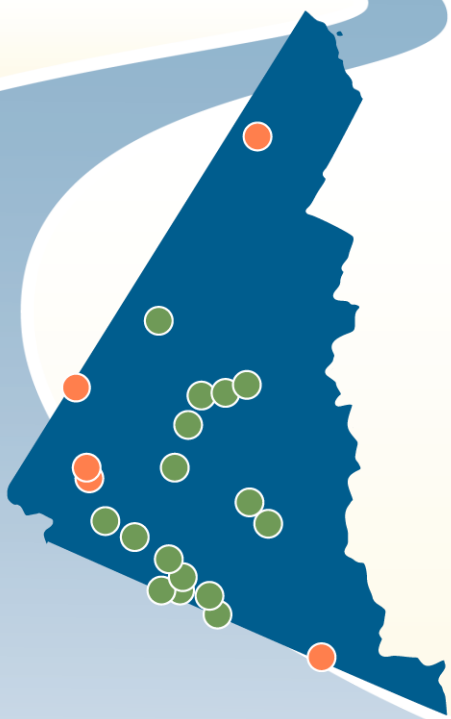

- Regional Grid Community
- Diesel Microgrid Community

The Yukon

Most communities in the Yukon are powered by an isolated regional grid with no interconnections to the North American electrical grid, though there are also four diesel-powered microgrids, three of which have an operating renewable energy project.

Ambitious targets and policies that create a robust market for diesel-displacing projects have established the Yukon as a leading jurisdiction in remote clean energy. Despite this, the territory continues to wrestle with significant challenges including the need to respond to growing electrical demand, and several major clean energy projects facing funding shortfalls.

Collaboration with rights-holders	Platforms for collaboration exist, but more well-funded and coordinated opportunities for consensus building around policy development and planning are needed.	
Plans and strategies	Strong plan with ambitious targets for reducing greenhouse gas emissions for both the regional grid and remote grids.	
Funding and financing	Territorial funding is available but is insufficient for community-scale generation projects.	
Programs for efficient buildings	Robust programs for energy efficiency and demand management in remote communities.	
Independent power producer (IPP) market	Well-defined and transparent IPP market with a good incentive to develop projects.	

Restoring the flow: the Yukon

As the Yukon strives to achieve its ambitious climate goals and transition to a clean energy future, its unique energy landscape presents both significant challenges and opportunities. Most of the population is served by a single, isolated electrical grid, the Yukon Integrated System (the main grid), which is largely hydro powered but also relies on diesel and liquified natural gas to meet energy demand. Additionally, there are five remote communities not connected to the main grid that are served by four isolated diesel generation systems.

The Yukon has two electric utilities, both of which are regulated by the Yukon Utilities Board. The Yukon Energy Corporation (Yukon Energy) is responsible for approximately 85% of the Yukon's total generation capacity, primarily through its three hydrogeneration facilities.[42,43] The other utility, ATCO Electric Yukon, owns and operates some generation capacity on the main grid, as well as the diesel generation and distribution facilities in the off-grid communities.[44] The Yukon government's Department of Energy, Mines and Resources develops energy policy and provides Yukoners with energy programs, expertise, and assistance.[45] The Yukon Development Corporation, a Crown corporation owned by the territory and the parent company of Yukon Energy, is responsible for ensuring the adequate provision of energy to promote economic development in the territory, and more recently has taken on responsibilities for energy policy development.[46,47]

Leadership on climate action and the clean energy transition by the Yukon First Nations was instrumental in shaping a supportive environment for community-owned renewable energy, which in turn has spurred numerous clean energy projects throughout the territory. Some initial targets for renewable energy generation on the main grid have been achieved in recent years, and significant progress is being made towards community-owned renewables on the remote diesel grids.

