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Hydrogen Innovation Fund: Draft Proposal Guideline (Program Rules) and Materials

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Purpose of Today's Webinar

To provide an overview of the Hydrogen Innovation Fund Request for Proposals and seek stakeholder feedback on the draft program rules and application guideline.

Agenda:

- Background
- Goal and Scope
- Project Criteria
- Review Process and Approval
- Next Steps and Feedback

What is Hydrogen?

- Hydrogen is the most abundant element in the galaxy
  - In gaseous form it occurs as two hydrogen elements bonded together (H2)
  - On earth, hydrogen is most commonly found in water molecules (H2O)
- Gaseous hydrogen (H2) is an energy carrier
  - Splitting hydrogen bond releases energy that can be used for other purposes
  - For electricity production, the hydrogen bond can be split through the use of a fuel cell or through combustion

Potential Electricity Sector Impacts of Hydrogen

- The most likely impact for the electricity sector is increased electricity demand from grid-connected electrolyzers for hydrogen production
- Hydrogen has the potential to provide essential services that support the reliability of Ontario's power system including clean energy integration, generation capacity, ancillary services and long-term storage
- The IESO's Pathways to Decarbonization Study identified 15,000 MW of hydrogen capacity as a potential cost-effective resource for reducing peak demand and helping to meet Ontario's growing electricity needs
- Hydrogen Innovation Fund will enable the IESO and broader industry to better understand role hydrogen can play in Ontario, including its ability to provide grid services and help to meet Ontario's future electricity needs

Minister's Directive - Background

- On April 7, 2022, the Minister directed the IESO to investigate and propose options to integrate low-carbon hydrogen technologies into Ontario's grid.
- After conducting stakeholder engagement and its own research, on October 31, 2022, the IESO reported back to the Ministry with potential options and projects, proposed program scope, budget and timelines.
- On January 26, 2023, the Minister directed the IESO to develop and implement a Hydrogen Innovation Fund to proceed with evaluating low-carbon hydrogen technologies in Ontario.
- The IESO is issuing a Request for Proposals for projects that explore how low-carbon hydrogen technologies can be integrated into Ontario's electricity grid for the purposes of balancing and strengthening our reliable electricity system

Minister's Directive – Key Program Elements

- Goal: investigating, evaluating, demonstrating how low-carbon hydrogen technologies can be integrated into Ontario's electricity supply to balance and strengthen reliability
- Potential technology applications: 1) clean energy integration; 2) peaking generation capacity; 3) ancillary services; 4) long-term/seasonal storage
- $15M budget over three years
- Three project types: 1) existing facilities; 2) new facilities; 3) research/feasibility studies
- Timelines specified for contracting for each project type

Hydrogen Innovation Fund Principles

- Integrate-hydrogen production in a way that supports wholesale electricity market efficiency
- Contribute to enhanced reliability in the near-term
- Demonstrate the ability of hydrogen to contribute to the decarbonization of the electricity sector
- Link to other IESO/Ministry initiatives, not limited to:
  - Electrolyzer load participating in the Interruptible Rate Pilot or as a dispatchable load
  - Matching load with hourly clean energy credits

Project Types and Timelines 1/2

The Hydrogen Innovation Fund will include three project types:

1. Projects at existing facilities that are already built
   - Demonstration projects to commence by December 21, 2023
2. Projects at new facilities that are not yet constructed
   - Demonstration projects to commence by June 30, 2025
3. Projects undertaking research and/or feasibility studies that could investigate the feasibility of different hydrogen approaches or support future decision-making
   - Final reports to be submitted by December 31, 2023

Project Types and Timelines 2/2

Project Type	Description	Project Timeline Requirements
1. Existing Facilities	Projects at facilities that are already built/operational and ready to participate in projects to demonstrate/evaluate reliability services by Q4 2023	Commence by Q4 2023
2. New Facilities	Projects at facilities that are not yet constructed but will be in-service by Q2 2025	Commence by Q2 2025
3. Research or Feasibility Studies	Projects undertaking research and/or feasibility studies that could investigate the feasibility of different hydrogen approaches or support future hydrogen project decision making	Submit reports to the IESO on research / feasibility studies by Q4 2023

