

*Rethinking Regulation to Decarbonize Canada*

# Optimizing Ontario

Regulatory solutions to sustainably  
meet growing demand

October  
2024

Lia Codrington, Grace Brown

**PEMBINA**  
Institute

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The Pembina Institute recognizes that the work we steward and those we serve span the lands of many Indigenous Peoples. We respectfully acknowledge that our organization is headquartered in the traditional territories of Treaty 7, comprising the Blackfoot Confederacy (Siksika, Piikani and Kainai Nations); the Stoney Nakoda Nations (Goodstoney, Chiniki and Bearspaw First Nations); and the Tsuut’ina Nation. These lands are also home to the Otipemisiwak Métis Government (Districts 5 and 6).

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# Executive summary

Currently, Ontario's electricity grid is 89% non-emitting, dipping from 96% in 2017, with planned generation from greenhouse-gas-emitting sources threatening to further reduce the province's clean energy advantage.<sup>1</sup> By 2030, gas generation is forecast to account for about 25% of Ontario's electricity supply<sup>2</sup> due to rising demand and a short-term dip in nuclear generation during planned refurbishments. Even after these refurbishments are complete, the Independent Electricity System Operator (IESO) expects gas plants to play an important role in the system until the late 2030s and beyond for reliability purposes. However, this forecast is only one potential pathway for the future of Ontario's electricity system. There are other ways for the province to keep pace with growth while maintaining the low electricity sector emissions for which it has become known. With careful forethought, Ontario can modernize its grid to enable new technologies and approaches that will help address increasing electricity demand without compromising the province's clean energy advantage. To achieve this, the legislative and regulatory frameworks that govern the provincial electricity system will need to be updated.

This report explores the regulatory barriers that inhibit grid modernization and decarbonization in Ontario, presents recommendations for overcoming these barriers and identifies the opportunities that can result.

Recommendations are divided into two categories depending on their scale.

The first category suggests regulatory changes that can be made immediately without significant legislative adjustments. These changes involve committing to a provincial strategic vision, enabling innovation, preparing the electricity system to integrate new technologies, designing new valuation methods that fairly assess these new technologies and including stakeholders through meaningful engagement.

The second category presents measures that require longer timelines and more comprehensive structural changes to the legislative and regulatory frameworks. These measures involve empowering electricity system actors to lead the modernization process, collaborating with other jurisdictions to optimize grid operations and changing utility remuneration models to enable a strong business case for utilities to support innovation.

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<sup>1</sup> IESO, "Transmission-Connected Generation." <https://www.ieso.ca/en/Power-Data/Supply-Overview/Transmission-Connected-Generation>

<sup>2</sup> IESO, "2024 Annual Planning Outlook Data Tables," spreadsheet, March 2024. <https://www.ieso.ca/-/media/Files/IESO/Document-Library/planning-forecasts/apo/Mar2024/2024-Annual-Planning-Outlook-Data-Tables.xlsx>

The provincial government, the Ontario Energy Board (OEB), and the IESO all have their own role in modernizing and decarbonizing the electricity system, and we have proposed recommendations for each of these entities.

While this report focused on opportunities for these entities to take on leadership roles, utilities and developers also have a part to play in modernizing the electricity grid because of their influence on policy makers and ability to make on-the-ground changes. Once policies are in place, utilities are best positioned to take advantage of the opportunities to advance innovation in their service areas. However, these advancements are only possible with local support. Utilities and developers must build strong relationships with communities and municipalities, develop their proposals based on communities' identified needs and concerns, and compensate impacted communities through community benefit agreements.

Many of the recommendations in this report are interdependent. Collective action will be necessary to reduce reliance on gas generation, meet the electricity demands of today and tomorrow, and ultimately maintain Ontario's clean energy advantage.

## Summary of recommendations

### Government of Ontario

1. Commit to an emissions reduction target that aligns with the earliest possible achievement of a net-zero emissions electricity system, define interim steps and develop an integrated provincial energy plan informed by third-party studies that identify potential pathways to achieve the chosen targets.
2. Accompany this energy plan with updates to the OEB's mandate that include decarbonization as a regulator objective.
3. Continue implementing a consumer price on carbon, or a made-in-Ontario equivalent, as a complement to the province's Emissions Performance Standards industrial carbon pricing program.
4. Support the OEB and the IESO in making decisions aligned with the provincial government's emissions reduction targets.

### Ontario Energy Board

1. Consider grid needs beyond the five-year rate application cycle to allow utilities a longer time horizon for innovation.

2. Develop an assessment framework for anticipatory investments and send a clear message to utilities on what types of anticipatory investments can be recovered through rates.
3. Expand the Benefit-Cost Analysis Framework for Addressing Electricity System Need (BCA Framework) to include social objectives such as achieving provincial clean energy targets to ensure future development aligns with government policy.
4. Enact the regulatory changes required to expand successful pilots into commercial-scale projects after they leave the Innovation Sandbox environment.
5. Revisit the public policy responsiveness metric in the fourth-generation incentive rate-setting scorecard and financially incentivize utilities for aligning their proposals with provincial energy plans.
6. Continue to encourage utilities to submit innovative rate applications that provide financial incentives for grid modernization and the adoption of cost-effective new technologies as a complement to the BCA Framework.

## Independent Electricity System Operator

1. Explore how collaboration with other jurisdictions, perhaps through regional transmission planning or regional transmission operators, could help the province achieve its clean energy goals.
2. Integrate lessons learned from successful Grid Innovation Fund pilot projects into operations.
3. Continue to explore how distribution system operators and other opportunities for electricity system restructuring could bolster grid modernization.
4. Publish and maintain a map showing grid hosting capabilities for both new generation and new load.



# 1. Introduction

In 2021, the Government of Canada announced its intent to achieve a net-zero economy by 2050. As a first step towards this target, the federal government also committed to achieving a net-zero electricity grid by 2035.<sup>3</sup> An abundant supply of clean energy will be needed to power traditionally high-emitting sectors like heavy industry and manufacturing, transportation and buildings as they evolve to meet Canada’s 2050 target. Canada’s electricity grid is already 84% non-emitting due to past investment in hydroelectric resources, but more needs to be done to build capacity, meet rising demand and fully decarbonize the growing system by 2035.<sup>4</sup>

Ontario faces a similar challenge. While good progress has been made towards decarbonizing the provincial electricity grid, forecasts show a widening gap between energy supply and demand over the next two decades.<sup>5</sup> Previous investments in nuclear and hydro infrastructure have established the province as a clean electricity powerhouse with an electricity grid that is 89% emissions-free.<sup>6</sup> Attracted by the promise of clean electricity, the industrial sector has boomed. This increase in industrial activity, alongside population growth and the electrification of transportation and home heating, are anticipated to put significant pressure on Ontario’s electricity system in the years to come.

To maintain its clean energy advantage, Ontario will need to meet growing demand without investing capital in new gas generation or increasing production from existing gas facilities. New technologies like distributed energy resources (DERs) and other non-wires solutions (NWS) can help fill the demand-supply gap, but outdated regulatory approaches limit their implementation. This report, part of a series that identifies opportunities for regulatory reform to advance decarbonization across Canada, examines how Ontario’s electricity regulation frameworks could evolve to address growing demand and enable grid modernization.

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<sup>3</sup> Government of Canada, *Canadian Net-Zero Emissions Accountability Act*, S.C. 2021, c. 22. <https://laws-lois.justice.gc.ca/eng/acts/c-19.3/fulltext.html>

<sup>4</sup> Environment and Climate Change Canada, “Table A13-1: Electricity Generation and GHG Emission Details for Canada,” November 10, 2023. <https://data-donnees.az.ec.gc.ca/data/substances/monitor/canada-s-official-greenhouse-gas-inventory/C-Tables-Electricity-Canada-Provinces-Territories/?lang=en>

<sup>5</sup> IESO, *Annual Planning Outlook* (2024), 50. <https://www.ieso.ca/en/Sector-Participants/Planning-and-Forecasting/Annual-Planning-Outlook>

<sup>6</sup> IESO, “2022 Year in Review.” <https://www.ieso.ca/en/Corporate-IESO/Media/Year-End-Data>

## 1.1 Methodology and scope

Ontario's partially deregulated electricity system is complex and unique, and it involves many different entities. For this report, we conducted 10 unattributed interviews with electricity system actors in Ontario to get province-specific insights on opportunities for regulatory reform. These interviews were complemented by a review of recent literature published by these actors, as well as by academics and think tanks.

