

**REPORT FOR INFORMATION****Hydrogen Sector Opportunity****Report Purpose**

To provide the Priorities Committee with an understanding of the future potential and possible barriers for hydrogen production in our region.

**Our Prioritized Strategic Goals**

Goal 3 - Cultivate economic diversification, within the petro-chemical industry and beyond, through a business-friendly environment.

**Report**

Hydrogen is the simplest chemical element, existing under ordinary conditions in a gaseous state. It can be used as a fuel source that produces only water with no carbon emissions.

Hydrogen is required to “crack” bitumen and further refine into synthetic crude, gasoline, diesel, jet fuel, and more. Strathcona County has existing demand for hydrogen in an industrial-use capacity, and that demand is coming from refineries and petrochemical facilities.

Hydrogen can be produced through reforming, gasification, or electrolysis processes. Of interest to Strathcona County is autothermal reforming, which breaks down natural gas to extract hydrogen. When combined with carbon capture and sequestration, blue hydrogen is produced. Using Alberta’s inexpensive natural gas as feedstock, blue hydrogen produced in our province would be one of the lowest cost sources of “clean hydrogen” on the planet. The retail hydrogen market can be Alberta’s solution to produce renewable energy, resulting in a cleaner environment.

The Transition Accelerator is a Canadian organization that collaborates with groups to seek opportunities to significantly reduce GHG emissions. In spring/summer 2020, the group struck the Alberta’s Industrial Heartland Task Force to advance hydrogen in our region. Their report projects that hydrogen could be the energy carrier for approximately 27% of Canada’s primary energy demand in a net-zero 2050, at 64,000 tonnes of hydrogen a day. This fits the goals of Strathcona County’s three refiners:

- Royal Dutch Shell aims to reduce GHG emissions to net zero by 2050
- Imperial plans to cut their 2016 GHG emissions by 10% by 2023
- Suncor has set a target to reduce GHG emissions intensity by 20% by 2030

Strathcona County meets the criteria in the task force report to be part of a hydrogen node/cluster, based on existing industrial supply and confidential proposed projects for our region. The development of such a cluster would lead to billions in investment, thousands of construction jobs, and hundreds of permanent full-time jobs – all while significantly reducing regional GHG emissions and decreasing the carbon intensity of our existing refineries and petrochemical facilities.

Barriers to development of the hydrogen sector in Strathcona County are related to the lack of existing infrastructure, and the challenge of increasing both demand and supply simultaneously.

**Priorities Committee Meeting\_Dec01\_2020**

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There are both short-term and long-term actions that Strathcona County can take to encourage private investment in our potential hydrogen sector, which would further diversify our tax base, improve the environmental footprint of local industry, and provide high-quality employment for residents.

**Other Impacts****Policy: N/A****Legislative/Legal: N/A****Interdepartmental: Intergovernmental Affairs, Transportation Planning & Engineering, Planning & Development Services, Fleet Services, Transit, Assessment & Tax****Master Plan/Framework: N/A****Enclosures**

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| 1 | Hydrogen Regional Opportunity Presentation                    |
| 2 | Alberta Industrial Heartland Hydrogen Task Force Presentation |
| 3 | Alberta Natural Gas Vision and Strategy                       |