



Green Action Centre's response to

A Made-in-Manitoba Climate and Green Plan: Hearing from Manitobans

November 2017

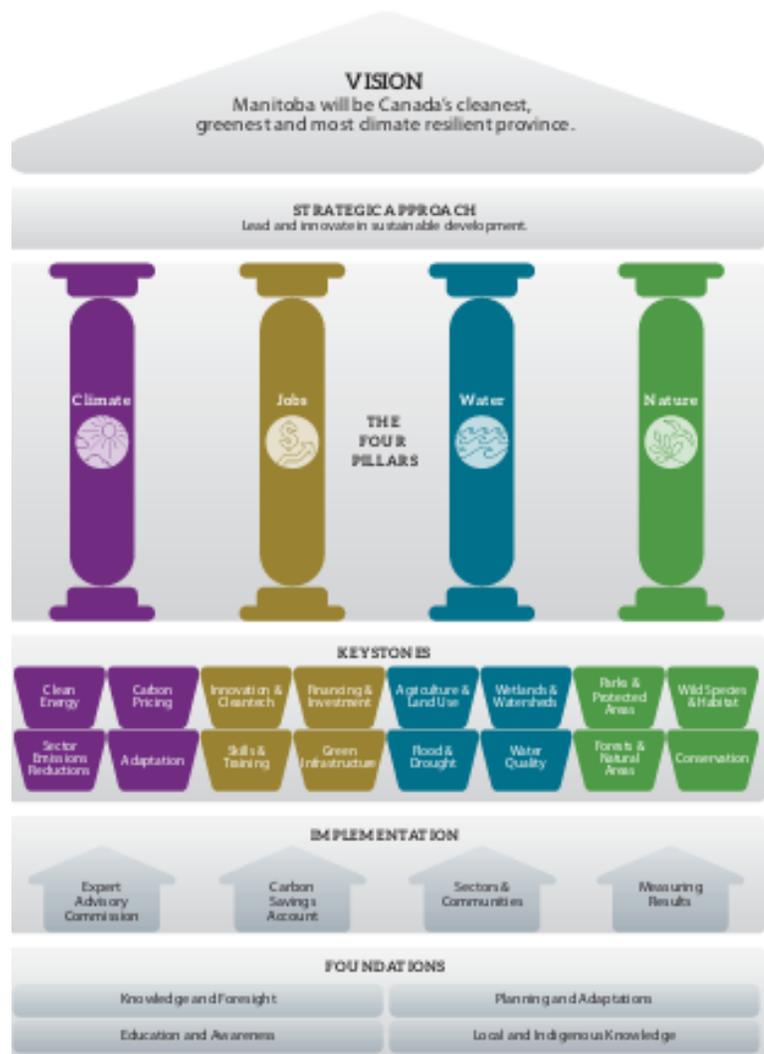
Green Action Centre is a non-profit hub for greener living based in Winnipeg and serving Manitoba. Our many activities and areas of work are displayed at our website (<http://greenactioncentre.ca>). We heartily endorse and share the draft plan vision: **Manitoba will be Canada's cleanest, greenest and most climate resilient province**. We are pleased to offer the following comments and recommendations on the draft Made-in-Manitoba Climate and Green Plan in response to questions in the plan and on the plan's website.

The Strategic Framework

QUESTION 1

What are your views on the key elements of the strategic framework?

1. Overall, the plan looks rich and elegant. It represents a lot of effort compiling and ordering areas of concern into multiple pillars and keystones. The structure is visually united to support an ambitious vision to be the cleanest, greenest most climate resilient province in Canada. But it also has component goals for each keystone. With appropriate indicators (which must include measurements of progress in other provinces for comparison), this provides a means of evaluating progress on the whole and the parts. In intent, it asks to be measured on accomplishments. Now, in execution, it must live up to those high expectations. We'll do our best to help make it happen.



2. One concern is that its architecture may portray a misleading symmetry, at least where required actions are concerned.
 - a. Some areas, like aspects of nature and water, may have adequate structures in place to manage conservation and protection efforts.
 - b. Climate is in a class by itself, since it involves society- and economy-wide transformational action, requires greater innovation and behaviour change, and time is running out.
 - c. Managing agro-Manitoba is a large-scale sectoral topic that overlaps nature, water, jobs and climate. Biodiversity protection, water management, air and water pollution control, and constraining GHGs while enabling a thriving, sustainable rural economy are key topics. The concept of a Manitoba Centre for Sustainable Agriculture (drawing on and adding to existing institutions) to enhance capacity to address these issues has merit.
 - d. Would an analogous Centre for Sustainable Municipalities to address buildings, land-use, transportation, municipal planning and infrastructure also have merit?
 - e. Job creation is an existing concern of economic development, which will need to evolve as market demand is transformed by sustainability and clean energy initiatives.

Conclusion: Don't treat pillars as silos or as requiring equivalent efforts and approaches. Pillars and keystones, however, do provide a useful guide to comprehensiveness. The different requirements of different areas should be kept in mind in the design of governance structures such as the Expert Advisory Commission. Is a wildlife expert likely to be a climate expert, and vice versa? And it is important that an elegant superstructure on paper not slow planning and response where players are ready to move.

3. The listed strategic attributes need modifications and additions to support the vision.
 - a. The third attribute, on focus, loses its focus on the plan vision. Suggested modification: "stays focused on TRANSITION TO A CLEANER, GREENER, MORE RESILIENT ECONOMY THAT MEETS the top priorities and needs of Manitobans..." [CAPS ADDED]
 - b. The fourth pillar, *it is dynamic*, is fine if it reaches beyond 2032 in its far horizon and links with national, international and scientifically supported goals. This reach is not explicit in the document but should be made so.
 - c. ADDED DESIRABLE ATTRIBUTE – *it is collaborative and responsible*, promoting national as well as local collaboration and assigning responsibilities to get things done.
 - d. ADDED DESIRABLE ATTRIBUTE – *it addresses economic vulnerabilities without subsidizing carbon pollution*. E.g. It uses rebates and supports rather than too low a price on fossil fuels. See Alberta's CRA-administered plan at <https://www.alberta.ca/climate-carbon-pricing.aspx>. The message should be: **Support households, not carbon emissions from imported fossil fuels.**

Strong Foundations



QUESTION 2:

Are these the right foundations?

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QUESTION 3:

How can we strengthen these foundations to our collective benefit?

4. Foundations strengths – the foundations ideally will promote a culture of informed climate responsibility and planning in which each citizen, business, institution and government asks, what can I (we) do proactively to become part of the solution. Example: Loblaws Senior VP Bob Chant - “We're committed to be part of the solution. We're not waiting to be told to do something” while announcing a corporate goal of zero carbon delivery systems and unveiling an electric semi truck. ECCC Minister McKenna commented, “We have a target [to reduce its greenhouse gas emissions by 30 per cent below 2005 levels by 2030]. It's not a target that the federal government has to meet. It's a target we all have to meet as a country and we're all part of it. The fact that Loblaws has stepped up... is a really great step. For everyone who is thinking about this, please do the same” (emphasis added) (<https://www.nationalobserver.com/2017/11/03/news/supersizing-electric-vehicles-loblaws-trucks-going-green>).
5. Foundations weaknesses – The multitude of topics and diffusion of responsibility risks loss of focus and urgency and absence of bold initiatives to achieve necessary targets. Although GHG mitigation is a responsibility of all and some climate leaders are stepping up, voluntary actions, by themselves, are not enough. Manitoba’s emissions in sectors like transportation and agriculture are going in the wrong direction. Although Manitobans care, other priorities guide daily actions and incentives still favour imported fossil fuels when there are no or low costs to the emitter despite great costs to climate change victims and governments. We need responsible, informed, effective agencies for strategic planning and deployment of enablers of change. “Responsible Agency” or “Responsibility” should be a fifth foundation, to be encouraged on all fronts and provided for structurally.
6. A knowledge foundation requires accuracy, not distortive political polemics, e.g. see Federal Plan vs. Manitoba Plan chart on p. 16. It’s as though the only federal document read was the benchmark and backstop, ignoring the *Vancouver Declaration* and *Pan Canadian Framework on Clean Growth and Climate Change*, ignoring conservation effects and impact mitigation from revenue recycling to net out household impacts, and missing out on the potential for collaborative national efforts such as

those listed in *PCF* for other jurisdictions that signed *PCF*. These points are elaborated in the attached document, "[Clearing the air on carbon pricing.](#)"

The Four Pillars

Climate, Jobs, Water and Nature

QUESTION 4:

Are these the right pillars to give focus to the Climate and Green Plan?

7. These are as good a way as any to organize the whole, while recognizing that pillars are not silos but must jointly (and interactively) support the edifice. Green Action Centre's comments focus primarily on the Climate Pillar. We look to other organizations and stakeholders for insights with respect to the other pillars.



Climate Pillar Tab

Clean Energy:

Cleaner, more efficient energy use can help Manitobans lower their carbon emissions, save money, and create a healthier environment. Building upon our investment in hydro electricity, reducing electricity and natural gas consumption, transitioning to green heat options, increasing the number of electric buses, and providing clean sources of energy to off-grid communities are all ways to reduce our carbon footprint.

Please share your comments on the initiatives being proposed under the clean energy keystone.

8. The Clean Energy keystone is absolutely fundamental to Manitoba's success. To capture the economics, the plan should underline that clean energy is Manitoba energy, whereas fossil energy is (largely) Alberta energy. A shift to clean energy is also a shift in investments from Alberta (supported by fossil fuel subsidies in production and consumption) to Manitoba. We support the clean energy initiatives.

The electrification of Winnipeg Transit is great news. We also point out, though, that Transit ridership is an issue and rising fares and decreasing frequencies do not help. Green Action Centre and other ENGOs try to act as a counterforce that promote transit and active transportation, but it

would help to have incentives aligned, particularly when vehicle owners and drivers never face a property tax, road tolls, or increased fuel tax to cover their extensive, expensive infrastructure requirements. These incremental costs are “free” unlike rising transit costs or dips in funding. This growing differential impact between transit users and drivers has happened for years, providing a profound perverse incentive to leave transit and drive!

Also worth consideration is a comparable promotion of electric vehicles using Manitoba Hydro’s Pay As You Save (PAYS) financing for the incremental cost of an EV purchase. This would be a win-win for Hydro and customers. Even at Hydro’s rising retail rates, electricity is much cheaper than gasoline as a fuel, and the additional sales at rising retail rates exceed what Hydro would earn from the same power if it were exported instead. Indeed, Hydro could afford an incentive such as a partial subsidization of loan interest to gain this benefit. Manitoba needs to update its Electric Vehicle Road Map (http://www.gov.mb.ca/jec/energy/pubs/elec_vehicle_road_map.pdf).

Carbon Pricing:

Manitoba has committed to introducing a carbon price to encourage emissions reductions. But carbon pricing is not a one-size-fits-all solution. Any carbon price in Manitoba must consider our unique environmental circumstances and economic realities.

Please share your comments on Manitoba's proposed carbon pricing design and carbon revenue recycling options.

9. The Carbon Pricing keystone is the most problematic and distorted, as documented in MCPC’s [“Joining the Future: Why Manitoba Should sign on to the Pan-Canadian Framework on Climate Change and its Carbon Price.”](#) (See the attached excerpt [“Clearing the air on carbon pricing”](#) and paragraph 6. above.)
10. Revenue recycling. We support the second principle, accounting transparency. But the first principle, unqualified spending on Manitoban priorities, invites diversion of resources away from fulfilling the vision, as noted in 3.a. above. E.g. Winnipeggers want their potholes fixed and many people want their taxes lowered, but these measures don’t get us to our vision. Carbon pricing revenues should not be a slush fund. Expenditure on green initiatives should be guided by criteria of effectiveness and cost-effectiveness in making a transition to a cleaner, greener, more resilient economy that is able to meet Manitobans’ needs and priorities. Unfortunately, the analysis of carbon pricing and impacts on Manitobans on pp. 16 and 17 focuses on isolated consumption impacts of various carbon prices and misses carbon pricing’s role as an engine of transformation to a cleaner economy by (a) creating a level playing field for cleaner alternatives, (b) providing reinvestment in green alternatives that enable Manitobans to reduce emissions and thus carbon price impacts, (c) signalling the real cost of fossil fuel use, and (d) direct levy mitigation on the principle: **Support households, not carbon emissions from imported fossil fuels** (3.d. above). It is not found money for other purposes.

