

North Coast Electrification



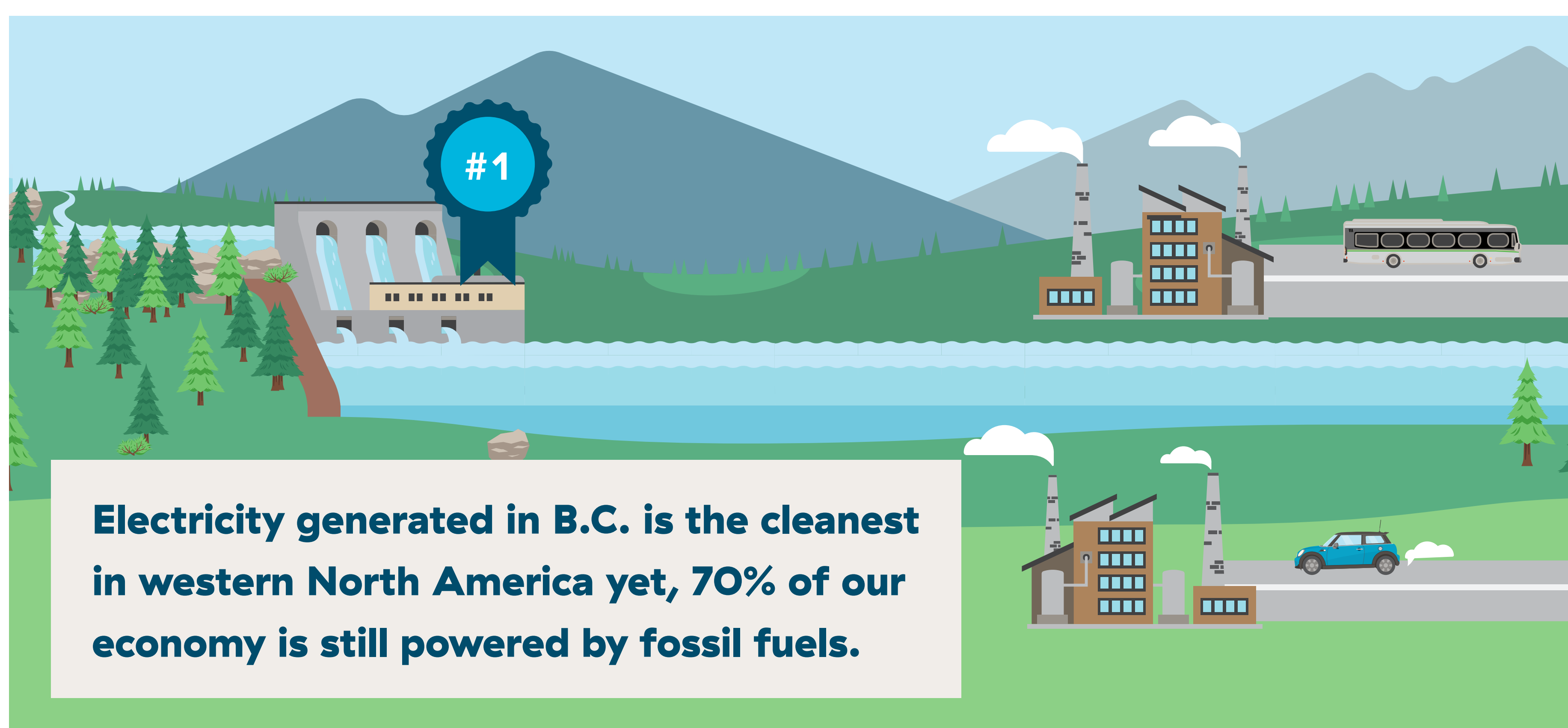
Existing 500kV transmission line

Welcome

- We're expanding our transmission system between Prince George and Terrace as part of our North Coast Electrification initiative.
- Please review the storyboards and maps to learn more about our plans.
- Project team members are here to answer your questions.
- Masks are encouraged but not mandatory.

Electrification overview

- We're bringing more clean, reliable electricity to the North Coast to help our customers switch to using clean electricity from fossil fuels to power their operations.
- Electrification supports the BC Government's CleanBC Plan and economic development goals.
- We're planning to build new transmission lines and associated infrastructure now due to the long lead time to develop projects. This will help us be ready to meet customer demand.
 - We're currently building the Prince George to Terrace Capacitors project; however, the electricity from that project is already fully subscribed.
- Depending on the level and location of customer demand, we may also need to build new transmission lines from:
 - Terrace to Kitimat
 - Terrace to Aiyansh
 - Terrace to Prince Rupert



Working in partnership with First Nations

We're working to implement the BC Government's commitment to the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

Transmission system expansion gives us a chance to take a different approach:

- Building economic relations with Indigenous peoples, including:
 - Exploring Indigenous co-ownership of new electrical infrastructure
 - Procurement
- Co-designing environmental assessment
- Deeper Indigenous involvement in decision making

We are thinking differently about how we do our business, and this new approach is an example of our work to advance reconciliation with First Nations.

