

ENERGY POLICY

Moving to Renewable Energy

A path forward for power generation in Canada

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I. Power Generation in Canada

Canada's energy profile is an ugly one. 65% of our energy is sourced from oil, natural gas, and coal while renewable energy makes up just 2% of our energy consumption (BP, 2016). Although Canada is an energy exporter, 24.5 billion dollars' worth of energy was imported in 2004 alone (Foreign Affairs and International Trade Canada, 2006). Most Canadians interact with the energy sector when powering and heating their homes. Here, firms like Enbridge dominate natural gas sectors, while semi-private corporations like Hydro One let their CEOs walk away with millions of dollars in annual compensation, all while the quality of transmission infrastructure fails (Morrow, 2015).

First Nations still rely on colonial power grids and are largely forbidden by the Indian Act from developing their power sources. Although recognizing a "climate emergency," the ruling Liberals under Justin Trudeau have continued to build pipelines across Canada, running several routes through unceded reserves. Canada's provinces haven't cooperated either — Alberta recently sank millions of dollars into a "war room" to combat misinformation about oil and gas. The war room rarely makes statements, and when they do, they have been riddled with misinformation (Boyd & Leavitt, 2020). The situation in Alberta has become something of a comedy for residents. With governments dragging their feet, private firms are beginning to move in (CBC, 2020). While this could be great for the environment, this is just more of the status quo: energy sectors dominated by a few private firms, selling their energy back into the grid at ludicrous costs (Government of Canada, 2019; IESO, 2016).

II. Necessary Components of a Solution

As the climate crisis continues to spiral out of control, hydro prices skyrocket (between May 2015 and May 2016, electricity rates shot up 15.4% in Ontario), and monopolies continue to get comfortable in the wallets of Canadians, decisions have to be made (Statistics Canada, 2016). Whatever solution is implemented will have to work for Canadians, not for large monopolies.

A successful energy solution would need to download as much power generation and distribution as possible to municipalities, integrate heating and other home energy sources with electricity, and rely on sustainable, green energy that respects the global environment and Canada's natural beauty.

Figure 2.1 *Components of a successful energy solution.*

Component	Reasoning
Municipal energy distribution	Local communities should have control over their energy. After all, they understand their use best.
Combined energy management	Central coordination of different types of energy will be critical to efficient and equitable distribution as renewable energy continues to develop.
Sustainable energy generation	As the climate crisis continues to advance, and more of our finite resources are consumed, a sustainable and renewable solution is critical to our survival.

Canada's present system, where hydro is managed almost entirely by provincial and territorial authorities, is unsustainable. Corruption runs rampant, central authorities are privatized on the whims of cost-cutting provincial governments, and electricity is mismanaged by civil servants disconnected both from the customers they are supposed to benefit and the mechanisms they manage. Downloading energy distribution to local municipalities offers the most flexibility: communities will have the ability to control their energy and hire managers who understand the community they are working in, develop and maintain personal connections to customers, and give municipalities the option to club together with neighbours to form regional power distribution networks. Provinces should still play a role in power management and transportation, where economies of scale and central management will reduce cost and increase efficiency, but their present duties are too expansive, leaving these agencies overgrown, unwieldy, and inefficient.

Although different types of energy should remain operated by those who know them best, natural gas is best managed by organizations specializing in natural gas, the generation and distribution of energy must become formally coordinated. Canada's current home energy consumption, split largely between hydroelectricity and natural gas, is an uncoordinated patchwork of various private firms and municipal and provincial authorities. It would already be of benefit to coordinate and localize the distribution of energy: local authorities could determine where and how energy is being used, develop infrastructure schemes based on the complete energy picture, and manage billing to maximize efficiency and equitable access. With renewable energies, however, this will become even more critical. As Canada is widely varied, and different regions are suited to different forms of power generation, coordination between different sources and generation providers will be fundamental to maintaining efficient and affordable energy management.

Lastly, and perhaps most obviously, the time is now for sustainable, renewable energy. The status quo, that being oil, gas, and coal, has destroyed air quality, changed the climate, and ripped apart ecosystems to satisfy unsatisfiable, bottomless energy demands. Even without climate change, the economic case is obvious: with fossil fuels depleting and energy demand rising, a renewable source is the only guaranteeable energy provision for our children and grandchildren.

III. Renewable Energy Across Canada

A mari usque ad mare. Canada stretches from the Atlantic Ocean to the Pacific and up to the Arctic. Energy consumption varies accordingly, and so too does energy suitability. Tidal power, for example, has no use in Canada's vast central regions but shows great promise in the Atlantic provinces (Chang, 2008). As of 2019, Nova Innovation is installing 15 tidal stream turbines in Nova Scotia (Frangoul, 2019). In northern Alberta, solar power is an increasingly popular choice for remote communities disconnected from the provincial power grid. Where diesel, trucked in over ice roads, had once reigned supreme, solar power is offering a cheaper, more reliable, and significantly more sustainable alternative for a growing number of communities. The trend isn't limited to Canada, either: the International Energy Agency reported that renewable energies will make up 90% of the increase in power capacity in 2020 (Calgary Herald, 2020). Storage, a solution that continues to be elusive, is also a popular investment in Alberta, with several projects being advanced.

Figure 3.1 *Renewable energy solutions across Canada (Natural Resources Canada, 2020).*

Energy type	Energy output	Province with greatest output
Hydro	60.2%	Manitoba (98.6%)
Nuclear	14.6%	Ontario (58.6%)
Renewable natural gas	8.6%	Alberta (42.2%)
Wind	4.4%	Prince Edward Island (97.9%)
Biomass	1.8%	British Columbia (6.4%)
Solar	0.5%	Ontario (2.2%)
Tidal	0.2%	Nova Scotia (0.2%)
Other (coal, petroleum, etc.)	9.7%	—

Conclusion: Canada the Researcher & Manufacturer

Canada has been blessed with a large, varied territory, smart and talented people, and a thriving industrial sector. This is the perfect lay-up for a three-pronged action plan. The first, which is the focus of this report, is the implementation of renewable energy technologies. The second prong, which is report-worthy in itself, is the manufacturing of renewable energy technologies. Canada is already home to many renewable energy projects, and many of these components are manufactured and maintained in facilities coast to coast. As Canada continues to invest in renewable energy, there is a unique opportunity to invest in manufacturing and maintenance facilities for both Canadian and international customers. Such an investment will create a strong, sustainable manufacturing economy in Canada for generations to come.

The third prong in the action plan is research. Just as China's research into solar power made harnessing the sun's energy more efficient and affordable, Canada has the same opportunity. With a wide array of universities, many installations, and diverse lands uniquely suited to an array of different types of renewable energy, Canada is perhaps the best Western country to pursue renewable energy research. These three prongs, which would improve the quality of life of Canadians in every sector, will create a stronger, more just Canada.

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