Shared Grid / Shared Benefits

Yukon–B.C. Grid Connect pre-feasibility benefits analysis

Yukon Development Corporation

September 2025

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Cover: A connected grid strengthens energy security for growing northern communities. *Joseph Bradley*

Message from Yukon Development Corporation President & CEO

The North can be a leader in the new energy economy.

Reliable electricity for critical mineral development, continued electrification of homes and transportation, First Nations-owned renewable energy facilities and clean electricity exports to the rest of Canada: these can power the North's economic future.

It starts with connecting Northwestern B.C. and the Yukon to the North American grid.

As part of the pre-feasibility work funded through Canada's Critical Mineral Infrastructure Fund and the YDC Fund, the Yukon Development Corporation (YDC) engaged recognized Canadian policy, economics and engineering experts to assess the available financial, energy security and environmental benefits of a connected grid.

The results of this analysis demonstrate significant benefit beyond the important goal of meeting Yukon's peak winter demand. The significant clean economic growth potential is shared equally between B.C. and the Yukon. Projected to power up to $7.6 billion per year in economic growth, this transformational project benefits northerners and all Canadians alike.

A connected grid and two-way energy market increases investment certainty and incentivizes more northern power generation. It takes more communities off diesel and promotes clean growth in the mining industry. It unlocks new opportunities for First Nations ownership and partnership in a growing energy sector.

Our progress on this project is a testament to the strengths of northern partnerships and collaboration. We are grateful for the constructive early discussions with First Nations rightsholders in both jurisdictions. We look forward to advancing this project together, with reconciliation as a shared goal.

Gary Gazankas

President & CEO,
Yukon Development Corporation

$7.6 billion

a year in clean economic growth

Midgard Consulting, Appendix A

Teslin, Yukon: part of a northern future powered by clean energy. *Andrew Strain*

Project overview

The Yukon–B.C. Grid Connect links Canada's northwest to the North American grid, unlocking the region's full clean energy potential.

The Yukon–B.C. Grid Connect is a proposed ~800 km high-voltage transmission line connecting Yukon's isolated electrical grid to the North American grid through Bob Quinn Lake, B.C. The transmission line will electrify several diesel-reliant communities and significant critical mineral developments in the Yukon and B.C.'s Northwest Corridor.

At the forefront of project development is the commitment to advance reconciliation through First Nations partnership and ownership.

The Yukon–B.C. Grid Connect seeks to meet several important needs, including providing clean, reliable electricity to the Northwest Critical Mining and Conservation Corridor, increasing the Yukon's energy supply during peak winter demand, electrifying multiple diesel-reliant communities, supporting First Nations ownership and partnership in the energy sector, and reducing the risks associated with major renewable energy projects in Canada's northwest.

YDC is currently undertaking pre-feasibility work on the proposed transmission line, supported by $40 million from the Government of Canada's Critical Mineral Infrastructure Fund and $13 million from the YDC Fund. Preliminary analysis by two leading construction firms estimates the construction costs at approximately $4 billion. YDC is advancing the project with joint support from the governments of B.C. and Yukon, and in collaboration with BC Hydro (Appendices C, D).

Methodology

This report is an initial summary of the pre-feasibility findings on the expected benefits of the proposed transmission line across three broad categories: economic contribution, energy security and clean growth.

YDC engaged leading Canadian experts in policy, economics, engineering and finance to assess the projected benefits of the transmission line. The reports draw on available mineral development and energy data. Each report appears in its entirety in the appendices and outlines the assumptions and industry methodology used in the analysis. For purposes of comprehension, YDC has translated several long-term benefits into yearly averages over 50 years, e.g., job years and economic growth projections.

The transmission line benefits were assessed for several prospective routes, of which YDC deemed two to be feasible, a route from Bob Quinn Lake, B.C., to Ross River, Yukon, along Highway 37 and the Robert Campbell Highway and a route from Bob Quinn Lake, B.C., to Whitehorse, Yukon, along Highway 37 and the Alaska Highway.

This benefits analysis does not address specific benefits to First Nations governments and development corporations. YDC is engaging with individual First Nations on advancing their own community energy plans.

~55%

of the clean growth benefits are generated in British Columbia

Midgard Consulting, Appendix A; BDO Canada, Appendix B

Yukon–B.C. Grid Connect

Shared power, shared benefits

The Yukon–B.C. Grid Connect is a proposed high-voltage transmission line powering Canada's northwest with clean energy.

Clean energy supports thriving communities and strong local economies in Canada's northwest. *Andrew Strain*

Growing the economy

Overall, the Yukon–B.C. Grid Connect is projected to power up to $7.6 billion a year in long-term growth and more than 36,000 Canadian jobs, creating lasting benefits across multiple sectors.

Critical mineral development

The critical mineral deposits that exist in Canada's northwest are in high demand due to their importance to clean energy technologies, advanced electronics and the global semiconductor supply chain. The Government of Canada has identified the Northwest Critical Mineral and Conservation Corridor as an area of strategic focus in transforming Canada.

Reliable and affordable clean power is essential to advancing many prospective mining operations in the region. BC Hydro's North Coast Transmission Line project will bring electricity to the doorstep of the Northwest Corridor. The Yukon–B.C. Grid Connect will extend electrification right through the corridor.

Existing and prospective major critical mineral and precious metal mines that could benefit from a high-voltage transmission line include Red Chris Block Cave Expansion, Turnagain, Eskay Creek Revitalization Project, Kitsault Mine, Galore Creek, Schaft Creek, KSM, Premier/Red Mountain, New Polaris, Kutcho, Silvertip, Tenas, Dome Mountain, Ootsa, Kudz Ze Kayah, Casino, MacTung and MacPass (Midgard Consulting, Appendix A).

The development of these important Canadian mining regions with clean, renewable energy not only benefits northern communities, it supports the growth of strategic Canadian sectors, including ports, smelters, the technology sector and the energy industry (Midgard Consulting, Appendix A).

Establishing a northern energy economy

Often seen as simply a way to bring more power north, the benefits analysis shows how a connected grid would actually unlock new investments in northern energy generation. The grid project is projected to allow for 2,000 MW of renewable energy generation in the northwest from hydro, wind and solar.

While the Yukon has strong potential for solar and wind power, its current smaller grid has reached the limit for these variable sources.

Linking to the North American grid creates market certainty to build new renewable power facilities. It reduces the risks investors face related to long-term energy demand projections and ensures a continuous and stable electricity market regardless of changes in local demand (Midgard Consulting, Appendix A). First Nations, communities and the private sector can confidently invest in clean energy projects that serve both local needs and broader markets (BBA, Appendix F).

Long-term economic growth powered by transmission line

B.C. mineral development

$100 billion

Yukon mineral development

$81.2 billion

Renewable energy

$198.5 billion

Transportation improvements

$200 million

Unlocks up to

36,000

long-term Canadian jobs

Midgard Consulting, Appendix A

Transmission expertise will drive the success of the Yukon–B.C. Grid Connect. *Sean Anthony Eddy*

Powering Canada's critical mineral corridor with clean, reliable energy. *Yocamon*

A connected grid unlocks energy opportunities in communities like Carmacks, Yukon. *Government of Yukon / Andrew Strain*

Securing our energy future

Strengthening northern energy security means stabilizing Yukon's grid, cutting diesel reliance and supporting national security.

A Yukon grid at capacity

Yukon's growing demand is outpacing its available clean energy supply. Peak winter power needs currently exceed generated capacity, and new thermal generation is considered a short-term solution.

Legacy infrastructure and an isolated grid are challenges to growing our northern energy infrastructure. The Yukon has reached the limit for intermittent solar or wind energy expansion while maintaining stability on a smaller grid. Attracting investment is challenging for projects that may not run at full capacity year-round.

The Yukon–B.C. Grid Connect provides a made-in-Canada solution to these challenges. A connected grid will stabilize winter supply, expand solar, hydro and wind potential and create a market to sell surplus clean power to the rest of Canada. Yukon's current export capacity is an estimated 159 GWh (BBA, Appendix F).

A two-way, continuous electricity market reduces investment risk and thereby significantly increases the potential for First Nations-owned renewable energy projects in the North (Midgard Consulting, Appendix A). YDC has initiated community energy planning discussions with Yukon First Nations to explore opportunities for all communities to participate in and benefit from a more connected grid.

Energy security in Northwestern B.C.

Four communities in Northwestern B.C. – Dease Lake, Good Hope Lake, Telegraph Creek and Lower Post, within Tahltan and Kaska territories – currently rely on diesel generation. Watson Lake and Upper Liard in the Yukon are also diesel reliant. Connecting these communities to the grid would displace 4.8 million litres of diesel annually (BDO Canada, Appendix B), while providing more reliable service and enabling local clean generation.

National security

The Assembly of First Nations – Yukon Region has identified energy security as a critical component to Canada's northern national defence strategy. According to Canadian defence policy expert, Heather Exner-Pirot, reliable energy supply is a significant contributor to national security in several ways. It enables critical mineral development, including minerals defined by NATO as important to defence. It increases Canadian presence in the Arctic. Finally, energy infrastructure is considered dual-use, serving for civilian populations and contributing to strengthened national defence (Exner-Pirot, Appendix E).

> As the Arctic becomes a greater geopolitical focus, both for our allies and our adversaries, investments in critical infrastructure demonstrate a visible and credible presence, economically and militarily.
>
> Heather Exner-Pirot, Appendix E

Clean power will reduce diesel reliance in communities like Watson Lake. *Andrew Strain*

A connected grid increases opportunities for First Nations renewable energy projects. *Government of Yukon / Justin Kennedy*

Transmission routes will follow established corridors like the Stewart–Cassiar Highway. *Edgar Bullon*

Leading clean growth

The Yukon–B.C. Grid Connect will cut diesel reliance and avoid up to nine million tonnes of emissions – making a measurable contribution to Canada's clean growth goals.

This nation-building project is expected to generate significant regional economic growth in Canada's northwest, while also driving climate benefits. The project will reduce current diesel and fossil fuel reliance in the North and avoid even greater emissions as economic activity and population grows.

BDO Canada estimates that clean electricity supplied through a connected grid could displace up to nine million tonnes of greenhouse gas emissions (CO_2e) compared to existing and projected thermal generation. That is equivalent to removing 120,000 tanker trucks of gasoline every year – equal to 1.3% of Canada's total current emissions. These figures highlight the critical role electrification can play in achieving Canada's clean growth goals.

Up to

9 million tonnes

of greenhouse gas emissions avoided annually – the equivalent of 120,000 tanker trucks of gasoline a year

BDO Canada, Appendix B; Natural Resources Canada

Electrification also supports the ongoing transition in transportation and housing. More homes across the North will be able to switch to electric heating, and adoption of electric vehicles will become more feasible with a stable, expanded grid. For the six diesel-reliant communities along the route, the clean energy transition will also mean more stable and affordable electricity rates.

Emissions displacement by source

Off-grid diesel-powered communities

13,133 tCO2e

On-grid Yukon thermal generation

39,226 tCO2e

Yukon / Northwest B.C. mining sector

9,100,000 tCO2e

Reliable electricity powers learning, connection and opportunity for northern youth. *Danilo Andjus*

Grid connection supports increased electrification across the Yukon and B.C. *Halfpoint*

Kaska Elder and artist Dennis Shorty sharing stories at the Dena Cho monument in Ross River. *Andrew Strain*

Reconciliation

YDC is committed to advancing the Yukon–B.C. Grid Connect in partnership with First Nations in B.C. and the Yukon, in the spirit of reconciliation.

The Yukon–B.C. Grid Connect has the potential to unlock new opportunities for First Nations along the route as well as those in grid-connected communities. This benefits analysis provides a transparent foundation for ongoing discussions on ownership and partnership opportunities. Through community energy planning with all Yukon First Nations, YDC's vision is that the benefits of a more connected grid – including new energy infrastructure ownership and participation – are widely shared.

Appendices

Appendix A.

B.C.–Yukon Interconnect – Benefits Analysis and Strategic Infrastructure – Midgard Consulting Inc.

Appendix B.

GHG and Revenue Analysis for the B.C.–Yukon Transmission Line – BDO Canada LLP

Appendix C.

Memorandum of Understanding – Between BC Hydro and YDC

Appendix D.

Memorandum of Understanding – Between Government of British Columbia and Government of Yukon

Appendix E.

The Yukon–B.C. Grid Connect Project: Strengthening Canada's Autonomy, Resilience and Security – Heather Exner-Pirot

Appendix F.

B.C. / Yukon Demand and Peaking Compatibility – BBA

Yukon

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MEMORANDUM

To: Yukon Development Corporation, Sandra MacDougall, Manager – Clean Energy Projects

From: Midgard Consulting Inc., Michael Walsh, CEO and Principal & Stephanie Whitehead, Principal

Date: August 29, 2025

Subject: BC-Yukon Interconnect – Benefits Analysis and Strategic Infrastructure

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The purpose of this memo is to provide a list of benefits and costs for the BC-Yukon Interconnection Project (the "Project" or the "Interconnection") within British Columbia and Yukon, along with supporting financial analysis. The financial analysis is informed by the financial models similar to those used by the British Columbia and Yukon government ministries, supplemented by publicly available estimates sourced from industry associations and project proponents.

