



The Hydrogen Innovation Fund Request for Proposals

Proposal Guideline

March 2023



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1. Overview: The Hydrogen Innovation Fund

On April 7, 2022, the Minister of Energy ("Ministry") sent a letter to the IESO, asking it to investigate and propose program options to integrate low-carbon hydrogen technologies into Ontario's electricity grid for the purposes of balancing and strengthening the electricity system and contributing to broader decarbonization. The letter also asked the IESO to report back to the Ministry by October 31, 2022, with program options, timelines, costs and any additional advice the IESO may have on how to proceed.

After conducting stakeholder engagement and its own research, on October 31, 2022, the IESO reported back to the Ministry with potential options and projects, as well as the proposed program scope, budget and timelines. The IESO's final report highlighted potential roles for hydrogen to benefit Ontario's electricity system, including use of hydrogen storage and generation to more efficiently balance supply and demand on the grid, and potentially blending hydrogen into natural gas-fired turbines for peaking capacity.

Based on a jurisdictional scan of comparable programs, discussions with stakeholders and the identified potential projects, the IESO proposed a total program budget of \$15 million over three years.

On January 26, 2023, the Minister of Energy directed the IESO to develop a Hydrogen Innovation Fund with the goal of investigating, evaluating and demonstrating how low-carbon hydrogen technologies can be integrated into Ontario's electricity grid.

Accordingly, the IESO is issuing a Request for Proposals focused on hydrogen demonstration projects and research/feasibility studies that could support electricity supply, capacity, storage and demand management applied to clean energy integration, peak generation capacity, ancillary services and long-term/seasonal storage.

The IESO will accept for consideration proposals submitted between **April 3, 2023 and May 5, 2023**. Up to \$15M in total funding over three years is available for approved projects.

2. Project Eligibility

In order to be eligible for funding under the Hydrogen Innovation Fund, proposals must be located in Ontario and meet requirements associated with the following four eligibility categories: (2.1) Project Type and Timelines, (2.2) Project Category, (2.3) Project Applicant and (2.4) Project Funding

The proposals will be screened for eligibility and those meeting all the eligibility requirements will be further evaluated according to the Evaluation Criteria set out in Section 5.

2.1 Eligibility: Project Type and Timelines

The Hydrogen Innovation Fund will consider proposals for three streams of project types:

- 2.1.1 Projects at existing facilities that are already built and/or operational and ready to participate in projects to demonstrate and/or evaluate reliability services;
- 2.1.2 Projects at new facilities that are not yet constructed, but could be in-service by a specified date; and
- 2.1.3 Projects undertaking research and/or feasibility studies that could investigate the feasibility of different hydrogen approaches or support future hydrogen project decision-making.

Successful projects funded through the Hydrogen Innovation Fund will be no longer than 36 months. Key dates to consider include the following:

- Demonstration projects at existing facilities shall commence by **June 30, 2024**;
- Demonstration projects at new facilities shall commence by **December 31, 2025**; and
- Reports on research / feasibility studies shall be submitted by **June 30, 2024**.

2.2 Eligibility: Project Category

In addition to proposals aligning with the “Project Type,” successful proposals will test activities related to at least one of the following project categories:

Category A- Hydrogen production from electricity

- A.1 Demonstration of how a hydrogen production facility participates in the energy, operating reserve, and capacity markets in Ontario, including analysis of hourly price-quantity pairs (as defined in [IESO Market Rules Chapter 11, Definitions](#)), price sensitivity and responsiveness, load profile, seasonal and monthly variations, average capacity factor, ramp rates, etc.
- A.2 Demonstration of how a hydrogen production facility might participate in peak-reduction and/or capacity programs including participation in the Industrial Conservation Initiative (ICI) or Interruptible Rate Pilot, or demonstration of demand reduction capabilities.
- A.3 Demonstration of how a hydrogen production facility would provide ancillary services to the IESO, such as frequency regulation.
- A.4 Integration of renewable energy, either through increased production during curtailment events or demonstrate ability to follow an IESO market dispatch signal.

Category B- Electricity generation from hydrogen

- B.1 Demonstration of how an electricity generator using hydrogen participates in the energy, operating reserve, and capacity markets, including analysis of hourly price-quantity (PQ) pairs, price sensitivity and responsiveness, minimum loading, average capacity factor, ramp rate, carbon intensity of energy generated etc.

