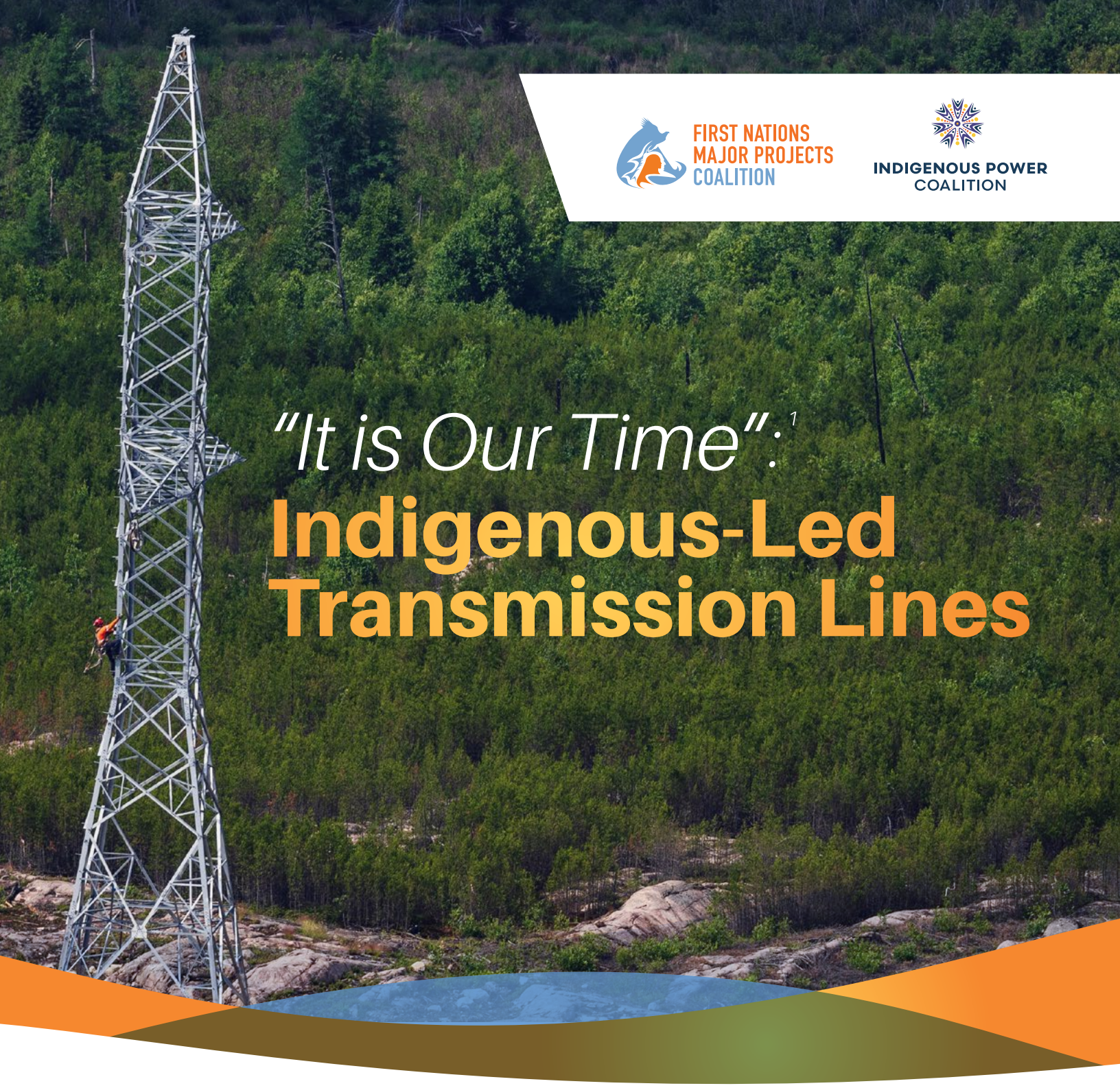

FIRST NATIONS MAJOR PROJECTS COALITION

INDIGENOUS POWER COALITION

"It is Our Time":[1] Indigenous-Led Transmission Lines

March 2026

Prepared By:

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- **Kwatuuma Cole Sayers** *(Hupačasath Nation),* Executive Director, Indigenous Power Coalition

[1] Kahsennenhawe Sky-Deer [personal communication] September 2025.

With Gratitude

Thank you to all who have built a pathway for Indigenous-led transmission, sharing and showing possible ways for other Indigenous nations to follow.

Special thank you to:

» **Kahsennénhawe Sky-Deer** *(Kahnawà:ke) for sharing insights about* the Hertel Line Project

» **Margaret Kenequanash** (*North Caribou Lake First Nation) for sharing insights about* Wataynikaneyap Power

» **Pat Chilton** (*Cree Nation of Kashechewan) for sharing insights about* Five Nations Energy Inc.

First Nations Major Project Coalition

FIRST NATIONS MAJOR PROJECTS COALITION

First Nations Major Projects Coalition (FNMPC) is a non-profit organization of 180+ First Nation members in ten provinces and two territories. With respect to major projects in Canada, FNMPC has a mandate to advance the economic and environmental interests of its membership, including through advocacy, thought leadership, capacity development, and project support. Currently, FNMPC staff are supporting members on more than a dozen projects across the country (e.g., designing governance frameworks, negotiating term sheets for equity partnership, advancing impact assessment activities). FNMPC also develops resources for the benefit of members, such as backgrounders explaining new policy developments and toolkits that members can use themselves in the field. These efforts are intended to support members in making informed decisions related to commercial and regulatory components of major projects impacting their lands and waters.

FNMPC is project and industry agnostic. Its operating principles include being member-driven, neutral, unbiased, value-maximizing, and collaborative. To ensure that FNMPC remains impartial, it does not take a financial stake in projects. All activities are undertaken with the sole intent of benefitting FNMPC's First Nation membership.

Indigenous Power Corporation

INDIGENOUS POWER COALITION

Indigenous Power Coalition (IPC) is a new non-profit organization that supports Indigenous Nations to lead clean electricity infrastructure projects from initiation to operation. The Coalition's goal is to advance economic reconciliation by flipping the conventional script on Indigenous project involvement from consulted Rightsholders to project proponents and leaders. Shifting this power dynamic in the electricity sector will not only open the door for increased Indigenous equity and ownership, but it will also increase autonomy over decision-making including who partners in a project and how a project gets built.

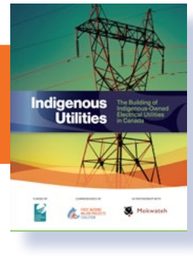
To achieve this goal, Indigenous Power Coalition convenes Nations around new project opportunities, creates collaborative space for coalition building, and brings critical, practical information to the table so that Nations can make decisions–individually and collectively–that serve their interests and ambitions. The Coalition works with technical modelers, legal and regulatory experts, and financial professionals to address issues related to project risk, financing, and equity models.

The Indigenous Power Coalition's initial focus is on opportunities for Indigenous-led interprovincial transmission projects in Western Canada. As a not-for-profit with no commercial interests, the Coalition's only stake in these projects is Nations' success.

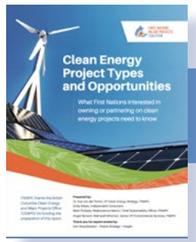
Supporting First Nations Project Development and Electricity Infrastructure Ownership

Electricity infrastructure represents a large area of opportunity and involvement for our First Nation members. The following FNMPC publications provide context and offer deeper exploration of Indigenous-led and -owned electricity projects.

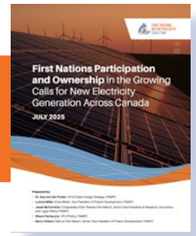
National Indigenous Electrification Strategy



Indigenous Utilities: The Building of Indigenous-Owned Electrical Utilities in Canada



Clean Energy Project Types & Opportunities



First Nations Participation and Ownership in the Growing Calls for New Electricity Generation Across Canada

Spirit of the Land Environmental Tools

Opportunities for First Nations-Owned Utilities in British Columbia

Interested in other topics? Explore the FNMPC's full resource library.

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Forewords

Sharleen Gale *(Fort Nelson First Nation),* Executive Chair of the Board of Directors, FNMPC

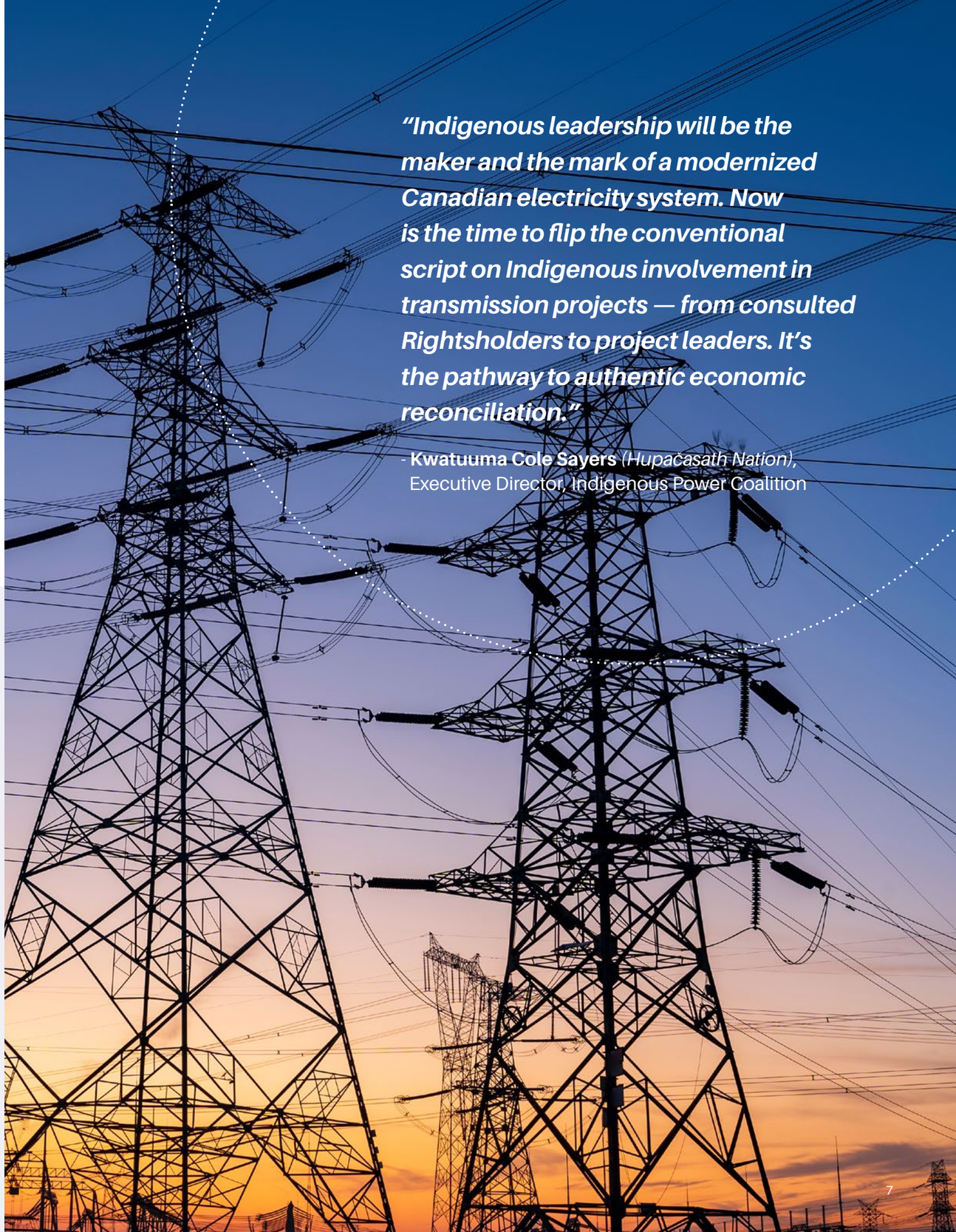
Across this country, First Nations are advancing a new era of electrification—one by First Nations leadership, ownership, and long-term prosperity in projects such as transmission lines. Through the work of the First Nations Major Projects Coalition and our National Indigenous Electrification Strategy, we have articulated a clear path forward: First Nations must be equity partners, planners, and operators in the infrastructure that will power the next generation. Transmission and interties are not simply wires on a map; they are assets that connect communities across Canada to economic opportunity and anchor to a clean energy future.

FNMPC's work First Nations Electrical Utilities reinforces that when First Nations lead and own electricity infrastructure, we shift from project-by-project participation to system-level leadership—setting standards, supporting Indigenous-led environmental assessment, and aligning electrification with the priorities of each First Nation. This paper reflects that shift. Indigenous-led transmission and interties is not an aspirational concept; it is a practical, scalable model for how Canada can build the grid it needs while upholding First Nations rights, strengthening local economies, and ensuring that electrification advances our collective prosperity.

Kwatuuma Cole Sayers *(Hupačasath Nation),* Executive Director, Indigenous Power Coalition

For too long, our Nations have been positioned to react to externally designed electricity projects—invited to comment on routes, mitigate impacts, or negotiate benefits after the fundamental decisions have already been made. We launched the Indigenous Power Coalition to flip this script. We envision the next generation of clean electricity projects getting built, not only with Indigenous ownership, but under Indigenous direction and authority. That includes leadership on decisions such as location, engagement practices, ownership structures, financing, and long-term planning. After all, these are not merely physical infrastructure decisions. They are expressions of Nationhood and the exercise of our inherent authority to plan for our homelands and future generations.

Interprovincial transmission projects offer a critical and timely opportunity to shift the dynamics in the electricity sector. Major investments in new, large-scale transmission projects to meet energy demand are on the horizon. They will depend on and impact Indigenous territories. These projects can and should be shaped by Nation-defined priorities—energy sovereignty, climate resilience, revenue generation, cultural continuity, and inter-regional cooperation. Governance over routing is not a procedural step; it is a matter of long-standing Indigenous laws, responsibility, protocols, and vision. When we lead, projects reflect our values and our timelines. This paper offers a useful landscape on Indigenous participation models in transmission projects, and IPC is excited to advance an Indigenous leadership model in which the future grid is shaped by Indigenous-led transmission projects in a way that strengthens our Nations' opportunities and affirms our leadership in this space.



"Indigenous leadership will be the maker and the mark of a modernized Canadian electricity system. Now is the time to flip the conventional script on Indigenous involvement in transmission projects — from consulted Rightsholders to project leaders. It's the pathway to authentic economic reconciliation."

– **Kwatuuma Cole Sayers** (*Hupačasath Nation*), Executive Director, Indigenous Power Coalition

Part 1
Context for Indigenous Ownership in Transmission

To meet growing electrification demands, Canada's electricity grid will need to double or triple its capacity over the next two decades.[2] This relies on widespread building of new transmission lines, reinforcement of existing ones, and the buildout of inter-regional grid connections ("interties"). Both changing economic conditions and national grid decarbonization are driving Canada's pace, and as a result, a unique opportunity has arisen: to advance economic reconciliation through Indigenous-led, -owned, and -partnered electricity projects.[3]

Canada is entering a once-in-a-century build-out of transmission infrastructure. The scale of new lines required — doubling or tripling the existing grid — represents not only a technical challenge but a generational opportunity. If Indigenous ownership and leadership are centered from the outset, this expansion can become a cornerstone of economic reconciliation rather than a repeat of past exclusion from major infrastructure decisions.