Besides Alberta's model of household support (<https://www.alberta.ca/climate-carbon-pricing.aspx>), also consider green cost reduction for low-income households, such as subsidizing free or low-cost bus passes for qualifying persons and support for city or regional composting facilities on condition that cities and municipalities implement utility bill affordability measures for qualifying households. Winnipeg's organics diversion initiative was defeated because Winnipeg subsidizes garbage from property taxes but added a visible charge for diversion initiatives. The City failed to follow the 2011 Garbage and Recycling Management Plan's polluter pay principle of covering diversion in property taxes and charging for garbage collection on the utility bill. The latter should be based on a Pay As You Throw (PAYT) rate structure.

Green Action Centre is a long-time intervener before the Public Utilities Board reviewing rates, new development (at the NFAT hearing), and operations (<http://greenactioncentre.ca/?s=hydro>). We propose rate designs that promote both conservation and low-income bill affordability (<http://greenactioncentre.ca/?s=affordable>). It is important that any subsidies not be used to reduce the marginal cost per kWh used, as that undercuts conservation incentives. Subsidies can be applied to efficiency and GHG reduction measures or fuel-switching to geothermal or solar energy or to electric vehicles. Low-income affordable bill subsidies can be applied to the first block of an inclined rate structure. Subsidizing Hydro rates in general is a bad idea, but targeted measures such as the foregoing can be made available with prioritization to low-income, high energy burden customers to make their bills more affordable. Funding for such measures can come from Hydro's general revenues and, in future, from the incremental revenue flowing from Hydro to the province when Bipole III and Keeyask come online, as recommended in the NFAT report (p. 252, recommendation 12 at http://www.pubmanitoba.ca/v1/nfat/pdf/finalreport_pdp.pdf). Carbon-pricing revenues might be a backup for low-income programs until the additional Keeyask revenues flow, but generally Manitoba Hydro should be self-sufficient, including accommodating the needs of lower-income customers who struggle with their bills.

Sector Emissions Reductions:

Carbon pricing is a key component to addressing climate change, but carbon pricing coverage and costs would have to be set much higher than what is currently being discussed to achieve the level of emissions reductions required to meet all our climate ambitions. To help bridge the gap and drive additional emissions reductions, the Manitoba government is proposing complementary climate measures in targeted economic sectors. Examples include transportation, waste and agriculture.

Please share your comments on the initiatives being proposed under the sector emissions reductions keystone.

11. Sector Emission Reductions. Manitoba is on the cusp of a green transition and needs engines of transformation to get us over the top. See Part IV of "[Joining the Future](#)" also separately attached as "[Green Energy Futures](#)" for further elaboration.

12. Transportation emissions.

- a. Vehicle efficiency and cleaner fuels are important instances where interjurisdictional cooperation can be especially beneficial. The proposed biofuels initiatives may help reduce net emissions from legacy internal combustion engines, but at the same time the province needs to prepare the way for Manitobans to embrace and ramp up adoption of electric vehicles.
- b. Note that in Manitoba, transportation is heavily subsidized. Manitoba has the lowest combined fuel taxes in Canada. The 14 cents/litre provincial fuel excise tax falls short of paying for our road infrastructure, so subsidies from other revenue sources like the provincial sales tax and municipal property taxes are required. In addition, no additional provincial sales tax is collected from the sale of fuel, so this area of commerce makes no contribution to the funding of government, education, health or policing, unlike other consumer purchases. And damaging emissions are freely sent into the atmosphere. Manitoba's plan is to tax them below their social cost. Manitoba should consider complementary ecofiscal measures to the carbon tax supported by user pay and polluter pay principles.
- c. **Long-haul trucking:** Trucking is both a major source of emissions growth and a core component of the economy. Diesel fuel is a third of the industry's costs. A carbon tax will have a cost impact on the industry and, if passed through, on the goods they deliver. **Solution:** The Manitoba Trucking Association (MTA) offered a solution in 2015 well before the federal benchmark price. MTA proposed a 3.5% carbon tax on diesel to subsidize efficiency retrofits on trucks for an estimated 22% fuel- (and thus emission-) savings¹. Truckers would benefit from lower fuel costs and become more competitive while lowering GHGs – a win/win solution. Even at the backstop 2022 price of \$50/tonne (or 13.69 cents/litre), this is still a win for truckers². By 2022, new technologies will permit even greater savings.
- d. **The future of trucking:** Increased efficiency through truck retrofits and improved logistics are best practices for trucking firms. But more is needed. Emterra, Winnipeg's waste and recycling collector for the past five years, fueled its garbage trucks with compressed natural gas, which produces significantly lower emissions than diesel. Many courier and delivery trucks operating in Manitoba are owned by international firms like Pepsico or DHL that employ electric and CNG trucks in other jurisdictions³. Why aren't more truckers in the Capital Region doing likewise? Could a higher carbon price or provision of fueling and charging stations tip the balance? Recent Tesla and Loblaws announcements indicate that electric trucks may soon be mainstream⁴.
- e. **Cities and urban commutersheds:** This is where most Manitobans live, most emissions are produced, and many solutions to climate change lie. By 2015, Vancouver had already met its 2020 target to make over 50% of trips by foot, bicycle, and public transit⁵. Manitoba needs to support and enhance sustainable transportation in the Capital Region, Brandon and Thompson, including transit, active transportation, and more efficient and low-emission delivery services.

¹ <http://www.mansea.org/s/Man-Trucking-Association-Pres.pptx>.

² If diesel is \$1/litre, the benchmark carbon price is ~14% or 4 times MTA's 3.5% proposal, but still permits a net cost saving of 8% in 2022 (and more in earlier years) using only today's efficiency technologies.

³ <https://www.greenbiz.com/article/pepsico-drivers-and-data-play-key-roles-fuel-efficiency> and <https://www.greenbiz.com/article/worlds-biggest-logistics-company-races-towards-net-zero-emissions>.

⁴ <https://www.trucks.com/2017/05/10/tesla-electric-truck-easy/>. <https://www.tesla.com/semi/>.

⁵ <http://vancouver.ca/green-vancouver/green-transportation.aspx>.

- f. **Ridesharing and carsharing:** GoManitoba⁶ is a province-wide online system to coordinate ridesharing. Peg City Car Co-op is a substitute for individual car ownership. Vehicles parked in the neighborhood are booked for members' use when needed. "Bike. Walk. Bus. And sometimes drive" is their slogan⁷. Sharing rides or cars can reduce costs and emissions.
- g. **Electrifying transportation:** This is a potential big winner for reducing Manitoba emissions and keeping in Manitoba a large portion of the \$2 to 3 billion we send to Alberta each year for fossil fuels⁸. Right now we are on the cusp of a revolution to electrify transportation and Manitoba is poised to participate. University of Manitoba Professor Nazim Cicek makes the case for converting Winnipeg Transit's fleet to electric buses over the next 12 years (a lifetime for a bus) to the economic benefit of Winnipeg Transit, New Flyer Industries and Manitoba Hydro as well as health benefits to Winnipeggers and the planet⁹. Note that Edmonton plans to buy only electric buses beginning in 2020¹⁰.

Professor Cicek also builds a persuasive case of mutual benefits all around for Manitoba to emulate Norway's rollout of electric vehicles, now composing 42% of car sales. Volvo will produce only all-electric or hybrid vehicles beginning in 2019 and other makers are rapidly ramping up EV production and number of models¹¹.

Carbon pricing adds to the benefits, accelerates the payback and enhances the uptake of electric vehicles leading to an earlier transition to a thriving, low-emission economy based on Manitoba's energy. Changing to electric buses does not necessarily lead to increased ridership; it is essential that environmental non-profits be engaged to continue the critical work they do educating and encouraging schools, business and the public to change behaviours and make sustainable choices.

13. Agriculture and land use.

- a. Manitoba's agricultural and forest lands and their use are important for climate action for at least five reasons – (1) agriculture is responsible for 30% of Manitoba's emissions arising from fuels, fertilizers, soils, and livestock and their manure. But also (2) agricultural and forest lands are able to sequester carbon from the atmosphere and (3) they both produce biofuel resources. In addition, (4) agricultural and forest lands both bear and contribute to climate impacts (e.g. frequencies of fire and flooding), (5) some of which can be mitigated by alternative land-use practices. Research, planning and implementation must address all five.

It is encouraging to see the attention Manitoba is directing to ecological services, including water and nutrient management and carbon sequestration, but it is not clear what additional emission-reduction strategies are being proposed. The plan does mention a variety of biofuels, either from energy crops or agricultural waste. For example, Manitoba biofuels can replace

⁶ <https://www.gomanitoba.ca/>.

⁷ <https://pegcitycarcoop.ca/>.

⁸ http://www.gov.mb.ca/jec/energy/pubs/energy_strategy_2012.pdf. p. 7.

⁹ <https://www.winnipegfreepress.com/opinion/analysis/twelve-years-to-transform-transit-441358583.html>.

¹⁰ <http://www.cbc.ca/news/canada/edmonton/edmonton-transit-bus-electric-diesel-robar-1.4276453>.

¹¹ <https://www.winnipegfreepress.com/opinion/analysis/electric-cars-are-manitobas-road-forward-442077243.html>, <https://www.winnipegfreepress.com/business/renault-nissan-promises-12-new-electric-vehicles-by-2022-444600233.html>, and <https://www.winnipegfreepress.com/business/leading-the-charge-444767343.html>.

Alberta propane or natural gas used in space heating for homes, barns and greenhouses and for grain drying using made-in-Manitoba equipment¹² and fuel. Manitoba has more than 5 biomass heating system manufacturers and more than 10 commercial biomass suppliers (although many farms have their own biomass supply)¹³.

- b. Biogas from anaerobic digestion of manure is another potential substitute. As a subsidized fossil fuel (no carbon pricing + other subsidies¹⁴), natural gas is currently so cheap that the economics of biofuel substitution is marginal. That can change with adequate carbon pricing, not only by raising the price of natural gas to reflect true cost but also by creating a revenue stream for reinvestment in greener alternatives. Note that this two-sided dynamic for agricultural solutions is ignored in *Manitoba's Response* (pp. 6-7), which uses the example of agricultural emissions as a reason NOT to assess a higher carbon tax, forgetting the reinvestment potential for green alternatives and relying instead on precarious matched federal dollars for such agricultural investments. This is the traditional "governments (i.e. taxpayers) pay" model rather than a more sustainable and equitable "polluter pays" model represented by carbon pricing.

14. Heating buildings and managing waste.

- a. The next largest source of Manitoba emissions is standing combustion at 20%, most of which is for space heating by natural gas or other fossil fuels. A high-efficiency gas furnace heating a well-insulated, well-sealed home is about as emission-efficient as fossil fuel usage can get. Hopefully Efficiency Manitoba can get all of Manitoba's buildings to that standard and building codes can ensure that all new builds meet net-zero-ready standards. But what about the residual amounts of gas used?
- b. FortisBC sells a premium product, renewable natural gas, made possible by BC's carbon tax and customer premiums. The supply comes from landfills, sewage treatment facilities and livestock operations, all of which produce methane from anaerobic decomposition of organic matter¹⁵. This in turn must be purified¹⁶ and then injected into FortisBC's gas mains. For a premium on the gas bill, customers can claim credit for the supply of this non-fossil gas. Note that customers receive an offsetting reduction in BC's carbon tax for this supply. Residential and commercial customers wishing to reduce their carbon footprint use this program, which provides a cost-effective way of reducing BC's methane emissions from waste.