Transmission system expansion

To support electrification, we're planning to build three 500kV transmission lines from Prince George to Terrace through two projects:

Prince George to Glenannan Transmission Project (PGGT)

- Approximately 170 km between Williston (near Prince George) and Glenannan (near Glenannan) substations

Glenannan to Terrace Transmission Project (GTTT)

- Approximately 130 km between Glenannan and Telkwa (near Telkwa) substations
- Approximately 145 km between Telkwa and Skeena (near Terrace) substations

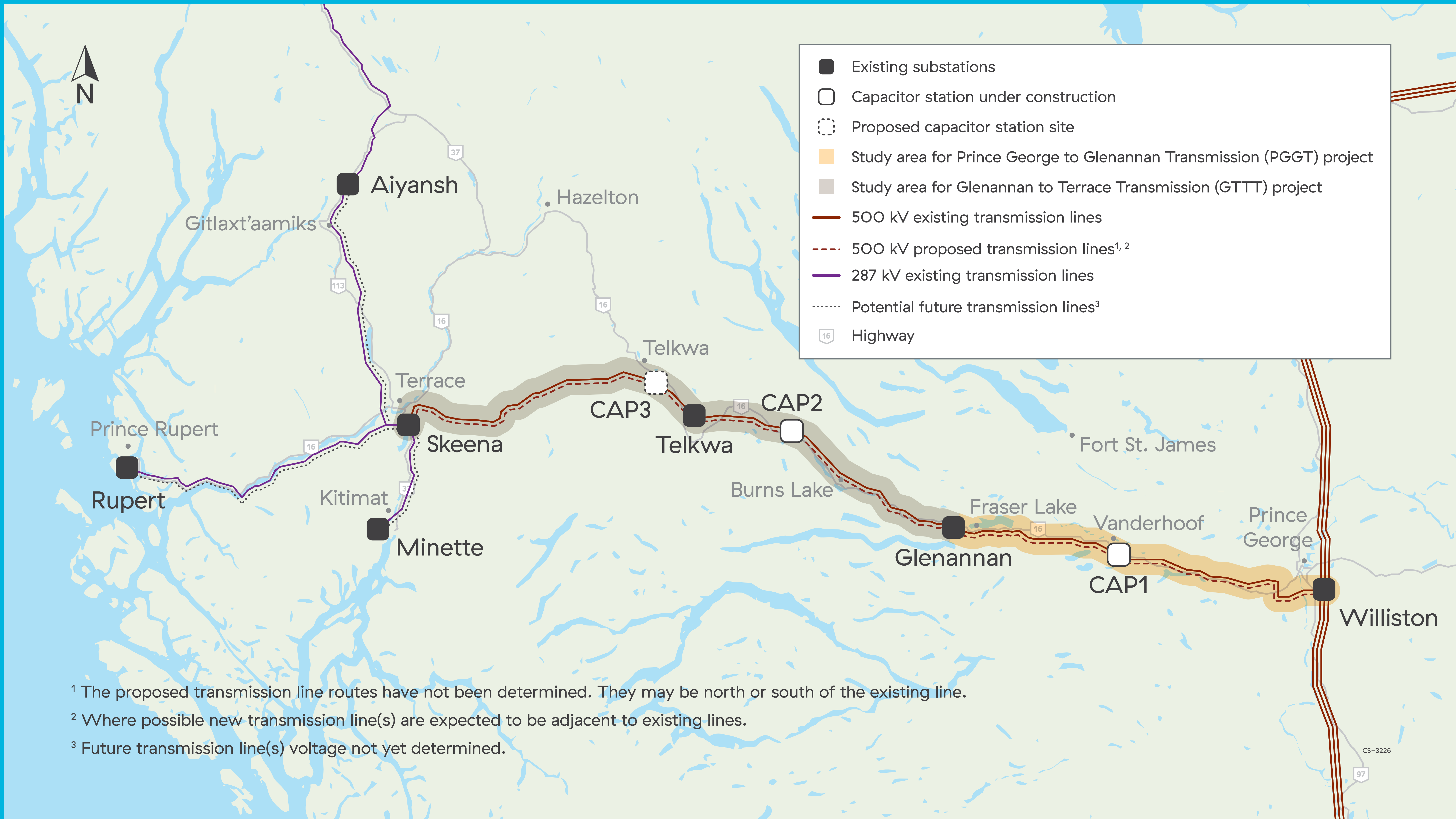
BOTH PROJECTS INCLUDE

- Substation expansions to accommodate new transmission lines
- New capacitor stations or expansions of existing stations along the new lines

PGGT is ready to move forward with route selection, field studies, and early permitting applications while work continues to advance GTTT to this stage.

Transmission system expansion

North Coast electrification



¹ The proposed transmission line routes have not been determined. They may be north or south of the existing line.

² Where possible new transmission line(s) are expected to be adjacent to existing lines.

³ Future transmission line(s) voltage not yet determined.

Power lingo



What is a substation?

A substation brings together power lines of varying voltages. Substations contain equipment that can change the voltages of these lines and safely control the flow of power.



What is a capacitor station?

As electricity moves down a long transmission line, the voltage drops; this means less electricity can be carried. Capacitor stations contain equipment to boost the amount of electricity that a transmission line can carry.

Power lingo



What is a transmission line?

Transmission lines move electricity from one point to another via numerous towers in an electric power system. Transmission lines vary in size with those carrying more electricity requiring larger towers.



