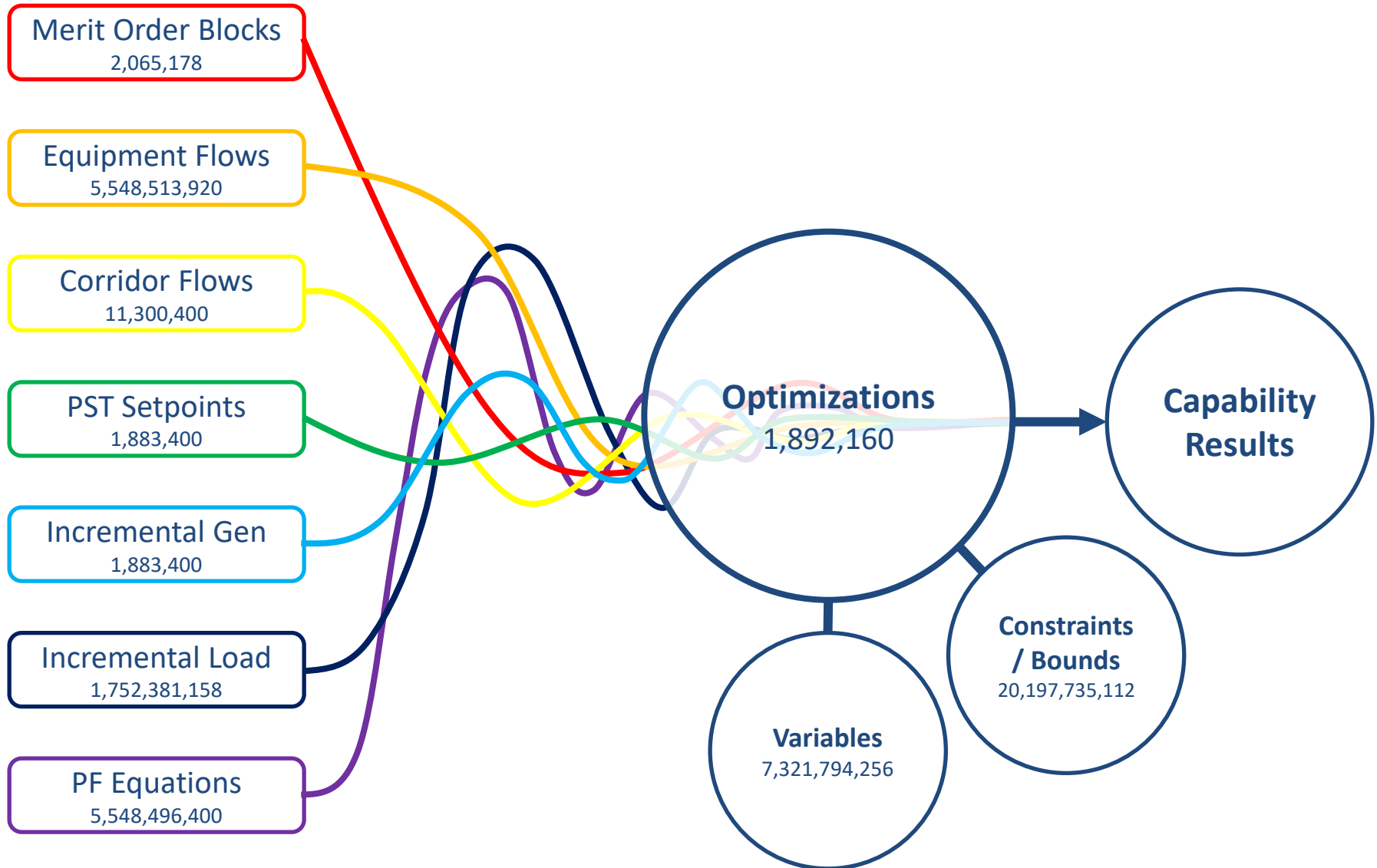


- Equipment Monitoring
 - Transmission equipment (≥ 69 kV)
 - Transmission equipment province wide
- Criteria
 - N-0 thermal violations
- Incremental capability
 - Substations in South and Central East
 - Transmission level buses



- Transmission equipment is modelled as of Dec 31
 - Generation / load inclusion based on energization date
 - Future generation / load are not included in the calculations
 - Map's future project information layer is provided for awareness, **no future projects are included in the capability calculations**