While generation is a key component of electricity systems, opportunities for decarbonizing generation itself have been discussed in other works. This report takes a different perspective by looking at Ontario's electricity system through a regulatory lens, with a special focus on meeting grid needs through innovative approaches. Our research identified actions that Ontario's Ministry of Energy and Electrification (formerly known as the Ministry of Energy), the Ontario Energy Board (OEB), the Independent Electricity System Operator (IESO), municipalities and distribution utilities across bulk, regional and distribution levels can take to enable and implement innovation.

We also developed regulatory recommendations that we arranged into two categories depending on the scale of reform required to enable them. The first category contains measures that can be enacted immediately without significant changes to legislative or regulatory structures and are presented in section 3. The second category contains measures that require broader structural changes and longer timelines and are presented in section 4. A summary of all our recommendations is included at the end of the report.

## 2. Ontario's electricity system

Ontario leads the provinces in economy-wide emissions reduction, bringing emissions in 2019 to 43 megatonnes (Mt) below 2005 levels.<sup>7</sup> This achievement is due in large part to the province's previous electricity system transformation — Ontario phased out all coal generation in 2014,<sup>8</sup> and effective conservation and demand management (CDM) programs have significantly decreased demand.<sup>9</sup> Today, Ontario's electricity system is 89% non-emitting, with over half of generation coming from nuclear power plants and another quarter coming from hydroelectric facilities.<sup>10</sup>

### 2.1 Anticipated challenges

Ontario has successfully adapted its electricity system in the past, and the coming years will test whether the province can put on a repeat performance. Electricity demand is expected to balloon over the next few decades,<sup>11</sup> driven by new industrial sector projects, electrification and population growth.<sup>12</sup> Notably:

- Ontario's progress towards a low-carbon electricity grid has attracted investment from manufacturers looking for affordable clean energy. Five pending connections from new electric vehicle (EV) battery manufacturers and green steel production manufacturers will increase industrial demand by 21%, or 8 terawatt hours,<sup>13</sup> in as little as three years.
- The electrification of transportation and buildings will play a significant role in increasing commercial and residential demand, as well as changing electricity consumption patterns. Ontario has historically been a summer peaking system; however, managed EV charging, electrification of home heating and reduced summer peaks resulting from new demand-side management initiatives and declining agricultural demand are expected to shift the province from a summer peaking system to a dual peaking system by the early 2030s.<sup>14</sup>

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<sup>7</sup> Ontario Energy Association, *Net Zero 2050* (2021), 5.  
[https://energyontario.ca/Files/PDF%20files%20to%20share/OEA\\_Net\\_Zero\\_2050.pdf](https://energyontario.ca/Files/PDF%20files%20to%20share/OEA_Net_Zero_2050.pdf)

<sup>8</sup> *Net Zero 2050*, 4.

<sup>9</sup> *Net Zero 2050*, 8.

<sup>10</sup> "2022 Year in Review."

<sup>11</sup> *Annual Planning Outlook* (2024), 3.

<sup>12</sup> *Annual Planning Outlook* (2024), 16.

<sup>13</sup> *Powering Ontario's Growth*, 34.

<sup>14</sup> *Annual Planning Outlook* (2024), 17.

- Growth in residential demand is compounded by an expanding population. The Government of Ontario is preparing for a 15% increase in population by 2030.<sup>15</sup>

Meanwhile, Ontario's Darlington and Bruce nuclear generation facilities are scheduled to go offline for refurbishment from 2024 through 2033, reducing available generation capacity as demand increases. At peak in 2025 and 2026, four nuclear units will be offline simultaneously, resulting in a loss of up to 9% of generating capacity.<sup>16, 17</sup>

## 2.2 Provincial action plan

To fill the gap left by offline nuclear generators until refurbishments are completed in 2033, the provincial government has announced capacity expansion projects at existing gas facilities,<sup>18</sup> procurement of a new gas facility<sup>19</sup> and procurement of battery storage.<sup>20</sup> Natural gas use in the province has already begun to increase to keep up with demand. In 2022, 10% of Ontario's electricity generation came from natural gas – a 25% increase in natural gas generation compared with 2021.<sup>21</sup> Continued reliance on natural gas power plants to meet rising demand during nuclear refurbishments could more than double the province's electricity emissions to over 10 Mt CO<sub>2</sub>e by 2028,<sup>22</sup> jeopardizing Ontario's reputation as a clean electricity powerhouse and dampening investment from the clean technology manufacturing sector.<sup>23</sup>

Natural gas generation is not the only tool that Ontario is exploring to meet rising demand. The IESO announced a series of staggered long-term procurements to address forecasted capacity

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<sup>15</sup> *Powering Ontario's Growth*, 39.

<sup>16</sup> *Powering Ontario's Growth*, 43.

<sup>17</sup> *Annual Planning Outlook (2024)*, 38.

<sup>18</sup> IESO, "Same Technology Upgrade Solicitation," <https://www.ieso.ca/-/media/Files/IESO/Document-Library/long-term-rfp/Same-Technology-Upgrades-Results.ashx>

<sup>19</sup> IESO, "Long-term 1 RFP and Expedited Process," <https://www.ieso.ca/Sector-Participants/Resource-Acquisition-and-Contracts/Long-Term-RFP-and-Expedited-Process>

<sup>20</sup> *Powering Ontario's Growth*, 43.

<sup>21</sup> "2022 Year in Review."

<sup>22</sup> IESO, *Annual Planning Outlook (2022)*, 78. <https://www.ieso.ca/-/media/Files/IESO/Document-Library/planning-forecasts/apo/Dec2022/2022-Annual-Planning-Outlook.pdf>

<sup>23</sup> Mike Crawley, "Doug Ford Government Wants New Gas Plants to Boost Ontario's Electricity System," *CBC News*, May 1, 2023. <https://www.cbc.ca/news/canada/toronto/ontario-gas-plant-electricity-doug-ford-government-1.6820256>

shortfalls.<sup>24</sup> The long-term procurements aim to bring 5000 MW of distributed energy and other generation resources, including wind and solar, online between 2029 and 2034.<sup>25</sup>

Today, wind and solar generation facilities are cost competitive with new gas plants in Ontario even without considering carbon pricing. They have further potential to bring energy prices down as their cost is expected to fall by another 40% by 2035.<sup>26</sup> The IESO's prioritization of energy storage procurements will also help address peak demand while keeping electricity costs down. Storage facilities contracted in the first round of long-term procurements were contracted at only \$672.32 per MW per business day, while non-storage assets, consisting mainly of natural gas facilities, were contracted at \$1,681.14 per MW per business day.<sup>27</sup>

Alongside these plans for new generation and storage, a continued focus on conservation efforts will also help address rising demand. Electricity energy efficiency programs in various forms have been in place in Ontario since the early 2000s and have been very successful, reducing today's electricity demand by 15%.<sup>28</sup> The most recent package of CDM programs, including program expansions announced in 2023, is forecast to provide three terawatt hours of energy savings in 2026.<sup>29</sup> The IESO and the Ministry of Energy and Electrification are currently developing the province's next CDM framework.

## 2.3 Innovative initiatives

Innovation will play a crucial role in meeting Ontario's rising electricity demand. How electricity is both generated and consumed is evolving as new technologies become available, and the regulatory systems that govern electricity must also adapt to keep up with changing customer needs. Proactive innovation, rather than rushed reaction, will help the province anticipate change and take full advantage of the economic benefits that large-scale reform can bring.