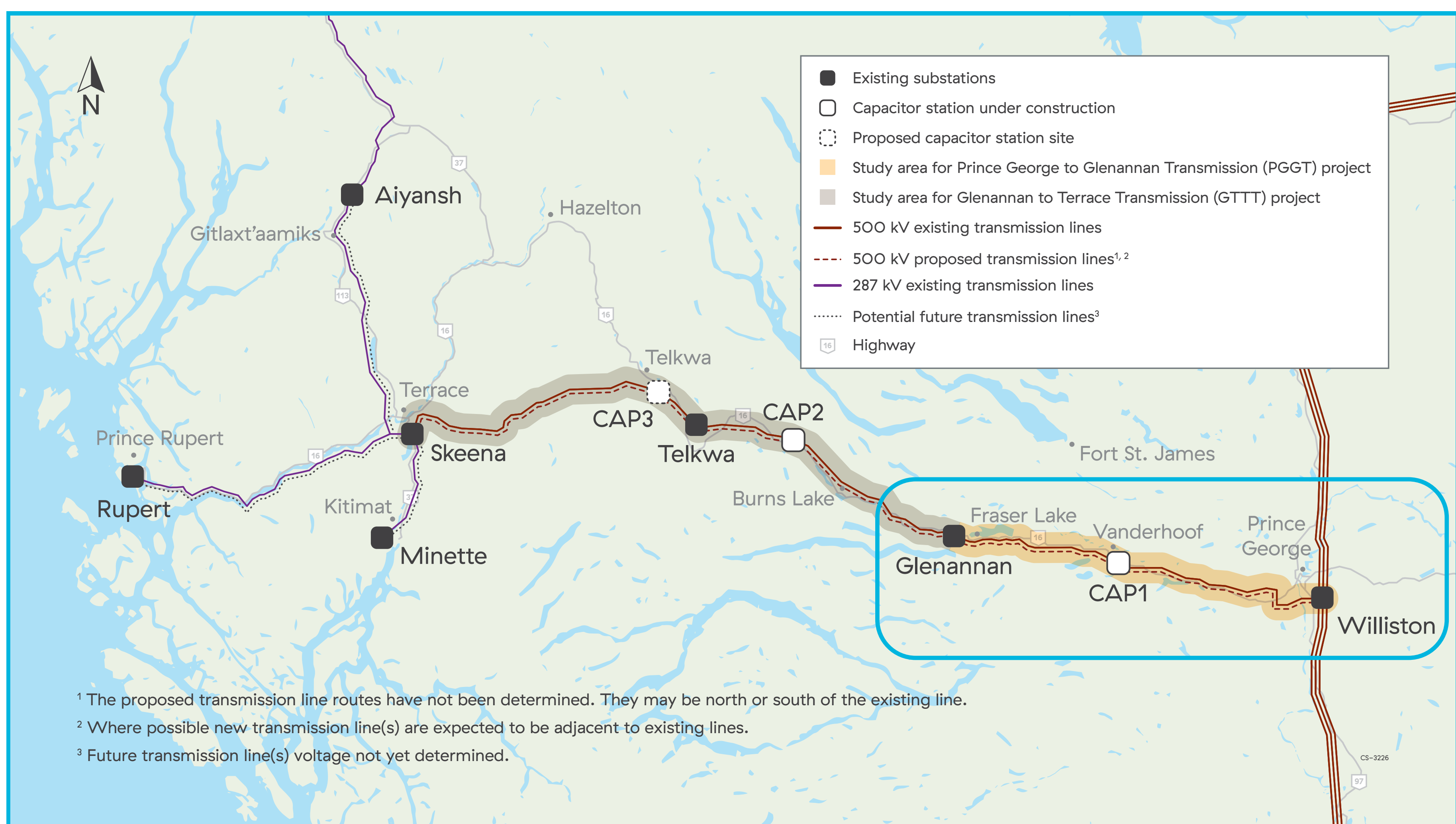
What is a node?

A node is used in transmission line route planning to identify where the transmission line connects with other infrastructure, such as a substation or capacitor station, or where a power line route can change direction. Nodes are generally numbered to make reference to them easier.

Prince George to Glenannan Transmission (PGGT)

Key project components:

- New 500 kV transmission line to be built from Williston Substation near Prince George to Glenannan Substation west of Fraser Lake
- Approximately 170km long
- Expansion of CAP 1
- Is expected to follow existing transmission corridors, where possible
- Will require expansion of Williston Substation to the east
- Glenannan Substation expansion not expected