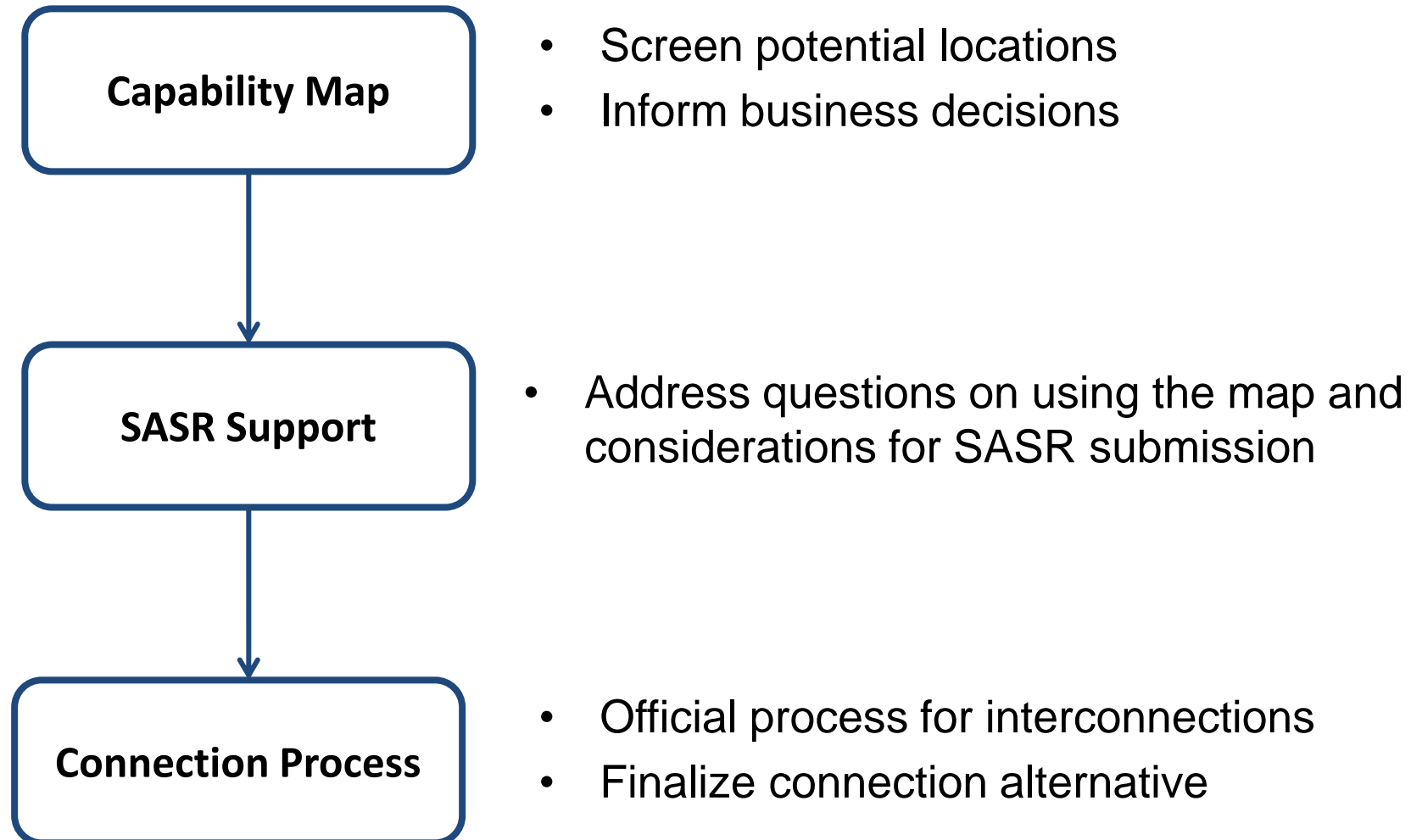




Transmission Capability Map

Using the Capability Map

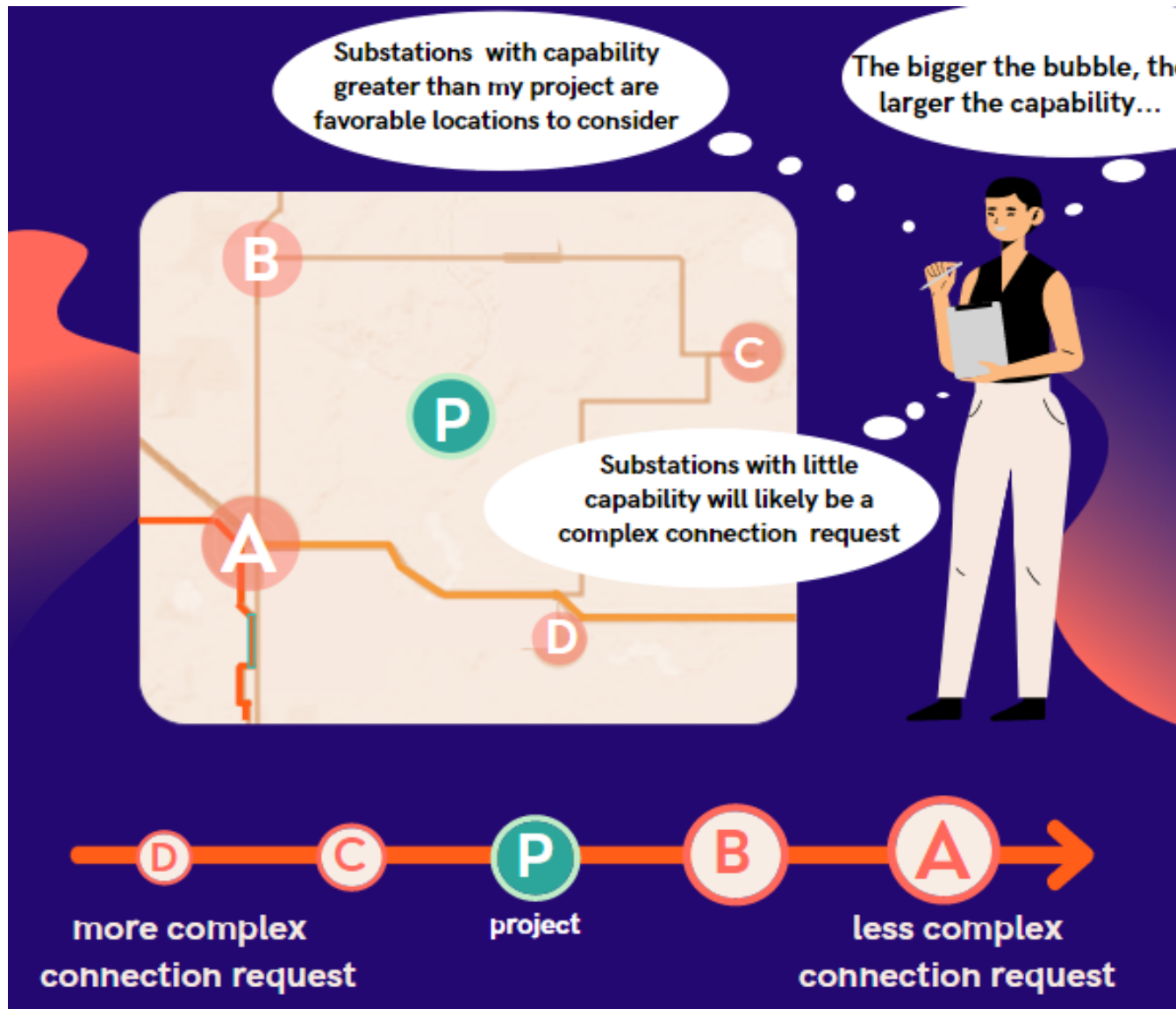
Connection Process is the Official Process to Facilitate Connections