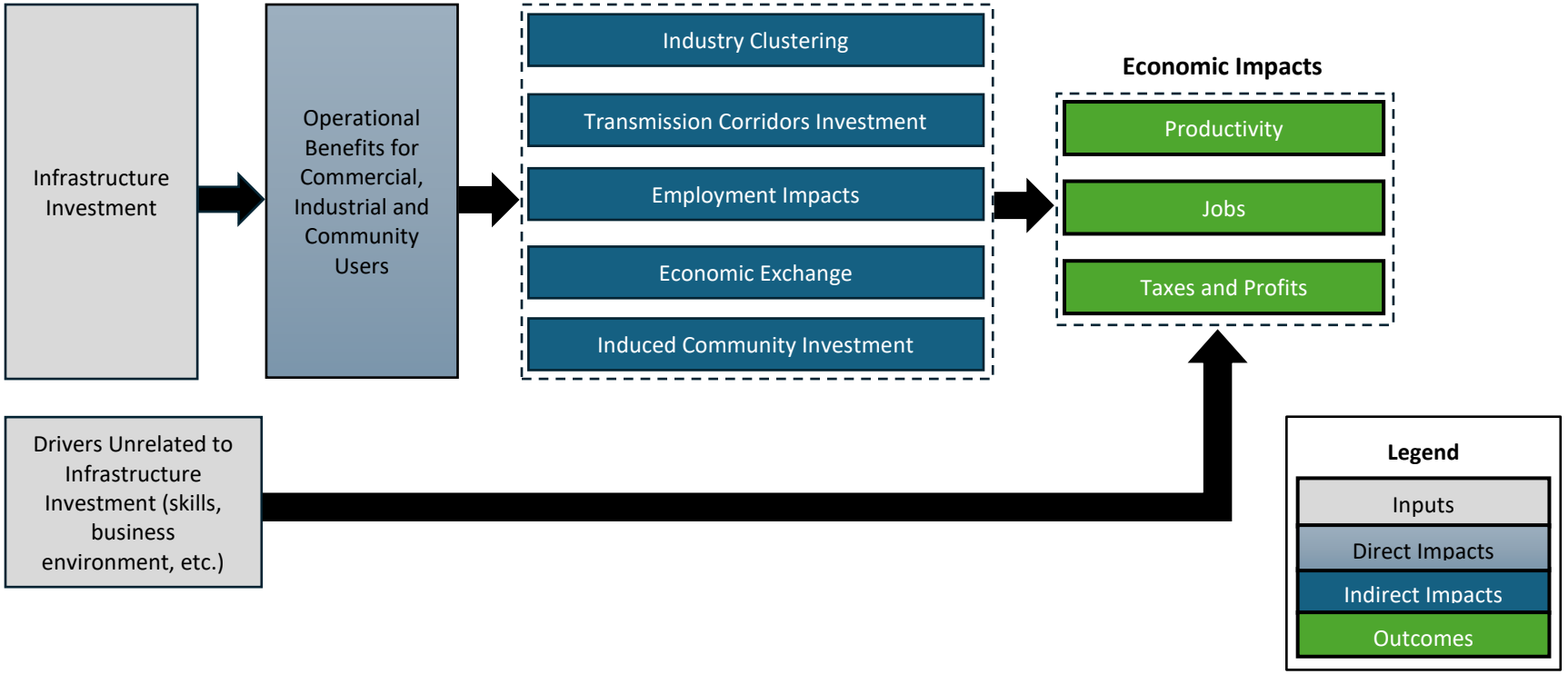
1 CONCEPTUAL ECONOMIC FRAMEWORK

The conceptual framework, as outlined in Figure 1, illustrates key economic drivers or channels used to assess and value benefits catalyzed by the BC-Yukon Interconnection Project.[1]

Developing and constructing a transmission line delivers economic value through a variety of channels. The investments also catalyze adjacent infrastructure investments, including roads and telecommunications facilities associated with Project construction and operation activities. At the foundation of these effects are benefits and operational gains realized by industrial, commercial, government, and residential users due to improved grid reliability, expanded access, and economies of scale induced cost savings. The conceptual framework helps policymakers, utilities, and stakeholders understand how the financial investment in a transmission line drives broader economic value by supporting business growth, job creation, business investment, and community development beyond the grid improvements.

[1] This framework adapted and modified from the report of Frontier Economics for the UK Department for Transport. Frontier Economics. (2021). Understanding the value of transport investment: The wider economic impacts. Report prepared for the UK Department for Transport. Link

Figure 1: Transmission and Associated Infrastructure Investment Benefits Channels [1]



Note: The figure above is inspired from the Figure 1 of the report prepared for the UK Department for Transport by the Frontier Economics.

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1.1 Description of Benefits Channels

The core of the framework illustrates that infrastructure investment in electricity transmission delivers direct operational benefits for commercial, industrial and community energy customers, particularly in sectors such as mining, renewable energy, and logistics. These direct benefits act as a gateway to broader structural economic changes through the following channels:

- **Industry Clustering:** The proposed transmission line will significantly enhance access to reliable, high-capacity and clean electricity in currently under-served regions. The improved energy infrastructure is expected to attract industrial and commercial enterprises, particularly in resource extraction, processing, and renewable energy leading to the formation of localized industry clusters which enables knowledge-sharing, resource pooling, and innovation across industries, boosting productivity over time.
- **Transmission Corridors Investment:** The proposed transmission line routes are expected to serve as strategic infrastructure corridors that attract additional public and private investment. These corridors can stimulate development in renewable energy projects (such as wind, solar, and hydro, etc.), industrial facilities, mining industry, national security priorities, and community infrastructure along and near the transmission route. By unlocking energy access in remote areas, the lines encourage co-located investments that align with regional development goals, accelerate economic growth, enhance energy security, and support Indigenous and local community self-sufficiency.
- **Employment Impacts:** Construction and development of the proposed transmission lines will create direct employment opportunities in construction, engineering, and environmental services. Beyond the construction phase, improved energy access will enable new and expanded industrial activity, supporting long-term job creation in operations, mining, manufacturing, and clean energy development. Over the longer term, improved energy access enables new industries to emerge and expand, supporting more and better jobs for British Columbians.
- **Economic Exchange:** Enhanced electricity transmission capacity will support more efficient production and distribution of goods and services across the region. By reducing energy-related constraints and upgrading transportation and communication infrastructure, the proposed routes will improve the reliability and competitiveness of local industries, enabling increased trade within the region and with neighboring jurisdictions. Strengthened economic connectivity supports diversification, fosters broader and more integrated regional supply chains, and promotes greater market opportunities for BC and Yukon based businesses.
- **Induced Community Investment:** Improved access to reliable electricity will improve the liveability and flexibility of remote areas for residents, commercial and institutional entities, leading to increased

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investment in housing, education, healthcare, transportation, and other community infrastructure. Overall, improvements in energy reliability will enhance long-term population retention, quality of life, and overall sustainability in rural and Indigenous communities.

1.2 Economic Outcomes

The interaction of the channels discussed above delivers measurable economic outcomes that align with the broader development goals of British Columbia, Yukon, and Canada:

- **Productivity:** Enhanced energy reliability reduces business downtime, improves adoption of energy efficiency measures and lowers energy-related operational costs. This enables commercial users and industries to operate more seamlessly and competitively, supporting overall productivity improvements.
- **Job Creation:** The proposed transmission lines will generate significant employment opportunities, particularly in construction, skilled trades, technical services, and energy-intensive industries. Additionally, enhanced grid access will support the growth of new and existing businesses in rural and Indigenous communities.
- **Tax Base and Profits:** By lowering energy costs, expanding access and improving reliability, the proposed interconnection facilitates business expansion. This leads to higher incomes for residents and broader business profits, and a larger tax base to support government services.

1.3 External Drivers

While infrastructure investment is a key enabler, outcomes are also shaped by external drivers such as the availability of skilled labor, the regional business environment, regulatory frameworks, and complementary infrastructure (e.g., roads, broadband). Coordinated planning and supportive policies are essential to optimize the economic return on transmission investments.

2 BENEFIT ANALYSIS

The following is a high-level benefit analysis to demonstrate the potential economic size and impact of benefits relating to the BC-Yukon Interconnection Project. Benefits analysis uses econometric models to estimate impact upon gross domestic product or GDP as well as employment. Estimates take into account direct, indirect and induced economic affects.

Direct economic benefits are the initial spending and job creation within the specific industry or project being studied. Indirect economic benefits are the supply chain effects, where the initial industry purchases goods and services from other local businesses. Induced benefits arise when employees from both the direct and

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indirect stages spend their wages in the wider local economy on goods, services, and housing, creating a multiplier effect.

2.1 Benefits and Benefit Valuations (BC and Yukon)

Table 2 and Table 2 list and describe the major benefit categories. Approximate values are provided for each of the benefits; see appendices for additional details on assumptions and methodology. The valuation horizon is the economic life of the different investments and projects.

The value of the benefits from the mining sector dwarfs the estimated construction costs of the transmission line. The benefit values for the BC and Yukon mining sectors enabled by the Interconnection are derived from estimates provided by the British Columbia and Yukon government staff, supplemented by public information from the mining companies. There are no guarantees that the mines will be developed, however, the mines assessed account for only a portion of the potential mining projects identified in the region and the modeling team feels this is an appropriate scale of benefits to present in the analysis.

The second largest value benefit is associated with renewable energy generation development. The figures are speculative considering that few renewable energy projects have been prospected along the potential transmission routes; it is not rational to develop industrial scale renewable energy projects in the absence of connection to transmission infrastructure and a broad market of potential loads and buyers.

The third pool of benefits is associated with improved infrastructure, namely roads, highways and telecommunication. These improvements carry both economic and social benefits that would greatly improve the lives of northern BC and Yukon residents and Canadians as a whole. The project will be instrumental in catalysing both road improvements and telecommunications upgrades; these will be necessary for construction and operation of the transmission line. The incremental cost of adding fibre optics to the transmission towers during construction and making portions of the fibre optics capacity available to local communities is modest. Operationally, telecommunications networks will be maintained based upon customer need, with customers paying for these services. As such, incremental contributions to GDP and employment have not been explicitly assessed. Road work will benefit from incremental upgrades and continued maintenance to realize further economic gains, enabling improved efficiency (i.e., higher speeds) and safety for road users, including for mining and freight vehicles.

The valuations do not explicitly assess contributions from activities of prospecting and developing future mines or renewable energy projects, nor is the potential clustering effects quantified. Information on the caveats, assumptions and limitation of the benefits analysis view limitation of the assessment is described in Appendix B:.

Table 1 discussed the benefits for BC. Road benefits are directly related to construction in road upgrades.

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Table 1: BC Focused Benefits - Descriptions and Valuations

Benefit Item	Description	GDP Contribution	Jobs ('000s FTE)
Mines	Mining activity enabled by transmission infrastructure can stimulate investment. Capital investment in mining operations brings significant economic contributions through construction, equipment procurement, and long-term employment. Increased economic activity supports local businesses and services, creating broader regional economic benefits beyond the mine site itself. The BC mines assessed: Red Chris Block Cave Expansion, Turnagain, Schaft Creek, New Polaris, Kutcho.	$100.0B	405
Renewable Energy	Transmission line construction and operations stimulate employment and utility revenues while reducing reliance on costly diesel, laying the groundwork for clean electrification of homes, transportation, and industry. Improved infrastructure facilitates renewable energy prospecting by improving access to high-resource areas, encouraging early-stage investment. Capital expenditures for new renewable energy projects drive local economic activity through construction, equipment sourcing, and ongoing operations and maintenance. These projects also support broader economic development by reducing energy costs, enhancing grid reliability, and creating opportunities for workforce development and local service industries. Note: The value of emission avoidance is discussed in Section 2.5 below.	250 MW Wind - $2.8B 1,000 MW Hydro - $128.9B Total – $131.7B	710
Road	Strategic road improvements (some of which are synergistic with prior government commitments), such as the Yukon Resource Gateway and Highway 37 upgrades, unlock mining potential and attract private investment by reducing logistical barriers.	$0.1B	0.8

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Table 2 discusses the benefits for the Yukon, presented in a manner parallel to the above table. Road benefits are directly related to construction in road upgrades.

Table 2: Yukon Focused Benefits - Descriptions and Valuations

Benefit Item	Description	GDP Contribution	Jobs ('000s FTE)
Mines	Mining activity enabled by transmission infrastructure can stimulate new investment. Capital investment in mining operations brings significant economic contributions through construction, equipment procurement, and long-term employment. Increased economic activity supports local businesses and services, creating broader regional economic benefits beyond the mine site itself. The Yukon mines assessed: Casino, Nickel Shaw, Coffee, and KZK.	$81.2B	361
Renewable Energy	Transmission line construction and operations stimulate employment and utility revenues while reducing reliance on costly diesel, laying the groundwork for clean electrification of homes, transportation, and industry. Improved infrastructure facilitates renewable energy prospecting by improving access to high-resource areas, encouraging early-stage investment. Capital expenditures for new renewable energy projects drive local economic activity through construction, equipment sourcing, and ongoing operations and maintenance. These projects also support broader economic development by reducing energy costs, enhancing grid reliability, and creating opportunities for workforce development and local service industries. Note: The value of emission avoidance is discussed in Section 2.5 below.	250 MW Wind - $2.8B 500 MW Hydro - $64.7B Total – $67.5B	364
Road	Strategic road improvements (some of which are synergistic with prior government commitments), such as the Yukon Resource Gateway and Highway 37 upgrades, unlock mining potential and attract private investment by reducing logistical barriers.	$0.1B	0.8

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2.2 Incremental Benefits (BC and Yukon)

In addition to the financial valuation presented for the benefits in Table 2 and Table 2, there are numerous additional benefits that are less easily valued. Although many of these benefits are considered to fall with the indirect and induced values discussed above, there are other incremental benefits which are not represented in those figures.

For instance, improved telecom connectivity, which is woven into facilities listed in Table 2 and Table 2. Investments in telecom infrastructure across Yukon and northern British Columbia generate broad-based economic benefits by enabling resource development, improving community connectivity, and supporting long-term regional growth.

These incremental and induced benefits can be grouped into three broad categories:

1. Indigenous and community benefits;
2. Innovation; and
3. Social and societal benefits.

Investing in an interconnection of this scale will significantly strengthen Arctic security by driving economic growth and enhancing critical infrastructure across the territory. Improved telecommunications, via fiber optics within the transmission line, enable better communication networks that support emergency response, public safety and improve wellbeing.

Enhanced energy reliability would also play a crucial role in supporting the responsible development of rare earth and other strategic mineral deposits vital to Canada's economy and national defense, as well as those of its NATO allies. The Interconnection supports both the economic vitality and security of the Arctic region, reinforcing Canada's sovereignty while promoting inclusive growth and safety.

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2.3 Strategic BC Infrastructure, Benefits, and BC Hydro Considerations

British Columbia possesses a diverse suite of infrastructure assets that would be strengthened by the BC–Yukon Interconnection Project. These assets range from ports and railways to processing facilities, education systems, and Indigenous partnerships. Collectively, they form an integrated ecosystem that can leverage the Project's benefits to generate province-wide economic, social, and environmental gains.

Key Infrastructure & Complementary Benefits:

- **Ports and Terminals:** Northern facilities such as Stewart Port, Stewart Bulk Terminal, Port Simpson, Prince Rupert, and Kitimat (Alcan and Shell terminals) stand to benefit directly from expanded export capacity. These complement southern hubs, most notably Port Metro Vancouver, Canada's largest port, which already moves ~158 million tonnes annually[2], along with Squamish Terminals and Port Edward. Enhanced mining output and transmission capacity would reinforce supply chains across the province, supported by CN and CP's national rail connections[3,4].
- **Rail and Highways:** The Skeena rail line and Highway 37/37A/51 corridor form the backbone of the Golden Triangle mineral belt. Current upgrades, including widening shoulders, improved safety infrastructure, and expanded broadband/5G connectivity are expected to unlock ~$20 billion in new mine investment and generate up to 3,000 construction jobs[5,6,7]. Together with CN and CP's transcontinental networks, these corridors connect northern B.C. projects to southern markets and ports, strengthening logistics for heavy industry and local communities alike[8].