FortisBC's renewable natural gas provides another example of the carbon pricing dynamic at work on both the tax and reinvestment side. Back home, Brady landfill and various livestock operations could be prime candidates for similar treatment. Note that, with the reinstatement of carbon tax increases over the next several years in BC, FortisBC is once again looking for new renewable natural gas suppliers. Let's not underprice Manitoba's GHG emissions and forego the prospect of this kind of solution for both agricultural and waste emissions. If we do underprice,

¹² <http://greenairheat.com/>.

¹³ <http://www.mansea.org/s/Agriculture-and-Renewable-Energy-Domitruk.pptx>.

¹⁴ <http://www.cbc.ca/news/politics/auditor-general-spring-report-1.4116346>

¹⁵ <https://fortisbc.com/NaturalGas/RenewableNaturalGas/>. See also <https://www.winnipegfreepress.com/opinion/analysis/household-waste-can-heat-our-homes-449176063.html>.

¹⁶ <https://www.airliquideadvancedseparations.com/biogas-campaign>.

we will also lose the Manitoba reinvestments to make it happen and spend our money instead on continuing to import fossil natural gas from Alberta.

Beyond the examples from FortisBC, we can look at a larger biogas facility in Sweden¹⁷. Manitoba needs to research the natural gas displacement potential from waste and gasification projects, which have the merit of utilizing the otherwise stranded assets of the gas distribution system in a low-carbon world.

- c. Green Action Centre also supports the organics waste reduction measures outlined on p. 21 and other initiatives in this section.
- d. A final example of what can be done with buildings is the University of Winnipeg, which is working towards zero emissions by 2035¹⁸. Remarkably, in 2015, U of W had already managed to reduce its emissions by 32% since 1990 while growing its space by 38%. They have made the economics work this far even in a subsidized fossil fuel environment in which emissions are free. But to go the final distance they need a level playing field with carbon pricing and reinvestment in renewable alternatives.

15. Conclusions.

What lessons can we draw from the foregoing discussion and examples?

- a. Transition to a much lower-emission economy is not only possible but tangible – Manitobans and others provide examples of how it is done.
- b. The replacement of fossil fuels with Manitoba renewable energy from solar, wind and hydro-electric power, waste, local biomass and geothermal also replaces the export of dollars to Alberta with new investments in Manitoba's economy.
- c. But there is a thumb on the scale in favor of GHG emitting fossil fuels that produce huge social costs without the emitter facing any immediate cost consequences.
- d. Putting a price on carbon removes that thumb and supports investment in cleaner alternatives. This provides an additional economic dynamic to enable other households, enterprises and organizations to follow the green economy leaders, thereby creating new markets, greener jobs, and market incentives for further green innovation.
- e. But the transition will not be instantaneous. This is not magic. There is not sufficient capital, resources or capacity to change or replace all existing vehicles, buildings, infrastructure and processes immediately. Many alternatives will still be cost-prohibitive until prices come down. So a carbon price will continue to be paid for covered emissions that we cannot see a way to avoid (at present). That payment is entirely appropriate to reflect the real cost of those emissions even if "suitable energy alternatives are not readily available" YET! (*MR* p. 5).
- f. A carbon price does not operate in a vacuum. Nor is it a punishment or a useless cost. Rather a carbon price levels the playing field for the next innovator or entrepreneur wanting to bring cleaner tech to market. And carbon price payments create resources to protect the vulnerable and invest in change. They also signal a social cost of our activities and the need for all of us to look for solutions in our own sphere of action.

¹⁷ https://gobigas.goteborgenergi.se/English_version/Start.

¹⁸ <https://www.winnipegfreepress.com/opinion/analysis/economic-investments-drive-carbon-tax-benefits-437310903.html>.

- g. Finally, a carbon price works best in a culture of climate responsibility with a variety of talents brought to bear, such as:
- i. Leadership that recognizes a problem and sets a course to create solutions. For example, BC's Premier Gordon Campbell led when he initiated BC's carbon tax in 2008 and showed the world that the economy could thrive while emissions go down.
 - ii. Entrepreneurship that is capable of producing and bringing to market goods and services like the designers and fabricators of biomass heat equipment in rural Manitoba.
 - iii. Sustainability officers and corporate and institutional leaders, like Alana Lajoie-O'Malley and President Trimbee at University of Winnipeg, who are able to drive institutional commitments, culture and achievements. Loblaws' commitment to a zero-emission delivery system is an example of corporate leadership.
 - iv. Research and analytical talents like the folks at Prairie Climate Centre and the Ecofiscal Commission, who can diagnose problems and propose and evaluate solutions.
 - v. Conscientious citizens looking for viable means to lower their carbon footprint and ready to adopt them when they become available.

Adaptation:

Climate change is a threat to Manitoba's economy, environment, and communities. Weather events such as flooding and extreme heat are forecasted to increase in both intensity and frequency. Investing in research centres and Indigenous knowledge to develop climate resilient communities and sustainable agricultural practises will allow Manitoba to adapt to climate change.

Please share your comments on the initiatives being proposed under the adaptation keystone.

16. Green Action Centre supports the proposed initiatives to manage flooding, water retention, water quality, nutrients and biodiversity on the landscape in agro-Manitoba. We also support the research and planning and preparedness proposed. One additional program that can be added to the adaptation and resilience mix is firesmart planning for forested regions. See <http://www.gov.mb.ca/wildfire/firesmart.html>.



Jobs Pillar Tab

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17. Green Action Centre supports the many initiatives proposed under the jobs pillar and adds a few additional comments.

Innovation and Cleantech:

Every sector benefits from more efficient use of resources and can be part of the transition to a low-carbon economy. Manitoba has great potential to build on its ability to innovate, adapt and thrive under changing circumstances.

Please share your comments on the initiatives being proposed under the Innovation and Cleantech keystone.

18. The most important actions to encourage the deployment of cleantech in Manitoba are to level the playing field and create demand for cleantech innovations. An anticipated steady rise in carbon pricing could produce that result. In the absence of a growing carbon price, strategic deployment of recycled revenues towards green innovation, development and marketing can help. Green procurement policies for government and public institutions and the encouragement of businesses to develop green supply chains and promote green products to consumers can all contribute to innovation and market development for green goods and services.

Financing and Investment:

Reducing green tape and making it easier for small and medium-sized enterprises to access financing will encourage new ideas, local business growth and success in export markets.

Please share your comments on the initiatives being proposed under the Financing and Investment keystone.

19. Financing for major green consumer purchases, especially EVs, may be more cost-effective than large grants. Carbon tax revenues or PowerSmart can finance the EV purchase premium over ICE vehicles on a pay as you save (PAYS) basis and subsidize the interest rate, if needed, to increase the incentive. Both EV customers and Manitoba Hydro come out ahead if customers can fuel their vehicles with electricity sold at retail rates, which cost the consumer a fraction of the cost of gasoline but also exceed the income Hydro would otherwise receive if the power was sold as wholesale opportunity sales to the US. Reduced vehicle maintenance costs are another substantial bonus for EV purchasers.

Skills and Training:

New technologies and processes require an evolving set of new knowledge and skills. We can build upon the strong training and educational opportunities that exist throughout the province.

Please share your comments on the initiatives being proposed under the Skills and Training keystone.

20. As above, the most important actions are to level the playing field and create demand for cleantech innovations and deployment and thus demand for jobs with appropriate skills. Suitable training programs can then help meet the jobs demand, including upskilling brown jobs workers as industry greens, e.g. auto-repair technicians.

Green Infrastructure:

When nature is used as part of infrastructure, it's called green infrastructure. Communities are rediscovering nature's ability to protect us from severe weather events and improve the general environmental health of our surroundings. We can benefit from the power of natural processes to become more resilient and prepared for changes.

Please share your comments on the initiatives being proposed under the Green Infrastructure keystone.

21. Another meaning of green infrastructure is that which enables green behaviour. Think of greener and more resilient ways of living and working and then identify the infrastructure that will facilitate the change. Examples: regional electric transit infrastructure such as superchargers at route ends or core (e.g. Balmoral Station or, in future, Union Station); required provision for charging vehicles in new buildings; complete (and maintain) protected bikeways to all parts of major urban centres and along provincial highways; and district heating. Regional composting facilities will enable the diversion of organic waste, recovery of nutrient-rich soil amendments, and potential recovery of biogas with anaerobic digestion facilities.



Water Pillar Tab

We look to other organizations to determine the best decisions to be made for Manitoba's water and the various keystones found within this pillar.



Nature Pillar Tab

We look to other organizations to determine the best decisions to be made for Manitoba's nature and the various keystones found within this pillar.

Implementation



Expert Advisory Commission:

22. We appreciate the intent of the Implementation section to build in effective means for plan deployment. For this we can learn from Manitoba's greatest climate success, Manitoba Hydro, which requires very long-range strategic planning and investments, as dictated by its mandate "to provide for the continuance of a supply of power adequate for the needs of the province."
23. Now substitute the near and long-terms needs of the climate, as articulated at Paris and in scientific analysis. Directionally this means getting as close as possible to zero net emissions in every sector, especially the most polluting, as fast as possible and in addition sequester as much as possible. See Curt Hull's "[Building Climate Resilience in Manitoba](#)." The 50 by '30 group has summarized the available strategies as **RED**, i.e. increase the proportion of energy from **R**enewables, increase **E**fficiency and reduce **D**emand in all sectors, to which we can add **S**equestration = **REDS**. A question for research and debate is whether urgent timelines still have room for natural gas as a **B**ridge fuel, in which case the formula becomes **BREDS**. (E.g. Emterra lowered its footprint collecting Winnipeg waste and recycling using CNG trucks over the last 5 years, but recent accelerated development of electric vehicles may bypass that technology in the future.)
24. For both power and climate needs, many technical elements are involved, not just hunches by lay people or even experts sitting around a table. It requires data gathering, analysis, modelling, backcasting, and economic analysis leading to the identification and characterization of potential pathways to meet power and climate needs. It also requires evaluation of alternatives for effectiveness, cost-effectiveness and multiple societal benefits and then the selection of preferred pathways as reviewed at the PUB's NFAT process on Hydro's development plans. It then requires taking actions and assigning resources and responsibilities along the way to make it happen.
25. This capacity for analysis, strategic planning, modeling, commitment of resources and otherwise clearing and building the path to meet critical energy and climate needs must be provided in support of the Expert Advisory Commission and Sector and Community working groups. A related capacity is the ability to participate meaningfully in national technical groups.
26. We offer the following examples of the required kind of strategic planning and measures from the Pembina Institute.