Indigenous nations are already playing a central role in developing transmission infrastructure across Turtle Island. This makes sense, all key potential transmission corridors run through traditional territories of Indigenous nations; any new transmission line in Canada should only occur with the free, prior, and informed consent of the impacted Nations. Beyond consent, Indigenous equity participation or ownership of transmission lines has been and can be an economic driver for Indigenous nations as transmission lines tend to be a stable investment within a regulated industry. Additionally, Indigenous leadership of transmission projects has facilitated the electrification of communities that may not have otherwise been connected.

This paper offers an overview of Canada's transmission networks and is intended to provide First Nations with an introductory look at transmission lines and ownership—specifically those already being led by or partnered with Indigenous nations.

Towards a shared solution

Canada and First Nations across the country are experiencing interrelated energy challenges.

- **Challenge one:** Canada's electricity system remains highly fragmented, with each power grid largely confined within provincial or territorial borders. While this provincial-territorial autonomy has historical roots, it now hinders progress towards the country's decarbonization and economic goals of being "one Canadian economy." Additionally, assessment and regulatory systems will be required to collaborate effectively and to make these projects viable.[4]

- **Challenge two:** many Indigenous nations face unreliable, outdated, or non-existent grid infrastructure. This restricts their ability to develop new economic development projects in their territories, to adopt clean technologies, or to participate in larger-scale renewable generation. As this paper explores, Indigenous leadership in and ownership of transmission projects can support both challenges and more. However, the journey towards shared solutions is notably complex.

[2] Government of Canada, 13 August 2025. Powering Canada's Future: A Clean Electricity Strategy, https://natural-resources.canada.ca/sites/admin/files/documents/2025-08/Clean-Electricity-Strategy.pdf.
[3] First Nations Major Projects Coalition, July 2023. National Indigenous Electrification Strategy, https://fnmpc.ca/wp-content/uploads/FNMPC_National_Electrification_digital_final_04222024.pdf.
[4] Integrated Impact Assessments: www.cer-rec.gc.ca/en/applications-hearings/view-applications-projects/integrated-impact-assessments/index.html

Canada's fragmented electricity system and the lack of reliable grid infrastructure in many Indigenous communities are often treated as separate challenges. In reality, they are deeply interconnected. Indigenous ownership in transmission is one of the few solutions that addresses both issues simultaneously: it strengthens regional grid reliability while advancing Indigenous self-determination and economic opportunity.

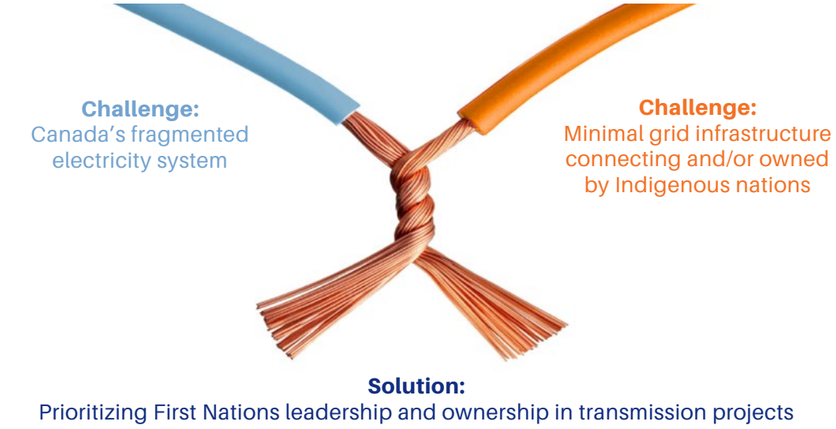


FIGURE 1: *FIRST NATIONS OWNERSHIP IN TRANSMISSION PROJECTS OFFERS A SHARED SOLUTION FOR TWO ENERGY SYSTEM CHALLENGES*

Powering Indigenous-owned connections

Transmission lines allow power to move between areas with different renewable resources with different weather, jurisdictions, time zones, and power sources. Among many benefits, they improve reliability, lower costs to ratepayers, and maximize the integration of different power sources (e.g., geothermal, wind, hydroelectricity, solar, natural gas, battery storage).[5] However, building transmission lines—and interties in particular—is not a simple job. It requires coordination across jurisdictions with differing regulatory frameworks, market structures, energy needs, affordability priorities, and political interests. To add to this, Indigenous nations face significant financial and capacity challenges when seeking to participate in large-scale projects.[6]

Despite these complexities, many Indigenous nations are taking on different ownership models to flow electricity where it has never flowed before—across colonially-defined borders and from urban centres into the homes of previously diesel dependent communities.

Transmission lines are more than technical connectors; they are strategic tools that allow First Nations to shape regional energy futures. When Nations lead or co-own transmission projects, they influence routing, environmental protections, procurement, and long-term operational decisions — ensuring that transmission development aligns with community values and long-term stewardship responsibilities.

[5] Canada Electricity Advisory Council, May 2024. Powering Canada: A Blueprint for Success, natural-resources.canada.ca/sites/nrcan/files/energy/electricity/Canada-Electricity-Advisory-Council-Final-Report-2024.pdf.
[6] First Nations Major Projects Coalition, April 2023. Financing First Nations' Participation in Major Projects, fnmpc.ca/wp-content/uploads/Capital-Markets-101_Handbook_FNMPC.pdf.

"When the power went on, you could hear the birds. Our communities were glowing."

- **Pat Chilton** *(Cree Nation of Kashechewan)*, former CEO of Five Nations Energy Inc.[7]

Different Nations, different approaches

Indigenous leadership of transmission projects is not a new concept within Canada. In 1997, a group of northern Ontario First Nations formed the country's first fully Indigenous-owned energy company—Five Nations Energy Inc—to build a transmission line that would service the remote communities of Attawapiskat, Fort Albany, and Kashechewan.[8] In 2013, Wataynikaneyap Power was formally incorporated for the purpose of bringing grid connection to 17 remote First Nations in Ontario. Both examples are of Indigenous-owned transmission lines that are up and running. Lessons learned from these projects focus on the importance of early and continuous engagement with Elders, knowledge keepers, and First Nation members to guide project design and routing.

Alongside these examples, there are other transmission projects with known Indigenous partnerships or participation, bringing to light the range of approaches Indigenous nations may choose to take. The projects and ownership types emphasizes the fact that what works for one Nation may not work for another. The economics, and therefore risk and rewards, of each project are unique and must be evaluated on their own merits. Importantly, transmission lines are generally not built in isolation. Rather, they tend to be linked to new sources of demand. Therefore, some Nations may decide to take on transmission line ownership (in full or in part), while others may view the impact their lands, water, culture, and way of life as outweighing the benefits of transmission line connection. These considerations are project and First Nation dependent. Every First Nation must decide what is best, and this decision should be fully respected and adhered to—a singular view for all First Nations simply does not exist, just as a singular view for all investors cannot be assumed.

"Every person has a right to say 'no'. Or they may say 'yes' when they see meaningful participation and a benefit to the current and future generations. Recognizing those things and agreeing to work together has proven to be successful."

- **Margaret Kenequanash** *(North Caribou Lake First Nation),* CEO, Wataynikaneyap Power[9]

Transmission infrastructure connects electricity supply to demand, unites fragmented provincial and territorial systems, and, if done correctly, can embody steps towards economic reconciliation.[10] By investing in Indigenous participation, ownership and options for ownership in transmission projects, Canada can more readily achieve its electrification and decarbonization ambitions while strengthening Indigenous self-determination, equity, and economic reconciliation across the country.[11]

[7] Syed, F., 20 October 2022. Told 'no' 37 times, this Indigenous-owned company brought electricity to James Bay anyway, thenarwhal.ca/ontario-indigenous-owned-energy/.
[8] Five Nations Energy Inc., 13 September 2013. History of Five Nations Energy Inc., fivenations.ca/about/history.
[9] Capkun, A.,12 March 2025. Electrical Business, Margaret Kenequanash – Leading Ontario's largest Indigenous-led grid connection project, ebmag.com/margaret-kenequanash-leading-ontarios-largest-indigenous-led-grid-connection-project/.
[10] Allary, C., and Sudhakar, N., 30 September 2025. Canadian Climate Institute, Carrying Power in a Good Way, climateinstitute.ca/carrying-power-in-a-good-way-indigenous-participation-leadership-electricity-transmission/.
[11] First Nations Major Projects Coalition, July 2023. National Indigenous Electrification Strategy, https://fnmpc.ca/wp-content/uploads/FNMPC_National_Electrification_digital_final_04222024.pdf.

"This moment is unique: every major transmission corridor in Canada crosses Indigenous territories, and every new line will require Indigenous consent. When Nations lead, co-own, or fully own transmission projects, the benefits extend far beyond revenue — they strengthen governance, support community priorities, and ensure that infrastructure is built in a way that respects Indigenous laws and relationships with the land."

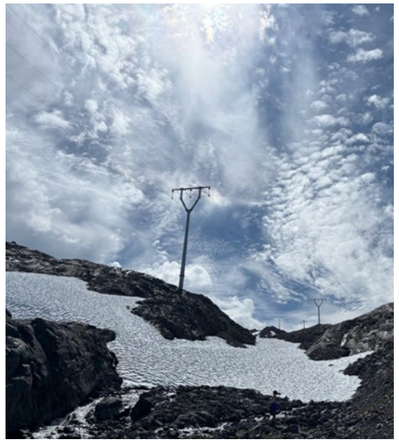
- **Blaine Collett** *(Kapawe'no First Nation),* Senior Advisor, Project Development, FNMPC

Part 2
Canada’s Transmission Grid Today

Canada’s current electricity system is underbuilt and highly fragmented. Many areas have no transmission connections to the main electricity grid, and existing networks are largely confined within provincial or territorial borders.[12] Each territory and province operate their own electricity system with different generation types, rate regulation, and market structures. While provincial-territorial grid autonomy has historical roots, it now undermines the potential for new clean electricity generation and progress towards the country’s economic goals.[13]

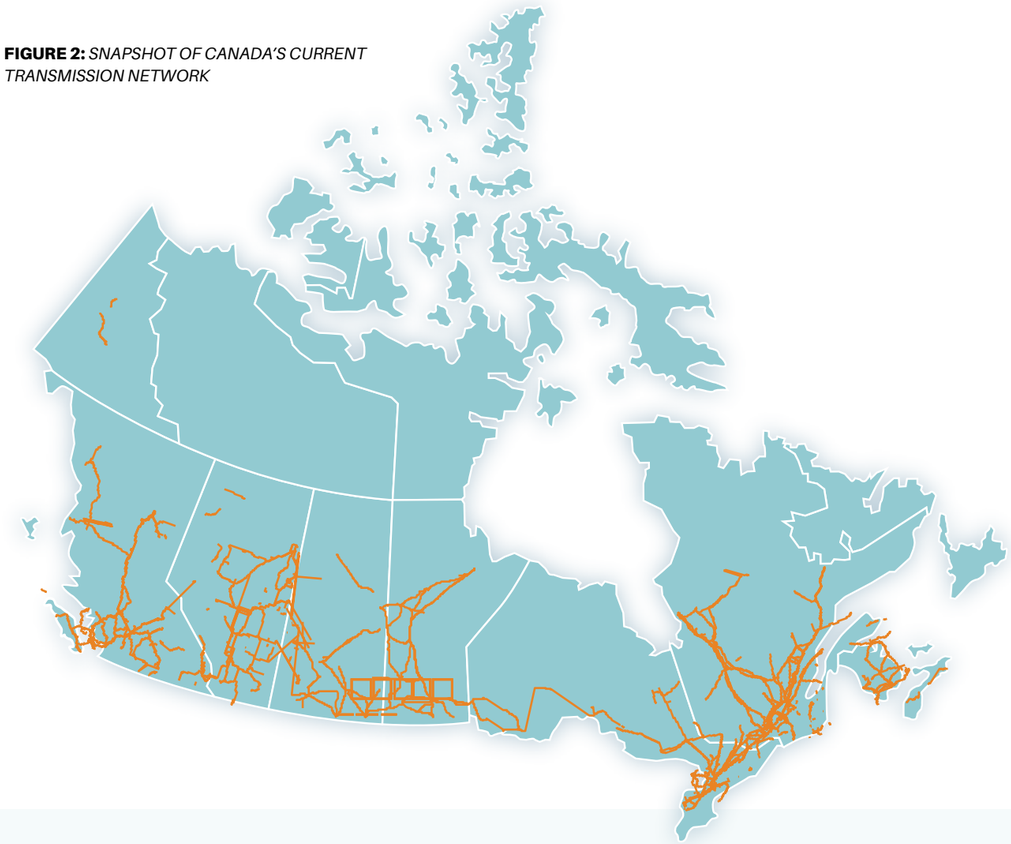
Canada currently has more capacity to export electricity to the United States than it does to flow electricity through inter-provincial connections:[14] More than 80% of Canada’ electricity flows south of the Canadian border.[15] The amount of electricity being imported or exported varies by province: this interactive table by Canada Energy Regulator gives insight into who is a net importer or exporter.[16]

As it stands, the country’s current grid is not yet set-up to support the rise in electrification required over the next two decades *within Canada*. Doubling Canada’s electricity and enabling the east-west flow between Canadian jurisdictions would mean building 40,000+ kilometres of transmission lines, which is 4.5 times the length of the Canada-US border, with an estimated cost of $44 billion carried out by 215,320 workers.[17] Canada’s grid requires three primary areas of new transmission lines to be built out quickly: inter-provincial, intra-jurisdictional, and international interties.



[12] Smith, R. and Nicholson, P., 07 July 2025. *Canadian Climate Institute,* Connecting regional electricity grids should be Canada’s top nation-building project, climateinstitute.ca/connecting-regional-electricity-grids-canada-top-nation-building-project/.
[13] Canada Electricity Advisory Council, May 2024. Powering Canada: A Blueprint for Success, natural-resources.canada.ca/sites/nrcan/files/energy/electricity/Canada-Electricity-Advisory-Council-Final-Report-2024.pdf.
[14] Cryderman, K., 8 January 2024. *Globe and Mail*, The provinces need to play ball with each other on electricity. theglobeandmail.com/opinion/article-the-provincesneed-to-play-ball-with-each-other-on-electricity/.
[15] Dunsky Energy + Climate, 21 May 2025. Energy Corridors: Expanding Interprovincial Electricity Transmission and Trade, dunsky.com/insight/webinar-energy-corridors-expanding-interprovincial-electricity-transmission-and-trade/.
[16] Canada Energy Regulator, 7 August 2024. Market Snapshot: Electricity trade trends affected by recent low precipitation, cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2024/market-snapshot-electricity-trade-trends-affected-by-recent-low-precipitation.html.
[17] Annesley, J., Campbell, D., Golshan, A., and Greenspon, E., 19 July 2023. Project of the Century: A Blueprint for Growing Canada’s Clean Electricity Supply – and Fast https://ppforum.ca/publications/net-zero-electricity-canada-capacity/.

FIGURE 2: *SNAPSHOT OF CANADA’S CURRENT TRANSMISSION NETWORK*



Did you know?

Canada’s current transmission network stretches over 160,000 kilometers. Over the next 25 years, this network is anticipated to double or triple, to both meet future energy needs and support the country’s move towards electrification.

“Canada is about to build more transmission infrastructure in the next 20 years than it has in the last 60. First Nations must not be passengers in that build-out — we must be owners, partners, and decision-makers. With transmission ownership, Indigenous ownership is one of the clearest pathways to economic reconciliation. It creates stable, long-term revenue while ensuring that infrastructure is built in a way that respects our lands and our laws.”

- **Blaine Collett** *(Kapawe’no First Nation),* Senior Advisor, Project Development, FNMPC

What are interties and why are they important?