---

[42] Yukon Bureau of Statistics, *Yukon Energy Facts 2023* (2024), 1. https://yukon.ca/sites/default/files/ybs/fin-yukon-energy-facts-2023.pdf

[43] Yukon Energy, *2023 Annual Report: October 2024 update* (2024), 8. https://yukonenergy.ca/media/site_documents/YEN24051_rpt_annual23_Oct24Update_web.pdf

[44] ATCO Electric Yukon, "About Us." https://www.atcoelectricyukon.com/en-ca/about-us/service-area.html

[45] Government of Yukon, "Department of Energy, Mines and Resources." https://yukon.ca/en/department-energy-mines-resources

[46] Government of Yukon, *Yukon Development Corporation Protocol Agreement and Letter of Expectation 2020-2021* (2022), 3. https://yukon.ca/sites/default/files/ecdev/e1_-_yg-ydc_potocol_agreement_and_shareholder_letter_of_expectation.pdf

[47] Government of Yukon, *Yukon Development Corporation Annual Report 2023* (2024), 11. https://yukon.ca/sites/default/files/2025-05/yukon-development-corporation-2023-annual-report.pdf

Photo: Julia Sterling, Pembina Institute, Whitehorse, YT, 2022.

Collaboration with rights-holders

The Yukon has a strong foundation for Indigenous co-governance; in 1993 the Umbrella Final Agreement established the framework for Yukon First Nations to negotiate their own Final Agreements and self government agreements with the territory and the crown, of which 11 of 14 Yukon First Nations have completed.[48] These modern treaties form the basis for reconciliation in the territory and lay the groundwork for the involvement of Yukon First Nations in the territory's energy sector, and ensure that Yukon First Nations are represented on the boards of directors of the Yukon Development Corporation and Yukon Energy.[49] While there isn't a specific program to build capacity to participate in the energy sector, projects related to energy are eligible for funding from the Training Policy Committee, a funding body established under the Umbrella Final Agreement.[50]

There are several energy forums and working groups in the Yukon that bring together a range of parties interested in the territory's energy supply and demand, and both utilities engage with Yukon First Nations on a bilateral basis. However, there is currently no formal, recurring opportunity for Yukon First Nations to collaborate with the Yukon government, Yukon Development Corporation and the utilities on energy policy and strategic planning.

Until recently, Yukon First Nations largely worked independently of one another to advance independent power producer projects and respond to energy planning proposals of the Yukon government and utilities. A new initiative, the First Nation Energy Working Group, formed in 2023 following an energy leadership summit hosted by the Council of Yukon First Nations (CYFN). The group represents an emerging opportunity for Yukon First Nations to collaborate, share knowledge and support one another as First Nation involvement in the clean energy sector grows. Further collaboration with government is led through the Council of Yukon First Nations Chiefs' Committee on Energy, which provides strategic direction, political support and guidance to the working group and CYFN Leadership, and conducts strategic, high-level discussions with officials of various levels of government and the utilities.

Platforms for collaboration exist, but more well-funded and coordinated opportunities for consensus building around policy development and planning are needed.

[48] Government of Yukon, "Agreements with First Nations." https://yukon.ca/en/your-government/government-government-relations/agreements-first-nations

[49] Government of Canada, *Umbrella Final Agreement Between the Government of Canada, the Council for Yukon Indians and the Government of the Yukon* (1993), 252-253. https://cyfn.ca/wp-content/uploads/2013/08/umbrella-final-agreement.pdf

[50] Training Policy Committee, "About TPC." https://www.tpcyukon.ca/about/about-about-tpc

Plans and strategies

The Government of Yukon's 2020 climate change strategy — Our Clean Future: A Yukon strategy for climate change, energy and a green economy — sets priorities for reducing the territory's greenhouse gas emissions.[51] The strategy includes a target of reducing emissions by 30% from the 2010 level, which was amended to 45% and enshrined in the Yukon's Clean Energy Act.[52] The act requires the Yukon government to report annual progress towards the emissions reduction target.

In addition to its emissions reduction target, the Yukon government has committed to developing legislation that will require 93% of electricity generated on the main grid to come from renewable sources. On its remote diesel grids, the government has set a goal to reduce the amount of diesel used for electricity generation by 30% by 2030, with one operating independent power project in each community. The territory also plans to replace 20% of the diesel used to generate electricity on both the main grid and the remote grids with clean diesel alternatives, such as biodiesel and renewable diesel.[53]

The Yukon Development Corporation is currently developing a resource plan that will outline how the Yukon will meet its climate goals for electricity on the main grid by 2050, while also planning for greater peak energy demands, which are estimated to rise by 50% by 2035 compared to 2020.[54]

Strong plan with ambitious targets for reducing greenhouse gas emissions for both the regional grid and remote grids.