- B.2 Assessment of the impact of hydrogen blending with natural gas on generator performance (heat rate, ramp rate, cost, minimum generation block run-time, minimum loading point, emissions reductions and any other requirements specified in the IESO market rules).
- B.3 Demonstration of how an electricity generator using hydrogen would offer ancillary services to the IESO, such as frequency regulation.
- B.4 Performance of energy storage using hydrogen including round trip efficiency, hourly price-quantity pairs, charge/discharge profile (i.e., when is it economic to charge and discharge), ramp rate, availability, energy management, etc.

Category C- Integrating hydrogen and electricity within a broader hydrogen economy

- C.1 Research and/or feasibility studies that assess larger integration challenges of hydrogen, the electricity system, and the economy. Potential feasibility study areas include integrating hydrogen hubs, long-term storage of hydrogen, site-specific conversion to hydrogen or production of hydrogen with applicability to other facilities, etc. A requirement of the studies is a direct assessment of the impact of potential projects on the electricity system.

Applicants are encouraged to include more than one sub-category as part of their project scope.

2.3 Eligibility: Project Applicant

Proposals are welcomed from non-profit and for-profit incorporated entities.

Funding is not available to individuals, including incorporated individuals, sole proprietorships, trusts or joint ventures.

At the time of proposal submission, the applicant must provide audited financial statements and signed letters of support from all financial contributors of the project.

2.4 Eligibility: Project Funding

The Hydrogen Innovation Fund has a total budget of \$15 million over three years, which will be available to projects that are successful under this Request for Proposals.

The maximum proposed limits of requested funding from the IESO are:

- \$5M IESO contribution for existing facilities and new facilities
- \$500k IESO contribution for research or feasibility studies

The Hydrogen Innovation Fund will provide support up to a maximum of 50% of eligible project expenses (see Appendix A). Applicant and partner contributions must comprise at least 25% (in cash) of the total project value. The lead applicant is required to make a cash contribution to the project.

Applicants are required to secure funding additional to the funding requested from the IESO. This includes cash and/or in-kind contributions from the applicant and all project partners. Each project partner must submit a signed letter of support specifying the contribution amount and the type of contribution (cash and/or in-kind), with the proposal submission package.

All budgeted expenses using IESO funds are subject to IESO audit.

Applicants must state whether they plan to receive other sources of funding/income from other IESO-administered programs or markets over the duration of the project. Receipt of funding will not impact project eligibility.

3. Proposal Details

Applicants should submit completed Proposals (based on the template set out in Appendix B – Project Proposal Template) and requested supporting documents (e.g., letters of support, audited financial statements, project team CVs etc.) to hydrogeninnovationfund@ieso.ca.

Proposals must be submitted between **April 3, 2023 and May 5, 2023** with the words “Hydrogen Innovation Fund RFP” in the subject line.

The IESO will respond by email to applicants to confirm receipt of proposals within two business days.

4. Support, Review Process and Approval

Potential applicants are strongly encouraged to contact the Hydrogen Innovation Fund team at hydrogeninnovationfund@ieso.ca to discuss their project prior to submitting a proposal. Upon request, IESO staff will meet with potential applicants to discuss projects.

Once proposals are submitted, they will be screened for eligibility. Those proposals that meet all eligibility requirements will be further evaluated as follows.

The IESO will form an internal Business and Technical Review Committee, with the support of external technical experts as needed (the Review Committee) to evaluate and score each eligible proposal. Applicants with highly ranked proposals will be provided with the opportunity to work with the Review Committee to refine their proposals to address any questions and/or feedback.

To ensure that the IESO funds projects under each project type and in order to ensure ratepayers benefit from the learnings that can be provided by each project type, the IESO will take the following approach until the \$15M of funding is allocated:

- First select the highest scoring proposal from each project type
- If funding is still available, select the highest scoring proposals of all remaining projects

The Review Committee will bring high-ranking proposals forward for IESO executive approval in Q2 2023. Applicants will be notified of the outcome in early Q3 2023.

Successful applicants will have the opportunity to participate in IESO communication activities, including public announcement of successful Hydrogen Innovation Fund projects.

5. Proposal Evaluation Criteria

Proposals will be evaluated using the following framework. The IESO reserves the right to conduct brief interviews (30-45 minutes) with selected proponents to better understand project details.