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<sup>24</sup> IESO, *2023 Annual Planning Outlook: Demand Forecast, Supply Outlook, and Acquisition Needs*, webinar, December 13, 2023, 23. <https://www.ieso.ca/-/media/Files/IESO/Document-Library/engage/apo/2023apo-20231213-presentation.pdf>

<sup>25</sup> IESO, *Resource Adequacy Update – Evaluating Procurement Options for Supply Adequacy* (2023), 7. <https://www.ieso.ca/-/media/Files/IESO/Document-Library/resource-eligibility/Evaluating-Procurement-Options-For-Supply-Adequacy.pdf>

<sup>26</sup> Clean Energy Canada, *A Renewables Powerhouse* (2023), 6. [https://cleanenergycanada.org/wp-content/uploads/2023/01/RenewableCost\\_Report\\_CleaEnergyCanada\\_Feb2023.pdf](https://cleanenergycanada.org/wp-content/uploads/2023/01/RenewableCost_Report_CleaEnergyCanada_Feb2023.pdf)

<sup>27</sup> IESO, *Long-Term RFP (LT1 RFP) – Final Results* (2024). <https://ieso.ca/-/media/Files/IESO/Document-Library/resource-adequacy/ieso-resource-adequacy-update-May2024.pdf>

<sup>28</sup> IESO, "Save on Energy's Peak Perks Program Reaches Milestone Enrollment," media release, February 1, 2024. <https://www.ieso.ca/Corporate-IESO/Media/News-Releases/2024/01/Peak-Perks-Program-100000-Enrollments>

<sup>29</sup> *Annual Planning Outlook* (2022), 23.

Ontario has already established itself as a leader in innovation through several initiatives meant to guide and implement electricity system modernization. Most recently:

- The Electrification and Energy Transition Panel (EETP) delivered their final report, which included a slate of 29 recommendations to improve Ontario's electricity planning, governance, partnerships, development and stakeholder engagement.<sup>30</sup>
- The OEB, the provincial electricity regulator, issued streamlined procedures that all utilities must follow when installing and connecting public EV charging infrastructure.<sup>31</sup> This action will facilitate faster charging network development and accelerate EV adoption.
- The OEB has released the *Non-Wires Solutions Guidelines for Electricity Distributors* (NWS Guidelines)<sup>32</sup> and the *Benefit-Cost Analysis Framework for Addressing Electricity System Needs* (BCA Framework)<sup>33</sup> to standardize rate applications for innovative solutions.
- The OEB's Innovation Sandbox supports pilot projects that test new approaches in the energy sector. Through the Innovation Sandbox, innovators can learn more about the OEB's regulatory framework and obtain written guidance specific to their proposed project. The OEB was also recently given the authority to grant innovative pilot projects temporary exemptions from licensing requirements to facilitate experimentation.<sup>34</sup>
- Similarly, the IESO's Grid Innovation Fund (GIF) supports innovative projects that reduce system costs or enable customers to better manage their electricity use. Since 2005, more than 200 projects have received support from the GIF.<sup>35</sup>
- The OEB and the IESO are collaborating to demonstrate how DERs can provide local and provincial grid services and to explore market and regulatory barriers. Seven pilot projects were selected from a 2021 joint targeted call. These projects will also test transmission-distribution coordination protocols, alternative telemetry and metering

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<sup>30</sup> Electrification and Energy Transition Panel, *Ontario's Clean Energy Opportunity* (2024).

<https://www.ontario.ca/files/2024-02/energy-eetp-ontarios-clean-energy-opportunity-en-2024-02-02.pdf>

<sup>31</sup> Government of Ontario, "Ontario Making it Easier to Build Electric Vehicle Charging Stations," media release, February 16, 2024. <https://news.ontario.ca/en/release/1004197/ontario-making-it-easier-to-build-electric-vehicle-charging-stations>

<sup>32</sup> OEB, *Non-Wires Solutions Guidelines for Electricity Distributors* (2024).

[https://www.oeb.ca/sites/default/files/uploads/documents/regulatorycodes/2024-03/OEB\\_2024%20NWS%20Guidelines\\_20240328.pdf](https://www.oeb.ca/sites/default/files/uploads/documents/regulatorycodes/2024-03/OEB_2024%20NWS%20Guidelines_20240328.pdf)

<sup>33</sup> OEB, *Benefit-Cost Analysis Framework for Addressing Electricity System Needs* (2024).

[https://www.oeb.ca/sites/default/files/uploads/documents/regulatorycodes/2024-05/OEB\\_BCA\\_Framework\\_FINAL-AODA.pdf](https://www.oeb.ca/sites/default/files/uploads/documents/regulatorycodes/2024-05/OEB_BCA_Framework_FINAL-AODA.pdf)

<sup>34</sup> OEB, "OEB Innovation Sandbox." [https://www.oeb.ca/\\_html/sandbox/index.php](https://www.oeb.ca/_html/sandbox/index.php)

<sup>35</sup> IESO, "Grid Innovation Fund." <https://ieso.ca/Get-Involved/Innovation/Grid-Innovation-Fund/Overview>

approaches for measurement and verification, the potential for using DERs as non-wires alternatives and the role of utilities as distribution system operators.<sup>36</sup>

Through initiatives like these, Ontario has placed itself at the forefront of Canada's grid modernization. However, the province is now at a crossroads. Sticking with the status quo and relying on natural gas generation could increase electricity bills and cause Ontario to lose its reputation as a clean energy powerhouse. To maintain the province's clean energy advantage, Ontario will need to continue to pursue innovative approaches to modernizing its grid.

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<sup>36</sup> OEB and IESO, *OEB/IESO Joint Engagement on DER Integration*, webinar, May 26, 2023. [www.youtube.com/watch?v=tnaYEonGroQ](https://www.youtube.com/watch?v=tnaYEonGroQ)>

### 3. Capitalizing on success: Regulatory strategies to implement today

The EETP, formed in 2022 to identify and prepare for the province’s future energy needs, recommended that the Government of Ontario plan carefully and act fast to modernize the grid and build a clean energy economy in the province.<sup>37</sup> Currently, regulators and other electricity system actors are limited in what they can do by their mandates and the working environment in which they operate. Thoughtful planning is needed to change these limitations over time. However, there are actions that the Ministry of Energy and Electrification, the OEB and the IESO can take now that do not require legislative changes or a major restructuring of the electricity system framework.

Some regulators have used their traditional mandates, which do not provide an explicit objective for grid modernization, to address today’s grid concerns in creative ways.<sup>38</sup> For example, the OEB’s Innovation Sandbox initiative and Ontario’s ultra-low overnight electricity rate are two ways the province has already taken steps to advance a modern grid within existing structures.<sup>39</sup> However, there are still more actions that can be taken to protect Ontario’s clean energy advantage and prepare for electricity system growth under current legislative and regulatory frameworks. These actions include:

1. building a shared strategic vision for the provincial electricity system,
2. enabling innovation at a provincial scale,
3. integrating the technologies of today and tomorrow,
4. designing valuation models that consider the new benefits these technologies can provide, and
5. involving stakeholders early in planning and development processes.

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<sup>37</sup> *Ontario’s Clean Energy Opportunity*, 28.

<sup>38</sup> Regulatory Assistance Project, *Elevating the Priority of Decarbonization in Energy Regulators’ Decision Making*, prepared for the Regulatory Energy Transition Accelerator (2024), 40. <https://www.raonline.org/wp-content/uploads/2024/03/RAP-RETA-Hernandez-Fraser-Elevating-the-Priority-of-Decarbonization-in-Energy-Regulators-Decision-Making-Mar-2024.pdf>

<sup>39</sup> *Elevating the Priority of Decarbonization in Energy Regulators’ Decision Making*, 41.