- a. The Pembina Institute has produced a research- and consultation-based report on *Deep Emissions Reduction in the Existing Building Stock: Key elements of a retrofit strategy for B.C.* at <http://www.pembina.org/pub/building-retrofits>. This strategy is to complement a net-zero-ready standard for new homes www.pembina.org/pub/the-path-to-net-zero-energy-buildings-in-bc. It provides a model for strategic planning in the building sector. They have also recommended a federal strategy at <http://www.pembina.org/pub/federal-buildings-blueprint>.
 - b. The Pembina Institute also made a submission to the ECCC consultation on a new Clean Fuel Standard (CFS) at <https://www.pembina.org/reports/pembina-institute-submission-eccc-clean-fuel-standard-discussion-paper-april-25-2017.pdf>.
 - c. Manitoba should (1) keep abreast of and participate in efforts to develop national standards and pathways to decarbonization in the building and transportation sectors and in the North and (2) develop provincial standards and pathways for buildings, transportation and other sectors.
27. The Expert Advisory Commission is supposed to embody needed expertise with some independence to review progress, assist with implementation, and give advice on next steps. Here are some observations. There are numerous potential threats to the effective functioning of this commission.
- a. If it includes experts and stakeholders representative of “business, environment, sectors, indigenous and other communities, and academe,” it is likely to be extremely large, with very different types and levels of expertise, and potentially unwieldy. If the membership is largely volunteer, the meeting frequency may be insufficient to accomplish its complex mandate.
 - b. There is no mention of supporting leadership, facilitation, research resources, or internal structures (e.g. separate committees or working groups), which might make the operations of such a group more effective.
 - c. The Commission will oversee an extremely broad range of initiatives, represented by the 16 keystones and other parts of the plan. As indicated in paragraph 5, the plan’s comprehensiveness must be complemented by focus and assigned responsibilities for it to be effective. This observation applies to the Commission itself.
28. Here are some potential remedies for the above risks.
- a. Provision for effective leadership, facilitation and research services. NRTEE provides a model for how such a group might function. A strong CEO who knows the job to be done and who can create an appropriate workplan, marshal resources, facilitate meetings of appointed volunteers, and liaise with government and others may be essential for this group to be effective. Some supporting research may be available within government, but commissioned independent research is likely necessary to identify and analyse alternative means for reaching targets and evaluating their feasibility, effectiveness and cost. See above.
 - b. Effective focus may also require several supported working groups. As noted earlier, the expertise of a wildlife manager and climate or energy expert may be quite diverse. With staff, the Commission should early identify functional working groups, with the understanding that they will report back to the whole Commission and that WG memberships and support staff may overlap to provide liaison. Here are a couple of examples for a division of labour.
 - i. By pillars and keystones: Water and Nature Pillars overseen by conservationists and resource users. Climate and Jobs Pillars overseen by climate, energy, buildings and transportation concerns.

- ii. By emission sectors: Sustainable transportation; sustainable buildings; sustainable landscapes and resource use, including bio-energy, non-energy emissions and sequestration (covering forests, agriculture and organic waste).
- c. The Commission has a role working with sectoral and community organizations to ground-truth plans and bring to bear strategic planning resources as described earlier. This will require additional resources.
 - d. Finally, the cumulative emission standard means that time wasted is costly to our carbon savings account. Rather than treating each keystone with equal attention, an early triage and prioritization is needed, based on such factors as size of sectoral emissions, readiness to act and potential for change. Two examples follow.
 - i. By the above criteria, trucking should be near the head of the line. Manitoba Trucking Association (MTA) has developed a phased GrEEEner trucking initiative and proposed a trucking + ENGO + academic Council to review opportunities first for efficiency measures but also prospective technological shifts. CNG has already been demonstrated in Winnipeg by Emterra and a number of courier fleets are run by national and international firms with strong sustainability commitments, who have implemented alternative vehicles in other locations. An increasing array of electric trucks are coming on market. There is a potential for immediate and longer-term wins in a sector that is a major contributor to MB emissions.
 - ii. Both Winnipeg and the Partnership of the Manitoba Capital Region have engaged and continue to engage in planning exercises regarding transportation, waste and recycling (including organics), and climate. It would be timely for the Expert Advisory Commission to bring together and join these exercises with the potential to recommend carbon tax revenues to resource effective regional solutions in the Capital Region.

Carbon Savings Account:

29. The Carbon Savings Account could be a useful innovation. Here are some observations.
- a. Cumulative emissions (not just emissions in a target year) are important because the global temperature limits of 2⁰ or 1.5⁰ are directly related to a limit on global cumulative emissions, with increasing risk as cumulative emissions rise. This has led to various calculations of a global atmospheric carbon budget. See <http://www.globalcarbonproject.org/carbonbudget/> and <http://www.wri.org/resources/data-visualizations/infographic-global-carbon-budget>.
 - b. One implication is that emission levels should be reduced sooner rather than later to reduce the accumulation. A rapid decrease at the beginning produces much fewer cumulative emissions than a rapid decrease at the end, even if both reach the same level of emissions by 2030. Foot-dragging undermines cumulative emissions reductions.
 - c. One complication of using BAU rather than a fixed date like 2005 as a baseline for calculation is that BAU should be periodically updated in light of more recent experience, technologies and policies. Thus, say, in 2022 a new projection of BAU might be appropriate, in which case cumulative emissions would be computed from a different baseline.

- d. Between 2005 and 2015, Manitoba's emissions were almost flat. The BAU projection, however, escalates. Pathway 1 preserves the flat trajectory, with reductions roughly equal to BAU increases.
- e. Only pathway 5 reaches Manitoba's proportionate share of the 2030 national target for reductions, but with higher cumulative emissions than a straight-line reduction would produce.
- f. The projected 5-year emission reductions on p. 55 are only 45% of the required reductions for pathway 5. This deficit will be added to the next 5-year period.
- g. Note: MCPC and Green Action Centre member Harvey Stevens has prepared "An Analysis of Manitoba's Approach to Calculating GHG Reductions," which makes many of the above points. He is currently reviewing his calculations with the Climate Change and Air Quality Branch.
- h. Accordingly, Manitoba needs more ambitious measures to achieve its proportionate share of Canada's 2030 target. Further suggestions are contained in Harvey Stevens' brief, which lists 7,200 kt. of potential reductions, and in the attached "Green Energy Futures."

Sectors and Communities:

- 30. As noted in paragraph 4., a strength of the plan is its recognition that sustainability requires community participation and support. This in turn requires an informed culture of climate and green responsibility, which is what we encourage as sustainability educators. We are pleased to note that the plan recognizes that non-profits like Green Action Centre "are an important and cost-effective resource that we can utilize more as part of this Climate and Green Plan. This plan envisages doing just that" (50).
- 31. See also our observations under 28.d. about building upon existing efforts to develop sectoral or community work plans fast.

Measuring Results:

- 32. We have the following observations on Measuring Results and indicators.
 - a. Manitoba's vision to be Canada's cleanest, greenest and most climate resilient province requires a selection of representative indicators for clean, green and resilient outcomes, not only in Manitoba, but in all provinces to track our comparative position. Two examples are tonnes of CO₂e per \$1 billion GDP and per 1000 people as metrics for GHG intensity. See the attached Appendix for current comparisons.
 - b. The set of indicators chosen should reflect the multiple functions that indicators serve. [A recent UNEP publication](#) describes the role of indicators for government policymakers in (a) issue identification, including worrying trends, causes and impacts; (b) policy formulation, including desired outcomes and policy objectives, and intervention options with output indicators; (c) policy impact assessment; and (d) policy monitoring and evaluation.
 - c. In addition, since sustainability is a whole society responsibility, indicators should assist citizens, organizations and community leaders, as well as governments, to assess conditions and act to improve them. See [the 62 PEG indicators](#) for Winnipeg and their interactive format with 8 themes as an example of how a larger set of indicators can be made comprehensible.

- d. Indicators should be both aggregated (e.g. total MB emissions) and disaggregated (e.g. building emissions, which can be further disaggregated by building type, vintage, etc.) to show the condition of the whole and parts.
 - e. Indicators should reflect both desired ends (outcomes) and drivers or means to those outcomes that can be affected by programs and policies (outputs). For example, the desired outcome of lower emissions from transportation is affected by factors like the GHG intensity of fuels, average vehicle efficiency by type, number of vehicles by type, and average kilometres driven. Policies can be devised to affect any of these. An analysis of disaggregated outcomes and their drivers is diagnostically important for developing policy options and tracking their outputs as well as the desirable outcomes they are intended ultimately to affect.
 - f. While formal public reporting may select a smaller number of high-level aggregated desired outcomes, an accessible database of more disaggregated and causal indicators should be maintained for detailed analytical and management purposes
 - g. Additional observations and detail are available in a Green Action Centre paper on Green Economy Indicators at <http://greenactioncentre.ca/wp-content/uploads/2015/02/Green-Action-Centre-on-Green-Economy-Indicators-FINAL.pdf>.
33. In the Appendix that follows, we show how Manitoba compares with other provinces in emissions and electricity rates. This information should be available at the outset, say in the next draft of the plan, so that Manitobans are aware how Manitoba is currently positioned as it strives to become the cleanest, greenest and most climate resilient province in Canada.

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Appendix – Comparing Manitoba with other provinces

GHG EMISSIONS AND CHANGE BY PROVINCE (ktCO₂ eq.)

PROVINCE	1990	2005	2015	% CHANGE 1990- 2015	Rank 1990-2015 (1=most reduction)	% CHANGE 2005-2015	Rank 2005-2015 (1=most reduction)
NF	9,510	10,100	10,300	8.31%	6	1.94%	8
PE	1,950	2,060	1,770	-9.23%	4	-16.38%	4
NS	19,800	23,200	16,200	-18.18%	1	-43.21%	2
NB	16,300	20,300	14,100	-13.50%	2	-43.97%	1
QC	89,000	88,900	80,100	-10.00%	3	-10.99%	5
ON	181,000	204,000	166,000	-8.29%	5	-22.89%	3
MB	18,600	20,600	20,800	11.83%	7	0.96%	7
SK	45,200	69,500	75,000	65.93%	10	7.33%	9
AB	175,000	233,000	274,000	56.57%	9	14.96%	10
BC	51,900	63,900	60,900	17.34%	8	-4.93%	6
CANADA	608,260	735,560	719,170	18.23%		-2.28%	

Source: Environment and Climate Change Canada, National Inventory Report. 1990-2015. Part 3

GHG ROAD TRANSPORT EMISSIONS AND CHANGE BY PROVINCE (ktCO₂ eq.)

PROVINCE	1990	2015	% CHANGE 1990- 2015	Rank 1990-2015 (1=least increase)
NF	389	2,110	442.42%	10
PE	307	602	96.09%	6
NS	3,590	3,760	4.74%	2
NB	3,210	3,240	0.93%	1
QC	19,700	26,800	36.04%	3
ON	34,400	48,300	40.41%	4
MB	2,550	5,090	99.61%	7
SK	3,410	8,510	149.56%	9
AB	12,500	26,500	112.00%	8
BC	11,700	18,200	55.56%	5
CANADA	92,000	144,000	56.52%	

GHG AGRICULTURE EMISSIONS AND CHANGE BY PROVINCE (ktCO₂ eq.)