Potential Project Focus Areas

Potential Project Focus Area	Examples of Electricity System Functions to be Evaluated
Renewable / clean energy integration	• Smoothing of renewable output compared to forecast output (storage and generation) • Utilization of surplus/constrained clean energy
Natural gas generation blending and/or 100% retrofit	• Low carbon hydrogen blended into fuel at existing natural gas facility would reduce emissions • Retrofit existing turbines at small combined heat and power plant to 100% hydrogen fuel input
Ancillary services	• Adjust electrolyzer load and/or fuel-cell output to respond to grid conditions
Feasibility studies	• Set aside portion of total program budget for cost-benefit or other studies and analytic work on feasibility of longer-term hydrogen solutions (e.g. hydrogen as a long-term electricity storage solution) • Feasibility studies could consider larger scale projects that advance Ontario's larger hydrogen strategy

Project General Criteria and Eligibility

Project Categories: Successful proposals will test activities related to:

- Hydrogen production from electricity
- Electricity generation from hydrogen
- Integrating hydrogen and electricity within a broader hydrogen economy

Eligible Project Applicants: Non-profit and for-profit incorporated entities

- Individuals, including incorporated individuals and sole proprietorships are not eligible for funding

Project Partners: Applicants are encouraged to collaborate and partner with other organizations to leverage broader capacity building aspects of the project

Project Duration: Projects will be no more than 36 months in duration and projects in the research/feasibility type must be completed by Dec. 31, 2023

Application Window: Proposals accepted between **April 3 – May 5, 2023**

Project Funding Criteria 1/2

The Hydrogen Innovation Fund has a budget of $15M over 3 years:

- 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 Fund will provide support up to a maximum of 50% of eligible project expenses (see Appendix A)
- Applicants are required to secure funding in addition to the funding requested from the IESO, including from project partners

Project Funding Criteria 2/2

- Contributions from applicants and partners must comprise at least 25% in cash of the total project value, part of which must come from the applicant
- Any proposed partners are required to submit signed Letters of Support stating their cash and/or in-kind contributions with the proposal submission
- Project deliverables and payments are structured on a Milestone basis (i.e. funds provided through the program will be paid out after completion of specific project milestones and approval by the IESO)

Project Evaluation Criteria 1/3

All proposals will be assessed using the following weighted evaluation criteria.

Evaluation Criteria	Description	Points
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
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
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

Project Evaluation Criteria 2/3

Evaluation Criteria	Description	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. 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
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
Project Funding	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.	20

Project Evaluation Criteria 3/3

Evaluation Criteria	Description	Points
Project Purpose and Outcomes	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 (Proposal Guideline 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 allow for the IESO to better understand the opportunities and challenges of hydrogen in the electricity system.	20
Project Design	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 Q2 2025).	20
Total Points		**100**

Review Process and Approval 1/2

- Potential applicants are encouraged to reach out to the Hydrogen Innovation Fund team to discuss the project prior to submitting a proposal
- Submitted proposals will be screened for eligibility: project type and timeline; project category; project applicant; project funding
- Eligible proposals will be evaluated by a Business and Technical Review Committee comprised of internal subject matter experts with the support of external technical experts if needed
- Projects will be evaluated based on published evaluation criteria