The Capability Values are Directional and not Guaranteed

- The capability values are provided as preliminary levels, the connection process will finalize the transmission connection and the risk of congestion
 - Evaluated on the existing system with historical data
 - Doesn't consider future load, generation and transmission development and operations
 - Considers only category A thermal constraints
 - Capability can be further limited by contingencies, MSSC, other constraints, or other connection projects

Comparison Indicates Expected Complexity in the Connection Process

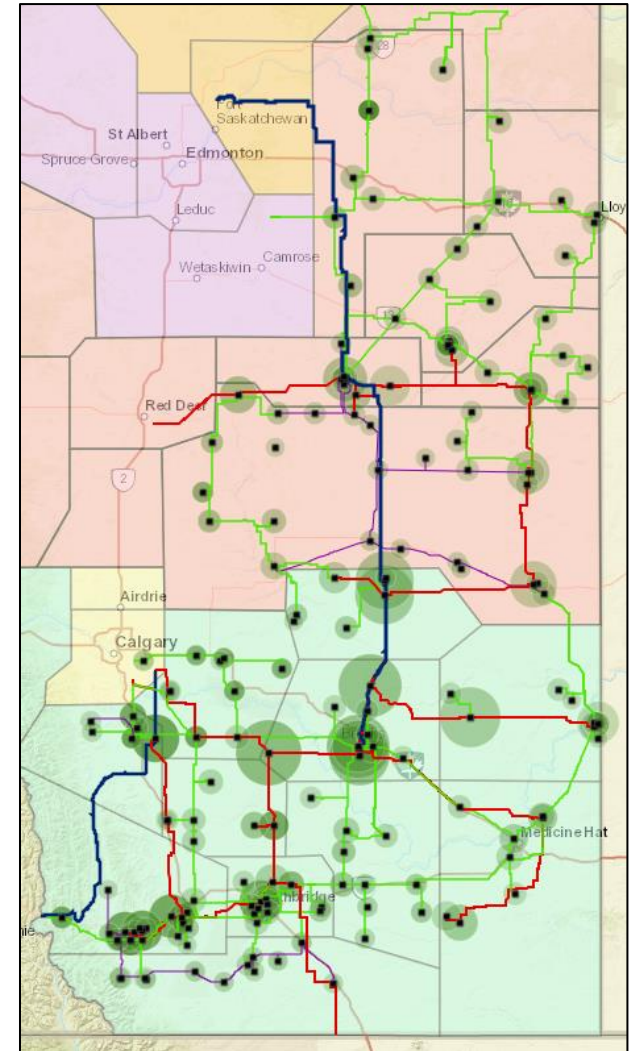
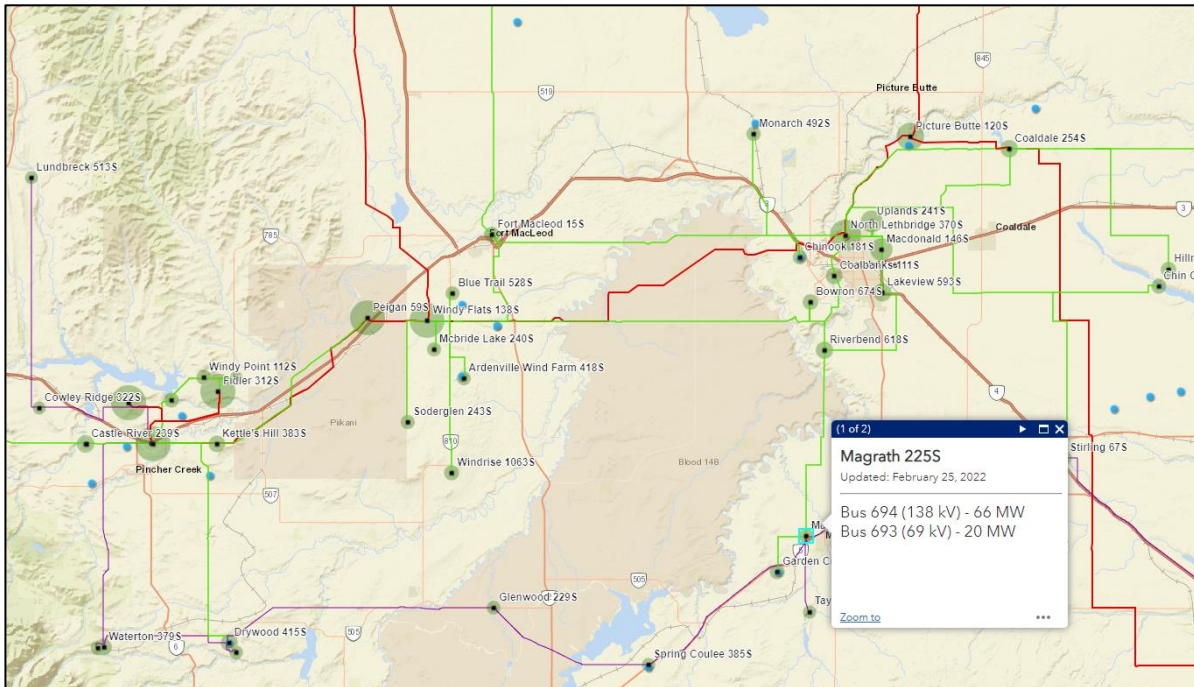