In an energy system, interties are the electricity connections that join different electrical systems. Also referred to as inter-regional transmission networks, these lines allow two or more networks to import, export or transport electricity with neighbouring networks.[18]

FIGURE 3: *AN EXAMPLE OF ENERGY TRADE ACROSS REGIONS, SUPPORTED BY INTERTIES*

Interties support energy trade across jurisdictions, by allowing electricity providers to:[19]

Import electricity from another network

Export electricity from another network

Transport electricity from one network to another by using a third network, known as wheeling.[20]

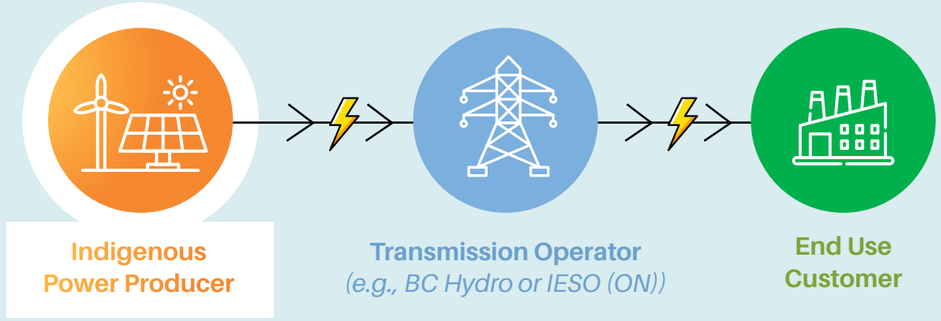
Although north-south interties with the United States continue to dominate Canada's transmission system, there is more momentum to grow inter-provincial transmission. Since 2024, Canada has seen a jump in new inter-provincial project proposals, indicative of a grid shifting towards cleaner, more resilient energy and changing trade relationship with the United States.[21, 22]

[18] Northwest Power and Conservation Council, N.D. Intertie, nwcouncil.org/reports/columbia-river-history/intertie/.
[19] Ontario Independent Electricity System Operator, May 2025. Interjurisdictional Energy Trading, ieso.ca/-/media/Files/IESO/Document-Library/training/WB-Interjurisdictional-Energy-Trading.ashx.
[20] Ibid.
[21] Dion, J., 14 January 2025. *Canadian Climate Institute*, Think the clean energy revolution moved fast last year? Just wait., climateinstitute.ca/think-the-clean-energy-revolution-moved-fast-just-wait/.
[22] Government of Ontario, 10 March 2025. Ontario Applies 25 Per Cent Surcharge on Electricity Exports to United States, news.ontario.ca/en/release/1005690/ontario-applies-25-per-cent-surcharge-on-electricity-exports-to-united-states.

WHAT IS WHEELING?

Wheeling is the movement of electricity from one system to another, using a third-party's interconnecting network. Wheeling can either take the form of a *wheel-through*, where electricity generation and users are both outside of the interconnecting network, or a *wheel-out*, where generation is within the network, but end users are outside.[23] Both of these scenarios rely on transmission lines to act as key connectors.

Restrictions on decentralized wheeling and Indigenous wheeling access to transmission networks - a reality in most jurisdictions in Canada - limits access to customers and presents an undue barrier to the First Nations pursuit of economic self-determination.[24]



An example of wheeling: the movement of electricity from power generation to customers using transmission lines from another operator / utility.

Canada's lack of transmission links between provinces and territories reduces reliability and increases costs of each provincial/territorial electrical system because they have to overbuild power generation. Further, this lack of east-west transmission continues dependence on imported electricity from the United States. Experts have called for a "United Canada Grid" initiative to enhance interprovincial collaboration and strategic energy planning.[25] This initiative, and any like it, will only be successful with Indigenous leadership and ownership options in new transmission and the associated visioning, planning, and routing.

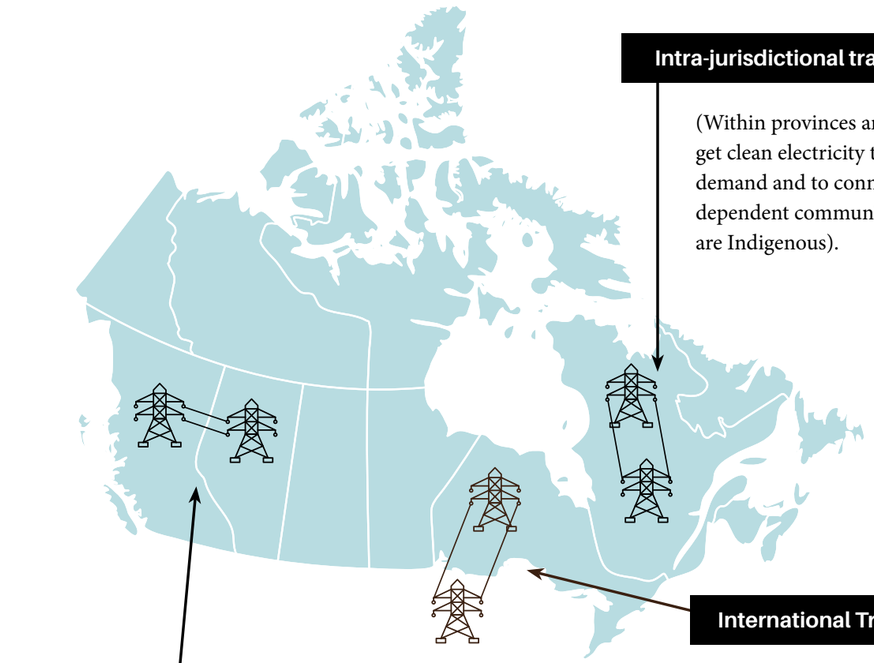
[23] Eskom, N.D. What you need to know about wheeling of electricity, eskom.co.za/distribution/wp-content/uploads/2022/07/20220721-Wheeling-concept_Introduction.final_.pdf.
[24] First Nations Major Projects Coalition, July 2023. National Indigenous Electrification Strategy, https://fnmpc.ca/wp-content/uploads/FNMPC_National_Electrification_digital_final_04222024.pdf.
[25] New Economy Canada, 18 November 2025. Industry, labour and Indigenous initiative urges nation-building electrification effort, neweconomycanada.ca/industry-labour-and-indigenous-initiative-urges-nation-building-electrification-effort/.

Interties and Indigenous nations

Canada's transmission grid is fractured by artificial borders of provinces, territories, and countries that in some cases split Indigenous nations into two or more jurisdictions. However, the challenges Canada faces to build out its grid mostly creates opportunities by way of Indigenous partnership or ownership of transmission lines—both *within* and *across* existing colonially-defined jurisdictions.

Given the strong pre-colonial political/geographic governance Indigenous nations have maintained despite the colonial provincial/territorial borders, it makes sense that Indigenous nations are the conveners and decision-makers across these borders, including First Nations working with regulators from multiple government agencies.

FIGURE 4: *AREAS FOR EXPANDED TRANSMISSION IN CANADA*



Intra-jurisdictional transmission

(Within provinces and territories) to get clean electricity to areas of growing demand and to connect remote, fossil-fuel dependent communities (many of which are Indigenous).

International Transmission

(Canada-US interties) to increase electricity trade and reliable, clean, and efficient power to both countries.

Inter-provincial/territorial transmission

(E.g., BC-Alberta interties) for the trade of electricity, reliability, and resilience.

Benefits of interties

Globally, grid integration has become essential as the growth in electricity demand and extreme weather events strain reliability. Reliability is not only important for customers, as it keeps their lights on, but also for the local economy. For example, some jurisdictions with unreliable electricity supply may force industrial users to curtail usage so residential customers can stay plugged in.[26]

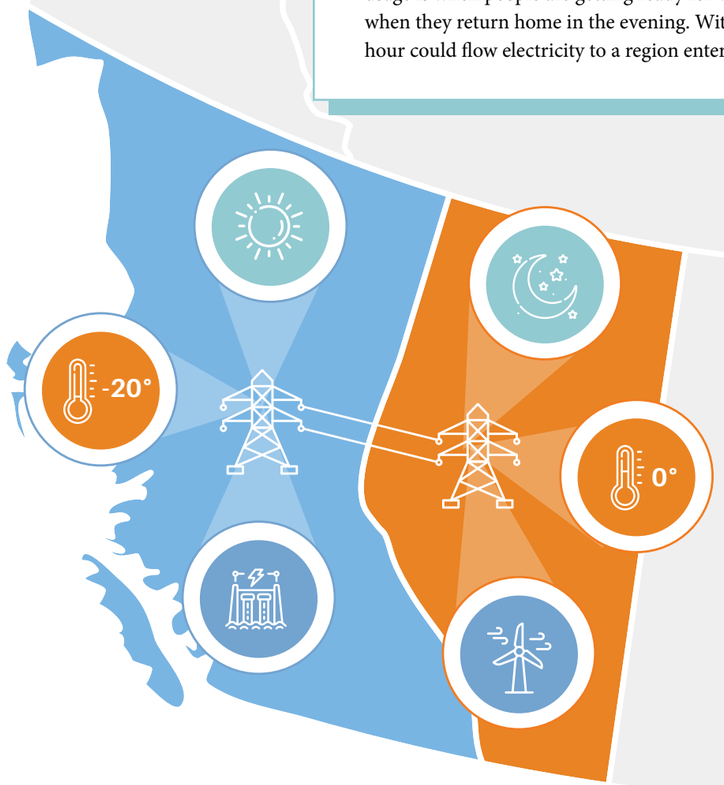
When different electricity systems are connected, energy supply and demand can be shared across regions and sources: the larger the connected area, the better the benefits.[27] The following figure offers examples of factors influencing electricity supply and demand across different regions.

[26] Yukon Legislative Assembly, 30 April 2025. Legislative Return, yukonassembly.ca/sites/default/files/2025-04/lr-35-1-172.pdf.
[27] Shaffer, B.,16 May 2025. Maclean's Magazine, Forget America. Build an East-West Power Grid., macleans.ca/economy/forget-america-build-an-east-west-power-grid/.

FIGURE 5: *FACTORS INFLUENCING ELECTRICITY SUPPLY AND DEMAND ACROSS DIFFERENT REGIONS*

Different time zones

Regions in different time zones will experience peak demands and low use periods at different times of the day. Generally, across Canada, peak electricity usage is when people are getting ready for work and school in the morning and when they return home in the evening. With interties, a region past its rush hour could flow electricity to a region entering their rush.



Different temperatures

The demand for electricity will be much higher in a region with -20°C weather versus one hovering around 0°C. In this instance, the region with 'warmer' weather could flow excess electricity out.

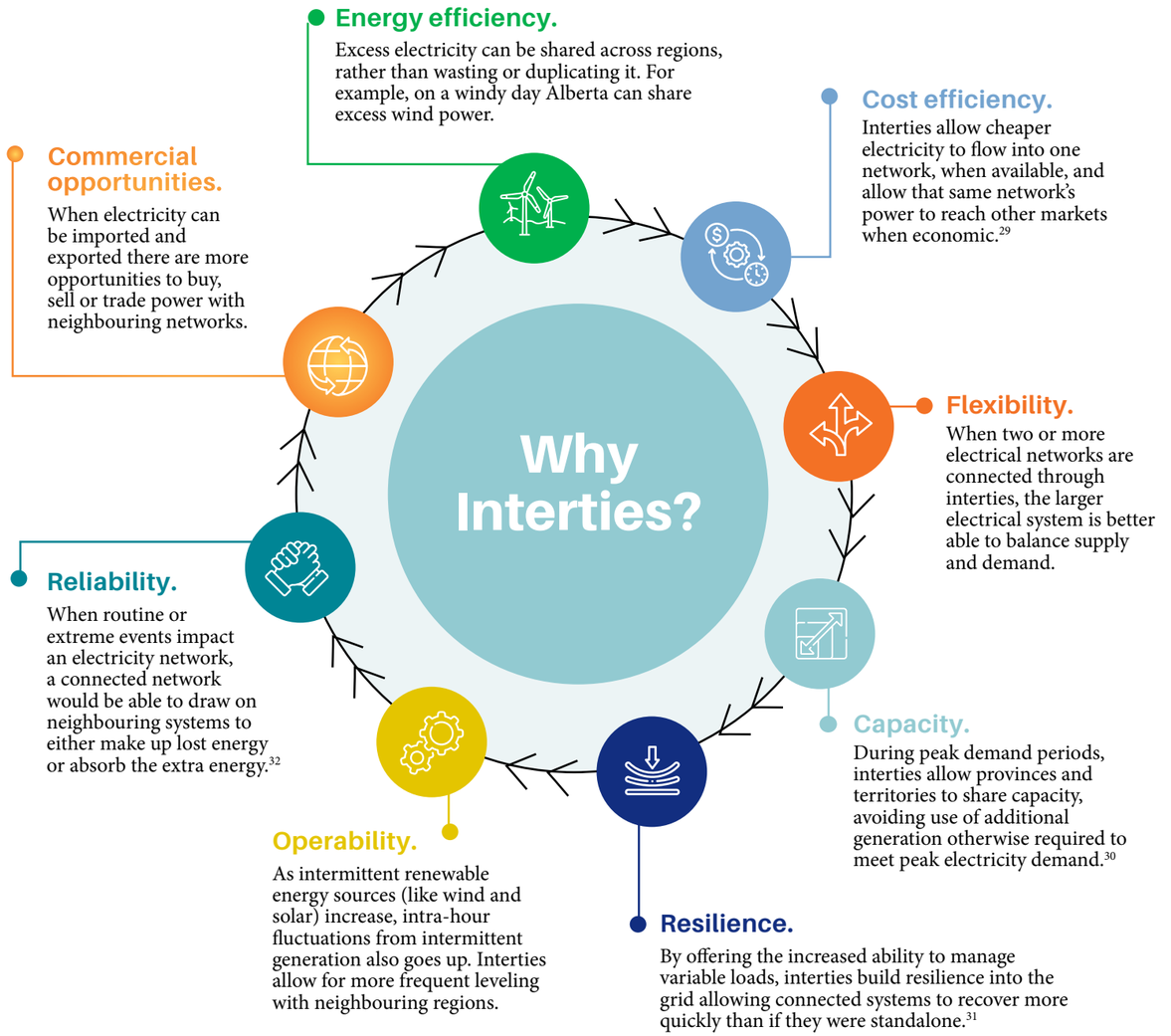
Different electrical generation resources

Interties allow power to flow between areas with different electrical generation resources (geothermal, solar, hydroelectric). In this example, a region experiencing strong winds (e.g., Alberta) could flow electricity to a wind-less region (e.g., BC), who can then ramp down hydro during windy periods for use when there is less wind capacity to sell it back to the wind-dependent region.[28]

[28] Graney, E., 5 April 2024. Globe and Mail, Albertans lose power in rolling blackouts as grid issues persist, theglobeandmail.com/canada/alberta/article-albertans-lose-power-as-grid-issues-continue/#:~:text=A%20shortage%20of%20wind%20and,continue%20going%20down%20that%20path.%E2%80%9D.

Alongside the benefits listed in the figure above, interties improve reliability and lower costs to ratepayers by maximizing the integration of different electrical generation sources. It may seem counterintuitive that a large capital expenditure, such as an intertie, would result in lower costs to ratepayers. However, the addition of interties into the electrical grid allows the network to blend "firm" power needed for system reliability—such as geothermal, hydroelectricity, or natural gas—with cheap renewable sources such as wind or solar.

