

# HIF Portfolio

## HIF Portfolio Table | Projects and Studies

All projects were contracted in 2023

This report covers the period ending Dec 31, 2023.

Proponent	Project Title	Summary	Category	Amount Awarded	Total	Status
Atura Power	Halton Hills Hydrogen Blending	The project will explore the performance of an existing large natural gas turbine when blended with natural gas and hydrogen (up to 15% hydrogen) impacts on operations, equipment functionality, turbine responsiveness, and market participation continuing to provide wholesale grid services such as energy, and operating reserve.	New Facility	\$4,179,700	\$12,641,900	Active
Capital Power	Hydrogen Blending – Goreway Power Station, East Windsor Cogeneration Centre and	The study will assess the financial and technical viability of blending and co-firing hydrogen and natural gas (NG) at three Capital Power’s existing	Research/feasibility study	\$206,300	\$525,700	Active

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	York Energy Centre	<p>natural gas generating facilities East Windsor, Goreway and York Energy Center) using various mixes of hydrogen (from 5% to 15%) as well as the blending impacts on natural gas turbine's performance, maintenance, operability, emissions and safety.</p>				
Capital Power	Kingsbridge Green Hydrogen and Storage Assessment	<p>The study will explore the economic and technical feasibility of creating green hydrogen via electrolysis from wind and storing it in underground storage units located in depleted gas reservoirs. The study to explored include, fueling a hydrogen-methane turbine and using hydrogen for natural gas blending and transportation fuel, as well as the potential to provide grid reliability services.</p>	Research/feasibility study	150,000.50	\$300,001	Active

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Carlsun Energy Solutions Inc.	Distribution-Connected Electrolytic Hydrogen Production	The project aims to construct and operate a 500 kW hydrogen production, compression and storage facility to demonstrate the grid benefits of Anion Exchange Membrane (AEM) electrolyzer can provide while producing hydrogen fuel for Ontario's first publicly accessible hydrogen fueling station.	Research/feasibility study	\$1,891,400	\$4,212,800	Active
Emerald Energy From Waste Inc.	Interruptible Hydrogen Generation Pilot	The project will demonstrate the technical capabilities of Proton Exchange Membrane (PEM) electrolyzer to produce hydrogen from waste, and test the electrolyzer's ability to provide real-time grid services such as operating reserve, frequency regulation and the smoothing of renewable generation. This project will also develop an on-site hydrogen hub to store and dispense hydrogen to near	New Facility	\$2,990,000	\$6,260,007	Active

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		market ready customers.				
Enbridge Gas Inc.	Performance of Combined Heat and Power System Using Blended Hydrogen and Natural Gas as Fuel	The project will demonstrate the fueling of a 115 kW combined heat and power (CHP) unit with a range of hydrogen and natural gas blends (up to 100% hydrogen) from an existing electrolyzer on-site to generate electricity and provide heat to the facility, contributing to a reliable, zero-to-low emission electrical grid in Ontario.	New Facility	\$1,787,480	\$3,574,960	Active
HydroMéga Services	Coupling green electricity and hydrogen	The study will assess the technical and economic feasibility of retrofitting an existing 27 MW natural gas generation facility in Cochrane, Ontario by installing an electrolyzer powered by on-site renewable electricity generation (solar and wind) to produce and store green hydrogen for electricity generation and/or support	Research/feasibility study	\$100,000	\$250,000	Active

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		decarbonization of the local heating systems by blending hydrogen with the local natural gas heating network.				
Kinectrics	Feasibility Study for an Urban Hydrogen Hub for Grid Flexibility, Resilience, and Carbon Reduction Scalable to Nuclear Power Plant Co-location	The study will assess the potential of producing hydrogen through solid oxide electrolysis powered by a surrogate heat to emulate a nuclear power plant. It will evaluate the economic feasibility, including installation, maintenance and operating costs of the hydrogen production, storage, distribution and electricity generation.	Research/feasibility study	\$250,000	\$500,000	Active
Next Hydrogen Corporation	Development and Demonstration of Next Hydrogen's Advanced Water Electrolyser Under Interruptible Service Conditions	The project will demonstrate the capabilities of advanced alkaline water electrolyser to provide grid services, including, operating reserves, energy, frequency regulation, fast frequency response, and, the smoothing of renewable generation.	Existing Facility	\$938,201	\$1,876,402	Active

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Transition Accelerator	The Role of Hydrogen Hubs in Strengthening the Affordability and Reliability of Ontario's Electricity System	The study will model the potential for hydrogen hubs in the Hamilton region to enable the decarbonization of Ontario's economy and the resulting impact on the electricity system. It will assess the ability to cluster hydrogen production, transportation, storage, and demand to facilitate cost-effective net-zero solutions across multiple sectors and understand the impact on the electric system	Research/feasibility study	\$101,204.73	\$202,409.46	Active
University of Windsor	Hydrogen Integrated Greenhouse Horticultural Energy	The study will economically model the production, storage, delivery and consumption of hydrogen for use in Ontario's agricultural greenhouse sector. It will identify the potential grid services that a wind-powered hydrogen production facility can offer in Southwestern Ontario and	Research and/or feasibility study	\$130,000	\$285,000	Active

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		estimate the range of costs for hydrogen integration into a greenhouse operation.				
Volta Energy Inc.	Feasibility Evaluation of Sustainable, Green and Rapid-Response Metal-Supported Solid Oxide Cell Technology	The study will assess how reversible solid oxide hydrogen fuel cells can help provide a pathway for hydrogen integration into the electricity grid. This study includes research on market-entry barriers for reversible solid oxide hydrogen fuel cells alongside the responsiveness of the technology to control room signals.	Research and/or feasibility study	\$491,352	\$1,114,554	Active
Western University	Optimal Deployment of Green Hydrogen Plants in Ontario's Electricity System	The study will analyze innovative approaches to integrating large-scale green hydrogen plants into Ontario's electricity system. The study will assess the technological and economic challenges and opportunities associated with the wide adoption of green hydrogen plants.	Research and/or feasibility study	\$498,000	\$996,000	Active

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York University	Preliminary Feasibility Study of Hydrogen Productions On-Site and Utilization of Hydrogen in Existing Prime Movers	<p>The study will assess the techno-economic challenges and opportunities associated with the wide adoption of green hydrogen plants in Ontario.</p> <p>It will investigate the feasibility of retrofitting existing gas turbines to burn a blend of hydrogen and natural gas in small/medium sized generators. The study will also investigate how generating hydrogen on-site during off-peak periods can provide faster operating reserve and reduce electricity demand and emissions during hours when large gas plants would otherwise be operating.</p>	Research and/or feasibility study	\$38,000	\$106,000	Active
York University	Optimal Deployment of Green Hydrogen Plants in Ontario Electricity System	The study analyze innovative approaches to integrating large-scale green hydrogen plants into Ontario's electricity system. The study will assess the technological and economic challenges	Research and/or feasibility study	\$90,000	\$180,000	Active



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		and opportunities associated with the wide adoption of green hydrogen plants.				