2 Port of Vancouver, Port of Vancouver moves record trade in 2024, supporting Canada and Canadians, Available [Online]

3 Canadian National Railway Company, Ports, Available [Online]

4 Canadian Pacific (CP), Port Access, Available [Online]

5 Government of Canada, Natural Resources Canada, *Canada and B.C. Invest in Infrastructure Upgrades to Support Critical Minerals Development in Northwest B.C. and Create Jobs Across the Province*, Available [Online]

6 Government of Canada, Canadian Radio-television and Telecommunications Commission, *CRTC Broadband Fund: Project selected in March 2024*, Available [Online]

7 Railway Age, CN Outlines 2025 Capex Plan (UPDATED 7/2), Available [Online]

8 Canadian National Railway Company, CN to Invest $615 Million in British Columbia to Build Capacity and Power Sustainable Growth, Available [Online]

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- **Mineral Processing and Refining:** Existing facilities demonstrate B.C.'s deep metallurgical expertise. Rio Tinto's Kitimat aluminum smelter (~420,000 tonnes annually)[9], Teck's Trail zinc-lead complex (one of the largest integrated operations of its kind globally)[10], and Teck's Highland Valley copper concentrator near Kamloops exemplify BC's processing strength. New mines enabled by the Project would feed these plants or justify new investments in ore treatment and refining, extending the value chain and reinforcing B.C.'s role as a global processing hub.
- **Engineering, Construction and Services:** B.C.'s engineering and contracting ecosystem, spanning firms like Kiewit, Graham, SNC-Lavalin, Ledcor, Aecon, Hatch, and thousands of suppliers, has proven capabilities in major civil, energy, and mining projects. For example, Metro Vancouver alone has 1,125 companies supplying goods and services to mining, generating about $1.4 billion in economic activity in 2022. Each mine job in B.C. is estimated to create two additional service-sector jobs, amplifying the impact across communities[11]. From LNG Canada in Kitimat to the Site C dam and Northwest Transmission Line, local companies have delivered complex projects similar in scale and scope to the BC-Yukon Interconnection Project.
- **Education and Skills:** The province's universities and colleges supply world-class talent to resource industries. UBC's Mining Engineering program is consistently ranked among Canada's best, complemented by strong metallurgy and materials research[12]. UNBC, BCIT, and regional colleges (such as the College of New Caledonia and College of the Rockies) provide training in geology, environmental sciences, and trades. BCIT's Mineral Exploration & Mining Technology diploma, the only program of its kind in Western Canada[13], illustrates the depth of specialized education available. This ensures a skilled pipeline of workers and innovators able to serve both northern and southern projects.
- **Indigenous Partnerships:** The Project aligns with B.C.'s reconciliation and equity frameworks. The provincial $1 billion First Nations Equity Financing Framework further supports Indigenous investment in resource infrastructure, ensuring inclusive growth and meaningful economic participation[14].
- **Clean Economy and Climate Benefits:** With 98% of electricity already sourced from clean sources, B.C. is uniquely positioned to electrify mines, smelters, and remote communities[15]. This would reduce reliance on diesel, cut greenhouse gas emissions, and enhance competitiveness in global clean-tech supply chains. B.C.'s mineral endowment - copper, nickel, cobalt, and others - provides essential inputs for EVs,

9 District of Kitimat, *Current Major Projects*, Available [Online]

10 Teck Resources Ltd., Trail Operations, Available [Online]

11 Government of Canada, Natural Resources Canada, *Canada and B.C. Invest in Infrastructure Upgrades to Support Critical Minerals Development in Northwest B.C. and Create Jobs Across the Province*, Available [Online]

12 The University of British Columbia, Mining Engineering, Available [Online]

13 British Columbia Institute of Technology, Mineral Exploration and Mining Technology, Available [Online]

14 Business in Vancouver, First Nations participating in major projects totalling $45B, says report, Available [Online]

15 Government of British Columbia, Powering Our Future: BC's Clean Energy Strategy, Available [Online]

batteries, and renewable energy systems. Leveraging clean power for extraction and refining strengthens both economic competitiveness and climate leadership.

Each of these elements: ports, rails, roads, processing plants, skilled workers, Indigenous partners, and clean power, act as force multipliers that benefit British Columbia. The Project's impact will ripple beyond its local footprint, creating province-wide economic growth, jobs, and technological capacity.

BC Hydro is a critical stakeholder in the overall planning of the Interconnection. BC Hydro owns and operates most transmission facilities in British Columbia, including the southern interconnection point of the Project. There are many aspects of the Project that harmonize well with BC Hydro's long-term plans and interests. For example,

- The BC-YK Interconnection Project fits with longer term BC Hydro plans of expanding transmission grid connections into northern reaches of the province.
    - BC Hydro is currently planning new or expansion lines from Terrace's Skeena substation north to Bob Quinn.
    - The Project can leverage BC Hydro lessons learned and productivity improvements.
- Transmission enables electrification of off-grid communities and industries. Connecting remote northern communities (e.g. Ross River, Dease Lake, Fort Nelson) and Yukon towns to the main grid would replace costly diesel generators with renewable hydro power. Likewise, mines and mills could electrify processes (smelters, LNG trains, compressors, etc.) rather than burning fossil fuels, meeting clean-energy goals.
- The Project will enable new generation. An interconnection makes formerly isolated resources accessible. BC Hydro has long identified potential northern hydro sites (e.g. the Liard River "Site E" or "Devil's Gorge" dam was extensively studied in the 1970s–80s). With a Yukon–B.C. corridor, similar large hydro or wind projects in Yukon and northern B.C. could be built to supply the region.

Moreover, the Project has attraction to BC Hydro and BC considering its potential use as a 'sandbox' to experiment with and prove out certain industries or business structures. For example,

- The Interconnection can enable mutually beneficial generation development, such as Small Modular Reactors, potentially hosted and integrated into Yukon communities to demonstrate and pioneer demonstration of local benefits.
- Economic partnerships and funding make the project attractive to BC Hydro's rate payers. Samples of large transmission projects in other parts of Canada have demonstrated an ability to attract investment from Canadian Infrastructure Bank and other strategic investors. The cooperation with Yukon broadens the potential structures and ventures that can be pursued in cooperation and partnership with Indigenous communities.

- Many of the Indigenous Nations in the project area straddle the BC-Yukon border, therefore regional benefits and agreements will naturally be coordinated. This flexibility in structuring agreements is enhanced by the interjurisdictional characteristics of the Project.

2.4 Strategic Yukon Infrastructure, Benefits, and Yukon Energy Considerations

Yukon has a distinct set of infrastructure assets—airports, highways, historic mine sites, specialized training programs and First Nations partnerships—that will be strengthened by the Yukon–BC Interconnection. Together, these assets can leverage the Project to generate broad economic, social and environmental gains across the territory.

Key Infrastructure and Complementary Benefits:

- **Airports and Transit Hubs:** The Erik Nielsen Whitehorse International Airport is undergoing a $186 million federally funded reconstruction, ensuring long-term capacity for tourism, supply chains, and Arctic security.[16] Regional airports such as Watson Lake are also benefitting from upgrades, while new transit links between Dawson City, Watson Lake, and Whitehorse are improving mobility and resilience for remote and Indigenous communities.[17]
- **Highways and Arctic Corridors:** The Alaska Highway, a vital economic and security artery, is being modernized through joint Yukon-Alaska investments to address permafrost damage and safety.[18,19] The Dempster Highway, Canada's only all-season road to the Arctic Circle, is now part of the Yukon Resource Gateway Project, with planned improvements (surface stabilization, avalanche mitigation, drainage) improve connectivity, strengthen Arctic sovereignty, and enhance supply chain reliability.[20]
- **Mineral Processing and Historic Sites:** While Yukon currently lacks large-scale smelting or refining, historic mines illustrate the territory's processing potential. The Keno Hill district (1931–1989) produced ~200 million ounces of silver, supported by mills at Elsa[21]. The Faro lead-zinc mine processed up to 9,300 tonnes/day between 1969 and 1998, leaving 70 million tonnes of tailing[22]. Though under reclamation today, these sites demonstrate opportunities to repurpose brownfield assets or develop new ore-treatment facilities if reliable, large-scale power becomes available.

[16] Government of Yukon, *What's happening at the Erik Nielsen Whitehorse International Airport?,* Available [Online]

[17] Government of Canada, *Federal government invests in new transit service to connect rural areas from Dawson City and Watson Lake to Whitehorse*, Available [Online]

[18] State of Alaska, Alaska Department of Transportation and Public Facilities, *$7.2M Investment Continues Progress On Alaska Highway Shakwak Project*, Available [Online]

[19] Government of Yukon, *New funding for north Alaska highway upgrades to be provided over three years*, Available [Online]

[20] Government of Yukon, *Dempster Highway now part of Yukon Resource Gateway Project*, Available [Online]

[21] Government of Canada, *United Keno Hill Mines Reclamation Project*, Available [Online]

[22] Government of Canada, Public Services and Procurement Canada, *Faro Mine Remediation Project*, Available [Online]

- **Engineering, Construction and Services:** Large-scale projects such as airport reconstruction, highway modernization, and new transmission lines will stimulate Yukon's engineering and contracting ecosystem. Each mining job typically generates multiple service-sector jobs. Heavy-civil contractors, electricians, environmental consultants, and suppliers stand to benefit, ensuring the Interconnection delivers long-term provincial employment growth. Yukon has a strong construction industry with many local companies with experience in mining and infrastructure projects. Many of these companies are owned by First Nations such as Castle Rock Enterprises (CAFN) and Canyon City Construction (KDFN). Multiple First Nations owned companies operate as suppliers of construction materials, concrete, earthworks and transportation services.
- **Education and Skills:** Yukon University's Centre for Northern Innovation in Mining (CNIM) provides cutting-edge, flexible training tailored to mining and construction. Mobile classrooms, advanced simulators, and nationally recognized curricula deliver real-world workforce skills[23]. The YukonU Research Centre connects industry with applied research, ensuring a steady pipeline of skilled graduates aligned with northern development needs.
- **Indigenous Partnerships and Self Government:** The Yukon operates under the Umbrella Final Agreement, which is a political agreement that provides a framework for Yukon First Nations and Governments to operate. This provides clarify of the process that the development of an infrastructure project would follow in working with First Nations. Many of the First Nations governments are self governing with businesses and investments being operated by their development corporations.
- **Arctic Sovereignty:** The Yukon Arctic Security Advisory Council (2024) emphasizes the value of dual-use infrastructure serving both civilian and military objectives[24]. The Dempster Highway upgrades include project agreements with First Nations along its corridor, embedding Indigenous employment and business participation.[25] Similarly, Community Development Agreements tied to the airport reconstruction ensure equity, training, and contracting opportunities.[26] These models align reconciliation, security, and economic development in a mutually reinforcing way.

Yukon Energy Considerations:

- **Grid Integration and Reliability**: The Yukon Energy grid is remote and isolated, with no connection the Western Electricity Coordinating Council (WECC) grid. This means that the Yukon Energy must generate all of the required electricity to service their customers as well as maintain the infrastructure required to

[23] Yukon University, *Centre for Northern Innovation in Mining*, Available [Online]

[24] Government of Yukon, *Government of Yukon receives report on enhancing the territory's Arctic security*, Available [Online]

[25] Government of Yukon, *Dempster Highway now part of Yukon Resource Gateway Project*, Available [Online]

[26] Government of Yukon, *What's happening at the Erik Nielsen Whitehorse International Airport?,* Available [Online]

maintain reliability. Linking to BC's large, clean hydroelectric system would increase Yukon's supply, reduce diesel reliance and strengthen resilience.[27]

- **Clean-Energy Corridor and Cost Efficiency**: A May 2025 Yukon–BC MOU commits both governments to developing a clean-energy corridor, securing C$40 million in federal funding and C$13 million from Yukon. Combined with First Nations equity frameworks, this partnership offers economies of scale and federal cost-sharing that lower ratepayer costs. [28]
- **Alignment with YEC's Roadmap to 2050**: YEC plans to invest over C$500 million in the next five years to renew aging infrastructure, build new transmission and expand winter capacity. With ~80 % of existing generation already used during winter peaks, integration with BC's grid offers the economies of scale, dispatch flexibility and power quality needed to support new mines and communities.[29]
- **Reconciliation and Shared Benefits**: Joint projects with BC and Indigenous partners create opportunities for revenue-sharing, innovative ownership and reconciliation. Yukon Energy has worked with many of the territories First Nations, including the recent battery energy storage project where the Kwanlin Dün First Nation and Ta'an Kwäch'än Council played a significant role, including investment, procurement and contracting. Additionally, Yukon Energy has experience with First Nation reconciliation through their recent collaborative relicensing of the Aishihik hydro generating facility with Champagne and Aishihik First Nations.
- **Opportunities for Power Exchange and Trading within WECC:** The Interconnection project offers Yukon Energy the opportunity to meet electricity and reliability requirements, while providing a much larger market for power procurement. With a large percentage of Yukon Energy's generation capacity being served by hydroelectricity, bilateral power trade is mutually beneficial. Yukon is winter peaking while also having a surplus of water available in the summer when electricity demands are higher in many WECC climes.

2.5 Emissions and Value of Avoided Costs

Canada, like many other countries, has implemented a carbon tax, as a tool to disincentivize consumption of greenhouse gas emissions and to promote a shift towards a non-carbon emitting economy. YDC commissioned BDO to quantify annual reductions in greenhouse gas emissions resulting from the Interconnection from:

- Mines being provided with grid power instead of diesel or LNG;
- Diesel powered communities being provided with grid power; and
- Yukon Energy displacing LNG and diesel generation with grid power.

[27] Government of Yukon, Yukon-British Columbia grid connect project, Available [Online]

[28] Government of Yukon, Governments of Yukon and British Columbia sign agreement to advance Yukon-BC grid connect, Available [Online]

[29] Yukon Energy, Yukon Energy Reveals Bold New Vision and Plans for a Resilient Energy Future, Available [Online]

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While estimated emissions reductions in the BDO report assess a large number of mines, the emissions reductions used in this memorandum only include the mines analysed in the benefits calculations presented in Table 1 and Table 2. The emissions reductions will differ annually, proportional to the load. The loads are consistent but smaller for local communities and the potential avoidance of fuel use by YEC. The potential mine emission are much larger.

