Feedback Form

Grid Innovation Fund (GIF) Engagement Roundtables – December 2025

Feedback Provided by:

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Date: December 24, 2025

To promote transparency, feedback submitted will be posted on the Grid Innovation Fund engagement page unless otherwise requested by the sender.

☐ **Yes – there is confidential information, do not post**

☑ **No – comfortable to publish to the IESO web page**

Following the Grid Innovation Fund roundtable discussions, the Independent Electricity System Operator (IESO) is seeking feedback from stakeholders on the items discussed. The presentation can be accessed from the Grid Innovation Fund engagement page.

Note: The IESO will accept additional materials where it may be required to support your rationale provided below. When sending additional materials please indicate if they are confidential.

Please submit feedback to engagement@ieso.ca **by December 24, 2025.**

Dear Sir/Madam,

Thank you for the opportunity to submit a written comment following the Grid Innovation Fund Engagement Roundtables. Responses to the IESO's questions follow.

Innovation Ecosystem in Ontario's Electricity System

Topic 1: Significance of Innovation (slide 15 of presentation)

Why does innovation matter in the electricity system and how can it support the energy transition and evolution of the system?

Why is innovation needed?
Innovation is essential to address the need for sufficient, clean, resilient, and cost-effective energy in a rapidly changing environment. Challenges to our existing systems include:

1. Rising electricity use is driving a need for new approaches that are quick to implement, scalable, and effective at meeting the need.
2. Technology and its associated costs continue to evolve. For the sake of economic competitiveness, Ontario needs an adaptable electric system that can incorporate and scale up innovation nimbly.
3. Climate change is accelerating the need to address energy-related greenhouse gas emissions. The latest technologies in renewable energy, EVs, and storage can help address Ontario's emissions and meet electricity demand.
4. More frequent extreme weather events are increasing the risk of outages. Innovative technologies can enable resilience to outages at the residential level, reducing the risk to public safety of power loss.
5. With new technologies gaining momentum and scale globally, these innovations are becoming the least costly methods of meeting our electricity needs. They are key to the affordability of the electric system and can often provide added value by being deployed at or near loads, rather than far away.

How can innovation support the energy transition and evolution of the system?
Innovation occurring on what is traditionally known as the "customer" side of the grid has the potential to meet growing electricity demand, make Ontario more economically competitive, reduce emissions, enhance resilience against outages, and lower grid costs. Distributed Energy Resources (DERs), including solar, electric vehicles, batteries, and controllable loads, can help meet the changing needs of the electric system.

a. <u>Reconceptualizing what is meant by "electric system" reveals a greater potential for innovative solutions.</u>

Innovation can and does occur within the framework of the traditional grid with its generators, transmitters, and distribution utilities (e.g., smart meters and reconductoring transmission lines to

increase capacity). But this is only part of the picture. The most exciting and impactful innovation may be at the “participant” level.

Many jurisdictions are moving away from a purely centralized model toward one that enables participants to own a small share of the energy infrastructure that serves them and others. This might look like a battery, a solar array, or an electric vehicle in a home garage that supplies the grid and can provide backup power during an outage.

For people who live in condominiums or apartments, innovation might look like owning a share in a community energy resource, such as a community solar array, wind farm, or battery energy storage system (BESS), which also helps reduce their energy costs. Innovation can also be as straightforward as installing a solar panel on a balcony, a common practice in Europe.

Community centers across Ontario can serve as safe havens during power outages if equipped with solar + battery systems, while providing valuable grid support near points of load. Electric school buses that provide healthy, sustainable transportation for children can also serve as a grid resource.

By recognizing that the grid is more than the centralized model alone and includes participation by individuals and communities, we can begin to see that the space for innovation is expansive and offers many opportunities to address the challenges facing the overall system.

b. Realizing the benefits of innovation requires overcoming obstacles to deployment.

Systemic obstacles impede the development and adoption of innovative ideas in Ontario. In many other jurisdictions, governments, regulators, grid operators, and utilities are, to a greater extent, enabling distributed resources to contribute to overall grid capacity and resilience.

Ontario's electrical system is not yet realizing the potential for distributed energy resources because of regulatory and utility barriers, a lack of proper compensation mechanisms, an uneven playing field (including subsidies for fossil fuels and tax incentives for corporate projects that aren't accessible to ordinary participants), the absence of standards and interoperability, and a general lack of consumer and utility awareness of DERs’ benefits.

