

# THE HIGHWAY TO HYDROGEN: RECENT HYDROGEN DEVELOPMENTS IN ALBERTA'S TRANSPORTATION INDUSTRY

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Virtually every industry is looking to reduce carbon emissions in its development and operational life cycles. This has proven to be a particular challenge in the transportation industry, specifically heavy-duty transport where the industry has traditionally relied heavily on energy-dense diesel fuel to provide the torque necessary for heavy load transportation. However, Hydrogen may become an attractive zero-emission alternative for heavy-duty commercial vehicles. Unlike diesel which produces carbon dioxide and other harmful bi-products, hydrogen produces only water at the tailpipe.

As Canada continues to pursue clean energy objectives through hydrogen production, Alberta is well positioned to capitalize on this trend. The province is already the largest hydrogen producer in Canada and is eager to build on this early advantage.<sup>[1]</sup> Recently, the 2023 Canadian Hydrogen Convention<sup>[2]</sup> took place in Alberta and reaffirmed the various advantages the province has in producing energy using hydrogen, including rich natural gas reserves, existing pipelines, ample capacity for carbon storage and sequestration and other infrastructure. Alberta also conducted an Expression of Interest<sup>[3]</sup> process to assess potential approaches that would enable investors to construct, design, and operate hydrogen fueling stations.

Indeed, the emerging hydrogen industry in Alberta is an opportunity for producers and investors who wish to support a low-carbon energy option for the transportation industry and other sectors.

Recent announcements further signal the government's support to establish and grow a hydrogen market with real projects in Alberta:

## Minister of Service Alberta and Red Tape Reduction Mandate Letter

In a letter dated July 24, 2023, Alberta Premier Danielle Smith outlined her expectations for the Honourable Dale Nally, Minister of Service Alberta and Red Tape Reduction (the "**Mandate Letter**").<sup>[4]</sup>, which prioritizes business growth in the province. The Mandate Letter specifically references the unique tax advantages and skilled workforce Alberta has to offer, and the role these factors play in Alberta's businesses, which create "thousands of new jobs and dozens of new projects in diverse sectors on a monthly basis." The letter urges Minister Nally to reduce barriers to business growth by eliminating "unnecessary red tape and uncertain

protracted timelines for needed approvals.”

The Mandate Letter and the expectations it outlines are a positive signal for investors who wish to navigate regulatory processes on a timely basis. Specific to hydrogen transportation projects, the Mandate Letter also tasks Minister Nally with the following:

*“Acquiring expressions of interest from private sector investors to establish a network of hydrogen vehicle and electric vehicle (EV) recharge stations throughout the province, with a focus on partnering with the retail and hospitality industries, and work towards adding hydrogen and EV stations to the commercial safety rest areas expansion program.”*

This mandate is consistent with Alberta’s Hydrogen Roadmap, which was published in November 2021 (the “**Roadmap**”).<sup>[5]</sup> The Roadmap identifies the transportation industry as a top candidate to integrate with clean hydrogen, and a promising market to advance as hydrogen technology continues to improve.

For those looking to implement or invest in hydrogen transportation projects, Alberta’s competitive advantage and intentions to reduce regulatory barriers make the province an excellent playing field for both retail and commercial projects.

### **Hydrogen Commercial Vehicle Demonstration Program**

Government, businesses, and entrepreneurs alike are focused on integrating hydrogen into the transportation industry; however, increased demand is required to incentivize key hydrogen distribution networks such as service stations. At the same time, transportation businesses are hesitant to rely on hydrogen vehicles to any meaningful degree until such distribution networks are in place. The Hydrogen Commercial Vehicle Demonstration Program<sup>[6]</sup> (the “**Vehicle Demonstration Program**”) may act to eliminate this “Catch-22” scenario and lead the way for similar projects and widespread adoption of heavy-duty hydrogen vehicles.

The Vehicle Demonstration Program is the first of its kind in Canada. Through it, the Alberta Motor Transport Association has offered carrier companies the opportunity to use and test Class 8 vehicles that operate with hydrogen fuel. The hands-on nature of the Vehicle Demonstration Program has proven superior to a showroom demonstration because carriers can test the vehicles under their unique operating circumstances.

The Vehicle Demonstration Program will run for two years and information regarding the performance of hydrogen vehicles on Alberta roads, as well as their reliability, vehicle cost, and maintenance, will be gathered and assessed. As these factors are analyzed and addressed with innovative, data-driven solutions, and as familiarity with hydrogen technology increases, demand is likely to increase, which we expect will pave the way for viable hydrogen distribution projects.

## Canadian Pacific Hydrogen Locomotive Project

The Canadian Pacific Hydrogen Locomotive Project (the "**Hydrogen Locomotive Project**"),<sup>[1]</sup> currently underway in Alberta, is spearheading North America's first hydrogen-powered train, scheduled to commence operations in the summer of 2023. The primary objective of the Hydrogen Locomotive Project is to introduce and familiarize others with the capabilities of hydrogen as a viable locomotive power source, particularly suitable for regions like Canada and the United States with extensive long-distance travel requirements but relatively low commuter density. Moreover, Alberta's diverse atmospheric conditions - characterized by varying altitudes, cold temperatures, and challenging environments - will provide an opportunity to rigorously test the capabilities of hydrogen-fueled locomotives.

## The "Green Road" Ahead

A variety of programs and projects underway across multiple transportation sectors have the potential to integrate and further reduce emissions. For example, replacing the currently used high-emissions diesel vehicles with hydrogen vehicles to refuel a hydrogen powered locomotive. Technological advances together with government mandates to reduce red tape and regulatory barriers, the "Green Road" ahead is an exciting opportunity for businesses, investors and consumers.

Though hydrogen is a promising alternative to oil and gas, the road to widespread adoption is not without obstacles. Initiatives such as the Vehicle Demonstration Program and the Hydrogen Locomotive Project continue to address practical and logistical challenges associated with widespread adoption of hydrogen.

While these initiatives and developments are exciting and encouraging, navigating any new and emerging industry is complex. McMillan is well-equipped to offer assistance in navigating the evolving landscape of hydrogen and clean energy. If you have questions regarding recent developments in the energy industry, please contact Sean Ralph or any member of McMillan's National Energy Group – we would be pleased to speak with you.

[1] Government of Alberta, "Hydrogen Roadmap" (November 2021), online: [Government of Alberta](#).

[2] Canadian Hydrogen Convention, "Canadian Hydrogen Convention Awards" (April 2023), online: [Canadian Hydrogen Convention](#)

[3] Government of Alberta, "Hydrogen fuelling infrastructure proposals" (January 2023), online: [Hydrogen Fuelling Stations Request for Expressions of Interest](#)

[4] Office of the Premier, "Minister of Service Alberta and Red Tape Reduction mandate letter" (July 24, 2023), online: [Government of Alberta](#)

[5] *Supra* at 1.

[6] Alberta Motor Transport Association, "Alberta Motor Transport Association (AMTA) launches Canada's first

Hydrogen Commercial Vehicle Demonstrations” (February 10, 2023), online: [AMTA](#)

[7] Government of Alberta, “CP Hydrogen Locomotive Project” online: [CP Hydrogen Locomotive Project - Alberta Major Projects](#)

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### **A Cautionary Note**

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