PROVINCE	1990	2015	% CHANGE 1990- 2015	Rank 1990-2015 (1=least increase)
NF	51	91	78.43%	10
PE	400	360	-10.00%	3
NS	540	460	-14.81%	1
NB	520	520	0.00%	4
QC	7,600	8,000	5.26%	6
ON	11,000	9,700	-11.82%	2
MB	4,800	6,500	35.42%	8
SK	7,800	13,000	66.67%	9
AB	14,000	18,000	28.57%	7
BC	2,300	2,300	0.00%	4
CANADA	49,000	59,000	20.41%	

GHG INTENSITY MEASURES BY PROVINCE – 2015

PROVINCE	TOT. GHGs (ktCO ₂ eq.)	TOT. POP. (000'S)	REAL GDP (\$Billions)	GHGs per 1000 POP.	Rank Order (lowest=1)	GHGs per \$BGDP	Rank Order (Lowest=1)
NFL	10,300	528.7	\$20.9	19.5	8	492.9	7
PEI	1,770	146.7	\$5.4	12.1	3	330.5	4
NS	16,200	943.4	\$37.9	17.2	6	427.3	6
NB	14,100	754.3	\$28.5	18.7	7	494.0	8
QC	80,100	8,259.5	\$283.0	9.7	1	283.0	1
ON	166,000	13,797.0	\$526.4	12.0	2	315.4	2
MB	20,800	1,296.0	\$48.8	16.0	5	426.6	5
SK	75,000	1,132.3	\$43.3	66.2	10	1,734.1	10
AB	274,000	4,179.7	\$177.7	65.6	9	1,542.2	9
BC	60,900	4,693.0	\$188.3	13.0	4	323.4	3
CANADA	722,000	35,848.6	\$1,368.5	20.1		527.6	

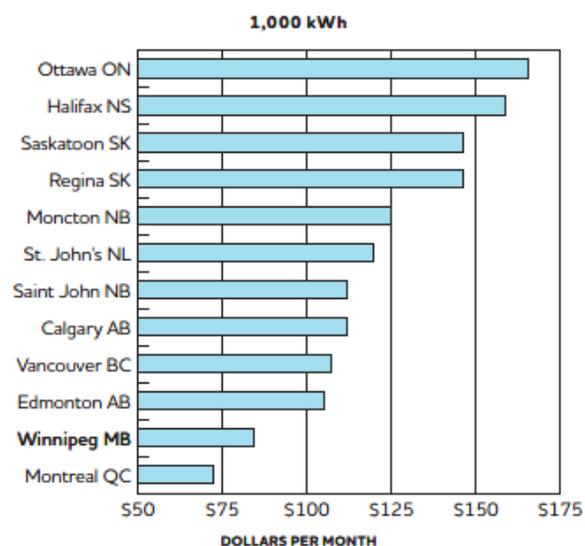
Sources: 2017 National Inventory Report, Part 3; CANSIM Tables 51-0001 & 384-0038

Comparison of one-month residential electricity bills for 1,000 kWh across Canada
May 2016.¹⁹

Residential

One Month Bill For:

	1,000 kWh	c/kWh
Ottawa ON	\$ 165.37	16.537
Halifax NS	\$ 158.83	15.883
Saskatoon SK	\$ 146.49	14.649
Regina SK	\$ 146.45	14.645
Moncton NB	\$ 124.98	12.498
St. John's NL	\$ 119.64	11.964
Saint John NB	\$ 111.71	11.171
Calgary AB	\$ 111.70	11.170
Vancouver BC	\$ 107.03	10.703
Edmonton AB	\$ 105.08	10.508
Winnipeg MB	\$ 84.29	8.429
Montreal QC	\$ 72.26	7.226



¹⁹ https://www.hydro.mb.ca/regulatory_affairs/pdf/electric/general_rate_application_2017/09.13_appendix_9.13_survey_canadian_electricity_bills_may_2016.pdf.

III. Does Manitoba make its case for exemption from the federal carbon pollution pricing Benchmark?

Manitoba's Response to the Proposed Federal Benchmark and Backstop for Carbon Pricing shares common ground, through the *Vancouver Declaration*, with other Canadian jurisdictions but balks at accepting the federal benchmark for pricing carbon pollution, which is embedded in the *Pan-Canadian Framework on Clean Growth and Climate Change*. How sound are its reasons? In this section we review Manitoba's claims.

1. Is Manitoba "Canada's greenest province" as claimed by the Premier last December?¹

One green metric is the percentage of GHG emissions decrease since the base years 1990 and 2005. Five provinces have decreased their emissions since 1990 and six since 2005. Manitoba is 7th lowest (4th highest) for each time period, increasing in both cases.

Another metric for climate performance is emissions intensity. How does Manitoba compare with other provinces in tonnes of CO₂e per person and per dollar of GDP?

By intensity measures, Manitoba is barely in the top half of the provinces at 5th lowest in GHG intensity for both population and GDP, i.e. 4 provinces are lower and 5 are higher. Of course, fossil dependent Saskatchewan and Alberta have much higher emissions per person and per dollar of GDP - four times higher. Next to those two, everyone else looks good. On the other hand, Canada's per person emissions are over three times global per person emissions.²

Measured by emissions performance, Manitoba is far from being "Canada's greenest province." It is rather in the middle of the pack and has a long way to go to go to catch up with Quebec, which is in first place. Quebec has only 3/5 of Manitoba's emissions per person and 2/3 of Manitoba's emissions per billion dollars of GDP.³

2. Would it have been a "less costly option to burn fossil fuels for electricity generation" as claimed in *Manitoba's Response (MR)*?

MR - In Manitoba, 98% of our electricity is generated from clean, renewable hydro. If Manitoba had chosen instead the less costly option to burn fossil fuels for electricity

¹ <http://news.gov.mb.ca/news/index.html?item=40132&posted=2016-12-09>.

² <https://data.worldbank.org/indicator/EN.ATM.CO2E.PC>.

³ See tables in the Appendix for inter-provincial comparative data.

generation, our overall carbon emissions would be double current levels from 21 megatonnes per year to about 42 megatonnes. This is an important consideration that needs to be recognized; because it has already come at a significant cost to Manitoba taxpayers and ratepayers.

MCPC Comment

The statement above reflects a fundamental misunderstanding of energy economics. The cost of electricity is the rates customers pay, which must be high enough to cover interest and depreciation on capital investments plus operating costs plus fuel costs. Hydroelectricity has high upfront capital costs from the construction of dams, but very low fuel costs (a small water rental fee paid to the Province). A gas turbine has a lower initial capital cost but higher and more volatile fuel costs. Moreover, in the course of 100 years of generation by a dam, the gas turbine would have to be replaced two more times. It is thus incorrect to say that it would have been a “less costly option to burn fossil fuels for electricity” just because a gas turbine has a lower initial capital cost than a hydroelectric dam.

Alberta and Saskatchewan rates show the cost of fossil alternatives. Last year Manitoba Hydro compared electric bills across Canada.⁴ Only Quebec had lower rates than Manitoba. Edmonton residents paid 25% more; Calgary residents a third more; and Saskatchewan residents 73% more. Note that Alberta has yet to incur the costs of retiring coal generation early and creating gas and renewable substitutes (a \$25 billion investment⁵). Ontario has already undergone that conversion and Ottawa’s rates are nearly double Manitoba’s. It is true these rates do not reflect the ~50% rate increase in store for Manitoba over the next 5 to 10 years. But utilities on coal and gas will experience the cost of renewable conversions plus carbon pricing until then and on residual fossil fuels in their mix.

Manitoba invested in hydroelectricity long before the need to reduce GHG emissions was known for the sole purpose of producing inexpensive electricity. We have benefited from the lowest prices in North America for decades and will continue to benefit from relatively low rates for years to come despite a near term bump to accommodate new capital investments.⁶

Moreover, we shall soon enjoy an additional benefit. We won’t pay a carbon price on our clean electricity that we would otherwise pay if, under MR’s hypothetical scenario, our power came

⁴ https://www.hydro.mb.ca/regulatory_affairs/pdf/electric/general_rate_application_2017/09.13_appendix_9.13_survey_canadian_electricity_bills_may_2016.pdf. The Appendix excerpts residential rate comparisons.

⁵ <http://www.energy.alberta.ca/OurBusiness/electricity.asp>.

⁶ In speaking of Hydro benefits to most Manitobans, we acknowledge the historic and continuing impacts of altered waterways on the lives and livelihoods of a number of northern First Nation and Métis communities and the continued need for mitigation, compensation and reconciliation.

from gas or coal. That benefit will extend further as electricity displaces other fossil fuels, e.g. by electrifying transportation. Manitoba's clean power is a winner for the climate AND for our economy and a keystone of our ability to transition to the thriving low-emission economy envisaged in the [Vancouver Declaration](#).

3. Does a heavy investment in clean power differentiate Manitoba from other provinces?

As noted above, the size of an initial investment in clean power is only one component of electricity costs, which are better reflected in the rates customers pay. Manitoba still has, and will continue to have, among the lowest costs of power in North America.

Manitoba is not the only jurisdiction to have invested heavily in clean electricity production and the other jurisdictions that have done so are not claiming special treatment.

All jurisdictions have made investments in reducing GHG emissions but only Manitoba and Saskatchewan are objecting to the federal benchmark and backstop carbon pricing proposal. There is nothing unique and special that Manitoba has done that warrants it being treated differently than other provinces like B.C., Quebec and Ontario that also have invested large sums in clean energy production. Alberta's costs lie ahead. "Alberta will need up to \$25 billion of new investment in electricity generation by 2030 to support the transition toward cleaner sources of energy and meet the needs of electricity consumers" (Alberta Energy).⁷

4. Is there any reason not to give complete flexibility to provinces and territories to set their own carbon prices (or not) rather than create a federally imposed benchmark?

MR - Provinces and territories face unique challenges in addressing climate change, and each has invested considerable time and effort in refining approaches that reflect their respective circumstances. Without adequate flexibility and recognition of this fact, the federal 'benchmark' for carbon pricing will impede the efforts of jurisdictions to innovate and develop strategies that are efficient, effective and tailored. Imposing a federal 'backstop' carbon price without prior consideration for a more tailored approach is not the least-cost pathway to achieving emissions reductions in Manitoba.

MCPC Comment

'Adequate flexibility' is a code word for inter-provincial differences in the effective price of carbon resulting in the unfair and inconsistent application of a carbon pricing regime in Canada.

⁷ <http://www.energy.alberta.ca/OurBusiness/electricity.asp>

The *Working Group on Carbon Pricing Mechanisms Final Report*⁸ evaluates an option like the one Manitoba proposes, in which each jurisdiction commits to do its part in attaining Canada's target but is totally free to choose the means and prices. The *Final Report* concludes that the one benefit is the greater flexibility that Manitoba seeks, but at a cost in efficiency and added complexity for both the private and public sectors, less predictability, less revenue raised to address vulnerable groups, and negative impacts on both interprovincial and international competitiveness. For example, "To abide by international trade obligations, BTAs [Border Tax Adjustments] on imports would not be possible if one province or territory does not assign an explicit carbon price to a given good" (47).

5. What reasons are there for imposing a price on carbon pollution?

MR - It is acknowledged that putting a price of carbon pollution can be an effective, market-based way to reduce fossil-fuel emissions. As a policy instrument, it is relatively simple – increasing the price of fuel encourages consumers to reduce their usage and/or seek alternatives. But for certain businesses and families, particularly those working in regions or sectors that are exposed to international competition or where suitable energy alternatives are not readily available, a carbon price may just raise costs, jeopardizing business competitiveness here and outside the province. The Manitoba government understands this and is designing its policies to ensure that businesses remain competitive and workers remain employed.

MCPC Comment

The above rationale for a carbon price is true but incomplete. Here are others.⁹

- **Polluter pays/remove the fossil fuel subsidy.**

Economist Nicholas Stern noted, "Climate change is a result of the greatest market failure the world has seen. ... [T]hose who damage others by emitting greenhouse gases generally do not pay."¹⁰ Absence of a price on carbon pollution (or one below the social cost of

⁸ https://www.canada.ca/content/dam/eccc/migration/cc/content/6/4/7/64778dd5-e2d9-4930-be59-d6db7db5cbc0/wg_report_carbon-20pricing_e_v4.pdf.

⁹ https://www.canada.ca/en/environment-climate-change/news/2017/05/pricing_carbon_pollutionincanadahowitwillwork.html

¹⁰ Alison Benjamin (29 November 2007). "Stern: Climate change a 'market failure'". London: Guardian. Retrieved 29 October 2013.

carbon¹¹) is in effect a perverse subsidy for using fossil fuels. Emissions costly to victims and governments are made free to the emitter. A carbon price lowers that subsidy. “Axe the tax” really means “Keep the subsidy.” Instead our cry should be “Axe the subsidy!” or “Make polluters, not victims, pay!”

- **Level the field for innovation.**

Too low a carbon price (or no price) creates unfair competition with lower-emission alternatives (including efficiency and demand reduction) by not charging for social costs. This creates a headwind for the rollout of green innovation, such as electric vehicles, contrary to the green economy objective of the *Vancouver Declaration*. It continues dependence on fossil fuels by subsidizing the old economy, based on fossil fuel imports from Alberta, instead of the new, based on Manitoba clean energy. Ironically, Alberta offers a much stronger incentive to replace fossil fuels, with a \$20/tonne carbon levy this year and \$30/tonne in 2018, yielding \$5.4 billion over 3 years to reinvest in the new economy.¹²

- **Climate and social reinvestment.**

A carbon price, by itself, may have a small effect at first in some sectors (“just raise costs”). But if polluters pay, they generate revenue for alternatives that can make a difference in a variety of ways. Whatever is collected from carbon pricing is returned to the economy on some other basis than a fossil fuel subsidy.