FIGURE 6: *EXAMPLES OF INTERTIE BENEFITS*



[29] Ontario Independent Electricity System Operator, 11 May 2011. Ontario- Québec Interconnection Capability - A Technical Review, ieso.ca/sector-participants/ieso-news/2017/05/ontario-quebec-interconnection-capability---a-technical-review.
[30] Canadian House of Commons, December 2017. Strategic Electricity Interties, Report of the Standing Committee on Natural Resources, ourcommons.ca/Content/Committee/421/RNNR/Reports/RP9335660/rnnrrp07/rnnrrp07-e.pdf.
[31] Yukon Energy, 15 December 2023. Integrating DERs to the Yukon Grid: Challenges of Grid Inertia, yukonenergy.ca/media/site_documents/challenges-of-grid-inertia_1.pdf.
[32] Ontario Independent Electricity System Operator, 11 May 2011. Ontario-Quebec Interconnection Capability - A Technical Review, ieso.ca/sector-participants/ieso-news/2017/05/ontario-quebec-interconnection-capability---a-technical-review.

Who builds and operates Canada's transmission lines?

Across Canada, transmission line ownership varies depending on the province or territory. In most, provincial/territorial Crown corporations are the ones who have historically built and owned transmission lines. The following table provides a snapshot of the main transmission owners by province/territory.[33] Notably, and as explored later in the paper, many Indigenous nations are now building and/or taking ownership positions in new transmission lines across Canada.

Province or territory	Who currently builds & operates most of the lines?
British Columbia	BC Hydro
Alberta	AltaLink and ATCO Electric. ENMAX and EPCOR also own transmission assets.
Saskatchewan	SaskPower
Manitoba	Manitoba Hydro
Ontario	Hydro One
Québec	Hydro-Québec
Newfoundland	Newfoundland and Labrador Hydro
New Brunswick	NB Power
Nova Scotia	Nova Scotia Power
Prince Edward Island	The Maritime Electric Company, which is owned by Fortis Inc.
Yukon	Yukon Energy Corporation
Northwest Territories	Northwest Territories Power Corporation
Nunavut[34]	Qulliq Energy Corporation

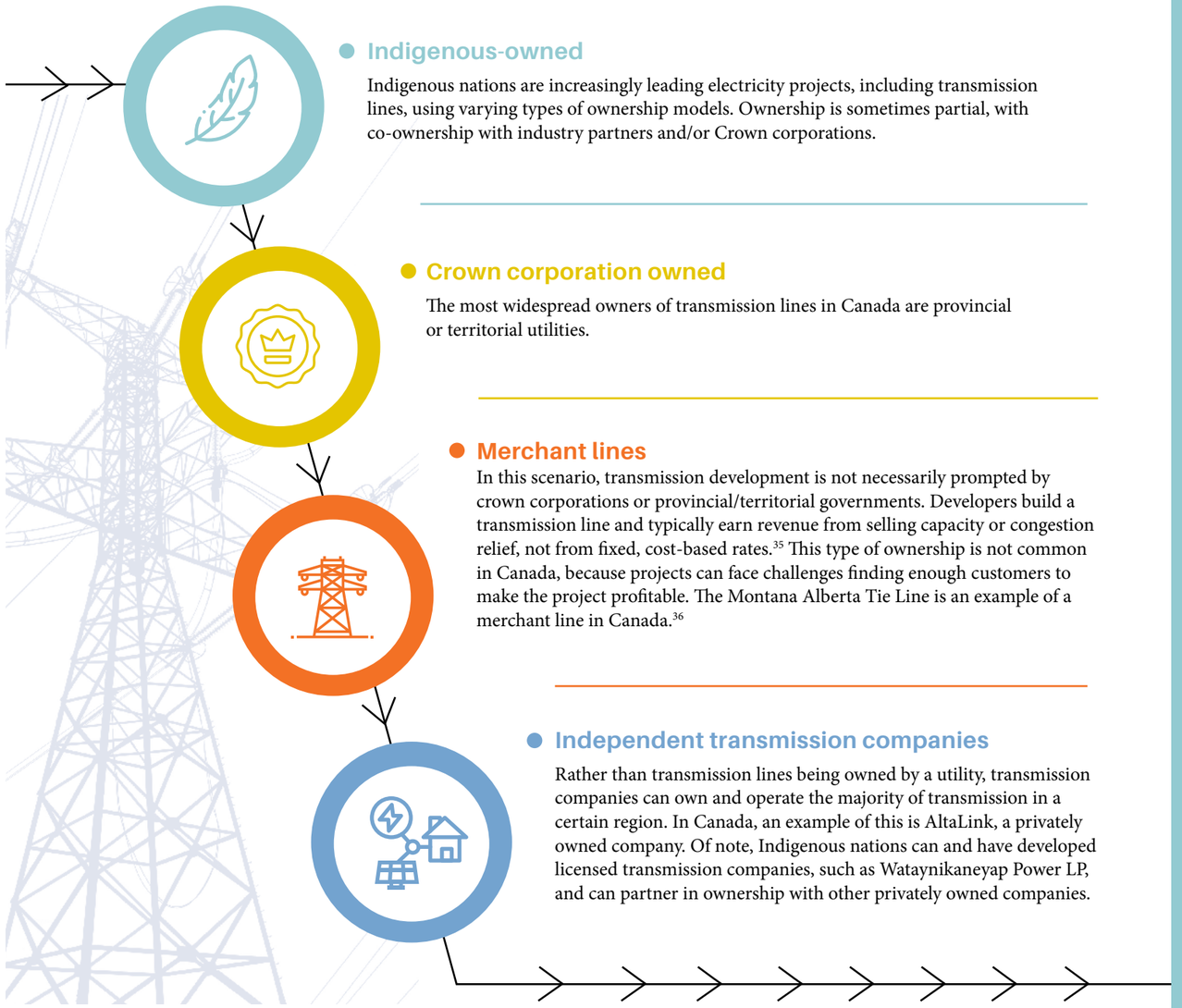
TABLE 1: *TRANSMISSION LINE OWNERSHIP BY PROVINCE OR TERRITORY*

[33] Table adapted from: Canada Energy Regulator, 22 January 2025. Market Snapshot: Electricity Trade — who regulates what in Canada? cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2025/market-snapshot-electricity-trade-who-regulates-what-in-canada.html?utm_source=facebook&utm_content=ed5d06b3-5ba8-40f1-a322-c35b9a6e25e7&wbdisable=true.

[34] Note that there are no transmission lines connecting any of Nunavut's 25 communities with each other or with any other grid, rather each is its own islanded microgrid.

Transmission line ownership examples

Although most of Canada's existing transmission lines are owned by provincial and territorial utilities, different transmission ownership models exist across the country, including Indigenous-owned lines. In many cases, line ownership is not just one entity or another, it is a partnership between multiple entities.



Indigenous-owned

Indigenous nations are increasingly leading electricity projects, including transmission lines, using varying types of ownership models. Ownership is sometimes partial, with co-ownership with industry partners and/or Crown corporations.

Crown corporation owned

The most widespread owners of transmission lines in Canada are provincial or territorial utilities.

Merchant lines

In this scenario, transmission development is not necessarily prompted by crown corporations or provincial/territorial governments. Developers build a transmission line and typically earn revenue from selling capacity or congestion relief, not from fixed, cost-based rates.[35] This type of ownership is not common in Canada, because projects can face challenges finding enough customers to make the project profitable. The Montana Alberta Tie Line is an example of a merchant line in Canada.[36]

Independent transmission companies

Rather than transmission lines being owned by a utility, transmission companies can own and operate the majority of transmission in a certain region. In Canada, an example of this is AltaLink, a privately owned company. Of note, Indigenous nations can and have developed licensed transmission companies, such as Wataynikaneyap Power LP, and can partner in ownership with other privately owned companies.

FIGURE 7: *EXAMPLES OF TRANSMISSION LINE OWNERSHIP MODELS*

[35] Schumacher, D. and Wenner, A., 1 August 2003. Project Finance, Merchant Transmission Projects, projectfinance.law/publications/2003/august/merchant-transmission-projects/.

[36] BHE Canada, January 2026. Working Around Transmission Lines, bhe-canada.ca/for-landowners/working-around-transmission-lines/.

"Thirty-seven times we were told, 'It can't be done', 'You're not going to do it,' but we kept going."

- **Pat Chilton** *(Cree Nation of Kashechewan),* former CEO of Five Nations Energy Inc.[37]

[37] Pat Chilton, (Cree Nation of Kashechewan), Five Nations Energy Inc. [personal communication, October 2025].

Part 3
First Nations Participation in Transmission Projects

The magnitude of opportunity for First Nations to partake in equity ownership in transmission projects is substantial. A 2023 report commissioned by FNMPC, estimated total equity ownership opportunities were likely to arise across the energy sector. As shown in the following figure, the numbers make a strong business case for Indigenous ownership in many parts of the country's energy system, including transmission projects.[38] A transmission governance framework that centers Indigenous self-determination, consent, and equity ownership can accelerate development, reduce conflict, and ensure fair outcomes for all partners.

FIGURE 8: *ESTIMATED EQUITY OWNERSHIP OPPORTUNITIES, WITH SPOTLIGHT ON TRANSMISSION*

$535 billion estimated total capital cost — for **475** natural resource projects planned or under construction

$450 billion aggregate capital cost — for **300** contemplated energy projects

$100-$125 billion equity in energy sector investment → **$40** billion potential in **Indigenous equity** participation in energy

$119.5 billion capital costs in generation → **$12** billion potential in **Indigenous equity** participation in generation

$27.75 billion capital costs in transmission → **$5.2** billion potential in **Indigenous equity** participation in transmission

Indigenous involvement should extend beyond equity ownership to encompass full participation in planning, permitting, and governance processes. True reconciliation in the electricity sector requires not only inclusion in future projects but also the recognition and redress of historical harms caused by past energy developments.

[38] Colliers Project Leaders, June 2023. Indigenous Equity in the Natural Resource Project Portfolio. Commissioned by the First Nations Major Projects Coalition.

"These are linear transmission projects going over thousands of kilometers, so you're working with multiple First Nations, bringing that collective together for First Nations. Does the governance model work the same for every jurisdiction? Likely not. First Nations are not all the same across Canada... and we've seen different approaches."

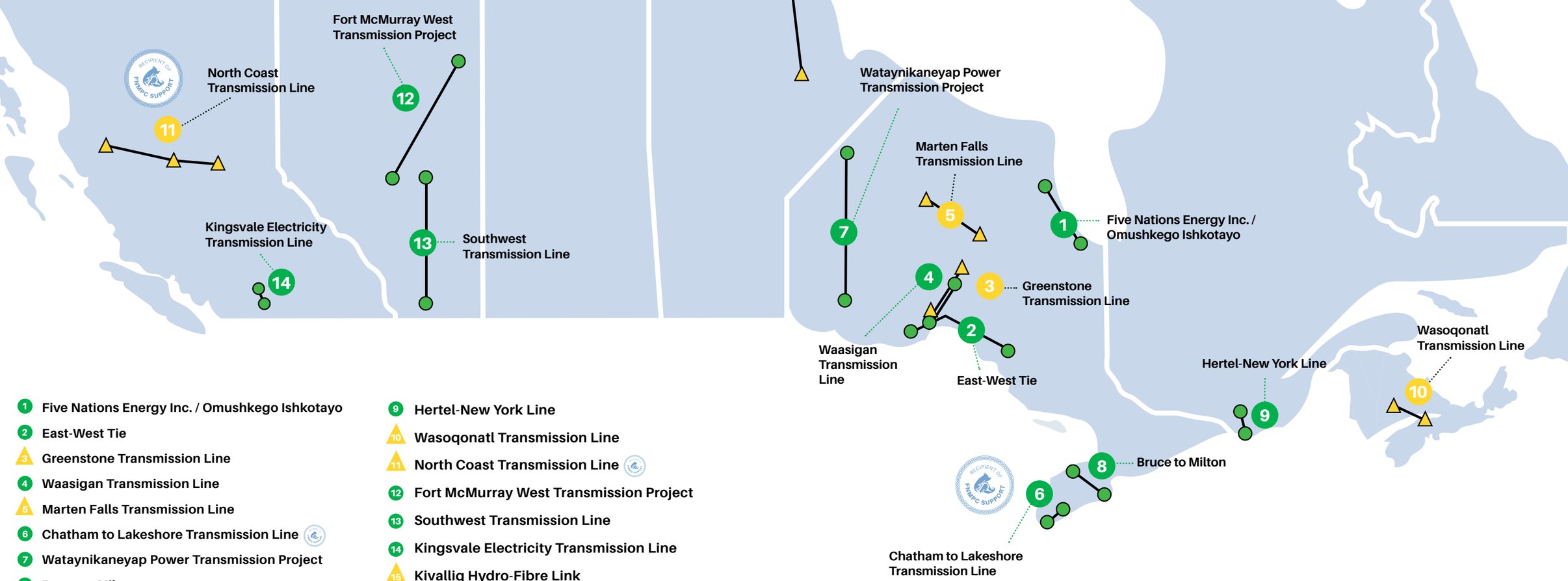
- **Barry Vickers** *(Saik'uz First Nation),* Senior Strategic Advisor, Project Development, FNMPC[39]

[39] First Nations Major Projects Coalition, July 2023. National Indigenous Electrification Strategy, https://fnmpc.ca/wp-content/uploads/FNMPC_National_Electrification_digital_final_04222024.pdf.

Examples of existing Indigenous-led transmission projects

Transmission lines owned or led by First Nations are on the rise. Many of the following projects show how transmission lines not only connect people to power, but through new partnerships, people to people as well.

This section spotlights known First Nations-led transmission projects in Canada, with the caveat there are likely many other projects either unknown to us at the time of writing, or yet to be announced.



1. Five Nations Energy Inc. / Omushkego Ishkotayo
2. East-West Tie
3. Greenstone Transmission Line
4. Waasigan Transmission Line
5. Marten Falls Transmission Line
6. Chatham to Lakeshore Transmission Line
7. Wataynikaneyap Power Transmission Project
8. Bruce to Milton
9. Hertel-New York Line
10. Wasoqonatl Transmission Line
11. North Coast Transmission Line
12. Fort McMurray West Transmission Project
13. Southwest Transmission Line
14. Kingsvale Electricity Transmission Line
15. Kivalliq Hydro-Fibre Link

1 Omushkego Ishkotayo/James Bay Transmission Line Project

TYPE:	STATUS:	LOCATION:
Off-grid community connection	In operation	Ontario

VOLTAGE:	DISTANCE:	NUMBER OF FIRST NATION PARTNERS OR OWNERS:	OWNERSHIP MODEL:
115kV	270km	3	Wholly owned

Omushkego Ishkotayo, also known as the James Bay Transmission Line, is a project of Five Nations Energy Inc. It delivers electricity from Moosonee to Fort Albany, Kashechewan, Attawpiskat, and to the line that connects the De Beers Canada Victor Diamond Mine north of Attawapiskat.

"First Nations were facing the impacts of the diesel generators: the environmental costs, the fuel spills, the maintenance, dirtiness, noisiness. The layers of pollutants would be seen in the snow, falling out from the air. Attawapiskat chiefs, and the other chiefs in the James Bay area said, 'Let's do a transmission line."

- **Pat Chilton** *(Cree Nation of Kashechewan)*, former CEO of Five Nations Energy Inc.[40]

Over My Dead Body: The Story of Five Nations Energy Inc. is a documentary about the journey to becoming Canada's first Indigenous-owned transmission company.

