CLEAN ENERGY CANADA

Submission: Integrated Energy Resource Plan Consultation

Date: December 12, 2024 | **Prepared by:** Evan Pivnick, Program Manager - Clean Energy

Clean Energy Canada is a climate and clean energy program within the Morris J. Wosk Centre for Dialogue at Simon Fraser University.

We are pleased to provide this submission in response to the Ontario Ministry of Energy and Electrification's Integrated Energy Resource Plan Consultation.

Summary

In order to support the development of an Integrated Energy Plan, Clean Energy Canada recommends the government adopt the following recommendations:

Recommendation 1: Provide clarity about government's priorities and create policy certainty for private and energy sector stakeholders by leveraging the best practices from other jurisdictions that already have their own energy plans in place.

Recommendation 2: Clearly define what a 'clean energy future' means to the Ontario government so public and private sector stakeholders know what they're working to achieve. Consider including these three objectives in the definition: (i) ensuring Ontario households can benefit from the cost savings associated with clean energy technologies, (ii) ensuring the build out of the electricity system protects the clean competitiveness of industries, and (iii) ensuring the build out of the electricity system is in line with the achievement of a net-zero economy by 2050.

Recommendation 3: Provide clear direction to the Ontario Energy Board (OEB) in the IERP to initiate a robust planning process to integrate the planning of the province's natural gas and electricity systems, providing sufficient time for the engagement and work required to get the details right. A priority first step in this process is to publish the "Cost-Effective Energy Pathways Study" it commissioned from Energy Super Modelers and International Analysts (ESMIA).

Recommendation 4: Explore a suite of policies that accelerate the deployment of household-level clean energy technologies to reduce energy bills, build out DER potential and support clean economic growth.[1]

Pages 2-9 below provide advice and recommendations on effective energy planning and associated actions. The Appendix , starting on page 10 provides responses to some of the specific questions the government has posed in its ERO posting.

Introduction

Ontario, like most jurisdictions around the world, is currently grappling with how to meet the rapidly growing demand for clean energy. Of the $3 trillion USD in expected global energy investment this year, $2 trillion will flow into clean energy technologies and infrastructure.[2] This shift towards clean energy generally — and clean electricity in particular — is being driven by a variety of factors, including global climate policies, falling prices for key clean energy technologies, increasing demand for cheap, secure electricity from households and industry, and the rising importance of energy security in the face of global conflicts.

In order to navigate this changing environment, leading jurisdictions around the world have been developing "energy plans" (also called "energy strategies" or "energy roadmaps") as a vital planning tool that can help address the inherent uncertainty that underpins the rapidly accelerating pace and scale of electrification at both industrial and household levels.

Ontario has already been taking active steps to modernize its energy system to incorporate new technologies and embrace the growing role of electrification. However, the commitment to develop an integrated energy plan represents an important opportunity to take a leap forward, provide clarity about the government's priorities, and initiate a meaningful process to integrate the planning of the province's different energy systems—in particular its natural gas and electricity systems.

Recommendation 1: Best practices for developing an Integrated Energy Plan

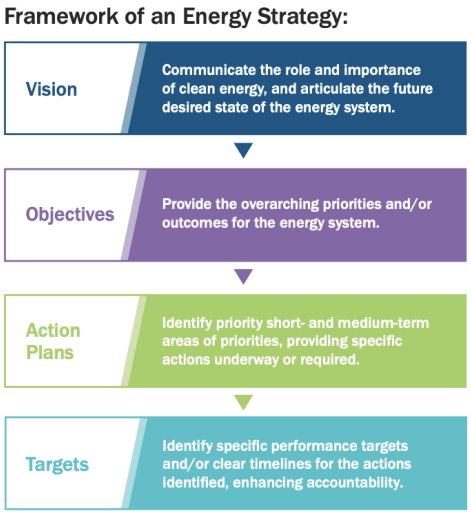
With the publication of *Ontario's Affordable Energy Future: The Pressing Case for More Power*, ("the vision") the government has provided a high-level vision for the modernization of the province's energy systems. Now with the Integrated Energy Plan, the government needs to translate its priorities into actionable policy guidance for utilities, system operators and regulators. Critically, an energy plan should guide — not replace — the more detailed work of system planners, regulators, and utilities, particularly as they seek to integrate the planning processes for distinct energy systems.