Transmission Capability Map

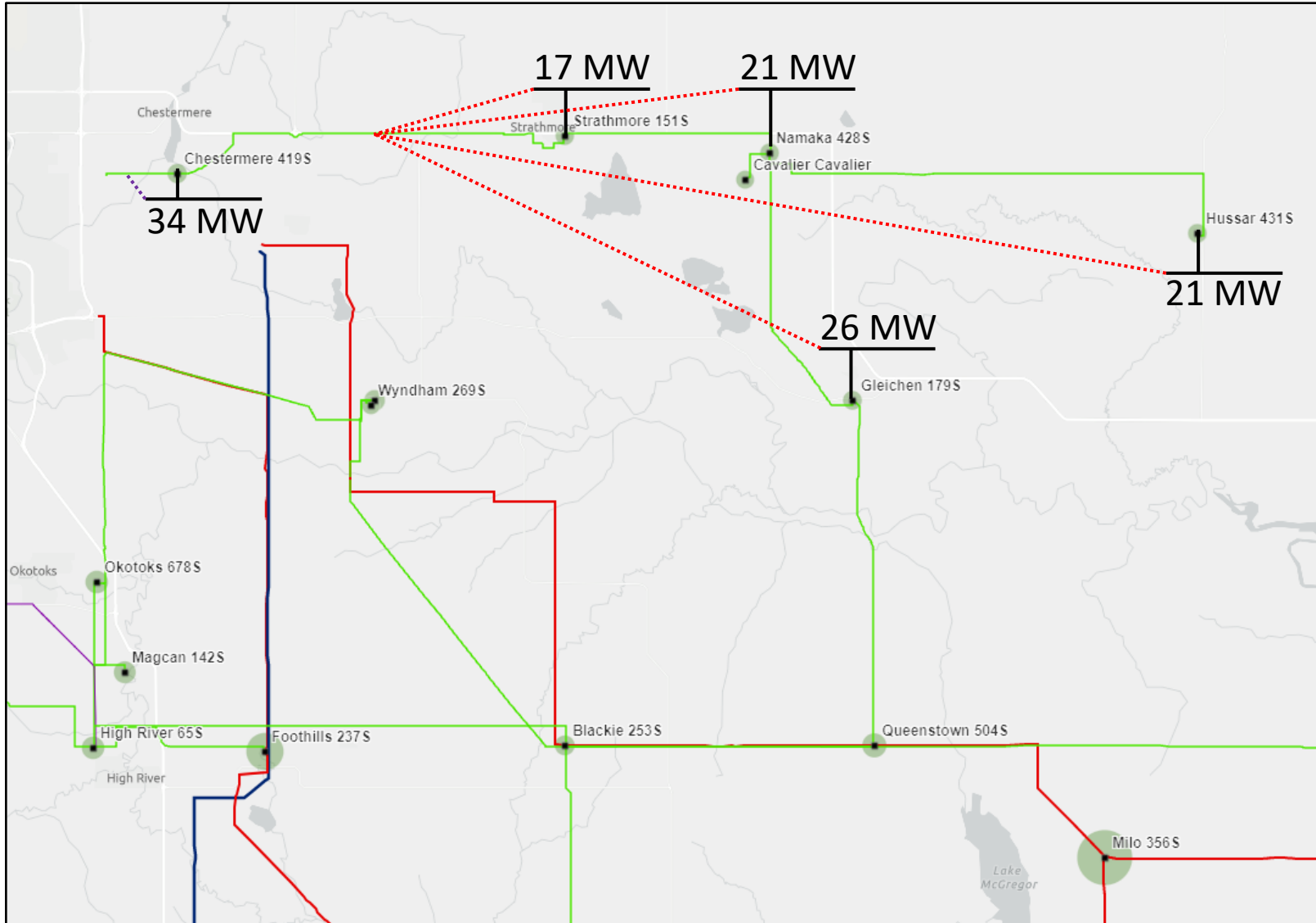
A walk through

Transmission Capability Map

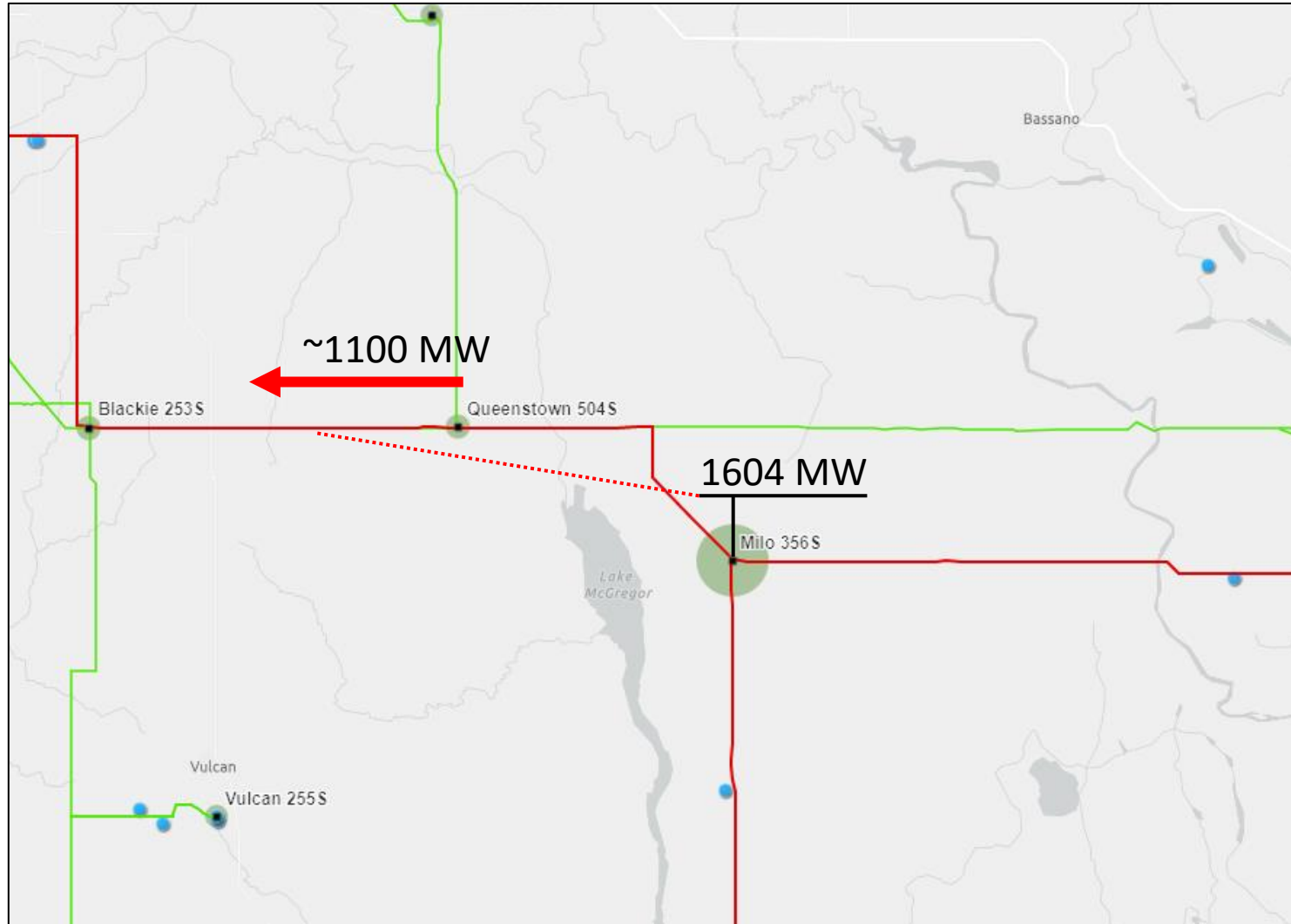
- Interactive Map
 - Size indicates category A capability
 - Popup provides detailed capability
 - Filter results



