Microgrids in canada

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This is the first publication inRemote Communities Energy in Transition, a series about challenges, opportunities, and solutions in integrating renewable energy into remote communities" microgrids. These publications cover the advancements in technical, financial, and human capacity, energy policy, and regulations needed to transition remote communities to clean energy. For more publications, visit ourRenewables in Remote Communities website.

The 250 or so remote communities scattered across the country are collectively home to about 185,000 people. They are mostly located in B.C., northern Ontario, northern Quebec (Nunavik), northern Labrador (Nunatsiavut), Yukon, the Northwest Territories, and Nunavut. Remote, in this case, refers to the fact they are not connected to North America"s integrated electricity grid or natural gas infrastructure. While some communities are accessible by permanent road, others are only accessible by airplane, boat, or winter road.

Since remote communities are not connected to the North American electricity grid, they make use of their own small-scale microgrids. A microgrid encompasses the whole system that provides electricity to the community; this includes diesel generators, distribution wires, and control systems, plus any sources of renewable energy, such as wind, solar (photovoltaic), biomass combined heat and power, and small-scale hydro.

High energy costs are typically addressed through government programs that subsidize and equalize electricity rates and provide discounts for heating fuels. The unique geographical and logistical constraints of remote communities (i.e. how difficult it is to bring in fuel and supplies) also have a major impact on energy prices. The following table illustrates the high cost of diesel fuel in a few representative communities, and shows how remoteness and access affect costs.

Regardless of location, solely relying on diesel in remote communities means higher costs and complete dependency on a fuel that must be transported from far away. Incorporating renewable energy into a community"s microgrid can reduce that dependency -- leading to lower costs for residents and a more secure, local supply of energy.

The Pembina Institute acknowledges that the work we steward and those we serve spans across many Nations. In the spirit of truth, justice, reconciliation, and to contribute to a more equitable and inclusive future for all of society, please see our path towards Reconciliation and prioritizing Indigenous leadership.

Image credit: Ontario Power Generation.Gull Bay (also known as Kiashke Zaaging Anishinaabek) has become the first remote community in Canada to have its own renewable energy supply. A team of IBEW Local 402 electricians was brought in to handle the complex wiring requirements for the project.

Located 200km north of Thunder Bay, Gull Bay is so remote that there is no hydro service. The Ojibway community of 300 have been relying on diesel generators, which are noisy and dependent on fossil fuels.

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