2 East-West Tie

TYPE:	STATUS:	LOCATION:
Inter-regional transmission	In operation	Ontario

VOLTAGE:	DISTANCE:	NUMBER OF FIRST NATION PARTNERS OR OWNERS:	OWNERSHIP MODEL:
230kV	450km	6+	Equity stake with Limited Partnership

The East-West Tie Transmission Project was completed in 2022, connecting Thunder Bay with Wawa, Ontario. It was built in partnership with the Bamkushwada Limited Partnership, which is jointly owned by 6+ Indigenous nations and Metis communities.[41] In 2024, Hydro One announced it would be acquiring 48% interest in this line, purchasing interest from OMERS infrastructure Management Inc. and Enbridge Transmission Holdings Inc.[42] More than 300 Indigenous community members received training to work on this project.[43]

"These are our lands, rights and welfare that stand to be most affected."

- **Chief Peter Collins** *(Fort William First Nation),* President of Bamkushwada Limited Partnership[44]

[40] Pat Chilton, (Cree Nation of Kashechewan), Five Nations Energy Inc. [personal communication, October 2025].
[41] Owners identified in this research: Fort William First Nation, Michipicoten First Nation, Biigtigong Nishnaabeg (Ojibways of the Pic River First Nation), Pays Plat First Nation, Netmizaaggamig Nishnaabeg (Pic Mobert First Nation) and Red Rock Indian Band. NextBridge also signed a MoU with the Métis Nation of Ontario, and engaged with Anishinabek communities along the project corridor.
[42] ReNew Canada, 20 January 2026. Hydro One to acquire 48% interest in the East-West Tie Line project, renewcanada.net/hydro-one-to-acquire-48-interest-in-the-east-west-tie-line-project/.
[43] NextEra Energy, January 2026. Investing in Clean Energy Across Canada, nexteraenergycanada.com/content/dam/neecanada/ca/en/pdf/east-west-tie-transmission/EWT-Fact-Sheet-FINAL.pdf.
[44] Wawa News, N.D. First Nations call on Ontario to fix unjust process threatening electrical transmission reliability and economic development in the north, wawa-news.com/index.php/2019/01/17/first-nations-call-on-ontario-to-fix-unjust-process-threatening-electrical-transmission-reliability-and-economic-development-in-the-north-and-first-nation-rights/.

3 Greenstone Transmission Line

TYPE:	STATUS:	LOCATION:
Grid access for major projects	Proposed	Ontario

VOLTAGE:	DISTANCE:	NUMBER OF FIRST NATION PARTNERS OR OWNERS:	OWNERSHIP MODEL:
230kV	230km	7	Equity

The Greenstone Transmission Line will connect multiple First Nations with the Ontario power grid and add a connection point into Ontario's Ring of Fire. In early 2026, the provincial government identified the line as being a priority project, with Hydro One responsible for its development and construction. Under Hydro One's First Nations Equity Partnership Model, partnering Nations will have opportunity for 50 per cent ownership. Line construction is expected to be complete by 2032.[45]

"After years of displacement, our members need to be ensured that there will be an adequate supply of power on the grid to support future growth and development. The benefits of First Nation ownership of a critical asset like this are endlessd."

- **Chief Laura Airns** *of Bingwi Neyaashi Anishinaabek*[46]

4 Waasigan Transmission Line

TYPE:	STATUS:	LOCATION:
Off-grid community interconnection	Construction	Ontario

VOLTAGE:	DISTANCE:	NUMBER OF FIRST NATION PARTNERS OR OWNERS:	OWNERSHIP MODEL:
230kV	360km	9	Equity

The Waasigan Transmission Line will run between Shuniah, Atikokan, and Dryden in northwest Ontario, with a current two-phase completion date of 2027. Economic participation opportunities for First Nations include training, employment and business creation, and a 50% equity ownership in the completed transmission line for nine First Nations.[47] Partners include Lac des Mille Lacs First Nation and eight partners represented by Gwayakocchigewin Limited Partnership (GLP).[48]

"After seventy years, [the Waasigan Transmission] line will still be there, it will still be generating revenue for a small community, which, because it's a small community, will be a huge benefit."

- **Chief Terry Allan,** *Nigigoonsiminikaaning First Nation*[49]

"We have worked tirelessly over the past several years with our community Elders, leadership and members to ensure that this project respected our Anishinaabe teachings, protected our cultural values and would be undertaken in a way to protect and preserve our land for all future generations to come."

- **Daniel Morriseau,** President, GLP.[50]

[45] Hixson, R., 28 January 2025. SiteNews, Ontario signs Ring of Fire agreement with First Nations, readsitenews.com/ontario-signs-ring-of-fire-agreement-with-first-nations/.
[46] Animbiigoo Zaagi'igan Anishinaabek, 29 September 2016. Greenstone Transmission Line, aza.ca/article/greenstone-transmission-line-394.asp.
[47] Hydro One, N.D. Waasigan Transmission Line Project, hydroone.com/about/corporate-information/major-projects/waasigan#projectOverview.GLP includes Eagle Lake First Nation, Fort William First Nation, Gakijiwanong Anishinaabe Nation, Lac Seul First Nation, Nigigoonsiminikaaning
[48] First Nation, Ojibway Nation of Saugeen, Seine River First Nation and Wabigoon Lake Ojibway Nation Source: https://hydroone.mediaroom.com/index.php?s=2429&item=123462.
[49] YouTube, https://www.youtube.com/embed/RNNaEWgHpV0?rel=0&autoplay=1.
[50] Hydro One, 22 November 2024. Hydro One and nine First Nation partners break ground on Waasigan Transmission Line project, hydroone.mediaroom.com/index.php?s=2429&item=123462.

5 Marten Falls Transmission Line

TYPE: Off-grid community interconnection	**STATUS:** Proposed / In Consultation ▲	**LOCATION:** Ontario	
VOLTAGE: TBD	**DISTANCE:** TBD	**NUMBER OF FIRST NATION PARTNERS OR OWNERS:** Still underway	**OWNERSHIP MODEL:** TBD

Currently in the proposal phase, the Marten Falls Transmission Line would run through Marten Falls, Eabametoong, Webequie, Neskantaga and Nibinamik First Nations, with the goal of reducing the First Nations' reliance on diesel-powered generators by connecting the remote communities to the Ontario power grid. This project is in early stages and still requires extensive consultation with Nations. As of 2024, four out of five impacted First Nations have expressed support for the project, emphasizing that full consultation still needs to take place.[51]

"There's a real dire need in the short term to come to shorter term solutions, but also keep an eye on the long-term solution, which is being connected to the grid. Energy is an important issue in our communities due to the fact we are growing communities."

- **Chief Bruce Achneepineskum,** *Marten Falls First Nation*[52]

"We are not opposed to any type of development, but we need to be thoroughly involved in these processes so that our treaty, and what we were promised back in 1905, is upheld."

- **Chief Michael Sugarhead,** *Nibinamik First Nation*[53]

6 Chatham to Lakeshore Transmission Line

RECIPIENT OF FNMPC SUPPORT

TYPE: Inter-regional transmission	**STATUS:** Construction complete ●	**LOCATION:** Ontario	
VOLTAGE: 230 kV	**DISTANCE:** 49km	**NUMBER OF FIRST NATION PARTNERS OR OWNERS:** 2	**OWNERSHIP MODEL:** Equity

The Chatham to Lakeshore Transmission Line runs from Chatham-Kent to Lakeshore in southwest Ontario. This transmission line is a partnership between Hydro One, Aamjiwnaang First Nation, and the Chippewas of Kettle and Stony Point First Nation.[54] With the goal to support growth and security in the local electricity supply chain, this line is the first of five new transmission lines proposed in the area.[55]

[51] Ibid.
[52] Dunick, L., 5 April 2024. Northern Ontario Business, Ford promises to connect five First Nations to power grid, northernontariobusiness.com/regional-news/far-north-ring-of-fire/ford-promises-to-connect-five-first-nations-to-power-grid-8556440.
[53] Ibid.
[54] Caldwell First Nation/Cision, 29 July 2025. Caldwell First Nation Announces Historic Equity Investment in Chatham to Lakeshore Transmission Line with Hydro One, newswire.ca/news-releases/caldwell-first-nation-announces-historic-equity-investment-in-chatham-to-lakeshore-transmission-line-with-hydro-one-873277224.html.
[55] Kitching, H., 13 January 2025. CBC, Ontario completes Chatham-Lakeshore transmission line ahead of schedule, cbc.ca/news/canada/windsor/chatham- lakeshore-transmission-line-1.7430033.

7 Wataynikaneyap Power Transmission Project

TYPE: Off grid community interconnection	**STATUS:** Construction complete ●	**LOCATION:** NW Ontario	
VOLTAGE: 25 kV to 230 kV	**DISTANCE:** 1800 km	**NUMBER OF FIRST NATION PARTNERS OR OWNERS:** 24	**OWNERSHIP MODEL:** 51% owned by the 24 communities

Wataynikaneyap Power has connected 16 remote northwestern Ontario First Nation communities currently powered by diesel generation to the electrical grid. Wataynikaneyap translates to "the line that brings light" in Anishniiniimowin, which is what this project does: connect approximately 15,000 people to Ontario's electricity grid. Although 51% of the project is owned by 24 First Nations partners, in 25 years they will own 100% of the company.[56]

"The first and foremost most important thing is for First Nations to work together establish their expectations, what their principles are, and live according to what the Creator has granted us to be which is our way of life on the land and protecting our environment."

- **Margaret Kenequanash** *(North Caribou Lake First Nation),* CEO, Wataynikaneyap Power[57]

[56] Syed, F., 24 October 2024. The Narhwal, This 1,800-km transmission line brings clean, reliable power to 24 remote First Nations — who also own most of it, thenarwhal.ca/ontario-indigenous-energy-watay-power/.
[57] First Nations Major Projects Coalition 2025 Conference: Valuing Reconciliation in Global Markets.

8 Kivalliq Hydro-Fibre Link

TYPE: Off grid community connection with fibre-optic cabling	**STATUS:** Proposed ▲	**LOCATION:** Manitoba to Nunavut	
VOLTAGE: 150 MW (electricity) 1,200 Gb/s (internet)	**DISTANCE:** 1,200 km (high voltage)	**NUMBER OF FIRST NATION PARTNERS OR OWNERS:** TBD	**OWNERSHIP MODEL:** TBD

Led by Nukik Corp—which is owned by Kivalliq Inuit Association and its business arm Sakku Investments Corp—the Kivalliq Hydro-Fibre Link is Nunavut's first infrastructure link to southern Canada.[58] The proposed line will run from Manitoba to Nunavut, and will both replace diesel-fuelled power with hydroelectricity and bring high-speed internet (via fibre optic cable) to remote communities in the Arctic. The proposed line would connect Manitoba's hydro grid to five communities and one gold mine in the Kivalliq region of Nunavut.[59]

"Inuit are proud to be driving this transformative, national infrastructure project. Together we are creating something that will bring lasting economic and environmental benefits to Nunavut and all of Canada."

- **Kono Tattuinee,** President Kivalliq Inuit Association[60]

9 Hertel-New York Line

TYPE: Underground and underwater inter-regional transmission	**STATUS:** Completion December 2025 ●	**LOCATION:** Québec	
VOLTAGE: 400 kV	**DISTANCE:** 58 km	**NUMBER OF FIRST NATION PARTNERS OR OWNERS:** 1 (Mohawk Council of Kahnawà:ke) 1	**OWNERSHIP MODEL:** Joint ownership

The Hertel-New York Transmission Line will run from the Hertel substation in La Prairie to the Rivière Richelieu, where it will connect with a line in New York State, thereby supplying New York City with electricity generated in Québec. This line is jointly owned by Hydro- Québec and the Mohawk Council of Kahnawà:ke, through the Horizon Kahnawà:ke Hydro-Québec, Limited Partnership. This historic partnership represents the first time Hydro-Québec has partnered with another entity as joint owners in transmission infrastructure.[61]

"Kanien'kehá:ka ironworkers helped build the New York City skyline, and now Kahnawà:ke will contribute to the city in a different way by transporting renewable energy to light up the very skyline Mohawks helped build."

- **Kahsennénhawe Sky-Deer** *(Kahnawà:ke),* CEO and President at Sky-Deer Consulting[62]

[58] The Kivalliq Inuit Association, 4 May 2021. Kivalliq Hydro-Fibre Link Takes Next Important Steps in its Development, kivalliqinuit.ca/kivalliq-hydro-fibre-link-takes-next-important-steps-in-its-development/.
[59] Pauls, K., 10 October 2025. CBC News, Kivalliq Hydro-Fibre Link would strengthen Nunavut's connection to the rest of Canada, proponents say, cbc.ca/news/canada/manitoba/kivalliq-hydro-fibre-link-nunavut-9.6931778.
[60] Canada Infrastructure Bank, N.D. Kivalliq Hydro-Fibre Link, cib-bic.ca/en/projects/clean-power/kivalliq-hydro-fibre-link/.
[61] Kahnawà:ke, 9 November 2022. Joint Ownership of the Hertel Transmission Line, kahnawake.com/wp-content/uploads/2025/01/2022-11-09-Hertel_FAQ_Sheet.pdf.
[62] Hydro-Québec/Cision, 18 April 2024. Mohawk Council of Kahnawà:ke and Hydro-Québec sign Hertel-New York Line agreements, newswire.ca/news-releases/mohawk-council-of-kahnawa-ke-and-hydro-quebec-sign-hertel-new-york-line-agreements-849385245.html.

10 Wasoqonatl Transmission Line

TYPE: Inter-regional transmission	**STATUS:** Proposed ▲	**LOCATION:** Nova Scotia to New Brunswick	
VOLTAGE: 345 kV	**DISTANCE:** 160 km	**NUMBER OF FIRST NATION PARTNERS OR OWNERS:** 13	**OWNERSHIP MODEL:** Equity stake TBD

WASOQONATL TRANSMISSION LINE

The Wasoqonatl Transmission Line proposes to connect Nova Scotia and New Brunswick's electricity grids, running from Onswlo, NS to Salisbury, NB. Wskijinu'k Mtmo'taqnuow Agency Ltd. (WMA)—an economic development partnership owned by the 13 Mi'kmaw First Nations in Nova Scotia—will acquire an ownership stake in the project, through the Canada Infrastructure Bank's Indigenous Equity Initiative.[63]

"First Nations voices need to be part of conversations that are exploring and driving major projects, investments and developments in all sectors. Green energy projects, such as the Wasoqonatl Transmission Line, is an example that is strengthening energy resilience over two Provinces and where First Nations communities are participating through partnerships and equity ownership. The WMA, representing the 13 Mi'kmaw communities in Nova Scotia, is committed to working together with the project partners in shaping the future of cleaner energy for all."

- **Crystal Nicholas,** President, Wskijinu'k Mtmo'taqnuow Agency Ltd.[64]

11 North Coast Transmission Line

RECIPIENT OF FNMPC SUPPORT

TYPE: Grid access for major projects	**STATUS:** Proposed ▲	**LOCATION:** British Columbia	
VOLTAGE: 500 kV	**DISTANCE:** 445 km	**NUMBER OF FIRST NATION PARTNERS OR OWNERS:** TBD	**OWNERSHIP MODEL:** TBD

The BC government and BC Hydro have set plans to twin the transmission corridor between Prince George and Terrace, to serve an increasing electricity load in the region. As of fall 2023, the provincial government and BC Hydro had commenced engagements with First Nations who would be impacted by the project routing. FNMPC has confirmed two capacity support engagements with members impacted by this project, and is assisting these members with early-stage considerations.