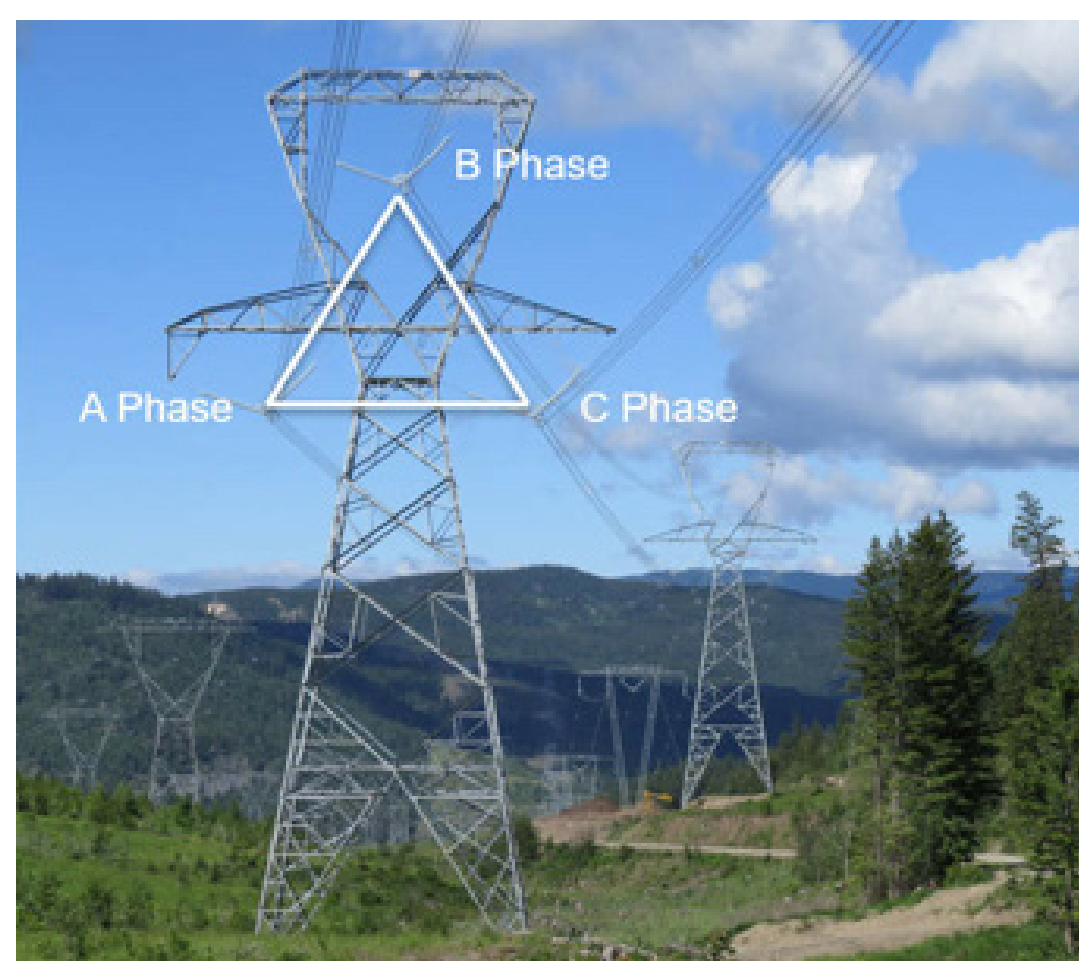
Prince George to Glenannan Transmission (PGGT)

Current project activities

- Potential corridor and route options identified
 - Studies are underway to refine route and advance design
 - Desktop environmental analysis to identify socio-environmental and archaeology features along the route corridor is complete
 - Objective is to select a leading route for further study by fall 2023
- Consultation underway with First Nations
- Stakeholder engagement underway
 - Open houses in Vanderhoof (May 8), Fraser Lake (May 9), Prince George (May 10) and online (May 23 and 31)
 - Discussions with property owners
 - Meetings with government representatives and agencies
- Preliminary access and clearing requirements being prepared
- Preparing permits required to conduct studies for the transmission line
 - Environmental and engineering studies starting summer 2023