[1] The details of this recommendation can be found in the appendix where Clean Energy Canada has responded to some of the specific questions posed by the Ministry.
[2] https://www.iea.org/reports/world-energy-investment-2024/overview-and-key-findings

To accomplish this, Ontario should leverage best practices from other jurisdictions that already have their own energy plans in place.[3] The specific best practices include:

- **Integrate planning for different energy systems.** The Ontario government has already outlined its commitment to ensuring that its energy plan provides guidance on the coordination of planning across different energy systems. Integrated energy planning is a major undertaking that will require consideration of new legislation and regulations, and is best done through comprehensive stakeholder engagement. In a number of U.S. states leading the way on integrated planning — including Colorado, Massachusetts and New York — integrated energy planning initiatives have been multi-year processes. Ontario's energy plan should establish a clear process that initiates a made-in-Ontario approach to integrated planning (see below).

- **Provide a clear vision, specific objectives and concrete actions.** While much of the vision exists in *Ontario's Affordable Energy Future: The Pressing Case for More Power*, the Integrated Energy Plan should build on this vision, by articulating more detailed objectives ,actions and targets, offering concrete guidance on how to balance the identified priorities and clearly outlining who is responsible for overseeing the reforms required. The graphic below shows the distinct role each of these elements play in an energy plan:



[3] In its final report, the Clean Electricity Advisory Council recommended a number of core principles for "energy roadmaps" (i.e. energy plans) that correspond with these best practices.

- **Regularly update the energy plan.** Most energy strategies provide a long-term vision and lay out actions that must be taken within the next 10 years. A clear process for regular updates should be established to account for changing technology, costs and demand over this time horizon.

- **Comprehensively engage stakeholders.** We commend the Ontario government for being proactive in engaging stakeholders on a wide variety of proposed reforms related to the development of its energy plan to-date. The government should continue this commitment to meaningfully engaging with stakeholders through the design and implementation phases of the plan.

- **Provide specific targets.** Given the speed at which electricity demand is growing, identifying specific targets helps create accountability across the diverse energy system stakeholders required to implement the plan and provides certainty to industry and households about the timing of planned reforms. These could take the form of clean technology deployment or energy efficiency targets (like the U.K.), or providing clear timelines for priority reforms (like Western Australia).[4] [5]

- **Explicitly centre the achievement of a net-zero economy by 2050.** The Ontario government has highlighted the importance of achieving its 2030 emissions target and the need to further reduce province-wide emissions in its newly released energy vision *Ontario's Affordable Energy Future: The Pressing Case for More Power*.[6] Given the integrated energy plan is intended to provide direction for the buildout of clean energy out to 2050, the government should take the opportunity to anchor its planning in what is required to achieve a net-zero economy by 2050. This would align the province with the over 145 countries, accounting for 92% of global GDP, that have adopted net zero pledges.[7] It will also help ensure the province is planning for the necessary investments in its energy system, and align with the principles that key industrial sectors have recommended for the province's energy system.

Recommendation 2: Defining Ontario's "Clean Energy Future"

The government's energy vision outlines the need to lay the "building blocks for future success" to achieve economic growth and a clean energy future.[8] For this vision to provide meaningful policy direction for public and private stakeholders, however, the government must clearly define what constitutes a "clean energy future."

Clean Energy Canada recommends integrating the following three priorities in the government's definition of a "clean energy future":

[4] https://www.gov.uk/government/publications/powering-up-britain/powering-up-britain-energy-security-plan
[5] https://www.wa.gov.au/organisation/energy-policy-wa/energy-transformation-strategy-2019-2021
[6] https://news.ontario.ca/en/release/1005215/ontario-ready-to-meet-the-challenge-of-soaring-energy-demand
[7] https://netzeroclimate.org/innovation-for-net-zero/progress-tracking/
[8] https://www.ontario.ca/page/ontarios-affordable-energy-future-pressing-case-more-power

1) Maximizing household energy affordability

First, the government should ensure that households across the province have the choice to save money through electrification, as the province modernizes its electricity system. Ontario currently lags other provinces when it comes to supporting the adoption of household clean technologies.[9]

In Ontario, households consistently identify the cost of living and affordability as their top concerns, with energy costs — whether from heating their homes or fueling their vehicles — being a major contributor to these costs.[10] Thankfully, there are a variety of household clean energy solutions that can cut these costs.

Clean Energy Canada's recent analysis found that a household in Toronto that switched its gas cars for electric versions, swapped out its natural gas appliances, installed a heat pump, and made some modest energy efficiency upgrades would cut $550 off its monthly bill, even taking into account upfront costs.[11]

Ontarians want access to these cost-saving clean energy solutions. In a survey conducted in the GTA (results available upon request), we found that more than half of respondents had a positive impression of heat pumps, would like to get a heat pump at some point or already have one. Learning that heat pumps are two to five times more efficient than gas furnaces made 52% of respondents even more inclined to install a heat pump. 54% say they are likely to consider installing an efficient (heat pump) electric hot water heater and the same share indicated they are inclined to buy an EV as their next vehicle. And 53% of GTHA residents believe that new buildings should come with heat pumps wherever it makes sense, compared to 24% who believe new buildings should be allowed to connect to natural gas heating.

