

Re-Envisioning an Energy Strategy for Manitoba: Planning for 2030 and Beyond

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Introduction

In ratifying the Paris Agreement, Canada committed to drastic reductions in greenhouse gas emissions to mitigate the risks and impacts of climate change ¹. The urgent need to reduce global emissions, along with changing market and technology dynamics for energy products and services are driving the global energy transition. Energy strategies are useful tools that can guide the transition at local, provincial, and federal levels. While there are many approaches that can be taken in developing energy strategies, it is necessary to incorporate the views and priorities of all members of the policy community in energy planning. This includes ensuring that the public can participate in a meaningful way. This paper demonstrates the importance and value of prioritizing public participation in energy planning, as illustrated within the context of Manitoba, Canada.

We begin by defining the concept of an energy strategy, and outlining several common approaches to energy planning, with a focus on community participation. We then provide background information on Manitoba's existing energy system. The 'Methodology' section then outlines the methods including data collection and analysis. Section 'Results' presents the results of the research, followed by a discussion and conclusion.

Background

What is an energy strategy?

An energy strategy is a framework that guides comprehensive and logical discussions about energy development and delivery, through a process that encourages involvement from all stakeholders ². Energy strategies are a tool for organizing information and dialogue about energy options and their anticipated consequences. They are useful in structuring decision making about energy choices in a manner that facilitates and incorporates learning. Energy strategies are specific to the objectives of the decision participants and can help to inform choices about desired level of investment in each aspect of an energy portfolio. Energy strategies should be flexible and adaptable so they can incorporate learning over time.

Common Approaches to Energy Planning

In developing energy strategies or plans, there are several different approaches that can be taken. The approach should be selected depending on the goals and priorities of those undertaking the process. Common approaches to energy planning include focuses on climate change adaptation and mitigation, energy security, and community participation.

¹ Merran Smith et al., "Canada's Energy Transition Getting to Our Energy Future, Together Generation Energy Council Report," 2018,

https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/CoucilReport_july4_EN_Web.pdf.

² Joseph Arvai et al., "Decision Support for Developing Energy Strategies," *Issues in Science and Technology* 28, no. 4 (2012): 43–52, www.jstor.org/stable/43315645.

Energy strategies using the climate focused approach often prioritize the use of renewable energy sources to reduce carbon emissions. Common tools used in this type of planning include energy potential mapping and whole systems modelling to predict low carbon energy scenarios. Energy potential mapping can clarify the local strengths and weaknesses of a jurisdiction's energy system ³. By identifying local characteristics including climate, topography, and infrastructure, energy potential maps can identify optimal locations for the use of renewable energy sources such as wind, solar, or tidal, to reduce local carbon emissions. The visual nature of energy potential maps is effective in utilizing local potential, and inspiring innovation in the face of climate change. Several countries including Mexico, The United Kingdom, Australia, and New Zealand have developed national calculators to model scenarios and visualize their potential impacts in terms of energy balance and carbon emissions over time ⁴. Modelling these scenarios can guide energy policy in order to adapt to and mitigate the impacts of climate change.

Another common approach to energy planning is focused on energy security. While definitions of energy security can vary greatly, most commonly they are primarily concerned with supply of a fuel source relative to demand, and a lack of interruption to that supply. A common framework that has been used to examine issues related to energy security is 'the four A's of energy security' which includes availability, affordability, accessibility, and acceptability ⁵. Beyond the 4 A's, energy system resilience has emerged as an important aspect of energy security. Resilience refers to an energy system's exposure and vulnerability to risks. More recently, discussions around energy security have shifted somewhat away from the traditional supply-focused definition, and are beginning to consider the unique contextual factors that impact energy security on a place-by-place basis. More specifically, guidance has been taken from food security research to scale down the focus of energy security to consider the household and community level, as opposed to the state or national level ⁶. A scaled down approach to energy security allows for the experiences of community members to be considered in decision making and the planning process.

Taking the scaled down approach to energy security even further, energy planning through community participation is focused on the needs and prioritizes of the public. Meaningful public participation means that members of the public who wish to participate have an opportunity to do so, and are provided with the information and capacity that enables them to participate in an informed way ⁷. There is an onus on government agencies to involve the public in decisions

³ Andy Van Den Dobbelsteen et al., "Energy Potential Mapping-A Systematic Approach to Sustainable Regional Planning Based on Climate Change, Local Potentials and Exergy," n.d.

