

A Canadian Opportunity: Tackling Climate Change By Switching to Clean Power

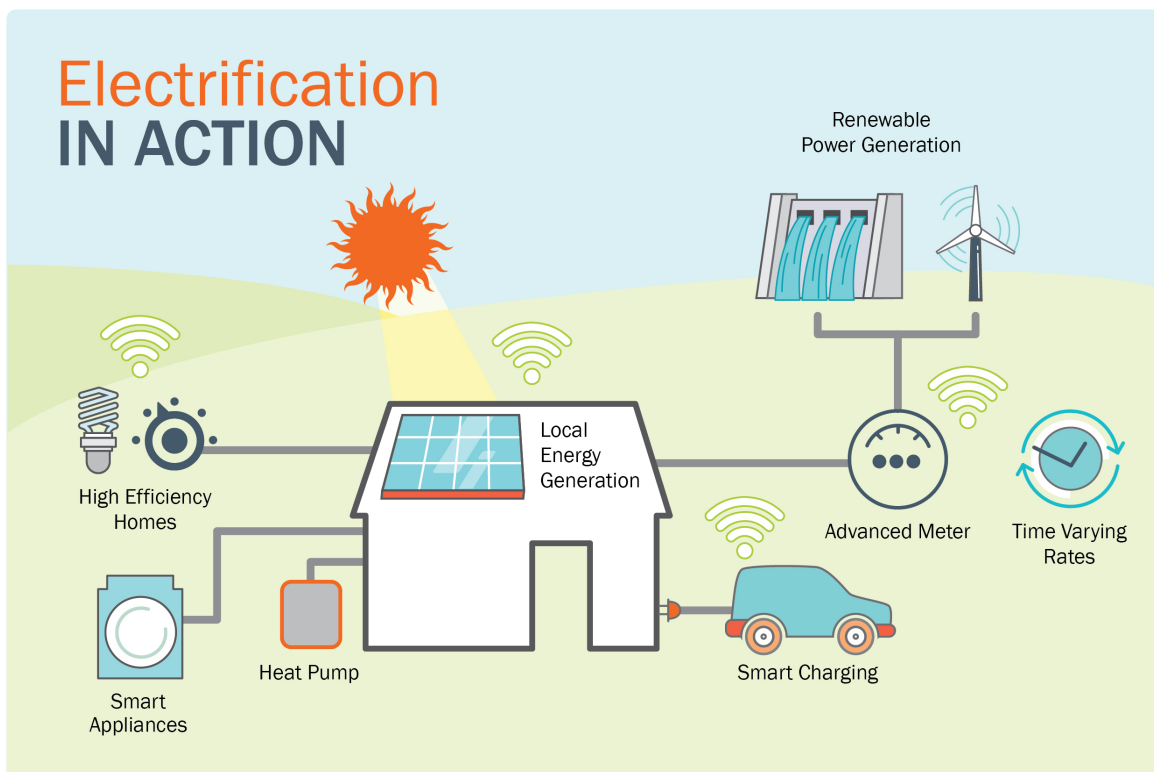
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Introduction

Expert assessments are clear: to tackle climate change, we need clean electricity to power far more of our daily activities than it does today—even factoring in a dramatic improvement in energy productivity.

Over time, we will need to shift from fuelling our personal vehicles with gasoline to driving electric cars. Electric pumps will draw heat from the air or the ground to keep our homes warm in winter and cool in summer. Innovative industrial processes will produce the goods and materials we need using clean power rather than fossil fuels.

The growing interconnectivity of the internet with electricity generation and consumption will also make these power flows smarter.



Source: Adapted from the Acadia Centre's *EnergyVision* (2014)

This shift from fossil fuels to clean electricity is needed in Canada, but to an even larger extent around the world. While not a one-size-fits-all solution, electrification will be a big part of the international effort to live up to the climate commitments countries made at the UN climate talks in Paris. As a result, the global market for clean electricity is growing quickly.

And that's excellent news for Canada: our country already has one of the cleanest electricity sectors in the world. Today, well over 60 per cent of our power comes from water, wind and sun—and that share of renewable electricity is poised to grow, thanks to government commitments to further decarbonize Canada's power supply. With ambitious and effective policies, Canada's headstart means our country is positioned to reach near-zero emission power well ahead of its peers.

In other words, clean electricity is a comparative advantage for Canada, one that positions us to lead in the global clean energy economy. With the right policy signals as a foundation, our country can reap the benefits of a rapid shift to clean electricity as a source of energy across the economy. We'll see those benefits in new jobs, innovation, business development and export opportunities, while reducing our carbon pollution.