And the savings aren't just from avoided fuel costs — these same resources are increasingly being recognized as valuable assets in a clean electricity system. The government has rightfully highlighted the role distributed energy resources can play in avoiding a more costly energy system buildout and optimizing the value we get from renewable energy. Both of these DER-related opportunities can help families save even more on their energy bills. Maximizing the role clean electricity generation plays in Ontario also helps support more Ontario jobs and ensures consumers experience more predictable prices compared to imported fossil fuels (whose prices can be more volatile and impacted by global instability.[12]
Ontario households currently lack access to the policies and programs needed to reduce upfront cost barriers and unlock longer-term household clean energy savings compared to other provinces and a growing number of U.S. states . As the province develops its integrated energy

[9] https://cleanenergycanada.org/report/making-the-grade/
[10] https://angusreid.org/ontario-pcs-ndp-liberals-doug-ford-cost-of-living-health-care-housing-affordability-bonnie-crombie-marit-stiles/
[11] https://cleanenergycanada.org/report/opening-the-door/
[12] https://www.dunsky.com/wp-content/uploads/DER-potential-study-IESO-Dunsky-Vol1.pdf

plan, household energy affordability — and the deployment of clean energy technologies — must be a top priority.

2) Ensuring long-term clean competitiveness

Second, the government should ensure that the build out of our electricity grid maintains the clean competitiveness of key Ontario industries. The expansion of our clean energy resources has both direct and indirect economic benefits that can increase our competitiveness and draw in foreign direct investment.

A recent survey of Canada's 220 largest public companies found that 95% of companies are publishing a sustainability, ESG, climate action/transition or similar report, with 88% of those disclosing Scope 1 and 2 GHG emissions, which includes electricity use.[13] Jurisdictions around the world are increasingly leveraging their clean grids to draw in specific investments. Texas for example, has used its Competitive Renewable Energy Zone policy to attract EV manufacturing (including Tesla's Gigafactory)[14], as well as semiconductors[15] and advanced battery manufacturing. Iceland has made a significant push in AI and data centres[16] from some of the largest technology companies in the world including Google, who have some of the most ambitious climate targets of any industry.[17]

Earlier this year, Clean Energy Canada brought together some of the province's largest industrial energy users to identify consensus recommendations to guide the development of the province's clean energy system. Those stakeholders agreed that the next decade will be critical to ensure Ontario can protect its clean competitive advantage in a world increasingly transitioning to net-zero. Through this period of growth and modernization, there are four key characteristics of the energy systems that can help ensure a clean energy future means one where Ontario's industries are able to effectively compete:

- Reliable: An electricity system that can generate, transmit, and distribute the necessary power to facilities operating in the province now and in the future. A system that is resilient to the impacts of climate, variable generation, and that leverages technology and innovation to ensure energy security.
- Affordable: An electricity system that can provide electricity that is cost-competitive with jurisdictions across in North America, and provide predictable pricing systems. This

[13] https://www.torys.com/our-latest-thinking/publications/2024/2024-climate-disclosure-report
[14] https://www.thecooldown.com/green-tech/tesla-giga-texas-rooftop-solar/
[15] https://www.ti.com/about-ti/newsroom/news-releases/2024/2024-03-06-texas-instruments-commits-to-100--renewable-electricity-in-the-u-s--by-2027--worldwide-by-2030----.html
[16] https://www.datacentersbyiceland.com/#:~:text=Clean%20and%20green%20in%20Iceland&text=A%20data%20center%20in%20Iceland,and%2010%2Dyear%20cost%20visibility.
[17] https://www.infrastructureinvestor.com/the-rise-and-rise-of-the-nordic-data-centre-industry/

necessitates a system that is built on cost transparency of electricity generation, storage, transmission, and distribution to ensure value to consumers.

- Predictable: An electricity system guided by a predictable, transparent, and consultative policy approach that balances the differing needs of its users and is centered around providing a quality service to consumers. A system that can deliver the electricity necessary for a decarbonizing economy with a 2050 net-zero target.

- Clean: An electricity system that maintains and prioritizes its low-carbon advantage, recognizing that it provides a competitive edge in siting decisions for industry. A system that provides a level playing field for non-emitting energy generation and capacity, and uses every tool available to rapidly build out generation, and is aligned with clean economy targets.

Building on these characteristics, it is essential that the province seeks to maximize the role of low cost energy sources, and in Ontario, that means prioritizing a growing role for renewables. There's no question that wind and solar won't be able to address the province's growing clean electricity demand on their own, but as Clean Energy Canada's own analysis confirms, these resources represent some of the cheapest ways to generate electricity.