⁴ Alejandra Elizondo et al., "Mexico's Low Carbon Futures: An Integrated Assessment for Energy Planning and Climate Change Mitigation by 2050," *Futures* 93 (2017): 14–26, <https://pdf.sciencedirectassets.com/271788/1-s2.0-S0016328717X00098/1-s2.0-S0016328717300794/main.pdf?X-Amz-Security-Token=IQoJb3JpZ2luX2VjEB8aCXVzLWVhc3QtMSJGMEQCICBduhpRBrF%2BIbOBXkubo%2BC21niHSpeR9p12OFbTLvtvAiBmSjmkzIHxymfNS%2BptXh67BAq60vbMOjrZluoiht>.

⁵ Aleh Cherp and Jessica Jewell, "The Concept of Energy Security: Beyond the Four As," *Energy Policy* 75 (December 1, 2014): 415–21, <https://doi.org/10.1016/j.enpol.2014.09.005>.

⁶ Yasmeen Hossain, Philip A. Loring, and Tom Marsik, "Defining Energy Security in the Rural North - Historical and Contemporary Perspectives from Alaska," *Energy Research and Social Science* 16 (June 1, 2016): 89–97, <https://doi.org/10.1016/j.erss.2016.03.014>.

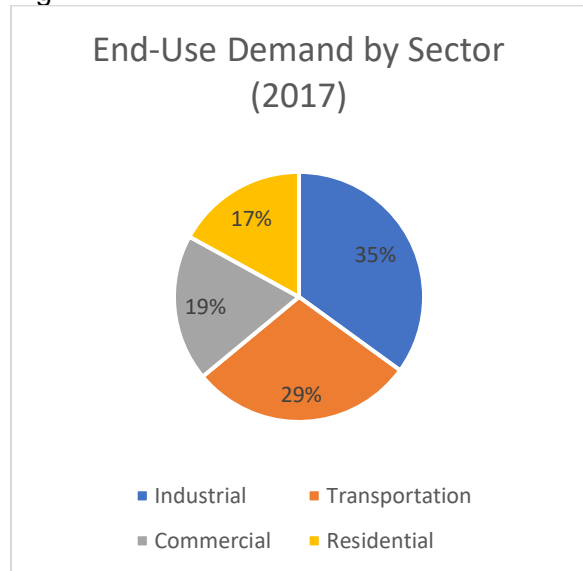
⁷ Impact Assessment Agency of Canada, "Interim Framework: Public Participation - Canada.Ca," accessed July 8, 2020, <https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/framework-public-participation.html>.

which affect their communities, and there is an increasing realization that improving levels of public participation can increase the likelihood the resulting decision will be accepted ⁸. For energy planning to be a tool that actually leads to change within energy systems, the energy plan or strategy needs to be accepted by a broad range of actors, including the public ⁹. Rather than leaving the development of an energy strategy solely to government agencies, approaching the process through meaningful public participation can lead to a holistic and comprehensive plan that reflects the needs and priorities of a variety of actors, and that is more widely accepted and effective in the long run.