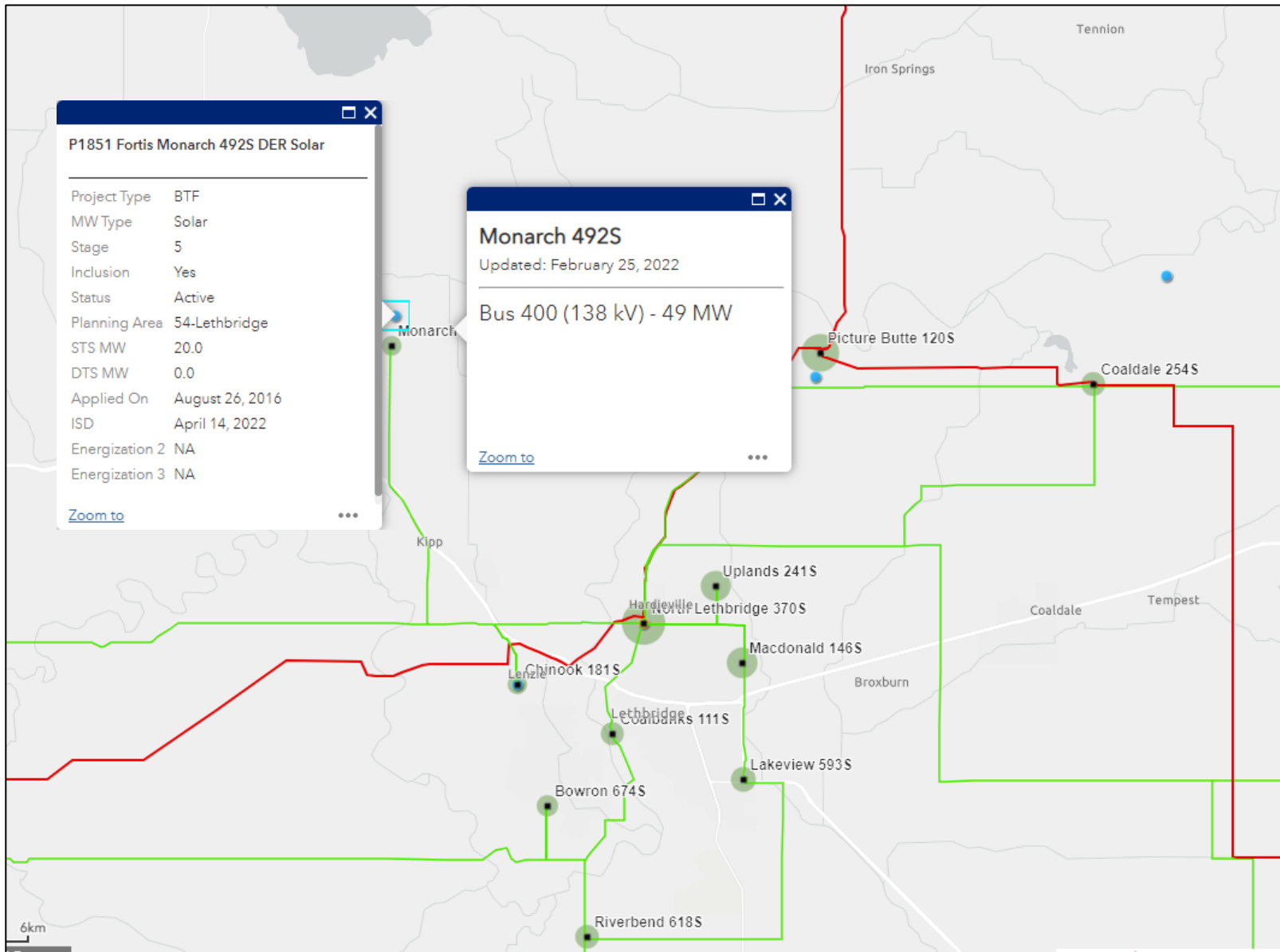
Capability cannot be Added



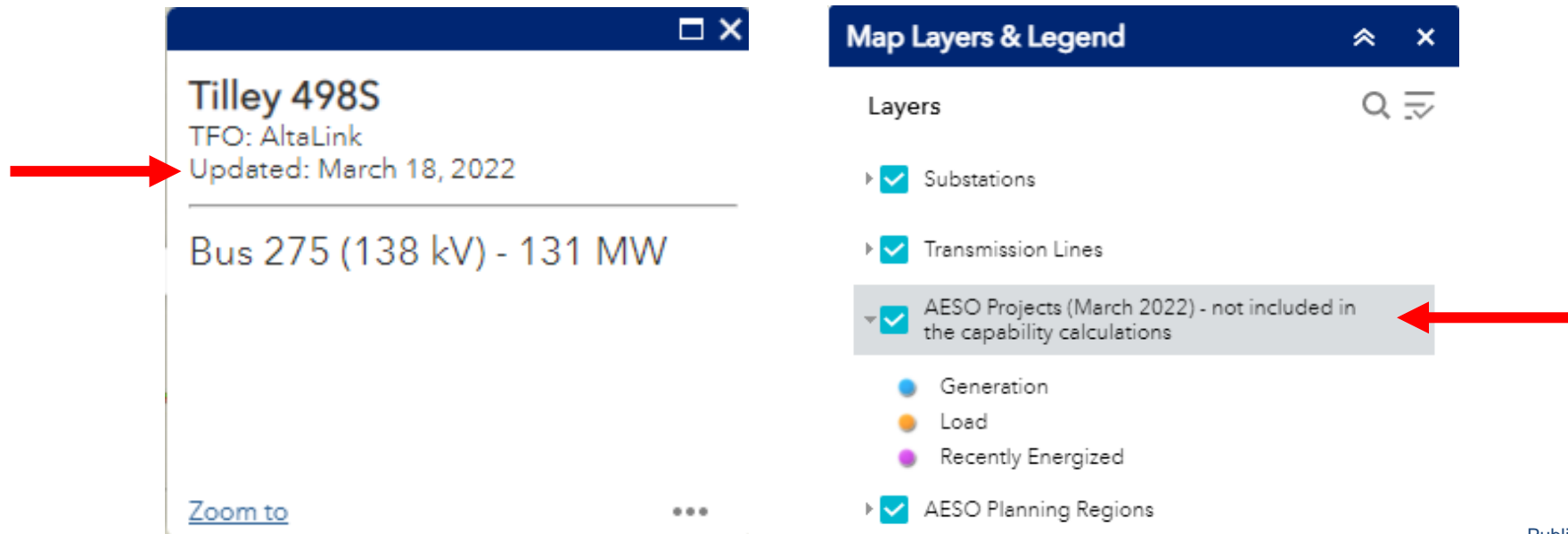
N-0 Site Capability may be Limited by other System Constraints



Future Projects can add Complexity



- Tx capability map will be generally updated annually in Q1
 - Enhancements may be released mid-year
 - The publication date is posted within the capability popup
- Future Projects will be updated monthly from the AESO Project List
 - The project list date can be found in the legend

