

## MUNICIPAL FLEET HYDROGEN PILOT PROJECT AGREEMENT

### Recommendation

1. That an agreement between the City of Edmonton and Azolla Hydrogen Ltd., as outlined in Attachment 1 of the May 23, 2024, City Operations report CO02453 be approved, and that the agreement be in form and content acceptable to the City Manager.
2. That Attachment 1 of the May 23, 2024, City Operations report CO02453, remain private pursuant to sections 25 (disclosure harmful to economic and other interests of a public body) and 27 (privileged information) of the *Freedom of Information and Protection of Privacy Act*.

<b>Requested Action</b>	Committee Decision Required		
<b>ConnectEdmonton's Guiding Principle</b>	<b>ConnectEdmonton Strategic Goals</b>		
<b>CONNECTED</b> This unifies our work to achieve our strategic goals.	<b>Climate Resilience</b>		
<b>City Plan Values</b>	THRIVE		
<b>City Plan Big City Move(s)</b>	Greener as we grow	<b>Relationship to Council's Strategic Priorities</b>	Climate adaptation and energy transition
<b>Corporate Business Plan</b>	Transforming for the future		
<b>Council Policy, Program or Project Relationships</b>	<ul style="list-style-type: none"> <li>• Community Energy Transition Strategy</li> </ul>		
<b>Related Council Discussions</b>	<ul style="list-style-type: none"> <li>• June 1, 2023, Urban Planning and Economy report UPE01799, Overview of City Hydrogen Activities</li> </ul>		

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## Executive Summary

- The City of Edmonton's Emissions Reduction Alberta (ERA) (Government of Alberta) application for the "Alberta Zero-Emissions Fleet Fueling (AZEFF) Project" was successful in securing funding up to \$6.9 million.
- The City will lead the AZEPP project in collaboration with the Transition Accelerator Inc. (TA), Azolla Hydrogen Ltd., the University of Alberta, Hyzon Motors Inc., Strathcona County and Sturgeon County. Per the grant structure, Administration will need to enter into single source procurement agreements with TA, Azolla Hydrogen Ltd, the University of Alberta and Hyzon Motors Inc. to transfer funds from the ERA to these entities in return for their services supporting the AZEPP project. Administration will also enter into agreements with Strathcona County and Sturgeon County.
- As per the City Administration Bylaw 16620, agreements exceeding \$1 million that do not arrive from a competitive procurement process must be approved by the appropriate Committee of Council. As such, Administration is seeking approval to enter into a Single Source agreement with Azolla Hydrogen Ltd. to provide the services outlined in the grant proposal and Attachment 1.
- Administration will use its authority to enter into the remaining single source agreements as follows:
  - a. A single source agreement with The Transition Accelerator Inc. for an amount not to exceed \$605,000 (excluding GST) over three years. The services to be provided include but are not limited to project management, GHG accounting and analysis and vehicle pathways study.
  - b. A single source agreement with the University of Alberta for an amount not to exceed \$208,000 (excluding GST) over three years. The services to be provided include but are not limited to vehicle performance analysis.
  - c. A single source agreement with Hyzon Motors Inc. for an amount not to exceed \$42,000 (excluding GST) over one year for a short-term hydrogen fuel cell waste truck pilot.
- Results from the project will inform future City fleet conversions and help grow the regional hydrogen economy and industry transition to hydrogen transportation technologies.

## REPORT

Hydrogen utilization aligns with The City Plan by promoting economic development opportunities to support energy transition and reduce the City's carbon footprint. The Community Energy Transition Strategy provides a path forward for a low-carbon city and climate change mitigation; Low carbon hydrogen for heavy transportation fits within the vision of this strategy by supporting the transition to a low-carbon city.

Hydrogen presents a significant economic opportunity for the Edmonton Region, Alberta and Canada. From an economic growth perspective, the Government of Canada Hydrogen Strategy<sup>1</sup> and the Government of Alberta's Hydrogen Roadmap<sup>2</sup> have acknowledged that hydrogen will

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<sup>1</sup> [natural-resources.canada.ca/climate-change/hydrogen-opportunities-key-findings/23104](https://natural-resources.canada.ca/climate-change/hydrogen-opportunities-key-findings/23104)

<sup>2</sup> <https://www.alberta.ca/hydrogen-roadmap>

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diversify Alberta's economy, helping the Edmonton Region, Alberta and Canada sustain their roles as energy leaders. This market diversification opportunity has the potential to provide the next generation with additional energy jobs, equipment manufacturers, as well as hydrogen production and technology companies to the region. Recently, Edmonton was chosen to be the home of a net-zero hydrogen energy complex by an international organization. The facility expects to add 2,500 jobs and projects "options for expansion and for billions in additional private sector investment in the region over time."<sup>3</sup>

Action 14 of the City's Economic Action Plan supports emerging off-shoots of the energy sector. This action capitalizes on Edmonton's proximity to heavy industrial areas including the Alberta Industrial Heartland and Alberta's oil sands to support emerging energy sector development, including the hydrogen sector. There are opportunities to leverage the City's geographical competitive advantage and capitalize on emerging innovation within the traditional energy sector. This can be accomplished in collaboration with other orders of government, industry, post-secondary institutions, through programs and support for emerging technologies related to this sector.