For simplicity, the cost of avoidance figures are presented using 2027 figures, assuming full operational loads for all 9 mines included in the benefits discussions. Table 4 show the emissions reduction for each sector for the year and avoided cost of both carbon tax and the social cost of carbon based on the following rates:

- Carbon tax[30]: $125/ tCO_2e
- Social cost of carbon[31]: $280/ tCO_2

Simply, carbon tax is a governmental policy and tool, and the social cost of carbon is a global metric. The social cost of carbon is an estimate of the global damages associated with each tonne of carbon emitted[32]. When considering the benefits of a project that would result in the reduction of greenhouse gas emissions, it is insightful to consider both.

Table 3: Annual Greenhouse Gas Emissions, Avoided Carbon Tax and Avoided Social Cost of Carbon

Sector	Annual Emissions (tonnes CO_2e)	Avoided Carbon Tax ($M)	Avoided Social Cost of Carbon ($M)
Grid Connected Mines	3,754,000	$469.3	$1,051.1
Historically Off-grid Communities	13,500	$1.7	$3.8
Yukon Energy LNG and Diesel Offset	39,200	$4.9	$11.0
Total	**3,806,700**	**$475.8**	**$1,065.9**

[30] Government of Canada, *The federal carbon pollution pricing benchmark.* Available [online]

[31] Government of Canada, *Social Cost of Greenhouse Gas Emissions.* Table 1. Available [online]

[32] Government of Canada, *Social Cost of Greenhouse Gas Emissions.* Available [online]

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2.6 Taxes and Royalties

For BC and the Yukon, the average mine will pay royalties and taxes equivalent to approximately 28% of the estimated total GDP contributions. The percentage estimate is derived from public information, for example, Yukon's Casino Mine[33].

Table 4: GDP and Government Taxes and Royalties

	Lifetime GDP ($B)	**Percentage of Government Taxes and Royalties**	**Government Taxes and Royalties** ($B)
BC Mining	$100.0	28%	$28.0
Yukon Mining	$81.2	28%	$22.7

Of note, the Yukon territorial tax is 11.5% or the total 28% of the taxes and royalties, which would result in $9.3 billion in tax revenue for the territory.

[33] MNP, *Economic Impacts of the Casino Mine Project,* Available [Online]

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APPENDIX A: MAP OF PROPOSED ROUTES AND MINE LOCATIONS

The Golden Triangle in northwestern BC is one of North America's most mineral-rich regions containing many critical mineral deposits. The southern end of the Project is anchored in the Golden Triangle.

Central Yukon also has a mineral rich region around Dawson City, famous for the Yukon's gold rush, Keno and Carmacks. The Interconnection would connect the Yukon grid, which runs through this region, with the WECC. Some of the larger mines proposed for the Yukon, such as the Casino Mine, have energy that would more than double to current Yukon grid capacity. These mines and the proposed interconnection routes can be seen in Figure 2 below.

Figure 2: Map of Route Options with Development Opportunities and Constraints

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Some of the mines that may benefit from access to reliable power, along with estimates of the lifetime mineral productions, impact on the GDP and jobs created are listed in Table 1Table 6 to Table 9 below.

Table 5: Select BC Mines and Lifetime Production Estimates

Mine	Commodity	Lifetime Production
Red Chris	Copper (tonnes)	216,000
	Gold (ounces)	468,000
	Silver (ounces)	1,128,000
Turnagain	Nickel (tonnes)	1,056,720
	Cobalt (tonnes)	61,920
	Copper	N/A
	Platinum	N/A
	Molybdenum	N/A
New Polaris	Gold (tonnes)	3,650,000
Kutcho	Copper (lbs)	533,000,000
	Zinc (lbs)	841,000,000
	Silver (ounces)	10,600,000
	Gold (ounces)	129,700
Schaft Creek	Copper (tonnes)	2,300,000
	Molybdenum (lbs)	226,000,000
	Gold (ounces)	3,700,000
	Silver (ounces)	16,400,000

Table 6: Select BC Mine GDP Impact and Job Creation

Mine	Impact on GDP (CAD billion)	Jobs Created ('000s)
Red Chris Block Cave Expansion	$ 6.5	33
Turnagain	$ 32.3	124
Schaft Creek	$ 46.0	179
Kutcho	$ 5.6	137
New Polaris	$ 9.7	22
Total	**$100.1**	**405**

Table 7: Select Yukon Mines and Lifetime Production Estimates

Mine	Commodity	Lifetime Production
Casino	Gold (ounce)	6,950,000
	Silver (ounce)	36,089,000
	Copper (lbs)	4,267,805,000
	Molybdenum (lbs)	346,174,000
Nickel Shaw	Gold (ounce)	174,208
	Copper (lbs)	281,528,578

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	Nickel (lbs)	613,346,969
	Cobalt (lbs)	21,447,835
	Platinum (ounce)	625,616
	Palladium (ounce)	742,006
Coffee	Gold (ounce)	2,089,765
KZK	Gold (ounce)	431,900
	Silver (ounce)	59,900,000
	Copper (lbs)	220,900,000
	Lead (lbs)	430,600,000
	Zinc (lbs)	1,732,000,000

Table 8: Select Yukon Mines GDP Impact and Job Creation

Mine	Impact on GDP (CAD billion)	Jobs Created ('000s)
Casino	$ 52.6	233
Nickel Shaw	$ 15.0	69
Coffee	$ 5.2	23
KZK	$ 8.3	36
Total	**$ 81.2**	**361**

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APPENDIX B: METHODOLOGY FOR BENEFIT VALUATION

This methodology outlines how operational revenues, capital spending, and sustaining investments for various mining and energy projects are translated into estimates of GDP and employment impacts at the provincial and national level. It also explains the role of economic multipliers in producing the results.

Data Inputs

The calculations begin with three key input categories for each project:

1. **Operational Revenue** – Annual operating income for the project in millions of dollars.
2. **Initial Capital Spending** – One-time capital outlays during the construction phase.
3. **Sustaining Investment** – Ongoing capital expenditures to maintain operations (set to 0 if unavailable).

These inputs are provided separately for:

- British Columbia (BC) projects (e.g., Red Chris Block Cave Expansion, Turnagain, Schaft Creek, New Polaris, Kutcho)
- Yukon projects (e.g., Casino, Nickel Shaw, Coffee and KZK)
- Other categories (e.g., Roads-Gateway, Generic Wind, Generic Hydro).

Economic Multipliers

Multipliers convert spending into estimates of GDP contribution and jobs supported. Different multipliers are applied for:

- Construction phase;
- Operations phase; and
- Sustaining investment phase.

They also vary by jurisdiction:

- BC Multipliers – Applied to projects in British Columbia.
- Yukon Multipliers – Applied to projects in Yukon.
- Mixed Multipliers – Used for infrastructure or energy projects not tied to a single province.

Calculation Process

Step 1: Construction Impacts

For each project:

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1. Multiply Initial capital spending by the appropriate GDP multiplier to estimate construction-phase GDP.
2. Multiply the same spending by the jobs multiplier to estimate construction-phase employment.

Step 2: Sustaining Investment Impacts

Where sustaining investment data is available:

1. Apply the same method as construction:
    - Sustaining Investment × GDP multiplier = Sustaining GDP impact.
    - Sustaining Investment × Jobs multiplier = Sustaining Jobs impact.
2. Projects with zero sustaining investment are excluded from this step.

Step 3: Operations Impacts

1. Multiply Operational Revenue by the GDP multiplier (Operations) to get the annual GDP impact of ongoing operations.
2. Multiply the same revenue by the jobs multiplier (Operations) to estimate employment.

Aggregation

1. Provincial totals are calculated by summing all projects within a jurisdiction (e.g., Yukon Total, BC Total).
2. National totals ("All Provinces") are calculated by summing across provinces.
3. Mixed projects are incorporated separately using mixed multipliers, then added into the total.

Additional Metrics

- Ratio of Investment to GDP. This provides a measure of GDP return per dollar invested.

$$\boldsymbol{Ratio\ of\ Investement = \frac{Initial\ Capital\ Spending}{Total\ GDP\ Impact} \times 100}$$

- Jobs with Casino Multiplier. For specific scenarios, an adjusted multiplier is applied to Casino-related job totals to reflect updated assumptions.

Units and Conventions

- Monetary values are in millions of dollars unless otherwise specified.
- Jobs represent full-time equivalent (FTE) positions (direct, indirect, and induced).
- All GDP impacts are in constant dollars (inflation-adjusted where applicable).
- Multipliers are sourced from provincial Input-Output models or economic impact studies.

Limitations

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Category	Description
Statistics Canada Input-Output Multipliers	GDP and employment impacts are based on Statistics Canada's Input-Output model assumptions. These reflect average provincial economic structures and may not capture project-specific conditions, supply chain limitations, or localized economic leakages. Multipliers are static and do not adjust for changes in productivity, technology, or market conditions over time.
Road Infrastructure Data (Resource Gateway 2016)	Impacts for the "Roads-Gateway" category are derived from the 2016 Resource Gateway documentation. Estimates may not reflect updated construction costs, inflationary effects, or recent transportation and logistics trends.
Renewable Energy Project Assumptions	The model assumes only two clusters of renewable projects in the region: 250 MW of wind generation and 1000 MW of hydro facilities for BC, and 250 MW of wind generation and 500 MW of hydro facilities for the Yukon.
No Discounting of Future Benefits	All results are in undiscounted current-dollar terms. Using a net present value (NPV) approach would reduce totals.
Direct, Indirect, and Induced Effects Included	Figures incorporate all three types of impacts, producing higher totals than direct effects alone. Comparisons with reports using only direct impacts should be made with caution.
No Sensitivity Analysis	Results are based on fixed multipliers and inputs. Variations in capital cost overruns, operational performance, or commodity prices could materially change the estimates.

GHG and Revenue Analysis for the BC-Yukon Transmission Line

BDO Canada LLP

September 2025

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This analysis was conducted to estimate the greenhouse gas (GHG) emission reductions and potential revenue associated with the proposed BC–Yukon transmission line. The assessment was designed to provide clear, evidence-based results that can support the project's presentation to the Privy Council as a "project of national interest."

SCOPE OF ASSESSMENT

The study evaluated four priority areas:

1. **Diesel-Powered Communities (Watson Lake & Non-Integrated BC):** Avoided GHG emissions from displacing diesel generation in Highway 37 communities and Watson Lake.
2. **Yukon Integrated System (Thermal Displacement):** Avoided GHG emissions from displacing diesel and LNG generation on the Yukon grid.
3. **Mines in Yukon and BC:** Avoided GHG emissions from supplying mines with grid electricity instead of on-site diesel/LNG generation.
4. **Potential Revenue with Mine Anchor Tenants (Full Deployment):** Annual electricity sales revenue if all identified mines were operating and purchased power under three tariff scenarios.

The results of the analysis represent the estimated annual avoided emissions and potential revenues under the assumption that the proposed BC–Yukon transmission line had already been operational during the years presented.

KEY FINDINGS

- **Diesel-Powered Communities:**
  Emissions of 13,686 tCO_2e in 2024 and estimated emissions of 13,133 tCO_2e in 2030. These totals include both Highway 37 non-integrated BC communities and Watson Lake.
- **Yukon Integrated System (Thermal Displacement):**
  Estimated emissions of 31,948 tCO_2e in 2025, rising to 39,226 tCO_2e by 2027, based on long-term average thermal generation forecasts and an 80% LNG / 20% diesel fuel mix.
- **Mines in Yukon and BC (Full Deployment):**
  Assuming all identified mines operate simultaneously, displaced generation totals 13.4 million MWh annually, equivalent to 9.1 million tCO_2e avoided each year. This is the single largest source of potential reductions.
- **Potential Revenue with Mine Anchor Tenants (Full Deployment):**
  Annual gross electricity sales revenue from mines is estimated at:

- 904.5 million CAD (Base case, 67.5 CAD/MWh)
- 2.01 billion CAD (Mid case, 150 CAD/MWh)
- 4.31 billion CAD (High case, 321.9 CAD/MWh)

CONCLUSION

The proposed transmission line represents a transformative opportunity for northern energy systems. It can deliver substantial GHG emission reductions primarily through mine electrification, while generating robust long-term revenue streams that strengthen financial sustainability. These results demonstrate that the project aligns with Canada's climate objectives, supports economic development in Yukon and northern BC, and justifies recognition as a project of national interest.

2. Methodology & Assumptions

This section outlines the scope, data sources, and key assumptions applied in estimating avoided GHG emissions and potential revenue for non-integrated communities, Watson Lake, mines in Yukon and BC, and the Yukon grid thermal displacement. References are provided where applicable.

DIESEL-POWERED COMMUNITIES (WATSON LAKE & NON-INTEGRATED BC)

Scope

Estimate avoided GHG emissions from diesel generation displaced by grid connection for Watson Lake (Yukon) and Highway 37 non-integrated BC communities.

Data Sources

- Diesel consumption data provided for Watson Lake (2024).
- BC Highway 37 non-integrated communities forecast diesel consumption (2024, 2030).
- Emission factor:
    - Diesel at 2.689 kg CO_2e/L, from the *GHG Calculation Guide – IREI draft*
        - *Source: Government of Canada Emission Factors and Reference Values v2.0: https://publications.gc.ca/collections/collection_2024/eccc/En84-294-2024-eng.pdf*

Assumptions

- 100% displacement of diesel generation upon grid connection.
- Watson Lake's 2024 diesel use applied to 2030 (no forecast provided).
- Aggregated results reported under the category *"Diesel-Powered Communities"*.

YUKON INTEGRATED SYSTEM THERMAL GENERATION (GRID DISPLACEMENT)

Scope

Estimate avoided GHG emissions from reduced Yukon Integrated System thermal generation if displaced by grid connection.

Data Sources

- YEC *Grid Connect – GHG Thermal Notes (Appendix A)* with long-term average (LTA) generation forecasts.
- Fuel split: 80% LNG / 20% Diesel.

- Emission factors (GHG emissions per 2013 YESAB filing for LNG project)
    - 451 tCO_2e/GWh for LNG (*Grid Connect - GHG Thermal Notes-July 29-25*).
    - 697.5 tCO_2e/GWh for Diesel (*Grid Connect - GHG Thermal Notes-July 29-25)*.