CATEGORY	EVALUATION CRITERIA	WEIGHTING
Potential Impact	The project cost-effectively supports Ontario's evolving electricity system. The project demonstrates savings to ratepayers, produces efficient market outcomes and/or enhances electricity system reliability/operability. Clear metrics are included in the proposal indicating how ratepayer savings, market efficiencies and reliability/operability will be assessed.	10 points
Market Capability Building Impact	The project demonstrates the skills, knowledge and infrastructure required by the market to accelerate the adoption of hydrogen technologies in the electricity system.	5 points
Market, Program or Technical Advancement	The project is testing a novel approach and advancement of the "state of the art" in Ontario. The project includes innovative arrangements that test new activities, services or business models for hydrogen project proponents that are not currently in-service in Ontario.	10 points
Project Team and Partners	The project team has the qualifications and experience required to execute a large-scale, strategic project. The project team provides evidence of appropriate partnerships, including a utility partner where appropriate. The project demonstrates consideration of community and Indigenous engagement and/or participation. Projects with a greater number of highly qualified, experienced and committed partners will be given greater points due to the capacity-building aspects that such projects offer.	5 points

CATEGORY	EVALUATION CRITERIA	WEIGHTING
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Project Funding	<p>The overall funding proposal satisfies IESO funding requirements outlined in the Proposal Guideline Section 2.4, and appropriately allocates risk between the proponent, partners and the IESO. Higher points will be allocated to projects with a lower percentage of IESO funding vs. total project value. The budget items outlined in the Proposal Template Part B are relevant to achieving the objectives of the project and the Hydrogen Innovation Fund. Audited financial statements demonstrate the financial ability of the applicant to support their contribution to the project.</p>	20 points
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Project Purpose and Outcomes	<p>The project purpose and outcomes are aligned with the Hydrogen Innovation Fund objectives and have the potential to influence technological evolution and wholesale market participation. The proposal clearly states which Project category and sub-category (Section 2.2) will be addressed, including identifying specific metrics that will be used to measure outcomes. The proposed deliverables demonstrate how the project will enable the IESO to better understand the opportunities and challenges of hydrogen in the electricity system.</p>	20 points
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Project Design	<p>The project’s design is clear, reasonable and likely to meet the stated objectives. The project demonstrates the ability to integrate into the IESO-administered markets to provide system reliability or resiliency, where applicable. The scope, work plan and scheduled tasks are contained in a clear and logical framework that supports successful completion of the project (for example, any not yet in-service assets or other resources included in the project scope have already been commissioned or will be commissioned by Q4 2025).</p>	20 points
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CATEGORY	EVALUATION CRITERIA	WEIGHTING
Emissions Impact	The proposal has assessed the greenhouse gas (GHG) emissions resulting from project activities. The proposal demonstrates a plan to limit GHG emissions increases or demonstrate economy-wide emissions reductions.	10 points

6. Notification of Successful Applicants

The Review Committee will evaluate all eligible proposals and recommend a select number for IESO executive approval. Applicants will be notified of the Review Committee outcome in early Q3 2023.

7. Funding Disbursement

Successful applicants will be required to enter into the form of agreement provided in Appendix C – Contribution Agreement. Note: **this agreement is non-negotiable**; the IESO will not make changes to the agreement for individual proponents and any applicants responding to this RFP should ensure they are comfortable signing the agreement as it is currently written before submitting an proposal.

Funding is disbursed on a milestone basis as projects complete key deliverables identified in the proposal. Submitted proposals must set out the number, content, timing, and budget of milestones in their proposal.

8. Electrical Safety Authority

Applicants should consider the following Electrical Safety Authority (ESA) codes and standards.

The Electrical Safety Authority (ESA) regulates and promotes electrical safety in Ontario. The Ontario government has given ESA a mandate to improve public electrical safety. The ESA administer Part VIII of the Electricity Act and oversee these four related regulations:

1. Ontario Electrical Safety Code (Regulation 777/21) — sets out how to do electrical work.
2. Licensing of Electrical Contractors and Master Electricians (Regulation 570/05) — sets requirements for businesses and certain people who can do electrical work.
3. Electrical Distribution Safety (Regulation 22/04) — provides objective-based electrical safety oversight and sets out the accountabilities of companies licensed to distribute electricity.
4. Electrical Product Safety (Regulation 438/07) — governs pre-market approval of electrical products before their sale, distribution and advertisement.