Manitoba’s Energy Profile

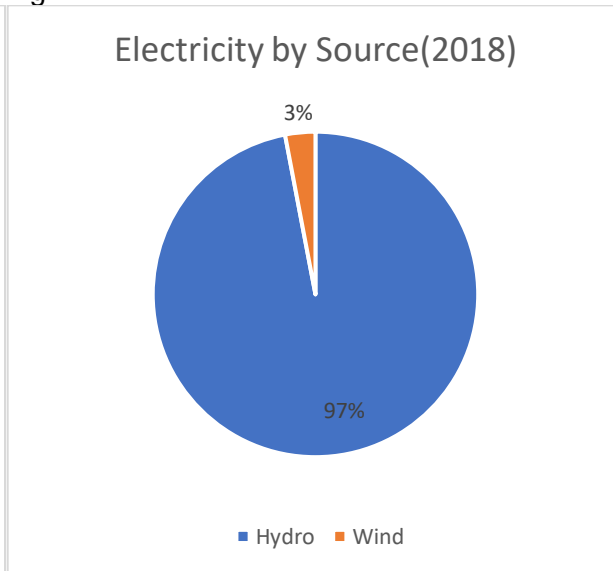
This paper concerns the context of Manitoba, a central Canadian province with a population of 1,278,365 people ¹⁰. 778,489 people, or 60% of the population live in Winnipeg, the provincial capital located in southern Manitoba. Manitoba Hydro, a crown corporation, is responsible for the design, construction, and operation of hydro facilities, and is the largest producer of electricity in Manitoba ¹¹. Manitoba Hydro also distributes natural gas through its Centra Gas division. As seen in figure 2, 97% of electricity in Manitoba comes from hydroelectricity. Heating consists primarily of natural gas, followed by hydro (figure 4), and the transportation sector is dominated by imported gasoline and diesel fuel (figure 3). There are also four remote, off-grid communities in Manitoba who rely on diesel as their primary energy source.

Fig. 1:



Source: Canada Energy Regulator

Fig. 2:



Source: Canada Energy Regulator

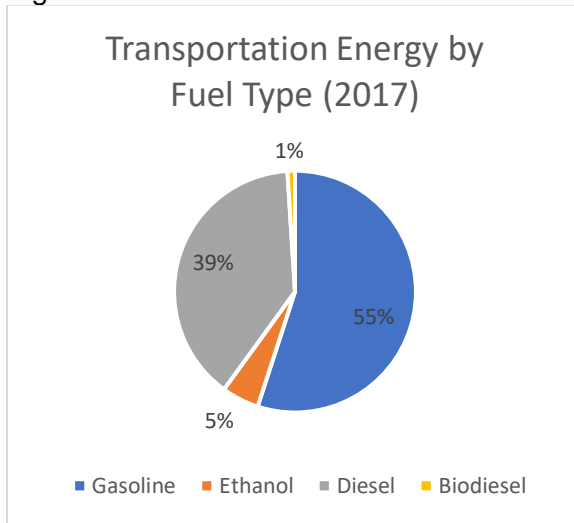
⁸ Gary Higgs et al., “Using IT Approaches to Promote Public Participation in Renewable Energy Planning: Prospects and Challenges,” *Land Use Policy* 25, no. 4 (October 1, 2008): 596–607, <https://doi.org/10.1016/j.landusepol.2007.12.001>.

⁹ Jenny Ivner et al., “New Tools in Local Energy Planning: Experimenting with Scenarios, Public Participation and Environmental Assessment,” *Local Environment* 15, no. 2 (February 2010): 105–20, <https://doi.org/10.1080/13549830903527639>.

¹⁰ Statistics Canada, “Focus on Geography Series, 2016 Census - Province of Manitoba,” Statistics Canada, 2017, <https://www12.statcan.gc.ca/census-recensement/2016/as-sa/fogs-spg/Facts-pr-eng.cfm?LANG=Eng&GK=PR&GC=46&TOPIC=1>.

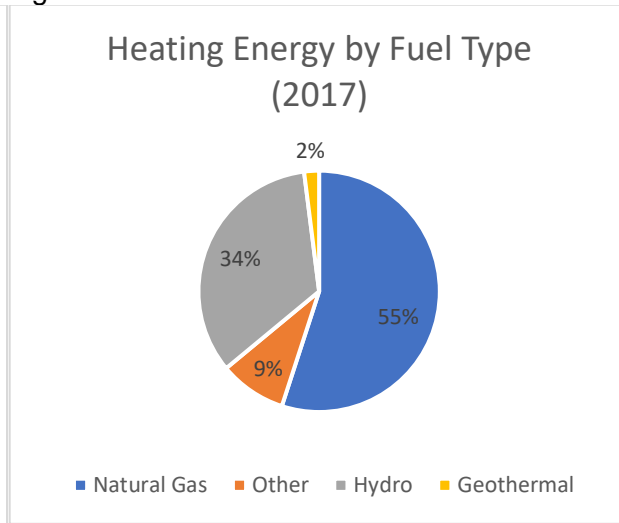
¹¹ Canada Energy Regulator, “CER – Provincial and Territorial Energy Profiles - Manitoba,” Government of Canada, 2020, <https://www.cer-rec.gc.ca/nrg/ntgrtd/mrkt/nrgsstmprfls/mb-eng.html#s2>.