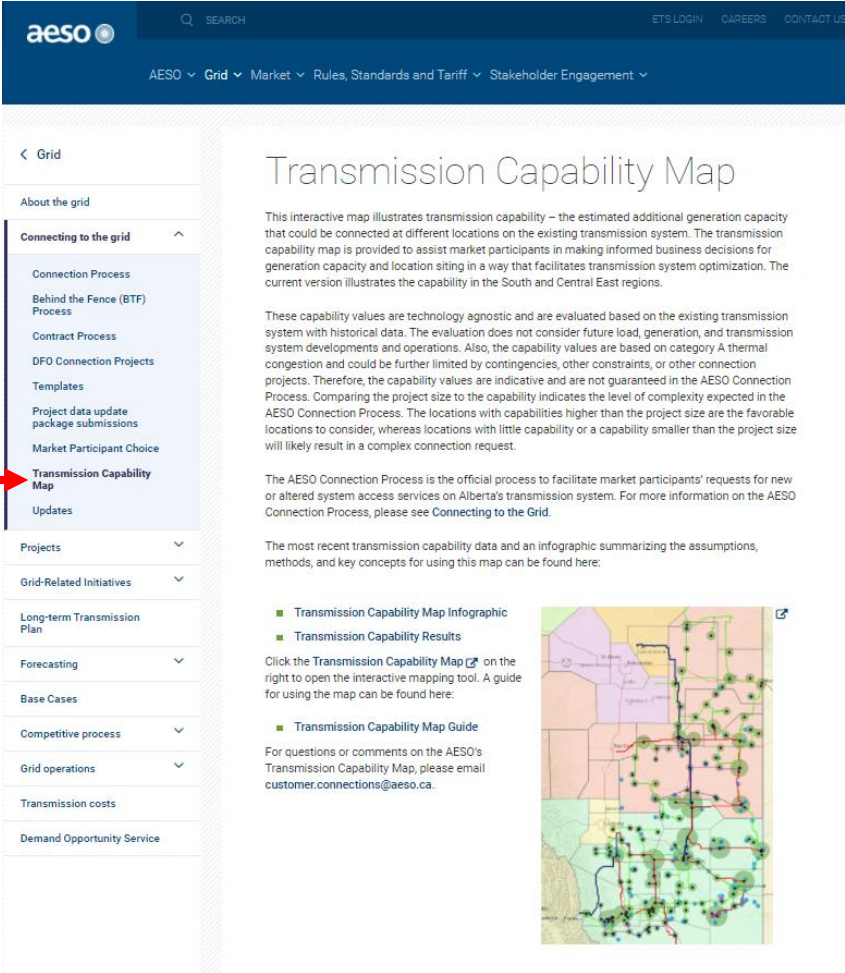


The screenshot displays two interface elements from a map application:

- Popup Window:** Titled "Tilley 498S", it shows "TFO: AltaLink" and "Updated: March 18, 2022". Below this, it lists "Bus 275 (138 kV) - 131 MW". A red arrow points to the update date.
- Map Layers & Legend Panel:** This panel lists several layers. The "AESO Projects (March 2022) - not included in the capability calculations" layer is highlighted in grey and has a red arrow pointing to it. Other layers include "Substations", "Transmission Lines", "Generation", "Load", "Recently Energized", and "AESO Planning Regions".

- Website Link:

<https://www.aeso.ca/grid/connecting-to-the-grid/transmission-capability-map>



NOTE : New capability map replaces old map

Transmission Capability Assessment (Last update: April 2019)

Optimal Integration Capability Interactive map

<https://www.aeso.ca/grid/long-term-transmission-plan/transmission-capability-assessments/>

Transmission Capability Map

This interactive map illustrates transmission capability – the estimated additional generation capacity that could be connected at different locations on the existing transmission system. The transmission capability map is provided to assist market participants in making informed business decisions for generation capacity and location siting in a way that facilitates transmission system optimization. The current version illustrates the capability in the South and Central East regions.

These capability values are technology agnostic and are evaluated based on the existing transmission system with historical data. The evaluation does not consider future load, generation, and transmission system developments and operations. Also, the capability values are based on category A thermal congestion and could be further limited by contingencies, other constraints, or other connection projects. Therefore, the capability values are indicative and are not guaranteed in the AESO Connection Process. Comparing the project size to the capability indicates the level of complexity expected in the AESO Connection Process. The locations with capabilities higher than the project size are the favorable locations to consider, whereas locations with little capability or a capability smaller than the project size will likely result in a complex connection request.

The AESO Connection Process is the official process to facilitate market participants' requests for new or altered system access services on Alberta's transmission system. For more information on the AESO Connection Process, please see [Connecting to the Grid](#).

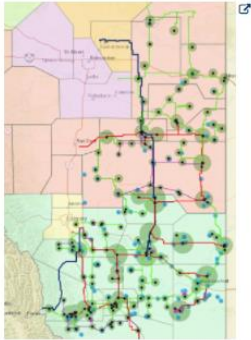
The most recent transmission capability data and an infographic summarizing the assumptions, methods, and key concepts for using this map can be found here:

- [Transmission Capability Map Infographic](#)
- [Transmission Capability Results](#)

Click the [Transmission Capability Map](#) on the right to open the interactive mapping tool. A guide for using the map can be found here:

- [Transmission Capability Map Guide](#)

For questions or comments on the AESO's Transmission Capability Map, please email customer.connections@aeso.ca.