[51] Government of Yukon. *Our Clean Future: A Yukon strategy for climate change, energy and a green economy* (2023). https://our-clean-future.yukon.ca/sites/default/files/2023-10/env-our-clean-future.pdf

[52] Government of the Yukon, *Clean Energy Act*, S.Y. 2022, c. 14. https://laws.yukon.ca/cms/images/LEGISLATION/acts/2022-0014.pdf

[53] *Our Clean Future*, 47–48.

[54] Yukon Energy, *Building a Resilient and Renewable Energy Future: Chapter 1 – A Reliable and Robust Grid: Reinforcing our Foundation* (2025), 11. https://yukonenergy.ca/media/site_documents/Electricity_Planning/Yukon-Energy-Chapter-1-2025-2030.pdf

Community project funding and financing

The Yukon's main funding program for community projects is the Innovative Renewable Energy Initiative (IREI). IREI provides funds in support of sustainable energy solutions with a focus on local and Indigenous leadership. The program funds up to 75% of eligible project costs (to a maximum of $500,000) and encourages Yukon-based public and private organizations, including First Nation governments and development corporations, to pursue renewable energy projects.[55]

This initiative provides critical early-stage funding for community projects, but the funding is quickly exhausted if it is used for larger, community-scale generation projects where costs exceed the IREI maximum.

Some diesel reducing projects also receive funding through the Arctic Energy Fund (AEF), a federal funding initiative administered by the Yukon Government.[56]

Territorial funding is available but is insufficient for community-scale generation projects.

[55] Government of Yukon, "Apply for funding for community renewable energy projects." https://yukon.ca/en/innovative-renewable-energy-initiative

[56] Government of Yukon, *Yukon Development Corporation: 2023 Annual Report,* 9. https://yukonassembly.ca/sites/default/files/2024-10/sp-35-1-164-ydc-2023.pdf

Programs for efficient buildings

As part of its 2020 climate strategy, the Yukon government committed to investing $30 million annually in energy retrofits for homes and buildings.[57] The territory's "Good Energy" program offers funding for energy upgrades to existing buildings and rebates for both upgrades and energy-efficient new home construction. Among the items that the program supports are solar hot water systems, energy efficient appliances, and heat pumps and wood/biomass heating systems.[58]

The Yukon's Peak Smart Home program is a demand-side management initiative to reduce peak power demand on the territory's main grid during the winter months, reducing reliance on diesel generation. Homeowners can receive up to 75% of the purchase and installation costs of smart thermostats and hot water tank controllers that can be adjusted by the utility to reduce energy use during peak energy demand.[59,60,61]

The Yukon has had a micro-generation policy since 2013 that allows homeowners, businesses and industry to offset their energy consumption by connecting small scale renewable projects to the grid. Unlike other jurisdictions in Canada, the price paid for surplus electricity exported to the grid is based on the avoided cost of new electrical generation, rather than the subsidized price consumers pay for their power, with a higher rate paid for power exported to the grid in the diesel communities.[62] This created a strong incentive for micro-generation, and the policy resulted in a rapid buildout of solar on the main grid, meeting the program's target of 7MW deployed by 2030 seven years early. This influx of intermittent power resulted in challenges with grid stability, and the program has been put on hold while the utility and the government conduct the necessary technical analysis and upgrades to support more solar on the grid.[63]

Robust programs for energy efficiency and demand management in remote communities.

[57] *Our Clean Future*, 40.