- **GHG reduction.** If truckers are unable to reduce emissions themselves, the carbon price collected can be invested in sequestration practices by farmers for an indirect reduction.
- **Efficiency.** It can also be invested in the GrEEEner trucking initiative to increase efficiency, reduce emissions and promote competitiveness.
- **Green innovation.** Getting our transit system off diesel and onto electricity will require capital investments in charging infrastructure, for example. City and provincial budgets are strapped for cash but carbon revenue provides an investment pool for green infrastructure that will lower fuel and operating costs.
- **Rebates to families.** In the short run, as observed by *MR*, a carbon levy adds costs to families. Alberta provides an excellent example of how to alleviate household

¹¹ <http://ec.gc.ca/cc/default.asp?lang=En&n=BE705779-1#SCC-Sec8>. The 2022 Canada central tendency Social Cost of Carbon is estimated at ~\$47/tonne CO₂e in 2012 dollars or well over \$50/tonne in 2022 dollars. For further explanation, see <https://www.carbonbrief.org/qa-social-cost-carbon>.

¹² <https://www.alberta.ca/climate-carbon-pricing.aspx>

impacts without subsidizing fossil fuel consumption by providing an income-tested rebate.¹² Modifications are possible by, for example, increasing rebates for residents of remote communities.

6. Is “the proposed \$50 per tonne carbon price of the federal government ... too extreme for Manitoba’s circumstances”?

MR - The proposed \$50 per tonne carbon price of the federal government is too extreme for Manitoba’s circumstances. Every \$10 per tonne in carbon price would yield approximately \$100 million in revenue each year. At \$50 per tonne, that is about \$500 million. The average household impact of the federal \$50 per tonne carbon levy would be \$335 dollars in that year. Over the five-year period of the federal carbon pricing ‘backstop’ that would amount to over \$1000 paid by the average Manitoba household.

MCPC Comment

How can we assess the claim that the federal backstop price of \$10/tonne in 2018 rising to \$50/tonne in 2022 “is too extreme for Manitoba’s circumstances”?

First note that the calculated cost per household apparently assumes a total lack of success in enabling lower-emission household choices, contrary to the intent and design of a climate plan. It also appears to ignore ways in which households may be beneficiaries of recycled revenues as in the Alberta rebate plan. In the absence of an after-rebate net impact calculation, it appears that Manitoba’s strategy for lowering household impacts is to continue a partial fossil fuel subsidy by insisting on a lower carbon price than the benchmark.

This in turn raises questions about the plan’s sufficiency. Manitoba’s Response has no alternative analysis of how we can get to the targets subscribed to in the Vancouver Declaration at less than the backstop price.

We should distinguish earned from unearned carbon tax avoidance. Carbon pricing offers the prospect of earning a carbon tax reduction by reducing the taxed emissions. It thus distributes responsibility to all citizens and sectors of society to seek out opportunities to lower their emissions. At the same time, governments can explore the most effective ways to enable those opportunities through reinvestment of collected revenues. Businesses and institutions can join in that effort on behalf of their employees, customers, clients and the planet. And innovators and entrepreneurs can develop and market green goods and services that enable others to live and work with lower emissions. This creates an economic dynamic and culture of climate responsibility that drives the creation of a low-emission economy and society. On the other

hand, unearned carbon price avoidance (i.e. a carbon price that is too small or none at all) undermines this dynamic and favors fossil-fueled business as usual.

Manitoba has earned carbon price avoidance in the electricity sector. Now we need to work on transportation, agriculture, heating and waste (and diesel generation in off-grid communities).

According to the latest National Inventory Report, only 57 per cent of Manitoba's GHG emissions will be subject to the federal carbon levy. Emissions from agriculture, solid waste disposal and manufacturing will be exempt. This is the lowest coverage of all provinces. The national average coverage is 73 per cent of GHG emissions, with provinces like Alberta and Ontario facing 75 per cent or more and Nova Scotia and New Brunswick over 86 per cent.

7. Won't a carbon price destroy the competitiveness of Manitoba businesses?

While we need to consider potential competitive impacts of carbon pricing, the Ecofiscal Commission found that less than 5% of Manitoba business is emissions intensive and trade exposed, e.g. cement and fertilizer production.¹³ Alberta is far more trade exposed (20%) yet is co-operating fully with the federal plan. Under the federal benchmark and backstop, emissions-intensive industries will be protected by an output-based pricing system.¹⁴ For exports to the US or other countries without a carbon price, emissions intensive producers can receive a border tax credit for exported product to help offset carbon-pricing costs while lower emission alternatives are developed.

Most Manitoba manufacturers, on the other hand, powered by clean electricity at low prices, have a distinct competitive advantage in a growing green economy where suppliers are increasingly screened for their sustainability credentials.

¹³ <https://ecofiscal.ca/reports/provincial-carbon-pricing-competitiveness-pressures/>.

¹⁴ See <https://www.canada.ca/content/dam/eccc/documents/pdf/20170518-2-en.pdf> (17). An output-based pricing system minimizes competitiveness and carbon leakage risks while retaining the incentives to reduce emissions created by the carbon pricing signal. It does this by setting an emissions-intensity standard for each type of activity (e.g. production of 1 tonne of cement or 1 MWh of electricity). The carbon pollution price is then applied only to the portion of a covered source's emissions that exceed those allowed by the emissions-intensity standard for the type of activity. Facilities that emit less than the limit receive "surplus credits" from the Government of Canada that they can bank for future use or trade to another participant in the output-based pricing system. Facilities whose emissions exceed their limit must submit compliance units (surplus credits or offset credits) or pay the carbon price to make up the difference. Thus only a portion of the facilities' emissions are subject to a direct price obligation, but the price incentive applies to all emissions, as facilities can earn surplus credits that they can sell if they emit less than their regulatory limit.

8. Conclusion.

Manitoba's Response rests its case for exemption from the federal carbon pollution pricing benchmark and backstop on a number of false or unconvincing considerations. 1. As measured by climate metrics, Manitoba is not "Canada's greenest province." Quebec is by a long shot. 2. Manitoba's clean power is a winner for both climate AND the economy. We would be worse off, not better off, on both counts had we emulated Alberta and Saskatchewan, built our electrical system on fossil fuels, and failed to take advantage of our hydroelectric potential from the convergence of major watersheds. 3. Nor are we unique in making large investments in clean energy.

Furthermore, 4. Manitoba's proposal for each province to create its own policy without national constraints was found by the Working Group on Carbon Pricing Mechanisms to lead to a less efficient, more complex system with less revenue raised to address vulnerable groups and negative impacts on interprovincial and international competitiveness. 5. Manitoba's understanding of carbon pricing as just a negative pressure to reduce fossil fuel usage ignores polluter pays and perverse subsidy issues, leveling the playing field for green innovation, and the complementary dynamic of climate and social reinvestment. 6./7. It also ignores available protections for businesses and households from carbon price impacts during the transition and provides no alternative analysis or modeling to show we can reach national targets with a lower carbon price that is inconsistent with the price in other jurisdictions.

We need a made-in-Manitoba climate and green plan, yes, but it must rest on better information and analysis than we have seen in Manitoba's Response. Manitoba can benefit from as yet untapped local and national capacity and resources working collaboratively with Manitobans to achieve ambitious targets for each sector. MCPC concludes it is in the interests of Manitoba, Canada and the planet for Manitoba to join the Pan-Canadian Framework on Clean Growth and Climate Change and produce a climate plan that prices carbon pollution consistently with other jurisdictions, benefits from federal support and collaboration, and secures a bright green future for Manitobans.

Canada's First Ministers foresaw a new economic era for Canada in the Vancouver Declaration. Unless Manitobans can see that prospect, a carbon price will be viewed, not as an engine of transformation, but as just an added cost to living our lives and doing business in the same old ways.

Section IV. identifies prospects for a bright green future for Manitoba as a thriving, low-emission province if it commits to the Vancouver Declaration's transformative project spelled out in the Pan-Canadian Framework on Clean Growth and Climate Change.

IV. “Green energy futures.”¹

Manitoba is ripe for transition to a thriving low-emission economy. If we view our hydro-electric endowment as a foundation for that transformation rather than an excuse for weak action in sectors like transportation and buildings with too low a carbon price, we will stand a better chance of “our province [becoming] Canada’s clean, green leader” or at least “making Manitoba the most improved province in all of Canada.”²

What Manitobans need is inspiration, education and examples of the transition that led Canada’s First Ministers to see, not only the necessity, but the attractive prospect of shifting to the low-emission economy subscribed to in the *Vancouver Declaration* and the *Pan-Canadian Framework* and the importance of not being left behind. In this section we offer examples of what could happen in several sectors.

1. Transportation

Let’s not create policy where the tail wags the dog, such as a low carbon price for all of Manitoba because a higher price is a challenge for, say, long-haul trucking or remote communities.³ Those problems can be addressed directly without subsidizing fossil fuel use with too low a carbon price. Here are examples.

Low- and middle-income households: A carbon price can cause household expenses to rise from higher freight costs for goods, heating costs from natural gas, and gasoline prices until cleaner, lower-cost alternatives are adopted. **Solution:** See Alberta’s household dividend.⁴

Remote communities: Cost increases are higher than for other households and alternatives may be fewer. **Solutions:** (a) Increase the household subsidy for qualified communities and/or (b) follow the Nutrition North Canada food subsidy model, which subsidizes food delivered by weight, not by fuel consumed.⁵

Money in the pockets of Manitoba citizens can be spent on local goods and services if they are

¹ See <http://www.greenenergyfutures.ca/> for a video series on inspiring examples of green energy alternatives.

² <http://www.gov.mb.ca/thronespeech/>.

³ Continuing a partial fossil fuel subsidy with a lower carbon price appears to be the strategy of *Manitoba’s Response*: “But for certain businesses and families, particularly those working in regions or sectors that are exposed to international competition or where suitable energy alternatives are not readily available, a carbon price may just raise costs, jeopardizing business competitiveness here and outside the province.”

⁴ <https://www.alberta.ca/climate-carbon-pricing.aspx>

⁵ <http://www.nutritionnorthcanada.gc.ca/eng/1415538638170/1415538670874>.

able to find ways to reduce fossil fuel spending. Replacing fossil fuel expenditures with local spending stimulates Manitoba's economy.

Long-haul trucking: Trucking is both a major source of emissions growth and a core component of the economy. Diesel fuel is a third of the industry's costs. A carbon tax will have a cost impact on the industry and, if passed through, on the goods they deliver. **Solution:** The Manitoba Trucking Association (MTA) offered a solution in 2015 well before the federal benchmark price.⁶ MTA proposed a 3.5% carbon tax on diesel to subsidize efficiency retrofits on trucks for an estimated 22% fuel- (and thus emission-) savings. Truckers would benefit from lower fuel costs and become more competitive while lowering GHGs – a win/win solution. Even at the 2022 price of \$50/tonne (or 13.69 cents/litre), this is still a win for truckers.⁷ By 2022, new technologies will permit even greater savings.

The future of trucking: Increased efficiency through truck retrofits and improved logistics are best practices for trucking firms. But more is needed. Emterra, Winnipeg's waste and recycling collector for the past five years, fueled its garbage trucks with compressed natural gas, which produces significantly lower emissions than diesel. Many courier and delivery trucks operating in Manitoba are owned by international firms like Pepsico or DHL that employ electric and CNG trucks in other jurisdictions.⁸ Why aren't more truckers in the Capital Region doing likewise? Could a higher carbon price or provision of fueling and charging stations tip the balance?