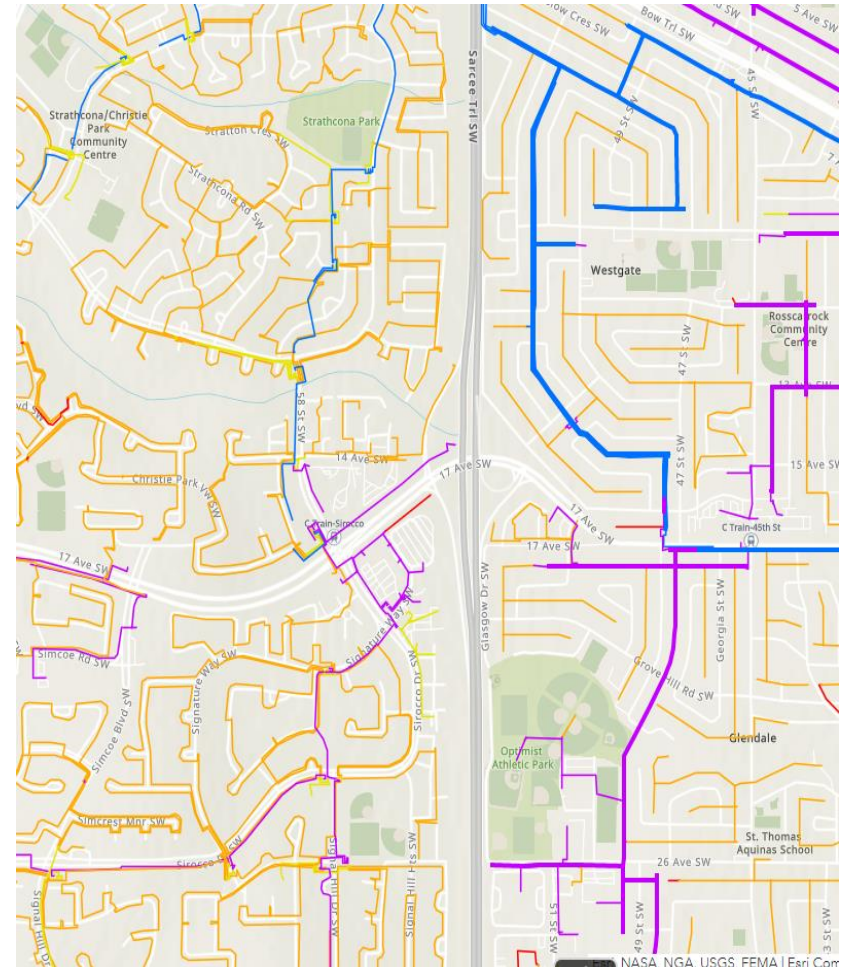


- **Infographic** to summarize the assumptions, methodology and key messages
- **Map User Guide**
- **FAQ** (to be published)
- **Contact info:** customer.connections@aeso.ca

DFO Hosting Capacity Maps

DFO Hosting Capacity Maps

- AESO and DFO maps are supplementary
 - AESO: ≥ 69 kV transmission bus capability (MW)
 - DFOs: feeder capacity (kW)



- The following DFOs provide hosting capacity for feeders

DFOs	Future Projects Included	Study Criteria	Web Address
ATCO	Yes	Thermal & voltage constraints	link
Enmax	No	Thermal, voltage, & protection constraints	link
FortisAlberta	Yes	Thermal & voltage constraints	link

- There are ongoing coordination activities between the AESO and DFOs for the capability map development

Transmission Capability Map

Moving Forward

- The 2022 capability map is now released:
 - Substations in the South and CE regions
 - Based on 2021 hourly merit order, load, and interchange data
 - Installed system as of Dec 31, 2021
 - Tx System N-0 congestion risks (all elements in service)
- The capability map will be updated annually in Q1
 - Historical data and topology from the previous year
- The AESO will continue refining methodology and adding features to the capability map to enhance user experience

Q&A

SASR Support

- AESO is expanding the SASR support we provide:
 - Connection Process documentation (existing)
 - Project List and Map (existing)
 - **Transmission Capability Map (new)**
 - **Additional engagement during SASR review (new)**
- SASR support is designed to **enhance customer service** and **improve project execution efficiency**. Market participants are better informed of possible project risks and can align on the expected complexity of a project.

- SASR support objectives include:
 - Better-informed applications that consider the complexity of the interconnection
 - SASR completeness
 - High-level assessment of connection viability, e.g., utilizing the Transmission Capability Map
 - Level set on schedule or ISD expectations and risks
 - More proactive approach to project risk management
 - Especially for situations where capacity and schedule cannot be adjusted to reduce project complexity
 - Fewer change proposals during the project lifecycle
 - Reducing rework, enabling more efficient use of AESO resources and saving time and cost for the customer

- Addressing questions related to the map or SASR process
 - Questions can be submitted to Customer.Connections@aeso.ca
- Additional engagement during SASR Review
 - For projects with anticipated complexity or requiring clarification, the AESO may reach out to a market participant during SASR review
 - Efficiency gains to be realized in later stages

- Situation:
 - Customer is considering 4 different locations across southern Alberta to install a 60 MW wind facility. Reviewing the Transmission Capability Map, the customer sees that each of the prospective locations has 50 to 70 MW of available capacity.
- Approach:
 - Avoid submitting multiple SASRs
 - Email Customer.Connections@aeso.ca with initial scope information, including locations and capacity
 - The capacity on the Transmission Capability Map is an **indicator**, therefore the capacity is not guaranteed and there could be other risks to consider. **It is recommended to reach out for more information**

- Situation:
 - Customer is fixed on a location for their new 100 MW solar facility in southeast Alberta. The Transmission Capability Map shows an estimated 95 MW of capacity in that area
- Approach:
 - Submit a SASR with the desired capacity of 100 MW
 - AESO will flag this during SASR review and may reach out to the customer to **discuss the expected project complexity**
 - The customer is made aware of the project complexities and may consider possible options, such as:
 - *Lowering capacity request*
 - *Change project location*
 - *Continue forward with a complex connection request*
 - This supports **stronger SASR applications** that consider both the customer needs and the complexity of an interconnection

Q&A

- The Transmission Capability Map is live
 - If you have additional questions, please send them to customer.connections@aeso.ca
- Additional SASR support is also live
 - If you have a prospective new SASR and are looking to understand the transmission capability, please reach out to customer.connections@aeso.ca
- The AESO will continue to monitor feedback on the transmission capability maps and assess go forward enhancements

Thank you

Contact the AESO



Twitter: [@theAESO](https://twitter.com/theAESO)

Email: stakeholder.relations@aeso.ca

Website: www.aeso.ca

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