Assumptions

- 100% displacement of thermal generation.
- LTA values are used to normalize year-to-year variability and align with regulatory practice in Yukon Energy filings. This approach ensures results are not skewed by unusually high or low generation in a given year
- Emissions calculated separately for LNG and diesel fractions.

MINES IN YUKON AND BC

Scope

Estimate avoided GHG emissions if off-grid mines switch from diesel/LNG self-generation to grid electricity.

Data Sources

- Yukon mines dataset with MW loads, explicit annual MWh/kWh values in 'note' column where available.
- Updated BC mine dataset (MW × 8,000 hours/year assumption).
- Fuel assumptions: Diesel unless otherwise specified; all BC mines assumed diesel.

Assumptions

- Where explicit MWh/kWh values were noted, those override the 8,000-hour assumption.
- Where only MW values are provided, MW × 8,000 hours is used.
- Exploration-stage mines without MW (e.g., BC New Polaris, Silvertip) excluded.
- All mines are assumed to be fully operating
- Emission factors (GHG emissions per 2013 YESAB filing for LNG project)
    - 451 tCO_2e/GWh for LNG (*Grid Connect - GHG Thermal Notes-July 29-25*).
    - 697.5 tCO_2e/GWh for Diesel (*Grid Connect - GHG Thermal Notes-July 29-25*).
- Trucking fuel emissions are not included but noted as an additional, material GHG source.

POTENTIAL REVENUE WITH MINE ANCHOR TENANTS

Scope

Estimate potential revenue from electricity sales to mines under different tariff assumptions.

Data Sources

- Mine-level annual MWh from the analysis above.
- Tariff scenarios:
    1. **Industrial Hydro Tariff (Base)**
        - 67.5 CAD/MWh (BC Hydro Large General Service rate).
        - Reflects a regulated utility sales model.
    2. **Market Competitive Rate (Mid)**
        - 150 CAD/MWh, aligned with Canadian industrial averages.
        - Provides a realistic mid-point if the utility prices grid power above regulated industrial rates but below full diesel cost.
    3. **Avoided Diesel Cost (High)**
        - 322 CAD/MWh, (YEC's weighted diesel cost from 2025–27 GRA).
        - Reflects the maximum economic displacement value of diesel, which is a strong anchor scenario.

Assumptions

- All mines assumed to be fully operating at steady state.
- Revenues represent energy sales only; no connection fees or transmission charges included.
- Exploration-stage and closed mines excluded.

3. Calculations and Results

DIESEL-POWERED COMMUNITIES

Data sources:

- Diesel volumes in remote communities along the Highway 37 corridor
    - Source: *Non-Integrated Areas along the proposed BC-YK Transmission Line-EPB FINAL*
- Diesel volumes for Watson Lake from 2023-2024 General Rate Application (GRA).
    - Source: *Grid Connect - GHG Thermal Notes-July 29-25, APPENDIX B: AEY DIESEL GENERATION PER 2023-2024 GRA*
- Emission factor:
    - Diesel at **2.689 kg CO_2e/L**, from the *GHG Calculation Guide – IREI draft*
        - *Source: Government of Canada Emission Factors and Reference Values v2.0: https://publications.gc.ca/collections/collection_2024/eccc/En84-294-2024-eng.pdf*

Formula applied:

$$\text{Emissions } (tCO_2e) = \text{Diesel Volume (L)} \times 0.002689$$

Results

Table 1: BC Highway 37 Communities – 2024 Actuals

Community	Diesel Volume (L)	EF (tCO_2e/L)	Emissions (tCO_2e)
Eddontenajon Iskut	9,225	0.002689	24.8
Telegraph Creek	770,231	0.002689	2,071.2
Dease Lake	29,234	0.002689	78.6
Good Hope Lake (incl. Jade City)	364,967	0.002689	981.4
Total	1,173,657	—	**3,156.0**

Table 2: BC Highway 37 Communities – 2030 Projection (no-growth scenario)

Community	Diesel Volume (L)	EF (tCO_2e/L)	Emissions (tCO_2e)
Eddontenajon Iskut	9,000	0.002689	24.2
Telegraph Creek	770,000	0.002689	2,070.5

Dease Lake	29,000	0.002689	78.0
Good Hope Lake (incl. Jade City)	160,000	0.002689	430.2
Total	968,000	—	**2,603.0**

Table 3: Watson Lake – 2024 Actuals

Community	Diesel Volume (L)	EF (tCO_2e/L)	Emissions (tCO_2e)
Watson Lake	3,916,000	0.002689	10,530.2

Table 4: Combined Totals (BC Highway 37 + Watson Lake)

Year	BC Highway 37 (tCO_2e)	Watson Lake (tCO_2e)	Total Avoided Emissions (tCO_2e)
2024	3,156.0	10,530.2	**13,686.2**
2030	2,603.0	10,530.2*	**13,133.1**

- *Watson Lake 2030 diesel volume = 2024 value.

GRID THERMAL GENERATION IMPACT (YUKON INTEGRATED SYSTEM)

Data sources:

- Long-term average (LTA) thermal generation by year from *YEC Thermal Generation Forecasts – Appendix A, Grid Connect - GHG Thermal Notes-July 29-25- .*
- Emission factors (GHG emissions per 2013 YESAB filing for LNG project)
    - 451 tCO_2e/GWh for LNG (*Grid Connect - GHG Thermal Notes-July 29-25*).
    - 697.5 tCO_2e/GWh for Diesel (*Grid Connect - GHG Thermal Notes-July 29-25*).

Formula applied:

$$\text{Emissions} = (\text{LNG GWh} \times 451) + (\text{Diesel GWh} \times 697.5)$$

Where LNG GWh = 80% of LTA thermal total; Diesel GWh = 20% of LTA thermal total.

Results

Table 5: Potential Avoided Emissions from Displacement of Yukon Integrated System Thermal Generation (2025-2027)

Year	LTA Thermal Generation (GWh)	LNG GWh (80%)	Diesel GWh (20%)	LNG Emissions (tCO_2e)	Diesel Emissions (tCO_2e)	Total Avoided Emissions (tCO_2e)
2025	63.857	51.086	12.771	23,039.61	8,908.05	**31,948.0**
2026	70.926	56.741	14.185	25,590.10	9,894.18	**35,484.0**
2027	78.405	62.724	15.681	28,288.52	10,937.50	**39,226.0**

MINES IN YUKON AND BC

Data sources:

- Mine load and operating assumptions provided in *Mine MW Load – Yukon and BC* dataset.
- Notes within the dataset indicating explicit MWh values (for example, Casino and AurMac) or adjustments to operating MW.
- Emission factors (GHG emissions per 2013 YESAB filing for LNG project)
    - 451 tCO_2e/GWh for LNG (*Grid Connect - GHG Thermal Notes-July 29-25*).
    - 697.5 tCO_2e/GWh for Diesel (*Grid Connect - GHG Thermal Notes-July 29-25*).

Formula applied:

$$\text{Emissions } (tCO_2e) = \text{Annual MWh} \times \text{EF } (tCO_2e/\text{MWh})$$

How annual MWh were derived

- Where the Notes provided an explicit annual energy value, that value was used.
    - For example: Casino 1,000,570,924 kWh per year → 1,000,571 MWh per year.
    - AurMac 588,000 MWh per year.
    - Snowline 504,000 MWh per year.
- Otherwise, Annual MWh = Peak Load MW × 8,000 hours.

Results

Table 6: Yukon and BC Mines – Full Operation: Avoided Emissions

Mine	Region	Load (MW)	Operating Hours	Annual MWh explicit	Annual MWh	Fuel	EF (t/MWh)	Avoided Emissions (tCO_2e)
Casino	Yukon	200	-	1,000,571	1,000,571	LNG	0.451	451,258
Snowline	Yukon	60	-	504,000	504,000	LNG or Diesel	0.698*	351,792
Banyon Gold - AurMac	Yukon	70	-	588,000	588,000	Diesel	0.698	410,424
Hecla - Keno Hill	Yukon	10	8,000	-	80,000	Diesel	0.698	55,840
Fireweed, both mac's	Yukon	37	8,000	-	296,000	Diesel	0.698	206,608
BMC Minerals - Kudz Ze Kayah	Yukon	27.5	8,000	-	220,000	LNG	0.451	99,220
Selkirk Copper	Yukon	7	8,000	-	56,000	Diesel	0.698	39,088
Coffee	Yukon	9	8,000	-	72,000	Diesel	0.698	50,256
Faro	Yukon	2	8,000	-	16,000	Diesel	0.698	11,168
Sitka	Yukon	60	8,000	-	480,000	Diesel	0.698	335,040
VicGold	Yukon	5	8,000	-	40,000	diesel	0.698	27,920
Granite Creek	Yukon	10	8,000	-	80,000	Diesel	0.698	55,840
Rock Haven Resourses - Klaza	Yukon	15	8,000	-	120,000	Diesel	0.698	83,760
BC Mines	BC	1,231	8,000	-	9,848,000	Diesel	0.698	6,873,904
Total					**13,400,571**			**9,052,118**

- *Conservative assumption: Snowline emissions calculated using diesel EF (0.6975 t/MWh) to avoid underestimation.

Table 7: Regional Totals – Full Operation: Avoided Emissions

Region	Annual MWh	Avoided Emissions (tCO_2e)
Yukon	3,552,571	2,178,214
BC	9,848,000	6,873,904
Total	**13,400,571**	**9,052,118**

POTENTIAL REVENUE WITH MINE ANCHOR TENANTS

Data sources:

- Mine-level annual MWh values provided in *Mine MW Load – Yukon and BC* dataset (full deployment, all mines operating).
- Tariff benchmarks:
  - **Base:** 67.5 CAD/MWh (BC Hydro Large Industrial rate proxy)
  - **Mid:** 150 CAD/MWh (market benchmark)
  - **High:** 321.9 CAD/MWh (YEC 2025–27 GRA avoided diesel cost)

Formula applied:

Revenue (CAD) = Annual MWh × Tariff (CAD/MWh)

Results

Table 8: Per-Mine Revenue Projections

			Revenue in CAD		
Mine	**Region**	**Annual MWh**	**Base (67.5 CAD/MWh)**	**Mid (150 CAD/MWh)**	**High (321.9 CAD/MWh)**
Casino	Yukon	1,000,571	$67,538,543	$150,085,650	$322,083,805
Snowline	Yukon	504,000	$34,020,000	$75,600,000	$162,237,600
Banyon Gold - AurMac	Yukon	588,000	$39,690,000	$88,200,000	$189,277,200
Hecla - Keno Hill	Yukon	80,000	$5,400,000	$12,000,000	$25,752,000
Fireweed, both mac's	Yukon	296,000	$19,980,000	$44,400,000	$95,282,400
BMC Minerals - Kudz Ze Kayah	Yukon	220,000	$14,850,000	$33,000,000	$70,818,000
Selkirk Copper	Yukon	56,000	$3,780,000	$8,400,000	$18,026,400
Coffee	Yukon	72,000	$4,860,000	$10,800,000	$23,176,800
Faro	Yukon	16,000	$1,080,000	$2,400,000	$5,150,400
Sitka	Yukon	480,000	$32,400,000	$72,000,000	$154,512,000
VicGold	Yukon	40,000	$2,700,000	$6,000,000	$12,876,000
Granite Creek	Yukon	80,000	$5,400,000	$12,000,000	$25,752,000
Rock Haven ResoursesÂ - Klaza	Yukon	120,000	$8,100,000	$18,000,000	$38,628,000
BC Mines	BC	9,848,000	$664,740,000	$ 1,477,200,000	$3,170,071,200
Total		**13,400,571**	**$904,538,543**	**$2,010,085,650**	**$4,313,643,805**

Table 9: Regional and Portfolio Totals – Annual Revenue

		Revenue in CAD		
Region	**Annual MWh**	**Base (67.5 CAD/MWh)**	**Mid (150 CAD/MWh)**	**High (321.9 CAD/MWh)**
Yukon	3,552,571	$239,798,543	$532,885,650	$1,143,572,605
BC	9,848,000	$664,740,000	$ 1,477,200,000	$3,170,071,200
Total	**13,400,571**	**$904,538,543**	**$2,010,085,650**	**$4,313,643,805**

Notes on revenue

- The High tariff scenario reflects the weighted diesel cost provided by YEC. It is useful for framing the financial strength of long-term electrification relative to diesel generation.
- Figures above are annualized at steady-state for a full-deployment view that aligns with the client's 2050 planning horizon.

DISCLAIMER

This report was prepared based on instructions provided to BDO Canada LLP ("BDO") by our client, Yukon Development Corporation ("YDC"), exclusively for the sole benefit and use of YDC. The report was not produced in contemplation of or for the purpose of reliance by any party other than YDC and is intended for the sole benefit and use of YDC. Items of possible interest to a third party will not be addressed, and matters may exist that would be assessed differently by a third party.

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MEMORANDUM OF UNDERSTANDING

on the

Yukon-BC Grid Connect

BETWEEN:

YUKON DEVELOPMENT CORPORATION

(referred to as "YDC")

AND:

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

(referred to as "BC Hydro")

(Collectively referred to as "the Parties" and each separately as a "Party")

BACKGROUND:

The Yukon Development Corporation ("**YDC**"), on behalf of the Government of Yukon and with support from the Government of British Columbia, secured $40 million in Critical Minerals Infrastructure Funding from Natural Resources Canada to explore interconnection between the Yukon and British Columbia electrical grids (the "**Yukon-BC Grid Connect Project**").

Per the Contribution Agreement signed on or about February 14, 2025, "the objective of this Yukon-British Columbia Grid Connect Project is to address gaps in clean electricity infrastructure that limit the production and expansion of critical mineral resources in Canada by advancing the pre-construction requirements to develop a transmission line and ultimately support critical minerals mining activities in Yukon and northern British Columbia.

The governments of Yukon and British Columbia, as represented by Premiers Eby and Pillai, signed a Memorandum of Understanding on or about May 22, 2025 which "guides coordination and collaboration the governments of Yukon and British Columbia ("**BC**") through the exploration, planning and design phases of establishing a clean electricity corridor connecting the Yukon and BC electrical grids which will aim to enhance economic opportunity, energy security, reconciliation and climate change mitigation in both jurisdictions."

The Parties acknowledge that a Non-Disclosure Agreement dated October 25, 2024 is currently in place between YDC and BC Hydro to facilitate confidential information sharing in connection with system impact assessments required for the Yukon-BC Grid Connect Project.

