



# Hydrogen fuelling infrastructure proposals

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## **Required**

Hydrogen Fuelling Stations – Request for Expressions of Interest | Alberta Energy

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# 1. Part A—INTRODUCTION AND OVERVIEW

## 1.1 Introduction

The Alberta Hydrogen Roadmap was released in November 2021, outlining the Province’s vision and ambition to deploy hydrogen across domestic and global markets. The roadmap identified four key markets to achieve the ambition of integrating clean hydrogen at scale into Alberta’s domestic energy system. One of these markets is transportation. The use of fuel cell electric vehicles and hydrogen-diesel dual fuel combustion offers a significant opportunity to reduce emissions from the transportation sector and drive the adoption of hydrogen in the larger Alberta economy. Independent analysis indicates that the heavy-duty transport sector, such as commercial trucking, is most likely to consider a shift towards the use of hydrogen as a zero-emission fuel source. In order to enable this opportunity, hydrogen fuelling infrastructure will need to be deployed.

In addition to the heavy-duty transport sector, hydrogen fuelling has significant growth opportunity for general commercial and personal use within Alberta. Key to this growth is a reliable fuelling network that citizens and businesses can count on.

## 1.2 Purpose and Scope of Request for Expressions of Interest

In this process, the Province is issuing a Request for Expressions of Interest (REOI) from parties seeking to design, build, operate, and own hydrogen fuelling stations in Alberta to primarily serve the heavy-duty transportation sector<sup>1</sup>.

The Province would also like to gather information about the potential for the development and use of this fuelling network for general commercial and personal use. Of primary interest is the synergy with current retail and hospitality locations in key economic corridors.

The REOI will determine the potential for a provincial network of hydrogen stations owned and operated by the private sector.

The intent of this REOI is to gather pertinent information on hydrogen fuelling infrastructure, including:

1. Potential locations of future fuelling stations
2. Capital and operating costs of fuelling stations
3. Market interest in hydrogen as a fuel for heavy-duty transportation, as well as general commercial and personal use
4. Market demand required to support economic feasibility of stations
5. Infrastructure requirements for the establishment and operation of stations, including hydrogen delivery and storage
6. Station safety considerations
7. Government policy required to remove barriers, drive efficiencies, and close competitiveness gaps with other fuels

Guidelines for submissions are outlined in Part B.

Expressions of Interest (EOI) submissions will be voluntary. EOI submissions will not be evaluated, and will have no bearing on a respondent’s status in any future competitive process. The information provided as part of this process may or may not be used to determine future policy decisions.

Any required regulatory approvals are the responsibility of the respondent and will not be granted through this process, however, Alberta Energy can facilitate discussions with relevant regulatory agencies.

## 1.3 Eligibility and Exclusions

- Respondents may operate in, be located within, or have extensive knowledge of, Alberta’s transportation sector, existing fuelling infrastructure, or the hydrogen sector in Alberta.
- This process is only intended to provide insight about potential hydrogen fuelling infrastructure projects within Alberta.
  - Projects that include infrastructure outside of Alberta with connection into Alberta infrastructure will also be considered but with a limited scope as the process is primarily considering the infrastructure within Alberta boundaries.
- Positive benefits to the community surrounding a project and extended positive economic, social and environmental regional outcomes associated with the proposed project are an expectation of the Province.

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<sup>1</sup> If feasible, the fuelling stations should be planned and designed for supplementary use by other transportation sectors, such as municipal transit agencies, long-distance coaches, and/or personal light-duty transportation.

## 1.4 Process

- Respondents will submit EOI to the Province using the guidelines in Section 2.1.
- The information from the EOI will be held confidential by government, and may or may not be used to shape potential future policies and programs.

# Part B – GUIDELINES FOR SUBMISSION OF EXPRESSIONS OF INTEREST

EOI submissions are requested from parties seeking to design, build, operate, and own hydrogen fuelling stations in Alberta.

The Province reserves the right to amend, suspend, postpone, or cancel the outlined process and deadlines, or this REOI at its sole discretion.

## 2.1 Guidelines for Submission of Expressions of Interest

### A. Submitting the Expression of Interest

- **Length:** There is no length restriction, however Expressions of Interest are generally not expected to exceed 10 pages. More details can be provided as appendices, if required.
- **Format:** Submissions are to be made electronically. Please submit one electronic submission in PDF format to the e-mail address below. Submissions are requested to be delivered to the Province on **Friday, March 10 by 11:59 p.m., MDT**, (“Closing Date and Time”). Submissions received after the Closing Date and Time may not be considered.

Email: [ENERGY.Hydrogen@gov.ab.ca](mailto:ENERGY.Hydrogen@gov.ab.ca)

Subject Line: Hydrogen Fuelling Infrastructure Expression of Interest – Company Name

### B. Submission Criteria

The headings listed below are the criteria that respondents should consider including in their EOI submission.