500kV Self Support
Lattice Dead-End



500kV Self Support Delta V
Lattice Tower



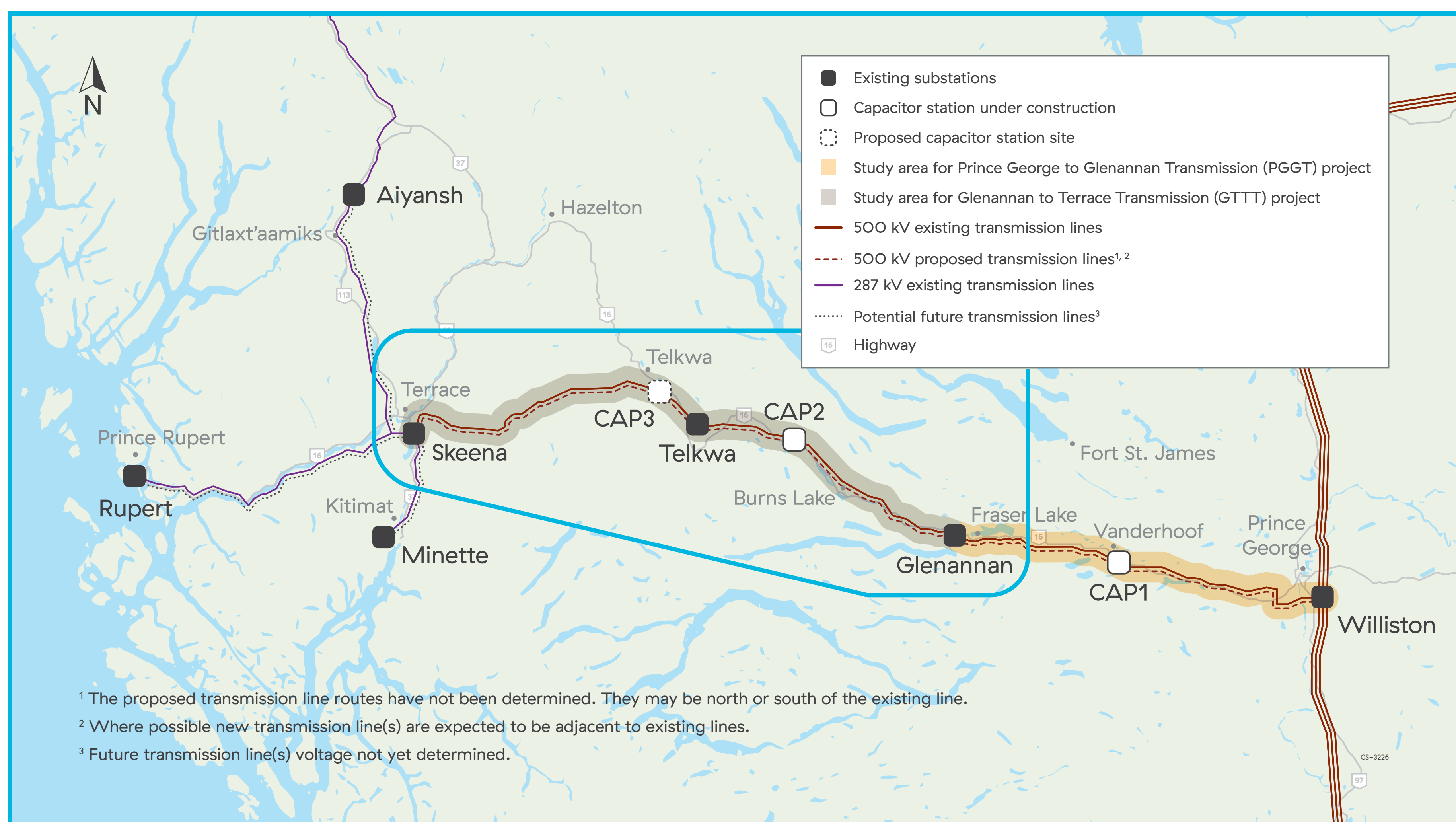
Lattice Guyed Flat Tangent

These are typical structure designs for 500 kV transmission lines

Glenannan to Terrace Transmission (GTTT)

Key project components

- Two new 500 kV transmission lines
 - Glenannan Substation to Telkwa Substation (approximately 130km long)
 - Telkwa Substation to Skeena Substation (approximately 145 km long)
- Routing corridor and options are being identified; will follow existing transmission lines where possible
 - Challenging terrain
- Potential expansion of substations
- Expansion of CAP 2 and 3, or construction of new capacitor stations



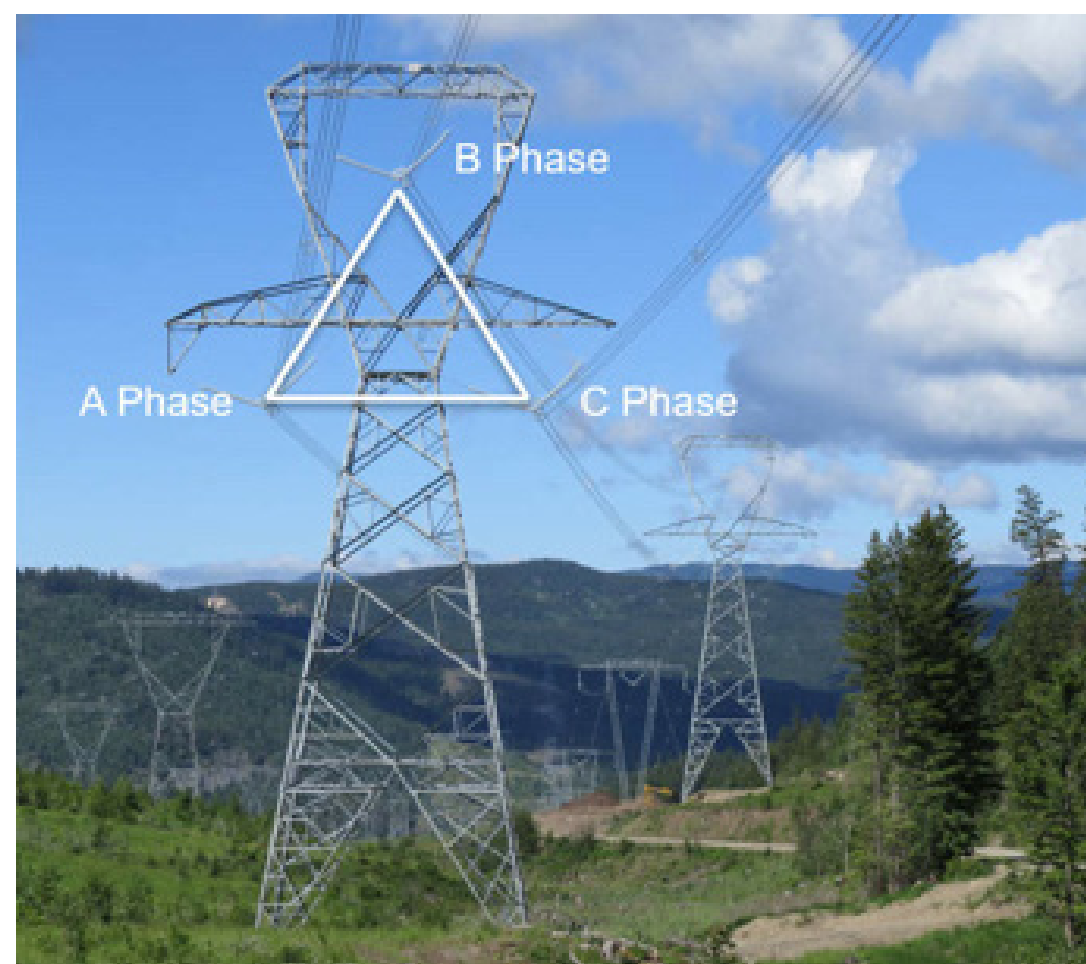
Glenannan to Terrace Transmission (GTTT)