PURPOSE:

This Memorandum of Understanding (**MOU**) guides coordination and collaboration between YDC and BC Hydro with respect to the exploration, planning and design phases of establishing a clean electricity corridor connecting the Yukon and BC electrical grids which will enhance economic opportunity, energy security, reconciliation and climate change mitigation in both jurisdictions.

WHEREAS:

I. The Parties are interested in strengthening Canada's self-sufficiency, security, and resilience through development of Yukon-BC economic and clean electricity corridors which assure prosperity and energy security for present and future generations.

II. The Parties are committed to advancing reconciliation with First Nations in alignment with final agreements and constitutional and legislative obligations, including through establishment of Indigenous partnership and ownership approaches.

III. The Parties are mutually interested in promoting economic prosperity through delivery of cost-effective renewable electricity for critical mineral and other industrial developments.

IV. The Parties recognize that BC Hydro's North Coast Transmission Line and future transmission extension plans, while not dependent on the Yukon-BC Grid Connect project, are important components that require collaborative planning and alignment to maximize system benefits.

V. The Parties each view the bi-directional electric power flow enabled by Yukon-BC Grid Connect Project as a promising opportunity and seek to expeditiously increase renewable electricity generation and transmission, such as mobilization of the Yukon's potential to be a net energy-exporter, to meet respective demand associated with growing populations, accelerating electrification and net-zero carbon emissions goals for 2050.

The Parties intend to:

1. **Establish operational coordination and technical collaboration** to ensure effective coordination and efficient collaboration between the Parties throughout the Yukon-BC Grid Connect Project to address gaps in clean electricity infrastructure that limit the production and expansion of critical mineral resources in Canada, including the implementation of this Memorandum of Understanding.

2. **Advance reconciliation and build Indigenous partnerships** through coordinated engagement on the Yukon-BC Grid Connect Project with applicable First Nations in the Yukon and northwestern BC, creating ownership models in alignment with negotiation of Final Agreements and constitutional and legislative obligations.

3. **Coordinate technical studies and solutions** for the Yukon-BC Grid Connect Project in an integrated manner, including considering forecasted supply and demand in the Yukon and British Columbia, technical design, routing, project economics and financing opportunities, while ensuring alignment with BC Hydro's North Coast Transmission Line operations and future transmission extension plans.

4. **Develop power supply arrangements** that recognize BC Hydro's capability to supply power during initial phases of the interconnection, with the mutual understanding and expectation that Yukon will transition to become a net exporter of power to the North

American market as Yukon's generation capacity expands to support critical mineral development and regional economic growth.

5. **Coordinate stakeholder and community engagement** on the Yukon-BC Grid Connect Project when required, particularly at key junctures necessary to consider remote community grid integration, understand interests and concerns with the transmission line, forecasted future electricity supply and demand, and fulfill expectations for accountability and transparency.

6. **Explore opportunities to expedite project** planning and regulatory processes for the Yukon-BC Grid Connect Project, should it prove feasible, including learning from the development and construction of BC Hydro's North Coast Transmission Line and leveraging synergies with BC Hydro's broader transmission expansion plans in northwestern BC.

7. **Develop governance and operational models** for construction of the transmission line and operations of an interconnected grid, should it prove feasible, to meet respective needs for reliable, cost-effective, renewable electricity energy, including joint advocacy with Government of Canada to access federal funding.

8. **Leverage transmission system synergies** to increase renewable electricity generation and optimize system operations, including coordination with BC Hydro's North Coast Transmission Line capacity and future transmission extension projects to create integrated regional transmission solutions.

ADMINISTRATION:

For the purposes of this MOU:

Yukon Development Corporation is represented by the President and Chief Executive Officer. Contact: Gary Gazankas, gary.gazankas@yukon.ca

BC Hydro is represented by the President and Chief Executive Officer. Contact: Chris O'Riley, chris.oriley@bchydro.com

BC Hydro's delegate for implementing this MOU is the Vice President of Asset Planning. Contact: will be Ajay Kumar, ajay.kumar@bchydro.com

These representatives will be the respective organizations' lead contact for all matters relating to this MOU and for the coordination of activities involving the Parties.

TERMS OF MOU:

1. The term of this MOU is the duration of the Contribution Agreement with Natural Resources Canada for the Yukon-BC Grid Connect Project, commencing on signing and expiring on March 31, 2030, inclusive.
2. This MOU is intended to record the Parties' intention to work together. This MOU is not legally binding on the Parties in any way. Nothing in this MOU is an admission of liability by either YDC or BC Hydro.
3. The MOU may be amended or extended by both Parties in writing during the progression of phases of the Yukon-BC Grid Connect Project, including on determination of project feasibility to advance to construction.
4. Either of the Parties may terminate this MOU at any time upon giving 30 days written notice to the other Party.

The duly authorized representatives have executed this MOU on behalf of each of the Parties, on the dates noted below.

YUKON DEVELOPMENT CORPORATION

July 21, 2025

Gary Gazankas
President & Chief Executive Officer

Date

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

July 23, 2025

Chris O'Riley
President & Chief Executive Officer

Date

MEMORANDUM OF UNDERSTANDING

BETWEEN:

THE GOVERNMENT OF BRITISH COLUMBIA
represented by the Premier

(referred to as "British Columbia")

AND:

THE GOVERNMENT OF YUKON
represented by the Premier

(referred to as "Yukon")

(Collectively referred to as "the Parties" and each separately as a "Party")

CONTEXT:

The Yukon Development Corporation, on behalf of the Government of Yukon and with support from the Government of British Columbia (the Parties), secured $40 million in Critical Minerals Infrastructure Funding from Natural Resources Canada to explore interconnection of the Yukon and British Columbia electrical grids (the Yukon-BC Grid Connect project).

Per the Contribution Agreement signed February 14, 2025, "the objective of this Yukon-British Columbia Grid Connect Project is to address gaps in clean electricity infrastructure that limit the production and expansion of critical mineral resources in Canada by advancing the pre-construction requirements to develop a transmission line and ultimately support critical minerals mining activities in Yukon and northern British Columbia".

PURPOSE:

This Memorandum of Understanding (MOU) guides coordination and collaboration between the governments of Yukon and British Columbia (BC) through the exploration, planning and design phases of establishing a clean electricity corridor connecting the Yukon and BC electrical grids which will enhance economic opportunity, energy security, reconciliation and climate change mitigation in both jurisdictions.

WHEREAS:

I. The Parties are united in their interest to strengthen Canadian self-sufficiency, security, and resilience through development of Yukon-BC economic and clean electricity corridors which assure prosperity and energy security for present and future generations.

II. The Parties are committed to advancing reconciliation with First Nations in alignment with final agreements and constitutional and legislative obligations, including through establishment of Indigenous partnership and ownership approaches.

III. The Parties are mutually interested in promoting economic prosperity through delivery of cost-effective renewable electricity for critical mineral and other industrial developments.

IV. The Parties each view the bi-directional power flow enabled by Yukon-BC Grid Connect as a promising opportunity and seek to expeditiously increase renewable electricity generation and transmission to meet respective demand associated with growing populations, accelerating electrification and net-zero carbon emissions goals for 2050.

The Parties intend to:

1. Establish interjurisdictional roles and responsibilities to ensure effective coordination and efficient collaboration between the Parties throughout the Yukon-BC Grid Connect project to address gaps in clean electricity infrastructure that limit the production and expansion of critical mineral resources in Canada, including the implementation of this Memorandum of Understanding.

2. Advance reconciliation, build Indigenous partnerships and create ownership models, in alignment with Final Agreements and constitutional and legislative obligations, through coordinated engagement on the Yukon-BC Grid Connect project with affected First Nations in the Yukon and northwestern BC.

3. Jointly advocate with the Government of Canda that the Yukon-BC Grid Connect project is a nation-building investment which builds an economic and clean electricity corridor to unlock economic opportunity and energy security for the Yukon and northwestern BC, advances critical mineral development, national security, Arctic sovereignty, climate change adaptation and economic resilience.

3. Advance feasibility studies for the Yukon-BC Grid Connect project when necessary, in an integrated and coordinated manner, including considering forecasted supply and demand in the Yukon and British Columbia, technical design, routing, project economics and financing opportunities.

4. Coordinate engagement with stakeholders and communities on the Yukon-BC Grid Connect project when required, particularly at key junctures necessary to consider remote community grid integration, understand interests and concerns with the transmission line, forecasted future electricity supply and demand, and fulfill expectations for government accountability and transparency.

5. Explore opportunities to expedite project planning, assessment and regulatory processes, and construction timelines for the Yukon-BC Grid Connect project, should it prove feasible. This could include learning from the development and construction of the North Coast Transmission Line.

6. Develop governance and financial models when required for construction of the transmission line and operations of an interconnected grid, should it prove feasible, so as to meet respective needs for reliable, cost-effective, renewable electricity energy. This includes joint advocacy with Government of Canada to access federal funding.

7. Leverage synergies to increase renewable electricity generation to meet the shared need for electricity due to population and economic growth and electrification efforts, including learning from and building on successes of the BC's North Coast

Transmission Line, Calls for Power, Requests for Expressions of Interest for capacity and energy efficiency projects, and Yukon's Independent Power Production policy to create a strong and diverse energy economy.

ADMINISTRATION:

For the purposes of this MOU:

British Columbia designates the Deputy Minister of Energy and Climate Solutions as its official contact in British Columbia. Contact: Peter Pokorny, peter.pokorny@gov.bc.ca

Yukon designates the President and CEO of Yukon Development Corporation as its official contact in the Yukon. Contact: Gary Gazankas, gary.gazankas@yukon.ca

These representatives will be the respective governments' lead contact for all matters relating to this MOU and for the coordination of activities involving the Parties.

TERMS OF MOU:

- The term of this MOU is the duration of the Contribution Agreement with Natural Resources Canada for the Yukon-BC Grid Connect Project, commencing on May 26 2025, and expiring on March 31 2030, inclusive.
- This MOU is intended to indicate the Parties' intention to work together. This Agreement is not legally binding on the Parties in any way.
- The MOU may be amended or extended by both Parties in writing during the progression of phases of the Yukon-BC Grid Connect Project, including on determination of Project feasibility to advance to construction.
- Either of the Parties may terminate this MOU at any time upon giving 30 days written notice to the other Party.

Their duly authorized representatives have executed this MOU on behalf of each of the Parties, on the dates noted below.

THE GOVERNMENT OF BRITISH COLUMBIA

Honorable David Eby
Premier

May 22, 2025
Date

THE GOVERNMENT OF YUKON

Honorable Ranj Pillai
Premier

May 22, 2025
Date

The Yukon-BC Grid Connect Project:

Strengthening Canada's Autonomy, Resilience and Security

August 15th, 2025

Prepared by Heather Exner-Pirot

Submitted to Yukon Development Corporation

The federal government's Bill C-5, which included the *Building Canada Act*, became law on June 26th, 2025. The Government of Canada has moved ahead on consultations with provinces, territories and Indigenous rights-holders to determine a list of projects of national interest. The criteria that will inform such a list include:

- Strengthening Canada's autonomy, resilience and security;
- Providing economic or other benefits to Canada;
- Having a high likelihood of successful execution;
- Advancing the interests of Indigenous Peoples; and
- Contributing to clean growth and to meeting Canada's objectives with respect to climate change.

Amongst the Yukon's top priorities is the advancement of the Yukon-BC Grid Connect project. This brief outlines the nature of the project and outlines how it contributes specifically to the objective of "strengthening Canada's autonomy, resilience and security". In particular, the project would enable security of supply for defence-critical minerals; maintain social cohesion and resist susceptibility to influence campaigns though provision of affordable, reliable, and sustainable electricity to northern communities; expansion of defence-supporting infrastructure for Canadian military and emergency response operations; and contribute to deterrence through presence in the Arctic.

The Yukon-BC Grid Connect Project

The Yukon-BC Grid Connect is a proposed ~800km high voltage transmission line connecting the Yukon's isolated electrical grid to the North American grid through Bob Quinn Lake, BC. The transmission line will electrify several diesel-reliant communities and significant critical mineral developments in the Yukon and B.C.'s 'Golden Triangle'. At the forefront of project development is the commitment to advance reconciliation through First Nation partnership and ownership.

The Yukon-BC Grid Connect project seeks to meet several important needs, including providing clean, reliable electricity to residents and industry in northwestern B.C. and the

Yukon, increasing the available energy supply during peak winter demand, electrifying multiple diesel-reliant communities, supporting First Nation ownership and partnership in the energy sector, and reducing the risks associated with major renewable energy projects in Canada's northwest.

The Yukon Development Corporation (YDC) is currently undertaking pre-feasibility work on the proposed transmission line, with $40 million in funding from the Government of Canada's Critical Mineral Infrastructure Fund and $13 million from the YDC Fund. YDC is advancing the project with joint support from the governments of B.C. and Yukon, and in collaboration with BC Hydro.

Assessing the Project's Impact on Canada's Autonomy, Resilience and Security

There are four areas identified in which the Yukon-BC Grid Connect project could contribute to Canada's objectives of advancing its autonomy, resilience and security. They include the development of critical mineral projects, especially those related to defence; the provision of affordable, reliable, and renewable electricity to northern communities, which in turn would maintain social cohesion; expansion of defence-supporting infrastructure for Canadian military and emergency response operations; and contributions to deterrence through presence in the Arctic.

Enabling Critical Minerals Development

Like other western nations, Canada has identified a number of minerals which it defines as "critical" to its supply chains. The government identifies critical minerals as those that are essential to our economic or national security; required for a low-carbon and digital economy; and strategic inasmuch as they position Canada to be a sustainable and responsible supplier of the mineral to its international allies.

Canada has identified 34 minerals that meet these criteria. The North Atlantic Treaty Organization (NATO) further specified, in December 2024, twelve that are particularly important for defence industrial capacity. Its Defence Critical Raw Materials include: aluminium, beryllium, cobalt, gallium, germanium, graphite, lithium, manganese, platinum, titanium, tungsten and rare earth elements (of which there are 17 but they are usually categorized as a single critical mineral.

Within the districts that could be served by the Yukon-BC Grid Connect project – Yukon's Cassiar and Tanana regions and B.C.'s Golden Triangle – viable deposits of critical minerals including cobalt, copper, molybdenum, nickel, platinum group metals, tungsten and zinc have been discovered.