### 3.1 Building a strategic vision

Electricity system actors need policy certainty to act with confidence and align towards a common goal. This sentiment has been echoed in the IESO’s Pathways to Decarbonization report,<sup>40</sup> the EETP’s final report,<sup>41</sup> and the Intergovernmental Panel on Climate Change’s Sixth Assessment Report.<sup>42</sup> To date, Ontario has not made a formal commitment to net-zero emissions. However, the government has stated that it “has a vision for the energy system in which Ontario leverages its clean energy grid to promote electrification.”<sup>43</sup>

While this statement is a good start, **we recommend the provincial government commit to an emissions reduction target that aligns with the earliest possible achievement of a net-zero emissions electricity system, define interim steps and develop an integrated provincial energy plan informed by third-party studies that identify potential pathways to achieve the chosen targets.** Having a clear target and implementation plan would help electricity system actors make appropriate decisions about assets with long lifespans and reduce the risk of stranded assets,<sup>44</sup> thereby reducing ratepayer costs in the long term.

Strategic energy planning, by which these targets and interim steps are integrated within broader economic and industrial goals, would further clarify the provincial government’s direction. Third-party pathway studies and ratepayer surveys should be commissioned to inform these energy plans and assess different options that Ontarians would support to achieve provincial emissions reduction targets. Labour markets; supply chain constraints; cybersecurity concerns; and the electrification of energy-intensive extraction, processing and manufacturing industries should also be considered during plan development. The Canada Electricity Advisory Council’s final report provides a list of suggested “energy roadmap” features to assist provincial and territorial governments in their planning processes.<sup>45</sup> Lessons learned from energy planning exercises at the provincial level could be distilled into a framework for municipal energy

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<sup>40</sup> IESO, *Pathways to Decarbonization* (2022), 34. <https://www.ieso.ca/en/Learn/The-Evolving-Grid/Pathways-to-Decarbonization>

<sup>41</sup> *Ontario’s Clean Energy Opportunity*, 28.

<sup>42</sup> International Panel on Climate Change, *Climate Change 2023: Synthesis Report*, 110. [https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC\\_AR6\\_SYR\\_LongerReport.pdf](https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_LongerReport.pdf)

<sup>43</sup> Todd Smith, Ontario minister of Energy, letter to the Ontario Energy Board, October 21, 2022, 1. Available at <https://www.oeb.ca/sites/default/files/letter-of-direction-from-the-Minister-of-Energy-20221021.pdf>

<sup>44</sup> Stranded assets are investments that cease to generate returns before their expected end of economic life. For example, gas plants built today are likely to become stranded assets if they are required to slow or halt generation before their expected end of life based on the Clean Energy Regulations.

<sup>45</sup> *Powering Canada*, 158.

planning, aligning provincial and municipal governments in achieving the identified emissions reduction targets.

Once targets are in place and backed by strategic planning, **the provincial government should support the OEB and the IESO in making decisions that are consistent with reaching these targets.** Changing the mandates of these entities to consider emissions reduction factors is a long legal process, but government directives to follow provincial policy can help kickstart action now while legislative changes are in progress.

Aligning policy to reflect the value of reducing emissions also helps attract investment in the sector by addressing some of the economic unknowns that come with a system in transition. A consumer carbon pricing policy already exists in Canada, but uncertainty around its future, both nationally<sup>46</sup> and provincially,<sup>47</sup> has created an unstable investment environment. Carbon policy certainty is necessary to continue attracting green industry and investment. **We recommend that the provincial government continue implementing a consumer price on carbon, or a made-in-Ontario equivalent, as a complement to the province’s Emissions Performance Standards industrial carbon pricing program<sup>48</sup>.**

Together, these carbon pricing policies build a stable and predictable investment environment that attracts clean industry. They also enable electricity system actors to make prudent decisions by establishing a price on carbon that reflects the value of emissions reductions to taxpayers and ratepayers. The government’s role is to set a reliable price for reducing carbon emissions that rewards industry and individuals for investing in zero-emission technology and pursuing innovation to the benefit of all Ontarians. The government can then allocate the money from carbon pricing to support individuals and sectors most affected by the energy transition through programs such as those that provide consumer rebates, develop the workforce or spur innovation.

### Case study: Bill 165 and the *Keeping Energy Costs Down Act*

Inconsistent government messaging has already caused confusion about Ontario’s decarbonization goals and the role electricity system actors play in achieving them. The

<sup>46</sup> John Paul Tasker, “Poilievre turns to Parliament to force Trudeau to meet with premiers on the carbon tax,” *CBC*, April 9, 2024. <https://www.cbc.ca/news/politics/poilievre-carbon-tax-motion-premiers-1.7168220>

<sup>47</sup> Sara Jabakhanji, “Federal carbon tax ‘has to go,’ says Ontario premier,” *CBC*, April 2, 2024. <https://www.cbc.ca/news/canada/toronto/doug-ford-carbon-tax-ontario-1.7161131>

<sup>48</sup> Ontario’s industrial carbon pricing system, called the Emissions Performance Standards Program, regulates greenhouse gas emissions from large facilities in the manufacturing, resource and electricity generation industries. Annual emissions limits are set for each facility and these limits are tightened every year in line with federal benchmarks. If a facility emits less than their limit, they receive emissions credits that can be banked for five years to offset future emissions or sold to other facilities that surpass their emissions limits.

Minister of Energy's letter of direction to the OEB in 2022 asked the regulator to advance the government's vision for a clean energy grid. The minister recognized that "the OEB cannot make substantive changes to its regulatory approach without a legislative amendment; however, it is critical that the OEB not wait until it has been provided with additional legislative authority before it begins to consider these reforms so that its work can proceed expeditiously."<sup>49</sup>

A year later, the OEB followed this guidance and found that Enbridge Gas Inc.'s rate application had not adequately assessed the risk of stranded assets resulting from the transition to clean energy. The OEB determined that the revenue time horizon used by Enbridge to assess the economics of new connections should be reduced from 40 years to zero, beginning in 2025 to shift the risk of stranded assets away from ratepayers.<sup>50</sup> The Government of Ontario concluded that the OEB had overstepped its authority in making this ruling and in February 2024 introduced the *Keeping Energy Costs Down Act* that, if passed, would allow the government to overturn the independent regulator's decision.<sup>51</sup>

The government's negative reaction to the OEB's decision may impact innovation in the provincial electricity system because it showed that stepping too far beyond the status quo can have serious consequences. There is now an elevated level of risk to the OEB and the IESO in taking innovative actions. The OEB and the IESO must be allowed to make novel decisions that support achieving provincial energy goals without fear of reprisal.<sup>52</sup>

## 3.2 Preparing for innovation

Under the OEB's current mandate, the regulator only considers electricity system needs over the next five years when assessing utility rate applications. One exception is for the replacement of aging assets. The utility may consider longer-term needs when sizing the new asset to avoid repeating the replacement process prematurely. Generally, though, experimental initiatives to address issues expected to occur beyond the five-year window can only be considered in a future rate application that covers the period during which the need arises.<sup>53</sup> However, these experiments are necessary to build a toolkit of tested options that utilities are prepared to deploy

<sup>49</sup> Todd Smith, Ontario minister of Energy, letter to the Ontario Energy Board, October 21, 2022, 2. Available at <https://www.oeb.ca/sites/default/files/letter-of-direction-from-the-Minister-of-Energy-20221021.pdf>

<sup>50</sup> OEB, *Backgrounder: Decision and Order EB-2020-0200* (2023), 1. <https://www.oeb.ca/sites/default/files/backgrounder-EGI-EB-2022-0200-20231221-en.pdf>

<sup>51</sup> Ontario Ministry of Energy, "Ontario Keeping Energy and Housing Costs Down," media release, February 22, 2024. <https://news.ontario.ca/en/release/1004217/ontario-keeping-energy-and-housing-costs-down>

<sup>52</sup> *Ontario's Clean Energy Opportunity*, 31.