Current project activities

- GTTT is at an earlier stage of development than PGGT
- Identifying corridor and route options
- Consultation underway with First Nations
- Stakeholder engagement underway:
 - North Coast Electrification Open Houses in Terrace (May 15), Smithers (May 16) and Burns Lake (May 17) and online (May 23 and 31)
 - Meetings with government representatives and agencies
 - GTTT Open houses in fall/winter 2023 between Glenannan and Terrace
- Desktop environmental analysis to identify socio-environmental and archaeology features along the route corridor to be completed over spring/summer 2023
- Work initiated on preliminary access and clearing requirements



500kV Self Support
Lattice Dead-End



500kV Self Support Delta V
Lattice Tower



Lattice Guyed Flat Tangent

These are typical structure designs for 500 kV transmission lines

Steps in building a transmission line

We are here



Planning	Transmission line design	Pre-construction	Construction
<ul style="list-style-type: none"> ○ Identify route corridors ○ Identify route options ○ Identify right-of-way requirements ○ High-level environmental review ○ Initial engineering and environmental field studies to determine if lines can be built in an area ○ Route selection 	<ul style="list-style-type: none"> ○ Detailed engineering and environmental studies ○ Permit applications ○ Confirm placement of structures ○ Confirm new right-of-way ○ Acquire property rights including access 	<ul style="list-style-type: none"> ○ Clearing ○ Access ○ Prepare ROW so that foundations and towers can be installed ○ Purchase construction materials 	<ul style="list-style-type: none"> ○ Foundations ○ Towers ○ Line stringing ○ Restoration

Consultation and engagement will be ongoing through all project phases.

Identifying route options

We've identified potential route options as a starting point based on:

- Minimizing impacts and costs
- Identifying the shortest, most direct route
- Minimizing land fragmentation by placing routes adjacent to existing corridors
- Using existing rights-of-way, where possible
- Ensuring safe construction and operation

Additional considerations will include:

First Nations input	Stakeholder input
Environment	Constructability
Archaeology	Public safety
Social	Other technical factors
Economic	Others to be identified

PGGT route corridor and options

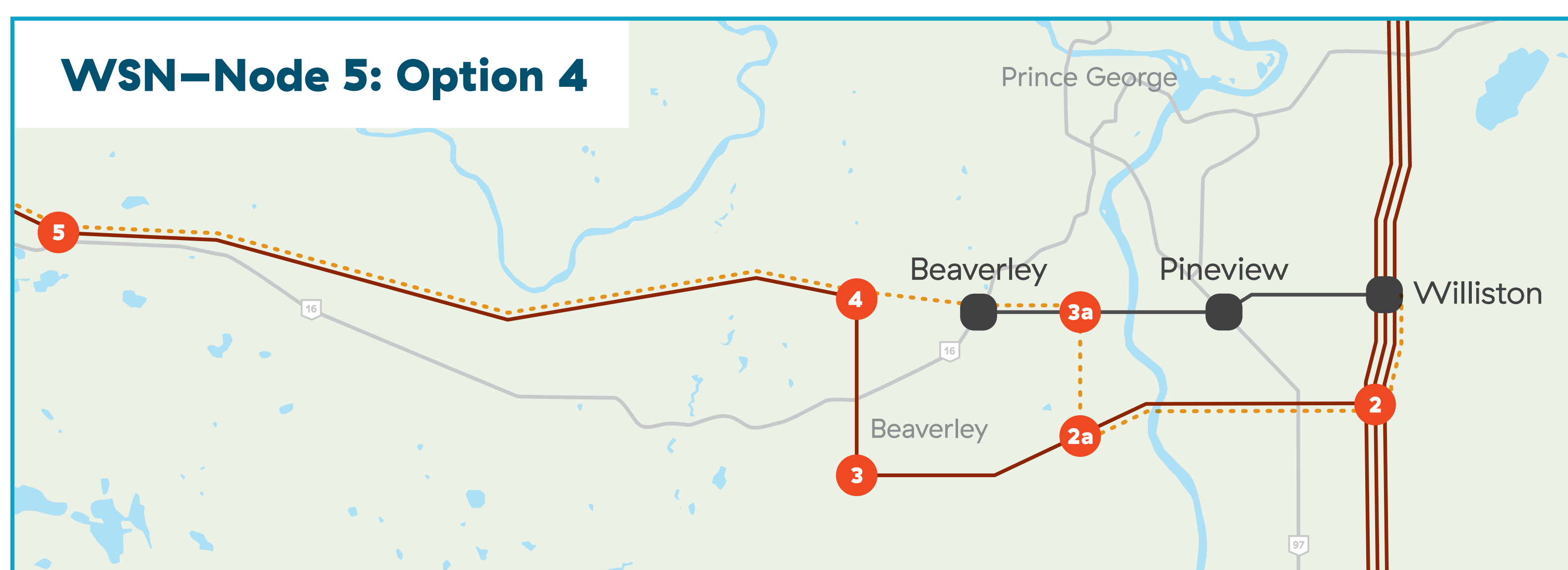


We have identified a route corridor as well as route options along certain parts of the corridor:

- Four route options from Williston Substation (Prince George) to Node 5
- One route option from Node 5 to Node 8
- Two route options from Node 8 to Node 9
- One route option from Node 9 to Glenannan Substation

Routing options

Williston Substation to Node 5



The proposed transmission line routes have not been determined. They may be north or south of the existing line.