Investment in hydrogen presents a significant economic opportunity for the Edmonton region. Low-carbon hydrogen will play an integral role as one option in Canada's transition to a low-carbon economy, delivering up to 30 per cent of Canada's end-use energy in a net-zero future.

On April 23, 2024, it was announced at the Hydrogen Convention that the City of Edmonton's ERA application for the "Alberta Zero-Emissions Fleet Fueling (AZEFF) Project" has been approved for funding up to \$6.9 million. The Government of Alberta is the source of ERA funding.

The Alberta Zero-Emissions Fleet Fueling (AZEFF) project will see Edmonton Region municipalities seek to enable the adoption of hydrogen fuel for heavy-duty fleet vehicles such as transit buses, Class 8 semi-trucks and Class 7-8 vocational trucks such as dump trucks, waste trucks and plow trucks. The AZEPP will cultivate a comprehensive understanding of obstacles within the hydrogen value chain that impede its adoption while actively collaborating with crucial stakeholders throughout the value chain to surmount these barriers.

The AZEPP project will:

- Build two re-deployable transitional fueling systems to bridge the gap between existing pilot stations (~200 kg H<sub>2</sub>/day) and permanent large-scale stations (~4000 kg H<sub>2</sub>/day).
- Determine the practicality of vehicle technology pathways for heavy-duty municipal fleet vehicles, such as Hydrogen-Diesel Dual Fuel, Hydrogen Internal Combustion and Fuel Cell. To achieve this, a Portable Emissions Measurement System (PEMS) will be installed on an in-service hydrogen diesel dual fuel (HD2F) Waste Truck and HD2F Transit Bus, alongside analysis of a hydrogen fuel cell Waste Truck and two hydrogen fuel cell buses. This comprehensive approach will provide data for an in-depth assessment of the technology's performance and suitability for widespread adoption in vehicle fleets, covering aspects such as fuel usage, fueling time, and greenhouse gas reduction performance.

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<sup>3</sup> Air Products Fast Facts: <https://www.airproducts.com/energy-transition/canada-net-zero-hydrogen-energy-complex>

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- Demonstrate and validate at least one vehicle technology pathway and provide an on-road emissions monitoring and performance validation, and a maintenance and repair profile.
- Develop an operational implementation plan to address supporting infrastructure uncertainties. This includes inspection/certification requirements, workforce training requirements, a fleet transition strategy and a feasibility study for vehicle storage and servicing facilities.

This project will serve key municipalities within Alberta to gain familiarity with the technology/fuel, present the City with an opportunity to collect Alberta specific data and provide confidence for much larger orders of hydrogen-powered zero-emission fleets.

### Budget/Financial Implications

If the agreement is approved, the City of Edmonton will contribute up to \$20.6 million for this project. This includes a value in kind of \$17.9 million and a \$2.7 million cash contribution (CM-17-2000 - Emissions Neutral City Fleet and Equipment) for the project, with an additional funding contribution of \$6.9 million from Emissions Reduction Alberta. The in-kind funding of \$17.9 million represents significant investments to existing City of Edmonton infrastructure and vehicles in emerging technology such as required infrastructure upgrades, two existing hydrogen-diesel dual-fuel heavy-duty waste trucks and two dual-fuel transit buses in the first year. The in-kind contribution would also cover planned investments in hydrogen vehicles (including dual-fuel retrofits) and fuel, in addition to the operational costs for the project, including labour, maintenance, data collection and analysis and training. Administration estimates a spend of \$2.7 million on dual-fuel vehicle technology, however, this is subject to positive results from the initial test phase, which is the ongoing pilot project with Diesel Tech Industries (DTI).

### Legal Implications

As per the City Administration Bylaw 16620, procurement agreements over \$1 million that do not arise from a competitive procurement process require approval by the appropriate Council committee. Additional legal implications are included in Attachment 1.

### Community Insight

Innovators and early adopters of hydrogen fuel sources are active and interested in building the hydrogen economy and investing in hydrogen projects. This is demonstrated through growing interest in, and attendance at, two major hydrogen conferences in Edmonton:

1. The Hydrogen Summit, aimed at Edmonton Region Hydrogen HUB partners and local/regional industry, government, Indigenous and academic stakeholders; and
2. The Canadian National Hydrogen Convention, which attracted over 4,000 people (local, national and international) in its inaugural year in 2022, and has continued to grow each year.

Edmontonians continue to ask for climate action. The 2022 Climate Change and Energy Perception Report<sup>4</sup> found that 75 per cent of respondents agree climate change is a concern and 75 per cent of respondents indicate that Edmontonians want the City to take action on climate

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<sup>4</sup> [Climate Change and Energy Perceptions Report](#)

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change. Additionally, through The City Plan engagement and the work to update the Energy Transition Strategy, Edmontonians shared their excitement and desires for a low carbon future.

### **GBA+**

The City of Edmonton recognizes that every purchase can be leveraged to create economic, environmental and social impacts. While this project has the potential to fuel economic growth across the region, those benefits may not be distributed equally. By championing women's participation in STEM fields and decision-making spheres, Edmonton can unlock untapped potential and address gender-specific climate vulnerabilities.

### **Attachment**

1. Terms of Single Source Procurement Agreement Between the City of Edmonton and Azolla Hydrogen Ltd. (PRIVATE)