According to our analysis, electricity from wind and solar is already cost-competitive with natural gas generation in Ontario costs are expected to decline by a further 40% by 2035, compared to relatively flat costs for new gas deployments.[18]

Modelling from The Atmospheric Fund and the IESO that looked at pathways for achieving net zero both saw wind energy make up a significant share of new capacity, with both solar and storage playing important supporting roles in achieving a clean, reliable, affordable grid.[19] [20]

3) Achieving Clean Targets

The third and final priority is to connect the dots between the build out of the province's energy system, and the achievement of key climate targets. A current lack of clean targets for the province's electricity grid has been highlighted as a risk to economic growth, with the potential for missed opportunities in key growth markets such as renewables, batteries and storage solutions.[21] The Ontario government has already clearly articulated the need for its energy plan to both help reduce province wide emissions, as well as achieve the government's 2030 emissions target.[22] Given that the energy plan will be using a 2050 planning horizon, the

[18] https://cleanenergycanada.org/wp-content/uploads/2023/01/RenewableCost_Report_CleaEnergyCanada_Feb2023.pdf
[19] https://taf.ca/custom/uploads/2022/11/TAF_Scenarios-for-a-Net-Zero-Electricity-System-in-Ontario-Power-Advisory_Nov2022.pdf
[20] https://www.ieso.ca/-/media/Files/IESO/Document-Library/gas-phase-out/Pathways-to-Decarbonization.pdf
[21] https://climateinstitute.ca/reports/net-zero-opportunities-provincial-perspective/
[22] https://news.ontario.ca/en/release/1005215/ontario-ready-to-meet-the-challenge-of-soaring-energy-demand

government should take the opportunity to centre the achievement of a net-zero economy by 2050 as a core aspect of its vision.

The government's own Electrification and Energy Transition Panel recommended that Ontario "develop and communicate a commitment and associated policy principles for achieving a clean energy economy for Ontario by 2050 in its final report." It was the Panel's first recommendation and they believed it should act as the province's "north star."

Recommendation 3: Establishing a process for integrated energy planning

The Government of Ontario has already shown considerable leadership in scoping its integrated energy planning process to include consideration for all of Ontario's energy systems. While this plan will provide a critical opportunity for the Minister to set a clear direction for other energy system actors, the detailed planning and implementation will need to occur by others, in particular the OEB.

Integrated planning is a technical process, necessitating careful consultation and planning. In other jurisdictions, energy regulators have been given responsibility for transparently facilitating the engagement of important public and private sector stakeholders, as well as identifying the necessary policy and regulatory reforms required to ensure affordability can be protected.

There is no question that both electricity and natural gas will continue to play a role in Ontario's energy system over the short and medium term. However, consumer demands are changing, and Ontario needs to be ready. In Ontario, 49% of people living in the GTHA already have a positive perspective on heat pumps and are interested in either having one installed, or learning more. Over half believe a household with a heat pump and EV will pay less on their monthly energy bill than a household using fossil fuel based technologies.

Driven by this growing desire to secure the cost reductions and other benefits associated with electrification—as well as the need to reduce greenhouse gas emissions—both households and industry are increasingly looking to clean electricity to make up a greater share of their energy needs.

Other jurisdictions across North America are taking action to address the need for integrated planning between energy systems. In the U.S., at least 13 states, covering over 30% of the U.S. population, have initiated "future of gas" proceedings to explore the necessary regulatory changes, ensuring affordability, energy security and climate objectives can be advanced simultaneously.[23]

When it comes to affordability, there are a number of pressures mounting on the natural gas system that it need to be planned for, including: 1) the growing desire to electrify and the

[23] https://buildingdecarb.org/wp-content/uploads/BDC-Presents-Future-of-Gas-Summary.pdf

cost-competitiveness of electrification, 2) the risk of overbuilding gas infrastructure, leaving costly stranded assets, and 3) the growing cost pressures that will face households and industries that continue to use natural gas as electrification accelerates, leaving fewer ratepayers over which to spread the costs of gas infrastructure.[24]

Managing this transition will require strategies that optimize (and reduce) spending on the gas system, as well as manage rates for gas customers who have not or are unable to make the switch to clean electricity. Support will be particularly needed for low-income and underserved communities who are more vulnerable to the impacts of higher energy bills and face higher barriers to switching away from natural gas.

Learning from the processes taking place in other parts of North America, the Ontario government should use the integrated energy plan to:

- Provide clear direction to the OEB to initiate a robust planning process that will transparently examine how Ontario can integrate the planning of its natural gas and electricity systems.
- Publish the "Cost-Effective Energy Pathways Study" it commissioned from ESMIA, which aimed to identify the least-cost pathways to decarbonizing the province's energy system by 2050. This study can provide vital and transparent insights into the opportunities, challenges and actions required to navigate this transition in the most cost-effective way possible, providing greater certainty for both industry and electricity stakeholders.