#### 1. Name, Address, and Affiliation of the Principal Applicant(s).

**2. Contact Information:** Respondent leader and key team members.

#### 3. Proposal Description:

##### 1. General overview:

- Provide an overall description of the proposed model for hydrogen fuelling in the heavy-duty transportation sector in Alberta by 2030:
  - A high-level overview of the main elements of a proposed solution, including locations, economics, infrastructure additions, and supporting policy critical to the successful establishment of a hydrogen fuelling infrastructure.
  - The potential for this fuelling infrastructure to support the growth of lighter-duty and other vehicles in general commercial, municipal and personal use.

##### 2. Locations:

- Outline the proposed locations for fuelling stations or network of fuelling stations that would support the growth of hydrogen-powered transportation, focusing on the heavy-duty sector.
  - Stations should be focused on fuelling heavy-duty (Class 8) vehicles, with opportunities to fuel light-duty or other commercial and municipal vehicles (buses, etc.) as a secondary purpose.
  - Stations should focus on existing high-traffic economic corridors, including those running north-south (Calgary to Edmonton, Edmonton to Fort McMurray, Calgary to Lethbridge), and/or east-west (Edmonton to Grande Prairie, Edmonton to Prince George, Edmonton to Lloydminster, Calgary to Medicine Hat, Lethbridge to Medicine Hat<sup>2</sup>).
  - Stations should be high volume, capable of fuelling large numbers of heavy-duty vehicles, with the expected minimum capacity of 2-4 tonnes/day of hydrogen consumption with an 80% utilization rate.
  - Explain rationale for location selection, providing data (traffic patterns, existing infrastructure maps, proximity to supply, land availability, etc.) where appropriate.
  - Outline how specified locations are supported by other factors within the EOI, including, but not limited to, favourable economics or minimal infrastructure additions required.
  - Outline proposed locations of fuelling infrastructure relevant to existing and proposed hydrogen production facilities and hydrogen distribution modes.

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<sup>2</sup> The EOI is focused on fuelling infrastructure within the Province of Alberta. Where feasible, connections to other proposed heavy-duty transportation fuelling stations outside the province (for example, Prince George, B.C.) could be considered but the EOI is focused on transportation within Alberta heavy-traffic corridors.

- g. Describe a potential timeline and sequencing for the construction of this network, outlining any assumptions as part of the timeline.
- h. Outline where and how, if applicable, this network could be used to support the growth of commercial and personal use of hydrogen fuelled vehicles, as well as any potential synergies that could result from this combined use.
- i. Describe the role that the current retail and hospitality industry locations might support the deployment of hydrogen fuelling for the heavy-duty transport sector and for general commercial and personal use.

### 3. Economics:

- i. Provide details about the costs of designing, building, and operating potential hydrogen fuelling stations for the heavy-duty sector and for general commercial and personal use.
  - a. Outline assumptions on capital cost, operating cost, maintenance costs, and revenue generation. Include a logical scenario and/or sensitivity analyses.
  - b. Outline expected costs related to hydrogen production, processing, and delivery to stations. Include any expected changes in costs over the timeframe to 2030.
  - c. Outline emissions-based assumptions, including the carbon intensity of sourced hydrogen, and subsidies or taxes implied in either the production or use of hydrogen.
- ii. Estimate the demand from potential hydrogen fuel customers required to make fuelling stations economical and self-sustaining for the heavy-duty sector and for general commercial, personal, and other use.
  - a. Outline assumptions in this analysis, including estimates of the size or scale of fuelling station(s) required to reach sustainability, daily customer volume, and any other element of the estimate.
- iii. Assess the overall level of market interest in hydrogen as a fuel, specifically for the heavy-duty transportation sector.
  - a. Where possible, identify timelines or assumptions about access to suitable vehicles, including:
    - i. Dedicated hydrogen fuel cell vehicles;
    - ii. Converted diesel-to-hydrogen vehicles; and
    - iii. Dual-fuel vehicles
  - b. If appropriate, identify opportunities, if any, for vehicles outside of this key sector (for example, municipal buses, long-distance coaches, and light-duty cars) to use proposed stations that may impact the economic viability of fuelling stations within the 2030 timeframe.
- iv. Assess the overall level of market interest in hydrogen as a fuel, specifically for the general commercial and personal use. Where possible, identify timelines or assumptions about access to suitable vehicles.

### 4. Infrastructure:

- i. Outline the necessary infrastructure required to build and operate hydrogen fuelling stations in each of the proposed locations.
  - a. If critical infrastructure is lacking, identify the potential cost of adding this infrastructure and which organization the respondent suggests would be responsible for the infrastructure. Outline if any existing partnerships or support from organizations responsible for the infrastructure are in place with the respondent.