Figure 1 Transmission and mining sites in northwest BC and southern Yukon Source: Midgard, 2025

It is important to note that the proposed Yukon-BC Grid Connect project would not just connect the potential mining sites along its route, although that is an important benefit; it would expand the amount of electricity available along the entirety of the existing transmission network.

Currently Yukon's electricity production is low in absolute terms, as expected for a small population of 40,000 people. It generates about 0.70 terawatt-hours (TWh) of electricity annually, which is approximately 0.1% of total Canadian generation, and has a generating capacity of about 140 megawatts (MW). This limits the kinds and scale of electricity generation that can be added to its grid.

While the original rationale for the Yukon-BC Grid Connect project in 2016 was to allow for imports of hydroelectricity from BC, following the completion of Site C, BC no longer has an electricity surplus. Drought and rising demand have led to the province being a net importer for the past two years. Demands from e.g. LNG export terminals, natural gas production, mining and residential use will likely preclude any structural surpluses in the coming years.

As a result, building the Yukon-BC Grid Connect project provides a different opportunity: it could allow for larger hydro or other electricity projects (such as nuclear) in the Yukon to be developed and feed into the grid, contributing to the electricity needs of the entire region.

Critical mineral potential

The Golden Triangle in BC hosts major mining projects like the KSM (Kerr-Sulphurets-Mitchell) project, Brucejack, Red Chris, and Eskay Creek, which require substantial electricity for operations such as ore processing, milling, and equipment.

Porphyry copper-gold mines (common in the region) typically require 50-200 MW per mine, depending on scale. The electrification of mining equipment and processes, driven by BC's CleanBC plan for net-zero emissions, further amplifies electricity needs as diesel-powered systems are replaced with electric alternatives.

In 2014, a 344-km high-voltage (287 kV) Northwest Transmission Line (NTL) was completed at a cost of $700 million to bring power from Terrace to Bob Quinn Lake. The Iskut Extension, a 93-kilometer, 287 kV transmission line from the Bob Quinn Lake substation Tatogga Lake, south of Iskut, was added a few months later. This extension powered the Red Chris copper-gold mine and remains the northernmost extent of the line. The Yukon-BC Grid Connect project would extend from there.

An economic impact analysis prepared for the Mining Association of British Columbia estimates that there are 14 viable critical mineral mine projects in the province, eight of which are in northern BC. Along with the extension of two existing mines, their development could generate nearly C$800 billion (US$594 billion) in wages, taxes, and other economic benefits over the span of a little more than two decades. Their development requires the availability of more electricity generation and transmission.

Yukon's mining sector has faced significant difficulties in recent years. The territory is down to one operating mine, Hecla's Keno Hill silver project, following the abandonment of the Minto Mine and the heap leach failure at Eagle Mine.

Realizing the full potential of the Yukon's mineral, and thus economic, potential, will require investment in new electricity generation. The best example of this is the Casino project, a copper-gold-molybdenum deposit located in west central Yukon, 300 km northwest of the territorial capital of Whitehorse. It is among the largest copper-gold deposits in Canada, and is the largest potential mine in the Yukon. Infrastructure is a key piece of the puzzle to bring the Casino project into production, and the Yukon-BC Grid Connect project is a linchpin for its future development. It's not enough to be connected to the existing Yukon grid – there has to be additional generation in the system that a large mine like Casino can draw upon, which the Yukon-BC Grid Connect project could provide.

To the west, Newmont is developing the Coffee Project. To the northwest, White Gold Corp. has a large number of claims and is actively exploring in partnership with Agnico-Eagle and Kinross. Approximately 100 km to the east is the Minto copper mine, which was acquired by

Selkirk First Nation in June 2025 with plans to eventually restart operations. All potential mines in the region would require the availability of more power to come online.

Critical minerals as defence spending

Much of the rationale for federal support for the Yukon-BC Grid Connect project, including the funding for its feasibility study, is its contribution to the development of domestic critical minerals production.

During the last commodities boom, Chinese investment played a large role in the development of projects across the world, including in Canada. Over the course of three decades, the Chinese strategically and deliberately developed vertically integrated supply chains for a variety of minerals and minerals products.

In particular China curated a minerals supply chain for renewables and battery/EV supply chains, such as nickel, lithium, copper.

It also developed near monopolies in niche minerals and related products/components including rare earth elements (REEs), gallium, germanium, antimony, tungsten, tellurium, bismuth, indium, molybdenum, and graphite. It has put some level of export controls on the aforementioned since 2023 to advance or preserve its geopolitical interests, to the detriment of Canada's and its allies.

China has been successful in this endeavour because it manipulates critical minerals markets through export restrictions, price controls, strategic investments and predatory pricing. It is also ultra competitive due to state-backed financing, a lower regulatory burden, cheaper energy and labour, and strategic investment in R&D. China's interventions have ensured the market is not free and it has been very difficult for western miners, especially juniors, to get a foothold in markets in which China wants to maintain control.

As a result, western governments have a responsibility to intervene to ensure minimum levels of supply are provided to sustain domestic economies and defence supply chains. Canada has engaged in this to some extent, and sometimes in collaboration with the United States. The US Department of Defense has approved awards for seven Canadian critical minerals projects under Title III of the Defense Production Act (DPA) in the past two years, which are usually matched with Canadian funding via Natural Resources Canada. The Yukon's Mactung mine project, led by proponent Fireweed, is one of them.

Fireweed has assessed resources of 41.5 Mt at 0.73% WO_3 indicated and 12.2 Mt at 0.59% WO_3 inferred, which it says makes it the world's largest high-grade tungsten deposit. (WO_3 is the chemical formula for tungsten trioxide.)

In December 2024, the federal government announced Fireweed would receive up to $12.9 million from NRCan's Critical Minerals Infrastructure Fund, alongside a $15.8 million DPA award from the US Department of Defense. The funding was directed to its North Canol Infrastructure Improvement Project for pre-development activities such as design, studies

and collection of baseline data, as well as engagement and consultations with First Nations. These pre-development activities focus on improvements of approximately 250 km of road, as well as upgrades to an existing transmission line between Faro and Ross River, and the construction of a new transmission line from Ross River to the Macmillan Pass site. This, in turn, would connect Mactung to the Yukon grid. The Yukon-BC Grid Connect project would help ensure the Yukon grid has the hosting capacity to service the mine and is key to the development of the project.

NATO Commitments

On June 25, 2025, Canada joined the NATO Defence Investment Pledge to invest 5% of GDP on defense spending by 2035. This commitment includes 3.5% for "core military capabilities" as NATO has defined it previously, and an additional 1.5% for critical infrastructure, innovation and strengthening the defense industrial base.

For Canada, spending on critical minerals infrastructure, production and processing is clearly eligible, especially for those minerals identified by NATO as strategic (listed above). The Yukon-BC Grid Connect project would be an obvious candidate for such spending given its role in servicing several viable mining jurisdictions.

Social Cohesion and Influence Campaigns

Investing in critical mineral supply chains and a robust defense industrial base is very much about preparing for conventional military threats. For most Yukoners, basic material needs are more pressing concerns, including food security, housing availability, and affordable, reliable & sustainable energy including electricity.

Security of electricity supply in the Yukon is threatened on a number of fronts. One is availability; demand pressures and drought have meant the territory is more reliant on backup diesel and LNG generation than it has been in the past. While electricity production peaked in 2021, the overall trend for the decade has been a steady increase, and from 2014 to 2023 it increased by 28.9%, to 558,940 MWh. Of that amount, Yukon produced 68,885 MWh of electricity from thermal combustion (diesel and LNG) in 2023, an increase of 203.7%, compared to 2014. Yukon's grid, while till overwhelmingly clean from hydroelectricity, is getting more emissions intense. Without connection to the BC grid, it would reply on more thermal combustion to support any new mines.

The cost of energy has gone up dramatically on Yukon in the past few years, more so than any other category of consumer product. According to Statistics Canada, which assesses Whitehorse inflation (via a Consumer Price Index) but not that of the entire territory, while the price of non-energy products have gone up 16.3% since 2020, energy products have gone up 38%.

There are few phenomena more destabilising to a society and economy than energy poverty and scarcity. If Yukon is left on its own with limited and expensive energy, it is likely to drive

feelings of alienation and resentment. This is the kind of situation that adversaries are adept at exploiting. This may be done simply by provoking discontent of Yukoners, in particular rural or Indigenous residents, with Canada writ large through e.g. online influence operations; or by making offers of foreign infrastructure investment more tempting for locals.

This was clearly the case when in 2018 Greenlandic authorities chose a Chinese state-owned enterprise China Communications Construction Company (CCCC) as one of the finalists for a contract to build a major expansion of Greenland's airports. For Greenlanders, this was a potentially welcome investment in inadequate transportation infrastructure. For Danish and American authorities, it was an unacceptable toehold for their Chinese adversaries in a jurisdiction crucial to Arctic security and continental defense, not least for early warning systems in the event of a nuclear attack. A superior funding agreement was eventually reached between Danish and Greenlandic authorities. The United States also boosted presence and investment in Greenland following the incident, including establishing a consulate in Nuuk in 2020.

The Yukon does not have the rate base or financial wherewithal to develop large scale energy infrastructure on its own. If the Government of Canada does not or cannot provide support, it will either be forced to look elsewhere for investments, and/or its residents will become more and more disaffected as their economic situation deteriorates.

Defence-Supporting Infrastructure

There is not a direct link between the proposed Yukon-BC Grid Connect project and current and proposed Canadian military bases and installations. While NORAD modernization is expected to attract almost $40 billion in investment, little of it will be spent in or on the Yukon.

The Government of Canada has announced that Iqaluit, Inuvik and Yellowknife will be the sites for its planned northern operational support hubs. While there are North Warning System sites in the Yukon, these are not connected to the Yukon grid and would be unaffected by the Yukon-BC Grid Connect project.

There is a Joint Task Force North detachment in Whitehorse. Its main tasks are to liaise with federal, territorial, municipal and Indigenous governments; support the 1st Canadian Ranger Patrol Group as required; involve the Canadian Armed Forces (CAF) in the community; and augment or expand JTFN Headquarters for major operations. None of this requires any large or novel electricity usage.

There is ongoing discussion of a potential naval reserve in Whitehorse. Two naval reservists are currently exploring the Yukon's potential for an increased Canadian Armed Forces presence in a months-long expedition to gauge the level of interest a greater military presence in the territory. Naval reserves are not energy intensive operations.

Ironically, one of the most likely scenarios for a military response in the Yukon is an extensive power infrastructure failure in extreme cold temperatures around Whitehorse. In other words, the Yukon-BC Grid Connect project is not needed to support a military operation or emergency response; it is needed to *avert* one.

This was the focus of Operation NANOOK-TATIGIIT, an interagency territorial exercise that takes place yearly in one of Canada's three territories, in October 2023. That year's exercise involved responding to a simulated winter storm causing widespread highway closures, power outages and other incidents across southern Yukon.

While the Yukon-BC Grid Connect project would not eliminate such an eventuality, it would add critical redundancy and reliability to the power system to make an outage both less likely and less severe.

Deterrence Through Presence in the Arctic

Deterrence through presence is a military strategy where a nation maintains a visible and credible force in a region to dissuade adversaries from aggressive actions. In the Yukon, this involves demonstrating a readiness to support Canadians in the territory beyond what might be justified on purely economic or demographic grounds. Investment in large scale energy infrastructure signal the value Canada accords the territory, its people, and its untapped resources, and thus indicates that it will be willing to put forth significant effort to maintain sovereignty and security in the region in the event of a conflict.

As the Arctic becomes a greater geopolitical focus, both for our allies and our adversaries, investments in critical infrastructure demonstrate a visible and credible presence, economically and militarily.

Connecting Yukon to the North American grid would provide new capabilities that China and Russia would likely calculate to raise the cost of aggression. It would also indicate a seriousness in efforts to unleash more Canadian critical minerals development, which poses a threat to Chinese and Russian commodities dominance.

It is likely that news of a major Canadian investment in the Yukon-BC Grid Connect project would be received with displeasure in Moscow and Beijing. That is a good indication that it is in our interest.

The proposed Yukon-BC Grid Connect project is a strong candidate for Canada's projects of national interest list. It would achieve a number of relevant goals, including supporting critical minerals development in large and highly promising mining jurisdiction; contributing to NATO spending commitments and capability goals; improving the affordability, reliability and sustainability of electricity supply for the majority of Yukon residents; and decreasing the likelihood of a crisis requiring a military response. In addition, it would clearly signal to both our adversaries and our allies Canada's commitment to the region, its people, and its

resource potential. It would be a bold step towards a strong and secure future in Canada's strategic northwest corner.

Nation-Building Project Criteria	Impact of the Yukon-BC Grid Connect Project
Autonomy	• Enhances Canada's self-sufficiency by enabling domestic critical minerals production (e.g., cobalt, copper, tungsten) in Yukon's Cassiar and Tanana regions and B.C.'s Golden Triangle • Supports Canada's NATO commitments and strengthens its defense industrial supply chain
Resilience	• Strengthens the territory's energy affordability, reliability and sustainability by connecting Yukon to the North American grid, adding redundancy and reducing reliance on thermal generation • Enhances Canada's ability to withstand global market disruptions and manipulations in particular critical minerals • Promotes social cohesion by mitigating vulnerability to external influence campaigns
Security	• Bolsters national security by enabling infrastructure for defence-critical minerals • Supports Canada's role as a reliable supplier to international allies • Counters Chinese critical mineral market dominance • Enhances deterrence by signaling Canada's commitment to protecting Yukon's resources and sovereignty • Improves emergency preparedness by ensuring a stable power grid, reducing the likelihood of crises requiring military intervention

1. BC/YK Demand and Peaking Compatibility

1.1. Seasonal Demand Compatibility

The seasonal demand profile for the Yukon is complimentary to British Columbia and Alberta's seasonal profiles in the summer [1] [2] [3] [4]. This results in an optimal "export window" available during the middle months of the year when Yukon demand drops and Alberta and British Columbia having stronger summer peaks (Figure 1).

Over the last decade, hot spells and extreme weather have been present in Western Canada (specifically BC & AB) leading to higher summer peaks within certain years. Alberta has seen more residential air conditioning adoption and commercial/industrial chillers leading to summer peak converging closer to the winter peak in recent years. Industrial activity (primarily oil and gas) and agricultural irrigation pumping is also a key contributor. In BC, residential and commercial air conditioning and cooling, and industrial activity (mining, pulp & paper, and LNG) contribute to summer peak.