[24] https://buildingdecarb.org/wp-content/uploads/BDC-The-Future-of-Gas-in-NYS.pdf

Appendix - Recommendation 4: Responses to specific EOR Posting Questions

To support the development of an Integrated Energy Plan that aligns with the government's vision, as laid out in *Ontario's Affordable Energy Future: The Pressing Case for More Power*, Clean Energy Canada recommends the government implement the policies outlined below, which respond to the specific questions posed in the government's consultation.

Overarching Question

What policy options and actions should the government consider in the integrated energy resource plan to achieve Ontario's vision for meeting growing energy needs, keeping energy affordable and reliable, ensuring customer choice and positioning us to be an energy superpower?

The government's energy vision outlines the need to lay the "building blocks for future success" to achieve economic growth and a clean energy future.[25] For this vision to provide meaningful policy direction for public and private stakeholders, however, the government must clearly define what constitutes a "clean energy future."

Clean Energy Canada recommends integrating the following three priorities in the government's definition of a "clean energy future":

1) **Maximizing household energy affordability**: The government should ensure that households across the province have the choice to save money through electrification, as the province modernizes its electricity system. Ontario currently lags other provinces when it comes to supporting the adoption of household clean technologies.[26]
2) **Ensuring long-term clean competitiveness:** Ensure that the build out of our electricity grid maintains the clean competitiveness of key Ontario industries. The expansion of our clean energy resources has both direct and indirect economic benefits that can increase our competitiveness and draw in foreign direct investment.
3) **Achieving Clean Targets:** Connect the dots between the build out of the province's energy system, and the achievement of key climate targets. The government should centre the achievement of a net-zero economy by 2050 as a core aspect of its vision.

[25] https://www.ontario.ca/page/ontarios-affordable-energy-future-pressing-case-more-power
[26] https://cleanenergycanada.org/report/making-the-grade/

Planning for Growth

Building on the recommendations of the EETP's final report, what actions should be prioritized to enhance planning across natural gas, electricity, and other fuels?

The Ontario government should use the integrated energy plan to:

- Provide clear direction to the OEB to initiate a robust planning process that will transparently examine how Ontario can integrate the planning of its natural gas and electricity systems.
- Publish the "Cost-Effective Energy Pathways Study" it commissioned from ESMIA, which aimed to identify the least-cost pathways to decarbonizing the province's energy system by 2050. This study can provide vital and transparent insights into the opportunities, challenges and actions required to navigate this transition in the most cost-effective way possible, providing greater certainty for both industry and electricity stakeholders.

Integrated planning is a technical process, necessitating careful consultation and planning. In other jurisdictions, energy regulators have been given responsibility for transparently facilitating the engagement of important public and private sector stakeholders, as well as identifying the necessary policy and regulatory reforms required to ensure affordability can be protected.

In the U.S., at least 13 states, covering over 30% of the U.S. population, have initiated "future of gas" proceedings to explore the necessary regulatory changes, ensuring affordability, energy security and climate objectives can be advanced simultaneously.[27]

When it comes to affordability, there are a number of pressures mounting on the natural gas system that it need to be planned for, including: 1) the growing desire to electrify and the cost-competitiveness of electrification, 2) the risk of overbuilding gas infrastructure, leaving costly stranded assets, and 3) the growing cost pressures that will face households and industries that continue to use natural gas as electrification accelerates, leaving fewer ratepayers over which to spread the costs of gas infrastructure.[28]

Managing this transition will require strategies that optimize (and reduce) spending on the gas system, as well as manage rates for gas customers who have not or are unable to make the switch to clean electricity. Support will be particularly needed for low-income and underserved communities who are more vulnerable to the impacts of higher energy bills and face higher barriers to switching away from natural gas.

[27] https://buildingdecarb.org/wp-content/uploads/BDC-Presents-Future-of-Gas-Summary.pdf
[28] https://buildingdecarb.org/wp-content/uploads/BDC-The-Future-of-Gas-in-NYS.pdf

The government's priority is to ensure Ontario has the energy resources it needs to support growth. Are there opportunities to enhance the province's approach to procuring electricity generation supply to better serve this priority?