The Ontario Electrical Safety Code (OESC) has comprehensive requirements related to product approval, applying for inspection, submitting plans for review and connection authorization requirements. Including this program (*), any work (where the OESC applies) on an electrical

installation will need to comply with the above requirements, which include what to install, who is eligible to install and how to install. Installers and designers are required to meet and satisfy the current OESC requirements, and are encouraged to refer to the latest bulletins issued by the ESA. The bulletins include interpretations, clarifications, and sometimes easements.

- A sample of these published bulletins are located on the following website link <https://esasafe.com/electrical-products/bulletins/>
- Notifications can be filed on the following website link <https://esasafe.com/fees-and-forms/forms/>
- Plan Review submissions can be filed on the following website link <https://esasafe.com/business-and-property-owners/electrical-plan-review/>
- For more information about ESA technical requirements, please refer to the following website link <https://esasafe.com/code-technical/>

(* OESC requirements apply to work on an electrical installation related to this program. Work on an electrical installation may include but is not limited to, the installation (e.g. new equipment, future modifications, replacement and retrofitting) of;

- DERs (e.g. energy storage systems, renewable energy systems such as solar/wind/fuel cell assets, generators); energy management systems; - example of related bulletins are Bulletin 64-1-*, 64-7-*, 84-1-* which can be found along with other bulletins in the following link <https://esasafe.com/electrical-products/bulletins/>
- Section 18 – Hazardous locations and related bulletins – examples of related bulletin is Bulletin 18-1-* which can be found along with other bulletins in the following link <https://esasafe.com/electrical-products/bulletins/>

All the generating facilities have to be inspected by ESA prior to be connected to the distribution grid. See Bulletin 2-28-* in the following link <https://esasafe.com/electrical-products/bulletins/>

Generation equipment that is grid interconnected shall meet all the applicable requirements of the OESC including section 84 and Bulletin 84-1-* in the following link <https://esasafe.com/electrical-products/bulletins/>

9. Appendices

9.1 Appendix A – Eligible Expenses

Eligible expenses are those directly related to the design, development, demonstration, installation, implementation, testing, measurement and performance verification of the project.

The following table summarizes eligible and ineligible expenses.

Eligible Expenses	Ineligible Expenses
<ul style="list-style-type: none"> ✓ Project-specific materials, equipment, products and services ✓ Salaries and benefits of employees directly involved in the design, selection, purchase and installation of the project ✓ Professional, engineering, scientific, technical, management and contracting services, including training ✓ Permits and licence fees ✓ Funding for marketing, communications and workshops directly related to project activities ✓ Costs associated with the monitoring, verification and evaluation of the project’s impacts, including data collection, processing, analysis and management ✓ Equipment and products, including diagnostic and testing tools and instruments and associated software ✓ Costs associated with providing approved incentives to project participants 	<ul style="list-style-type: none"> ✗ Budget deficits ✗ Activities completed or costs incurred before the funding is approved or after the project is completed ✗ For research/feasibility studies, costs over \$50,000 for any single consultant or contractor that has not been selected through a competitive process ✗ For new or existing demonstration projects, costs over \$200,000 for any single consultant or contractor that has not been selected through a competitive process ✗ Costs associated with the purchase of real estate ✗ Any overhead costs generated by the lead applicant or third parties, such as operating costs related to general maintenance and repair ✗ Hospitality, incidental or food expenses for the project team ✗ Hospitality or travel costs not in compliance with the Government of Ontario’s Travel, Meals and Hospitality Expenses Directive ✗ Any costs not directly related to the achievement of the project’s objectives as defined in the contribution agreement between the IESO and the applicant ✗ Any cost related to System Impact Assessment (SIA) or Customer Impact Assessment (CIA) processes

9.2 Appendix B – Project Proposal Templates

There are two [Proposal Templates](#) that are required, Proposal Part A and Proposal Part B, posted on the Hydrogen Innovation Fund page on the IESO website.

9.3 Appendix C – Contribution Agreement

Posted on the [Hydrogen Innovation Fund](#) page on the IESO website.

9.4 Appendix D – Project Brief Template

Posted [Hydrogen Innovation Fund](#) page on the IESO website.

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