Soon even long-haul trucks will be electric. Tesla, Mack, BYD, Nikola Motors and Cummins are all unveiling large electric trucks this year. Mercedes-Benz has an urban e-truck in production.⁹

Cities and urban commutersheds: This is where most Manitobans live, most emissions are produced, and many solutions to climate change lie. By 2015, Vancouver had already met its 2020 target to make over 50% of trips by foot, bicycle, and public transit.¹⁰ Manitoba needs to support and enhance sustainable transportation in the Capital Region, Brandon and Thompson, including transit, active transportation, and more efficient and low-emission delivery services.

⁶ <http://www.mansea.org/s/Man-Trucking-Association-Pres.pptx>.

⁷ Assuming diesel costs \$1/litre, the benchmark carbon price is ~14% or four times MTA's 3.5% proposal, but it still permits a net cost saving of 8% in 2022 (and more in earlier years) using only today's efficiency technologies.

⁸ <https://www.greenbiz.com/article/pepsico-drivers-and-data-play-key-roles-fuel-efficiency> and <https://www.greenbiz.com/article/worlds-biggest-logistics-company-races-towards-net-zero-emissions>.

⁹ <https://www.trucks.com/2017/05/10/tesla-electric-truck-easy/>.

¹⁰ <http://vancouver.ca/green-vancouver/green-transportation.aspx>.

Ridesharing and carsharing: *GoManitoba*¹¹ is a province-wide online system to coordinate ridesharing. *Peg City Car Co-op* is a substitute for individual car ownership. Vehicles parked in the neighborhood are booked for members' use when needed. *"Bike. Walk. Bus. And sometimes drive"* is their slogan.¹² Sharing rides or cars can reduce costs and emissions.

Electrifying transportation: This is a potential big winner for reducing Manitoba emissions and keeping in Manitoba a large portion of the \$2 to 3 billion we send to Alberta each year for fossil fuels.¹³ Right now we are on the cusp of a revolution to electrify transportation and Manitoba is poised to participate. University of Manitoba Professor Nazim Cicek makes the case for converting Winnipeg Transit's fleet to electric buses over the next 12 years (a lifetime for a bus) to the economic benefit of Winnipeg Transit, New Flyer Industries and Manitoba Hydro as well as health benefits to Winnipeggers and the planet.¹⁴ Note that Edmonton plans to buy only electric buses beginning in 2020.¹⁵

Professor Cicek also builds a persuasive case of mutual benefits all around for Manitoba to emulate Norway's rollout of electric vehicles, now composing 42% of car sales. And Volvo will produce only all-electric or hybrid vehicles beginning in 2019 and other makers are rapidly ramping up EV production and number of models.¹⁶

Carbon pricing adds to the benefits, accelerates the payback and enhances the uptake of electric vehicles leading to an earlier transition to a thriving, low-emission economy based on Manitoba's energy.

2. Agriculture and land use.

Manitoba's agricultural and forest lands and their use are important for climate action for at least five reasons – (1) agriculture is responsible for 30% of Manitoba's emissions arising from fuels, fertilizers, soils, and livestock and their manure. But also (2) agricultural and forest lands are able to sequester carbon from the atmosphere and (3) they both produce biofuel resources. In addition, (4) agricultural and forest lands both bear and contribute to climate impacts (e.g.

¹¹ <https://www.gomanitoba.ca/>.

¹² <https://pegcitycarcoop.ca/>.

¹³ http://www.gov.mb.ca/jec/energy/pubs/energy_strategy_2012.pdf. p. 7.

¹⁴ <https://www.winnipegfreepress.com/opinion/analysis/twelve-years-to-transform-transit-441358583.html>.

¹⁵ <http://www.cbc.ca/news/canada/edmonton/edmonton-transit-bus-electric-diesel-robar-1.4276453>.

¹⁶ <https://www.winnipegfreepress.com/opinion/analysis/electric-cars-are-manitobas-road-forward-442077243.html>, <https://www.winnipegfreepress.com/business/renault-nissan-promises-12-new-electric-vehicles-by-2022-444600233.html>, and <https://www.winnipegfreepress.com/business/leading-the-charge-444767343.html>.

frequencies of fire and flooding), (5) some of which can be mitigated by alternative land-use practices. Research, planning and implementation must address all five.

It is encouraging to see the attention Manitoba is directing to agriculture and land use in *Manitoba's Response*, in the conservation district and watershed discussion documents, and in the recently announced federal and provincial investments in ecological services, including water and nutrient management and carbon sequestration. No specific agricultural emission reduction strategies are mentioned in these documents other than sequestration but we can hope that some will be forthcoming when the climate and green plan is released.

One addition to consider is the substitution of Manitoba biofuels for Alberta propane or natural gas used in space heating for homes, barns and greenhouses and for grain drying using made-in-Manitoba equipment.¹⁷ Manitoba has more than 5 biomass heating system manufacturers and more than 10 commercial biomass suppliers (although many farms have their own biomass supply). Biogas from anaerobic digestion of manure is another potential substitute.¹⁸

As a subsidized fossil fuel (no carbon pricing + other subsidies¹⁹), natural gas is currently so cheap that the economics of biofuel substitution is marginal. That can change with adequate carbon pricing, not only by raising the price of natural gas to reflect true cost but also by creating a revenue stream for reinvestment in greener alternatives. Note that this two-sided dynamic for agricultural solutions is ignored in *Manitoba's Response* (pp. 6-7), which uses the example of agricultural emissions as a reason NOT to assess a higher carbon tax, forgetting the reinvestment potential for green alternatives and relying instead on precarious matched federal dollars for such agricultural investments. This is the traditional “governments (i.e. taxpayers) pay” model rather than a more sustainable and equitable “polluter pays” model represented by carbon pricing.

3. Heating buildings and managing waste.

The next largest source of Manitoba emissions is standing combustion at 20%, most of which is for space heating by natural gas or other fossil fuels. A high-efficiency gas furnace heating a well-insulated, well-sealed home is about as emission-efficient as fossil fuel usage can get. Hopefully Efficiency Manitoba can get all of Manitoba's buildings to that standard and building codes can ensure that all new builds meet net-zero-ready standards. But what about the residual amounts of gas used?

¹⁷ <http://greenairheat.com/>.

¹⁸ <http://www.mansea.org/s/Agriculture-and-Renewable-Energy-Domitruk.pptx>.

¹⁹ <http://www.cbc.ca/news/politics/auditor-general-spring-report-1.4116346>

FortisBC sells a premium product, renewable natural gas, made possible by BC's carbon tax and customer premiums. The supply comes from landfills, sewage treatment facilities and livestock operations, all of which produce methane from anaerobic decomposition of organic matter.²⁰ This in turn must be purified²¹ and then injected into FortisBC's gas mains. For a premium on the gas bill, customers can claim credit for the supply of this non-fossil gas. Note that customers receive an offsetting reduction in BC's carbon tax for this supply. Residential and commercial customers wishing to reduce their carbon footprint use this program, which provides a cost-effective way of reducing BC's methane emissions from waste.

FortisBC's renewable natural gas provides another example of the carbon pricing dynamic at work on both the tax and reinvestment side. Back home, Brady landfill and various livestock operations could be prime candidates for similar treatment. Note that, with the reinstatement of carbon tax increases over the next several years in BC, FortisBC is once again looking for new renewable natural gas suppliers. Let's not underprice Manitoba's GHG emissions and forego the prospect of this kind of solution for both agricultural and waste emissions. If we do underprice, we will also lose the Manitoba reinvestments to make it happen and spend our money instead on continuing to import fossil natural gas from Alberta.

A final example of what can be done with buildings is the University of Winnipeg, which is working towards zero emissions by 2035.²² Remarkably, in 2015, U of W had already managed to reduce its emissions by 32% since 1990 while growing its space by 38%. They have made the economics work this far even in a subsidized fossil fuel environment in which emissions are free. But to go the final distance they need a level playing field with carbon pricing and reinvestment in renewable alternatives.

4. Conclusions and a way forward.

What lessons can we draw from the foregoing discussion and examples?

- a. Transition to a much lower-emission economy is not only possible but tangible – Manitobans and others provide examples of how it is done.
- b. The replacement of fossil fuels with Manitoba renewable energy from solar, wind and hydro-electric power, waste, local biomass and geothermal also replaces the export of dollars to Alberta with new investments in Manitoba's economy.

²⁰ <https://fortisbc.com/NaturalGas/RenewableNaturalGas/>. See also <https://www.winnipegfreepress.com/opinion/analysis/household-waste-can-heat-our-homes-449176063.html>.

²¹ <https://www.airliquideadvancedseparations.com/biogas-campaign>.

²² <https://www.winnipegfreepress.com/opinion/analysis/economic-investments-drive-carbon-tax-benefits-437310903.html>.

- c. But there is a thumb on the scale in favor of GHG emitting fossil fuels that produce huge social costs without the emitter facing any immediate cost consequences.
- d. Putting a price on carbon removes that thumb and supports investment in cleaner alternatives. This provides an additional economic dynamic to enable other households, enterprises and organizations to follow the green economy leaders, thereby creating new markets, greener jobs and market incentives for further green innovation.
- e. But the transition will not be instantaneous. This is not magic. There is not sufficient capital, resources or capacity to immediately change or replace existing vehicles, buildings, infrastructure and processes. Many alternatives will still be cost-prohibitive until prices come down. And so a carbon price will continue to be paid for covered emissions that we cannot see a way to avoid (at present). That payment is entirely appropriate to reflect the real cost of those emissions even if “suitable energy alternatives are not readily available” (*MR* p. 5).

A carbon price does not operate in a vacuum. Nor is it a punishment or a useless cost. Rather a carbon price levels the playing field for the next innovator or entrepreneur wanting to bring cleaner tech to market. And carbon price payments create resources to protect the vulnerable and invest in change. They also signal a social cost of our activities and the need for all of us to look for solutions in our own sphere of action.

- f. Finally, a carbon price works best in a culture of climate responsibility with a variety of talents brought to bear, such as:
 - i. Leadership that recognizes a problem and sets a course to create solutions. For example, BC’s Premier Gordon Campbell led when he initiated BC’s carbon tax in 2008 and showed the world that the economy could thrive while emissions go down.
 - ii. Entrepreneurship that is capable of producing and bringing to market goods and services like the designers and fabricators of biomass heat equipment in rural Manitoba.
 - iii. Sustainability officers and corporate and institutional leaders, like Alana Lajoie-O'Malley and President Trimbee at University of Winnipeg, who are able to drive institutional commitments, culture and achievements.
 - iv. Research and analytical talents like the folks at Prairie Climate Centre and the Ecofiscal Commission, who can diagnose problems and propose and evaluate solutions.
 - v. Conscientious citizens looking for viable means to lower their carbon footprint and ready to adopt them when they become available.

A way forward – structured collaborative Round Tables.

MCPC advocates well-informed and balanced discussion amongst a broad spectrum of stakeholders. But that discussion can't begin with a blank slate that ignores wider commitments and progress already made, as represented in the *Pan-Canadian Framework on Clean Growth and Climate Change* and its benchmark carbon pricing. Productive discussion, including ways to protect vulnerable households, communities or industries while seizing the opportunities offered, should begin from that starting point.