Clean Energy Canada recommends that the government:

- **Establish a Competitive Renewable Energy Zones (CREZ) Governance Framework for Ontario, announced in Budget 2025.**
  This framework should include a model community benefit agreement that can be replicated in future zones and which provides clear financial incentives and regulatory streamlining for projects within the designated zone. By 2026, the province should launch a pilot CREZ that targets a specific region with high renewable potential and existing infrastructure capacity. CREZ policies in Texas and other jurisdictions have had a multitude of benefits to the energy system and economy writ large, including helping to stabilize and reduce electricity prices in wholesale markets, and reduce costs for commercial and residential customers. Significant numbers of jobs in engineering, construction, and ongoing operations and maintenance of renewable infrastructure have been created directly and indirectly.[29]

Affordable and Reliable Energy

What further steps should the government take to enable households and businesses to manage and make informed decisions about their energy use?

Clean Energy Canada recommends that the government:

- **Double the number of households enrolled in the Peak Perks Program, providing more households with free smart thermostats to manage their energy use.**
  Build on the success of the Peak Perks program (with its over 100,000 households enrolled achieving demand reduction of 90MW [30]) and expand it by offering a free smart thermostat shipped to any Ontario resident that signs up for the program with an associated awareness campaign. Smart thermostats are popular among Canadians, with 62% of residents in the GTHA saying that they are likely or very likely to adopt the technology based on recent polling by Clean Energy Canada. Furthermore, this same polling shows that adoption of technologies like a smart thermostat helps increase the likelihood that a household will consider other household clean energy technologies, supporting the broader deployment of DERs.

[29] https://www.bakerinstitute.org/research/texas-crez-lines-how-stakeholders-shape-major-energy-infrastructure-projects
[30] https://www.ieso.ca/Corporate-IESO/Media/News-Releases/2024/01/Peak-Perks-Program-100000-Enrollments

Ontario could double the number of enrolled households for less than $20 million, which would provide an additional 90 MW of demand reduction in return.[31] Providing free thermostats as part of energy conservation programs is also a policy that public and private utilities across North America have provided for a number of years, including Texas[32] and Alberta.[33]

What actions could the government consider to ensure the electricity system supports customers who choose to switch to an electric vehicle?

Clean Energy Canada recommends that the government:

- **Advance Regulatory Changes for Ontario's Grid to Support Cost Effective and Easily Accessible Charging Options**
  A growing EV charging network represents an opportunity to provide more ways for EV owners to charge their vehicles conveniently and affordably. With some regulatory modernization, EV charger deployment can also be done in a way that minimizes peak demand impact and increases grid resilience. The government has a suite of options available to explore, including:
  - Empower local distribution companies to become a stakeholder in charging projects and implement non-wire solutions to minimize peak demand impacts, as California's Pacific Gas and Electric Company has done by actively enrolling EV storage in demand response.[34]
  - Support customer return on investment for EV charger purchases through incentives to allow system access to electric vehicle supply equipment and its ongoing operation.
  - Specifically list EV charging as eligible for "beneficial electrification" under the proposed Affordable Energy Act to provide clarity and efficiently support condo and apartment building retrofits.
  - Allow new developments and existing buildings to benefit from the extended connection horizons currently being considered by the OEB.
  - Implement time of use rates for Non-Regulated Price Plan Class B Customers to incentivize EV service equipment installs in condos and apartment buildings (due to a more predictable operational cost structure) and encourage off-peak charging.

[31] Assuming a per-unit cost of $200, which is the current retail price, minus HST, of the *Ecobee 3 lite* model, an Ontario manufacturer. Lower pricing based on bulk purchases are likely, and would reduce this investment cost.
[32] https://www.texaselectricityratings.com/deals/free-nest-thermostat
[33] https://mobilesyrup.com/2017/10/04/alberta-government-wants-install-smart-thermostats-advanced-power-bars-home/#:~:text=As%20per%20the%20province's%20'Residential,through%20the%20Efficiency%20Alberta%20website.
[34] https://www.pge.com/assets/pge/docs/about/doing-business-with-pge/2022-PGE-Integrated-Resource-Plan.pdf

- **Introduce interest-free loans that bridge the upfront cost differential between internal combustion engine and electric vehicle models for new vehicle purchases**
  Offer interest free loans to cover the upfront cost differential between traditional combustion engine and electric vehicles available in Canada. In Canada, the average ICE vehicle cost $66,000 in 2023, while the average electric vehicle was $73,000. The interest free loan should be designed to cover this average sticker price difference of $7,000, which drivers could re-pay through the substantial operational cost-savings EVs provide.[35] (A typical EV saves drivers in Ontario around $2,400 a year compared to an ICE vehicle driver, which would translate into loan payback periods of less than three years.[36] Loan payback periods could be aligned with the customers existing financing, and delivered through a partnership with private lenders. This policy would be a more fiscally conservative version of similar interest-free or low-interest loan policies that jurisdictions such as France[37] and Scotland[38] have provided, which covered the majority of the entire vehicle purchase ($30,000+).