"This is just the beginning. There are many more projects to come. K'uul Power and the collaborating Nations are demonstrating what First Nations can achieve by working together."

- **Ts'il Kaz Koh Chief** and **K'uul Power Chair Wes Sam.**[65]

[63] Canada Infrastructure Bank, 5 March 2025. CIB commits $217 million to Nova Scotia to New Brunswick (Wasoqonatl) Reliability Intertie, cib-bic.ca/en/medias/articles/cib-commits-217-million-to-nova-scotia-to-new-brunswick-wasoqonatl-reliability-intertie/.
[64] Crystal Nicholas, 9 February 2026, [personal communication.]
[65] Wray, J., 1 August 2025. First Nations sign agreement to co-own new North Coast Transmission Line, thenorthernview.com/2025/08/01/first-nations-sign-agreement-to-co-own-new-north-coast-transmission-line/.

12 Fort McMurray West Transmission Project

TYPE: Grid access for major projects	**STATUS:** Energized in 2019		**LOCATION:** Alberta
VOLTAGE: 500 kV	**DISTANCE:** +500 kms	**NUMBER OF FIRST NATION PARTNERS OR OWNERS:** 7	**OWNERSHIP MODEL:** 40% Indigenous equity

The Fort McMurray West Transmission Project was built to help northern Alberta meet its growing electricity demand. First Nations invested in the power line include the Athabasca Chipewyan First Nation, Bigstone Cree Nation, Gunn Métis Local 55, Mikisew Group of Companies, Paul First Nation, Sawridge First Nation and Sucker Creek First Nation.[66] This line runs from Wabamun to Fort McMurray, Alberta.

"We are looking at a path of self-governance … and as a part of that we need to have our own self-sourced funding."

- **Chief Roland Twinn,** *Sawridge First Nation*[67]

13 Southwest Transmission Line

TYPE: Grid strengthening	**STATUS:** In operation		**LOCATION:** Alberta
VOLTAGE: 240 kV	**DISTANCE:** 92.9km	**NUMBER OF FIRST NATION PARTNERS OR OWNERS:** 2	**OWNERSHIP MODEL:** 51% majority ownership

The Southwest 240 kV project is consists of two limited partnerships between AltaLink and PiikaniLink, and AltaLink and KainaiLink, wherein the Piikani Nation and the Kainai-Blood Nation have each invested in 51% of ownership for the portion of the transmission lines located on their lands.[68] Of the total 92.9 kilometres of the line, the Piikani Nation and the Kainai-Blood Nation own 52.7 kilometres.[69] In response to the growth of Alberta's wind energy, AltaLink applied for permission to construct a new transmission line in 2007—using a route that crossed lands of the Piikani Nation and the Kainai-Blood Nation.[70] When access to the land was challenged by both Nations, AltaLink presented Nation ownership as an option, which was subsequently approved by Alberta Utilities Commission.[71]

"We believe we have forged a path for our Nation, as well as other Indigenous communities and proponents in the growing energy sector of Alberta."

- **Councillor Doane Crow Shoe,** President of Piikani Resource Development Ltd.[72]

"In order for AltaLink to build the transmission line, they had to consult the Piikani Nation people, and more importantly our traditional knowledge keepers who were entrusted to verify important sacred traditional and burial sites related to Piikani Nation lands."

- **Chief Stanley Grier,** *Piikani Nation*[73]

[66] Ibid.
[67] Malbeuf, J., 26 September 2019. CBC News, 7 Indigenous communities buying stake in Wabamun-Fort McMurray power line, cbc.ca/news/canada/edmonton/alberta-powerline-fort-mcmurray-1.5296209.
[68] Altalink, 26 November 2020. AltaLink, Piikani & Kainai-Blood partners share Canadian Electricity Association sustainability award. altalink.ca/news/news-releases/altalink-piikani-amp-kainai-blood-partners-share-canadian-electricity-association-sustainability-award/.
[69] Altalink [personal communication, January 12, 2026].
[70] Kaiser, G.E., December 2021. Energy Regulation Quarterly, Reconciliation: The Public Interest and a Fair Deal, Volume 9, issue 4, energyregulationquarterly.ca/regular-features/reconciliation-the-public-interest-and-a-fair-deal.
[71] Ibid.
[72] Altalink, 26 November 2020. AltaLink, Piikani & Kainai-Blood partners share Canadian Electricity Association sustainability award. altalink.ca/news/news-releases/altalink-piikani-amp-kainai-blood-partners-share-canadian-electricity-association-sustainability-award/.
[73] Altalink, 4 June 2019. Limited Partnership Provides Valuable New Revenue for Piikani Nation. altalink.ca/news/news-releases/limited-partnership-provides-valuable-new-revenue-for-piikani-nation/.

14 Kingsvale Electricity Transmission Line

TYPE: Grid access for major projects	**STATUS:** In operation		**LOCATION:** British Columbia
VOLTAGE: 138 kV	**DISTANCE:** 24 km	**NUMBER OF FIRST NATION PARTNERS OR OWNERS** 1	**OWNERSHIP MODEL:** Majority

Located south of Merritt in BC's Nicola Valley, the Kingsvale Electricity Transmission Line traverses a geographically complex region. This line connects to an existing distribution line and pump station, as well as a new pump station, and is part of the Trans Mountain Expansion Project. Kingsvale Electricity Transmission Line is a partnership between the Lower Nicola Indian Band Development Corp. and EPCOR.

"This project reflects our Nation's vision for economic independence and infrastructure leadership. We are proud to be primary owners of the Kingsvale Transmission Line and to demonstrate what Indigenous-led development can achieve."

- **Chief Stu Jackson,** *Lower Nicola Indian Band*[74]

15 Bruce to Milton Transmission Reinforcement

TYPE: Grid strengthening	**STATUS:** In operation		**LOCATION:** Ontario
VOLTAGE: 500 kV	**DISTANCE:** 176 km	**NUMBER OF FIRST NATION PARTNERS OR OWNERS:** 2	**OWNERSHIP MODEL:** Limited Partnership / 34.2% minor equity

The Bruce to Milton Transmission Reinforcement Project runs between the Bruce Nuclear Generating Station in Kincardine and Hydro One's switching station in Milton. Completed in 2012, this line was the largest expansion of Ontario's transmission system in over two decades.[75] With two refurbished Bruce Power nuclear reactors now connected to Ontario's electrical grid, the line has capacity to transmit 3000 Megawatts of nuclear energy. This project is a partnership between Hydro One Indigenous Partnerships Inc, Hydro One Limited and SON Financial Corporation, which includes Saugeen Ojibway Nations (Chippewas of Saugeen First Nation and the Chippewas of Nawash Unceded First Nation). Each Nation is a 50% Limited Partner of Son Financial Corporation, which is 34.2% limited partner in the line.

[74] Merritt Herald, 22 September 2025. Kingsvale Transmission Line showcases success of First Nations–industry collaboration, merrittherald.com/kingsvale-transmission-line-showcases-success-of-first-nations-industry-collaboration/.
[75] B2M Limited Partnership, 2026. The Line, https://b2mlp.ca/the-partnership/the-line/.

Why do First Nations own transmission lines?

Many Indigenous nations in Canada are lighting the way towards a new energy future, one that centres Nation-led major projects, partnerships, and possibilities. This section offers reasons why some Indigenous nations have decided to own or operate transmission lines.

Indigenous self-determination

Through transmission line ownership, First Nations are better able to choose energy the Nation wants, as well as type, location, and timing of related infrastructure impacting the Nation's homelands. Economic benefits also provide long-term revenues, driving Nation-identified priorities.

"For generations to come, this will be something we can be proud of. We know self-determination, finding new ways forward, finding ways to provide an economy for our people is paramount."

- **Kahsennénhawe Sky-Deer** *(Kahnawà:ke),* CEO and President at Sky-Deer Consulting[76]

Remedying unreliable, outdated, or nonexistent grid infrastructure

By updating or building new transmission networks that tie into a wider grid, Nation-owned transmission lines have potential to reduce outage frequency. Plus, as line operators, addressing issues is more within the Nation's control.

"As the only 100% Indigenous-owned electricity transmission company in Canada, our Nations know best how to deliver reliable and safe electricity to First Nation customers, while providing maximum economic benefits to communities."

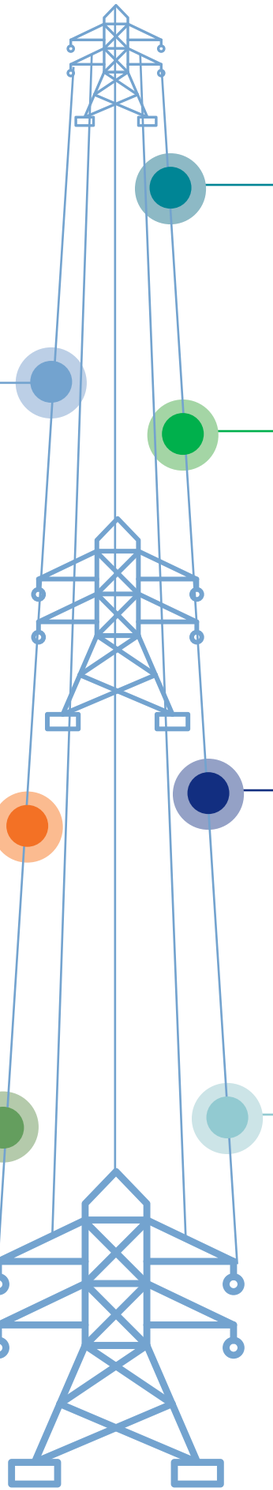
- **Pat Chilton** *(Cree Nation of Kashechewan),* former CEO of Five Nations Energy Inc.[77]

On-reserve population growth

As a Nation's population expands, so do its energy needs. In some cases, new homes may get built but due to load restrictions (and subsequent lack of power) they are not inhabited.[78] By connecting into the grid, Nations are better able to respond to and support community growth, such as housing, infrastructure upgrades. treatment facilities, schools, health and education centres, Elder and youth centres, and recreational facilities.

"Our reserves are these little square boxes that somebody decided we should live in, and we're quickly outgrowing them. Our population is expanding, so we need more housing, more services, more infrastructure. And that's the reality."

-**Margaret Kenequanash** *(North Caribou Lake First Nation)*, CEO, Wataynikaneyap Power[79]



Connecting Indigenous well-being

When transmitting both electricity and data, transmission lines have ability to greatly improve a Nation's communication network. As well, the multi-fold benefits of cleaner energy, more reliable electricity, and growing economic returns ripple throughout the Nation.

"If you improve communications access to the community, you also improve health care, transportation, and education."

- **Pat Chilton** *(Cree Nation of Kashechewan),* former CEO of Five Nations Energy Inc.[80]

Climate solutions, on Indigenous terms

To reach its clean energy goals, Canada needs to expand transmission: doubling or tripling its network by 2050. Indigenous-led transmission ownership is one way for Nations to support climate solutions, under Nation-directed terms.

"One of the critical steps we are taking to help solve the climate crisis is our ownership of, or partnership in, electrification projects. From clean generation projects to new transmission lines, these initiatives need to take place on our terms, on Indigenous terms."

- **Sharleen Gale** *(Fort Nelson First Nation),* Executive Chair of the Board, FNMPC[81]

Infrastructure self-sufficiency

As transmission line owners or operators, Indigenous nations may be better equipped to directly address operational or maintenance issues along the line.

"Electricity used to be very expensive, and the grids were poorly maintained by Ontario Hydro because technicians were flown in from Timmins, hundreds of kilometres away."

- **Pat Chilton** *(Cree Nation of Kashechewan),* former CEO of Five Nations Energy Inc.[82]

Industry's increasing energy demands

For some First Nations, industrial demand for electricity (such as mining) presents an economic opportunity. By owning transmission lines needed to power industry occurring on a Nation's homeland, Nations are better able to create benefits of present or future industrial activities.

"Transmission lines unlock industries and economies by providing the necessary power to operate. Transmission line ownership allows Indigenous communities, in an indirect way, to facilitate industries that are not necessarily in their own back yard and to build economic strength in doing so."

- **Luticia Miller,** *(Cree- Métis)* Vice President of Project Development, FNMPC

[76] https://montreal.citynews.ca/2024/04/18/mohawk-council-kahnawake-hydro-quebec/
[77] https://hydroone.mediaroom.com/2023-12-13-Five-Nations-Development-and-Hydro-One-sign-strategic-partnership-to-increase-Indigenous-economic-opportunities-in-Ontarios-energy-sector
[78] https://www.wataypower.ca/project/background
[79] https://www.ebmag.com/margaret-kenequanash-leading-ontarios-largest-indigenous-led-grid-connection-project/

[80] Pat Chilton, (Cree Nation of Kashechewan), Five Nations Energy Inc. [personal communication, October 2025].
[81] https://fnmpc.ca/wp-content/uploads/FNMPC_National_Electrification_digital_final_04222024.pdf
[82] Pat Chilton, (Cree Nation of Kashechewan), Five Nations Energy Inc. [personal communication, October 2025].

Reduces diesel dependency

Although reducing diesel use has both environmental and health benefits for a community, for many Nations it makes financial sense. Diesel is often shipped to remote communities via winter roads that are now less reliable due to warmer winters thus shorter hauling allowances on the roads.

"We went through an avoided cost funding model, identifying what the cost would be for the next 25 years to operate diesels in communities and transport [fuel]. We weighed this against the environmental damage the diesels were doing in our communities."

- **Pat Chilton** *(Cree Nation of Kashechewan),* former CEO of Five Nations Energy Inc.[83]

Own-source revenue, economic diversification & local employment

Transmission line ownership can bring long-term economic revenue generation to Indigenous nations, supporting Nation-led direction across multiple sectors as well as to diversify investments, assets, and revenue sources.

"[First Nations] need opportunities for own source revenues so that we can make choices about which of these infrastructural deficits to address, and to be able to use our own decision-making and self determination to not only choose which ones we build, but also when we build them, where we build them, and what infrastructure or program is priority."

- **Sharleen Gale** *(Fort Nelson First Nation),* Executive Chair of the Board, FNMPC[84]

Economic growth that can resonate with Indigenous values

The relatively small footprint of transmission lines and their capacity to connect remote areas have the potential to resonate with traditional Indigenous priorities and values.

"The comparably low-risk investment of transmission line ownership can translate into long-term, reliable, and predictable returns to Indigenous nations. This own-source revenue can enable long-term planning and the ability to focus on the things that matter most to Nations."

- **Luticia Miller,** *(Cree- Métis)* Vice President of Project Development, FNMPC

More affordable electricity

Transmission can support affordability by reducing the need for new generation capacity.

"Affordability becomes increasingly important in … the high-[electricity] demand scenario. Interprovincial connections can optimize the use of existing resources and reduce the need for each province to build excess generating capacity for peak periods or emergencies."

- **Luticia Miller,** *(Cree- Métis)* Vice President of Project Development, FNMPC[85]

"This is a partnership that's going to last for 40 years. It's going to bring economic revenue generation to our community, which we know is important to insert into things that are important to us."

- **Kahsennénhawe Sky-Deer** (*Kahnawà:ke),* CEO and President at Sky-Deer Consulting[86]

[83] Garrick, R., 1 November 2023. Anishnabek News, Persevering with economic development objectives key to success, anishinabeknews.ca/2023/11/persevering-with-economic-development-objectives-key-to-success/.
[84] Canada Infrastructure Bank, July 2024. The Frame, cib-bic.ca/en/media/the-frame/article/in-conversation-with-chief-sharleen-gale-fort-nelson-first-nation-chair-first-nations-major-project-coalition/.
[85] Shaffer, B.,16 May 2025. Maclean's Magazine, Forget America. Build an East-West Power Grid., macleans.ca/economy/forget-america-build-an-east-west-power-grid/.
[86] Henriques, B., 18 April 2024. City News, Mohawk Council of Kahnawà:ke and Hydro-Québec sign Hertel Transmission Line agreements, montreal.citynews.ca/2024/04/18/mohawk-council-kahnawake-hydro-quebec/.