<sup>53</sup> OEB, *Handbook to Utility Rate Applications* (2016), 13. [https://www.oeb.ca/oeb/\\_Documents/Regulatory/OEB\\_Rate\\_Handbook.pdf](https://www.oeb.ca/oeb/_Documents/Regulatory/OEB_Rate_Handbook.pdf)

at scale as future needs arise. **We recommend the OEB consider grid needs beyond the five-year rate application cycle, allowing utilities a longer time horizon for innovation.** This measure would allow utilities to identify the most cost-effective solutions and make appropriate investments in enabling infrastructure, such as transmission lines, to meet the needs of the future.<sup>54,55</sup>

Investing in enabling infrastructure is an especially important preliminary step to promote innovation by ensuring connection capacity for future renewable energy projects. In Texas, establishing Competitive Renewable Energy Zones (CREZs) has demonstrated how building transmission lines between areas with high renewable energy potential and areas with high electricity demand can encourage the concentration of renewables in locations with available connection capacity and reduce the cost of clean energy by leveraging economies of scale.<sup>56</sup>

### Case study: Get it Done Act

Reducing red-tape and minimizing delays and costs in regulatory processes is a provincial priority in all sectors, including electricity. Ontario's Get it Done Act, which was passed in May 2024, aims to streamline regulatory processes for transmission line approval, potentially shortening transmission development timelines by up to four years.<sup>57</sup> Accelerating the development of much-needed transmission projects will help ensure that connection capacity is available for future renewable energy projects. However, shortening approval processes must not occur at the expense of community and municipal engagement.

In Europe, the Council of European Energy Regulators (CEER) and the European Agency for the Cooperation of Energy Regulators (ACER) have recommended that system operators and network users prioritize early information-sharing to enable regulators to make informed decisions and support anticipatory investments in grid modernization.<sup>58</sup> For example, they recommend that system operators publish and maintain a map detailing grid hosting

<sup>54</sup> The Ministry of Energy and Electrification has identified this issue in the context of electric vehicles. In their 2023 letter of direction, the Ministry of Energy (now the Ministry of Energy and Electrification) asked the OEB to look beyond immediate utility requirements and enable them to invest in infrastructure that will support potential EV demand.

<sup>55</sup> Todd Smith, Ontario Minister of Energy, letter to the Ontario Energy Board, November 29, 2023, 5.

<sup>56</sup> Lia Codrington and Grace Brown, *Directing Decarbonization* (Pembina Institute, 2024), 30.  
<https://www.pembina.org/pub/directing-decarbonization>

<sup>57</sup> Government of Ontario, "The Get It Done Act," media release, February 20, 2024.  
<https://news.ontario.ca/en/backgrounder/1004202/the-get-it-done-act>

<sup>58</sup> ACER and CEER, *Position on anticipatory investments* (2024), 8.  
[https://www.acer.europa.eu/sites/default/files/documents/Position%20Papers/ACER-CEER\\_Paper\\_anticipatory\\_investments.pdf](https://www.acer.europa.eu/sites/default/files/documents/Position%20Papers/ACER-CEER_Paper_anticipatory_investments.pdf)

capabilities for both new generation and new loads.<sup>59</sup> The IESO currently offers technical feasibility studies to help potential system users select a connection option, but this paid service is optional and hosting capability information is not available publicly. This adds additional steps to the connection process and introduces unnecessary uncertainty in early project stages as developers explore their options.<sup>60</sup> **We recommend that the IESO follow ACER and CEER recommendations and share a map of grid hosting capabilities for both new generation and new load.**

### 3.3 Integrating new technologies

There are new, available technologies that can be used to modernize the electricity grid, but the grid is currently not able to fully benefit from them. For example, DERs<sup>61</sup> can enhance grid management by smoothing peak demand and reducing transmission line losses. They can also be deployed to meet demand in constrained areas, thereby delaying the need for large capital investments in grid infrastructure and buying time for proactive rather than reactive system planning. However, Ontario's grid is not designed to handle the two-way power flows and shifting load patterns these new technologies will bring, limiting the integration of DERs into the grid. The OEB and the IESO have begun exploring this issue through joint engagements on DER integration, as well as through initiatives like the OEB's Innovation Sandbox program and the IESO's Grid Innovation Fund. These programs have supported many successful pilot projects testing how best to integrate DERs and other innovative approaches into the system. But once the pilots are no longer under these programs, they tend to falter or be forgotten.

To better enable DER integration, we recommend:

- **the OEB enact the regulatory changes needed to expand successful pilots into commercial-scale projects after they leave the Innovation Sandbox environment, and**
- **the IESO ensure that lessons learned from successful Grid Innovation Fund pilot projects are integrated into operations.**

It is not only new technologies and approaches that face obstacles – even established programs supporting innovation in the electricity sector have challenges. For example, conservation and

<sup>59</sup> *Position on anticipatory investments*, 9.

<sup>60</sup> IESO, "Overview of the Connection Process." <https://www.ieso.ca/Sector-Participants/Connection-Process/Overview>

<sup>61</sup> DERs, or distributed energy resources, are small-scale decentralized technologies that generate, store and/or manage energy close to where grid services are needed. Because of this proximity, DERs are less reliant on transmission and distribution networks, thereby reducing grid demands. Solar panels, small-scale wind turbines, and demand-side management of controllable loads are examples of DERs.

demand management (CDM) programs have been an innovation priority in the province for many years and have reduced demand by 15% from what it would be today.<sup>62</sup> Yet utilities still encounter barriers when pursuing energy conservation activities due to changing rules on who can implement CDM programming and how that programming can be funded. While the 2021-2024 CDM Framework consolidated the funding, design, and delivery of CDM programming under the IESO's purview,<sup>63</sup> the Ministry of Energy and Electrification's 2022 letter of direction asked the IESO to support utilities in developing CDM programming at the distribution level.<sup>64</sup> A joint working group led by utilities and the IESO is currently exploring how to provide funding for CDM programs at the bulk and distribution levels, which should help clarify the role of utilities in CDM.<sup>65</sup>

## Case study: The sandbox program of the Italian Regulatory Authority for Energy, Networks, and Environment

The Italian electricity regulator has launched two phases of regulatory experiments since 2010: one for projects addressing needs in specific critical locations, and the second for projects that introduced innovation at the whole-system level.<sup>66</sup> Selected pilots were granted regulatory exemptions based on the type of initiative and challenge they were meant to address.<sup>67</sup> Pilot proponents also received special remuneration to cover the cost of the experiment. In return, they were required to share the results of their project publicly.<sup>68</sup> Publishing key outcomes and findings was also meant to encourage discussion and dissemination.<sup>69</sup> The regulator then compiled feedback on the most beneficial projects to craft final recommendations and developed provisions for regulatory amendments or incentives that would enable implementation of the successful pilots at scale.<sup>70</sup> Similar transparency and an established pipeline for beneficial projects to progress from experiment

<sup>62</sup> "Save on Energy's Peak Perks Program Reaches Milestone Enrollment."

<sup>63</sup> OEB, *Non-Wires Solutions Guidelines for Electricity Distributors* (2024), 5. [https://www.oeb.ca/sites/default/files/uploads/documents/regulatorycodes/2024-04/OEB\\_2024%20NWS%20Guidelines\\_20240328.pdf](https://www.oeb.ca/sites/default/files/uploads/documents/regulatorycodes/2024-04/OEB_2024%20NWS%20Guidelines_20240328.pdf)

<sup>64</sup> Todd Smith, Ontario minister of Energy, letter to the Ontario Energy Board, October 21, 2022, 5. <https://www.oeb.ca/sites/default/files/letter-of-direction-from-the-Minister-of-Energy-20221021.pdf>

<sup>65</sup> *Non-Wires Solutions Guidelines for Electricity Distributors*, 5.

<sup>66</sup> International Smart Grid Action Network, *Innovative Regulatory Approaches with Focus on Experimental Sandboxes* (2019), 43. [https://www.iea-iscan.org/wp-content/uploads/2019/05/ISGAN\\_Casebook-on-Regulatory-Sandbox-A2-1.pdf](https://www.iea-iscan.org/wp-content/uploads/2019/05/ISGAN_Casebook-on-Regulatory-Sandbox-A2-1.pdf)

<sup>67</sup> *Innovative Regulatory Approaches with Focus on Experimental Sandboxes*, 34.