There is a great need to go beyond pilot programs. Pilots can give the appearance of progress, but if there isn’t robust follow-through to bring the technology into widespread reality, the pilots will prove little more than moonwalking. That is, they may give the impression of forward progress without necessarily yielding it. It is essential to establish the mechanisms that facilitate the widespread adoption of innovations and eliminate unnecessary barriers, enabling the Grid Innovation Fund to better translate its innovations into practical outcomes.

Innovation can support the energy transition and the evolution of the electric system if we recognize that modern electricity systems should include distributed energy resources. Actions taken to overcome the obstacles to the widespread deployment of innovative resources can help meet the need, build resilience, enhance economic competitiveness, reduce emissions, and improve affordability.

Topic 2: Strengths (slide 16 of presentation)

What are the strengths of the current state of innovation in the electricity sector? What is working well?

Despite the many obstacles to advancing and deploying innovation at scale in Ontario, there are at least three things that are working well:

1. The Peak Perks demand-response program for smart thermostats is helping reduce demand on the system at important times and has over 300,000 participants.
2. The Ultra-Low Overnight Tariff for residential customers is helping shift some demand to off-peak times of use.
3. The IESO is beginning to recognize the importance of and need for a compensation mechanism for dispatchable DERs and is taking action in this area in its Enabling Resources Program.[1]

Topic 3: Evolution of Innovation (slide 17 of presentation)

Recognizing the electricity system of tomorrow will look different than today's, what support do you feel the innovation sector needs to support the energy transition?

<u>The need for an environment that includes innovation as an important element is critical:</u>

Meeting the changing realities Ontario faces requires welcoming new approaches that support the electric system. The innovation sector needs coordinated efforts by government, regulators, the grid operator, and utilities to overcome obstacles to the widespread implementation of innovative approaches in the province. This begins with recognizing the importance of innovation and reconceptualizing the grid as including participation.

The innovation sector in Ontario needs a broader working environment that supports the implementation of innovations. Creating an electric system that is responsive to changes and challenges requires consideration of the physical infrastructure and the regulatory, policy, and incentive frameworks that govern it. Aligning vision, policies, regulations, and incentives with the twin goals of advancing new ideas and implementing new approaches is suggested.

<u>With respect to the Grid Innovation Fund, a new approach is needed:</u>

The Fund's innovation program appears to be isolated from broader-scale innovation implementation. This has contributed to a "valley of death" syndrome in Ontario, where potentially highly desirable innovations do not reach wider deployment. Innovation in Ontario could benefit from reformulating the current model by establishing a relationship between innovation and implementation.

By linking the innovative process directly to implementation, a bridge can be built between the two. Instead of isolating pilot projects from broader implementation, pilot projects could be included as a verification step within a substantive implementation plan. This approach can be referred to as a "pilot within a plan." If the pilot is not successful, wider implementation would not go forward. If the pilot is successful, planning and budgeting are already in place to move forward.

[1] "Distributed Energy Resources (DERs) are an increasingly important resource to meet Ontario's electricity needs." https://www.ieso.ca/Sector-Participants/Engagement-Initiatives/Engagements/ERP-Distributed-Energy-Resources-Integration-Project

Implementing "pilot within a plan" would involve early identification of actions to overcome obstacles to broader deployment and the creation or identification of the necessary funding mechanisms to scale the innovation. Structuring the Grid Innovation Fund in this way would help close the gap between innovation and implementation. This would make it less likely that successful pilots dead-end without further deployment and would accelerate the implementation timeframe.

What are the biggest gaps or challenges to advancing innovation in the electricity sector in Ontario?

An overarching challenge:

Ontario has not been forward-looking enough in its actions to facilitate DERs.

IESOs in other places are significantly more advanced – The California ISO's DERP, which enables DER participation in wholesale markets through aggregators, began a decade ago. Ontario is very much behind in implementing a similar model, even though it is in the works.

Outside Ontario, utilities have been leading the implementation of innovative solutions. For example, Green Mountain Power (GMP) in Vermont has been operating a fleet of utility-owned batteries installed in people's homes for over a decade. GMP uses the batteries for grid services while allowing the customers to use them for resilience. This does not appear to be happening in Ontario. Successful programs such as this demonstrate that utilities can play an important role in advancing innovative solutions.