### 5. Safety

- i. Outline the appropriate safety requirements, codes and standards for hydrogen fuelling stations related to the hydrogen storage and fuelling process, including but not limited to building and storage standards and assessments, leak detection, etc.
- ii. Identify any outstanding safety concerns or gaps related to hydrogen fuelling that may exist in Alberta.

### 6. Government Action:

- i. Identify any critical policy actions required by the provincial government to enable the successful construction of hydrogen fuelling stations supporting the heavy-duty transportation sector and general commercial and personal use along established corridors.
  - a. Policy suggestions may include regulatory changes or clarifications, funding mechanisms required to enable economic feasibility, supports to enable demand for hydrogen fuel, or actions outside of the transportation sector directly.

- ii. Identify any informational support from the Province that would better enable private sector investment decisions in hydrogen fuelling stations, including but not limited to traffic data, weight station data, fuel tax data, or other information.

#### **7. Respondent Capability:**

- i. Outline the respondent's relevant experience and the expertise of the respective entities comprising the respondent within the EOI, related to:
  - a. Owning, operating, or other involvement in existing transportation sector fuelling (i.e. diesel, gasoline, or other alternative vehicle fuels);
  - b. Knowledge of or working within Alberta's hydrogen sector;
  - c. Working within Alberta's existing transportation sector; or
  - d. Working within Alberta's existing retail fuelling sector.
- ii. Provide an overview of all current business activities of entities comprising the respondent that may be relevant to the information sought as part of the REOI.
- iii. Outline an understanding of the regulatory process and approvals required to build, own, and operate a fuelling station in Alberta.
  - a. If existing regulatory structure gaps are identified, identify regulatory structures in other jurisdictions implementing hydrogen fuelling for consideration by the Province in the future.
- iv. Identify if the respondent has relevant partnerships or support from hydrogen transportation end users, organizations responsible for relevant infrastructure, hydrogen producers, municipalities, fuelling station equipment manufacturers, trucking companies, or other organizations as relevant.
  - a. If partners are critical to overall business model for the proposed network, include any relevant formal connections with other portions of the industry on behalf of the partner, such as Memoranda of Understanding or other agreements.

## **2.2 Communications with the Province**

During the REOI process, comments or requests for information by respondents to the Province with respect to this process, excluding usual government business meetings with respondents, can be made through the email address [ENERGY.Hydrogen@gov.ab.ca](mailto:ENERGY.Hydrogen@gov.ab.ca).

## **2.3 Enquiries**

Interested parties may address questions of clarification on this REOI to the Province in writing by email to the following email address: [ENERGY.Hydrogen@gov.ab.ca](mailto:ENERGY.Hydrogen@gov.ab.ca).

The Province appreciates respondents identifying, in writing, any ambiguity, divergence, error, omission, oversight, contradiction, or item subject to more than one interpretation in this REOI, as it is discovered, and to request any instruction, decision, or direction necessary to prepare their submission.

Verbal responses to enquiries are not binding on any party.

## **2.4 Response to Submissions**

The Province does not intend to issue individual responses to submissions or specific responses to questions or comments contained in respondents' submissions.

## **2.5 Clarification of Submissions**

Following the closing date, the Province may, but shall not be obligated to, contact or meet with any or all respondents for the purpose of seeking clarification relative to their submissions.

## **2.6 Confidentiality**

All applications, and communications related to the applications submitted in the REOI process are confidential and shall be maintained in confidence and kept secure by the Province. Information may be shared within departments of the Province, with Cabinet, and others supporting the process (e.g. consultants in the review process under confidentiality agreements).

## **2.7 Freedom of Information and Protection of Privacy Act (Alberta) (FOIP)**

Respondents acknowledge that:

Request for Expressions of Interest - Alberta Hydrogen Fuelling Infrastructure



- a) FOIP applies to all information and records relating to, or obtained, generated, created, collected or provided under, the REOI, any EOI, and which are in the custody or under the control of the Province. FOIP allows any person a right of access to records in the Province's custody or control, subject to limited and specific exceptions as set out in FOIP; and
- b) In the event of a request for access under FOIP, the Province will provide any affected respondent notice and an opportunity to object to disclosure of information.

## **2.8 Claims for Damages or Compensation**

Notwithstanding any other provision in this REOI, respondents may not make any claim against the Province for damages or compensation of any kind related directly or indirectly to a breach of contract or other cause of action arising from the REOI process or the Province's review of submissions.

Further, the issuance of this REOI does not obligate or otherwise bind the Province to take any future action in respect of the subject matter of this REOI, including, but not limited to, issuance of future requests for proposals or to create, or make changes to, any program, policy or law.

By submitting an EOI a respondent acknowledges and accepts the above limitations.