Recognizing the importance of electrification as a component of the upcoming pan-Canadian climate plan, a diverse group of experts and clean energy sector representatives worked together to develop a package of policy recommendations, which we submitted to the "Let's Talk Climate Action" consultation.

The full list of recommendations and signatories is available at <http://cleanenergycanada.org/work/canadian-opportunity-tackling-climate-change-switching-clean-power/>. This submission pulls out recommendations of relevance to the upcoming federal budget from that document.

We would welcome the opportunity to present to your committee on this critical and timely issue.

Supportive Policies for Electrification

While the policies described in this section may not result directly in a switch from fossil fuels to clean power, they lay the groundwork for electrification. Policies to support a durable, effective transition to electrification in Canada include:

A price on carbon across Canada. The price signal should apply in all jurisdictions in Canada, start as quickly as possible (where it doesn't exist already), grow over time, and cover the vast majority of emissions.

A national "roadmap" or action plan for electrification in Canada. Electrification remains a relatively new policy area, and it faces some significant barriers. A roadmap for electrification would help fill information gaps that exist today, and lay out a national vision aligned with the pan-Canadian effort to tackle climate change and the Council of the Federation's Canadian Energy Strategy.

A national action plan for electrification should also include:

- **A national goal of reaching a near-zero carbon electricity supply** by a given year, along with interim milestones.

- In support of the national electricity sector goal, assessments of the **growth in clean power supply that will be required in various regions of Canada**, and plans to meet those needs.
- **Sector-by-sector electrification goals** and pathways for end-use sectors (transportation, buildings, industry, etc.) for the short, medium, and long term.
- Assessments, including cost-benefit analysis, of the **grid modernization that will be needed** and plans to achieve those improvements, recognizing the advantage and economic value of the potential electricity storage capacity of hydro reservoirs as well as smaller-scale storage and distributed generation.
- Assessments of the **financing needs associated with electrification**, and recommendations of how best to meet those needs.
- **Analysis of the scale of export opportunity involved**, which goes well beyond clean power itself to include electrification technologies and services, and recommendations of the policies and practices that will allow Canada to capitalize on those opportunities.
- Targeted approaches for **electrification in remote, rural and Indigenous communities**, which also represent prototype solutions for a world marketplace.

Developing an action plan of this type would take time. It requires investment, analysis, and consultation—but we believe a well-researched action plan would provide the national vision and technical foundation we need for the transition to electrification across Canada. Meanwhile, the sections that follow identify policy actions that the federal government can implement in support of electrification today.

Transportation

The electrification of personal transportation, via electric cars, is a significant opportunity we can start to realize today, as the technology is ready and increasingly attractive. To increase the uptake of electric vehicles (EVs) in Canada, Budget 2017 should:

Invest in effective support for EV education. Polling shows that relatively few drivers know about the EVs available today, or about the benefits—economic and environmental—of driving them. In response, governments can support access to updated, abundant, unbiased and user-friendly EV information to potential drivers, and to calculators¹ or other tools that allow potential EV drivers to assess the costs/savings of EV ownership over time. Increasing the fraction of EVs in the growing number of car-sharing fleets, via support for pilot programs in interested municipalities, is another very effective way to introduce drivers to EVs.

Provide incentives for the purchase of EVs. There is strong evidence, both in Canada and in peer countries, that rebates to offset the higher upfront cost of EVs are an effective means of accelerating EV use. For example, 97 per cent of all EVs sold in Canada last year were purchased in the three provinces that currently offer rebates. All provinces should offer a rebate of at least \$3,000, and the federal government should match that level of incentive.

Make strategic investments in charging infrastructure. Greater availability of workplace charging would help reduce “range anxiety” for EV drivers, so governments should offer incentives to workplaces that invest in EV chargers. Fast charging stations in public locations where they will be

¹ See, for example, the U.S. Department of Energy’s calculator at <http://www.afdc.energy.gov/calc/>.

used—for example, at rest stops along national highways or near public transit hubs—are also an important upfront investment that governments should support, often via public-private partnerships.

Support the growth of the EV supply chain in Canada through a dedicated advanced transportation innovation fund. Federal and provincial investments have helped to build clusters of advanced transportation expertise in Canada, including electric battery and fuel cell technologies and advanced transportation software. A new national innovation network for advanced transportation technologies—an independent entity that brings together industry, government, and academic expertise—could build on that foundation and help position Canada as a leading global destination for advanced vehicles, including in public transit and other applications.

Buildings

Everywhere in the economy, electrification works best if it's paired with increasing energy efficiency. That's particularly important in the buildings sector, where efficiency opens the door to greater use of electric technologies: an electric heat pump may not be an effective choice to heat a very leaky home, but it could provide more than enough heat for a cutting-edge green building. The policies below will help to reduce emissions and encourage electrification in the building sector.