Additional challenges include:

a. Regulatory obstacles – e.g., there is no virtual metering policy for community solar and battery storage projects to benefit multiple electric accounts, which prevents community-scale solutions on the distribution system from being realized. Virtual metering can be quickly implemented at little or no cost to ratepayers, taxpayers, and grid operators.
b. Interconnection hurdles – e.g., the process for community-scale energy solutions less than 100 kW, but greater than 10 kW, is unreasonably expensive and lengthy, subjecting these projects to the same requirements as a 500 kW system. Regulators should consider creating a special category for small community-scale projects to participate.
c. Financial barriers – e.g., Ontario lacks an incentive program for DERs that is equivalent to corporate projects. Corporate generation and storage facilities in Ontario benefit from federal subsidies for fossil fuels and tax incentives, including Investment Tax Credits and accelerated depreciation. DERs may soon be allowed to compete in the wholesale market in Ontario, but will likely face a competitive disadvantage given the lack of incentives enjoyed by larger participants.
d. Rebate program challenges – e.g., The Home Renovation Savings rebate program does not have a compensation mechanism for energy exported to the grid during peak times. Rebate programs should incentivize recipients to size and use their batteries to support the grid in addition to achieving load displacement.

A gap:

Even though there is no Federal Energy Regulatory Commission (FERC) in Canada, cohesive leadership across provinces is needed to encourage harmonization and create a larger market for innovators. In the U.S., FERC Order 2222, following California's lead, was issued in 2020 and created a national requirement that DERs be allowed to participate in wholesale markets through aggregators across the United States. Nothing comparable to this level of harmonized action exists in Canada.

Grid Innovation Fund Governance Framework

Topic 4: Existing Framework (slide 20 of presentation)

From your experience, what would you say has worked well to date with GIF?

Having a call for innovation that is open to all in Ontario and backed by funding is very good.

What do you see as potential limitations/risks with the current GIF framework?

The mechanisms to create a future for innovations beyond the short-term nature of the project funding from the Grid Innovation Fund need to be put in place. Incorporating pilot projects into a plan to implement the innovation at scale is an important step toward achieving the long-term objectives of the Grid Innovation Fund.

Topic 5: Current Mandate (slide 21 of presentation)

Do you feel the current mandate is appropriately broad? Too narrow?

Too narrow.

How could it be refined to better capture the needs of supporting innovation within Ontario's electricity sector?

Consider adding language to include assistance in overcoming barriers to the widespread adoption of innovations to the mandate.

Topic 6: Eligible Project Categories (slide 22 of presentation)

Thinking about where innovation in the sector is headed, are there project categories you feel should be added or removed to ensure we're able to fund new innovations in the future?

Consideration should be given to adding resilience to outages as a project category. This is important because Ontario is likely to see further increases in extreme weather events and needs to be well-positioned to adapt. One example in this category is "smart microgrids," which are small grids that can operate independently during outages, incorporate community energy resources, and interact intelligently with the larger grid. A focus on resilience measures that also contribute to the grid on a daily basis, like DERs, would provide additional value.

Topic 7: Budget (slide 23 of presentation)

How is the funding amount limiting our ability to meet our broader objectives?

The Grid Innovation Fund's grants can be considered a highly leveraged investment that benefits Ontario's residents largely to the extent that projects go beyond the pilot stage to full-scale implementation.[2] With more financial resources, the Grid Innovation Fund could support planning for deployment as well as deployment itself.

Programs in other jurisdictions are much more comprehensive than the Grid Innovation Fund and are accompanied by larger budgets. For example, in New York, NYSERDA's budget is roughly 100x larger than the IESO's Grid Innovation Fund. The significantly greater level of funding reflects both greater investment in innovation and research and NYSERDA's broader mandate, which includes deployment.

The current cap on the Grid Innovation Fund's level of funding should be reconsidered. Even if the mandate of the Fund were unchanged, a hard dollar cap is unlikely to be the most suitable way to determine what the Fund can and cannot do. The Grid Innovation Fund should be funded at a level that helps bring to fruition highly leveraged innovations for the electric system, looking not just at upfront costs, but also at the value provided over the long term.

Additional funding could support additional projects, but increasing funding to do more projects within the current model would likely be insufficient to address the challenges the electric system faces, as identified in discussion topic 1. Addressing these challenges requires reconsidering both the structure of the Grid Innovation Fund and the environment for scaling innovation in Ontario.

Funding may also be better supported if resources are allocated to improve the concept-to-reality process. This would help to ensure that promising projects reach implementation.