Fig. 3:



Source: Canada Energy Regulator

Fig. 4:



Source: Canada Energy Regulator

Methods

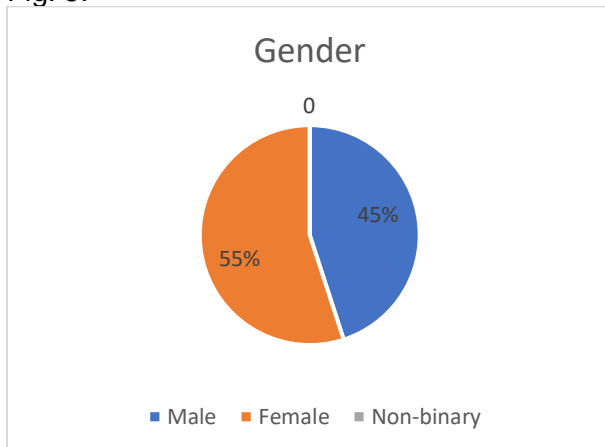
Data collection employed two methods: (i) an independent, random survey of 1,000 people across the province; and (ii) an interactive public workshop.

Public Survey

The survey was conducted by Prairie Research Associates (PRA), an independent research firm¹². Using an online panel, PRA surveyed 1,000 Manitobans during a four-day period in February, 2020. Manitobans were asked questions on the topics of energy production, electricity rates, future energy use, and costs of changes to energy use. This included questions about Manitobans' personal energy use, as well as their opinions on energy at the provincial level.

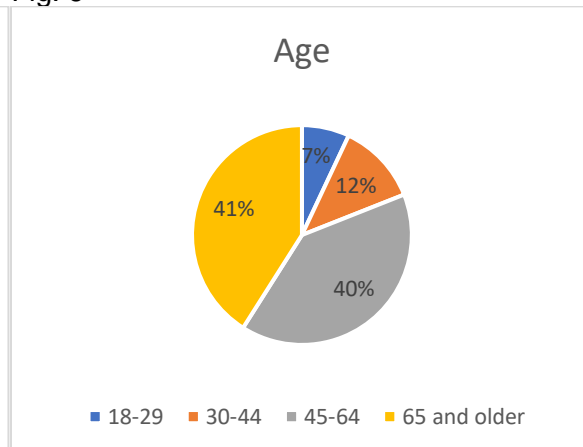
Demographics of respondents are seen in figures 5-7. The survey slightly over represents respondents over 45 years of age and those living in Winnipeg. In order to correct for differences between the demographics of survey respondents and the Manitoba population, PRA weighted the data by age, gender, and region.

Fig. 5:



Source: PRA

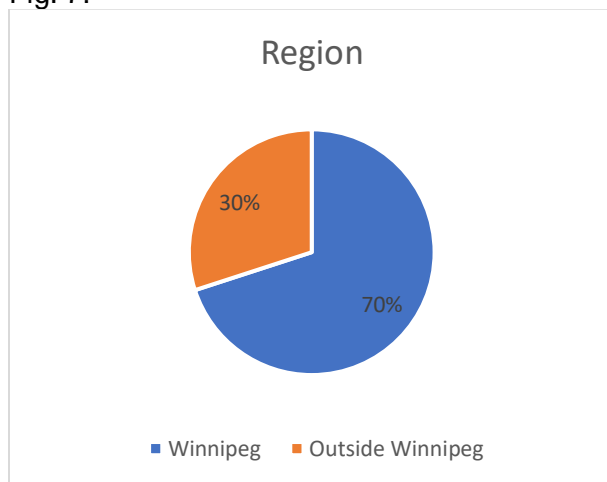
Fig. 6



Source: PRA

¹² Prairie Research Associates, "About PRA," accessed July 23, 2020, <https://pra.ca/about-pra/>.