Routing options

Williston Substation to Node 5

The following table provides an overview of differences between the options. Items that are similar between the options are identified on the next storyboard.

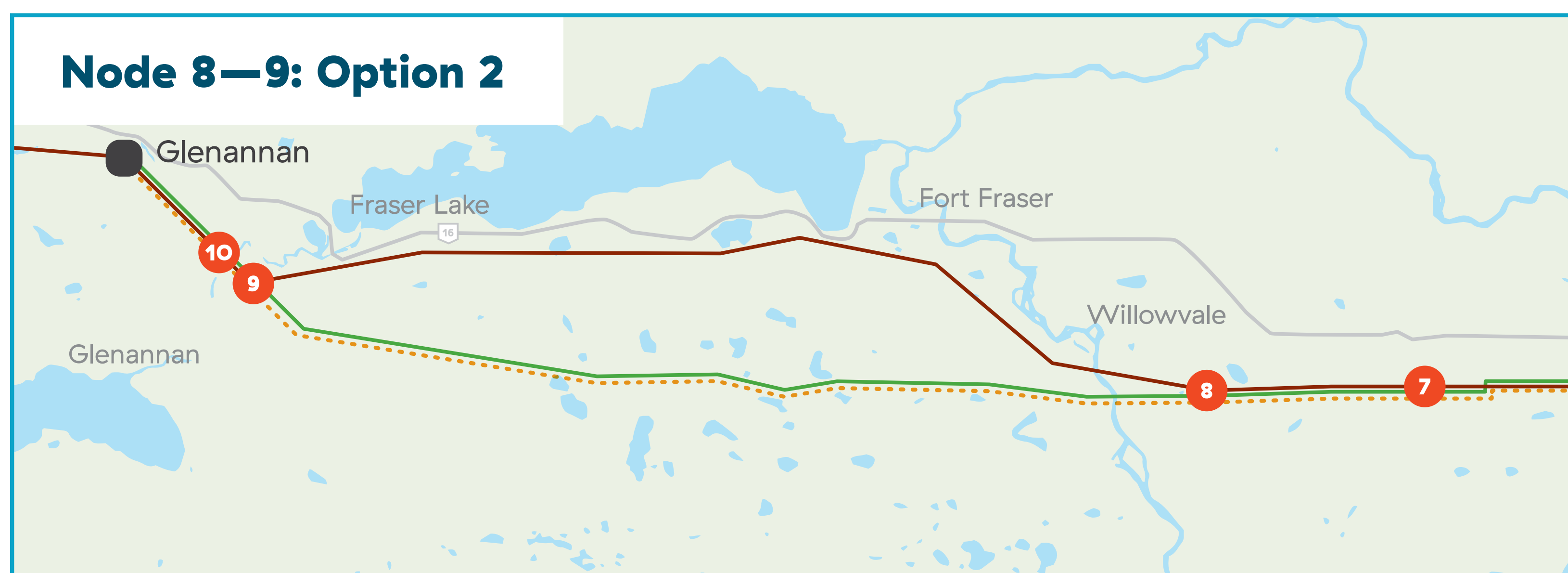
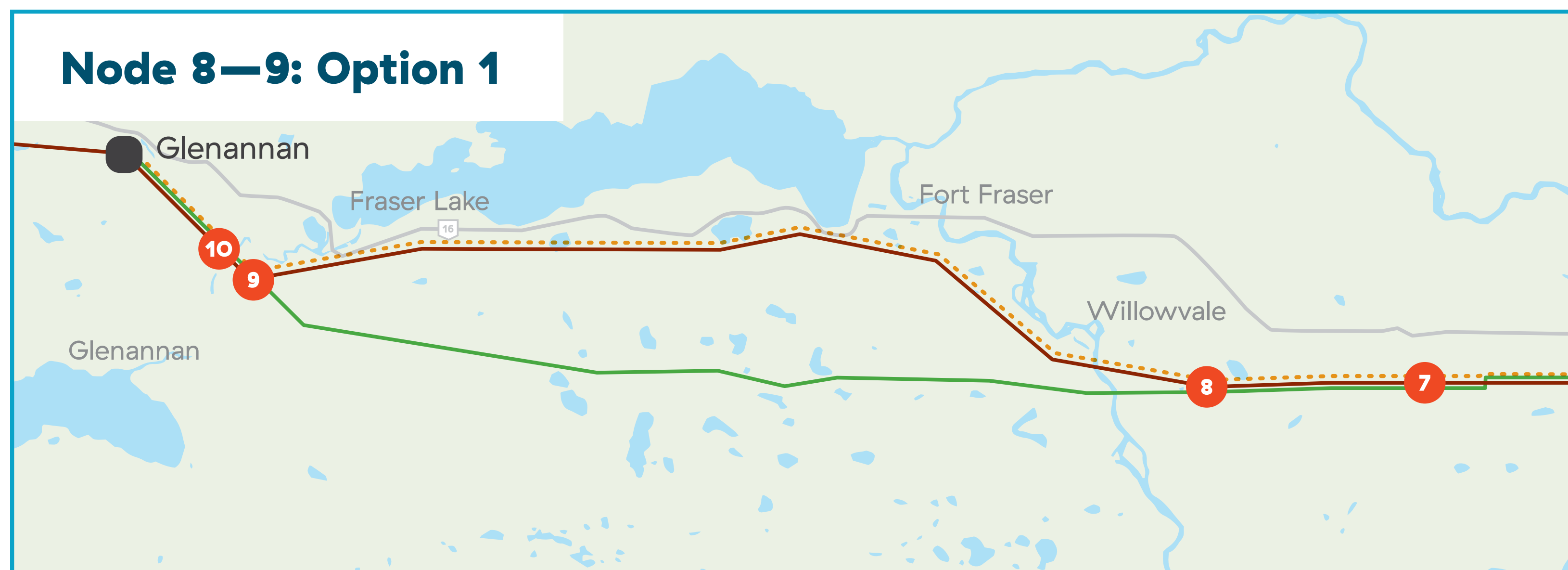
Consideration	Option 1	Option 2	Option 3	Option 4
Route length (km)	53	58	50	53
New right of way not adjacent to existing lines (km)	30	0	8	4
Vegetation clearing	<ul style="list-style-type: none"> <input type="radio"/> Clearing along existing right-of-way <input type="radio"/> Extensive clearing along new right-of-way 	Clearing along existing right-of-way	Clearing along new and existing right-of-way	<ul style="list-style-type: none"> <input type="radio"/> Clearing along new and existing right-of-way <input type="radio"/> Extensive clearing on private property
Effects on other transmission lines	Crosses three 500 kV lines	Crosses three 500 kV lines	<ul style="list-style-type: none"> <input type="radio"/> May result in multiple 500 kV line crossings at Williston substation and along the route <input type="radio"/> Operate existing line at 500 kV <input type="radio"/> Need to build a new 69 kV line 	<ul style="list-style-type: none"> <input type="radio"/> Crosses four 500 kV lines <input type="radio"/> Need to build a new 69 kV line
Private Properties along the route corridor	86	101	87	88
Birds	Critical habitat for bank swallow	Critical habitat for bank swallow	Critical habitat for bank swallow	