<sup>68</sup> *Innovative Regulatory Approaches with Focus on Experimental Sandboxes*, 43.

<sup>69</sup> *Innovative Regulatory Approaches with Focus on Experimental Sandboxes*, 32.

<sup>70</sup> *Innovative Regulatory Approaches with Focus on Experimental Sandboxes*, 33.

to full scale deployment could help the OEB and the IESO maximize the impact of their Innovation Sandbox and Grid Innovation initiatives.

### 3.4 Valuing new technologies

While integrating new technologies into the grid can be technically difficult, their integration is also limited by financial barriers. Many of these new technologies, such as DERs and demand response, provide services that are fundamentally different from those provided by traditional energy resources. As a result, new technologies often are only compensated for a portion of the value they provide to the grid.<sup>71</sup> The OEB recently introduced measures to recognize the full value of new technologies. The new NWS Guidelines, which replace the CDM Guidelines, and the BCA Framework that evaluates competing options to fulfill a grid need support levelling the playing field between traditional solutions and innovative approaches.

The methodology outlined in the BCA Framework currently only considers traditional system concerns and economic benefits when evaluating potential solutions. Expanding this methodology to consider non-economic benefits is a valuable opportunity to include government policies and social objectives in the assessment process. **We recommend the OEB expand the BCA Framework to include social objectives such as achieving provincial clean energy targets to ensure future development aligns with government policy.**

#### Case study: Ontario's NWS Guidelines and BCA Framework

Under the NWS Guidelines, utilities are required to consider NWS in distribution system planning when capital costs of \$2 million or more are expected to meet electricity system needs. Utilities must conduct and file a pre-assessment to determine if a NWS could be a viable option.<sup>72</sup> Once all viable options are identified, whether they are traditional or NWS, the utility must follow the BCA Framework to assess and compare their economic feasibility.<sup>73</sup> The BCA Framework remains optional for proposed investments that are expected to have a

<sup>71</sup> *Barriers to innovation in the Canadian electricity sector and available policy responses*, 6.

<sup>72</sup> OEB, *Non-Wires Solutions Guidelines for Electricity Distributors (2024)*, 8.  
[https://www.oeb.ca/sites/default/files/uploads/documents/regulatorycodes/2024-03/OEB\\_2024%20NWS%20Guidelines\\_20240328.pdf](https://www.oeb.ca/sites/default/files/uploads/documents/regulatorycodes/2024-03/OEB_2024%20NWS%20Guidelines_20240328.pdf)

<sup>73</sup> OEB, *Benefit-Cost Analysis Framework for Addressing Electricity System Needs (2024)*, 6.  
[https://www.oeb.ca/sites/default/files/OEB\\_BCA\\_Framework\\_FINAL.pdf](https://www.oeb.ca/sites/default/files/OEB_BCA_Framework_FINAL.pdf)

capital cost of less than \$2 million, but the OEB has suggested it be used for all new project planning activities.<sup>74</sup>

The BCA Framework requires utilities to perform a distribution service analysis that includes a cost test.<sup>75</sup> The cost test, called the Distribution Service Test (DST), favours solutions that optimize long-term benefits for the utility's customers.<sup>76</sup> Utilities may also include an optional Energy System Test (EST), which measures the impacts of the solution on all Ontario ratepayers, if they believe the NWS could have a broader benefits.<sup>77</sup>

Beyond the cost tests, utilities are expected to explore qualitative considerations as part of the BCA process. Qualitative costs, such as ancillary service costs and distribution system risks, must be discussed in the BCA. Qualitative benefits such as reliability, resilience, planning value, innovation and market transformation are optional.<sup>78</sup>

The NWS Guidelines' pre-assessment requirement and the subsequent BCA Framework methodology ensure that utilities consider innovative solutions and create consistency in how NWS are evaluated. It may also help address information asymmetry between the regulator and utilities, at least when NWS are considered, by increasing the transparency of cost calculations through a standardized approach.

### 3.5 Stakeholder inclusion

DERs and CDM can delay the need for big capital expenditures, but large infrastructure development will eventually be needed as electricity demand increases. Gaining public support for this first wave of grid modernization projects will be extremely important; negative experiences with early transition development can halt projects and build resistance to future initiatives. Early and earnest stakeholder engagement from the beginning of the grid modernization process will help obtain buy-in at the individual level and create grassroots momentum for future development.

Municipal approvals for new grid development projects are also becoming increasingly important in provincial energy policy, and rightly so. For example, 2019 amendments to Ontario's Renewable Energy Approvals Act give municipalities the opportunity to determine

<sup>74</sup> *Benefit-Cost Analysis Framework for Addressing Electricity System Needs*, 7.

<sup>75</sup> *Benefit-Cost Analysis Framework for Addressing Electricity System Needs*, 17.

<sup>76</sup> *Benefit-Cost Analysis Framework for Addressing Electricity System Needs*, 18.

<sup>77</sup> *Benefit-Cost Analysis Framework for Addressing Electricity System Needs*, 20.

<sup>78</sup> *Benefit-Cost Analysis Framework for Addressing Electricity System Needs*, 19.



which renewable energy projects may proceed within their boundaries.<sup>79</sup> The IESO's upcoming LT2 procurements also contain a requirement for developers to provide formal evidence of municipal support for their project to be eligible.<sup>80</sup>

**We recommend that utilities and developers build strong relationships with communities and municipalities and develop their proposals based on communities' identified needs and concerns.** Under existing and proposed regulations, project proponents must have a social license to operate in the communities and municipalities where they want to site their facilities. Project proponents can earn this license by prioritizing relationship-building over project-specific consultation. Through this approach, they can gain an understanding of the community's values and tailor their proposals to local needs and concerns rather than applying one-size-fits-all design standards.<sup>81</sup> Community benefit agreements, which outline how stakeholders will be compensated for any potential negative impacts of development, can also help build social license by ensuring that these stakeholders also share in the positive outcomes of the project.<sup>82</sup> Utilities can also leverage their existing relationships with communities to support local transition objectives through a customer-centred approach to planning.

As many others have recommended, early, effective and meaningful engagement is key to ensuring these relationships begin on the right foot, particularly when building relationships with Indigenous communities.<sup>83, 84</sup> These engagements must be coordinated between the OEB, the IESO, utilities, developers and other parties to ensure communities are not overburdened by duplicate efforts. The inclusion of Indigenous communities — in both electricity planning and ownership opportunities — is especially important given their leadership in renewable energy development and the potential of clean energy projects to advance much-needed economic reconciliation in the historically inequitable energy sector. There has been progress on the ownership side, with nine of the IESO's ten recent battery procurements having 50% or more

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<sup>79</sup> Government of Ontario, *Renewable Energy Approvals Under Part V.0.1 of the Act*, O. Reg. 122/19 (2019). <https://www.ontario.ca/laws/regulation/r19122>

<sup>80</sup> IESO, "IESO Long-Term 2 (Energy) Request for Proposals" (draft), 7. <https://www.ieso.ca/-/media/Files/IESO/Document-Library/long-term-rfp/LT2e-rfp-draft-rfp-sept-2024.pdf>

<sup>81</sup> *Ontario's Clean Energy Opportunity*, 29.

<sup>82</sup> Scott MacDougall, *Coordination and community engagement for a net-zero grid* (Pembina Institute, 2024), 8. <https://www.pembina.org/pub/coordination-community-engagement-net-zero-grid>

<sup>83</sup> *Powering Ontario's Growth*, 61.