- **Remove the 8% provincial portion of the HST on used light duty battery electric and plug-in hybrid vehicles**
  Provide a tax break on used EVs that can help to spur uptake and support Ontarians that want to go electric but are in the market for a cheaper used vehicle. This would be administered as a point-of-sale rebate when purchasing from a dealership[39], and waived when registering a vehicle following a private sale. Similar programs providing tax relief have been successfully rolled out in multiple jurisdictions including British Columbia, which exempts used EVs from its provincial sales tax, as well as Norway, which has the highest uptake of EVs in the world.[40]

- **Leverage the Ontario Infrastructure Bank to finance public charging**
  This government could look to leverage the Ontario Infrastructure Bank to finance the province's public charging network buildout, similar to the Canada Infrastructure Bank's successful Charging and Hydrogen Refuelling Infrastructure Initiative, which has supported thousands of public charging and hydrogen refueling stations to-date.[41]

- **Support home EV charging in existing condo and apartment buildings**
  The ChargeON program has already successfully delivered over 1,300 charging stations in small- and medium-sized communities across Ontario.[42] The Ontario government

35 https://www.theglobeandmail.com/investing/personal-finance/household-finances/article-this-is-the-price-where-evs-become-affordable-for-the-masses/
36 https://cleanenergycanada.org/report/the-scenic-route/
37 https://www.thelocal.fr/20220503/france-to-offer-interest-free-loans-for-low-emission-vehicles#google_vignette
38 https://transportandenergy.com/2022/06/07/scottish-government-announces-30m-funding-to-boost-ev-uptake/
39 https://www.ontario.ca/document/harmonized-sales-tax-hst/hst-ontario-point-sale-rebates
40 https://www2.gov.bc.ca/assets/gov/taxes/sales-taxes/publications/pst-308-vehicles.pdf; https://elbil.no/english/norwegian-ev-policy/
41 https://cib-bic.ca/en/charging-and-hydrogen-refuelling-infrastructure-initiative/
42 https://news.ontario.ca/en/release/1005313/ontario-building-more-electric-vehicle-charging-stations

should re-capitalize this highly popular ChargeON program and expand eligibility to include charging stations in condos and apartment buildings so all Ontarians can benefit from affordable, accessible home charging. In Ontario, 31% of households live in apartment buildings. The share is highest in Toronto, where 40% of households live in an apartment, but apartments are also common in communities such as Hawkesbury, Orillia and Kitchener-Cambridge-Waterloo, where over a quarter of households live in apartments. Several Canadian provinces—including Quebec, B.C. and Nova Scotia—offer funding to support EV charging in condos and apartment buildings.[43] Ontario's Infrastructure Bank could also partner with developers to retrofit multi-unit residential and commercial buildings to add EV chargers at scale and complement the ChargeON program.

➢ **Give new condo and apartment residents the choice of driving an EV**
The province should consider a phased approach to ensuring new condos and apartment buildings are "EV ready,"[44] starting by offering tax exemptions for developers that add EV charging to new builds to familiarize the construction industry with the technology and support first movers, something jurisdictions such as the Netherlands have applied with success, allowing businesses to write off up to 75% of the cost of installing charging infrastructure.[45] Eventually, the province should update the Ontario Building Code to require that all new condos and apartment buildings be 100% EV-ready. With the Ontario government aiming to support a massive buildout of new homes over the next decade, it is prudent to equip these homes with EV charging (or ensure they are EV ready) from the start to avoid expensive retrofits later.[46] Other provinces are moving in this direction. For instance, the Province of Quebec is expected to release its updated building code with 100% EV readiness provisions for condos and apartment buildings by the end of 2024, offering a model for Ontario to follow.[47] Manitoba's recently released energy strategy also includes a commitment to "Introduce New Codes and Standards for EV Chargers for Multi-Unit Residential Buildings, and in New Construction."[48]

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[43] For instance, Quebec offers $500 per connector or wireless charging station plus 50% of the eligible expenses for the installation of the charging stations up to a maximum of $20,000 for a building with 3 to 9 dwelling units; $40,000 for a building with 10 to 19 dwelling units; and $49,000 for a building with 20 or more dwelling units. https://www.quebec.ca/en/transports/electric-transportation/financial-assistance-electric-vehicle/charging/multiple-dwelling-building-charging-station/amount-financial-assistance ; B.C. Hydro similarly offers up to $137,000 to support creating an EV Ready plan for the building, installing the electrical infrastructure to implement the plan, and purchasing and installing the chargers to implement the plan. https://www.bchydro.com/powersmart/electric-vehicles/rebates-incentives/rebates-apartment-chargers.html ; https://www.efficiencyns.ca/evcharging/

[44] "EV readiness" means each parking stall in an EV-ready building features an adjacent outlet and sufficient upstream electrical capacity to support the easy installation of future Level 2 chargers.