Existing Buildings

Governments should set minimum greenhouse gas and energy performance levels for existing large buildings, by building type. Because the electricity mix varies by province, the GHG performance standard would need different baselines in different provinces. For an initial period of time, governments should **offer targeted retrofit incentives and/or financing for buildings that do not meet the established performance target.** Over time, governments should consider moving to **regulations that require buildings in the lower tier of performance to meet minimum performance targets.**

Existing Homes

Require energy audits and labelling for homes at the time of sale and major renovations, so that home buyers (and in the case of renovations, homeowners) can easily understand the energy costs and potential for improvement associated with a given home purchase.

Support significant improvements in GHG and energy performance through incentives for retrofits. Drawing on the legacy of the [EcoENERGY](#) program, require an audit upfront, and provide incentives based on the level of improvement in a home's performance after the retrofits have occurred. Such incentives could be offered through tax credits calibrated to the performance improvement achieved; through loans; or through grants where appropriate.

Industrial Processes

Even a very low-carbon future will still require cement, iron, steel, petrochemicals, and so on. In the context of growing global demand for low- or zero-carbon industrial processes, and as part of the upcoming federal Innovation Agenda, the federal government should **create a new research institution for zero-carbon industrial processes.** A research institution of this type should bring together universities, federal and provincial players, industry, and federal science bodies like the National Research Council.

Governments in Canada should also **initiate trade promotion efforts** to attract businesses to Canada to take advantage of our clean electricity supply. Locating a manufacturing operation or a data centre in areas of Canada that generate clean electricity would allow businesses to reduce the lifecycle emissions (“embedded carbon”) associated with their products, which confers an important advantage in an increasingly carbon-conscious marketplace.

Electricity Supply

Of course, electrification works best to reduce emissions when the electricity comes from zero-carbon sources. In assessments of pathways to deep emission reductions in Canada, fuel switching from fossil fuels to electricity produces significant growth in the electricity sector, particularly for hydro, wind, and solar power. This means that governments in Canada need to plan for significant growth in the clean electricity sector as we reduce greenhouse gas emissions, even while maximizing energy conservation and energy efficiency.

The federal government should facilitate and enable opportunities for interprovincial and regional cooperation on electricity needs, as well as increased exports, where such enhanced connections support the transportation of clean power to jurisdictions still reliant on fossil fuelled electricity, and where they enjoy broad regional support.

Laying the Groundwork for Electrification

In some regions, the legislation governing energy boards and utility commissions can be perceived as presenting a structural barrier to electrification. Some utilities are mandated to choose “least cost” electricity generation, rather than “lowest emission,” “most resilient,” or “best life-cycle return.” Restrictive utility mandates can also make it difficult to invest now in new clean power to enable more electrification; to plan for increased demand as the transition to electrification takes hold; to conduct pilot programs; to support R&D efforts; to value energy efficiency and conservation; to invest in smart grid technology; and to change rate structures where necessary to support electrification activities.

Thus, in some regions, utility mandates may need to be updated for the 21st century, now that electrification and low-carbon electricity are important policy goals. Updated acts and regulations could allow for R&D support, pilot projects, innovation, growing clean power capacity, and new rate structures, while assuring affordability and economic competitiveness.

Building on the Government of Canada’s Budget 2016 investment in regional electricity cooperation, **the federal government should support a forum for transmission and distribution system operators to share best practices** for managing high penetrations of smart and variable generation and loads. The forum would allow system operators to share issues of common concern and support research and analysis on solutions.

The federal government should also **convene expert panels to recommend best practices** for utility legislation and regulation in a low-carbon world. Drawing on Canadian and international precedents, the panel would recommend elements of “model” legislative and regulatory approaches that jurisdictions could adopt where appropriate. As a next step, the federal government could make the adoption of some or all of the best practice recommendations a condition when considering funding energy-related infrastructure projects.

Building on existing measures and where appropriate, **provide enhanced federal support for the deployment of renewable technologies.** While renewable energy becomes increasingly cost-competitive all the time, federal support can speed its deployment, helping to achieve emission reductions in line with our 2030 climate target. The 2016 federal budget took the positive step of introducing accelerated depreciation measures for two additional electrification technologies, power storage and EV chargers. However, U.S. producers will continue to benefit from a renewed Investment Tax Credit and Production Tax Credit into the early 2020s, thus creating an uneven playing field for some Canadian developers. Any enhanced federal support could be designed to phase out on the same timeline as the U.S. credits—by which time a growing national price on carbon should help make clean power even more competitive against fossil options.

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