<sup>84</sup> Canada Electricity Advisory Council, *Powering Canada: A blueprint for success*. <https://natural-resources.canada.ca/our-natural-resources/energy-sources-distribution/electricity-infrastructure/the-canada-electricity-advisory-council/powering-canada-blueprint-for-success/25863#a11g>

Indigenous ownership.<sup>85</sup> Indigenous consultation is currently required under Ontario's Renewable Energy Approval Act,<sup>86</sup> but the consultation process is more about information sharing than engagement and relationship building.

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<sup>85</sup> Government of Ontario, "Ontario Completes Largest Battery Storage Procurement in Canada to Meet Growing Electricity Demand," media release, May 9, 2024. <https://news.ontario.ca/en/release/1004567/ontario-completes-largest-battery-storage-procurement-in-canada-to-meet-growing-electricity-demand>

<sup>86</sup> Government of Ontario, *Renewable Energy Approvals Under Part V.0.1 of the Act*, O. Reg. 359/09 (2024). <https://www.ontario.ca/laws/regulation/090359#BK28>

## 4. Sowing seeds: Transforming regulations for tomorrow's grid

The electricity system is changing, and so are regulator responsibilities. Today, regulators are responsible for infrastructure development, market design, DER integration and electricity pricing.<sup>87</sup> As the OEB's role changes, the regulatory framework and mandate that govern its work should be updated.

The legislative and regulatory reforms recommended below, as well the opportunities that would arise from them, will likely require long lead times. Starting now will help Ontario prepare its electricity system for the needs of the future.

### 4.1 Empowering electricity system entities

The absence of decarbonization objectives is one of the biggest gaps in electricity regulation frameworks worldwide.<sup>88</sup> Under quasi-judicial regulatory systems like Ontario's, the regulator's decisions can be challenged in court if they do not align with the objectives outlined in their mandate. This causes regulators to be cautious in interpreting their authority. It is safest for the OEB to follow its mandated objectives to the letter.

Mandate changes and energy planning must go hand in hand. A plan without an updated mandate would limit the OEB's ability to achieve the plan's targets, and an updated mandate without a plan ultimately puts policy-making responsibilities in the hands of the regulator, which is not its role. **We recommend that the provincial government accompany energy plans with updates to the OEB's mandate that include decarbonization as a regulator objective.** Creating clarity on carbon pricing to signal how much Ontario is willing to pay to achieve its clean energy goals would also help decision-makers like the OEB confidently evaluate competing solutions and accelerate provincial decarbonization.<sup>89</sup>

Legislation is one of the most lasting ways to empower electricity system entities, but it is not the only way. Enabling specific actions through regulations supported by legislation can also support grid modernization. For example, as discussed in Section 3.2, enabling anticipatory investments, like the Texas CREZ initiative, that align with provincial energy plans would help proactively modernize Ontario's electricity system and reduce long-term costs. **We**

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<sup>87</sup> *Elevating the Priority of Decarbonization in Energy Regulators' Decision Making*, 10.

<sup>88</sup> *Elevating the Priority of Decarbonization in Energy Regulators' Decision Making*, 41.

<sup>89</sup> *Elevating the Priority of Decarbonization in Energy Regulators' Decision Making*, 40.

**recommend the OEB develop an assessment framework for anticipatory investments and send a clear message to utilities on what types of anticipatory investments can be recovered through rates.**

Another change that merits further exploration is establishing a distribution system operator (DSO). Managing DERs through this model has the potential to provide system benefits. Similar to what the IESO does at the bulk transmission level, the DSO could act as a neutral market facilitator at the distribution level. Adding a DSO in Ontario has the potential to provide up to \$1.2 billion in net annual benefits to the province through increased DER adoption,<sup>90</sup> and some testing has already been done to see how a DSO could work. The OEB and the IESO supported a pilot project to explore how a local DER flexibility market, managed by Essex Powerlines acting as a DSO, could alleviate pressure in the constrained Windsor-Essex area.<sup>91</sup> **We recommend the IESO continue to explore how DSOs and other opportunities to restructure the electricity system could bolster grid modernization.**

### Case study: OEB mandate changes to date

The OEB's mandate has evolved to support government clean energy policies. One of the OEB's objectives under a previous version of the OEB Act was to "promote the use and generation of electricity from renewable energy sources in a manner consistent with the policies of the Government of Ontario, including the timely expansion or reinforcement of transmission systems and distribution systems to accommodate the connection of renewable energy generation facilities."<sup>92</sup> Although this objective was repealed in 2020, it shows that there is precedent to add objectives to the OEB's mandate to reflect provincial government policy.

## 4.2 Interjurisdictional collaboration

Because electricity is a subnational responsibility, each province designs its electricity system independently. Optimization in isolation leaves many benefits on the table, while coordinating with neighbouring jurisdictions opens up opportunities to better use existing assets, improve economic efficiency, and accelerate the adoption of renewable energy generation. However, today's regulatory processes and electricity markets are not designed to facilitate interjurisdictional collaboration in Canada.

<sup>90</sup> *Distribution System Operator (DSO) Study*, iv.

<sup>91</sup> OEB, "OEB-IESO Partnership." [https://www.oeb.ca/\\_html/sandbox/oeb-ieso.php](https://www.oeb.ca/_html/sandbox/oeb-ieso.php)

<sup>92</sup> Government of Ontario, *Ontario Energy Board Act*, S.O. 1998, c.15, Sched. B., as it appeared on Dec. 7, 2020. <https://www.ontario.ca/laws/statute/98o15>

Ontario has made some progress in this regard through trade agreements between the IESO and Hydro-Québec. The IESO has agreed to provide Hydro-Québec with 600 MW of electricity during the winter, which is when electricity consumption peaks in Quebec. In return, Hydro-Québec will provide the IESO with 600 MW during Ontario's summer peak consumption period.<sup>93</sup> This agreement optimizes the use of existing generation without increasing costs for ratepayers.

Greater collaboration with other jurisdictions could help improve energy affordability in Ontario. For example, regulators could require that transmission utilities like Hydro One participate in regional transmission planning processes and coordinate with neighbouring transmission planning entities to determine cost-effective solutions to mutual transmission needs. **We recommend the IESO explore how collaboration with other jurisdictions, perhaps through regional transmission planning or regional transmission operators, could help the province achieve its clean energy goals.** Of course, collaboration is only effective if neighbouring jurisdictions like Quebec, Manitoba, and adjacent U.S. states are also open to it.

### Case study: Federal Energy Regulatory Commission Order 1920

In the U.S., the Federal Energy Regulatory Commission (FERC) already requires utilities to participate in regional transmission planning processes, and a number of independent system operators (ISOs) and regional transmission operators (RTOs) operate transmission and electricity markets across multiple states.<sup>94,95</sup> The FERC has also recently introduced Order 1920, which requires each U.S. transmission region to perform standardized long-term transmission planning.<sup>96</sup> The FERC does not yet require interregional transmission planning, but these standardized processes would facilitate coordination between regions should they choose or be mandated to do so in future.<sup>97</sup>

<sup>93</sup> Government of Ontario, "The Governments of Ontario and Quebec Support New Electricity Trade Agreement," media release, August 30, 2023. <https://news.ontario.ca/en/release/1003444/the-governments-of-ontario-and-quebec-support-new-electricity-trade-agreement>

<sup>94</sup> Federal Energy Regulatory Commission, *Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities*, 2011, Order No. 1000. <https://www.ferc.gov/sites/default/files/2020-04/OrderNo.1000.pdf>

<sup>95</sup> FERC, "RTOs and ISOs." <https://www.ferc.gov/power-sales-and-markets/rtos-and-isos>

<sup>96</sup> FERC, *Building for the Future Through Electric Regional Transmission Planning and Cost Allocation*, 2024, Order No. 1920. <https://www.ferc.gov/media/e1-rm21-17-000>

<sup>97</sup> Claire Wayner, *Understanding FERC's Order 1920* (RMI, 2024), 1. [https://rmi.org/wp-content/uploads/dlm\\_uploads/2024/06/ferc\\_order\\_1920\\_factsheet\\_updated.pdf](https://rmi.org/wp-content/uploads/dlm_uploads/2024/06/ferc_order_1920_factsheet_updated.pdf)

## 4.3 Utility remuneration

The traditional cost-of-service (CoS) model provides utilities with an OEB-approved return on equity on investments in infrastructure. Because the CoS model favours large capital expenditures, utilities are not incentivized to consider innovative technologies and approaches that could be the most cost-effective solutions. Under Ontario's fourth-generation rate-setting method, which has been available to utilities since 2012, a utility's performance is evaluated based on their customer focus, operational effectiveness, public policy responsiveness, and financial performance using a scorecard approach.<sup>98</sup> However, there are no monetary incentives associated with these performance scores, and utilities are still financially motivated to invest in traditional infrastructure. Updating rate-setting frameworks to create a business case for utilities to invest in grid optimization and encouraging utilities to explore creative options for remuneration in their rate applications would help to unlock innovation, promote efficiency, and improve cost effectiveness.