[45] https://www.ampeco.com/blog/ev-and-ev-charging-incentives-in-the-netherlands/

[46] It is three to four times cheaper to install EV-ready parking spots at the point of construction than to retrofit the parking spots post-construction, according to a costing study conducted in the Greater Toronto and Hamilton Area. https://www.cleanairpartnership.org/wp-content/uploads/2022/05/EV-Ready-Requirements-for-Municipalities.pdf

[47] https://cdn-contenu.quebec.ca/cdn-contenu/environnement/vehicules-electriques/recharge/Strategie-quebecoise-recharge-vehicules-electriques.pdf

[48] https://www.manitoba.ca/asset_library/en/energyplan/mb-affordable-energy-plan.pdf

What actions should the government consider that would empower customers to install innovative technologies to generate or store energy on-site to reduce costs and improve resiliency?

Clean Energy Canada recommends that the government:

- **Help rural communities become more energy resilient by piloting a scheme for home battery storage purchase and installation.**
  Ontarians in rural communities often face challenges with energy reliability and cost. The province should work with Local Distribution Companies to pilot a new policy for households in targeted postal codes that helps them access home batteries (e.g., Tesla Powerwall) for a subsidized fixed monthly fee in return for utility access to draw on the stored power at peak times. Vermont has been trialing a similar program since 2015, and, after much success, f made the program permanent in 2024. The program has grown a fleet of batteries totalling 27 megawatts of capacity and lowered grid costs for all customers during peak hours while providing substantial gains in reliability during weather events.[49] Programs like these can also support Ontario manufacturing and de-risk the tens of billions of dollars in investments made into the province's battery supply chain by building a domestic market for stationary storage.

What policy or regulatory changes should government consider to address financial risks and support adoption of DER in the long-term?

Clean Energy Canada recommends that the government:

- **Ensure coordination between the government's Non-Wire Alternatives Guidelines, its Energy Efficiency Framework and any new programming developed to support Beneficial Electrification**
  The government has taken some promising steps towards supporting DERs. It must now ensure coordination and consistency between the various initiatives supporting distributed energy resources, in particular the Energy Efficiency Framework and Non-Wires Guidelines for utilities and the new programming that is developed to advance beneficial electrification. To start, the government should recognize heat pumps for space and water heating, as well as EV charging, as forms of beneficial electrification under the Affordable Energy Act.

49 https://www.canarymedia.com/articles/batteries/vermonts-biggest-utility-dramatically-expands-home-battery-subsidies#:~:text=Customers%20who%20opt%20for%20the,for%20safe%20disposal%20via%20recycling.

What actions can the government take to enhance collaboration between the OEB, the IESO, local distribution companies, industry stakeholders, and local communities to support the investment and integration of DER?

Clean Energy Canada recommends that the government:

- **Direct the OEB to develop recommendations for a made-in-Ontario model for a distribution system operator.**

  Ontario has firmly established itself as a leader in Canada in considering the growing role that DERs could play in meeting Ontario's clean energy needs. In large part led by the IESO, initiatives like the Transmission-Distribution Coordination Working Group ("TDWG") have been working to explore different approaches that may be required to support these technologies in playing a role in both the bulk system and at the distribution level. What is needed now is a comprehensive effort to develop a collaborative and coordinated governance framework that can manage the cost effective deployment of resources and modernization of the grid. This will clarify responsibilities regarding the deployment and management of distributed energy resources and the facilitation of regional planning. Jurisdictions such as the UK are leading the way on integrated energy planning and energy system modernization in large part due to: robust modernization of their regulatory systems to more easily allow for DER integration; more regional say in energy provision; and swift, responsive expansion of energy resources.[50] [51]

What further actions could the government take to maintain an affordable energy system for Ontarians throughout the energy transition?

To maintain an affordable energy system for Ontarians, the Government should leverage the best practices from other jurisdictions that already have their own energy plans in place, including:

1) Integrate planning for different energy systems.
2) Provide a clear vision, specific objectives and concrete actions.
3) Regularly update the energy plan.
4) Comprehensively engage stakeholders.
5) Provide specific targets.
6) Explicitly centre the achievement of a net-zero economy by 2050.

More details on these best practices can be found above in Recommendation 1.

50 https://www.gov.uk/government/publications/energy-security-bill-factsheets/energy-security-bill-factsheet-future-system-operator#why-are-we-legislating

51 https://www.neso.energy/news/new-regional-system-unlocking-britains-renewable-energy-potential