Fig. 7:



Source: PRA

Public Workshop

In early March 2020, a free public workshop was held at The University of Winnipeg with the goal of initiating a discussion amongst Manitobans about energy in the province. The event brought together people with a variety of energy-based perspectives and interests, including consumers, researchers, students, Indigenous peoples, energy providers, entrepreneurs, decision-makers, and members of the public interested in the future of energy use in Manitoba.

The workshop consisted of two sessions, each including presentations from a panel of speakers, opportunity for questions and answers, and an audience focused workshop. The first panel was designed to provide expertise on the bigger picture of energy, both in Canada and internationally, while the second panel was designed to focus on the Manitoba context, including on-the-ground projects and initiatives. The workshops were designed to initiate discussion amongst and to hear from participants about strengths and weakness of Manitoba's current energy system, as well as important aspects to frame an energy strategy for the province.

The event was attended by 87 in-person participants, and 10 on-line participants via Facebook livestream. As of July 23, 2020, the video of the event had a view count of 702 (<https://www.facebook.com/119395024836293/videos/201046687905220/>).

Data Analysis

Analysis was based on three data sources: the panel presentations, the workshop sessions, and the survey. The data from the presentations consisted of a detailed record written by a note-taker during the event. During the workshop sessions, a designated note-taker recorded each group's responses to the discussion questions, which were submitted to the workshop organizers at the end of the event. For the survey, PRA provided a PowerPoint presentation highlighting the results of the survey questions.

Employing a grounded approach, the data from all three sources was coded for common themes using NVivo 12¹³. This paper presents and discusses the top four most frequent themes that arose during the analysis.

¹³ QSR International Pty Ltd., "NVivo 12," 2019.

Results

Diversification

Essential to energy security, diversification refers to having a portfolio that consists of multiple different energy sources rather than relying solely on one ¹⁴. As common energy sources such as crude oil, coal and natural gas are commodities, they are subject to market forces and shocks that can lead to changes in supply and price. In a nation or jurisdiction that relies heavily on one source of energy, a disruption to that source could lead to a widespread shortage of energy for the population. On the other hand, in a nation or jurisdiction with a diverse energy portfolio, should one energy source be subject to a disruption, they would still have multiple other sources to supplement and rely on.

The need to diversify Manitoba's energy portfolio with more renewable sources was a common theme throughout the three data sources. When asked about the future of Manitoba's energy profile, the majority of the survey respondents believed that more importance should be placed on alternative energy sources, including solar (69%), wind (58%), and geothermal (57%). Additionally, most respondents believed that less importance should be placed on fossil fuels including coal (86%), oil (74%) and diesel (67%).

In framing an energy strategy for Manitoba, workshop participants identified the promotion of alternative energy sources as an important aspect to be included. Several opportunities to increase the use of renewable energy sources such as biomass, solar, wind and geothermal were identified during the event. This includes advances in technologies such as storage for solar energy, and microgrid systems. Examples of small-scale diversification initiatives were also discussed, such as several renewable energy projects at The University of Winnipeg, as well as on a farm in southern Manitoba.

Decentralization

Decentralization changes the structure of the energy sector towards a multi-actor set-up where large utilities interact with self-producing consumers and mini-utilities ¹⁵. For governments, roles switch from being direct providers of energy access to facilitators of energy access, allowing for local and community level renewable energy producers to generate, distribute and sell in a decentralized system.

The need for increased local control over energy production through the decentralization of the province's energy system was a common theme throughout the three data sources. In the PRA survey, when asked what changes they would make in their home energy use over the next 10 years, 39% of respondents said they would consider supplementing energy with an additional energy source, and 27% said they would consider producing their own energy.

Workshop participants identified the need to include opportunities for local control over energy production in an energy strategy for Manitoba. This includes opportunities for community ownership through co-op models, and addressing the idea of energy sovereignty. Additionally,

¹⁴ Lyndon G., Jordan Hanania, and Jason Donev, "Energy Diversification - Energy Education," University of Calgary, 2016, https://energyeducation.ca/encyclopedia/Energy_diversification.