All options:

- Require upgrades to existing and creation of new access
- Interact with other land users including agricultural land, traplines, woodlots
- Cross wetlands
- Cross waterways, including waterways that are home to White sturgeon (listed species)
- Overlap with ungulate winter habitat for moose and/or deer
- Are within 200m of archaeology sites

Routing options

Node 8 to 9



The proposed transmission line routes have not been determined. They may be north or south of the existing line.

Consideration	Option 1	Option 2
Total length	35	34
New right-of-way required	35	34
Provincial parks	Crosses Beaumont Provincial Park	No provincial parks identified
Communities	Crosses First Nations Reserve close to Fraser Lake	Avoids First Nations Reserve, avoids Fraser Lake
Private properties	71	24
Vegetation clearing	Clearing along right-of-way, parallelling existing 500 kV line	Clearing along right-of-way, parallelling existing 230 kV line

Both options:

- Overlap archaeology sites
- Cross wetlands
- Cross waterways, including those home to White Sturgeon (listed species)
- Interact with other land use

Studies



- We're planning to start environmental field studies during summer of 2023
 - Wildlife—amphibians, bats, birds, wildlife habitat, remote cameras
 - Fish—stream assessments
 - Vegetation—Terrestrial Ecosystem Mapping, rare plants
 - Archaeology
 - First Nations Traditional Use Studies
- Study areas and locations will depend on type and subject of the study, and where clearing and/or ground disturbance will occur
- We will use the findings to complete the Environmental Overview Assessment and Archaeological Overview Assessment and to help us develop both strategies to deal with potential effects and monitoring programs
- Preliminary engineering and survey studies starting spring 2023

Schedule

Key dates	Activity
Fall 2022 to Summer 2024	<ul style="list-style-type: none"> ○ Start desktop and field studies ○ Assess route and site options ○ Select route and capacitor station locations
2023 to 2028	<ul style="list-style-type: none"> ○ Complete studies and design work ○ Seek required regulatory approvals
2026	Start construction Prince George to Glenannan Project
2028	Start construction Glenannan to Terrace Project
Fall 2030	Target in-service date Prince George to Glenannan Project
Fall 2032	Target in-service date Glenannan to Terrace Project

We are working to identify ways to shorten the schedule.

Next steps

- Advance project planning
- Continue First Nations consultation and stakeholder engagement
- Select route and capacitor station sites
- Determine regulatory and environmental requirements
- Acquire property rights
- Complete:
 - Required studies
 - Required regulatory/environmental processes
 - Planning design

Thank you for attending

- Please complete a comment form to share your feedback and leave it with us
 - Alternatively, email us at projects@bchydro.com or complete the on-line feedback survey at bchydro.com/ncelectrification
- We'll continue to keep you informed as the project advances
- For more information, please visit bchydro.com/ncelectrification
- Please contact us toll free at **1 866 647 3334** or at projects@bchydro.com if you have any additional questions or comments