What types/scale of projects is GIF unable to support?

Some projects that require significant up-front capital or a greater level of scale than current projects may not be supported by the Grid Innovation Fund's current financial constraints. Changes to the Fund's framework that improve the balance between initial capital requirements and potential long-term benefits would better serve the objective of bringing innovation to fruition.

What types of projects could a larger budget enable GIF to support and how could that allow projects to secure additional funding from other sources?

Community energy projects, including neighborhood- or community-scale microgrids, can leverage private investments in DERs for community and system benefits. Organizations like Renewable

[2] "A third-party analysis of Grid Innovation Fund projects showed that if these innovative technologies were to be adopted more widely across the province, they could reduce costs to Ontario's energy system and customers by half a billion dollars." https://ieso.ca/Get-Involved/Innovation/Grid-Innovation-Fund/Projects-Funded

Energy Cooperatives would likely be interested in investing low-cost capital in projects like this as well.

Topic 8: Intake Approach (slide 24 of presentation)

Do you think the current approach is best to identify and assess projects?

It would be better to have both open and targeted calls rather than needing to choose between them each year. Ideally, the Grid Innovation Fund would not have gaps in time during which it is not accepting applications, as is the case now. Instead, it should have a continuous call or stream of calls for proposals.

Based on experience in other jurisdictions and technology readiness, some innovations may be better suited to immediate implementation than to a pilot project. An example of this is meter collar adapters, which can simplify and reduce the cost of home solar and battery interconnection (e.g., ConnectDER). There should be a mechanism in place to identify deployment-ready technologies and fast-track them to implementation.

What do you perceive to be the benefits of open calls? Targeted calls?

The benefits of an open call are that it can capture a wider range of potential innovations than a targeted call and can be done on a rolling basis without deadlines.

The benefits of a targeted call are that funding can be directed to addressing the highest-priority needs, and the proposals it yields can be more readily compared to one another.

Both open calls and targeted calls are important to an effective overall process.

Are there alternative approaches that could be considered?

Alternative approaches to consider include:

- A dual open-targeted call approach: Both open and targeted calls could be run concurrently. The open call could be ongoing, while the targeted call could be more narrowly focused, with periodic application deadlines and larger funding levels.
- An innovation accelerator and deployment model: Such a model might incorporate elements of financial support as well as support for widespread implementation.
- A “pilot within a plan” approach: Pilot projects or studies could be included as a verification step within a plan for broader implementation. The broader implementation plan would lay the groundwork for scaling the innovation by ensuring that planning and budgeting for deployment are put in place early. This would result in shorter deployment timeframes and an increased likelihood that sound innovations are brought into wider reality.

An overall approach that implements all three of the above approaches is suggested.

General Comments/Feedback

To foster an innovation-friendly environment in Ontario, leaders in government, regulators, the grid operator, and utilities must work together to broaden the shared vision for innovation. This includes structuring the Grid Innovation Fund effectively and ensuring alignment of policies, regulations, and incentives throughout the electric system so that meritorious innovations more often reach widespread implementation.

Enabling greater contribution from distributed energy resources is key. Ontario is now well-positioned to adopt a more participatory model informed by lessons from other jurisdictions that have successfully integrated distributed resources and community participation. An innovation-friendly environment that enables DERs can yield bottom-up, innovative solutions that are faster, lower cost, and more effective than centralized approaches alone.

Three ingredients would significantly enhance the Grid Innovation Fund's ability to contribute to Ontario's electric system:

1) A broader mandate that includes assistance with scaling the deployment of innovative solutions with commensurate funding.
2) Ongoing calls that eliminate gaps in time during which proposals are not accepted.
3) Inclusion of pilot projects or study as a verification step within a larger implementation plan, if such verification is necessary before the innovation can be scaled.

A grid that facilitates innovation as a response to the broader changes in the economics and capabilities of technologies is necessary to maintain and enhance affordability, sustainability, and resilience, and to meet the growing demand for power in Ontario. An innovation program that explicitly supports solutions beyond the demonstration phase—ideally folding demonstration into a larger-scale-up plan—can more effectively deliver timely, widespread benefits.

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I very much appreciate your careful consideration of the thoughts and suggestions enclosed here. Please let me know if clarification or additional detail is needed or if I might be of assistance in any way.

Thank you,

Aaron Kelly, Esq.

Master of Energy Regulation and Law, Juris Doctor