¹⁵ * Ministry Federal Ministry for Economic Cooperation and Development (BMZ), Germany, International Renewable Energy Agency (IRENA) of Foreign Affairs of the Netherlands, and World Bank, "ACCELERATING SDG 7 ACHIEVEMENT POLICY BRIEF 24 ENERGY SECTOR TRANSFORMATION: DECENTRALIZED RENEWABLE ENERGY FOR UNIVERSAL ENERGY ACCESS," 2018, <https://sustainabledevelopment.un.org/content/documents/17589PB24.pdf>.

the importance of Indigenous owned and operated energy projects for Manitoba's energy future was discussed during the panel presentations.

Legislative and Policy Barriers

While Manitobans want diversification and decentralization of the provincial energy system, there are both legislative and policy barriers that pose challenges for such initiatives. These barriers were identified in both the panel presentations and the workshop sessions. There were no survey questions related to legislative or policy barriers, therefore it did not come up in the results.

The centralized monopoly model of Manitoba Hydro is a potential barrier, as the single supplier system is inflexible limits entry of community projects into the system. Additionally, the centralized system limits the ability to adapt to new renewable technologies without financial consequences to the existing hydro system. As the Manitoba Hydro Act gives the crown corporation the exclusive right to sell, there are to limits innovation and diversification of energy sources as individual producers face difficulty selling back to the grid. Other legislative and policy barriers identified during the presentation and workshop sessions include; the lack of environmental assessment for hydro projects under the Water Power Act, leading to negative environmental and social outcomes; permitting and inspection processes that have not been updated to reflect renewable energy sources; and, an overall disconnect between policy makers and what is happening on the ground in terms of changes to the energy sector.

Affordability

Currently, the price per kilowatt hour of electricity is much lower in Manitoba compared to other provinces¹⁶. Although the price per kilowatt hour is low, northern residents, primarily First Nations, pay much higher amounts on their electricity bills compared to those living in southern urban centres due to drastic differences in consumption¹⁷. With a colder climate and less energy efficient housing as compared to the southern portion of the province, overall consumption in the north is much higher. Additionally, multiple northern communities are not connected to the provincial grid and must rely on diesel fuel. The need for affordable energy was a common theme within the three data sources.

During the workshop sessions, the low price per kilowatt hour of electricity in Manitoba's current energy system was identified as a strength, however the fact that it is not affordable for all segments of the population was identified as a weakness. This issue ties directly into another key topic from the event: reconciliation with Indigenous communities. Manitoba's hydroelectric system has numerous historic and on-going effects on both the environment and First Nations in the north ¹⁸. There is a need for a shift in framework for how Manitoba Hydro engages with Indigenous communities, towards an approach that centres relationships and the use of renewable energy in a way that benefits everyone in an equitable way. While general costs to

¹⁶ Ontario Hydro, "Electricity Rates by Province," 2013, <http://www.ontario-hydro.com/electricity-rates-by-province>.

¹⁷ Philip Raphals, "Energy Poverty on First Nation Reserves in Manitoba Energy Poverty on First Nation Reserves in Manitoba Philip Raphals for the Assembly of Manitoba Chiefs," 2019, <http://www.pubmanitoba.ca/v1/proceedings-decisions/appl-current/pubs/2019-mh-gra/amc-ex/amc-3-raphals-evidence-final.pdf>; Statistics Canada, "Focus on Geography Series, 2016 Census - Province of Manitoba."

¹⁸ Steven M Hoffman, "Engineering Poverty: Colonialism and Hydroelectric Development in Northern Manitoba," 2004, <http://hydroimpacted.ca/wp-content/uploads/2018/03/Colonialism-and-Hydroelectric-Development-in-MB.pdf>; Emily Unger, "Augmented Flow," Wa Ni Ski Tan, 2018, <http://hydroimpacted.ca/augmented-flow/>.

consumers are of concern, greater importance should be placed on social equity, or fair pricing for lower income and on-reserve consumers who may have difficulty paying their bills.

This sentiment was also reflected in the survey. While 63% of respondents felt that cost to ratepayers/taxpayers was among the most important considerations when making energy decisions in Manitoba, 69% felt that there should be some type of support for consumers who have difficulty paying their energy bill.

Discussion and Conclusion

The survey, panel presentations, and workshop sessions described in this paper make clear that the public provides a balanced perspective regarding the issues that should be considered in developing a provincial energy strategy. It is therefore important to include their input directly in to the development of an energy strategy for Manitoba.