Review Process and Approval 2/2

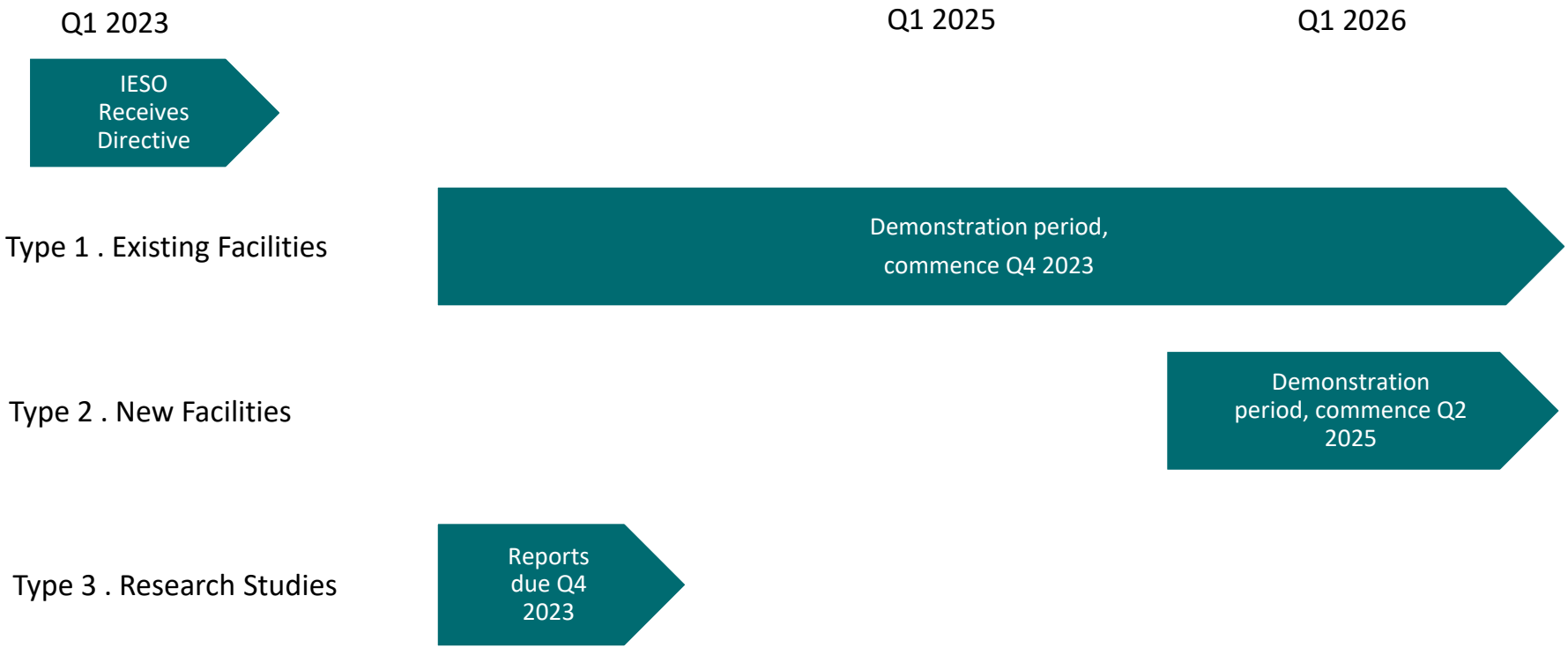
- To ensure that the IESO funds projects under each type and in order to ensure ratepayers benefit from the learnings that can be provided by each type, the IESO will take the following approach until the $15M is allocated:
  - First select the highest scoring proposal from each project type
  - If funding is still available, select the highest scoring proposals of all remaining projects
- Applicants will be notified of the outcome in early Q3 2023

Next Steps and Feedback

Next Steps

Timing	Activity
March 8, 2023	Stakeholder Feedback due
March 31, 2023	IESO to publish Final Proposal Guideline, Templates, Agreement
April 3 – May 5	Accept proposals for Hydrogen Innovation Fund RFP
May – June 2023	Proposal evaluation and selection
Q3 2023	Execute contribution agreements with successful proponents

Program Timelines by Project Type



Feedback Questions

- We are seeking general stakeholder feedback on the draft Proposal Guidelines (Program Rules)
- Are the evaluation criteria clear and complete?

Please use the feedback form found under the Feb 22 entry of the Low-Carbon Hydrogen Strategy webpage and send to engagement@ieso.ca by March 8

Appendix

Appendix A: Expense Eligibility 1/2

Eligible Expenses	Ineligible Expenses
Project-specific materials, equipment, products and services	Budget deficits
Salaries and benefits of employees directly involved in the design, selection, purchase and installation of the project	Activities completed or costs incurred before the funding is approved or after the project is completed
Professional, engineering, scientific, technical, management and contracting services, including training	Costs over $50,000 for any single consultant or contractor that has not been selected through a competitive process
Permits and licence fees	Costs associated with the purchase of real estate

Appendix A: Expense Eligibility 2/2

Eligible Expenses	Ineligible Expenses
Funding for marketing, communications and workshops directly related to project activities	Any overhead costs generated by the lead applicant or third parties, such as operating costs related to general maintenance and repair
Costs associated with the monitoring, verification and evaluation of the project's impacts, including data collection, processing, analysis and management	Hospitality, incidental or food expenses for the project team
Equipment and products, including diagnostic and testing tools and instruments and associated software	Hospitality or travel costs not in compliance with the Government of Ontario's Travel, Meals and Hospitality Expenses Directive
Project-specific materials, equipment, products and services	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

Thank You

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