[58] Government of Yukon, "Good Energy Rebates." https://yukon.ca/en/good-energy-rebates

[59] Yukon Energy, "About Peak Smart: how the programs work." https://yukonenergy.ca/energy-in-yukon/saving-energy/peak-smart/about

[60] ATCO Electric Yukon, "Peak Smart: Be part of the change and help build Yukon's sustainable energy future." https://www.atcoelectricyukon.com/content/dam/web/electric-yukon/peaksmart-brochure.pdf

[61] Patrick Egwu, "Yukon Energy offers home energy use program," Yukon News, November 10, 2023. https://www.yukon-news.com/local-news/yukon-energy-offers-home-energy-use-program-7113068

[62] Government of Yukon, *Micro-generation Policy* (2021). https://yukon.ca/sites/default/files/emr/emr-micro-generation-policy.pdf

[63] Government of Yukon, "Government of Yukon working with public utilities to ensure Yukon grid remains reliable as intermittent renewables increase," news release, December 14, 2023. https://yukon.ca/en/news/government-yukon-working-public-utilities-ensure-yukon-grid-remains-reliable-intermittent

Independent power producer (IPP) market

The Yukon was the first jurisdiction in the North to develop an IPP policy, a recommendation made in its 2009 energy strategy.[64] The Yukon's policy and regulatory framework is notable for its support of Indigenous-led IPP projects and a transparent formula for determining fair electricity purchase rates, in addition to a regulatory provision that allows utilities to recover expenses related to purchasing electricity from IPPs.[65,66]

The goal of the Yukon's IPP policy is to encourage IPPs to develop and expand environmentally sound and affordable electrical supply options. The policy aims to develop local renewable energy to replace diesel and create economic opportunities for First Nations communities, including achieving economic self-reliance. The policy sets two targets: to have 10% of new electricity demand in the territory met by IPPs, and for at least 50% of IPP projects to involve Yukon First Nations ownership.[67]

On the Yukon's main grid, the price for electricity under electricity purchase agreements is based on the average blended fuel price per kilowatt-hour for thermal generation, as most recently approved by the Yukon Utilities Board, and is adjusted annually for inflation. On the diesel grids, the price for electricity is based on the fuel cost for diesel generation over the previous five years, plus any cost savings from reductions in maintenance, capital or other diesel-generation costs.

Well-defined and transparent IPP market with a good incentive to develop projects.

[64] Government of Yukon, *Energy Strategy for Yukon* (2009), 17. https://yukon.ca/sites/default/files/emr/emr-energy-strategy-for-yukon.pdf

[65] Government of Yukon, *Yukon's Independent Power Production Policy* (2018). https://yukon.ca/sites/yukon.ca/files/emr/emr-yukon-independent-power-production-policy.pdf

[66] Yukon Executive Council, *Direction to the Yukon Utilities Board (Independent Power Production),* O.I.C. 2019/25. https://yukonutilitiesboard.yk.ca/pdf/OICs/OIC_2019-25.pdf

[67] *Yukon's Independent Power Production Policy*, 5.

Community outcomes

Yukon First Nations have been quick to realize opportunities for clean energy with the help of federal funding programs and have been trailblazers for how to bring community clean energy online in remote microgrids. As of summer 2025, there is an Indigenous-owned IPP project in development or fully operational on each of the diesel grids, as well as several on the main grid.

The Vuntut Gwitchin First Nation's Sree Vyàa solar project in Old Crow, commissioned in 2021, established a template for electricity purchase agreements in the Yukon. It was the first project in the North that enabled an IPP to meet 100% of a remote community's electricity demand with renewable energy and temporarily shut off the diesel generators.[68]

In 2023, the Teslin Tlingit Council began selling heat from its successful waste-wood biomass facility through a first-of-its kind heat purchase agreement with the Yukon government.[69]

The 4 MW Haeckel Hill-Thay T'äw Wind Energy Project is the first wholly Indigenous-owned wind energy project in the north and began feeding the Yukon's main grid in March 2024.[70]

The Kluane First Nation's 900 kW Lhù'áán Mân N'tsi wind project and White River First Nation's 1.9 MW Saa/Se Energy Project both switched on in April 2025, allowing each community to enjoy extended diesel-off periods.[71,72]

The Sādę Solar Initiative project in Watson Lake is a 2.85 MW solar farm in development with expected commissioning in 2027.[73]