One way to do this is to adopt an idea put forward by the Manitoba Trucking Association. They propose a GrEEener Trucking Council composed of industry, academia and the green community to identify and evaluate new initiatives. Their approach could extend to other sectoral councils or Round Tables for, say, buildings, personal transportation, agriculture and land-use, waste management, and the like, which identify effective paths to climate goals, given national and international commitments and targets and a stipulated level of carbon taxation and revenue. The Round Tables would examine best ways to meet or exceed targets and find the most productive reinvestments of carbon revenues. Research support to help identify and evaluate problems and opportunities would be critical for each sectoral Round Table.²³

It is time to refocus everyone's energy on developing collaborative made-in-Manitoba solutions within the *Pan-Canadian Framework* rather than spend it resisting coordination with other jurisdictions in Canada. We have much to offer, but also much to learn. For example, British Columbia and Alberta developed robust, well-researched recommendations for their provincial plans by establishing climate leadership advisory bodies that understood the issues from a variety of perspectives and consulted widely.²⁴ Likewise, lying behind the *Pan-Canadian Framework* were four expert working groups, comprised of federal, provincial and territorial officials, that were established to develop options. They too consulted widely.²⁵ Manitoba has yet to create any independent body or bodies to combine expertise with stakeholder views. Step one for Manitoba's plan could be to announce one or more Round Tables with the right mix of expertise and stakeholder perspectives to recommend climate actions within the *Pan-Canadian Framework on Clean Growth and Climate Change*.

²³ We note that David McLaughlin, climate advisor to the Manitoba government and former Chair of the National Round Table on Environment and Economy, is well versed in this type of organization and could advise on their construction.

²⁴ <https://engage.gov.bc.ca/climateleadership/> and <https://www.alberta.ca/climate-leadership-plan.aspx>.

²⁵ <https://www.canada.ca/en/environment-climate-change/services/climate-change/canada-priorities/clean-growth-working-group-reports.html>.



A Plan to Build Climate Resilience in Manitoba

- Recommendations

The overarching approach to climate change in Manitoba must be to **build local resilience while moving beyond fossil fuels**. To achieve the proper level of urgency, we need an appropriate new way of thinking. We need to approach this problem like this:

Within 30 years...

- ALL of our homes & **buildings** must be heated & cooled without natural gas.
- ALL goods and people must be **transported** without gasoline or diesel.
- ALL of our **food** must be provided without fossil fuel for fertilizers or tractors.

We need to plan for this reality now. To formulate that plan we need to ask tough, bold questions that need to be discussed and research conducted to answer. Here are some key ideas and research questions related to those three bullets above:

Buildings

We need to design, build, and retrofit all of our buildings to minimize inherent heating/cooling demand. Concurrently, we need to switch fuels to geothermal, co-location (i.e. use waste heat), biomass, and electricity (in that order).

- **Building standards** - We must move toward making Passive House or R-2000 or other high performance approach the standard requirement for all new buildings.
- **Passive House education and display projects** - We need push from developers and pull from the market. Builders need to be educated in Passive House construction. The public needs to see how comfortable these buildings are.
- **Passive House education** - [Sustainable Building Manitoba](#) and [Passive House Canada](#) have been training professionals in Passive House principles. If this training was offered at the same time as the prospect for work that requires it, there will be good uptake from the professions.
- **Passive House display projects** - The more Passive House examples there are, the more likely the market will see the benefits and start demand. So far, the only examples in the province are residential. Why not a government building? Get Hydro and the developers involved in ensuring that the next development that would have needed natural gas will instead be built to Passive House standards. A 1,500 sq ft Passive House home requires no more than 1,500 watts to heat.

- **Building energy labelling** - Building energy performance is invisible. In order for the market to start demanding it, there needs to be increased visibility. All buildings should be labelled like the EnergyStar labels on appliances. The EU Energy Performance of Buildings Directive requires that buildings cannot be sold without such a certificate and label.
- **Financial analysis tools** - Jim Nostedt (CFB 17 Wing) and Wayne Cole have some very interesting analysis tools to show how this type of construction and deep energy retrofit is cost neutral immediately. (i.e. right at construction)
- **District heating for commercial buildings and rural towns** - Hydro (or other utility) should own district heating systems. These should include geothermal. Many municipalities have commercial and municipal buildings clustered in such a way that connecting them together on a district heating loop would make sense and would allow for biomass in the central heat plant.
- **Geothermal** - Individual homeowners and businesses should not bear the cost of geothermal installations. Hydro, or other utility, should be building geothermal loops and wells under public property. These include sport fields, roadways, and lanes. In rural and remote areas, the loops should be in lake or river. If *Efficiency Manitoba* had a broad-enough mandate, it could be the utility.

Buildings research questions:

- How much energy (petajoules) does our building stock currently require?
- How much alternative energy (biomass, geothermal, air source heat pump, electricity) does this translate to?
- If we can't realistically supply that much energy with renewables and the current level of building stock, what level of performance must our building stock achieve in order to lower the energy requirement to something achievable?
- When must we stop expanding the natural gas distribution system? This is inevitable and needs to be done very soon, if not immediately. But we need to have a plan in place for how to heat these new developments without gas. What alternatives exist? What projects can we initiate now to test the alternatives?
- What are the steps required to make Passive House the minimum standard for new construction? How quickly can this be achieved?
- What are the regulatory, legal, and financial barriers to a dramatic deployment of district heating?
- What are the regulatory, legal, and financial mechanisms necessary to have Hydro (or another utility) provide geothermal to a district heating system?
- What are the regulatory, legal, and financial mechanisms necessary to have municipalities or producer-owned coops supply biomass to municipal district heating systems?
- What opportunities for co-location exist? (i.e. locate heat generating facilities near heat-using facilities)
- What is the current state of straw-board as a local supply of building material? (I heard that the Elie OSSB strawboard process is starting up again in Alberta.)

- **Biomass for heat** - This could make sense for any institution with a central heating plant (e.g. jails, hospitals, universities) and for municipalities that could have a district heating loop installed. There are examples from Denmark of producer cooperatives that own the heat plant and supply the biomass themselves to the municipality. The municipality just pays for the heat. Local producers have another source of revenue.
- **Moratorium on new natural gas infrastructure** - This must be in concert with the other recommendations above so that there are alternatives to simple electric heat. We need to get off of fossil fuel but we are making the dependency worse by adding 25 to 30 new gas connections every day in this province. (There are about 7,000 new homes a year in Manitoba. At 200 business days a year, that's 35 houses a day. Not all of these are natural gas. So maybe 25 to 30 new gas-connected homes per day.)

Transport

We need to reduce the need (i.e. more local production) and electrify.

- **Electrify transportation** - According to [a recent Stanford report](#), we are on the verge of a fundamental shift toward electric vehicles. In less than 10 years (maybe *much* less), there will be no fossil-fuel passenger vehicles sold. With [Tesla's announcement of the Tesla Semi](#), goods transportation may not be far behind. This means that the market will soon be driving this shift. Public policy effort should be anticipating this shift and be paving the way for it.
 - **Policy** - Government needs to focus on policy enablers and barriers to electrification. This includes shifting the focus of *Efficiency Manitoba* away from absolute electricity demand reduction and rather decreasing electricity demand in some areas (e.g. lighting) but enabling increasing demand in other areas (e.g. transportation and heating)
 - **Build electric vehicle charging systems** - Hydro, 3 levels of government, Winnipeg Transit, electric vehicle manufacturers, and the Manitoba Electric Vehicle Association (MEVA) should work together to build three recharging networks in the province:
 - Level 3 (quick charge) for passenger vehicles
 - "Mega-charger" network for transport trucks
 - Winnipeg Transit System charging network in concert with design of Frequent Service Transit Network
 - **Premium electricity rates for transportation** - Hydro should be able to charge a premium for electricity to help pay for the cost of recharging network.
- **Electrify Winnipeg Transit** - I recommend that the province should restore the 50/50 operations funding support for Transit and to also provide for ongoing acquisition of electric buses. Transit has estimated about \$6 million annually to enable Transit to add about 40 (or more) new buses per year.

- **Airships** - The province should take these more seriously. [The Airliner airship](#) will be commercially available starting in 2018. We should help foster a commercial enterprise to purchase at least one of these vehicles. This help may include examining and adjusting regulatory barriers, some promise of business, and perhaps financing. [Dr Barry Prentice](#) could provide advice.

Transportation research questions:

Freight

- What freight gets moved within this province? How is it moved? How much of this freight is essential (e.g. food, building material)
- How much electricity would be required to electrify all of Manitoba's transportation?

People

- How many buses should Winnipeg have to properly serve our population?
- What's the state of self-driving bus research?
- How do we make all public (government and public utility) vehicles available through carshare?
- What would a viable electric charging network look like? How many level 3 charging stations are needed to ensure there is no more the xx Km between them? Where must these stations be located?

Demand/need for travel

- How can we ensure high-speed, reliable internet for all Manitobans? (and thereby reduce the need to travel) Especially for remote communities?
- Who is active in virtual presence technology? How do we make this universal and free?
- How do we stop sprawl completely? (Oregon State instituted [Urban Growth Boundaries](#).)

Food

Manitoba agriculture is focused on and dependent upon export. To feed ourselves, we rely on a lot of imports. (<https://vimeo.com/5236966>) We need a complete system of local table food production, processing, storage, transportation, and distribution with local energy & nutrient inputs.

- **Require local food for institutions** - Support local table food production by requiring a percentage of food provided to provincial institutions be local. This will establish the supply chains that can be scaled up over time.
- **Local storage and distribution centres** - When small farmers bring produce into the city to sell at farmers markets, they need to bring everything in and handle their own storage. If there were properly equipped storage and distribution depots and year-round farmers' markets, this could be a more viable business. Contact and support Kalynn Spain and [Small Farms Manitoba](#).
- **Clarify and remove regulatory barriers to connect producers directly to consumers** - I understand that MAFRD already has an effort going on to support local agriculture in this. We should support this work and encourage its reaching a successful conclusion.

- **Reduce the beef herd** - Beef cattle production results in about 300 kg CO₂e per kg protein vs about 50 for hogs and about 40 for chickens. Forage management for remaining beef herds should be moved toward rotational forage to enhance soil carbon sequestration.
- **Manage manure, straw, and other organics as a resource** - All organics should be treated as sources of soil nutrients, soil carbon, and energy. We should be diverting all organics out of landfills. All municipalities should be encouraging in-home composting and rotary drum composting systems for institutional use.

Food system research questions

- What strategy could we employ to encourage producer-owned biodiesel production co-ops for farm tractors?
- We need a strategy to replace synthetic fertilizers with local nutrient recycling and soil remediation.
- How can we use local agricultural waste (straw) as the heat source for municipal district heating systems? Which municipality will we start with? This is can be considered a utility. Who will provide and manage it? What about producer co-ops as they have in Denmark. Are there legal barriers? What assistance can be provided to facilitate creation of these?

Energy system

We need to reduce our energy demand and shift to electricity

- **Efficiency Manitoba** - When Keeyask comes on-line in 2019, our oversupply of electricity will increase even further. We need to focus on making more use of electricity to meet our energy demands instead of fossil fuel. The mandate for this Efficiency Manitoba must include reducing energy demand from all sources and needs to focus on greenhouse gas emission reduction from our energy systems. This will mean encouraging more electrical demand in transportation and heating (when coupled with my recommendations in Buildings above.).
- **Distributed, small-scale generation** - If we eventually do need more generation, we should ensure we have completely tapped into DSM and small-scale generation before building more dams like Conawapa. This includes considering reopening the Hydro Act so that Hydro maintains its monopoly to distribute but takes away their monopoly to produce power. This would open up the possibility of community-owned and competing private generation.

Energy system research questions

- How much revenue is generated from the fossil fuel industry in Manitoba? (I.e. What revenue will be lost?)
- What direct and indirect subsidies and incentives does Manitoba's fossil fuel industry receive? (I.e. If we stop these subsidies, how much revenue might be available to support this transition?)

Education

- **Educate adults** - I'm constantly shocked at how little the general public knows about climate change. The province is doing a really good job with school kids but adults, not so much. Most people confuse climate and weather. Many people think it has something to do with the hole in the ozone. Many think it's part of a natural cycle. Many don't see it as a problem. In order to get support for action, people need to understand at least the basics.