Part 4
Questions First Nations Could Ask

Before taking on transmission project ownership or partnership, First Nations may want to explore a range of questions. These initial questions are suggested to guide considerations for transmission ownership, with each topic likely sparking further conversation.

Project Readiness and Nation Capacity

- What is the First Nation's readiness for taking on a project (e.g., corporate structures; in-house capacity to advance partnership and engagement)?
- What is the capacity of the First Nation's economic development, lands and resources, and/or environmental resource departments to consider and prioritize the project opportunities, impacts, benefits, and development?
- Is capacity funding available and if so, how is it accessed and what processes are required to access?

"Getting the three Nations together to build the transmission line came down to the women. Women asked the men to leave the room at a town hall, and when they returned they spoke in the Cree language to the men. They said, 'You will build that line. Think about the kids and the grandkids.'…the men listened."

- **Pat Chilton** *(Cree Nation of Kashechewan)*, former CEO of Five Nations Energy Inc.[87]

[87] Pat Chilton, (Cree Nation of Kashechewan), Five Nations Energy Inc. [personal communication, October 2025].

Environmental, Social, and Consent

- Will the First Nation(s) involved in the transmission line have their own Indigenous-led environmental assessment?
- How will the First Nation establish consent on, and incorporate partnership into, the project?
- What are the potential project impacts? Can the impacts be addressed effectively?
- How can Nations be involved with building capacity for environmental assessments and monitoring of a project during the construction phase and ongoing assessments?
- How can we see our own First Nation's laws and priorities reflected in the project?

"An Indigenous-led environmental assessment doesn't duplicate the Crown's process — it answers a different question: does this project align with our laws, our responsibilities, and our relationship with the land?"

- **Blaine Collett** *(Kapawe'no First Nation)*, Senior Advisor, Project Development, FNMPC

Spirit of the Land

For guidance on how to characterize and explore compensation for project-specific and cumulative effects on Indigenous cultural rights, check out the **Spirit of the Land Toolkit**.

Indigenous Ownership

- What type of participation (equity ownership, partnership, majority, minority, etc.) is best suited to the First Nation's priorities?
- Is equity ownership required for the transmission to move forward?
- If equity ownership is preferred, what percentage equity is ideal for the proponent First Nation? What are the benchmarks in other jurisdictions for Indigenous ownership in similar projects?
- What types of decisions will (or should) our First Nation participate in as owners before, during, and after construction of the project?

"Start with an assessment of the First Nations needs and interests. What does success look like?"

- **Paula McGarrigle,** President and CEO, Solas Energy[88]

Industry Partners

- Is the proponent/industry partner reliable? Does the proponent have experience partnering with First Nations? Are they collaborative?
- Does the First Nation have visibility into whether the proponent is credit-worthy/ capable of achieving what they propose to do?
- Which department of the First Nations should potential partners approach? (e.g., development corporation, Chief and Council, referrals, or other departments)?
- Does the proponent/industry/partner have a large enough standard 'capacity funding' budget for their First Nation partners/co-owners?

[88] Paula McGarricle [personal communication, January 2026].

"When folks say they want to partner with you, be forceful to keep yourself in the process. Don't assume they have your best interests at heart, it is all about the money."

- **Pat Chilton** *(Cree Nation of Kashechewan)*, former CEO of Five Nations Energy Inc.[89]

Financing

- How will the transmission line make money? What is the revenue model?
- How will the project be financed?
- What is the regulatory setting of the proposed utility project?
- How will the First Nation finance their investment in the project?
- How will capital investment be secured? Are there grants, loan guarantees, lenders or investors that can secure capital?
- Where Indigenous nations are in collaboration, how will financial cooperation be structured?
- What returns or benefits from the project will accrue to the First Nation and what level of financial or other risks will the Nation be assuming?
- Has the viability and a competitive return on investment been established for the project? And over what time frame?
- Has profitability been maximized for the First Nation?

Risk

- What are the known risks and how can they be mitigated?
- What are the specific risks associated with transmission ownership (e.g., financial, commodity, construction)?
- Who bears the risk during the construction of the transmission line?
- What are the risks related to inter-provincial/territorial projects such as construction pricing, PST/HST/GST, and cross jurisdictional trade unions for construction/maintenance?

[89] Pat Chilton, (Cree Nation of Kashechewan), Five Nations Energy Inc. [personal communication, October 2025].

Governance Structures

- Will other First Nations be part of the project and how will equity or benefits be shared between/ among the partner First Nations?
- Are the political and corporate structures in place to succeed in a collaborative development?

Procurement

- What are the goods and services that can be provided through procurement?
- How can First Nations strategically secure procurement terms that are favourable to the Nation's communities?
- What would the procurement and contracting process look like for the Nation and its businesses?
- What would be the most strategic approach for the Nation to take regarding procurement and contracting within their lands and territories?
- What steps can the Nation take to strategically secure procurement negotiations terms favourable to the Nation's membership?

"Have technical people you can trust to model the business case."

- **Josh Montana** *(George Gordon First Nation),* Wicehtowak Solar Project, George Gordon Developments Ltd.[90]

[90] Josh Montana [personal communication December 2025].

Additional economic opportunities

- What other Indigenous businesses have the potential to be powered or financed by participation in this transmission line? For example, **indirectly** through businesses external to the electricity sector but that are limited in growth where there is not enough power or **directly** through:
  - a) Independent power projects such as wind, solar, battery
  - b) Indigenous utilities
  - c) Wheeling
  - d) Behind-the-fence projects
  - e) Distribution lines
- Can the corridor created for transmission be twinned with other infrastructure or projects such as fibreoptic lines?[92]
- Can the transmission line engagement process be utilized as a time to do comprehensive community planning?
- Are there neighbouring Indigenous nations with which to partner to scale-up or reach an economy of scale?

Capacity and Negotiation Supports

What capacity or negotiation supports does the First Nation need to take the next steps on participation in the transmission line?

"There are many pre-baked deals with the illusion of negotiation. If a proponent comes with something that looks like a 'take it or leave it' deal, and this rubs poorly with Nations, it can impact trust in the relationship. Flip the script: developers and their potential Indigenous partners should decide together what they want the partnership and the project to look like."

- **Luticia Miller,** *(Cree- Métis)* Vice President of Project Development, FNMPC[91]

[91] Luticia Miller [personal communication December 2025].

Transmission Basics

Getting involved in a transmission project requires a more in-depth understanding of how the electricity system works.

- What are the main networks within an electricity system?
- How many different types of transmission towers are there?
- How are transmission lines built? What types of capacity supports will First Nations need to hire to advance their projects?

Answers to these questions and more can be found in **Section Five: Transmission Basics**.

"The most important thing is for First Nations to work together establish their expectations, what their principles are, and live according to what the Creator has granted us to be, which is our way of life on the land and protecting our environment."

- **Margaret Kenequanash** (*North Caribou Lake First Nation),* CEO, Wataynikaneyap Power[92]

[92] First Nations Major Projects Coalition, 2025 Conference, Toronto Ontario, April 29, 2025.

Part 5
Transmission Basics

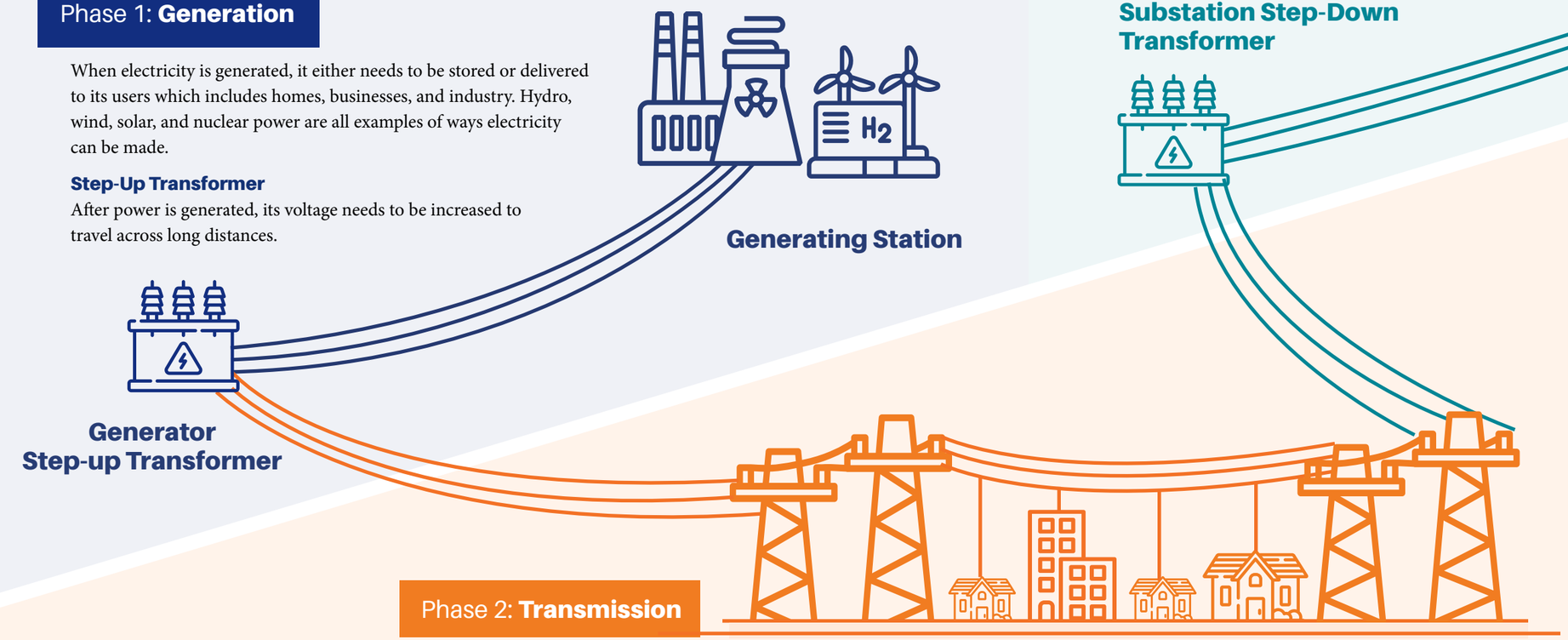
How the electricity system and its various sub-systems work can get quite complicated. However, having a foundation of basic electricity-related knowledge may help navigate upcoming decisions, and may support a launch into more in-depth learning.

The Electrical Grid

Phase 1: **Generation**

When electricity is generated, it either needs to be stored or delivered to its users which includes homes, businesses, and industry. Hydro, wind, solar, and nuclear power are all examples of ways electricity can be made.

Step-Up Transformer
After power is generated, its voltage needs to be increased to travel across long distances.



Phase 2: **Transmission**

With voltage increased, bulk electricity travels across high voltage lines on its way to the distribution system.

Transmission Customer
(Industrial)

Phase 3: **Distribution**

Bulk electricity moves through substations and distribution lines until it is finally connected with electricity users. In this phase, electricity is transported at a much lower voltage than during the transmission phase.

Step-down Transformer
Before getting into the distribution system, electricity needs to be decreased.

Phase 4: **End User**

Electricity finally arrives to the end user—the customer who uses (and pays for) the electricity to be delivered: homes, businesses, communities.

Transmission and distribution: What is the difference?

Transmission and distribution are all networks within one electricity system. Transmission lines move electricity from the power generation source to substations that then feed it to the end user via distribution lines.[93]

Roadways can be a useful analogy for electrical networks: transmission lines being the highways and distribution lines the streets within a community. Transmission lines move high voltage electricity over long distances, distribution lines disperse it at a much lower voltage, over shorter distances.

MW vs MWh

You may hear power being referred to by megawatts (MW) or by megawatt hours (MWh). Unsure of the difference? **Capacity** is the maximum possible power that can be generated by a source and uses MW as its descriptor. **Energy generation** refers to the amount of electricity produced in a time period and uses MWh. Learn more here.[94]

	TRANSMISSION	DISTRIBUTION
TYPICAL KILOVOLTAGE RANGE*	Medium to Very High Often 138 kV to 800 kV	Low to Medium Often 4 kV to 35 kV
DESTINATION	Distribution network	End users such as residential, commercial, and industrial

95

TABLE 2: *GENERAL DIFFERENCES BETWEEN NETWORKS WITHIN A TYPICAL ELECTRICITY SYSTEM*

[93] Csanyi, E., 23 September 2023. Electrical Engineering Portal, Basics of Subtransmission Systems, www.electrical-engineering-portal.com/basics-of-subtransmission-systems.
[94] Climate Council, N.D. The Difference Between Installed Capacity and Energy Generation, climatecouncil.org.au/resources/the-difference-between-installed-capacity-mw-and-energy-generation-mwh/.
[95] U.S. Department of Energy, November 2023. Electric Transmission & Distribution & Protective Measures, energy.gov/sites/default/files/2023-11/FINAL_CESER%20Electricity%20Grid%20Backgrounder_508.pdf.

Transmission networks

Often called the backbone of an electricity system, a transmission network is the part of an electric grid built to carry electricity from the power generation source to distribution systems, which then send electricity to the end user.

Transmission networks—a term used interchangeably with transmission lines—are made up of components such as transmission towers, cables, substations, and hardware needed to connect to the distribution network.

In an overhead transmission network, transmission wires are held up by structures of varying shapes and heights—from ~15 metres to 100 metres.[96] In an underground transmission network, the transmission cables are buried below the ground.

Transmission line lengths can range from a few kilometres to thousands of kilometres—it all depends on where the power generation source is and how far the electricity needs to travel.

Substations

To move electricity from energy source to end user is not a simple process. One complexity is voltage requirements. When electricity is generated, the voltage may be too low to be transported efficiently. To address this, voltage is increased at the generation site through a step-up transformer. After transmission, voltage is lowered through a step-down transformer and safely delivered to end-users through the distribution system.

Substations are points within an electricity system that increase or decrease voltages. This allows high voltage electricity to be transmitted from a power generating facility, and then lower voltage electricity to be distributed safely to the community of homes and businesses.[97]

Substations are critical for connecting a transmission line to the distribution network. For different reasons, many transmission lines across Canada traverse near communities without bringing power to it. One reason is cost: the price tag to build a substation is not insignificant and, depending on the voltage requirements, can exceed CAD $35 million.

The two main types of facilities are **step-up** substations and **step-down** substations.