Manitobans want diversification of the provincial energy portfolio, through an increase in renewable energy sources like wind, solar, and geothermal. Additionally, they want a decentralized system, that allows for individual and community scale producers to sell power back to the provincial grid. From a climate standpoint, it may be difficult to understand why diversification of Manitoba's energy system is desired, as the hydroelectric system is low carbon and often touted as 'green' or 'clean' by the provincial government. Beyond carbon emissions, hydroelectric development has had both historic and ongoing impacts on First Nations and Métis communities. These impacts include increased erosion leading to loss of lands, cultural sites, wildlife resources, collapsing fisheries, and other social, environmental, and economic effects¹⁹. Diversification of Manitoba's energy system could mean mitigating the ongoing impacts, and preventing further impacts of hydro development on Indigenous communities in Manitoba. The high costs of new large-scale hydro projects, and the vast distance between production in the north and use in the south are other factors which may influence a desire to diversify Manitoba's energy system.

As there are a number of ways that diversification and decentralization can be approached and implemented, it is important to consider the specifics of what Manitobans are pondering in this instance. Diversification of an energy system can be achieved through mechanisms that allow for individual and community scale producers to generate their own power and sell back to the grid. On a grander scale, it can also be achieved through widespread privatization of a jurisdiction's energy system. As Manitobans who participated in this research discussed the importance of reconciliation, and Indigenous owned and operated energy projects, it is necessary to consider what scale of diversification best meets these priorities. In developing an energy strategy for Manitoba, it will be important to hear more from the public in order to select the most appropriate approach to diversification and decentralization.

There are many legislative and policy barriers in place that are hindering both diversification and decentralization within Manitoba's energy system. To address these priorities and concerns, a provincial energy strategy must include legislative changes to allow for and facilitate individual and community scale producers who want to use renewable energy projects to generate power for themselves as well as to sell back to the grid. As the legislative and policy changes that are needed will depend on the scale of diversification and decentralization, it is crucial that further public participation activities are undertaken to clarify the needs and priorities of Manitobans.

¹⁹ Unger, "Augmented Flow"; Hoffman, "Engineering Poverty: Colonialism and Hydroelectric Development in Northern Manitoba."

Affordability was another priority for Manitobans, both in terms of equity among population segments, and financial support and investment into renewable technologies. To address the equity concern, a provincial energy strategy must be rooted in reconciliation between Manitoba Hydro, the provincial government, and the Indigenous communities who continue to experience the devastating impacts of hydroelectric development. Hydro and the province must listen to those who have been impacted, in order to redress the damages they have caused. Furthermore, the energy strategy must include a variety of subsidies and incentive programs that assist both large- and small-scale renewable energy projects to enter the provincial market.

The timing of this research is critical, as the provincial government recently tasked Manitoba Hydro with the responsibility of developing an energy strategy for the province ²⁰. Assigning this task to the crown corporation is problematic, as while Manitoba Hydro is responsible for electricity and natural gas, it does not provide propane or fuels adopted to the transportation sector. Additionally, this mandate by the provincial government continues to perpetuate the prioritization of hydro-electric development over other renewable energy sources. Assigning the task of developing a provincial energy strategy to Manitoba Hydro does not reflect the priorities of the public identified by this research.

As Manitoba and other jurisdictions around the world undergo system changes as they adapt to the energy transition, listening to and incorporating input from all members of the policy community is critical. The public can provide a variety of perspectives on the future of energy use, and including them in the energy planning process can lead to greater acceptance and long-term success of the resulting energy strategy ²¹. In conclusion, this paper has outlined priorities and concerns of Manitobans which should be considered in the development of a provincial energy strategy, demonstrating the value of public participation in the planning process. Moving forward, the province must ensure that the public is able to participate in a meaningful way, in order to develop a holistic and comprehensive energy strategy for Manitoba.

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²⁰ Brian Pallister, "Minister of Crown Services Mandate Letter 2020," Province of Manitoba, 2020, https://www.gov.mb.ca/asset_library/en/executivecouncil/mandate/2020/crown_services_mandate.pdf.

²¹ Ivner et al., "New Tools in Local Energy Planning: Experimenting with Scenarios, Public Participation and Environmental Assessment."

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