North Coast Electrification

Virtual Open House May 23, 2023



Virtual Meeting Etiquette

Welcome!

- Use the 'raise your hand' button for comments/questions
- Mute your microphone when not speaking
- Please don't use a virtual background with video to save bandwidth
- Share air space so that everyone can participate
- Challenge ideas, not people
- We aren't recording this session, and kindly ask that others do not record





Agenda

- Introductions
- North Coast Electrification Overview
- Working in partnership with Indigenous Nations
- Prince George to Glenannan Transmission Project
- Glenannan to Terrace Transmission Project
- Transmission Line Development
- Prince George to Glenannan Routing Options
- Studies
- Schedule
- Next Steps and Q&A



Electrification Overview

- We're bringing more clean, reliable electricity to the North Coast to help customers switch to clean electricity from fossil fuels
- Electrification supports the Government's CleanBC Plan and economic development goals
- We're planning now for the new transmission lines and associated infrastructure due to the long lead time; this will help us be ready to meet customer demand
 - We're currently building the Prince George to Terrace Capacitors Project; however, it 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, Aiyansh, and/or Prince Rupert

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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:
 - Build economic relations with Indigenous peoples, including:
 - exploring Indigenous ownership of new electrical infrastructure
 - procurement
 - Co-design environmental assessment
 - Deeper Indigenous involvement in decision making
- We're thinking differently about how we do our business, and this new approach is an example of our work to advance reconciliation with Indigenous Nations.





Substation: brings together power lines of varying voltages; contains equipment that can change the voltages of these lines and safely control the flow of power

Capacitor station: contains equipment that boosts voltage, allowing more electricity to be carried along a transmission line

Transmission lines: move electricity from one point to another via numerous towers; lines vary in size with those carrying more electricity requiring larger towers

Node: used in transmission line route planning to identify where the line connects with other infrastructure like a sub-station or capacitor station or where a route can change direction. Nodes are numbered to make reference to them easier.



Transmission System Expansion



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Prince George to Glenannan Transmission (PGGT) **Project**



- New 500 kV transmission line from Williston to Glenannan Substation
- Approximately 170km long
- Expansion of Cap 1 capacitor station
- Expected to follow existing transmission corridors, where possible
- Will require expansion of Williston substation to the east
- Glenannan Substation expansion not expected



PGGT Key Activities

- Potential corridor and route options identified
 - Studies underway to refine route and advance design
 - Desktop socio-environmental and archaeology analysis along corridor complete
 - Working to identify a leading route for further study by fall 2023
- Consultation underway with Indigenous Nations
- Stakeholder engagement underway
 - Open houses in Vanderhoof, Fraser Lake, Prince George
 - Discussions with property owners, government reps and agencies
 - Virtual open houses for increased accessibility
- Preliminary access and clearing requirements are being finalized
- Preparing permits needed to conduct studies for the transmission line
 - Environmental and engineering studies start summer 2023



Glenannan to Terrace Transmission (GTTT) Project



- Two new transmission lines
 - Glenannan Substation to Telkwa Substation
 - Telkwa Substation to Skeena Substation
- Routing corridor and options are being identified; will follow existing transmission lines where possible (challenging terrain)
- Potential expansion of Glenannan, Telkwa, and Skeena Substations

GTTT Key Activities

- Identifying corridor and route options
- Consultation underway with First Nations
- Stakeholder engagement underway:
 - Open houses in Terrace, Smithers and Burns Lake
 - Discussions with property owners, government reps and agencies
 - Virtual open houses for increased accessibility
- 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

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Steps in Building a Transmission Line

Planning We are here	Transmission Line Design	Pre-construction	Construction
 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 	 Detailed engineering and environmental studies Permit applications Confirm placement of structures Confirm new right-of- way Acquire property rights including access 	 Clearing Access Prepare ROW so that foundations and towers can be installed Purchase construction materials 	 Foundations Towers Line stringing Restoration

Consultation and engagement will be ongoing through all project phases.

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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 next to existing corridors
- Using existing rights-of-way, where possible
- Ensuring safe construction and operation

Additional considerations will include:

- First Nations input
- Environment
- Archaeology
- Social
- Economic

- Stakeholder input
- Constructability
- Public safety
- Other technical factors
- Others to be identified



Typical 500kV Structure Designs



500kV Self Support Lattice Dead-End

B Phase A Phase C Phase

500kV Self Support Delta V Lattice Tower



Lattice Guyed Flat Tangent

These are typical structure designs for 500 kV transmission lines



PGGT Route Corridor and Options

(CAP 1)



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

Two options

- One route option from Node 5 to Node 8
- O Two route options from Node 8 to Node 9
- One route option from Node 9 to Glenannan Substation



Four options

PGGT Routing Options – Williston 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 to Node 5

Consideration	Option 1	Option 2	Option 3	Option 4
Route length (km)	53	58	50	53
New right-of-way not adjacent to existing (km)	30	0	8	4
Vegetation clearing	 Clearing along right-of-way Extensive clearing along new right-of- way 	Clearing along right-of-way	Clearing along right-of-way	 Clearing along right- of-way Extensive clearing on private property
Effects on other transmission lines	Crosses three 500 kV lines	Crosses three 500 kV lines	 May result in multiple 500 kV line crossings at Williston substation and along the route Operate existing line at 500 kV Need a new 69 kV line 	 Crosses four 500 kV lines Need a new 69 kV line
Private properties along the corridor	86	101	87	88
Birds	Critical habitat for bank swallow	Critical habitat for bank swallow	Critical habitat for bank swallow	

Routing Options – Williston to Node 5

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.



Routing Alternatives – Nodes 8 to 9

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:

O Overlap archaeology sites

O Cross wetlands

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

Studies

- Planning to start environmental field studies summer 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
- We'll use the findings in the Environmental Overview Assessment and Archaeological Overview Assessment and to help us develop both strategies to deal with potential effects and monitoring programs



Schedule

Key Dates	Activity	
Fall 2022 to Summer 2024	 Start desktop and field studies 	
	 Assess route and site options 	
	 Select route and capacitor station locations 	
2023 to 2028	 Complete studies and design work 	
	 Seek required regulatory approvals 	
2026	 Start construction PGGT 	
2028	Start construction GTTT	
Fall 2030	 Target in-service date PGGT 	
Fall 2032	 Target in-service date GTTT 	

We're working to identify ways to shorten the schedule.

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Next steps

- Advance project planning
- Continue Indigenous 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
 - Technical requirements



Questions?

Power smart:



Thank you!

- We'll continue to keep you informed as the project advances
- For more information, please visit <u>bchydro.com/ncelectrification</u>
- Please contact us toll free at 1 866 647 3334 or at projects@bchydro.com if you have any additional questions or comments