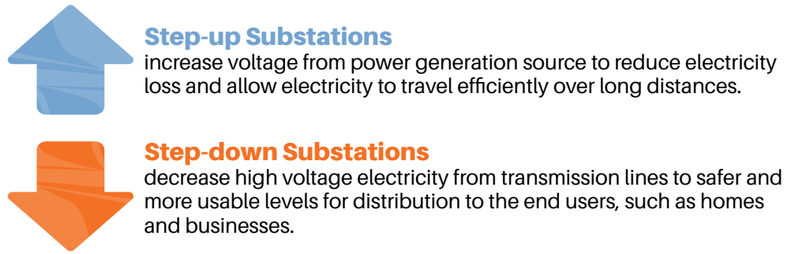
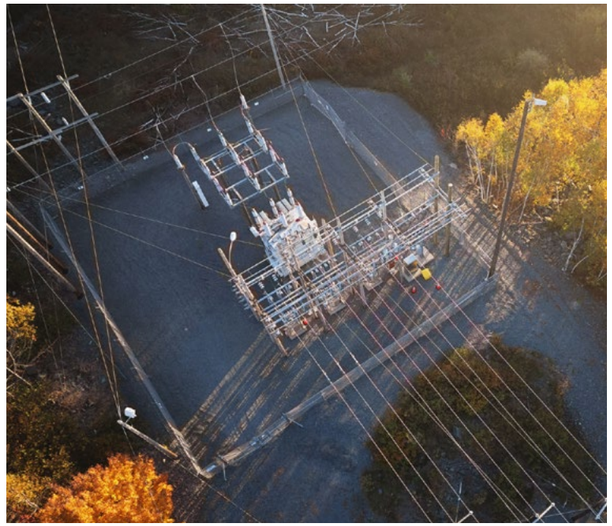


FIGURE 9: *FACILITIES USED TO INCREASE OR DECREASE VOLTAGE WITHIN AN ELECTRICITY SYSTEM*

[96] Hydro Québec, N.D. What is a transmission line and why is it in a cleared corridor? hydroquebec.com/safety/vegetation/understand-transmission-lines.html.
[97] Alberta Electric System Operator, N.D. AESO Transmission Costs, aeso.ca/grid/grid-planning/transmission-costs/.

Substations come in a range of sizes, and include various components, such as:

- Transformers (to increase or decrease voltage)
- Protective equipment (surge arresters and circuit breakers)
- Control devices (disconnect switches and busbars)
- Distribution feeders
- Electronic instrumentation to monitor system performance and record data
- Firefighting equipment[98]



Most substations do not have technical staff on-site. This means many are controlled remotely and rely on automatic functions to provide required services and monitoring.

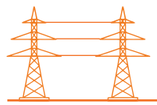
Did You know?

Electricity inside longer transmission lines may get boosted at capacitor stations. This is because as electricity moves down a line the voltage drops, which means the amount of electricity carried goes down.

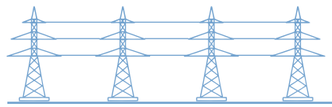
[98] U.S. Department of Energy, November 2023. Electric Transmission & Distribution & Protective Measures, energy.gov/sites/default/files/2023-11/FINAL_CESER%20Electricity%20Grid%20Backgrounder_508.pdf.

Types of transmission lines

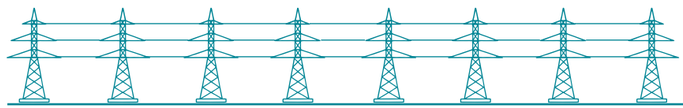
Transmission lines come in many different configurations, sizes, and lengths. The three main classifications for overhead lines are highlighted below, with corresponding lengths and voltage levels.[99] Generally speaking, the further electricity needs to travel, the higher the voltage level needs to be.



Short transmission line
Typical Length Range: <80 km
Voltage Level: 33 to 132 kV



Medium transmission line
Typical Length Range: 80 km to 250 km
Voltage Level: 132 to 230 kV



Long transmission line
Typical Length Range: >250 km
Voltage Level: 345 kV +

TABLE 10: *TYPES OF TYPICAL TRANSMISSION LINES, BY LENGTH AND CORRESPONDING VOLTAGE*

When a new transmission line is planned, designers and engineers take a range of factors into consideration, including:

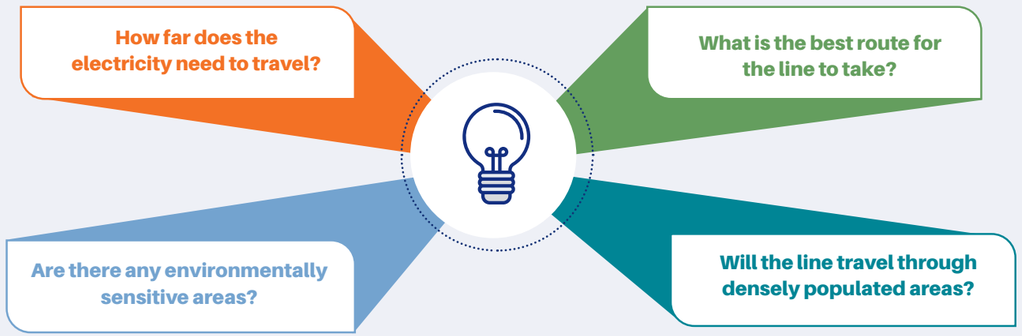


FIGURE 11: *GENERAL EXAMPLES OF CONSIDERATIONS FOR NEW TRANSMISSION LINES*

Once the broad parameters of a transmission line project have been identified, technical experts can start to model and plan the transmission line. This includes identifying—and sometimes innovating towards—the right type of towers to support the line.

[99] https://eepower.com/technical-articles/introduction-to-transmission-line-modeling-for-power-system-analysis/#

Overhead or underground?

When most people think of electricity travelling across the country, they likely picture a line of overhead transmission lines traversing fields, running alongside highways, or climbing hillsides. This is because transmitting electricity using overhead lines is much more common than via underground lines.

However, as shifting climate conditions (like increased ice storms or forest fires) continues to disrupt grid stability, countries around the world are looking to solutions to weather-related hazards. This has brought the topic of building underground transmission lines more into the forefront of energy infrastructure conversations.

Even still, in Canada, underground transmission lines are largely only used in more densely populated areas, because of the higher costs associated with construction. The distances between power generation sources and user communities are often very long and needing higher voltage transmission, which typically is better suited to an overhead network.

Thunderstruck

Transmission lines in Canada use both alternating current (AC) and direct current (DC) systems.

AC is an electric current that reverses direction, around 60 times per second. This type of current is commonly transmitted to homes and businesses through the distribution network.

DC is an electric current that only flows in one direction. For long distance electricity transmission, power losses are far less with DC than with AC.

Transmission towers

An overhead transmission line is primarily made up of towers and cables, with substations positioned at strategic locations to bump the voltage up or down, where necessary.

Depending on its function, the type of tower used to support the electricity-transmitting cables will vary in shape, height, and materials. Let's just say, to figure out the right specifications for a transmission line, it can take a lot of technical modelling!

Determining what type of tower to use is not just an aesthetic decision, although how it looks often factors into the selection. Different designs work to support different voltages, numbers of circuits, terrains, and conditions.

To find the right type of tower, tower designers and engineers consider technical criteria, as well as cost, including:

Structural integrity

Transmission towers constantly withstand environmental pressures while still supporting cable weights: their ability to endure various mechanical forces is very important. In the design process, engineers calculate loads, analyze stresses, and pick materials that ensure stability under the full range of weather conditions.

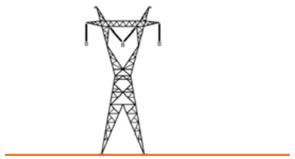
Voltage and electrical performance

To transmit electricity efficiently, it needs to travel at high voltages. In general: the bigger the tower, the higher the voltage. When selecting a tower for a project, engineers must think about conductor configuration, as well as how to minimize energy loss and keep voltage at the level required to travel long distances and maintain grid stability.[100]

Environmental impact

What is the ecological footprint of the transmission tower? Tower designers may look for ways to minimize the environmental or ecological impacts of the transmission line on the land.

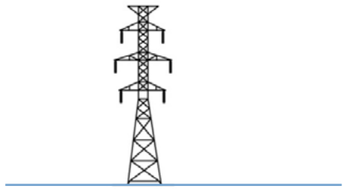
Examples of transmission tower variety



Waist-type

Voltage: ***110 to 735 KV***

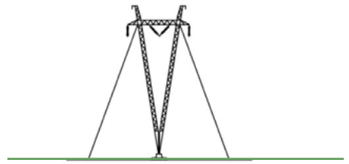
- Easy to assemble
- Suitable for uneven terrain
- Require minimal maintenance



Double circuit

Voltage: ***110 to 315 kV***

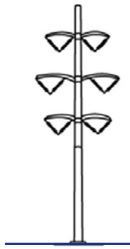
- Typically used when more power needs to be transported through the same corridor
- Benefit of double circuit: if one fails, the other may be able to handle the load



Guyed-V

Voltage: ***230 to 735 kV***

- Cost effective
- Lighter and faster to build than self-supporting towers
- More economical than double circuit or waist-type towers



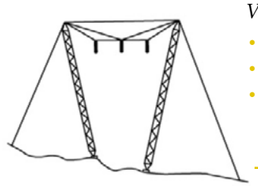
Tubular steel pole

Voltage: ***230 to 315 kV***

- Considered more aesthetic
- Popular for urban areas

Guyed cross-rope suspension tower

Voltage: ***Up to 735 kV***



- Easy to assemble
- Requires less steel than guyed-V
- Lighter and less expensive tower

101, 102

FIGURE 12: *EXAMPLES OF TRANSMISSION TOWER VARIETY*

[100] Towerist, Advancing Power Infrastructure: The Art and Science of Transmission Tower Design, tower-ist.com/transmission-tower-design/#:~:text=Electrical%20engineers%20focus%20on%20optimizing,Geotechnical%20Engin.
[101] Rabert, T., 17 April 2023. *Forum Electrical,* Transmission Towers and their parts, forumelectrical.com/transmission-towers-and-their-parts/.
[102] Hydro Québec, N.D. Tower, hydroquebec.com/learning/transport/types-pylones.html.

Building a Line

"For some First Nations, [transmission construction] will be a first. What are the execution and performance analytics? There will be companies familiar with this, this would be normal, but for First Nations this may be a first."

- **Luticia Miller,** *(Cree- Métis)* Vice President of Project Development, FNMPC

Transmission line buildout involves many different skillsets and tradespeople, including power line technicians, electricians, civil engineers, restoration specialists, and other workers. To be done right, construction relies on in-depth knowledge and expertise throughout the entire process.

"When First Nation's lead or co-own transmission projects, construction becomes more than a technical phase — it becomes a capacity-building engine. Every tower, every span, every work package is an opportunity to grow our people's skills and strengthen long-term Nation-owned capacity."

- **Blaine Collett** *(Kapawe'no First Nation),* Senior Advisor, Project Development, FNMPC

In general, building a transmission line follows a series of steps, including[103]:

Planning & Design

- Establish governance and ownership structure and partners (First Nation, industry and public sector where relevant)
- Environmental and engineering studies
- Environmental and First Nations cultural assessments
- Regulatory agency discussions, reviews and hearings
- Identify and select route options; Finalize corridor route
- Permitting (can take four to ten years)

Pre-Construction

- Confirm structure placement
- Acquire access and property rights
- Clear site and prepare right-of-way
- Purchase materials

Construction

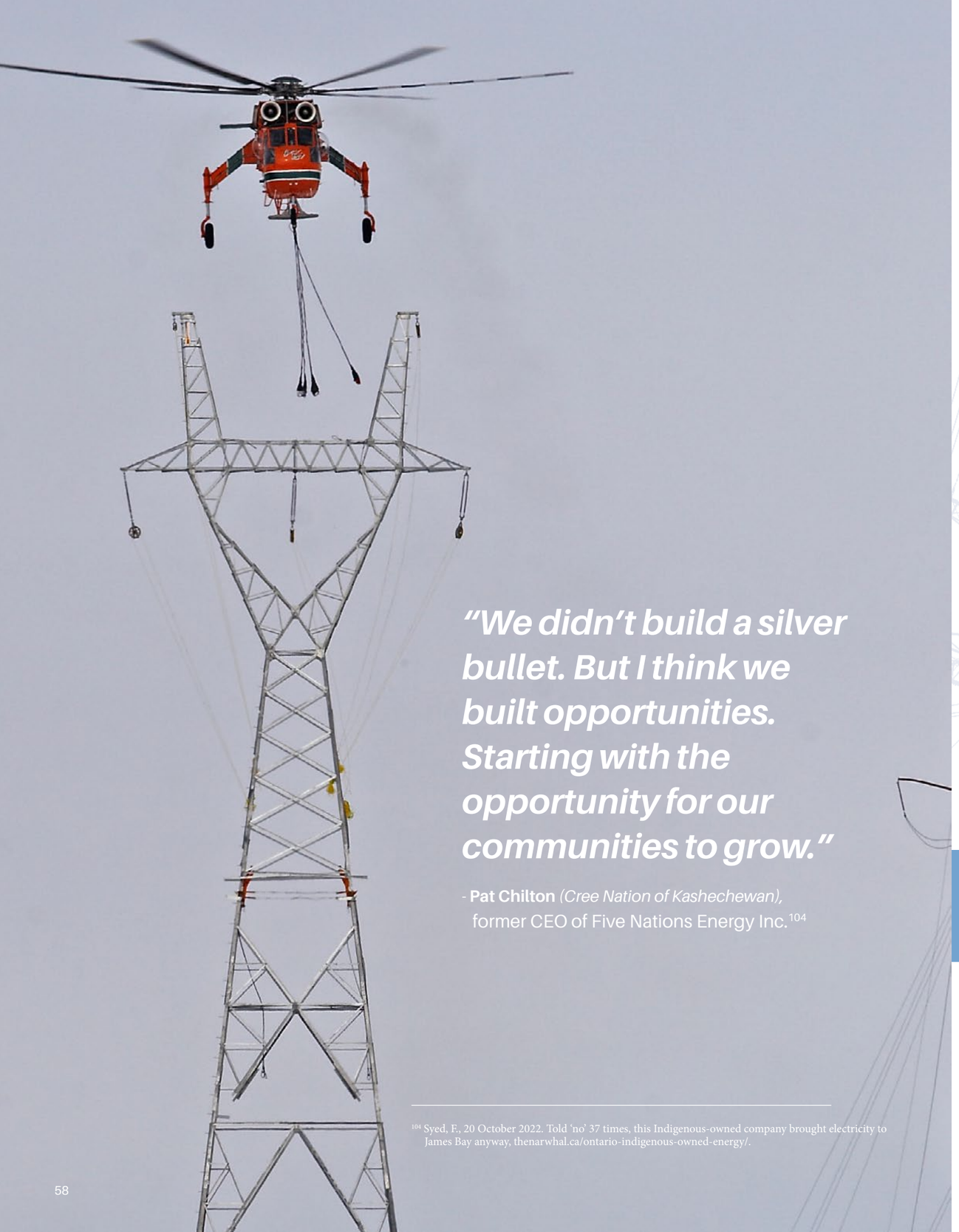
- Deliver materials to each tower site
- Build the foundations and anchors
- Assemble the towers
- Raise the towers
- Unreel and install the conductors
- Install the counterpoise wires

Post-Construction

- Restore the site
- Maintain and upkeep the line
- Hiring people and businesses who hold the specific knowledge, skillset, and capability to carry out building a transmission line.

FIGURE 13: *GENERAL OVERVIEW OF STEPS REQUIRED TO BUILD A TRANSMISSION LINE*

[103] BC Hydro, N.D. North Coast Electrification, bchydro.com/content/dam/BCHydro/customer-portal/documents/projects/north-coast-electrification/north-coast-electrification-open-house-story-board.pdf.



"We didn't build a silver bullet. But I think we built opportunities. Starting with the opportunity for our communities to grow."

- **Pat Chilton** *(Cree Nation of Kashechewan),* former CEO of Five Nations Energy Inc.[104]

[104] Syed, F., 20 October 2022. Told 'no' 37 times, this Indigenous-owned company brought electricity to James Bay anyway, thenarwhal.ca/ontario-indigenous-owned-energy/.

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