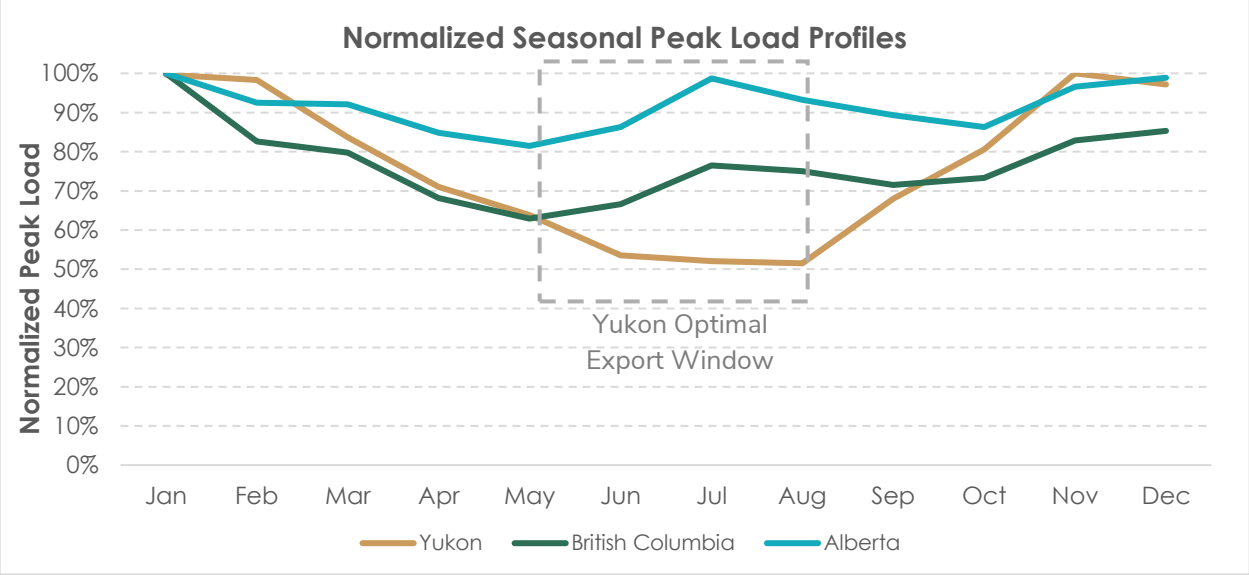

Figure 1: Normalized Seasonal Demand Profiles for the Yukon, British Columbia & Alberta

1.2. Hydro Generation Summer Surplus

In the Yukon, summer runoff is driven first by the rapid snowmelt in late May and June. This is the period when hydro reservoirs are replenished, and river flows reach their annual peaks. As the season progresses, glacial melt from the territory's icefields sustains elevated river flows through July and August, even after most snowpack has disappeared.

During this peak period of May to August coinciding with the optimal "export window", we see surplus hydro generation (Figure 2) well above all load scenarios (peak, average, minimum). This results in hydro "spill" or surplus generation that has the potential to be exported upon energization of a high voltage transmission interconnection.

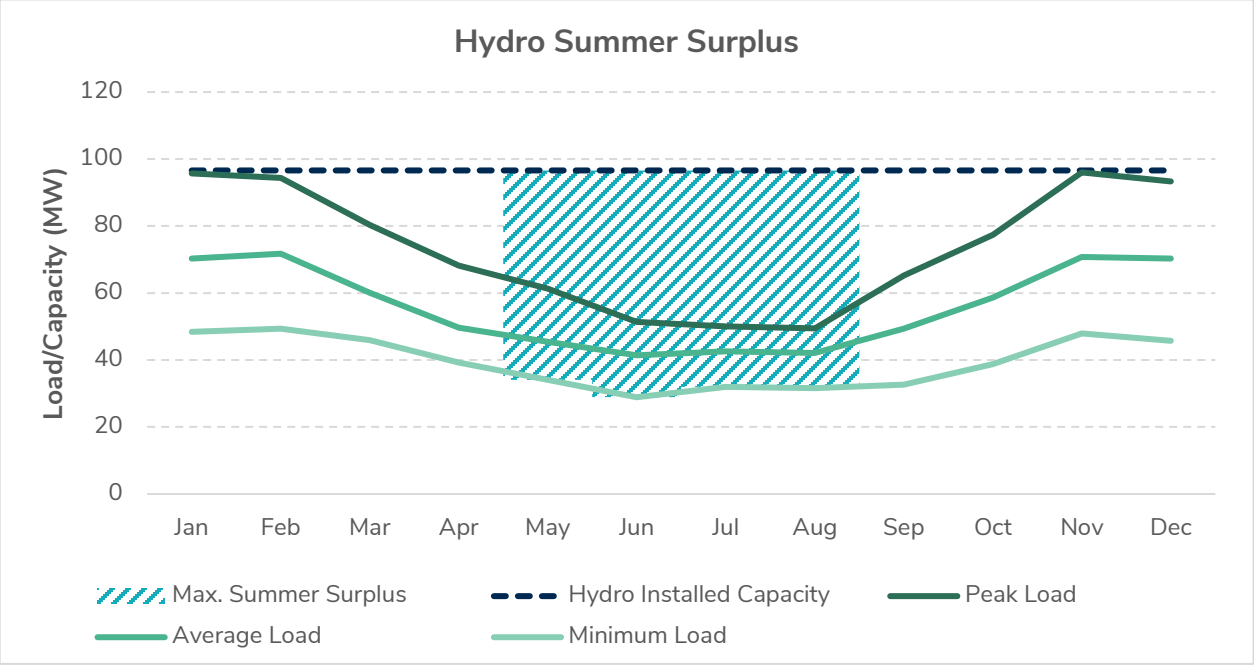

Figure 2: Yukon Hydro Summer Surplus for Typical Year [9]

Table 1 displays the estimated summer hydro generation surplus capacity and surplus volumes under different load scenarios within a typical year (assuming 96.6 MW of current installed hydro generation).

Table 1: Summer Hydro Surplus Under Different Load Scenarios

Month	Peak Load		Average Load		Minimum Load	
	Surplus (MW)	Volume (GWh)	Surplus (MW)	Volume (GWh)	Surplus (MW)	Volume (GWh)
May	35	25	51	38	63	47
June	45	33	55	41	68	50
July	47	34	54	40	65	48
August	47	34	55	40	65	48
Total	174	126	215	159	261	193

Table 2 displays the volumes available for export including the estimated hydro generation summer surplus under an average load scenario and future renewables less mines. These values were calculated assuming:

- 750 MW of new hydro, wind and other renewables in the Yukon.
- Four mines (Casino, Kudz Ze Kayah, Cofee and Nickel Shaw) with typical mine load of 40 MW per mine totalling 160 MW.
- 590 MW of future renewables remaining (2/3 hydro, 1/3 wind and other renewables).
- A 20% [11] capacity factor for wind and other renewables and a 70% capacity factor for hydro generation.

Table 2: Volumes Available for Export from Surplus Hydro & Future Renewables (Less Mines)

Month	Volume Available for Export		
	Hydro Surplus Volume (GWh)	Future Renewables Less Mines (GWh)	Total (GWh)
May	38	230	268
June	41	230	271
July	40	230	270
August	40	230	270
Total	159	920	1079

1.3. Western Grid Imports/Exports & Energy Sales Impact

BC has been a net importer of energy from both the U.S. and Alberta over recent years (Figure 3). There is significant potential for hydro generation summer surplus and future renewables (less mines) in the Yukon to offset net imports into BC from the U.S. which would have resulted in an estimated:

- **$98.4M** in deferred U.S. purchases replaced by Canadian sales in 2023 with **$83.9M** coming from new renewables (less mines) and the remaining **$14.5M** from hydro generation summer surplus in the Yukon;
- **$63.4M** in deferred U.S. purchases replaced by Canadian sales in 2024 with **$54.0M** coming from new renewables (less mines) and the remaining **$9.4M** from hydro generation summer surplus in the Yukon.

Of note is that Alberta, historically a net importer over the last decade during typical years has become a net exporter over the last two years due to low hydro conditions in BC and the Pacific Northwest and lower pool prices in Alberta.

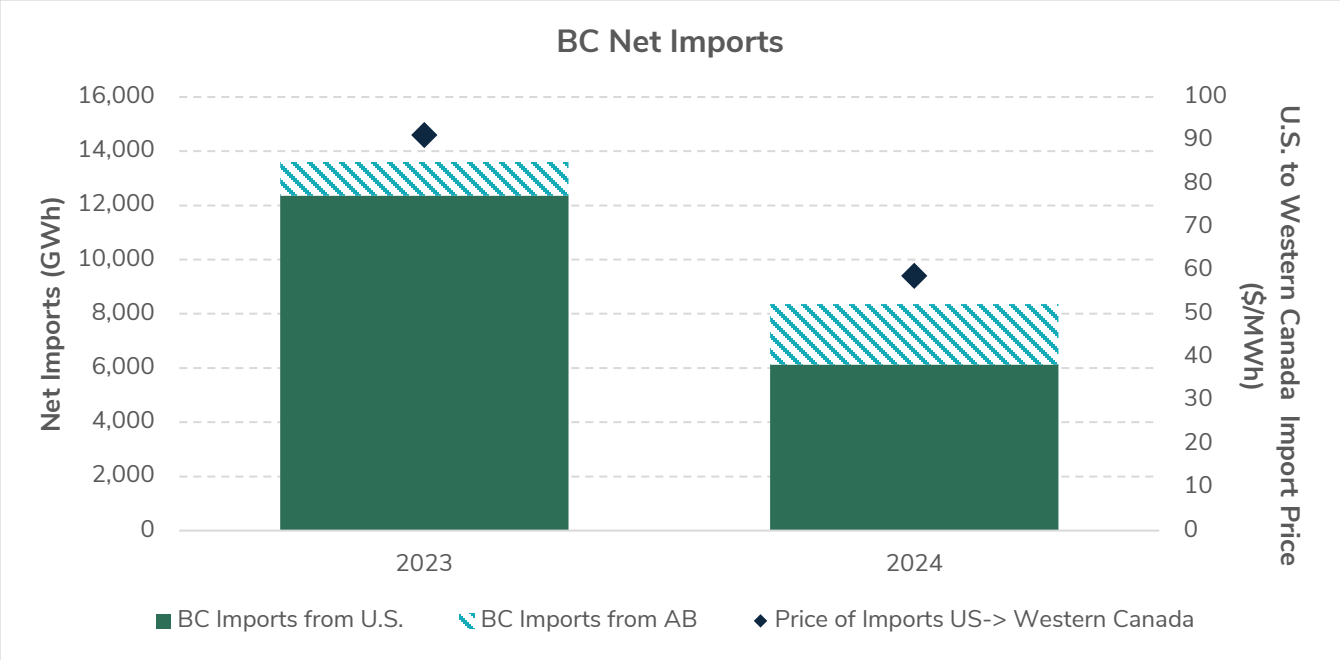

Figure 3: BC Net Imports from the US and Alberta with U.S. to Western Canada Prices [5] [6] [7] [8]

1.4. Peak Flattening & Savings on Thermal Generation

Imports from clean renewable energy sources have a low marginal cost and can therefore displace thermal generation which has high fuel costs in the Yukon territory. Assessing potential for peak flattening involves analyzing the generation stack during the peak winter season in the Yukon and understanding which types of generation can potentially be outpriced by low cost imported energy from renewable sources. It's assumed that an added benefit would be that the outpriced diesel and LNG generation would then be utilized primarily for reliability purposes during peak load events including winter storms.

Assuming a 20% capacity factor across the full year with 40 MW of total diesel generation and 13.2 MW[9] of Liquids Natural Gas (LNG) generation and $0.3069/KWh and $0.1906/KWh [10] for diesel and LNG fuel prices respectively (Figure 4), the estimated savings from low-cost imports into the Yukon resulting in peak flattening are:

- **$21.5M** in savings from replacing 70.0 GWh of diesel generation with low-cost imports;
- **$4.4M** in savings from replacing 23.1 GWh LNG generation with low-cost imports.

This would potentially result in at total of **$25.9M** in savings on 93.1 GWh of thermal generation. The peak flattening potential of 93.1 GWh is less than 10% of the export potential (refer to Section 1.2).

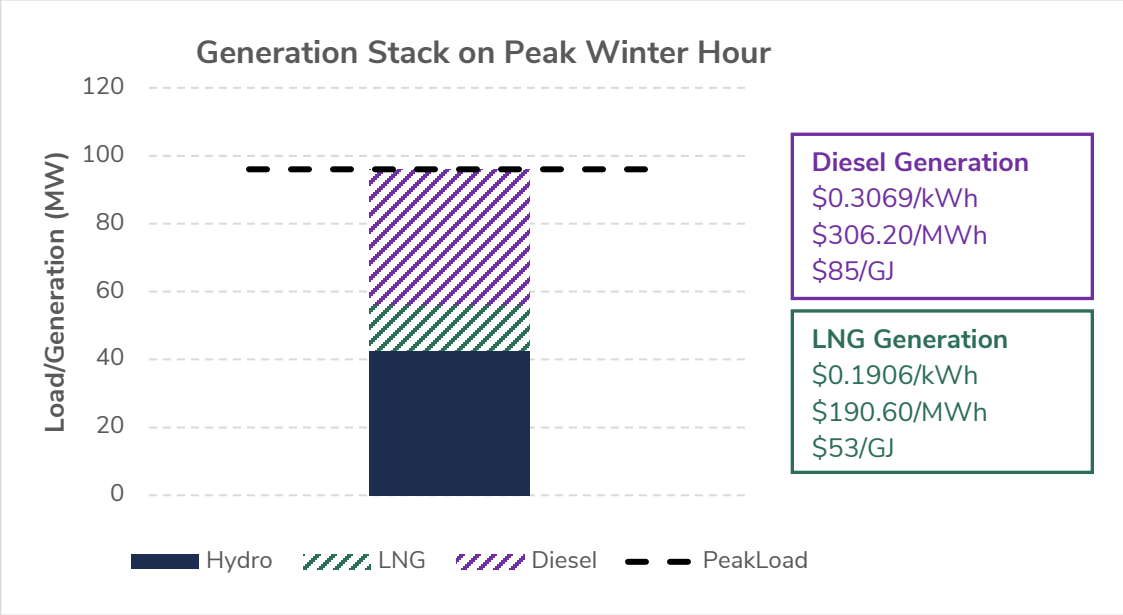

Figure 4: Yukon Generation Stack During Peak Winter Day with Diesel & LNG Fuel Prices

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