The OEB, the Ministry of Energy and Electrification and the EETP have all called for a re-evaluation of the province's utility remuneration model and the regulatory reforms needed to change it. The Ministry requested that the OEB investigate alternative regulatory frameworks that would support the evolution of future utility remuneration models,<sup>99</sup> and the EETP specified that these future models should assist in achieving the province's clean energy goals.<sup>100</sup>

**We recommend the OEB continue to encourage utilities to submit innovative rate applications that provide financial incentives for grid modernization and the adoption of cost-effective new technologies as a complement to the BCA**

**Framework.** There are many different utility remuneration strategies being used in other jurisdictions, each implemented in a unique way, from which Ontario could draw inspiration. For example, the New York Public Service Commission has developed its own performance-based regulation framework to incentivize utility innovation.<sup>101</sup> The OEB has already proposed developing new performance incentives that consider customer service, resilience, and peak load management to defer the need for system expansion, which the minister of Energy and Electrification approved in his 2023 letter of direction.<sup>102</sup>

<sup>98</sup> OEB, *Renewed Regulatory Framework for Electricity Distributors: A Performance-Based Approach*, 57. [https://www.oeb.ca/sites/default/files/uploads/Report\\_Renewed\\_Regulatory\\_Framework\\_RRFE\\_20121018.pdf](https://www.oeb.ca/sites/default/files/uploads/Report_Renewed_Regulatory_Framework_RRFE_20121018.pdf)

<sup>99</sup> Todd Smith, Ontario minister of Energy, letter to the Ontario Energy Board, November 29, 2023, 3. Available at <https://www.oeb.ca/sites/default/files/letter-of-direction-from-the-Minister-of-Energy-20231129.pdf>

<sup>100</sup> *Ontario's Clean Energy Opportunity*.

<sup>101</sup> *Directing Decarbonization*, 50.

<sup>102</sup> Todd Smith, Ontario minister of Energy, letter to the Ontario Energy Board, November 29, 2023, 6. Available at <https://www.oeb.ca/sites/default/files/letter-of-direction-from-the-Minister-of-Energy-20231129.pdf>

Once the province develops a comprehensive energy plan with interim targets and a commitment to decarbonize the grid, **we recommend that the OEB revisit the public policy responsiveness metric in the fourth-generation incentive rate-setting scorecard and financially incentivize utilities to align their proposals with provincial energy plans.**

Reforming Ontario's utility remuneration model, like the other initiatives in this section, will take time. However, the benefits from these long-term initiatives will be significant and worthwhile. Starting the transformation as soon as possible will set up future opportunities to make Ontario's electricity system more affordable, reliable, and clean.

## 5. Conclusion

Ontario's electricity sector is one of the most innovative in Canada. However, innovation efforts are disconnected and often underutilized due to a lack of clarity on where the sector is going and who is responsible for guiding it. Strategic regulatory reform will help Ontario harness existing and future innovation to meet tomorrow's demand while maintaining the province's reputation as a clean energy powerhouse. Modernizing regulatory structures is the next logical step towards achieving a decarbonized electricity grid.

This report identified eight key opportunities for regulatory reform. The first five — developing a strategic vision, preparing for innovation, integrating new technologies, valuing new technologies and meaningfully including stakeholders — can be enacted immediately and kickstart the grid modernization process. The last three — empowering electricity system entities, advancing interjurisdictional collaboration and redeveloping utility remuneration models — will require longer timelines and significant changes to legislative and regulatory structures, but will deliver lasting impacts.

While this report focused on opportunities for the Government of Ontario, OEB, and IESO to take on leadership roles, utilities and developers also have a part to play in modernizing the electricity grid because of their influence on policy makers and ability to make on-the-ground changes. Utility advocacy for the above recommendations will help move the needle on future energy policy and regulation. Once these policies are in place, utilities are the entities best positioned to take advantage of the opportunities to advance innovation in their service areas. However, these advancements are only possible with local support. Utilities and developers must build strong relationships with communities and municipalities, develop their proposals based on communities' identified needs and concerns, and compensate impacted communities through community benefit agreements.

The most important outcome of these recommendations is clarity for all system actors on where Ontario's electricity system is headed and the roles that they play in modernizing the grid. A regulatory environment that creates policy certainty and clearly communicates shared objectives will ensure alignment between electricity system actors, support the collaboration and innovation needed to overcome challenges and promote continued growth in Ontario's electricity and industrial sectors.



# Appendix A. Table of recommendations

Table 1. Summary of recommendations

| Need                         | Recommendation   |
|------------------------------|--|
| Strategies for today         |  |
| Strategic vision             | <p>The provincial government should commit to an emissions reduction target that aligns with the earliest possible achievement of a net-zero emissions electricity system, define interim steps and develop an integrated provincial energy plan informed by third-party studies that identify potential pathways to achieve the chosen targets.</p> <p>The provincial government should support the Ontario Energy Board (OEB) and the Independent Electricity System Operator (IESO) in making decisions aligned with the provincial government's emissions reduction targets.</p> <p>The provincial government should continue implementing a consumer price on carbon, or a made-in-Ontario equivalent, as a complement to the province's Emissions Performance Standards industrial carbon pricing program.</p> |
| Preparing for innovation     | <p>The OEB should consider grid needs beyond the five-year rate application cycle, allowing utilities a longer time horizon for innovation.</p> <p>The IESO should publish and maintain a map showing grid hosting capabilities for both new generation and new load.</p>  |
| Integrating new technologies | <p>The OEB should enact the regulatory changes required to expand successful pilots into commercial-scale projects after they leave the Innovation Sandbox environment.</p> <p>The IESO should integrate lessons learned from successful Grid Innovation Fund pilot projects into operations.</p>  |
| Valuing new technologies     | <p>The OEB should expand the BCA Framework to include social objectives such as achieving provincial clean energy targets to ensure future development aligns with government policy.</p>  |
| Stakeholder inclusion        | <p>Utilities and developers should build strong relationships with communities and municipalities and develop their proposals based on communities' identified needs and concerns.</p>   |

| Strategies for tomorrow                |  |
|--|--|
| Empowering electricity system entities | <p>The provincial government should accompany their energy plan with updates to the OEB's mandate that include decarbonization as a regulator objective.</p> <p>The OEB should develop an assessment framework for anticipatory investments and send a clear message to utilities on what types of anticipatory investments can be recovered through rates.</p> <p>The IESO should continue to explore how DSOs and other opportunities for electricity system restructuring could bolster grid modernization.</p> |
| Interjurisdictional collaboration      | <p>The IESO should explore how collaboration with other jurisdictions, perhaps through regional transmission planning or regional transmission operators, could help the province achieve its clean energy goals.</p>  |
| Utility remuneration                   | <p>The OEB should revisit the public policy responsiveness metric in the fourth-generation incentive rate-setting scorecard and financially incentivize utilities for aligning their proposals with provincial energy plans.</p> <p>The OEB should continue to encourage utilities to submit innovative rate applications that provide financial incentives for grid modernization and the adoption of cost-effective new technologies as a complement to the BCA Framework.</p>                                   |



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