---

[68] Anna Desmarais, "How Old Crow's solar farm is changing green energy projects in Yukon," *CBC News,* 2022. https://www.cbc.ca/news/canada/north/old-crow-solar-farm-changing-green-energy-projects-yukon-1.6434746

[69] Government of Yukon, "Government of Yukon and Teslin Tlingit Council sign heat purchase agreement for biomass at Khàtìnas.àxh School in Teslin," news release, August 22, 2023. https://yukon.ca/en/news/government-yukon-and-teslin-tlingit-council-sign-heat-purchase-agreement-biomass-khatinasaxh

[70] Northern Energy Capital, "Haeckel Hill-Thay T'äw Wind Energy Project," 2025. https://www.northernenergycapital.com/haeckel-hill-wind-project

[71] Sara Connors, "Kluane First Nation now harnessing wind energy to help power community, reduce reliance on diesel," APTN News, May 15, 2025. https://www.aptnnews.ca/national-news/kluane-first-nation-now-harnessing-wind-energy-to-help-power-community-reduce-reliance-on-diesel/

[72] Jake Howarth, "Beaver Creek in the Yukon goes diesel-free with solar power," July 19, 2025. https://www.yukon-news.com/news/beaver-creek-in-the-yukon-goes-diesel-free-with-solar-power-8140684

[73] Chris MacIntyre, "Watson Lake expecting new solar project to reduce diesel by a million litres a year," June 25, 2025. https://www.cbc.ca/news/canada/north/watson-lake-expecting-new-solar-project-to-reduce-diesel-by-a-million-litres-a-year-1.7569563

Priorities for action

Yukon Energy's most recent five-year plan (published in 2025) identifies adding diesel infrastructure and doing upgrades on existing hydro and diesel infrastructure to provide dependable winter capacity and meet increased demand for electricity.[74] The utility and the Yukon government maintain these investments are necessary in order to accommodate higher levels of renewable energy on the grid in the future.[75] With that understanding, the Yukon must prioritize the development of a long-term strategy for continued decarbonization while keeping pace with rising demand and maintaining grid stability.

The territory is also seeking to increase its firm power supply through renewable energy imports, with a long-standing commitment with the Taku River Tlingit First Nation to purchase power from the Atlin Hydroelectric Expansion Project, which still has a funding gap of roughly $90 million.[76] Another option being pursued for firm power supply is a grid intertie to B.C., which could have a cost upwards of $3 billion.[77] These projects require additional funding support; the Yukon government should determine how best to allocate resources to these initiatives and other clean energy programs, and ensure all rights holders are included in the decision making process.

Though the supportive policy environment for independent power production has resulted in a number of community-led projects, further diesel reduction will require collaborative planning and policy development between the territory, the First Nations, the Yukon Development corporation, and the utilities. This collaboration will help to build consensus about the necessary steps to ensure grid stability while still furthering community goals with respect to renewable energy and diesel reduction.

[74] Yukon Energy, *Building a Resilient and Renewable Energy Future: Yukon Energy's Road Map to 2050* (2025), 14. https://yukonenergy.ca/media/site_documents/Electricity_Planning/Yukon-Energy-Road-Map-to-2050.pdf

[75] CBC News, "Yukon Energy pitches $100M plan for new fossil-fuel plants in Whitehorse," April 10, 2025. https://www.cbc.ca/news/canada/north/yukon-energy-pitches-100m-plan-for-new-fossil-fuel-plants-in-whitehorse-1.7507196

[76] Chris MacIntyre, "Atlin hydro expansion project is 'shovel-ready,' but still $86M short," *CBC News,* October 26, 2024. https://www.cbc.ca/news/canada/north/atlin-hydro-expansion-shovel-ready-1.7364158

[77] Chris Windeyer, "Is the Yukon's ambitious plan to connect to B.C.'s power grid even a good idea?" *CBC News,* June 7, 2025. https://www.cbc.ca/news/canada/north/yukon-bc-power-grid-analysis-1.7552201

Photo: Pembina Institute/Archbould Photography. Whitehorse, YT, 2025.