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Mr. Michael Bishop
Climate Change Program Development
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January 14, 2021

Re: Ontario Low Carbon Hydrogen Strategy – Joint Comments City of Mississauga and Ash Grove

Mr. Bishop,

The Corporation of the City of Mississauga (CoM) in partnership with Ash Grove Cement appreciates the opportunity to provide input on the "Ontario Low-Carbon Hydrogen Strategy – Discussion Paper" (Hydrogen Paper). We commend you for your commitment to develop a low-carbon hydrogen strategy for the Province, and believe that a focus on green hydrogen will help CoM reach its greenhouse gas (GHG) reduction targets.

The input provided herein is based on CoM's participation in a hydrogen bus project, called the "Pan-Canadian Hydrogen Fuel Cell Demonstration and Integration Trial" (Project), which is being led by the Canadian Urban Transit Research & Innovation Consortium (CUTRIC). The Project involves CoM transit (MiWay) piloting 10 new hydrogen fuel cell buses in its fleet. The goal of the Project is to create a hydrogen ecosystem in Mississauga, where hydrogen is produced at a local cement plant (CRH's Ash Grove Cement) and dispensed at a local ready mix plant (CRH's Dufferin Concrete) adjacent to the City's transit storage and maintenance facility. A number of other companies are involved in the Project, including Enbridge, Hydrogenics, and New Flyer. To date, the project team has been unsuccessful in securing funds to implement the pilot.

Recently, CoM and CUTRIC have begun to explore ways to revitalize the Project. This includes dividing the Project into two phases:

> **Phase 1:** CUTRIC will complete a feasibility study. This study will help CoM understand, among other things, where it will source and store the hydrogen fuel, logistics for the 10 new hydrogen buses, potential impacts of statutory and regulatory changes (e.g., Clean Fuel Standards), economic and financial viability, and GHG reduction opportunities.
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> **Phase 2:** CUTRIC, CoM, Ash Grove Cement, and other Project partners will request funding from the federal and/or provincial government to implement the Project. The estimated cost of the Project is $42 million, with CoM contributing around $8 M.

In October 2020, CoM Council approved City staff's continued work with CUTRIC to revitalize the Project, as well as staff's participation in Phase 1 of the Project. Work on Phase 1 is expected to start in early 2021.

From CoM's experience with the Project, it is clear that:

Dedicated Funds are needed to Kick-start Projects: the costs to implement a pilot project – even one involving just 10 hydrogen buses – are significant. The current cost of a hydrogen bus is roughly $1.7 M, which is almost three times the cost of a conventional diesel bus. Similarly, hydrogen fuel derived from electricity (referred to as 'green' hydrogen) is roughly four times the cost of diesel at the present time. There is also a premium to maintain hydrogen buses. Municipalities like CoM face competing demands on their limited budget dollars. Without financial assistance, it will be nearly impossible for CoM to move forward with piloting and ultimately incorporating hydrogen buses into its transit fleet.

Province Has a Role in De-Risking Use of Hydrogen: as noted above, the current cost of a hydrogen bus, including operations and maintenance, is significantly higher than a conventional diesel bus. This is due in large part to the limited market for hydrogen. In this circumstance, the Province can play a role in de-risking investments in the hydrogen sector and should:

- **Provide Long-term Policy Certainty:** the Province must set out a clear path forward on hydrogen in Ontario. This includes putting in place policies that will stimulate the hydrogen market (e.g., incentives, tax breaks), setting out timelines for rolling out these policies and other measures, and defining roles and responsibilities for the Province, federal government, private sector, municipalities, and others. These actions will bring the required assurance to parties who are interested in playing a role in the hydrogen ecosystem.

- **Introduce Short-Term Fuel Incentive:** subsidize the cost of hydrogen fuel until demand increases and prices fall (e.g., over the next 3 to 5 years or until a target volume is achieved). Hydrogen fuel is currently four times the cost of diesel. The Province could reduce this cost between 50 to 75% by providing a special price for off-peak electricity that is used solely for the production of green hydrogen. Also, for Ash Grove Cement to participate in the Project, it would have to procure, install, and maintain a hydrogen production facility (an electrolyser) at its cement plant. It would need to accelerate the payback of such a capital investment by applying a production incentive, via an accelerated depreciation or through a co-funding contribution from government.

- **Buildout of Infrastructure:** the Province should play a role in building hydrogen-refueling stations at strategic locations throughout the province. The Region of Peel is a goods movement hub and many logistics companies operate their heavy-duty transport vehicles within Mississauga. With this in mind, one option for a hydrogen refueling station would be in the vicinity of Lakeshore and Southdown roads in Mississauga, where Ash Grove Cement and trucking companies are located. Another option would be on MiWay's Malton property, which would allow MiWay to easily refuel its buses.

Province Must Commit to a Clean Electricity Grid: one of the principal advantages of hydrogen is its potential to emit low amounts of GHGs – from production to use (note that this is in reference to "green" hydrogen). A clean electricity grid is, however, needed in order to achieve low emissions. Indeed, the Hydrogen Paper points to Ontario's clean electricity grid as key to producing low carbon hydrogen (e.g., in listing "Ontario's advantages and opportunities," the Province notes "Ontario has a competitive advantage in adopting low-carbon hydrogen due to its low-carbon electricity supply"). Despite this, it is anticipated that Ontario's electricity grid will become more carbon intensive in the coming years: an April 2020 publication from the Ontario Clean Air Alliance noted that GHG emissions "from Ontario's gas-fired power plants will increase by more than 300% by 2025 and by more than 400% by 2040, as the Province uses gas to replace aging nuclear plants and to meet growing demand for electricity…" This will significantly increase the GHG emissions from hydrogen production, and will also impact other climate initiatives focused on electrification (e.g., incentivizing the use of EVs). The Province must ensure that Ontario's electricity grid remains low carbon by finding alternatives to the use of natural gas.

Province Should Connect its Strategy to the Federal Hydrogen Strategy: one of the pillars in the federal government's "Hydrogen Strategy for Canada" is "Regional Blueprints," which includes four recommended actions. For example, one recommendation is for the federal government to "facilitate the development of regional hydrogen blueprints, as a multi-level government collaborative effort, to identify specific opportunities and plans for hydrogen production and end-use." CoM and Ash Grove Cement suggest that any strategy that the Province develops is closely aligned with and complements the federal strategy.

Sincerely,

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