

The Transition  
Accelerator



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# Hamilton Region Decarbonization Hub

A new approach to speed progress to Net Zero



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## Outline:

- 1) The Transition Accelerator's approach and methodology
- 2) Hub concept and Examples
- 3) Hamilton Region Decarbonization Hub (HRDH)

# The Transition Accelerator



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## A new pan-Canadian, non-profit Approach:

- ❑ **Understand** that we live in a time of disruptive change that could be good or bad
- ❑ **Harness technology, business model and social disruptions** already at play
- ❑ **Direct disruptive forces** along **Transition Pathways** to achieve societal goals, including emissions

*We help create the future.*



<https://www.transitionaccelerator.ca/blueprint-for-change>

# Transition Accelerator Methodology

1

## UNDERSTAND

- The history, strengths and weaknesses of existing systems;
- Identify compelling drivers of disruption (*technology, business model, policy & social innovations*)

2

## CODEVELOP

- Engage innovative industry, academics, government, others,
- Define shared visions and possible pathways

3

## ANALYZE

- Analyze and model pathway alternatives to make them more CREDIBLE, COMPELLING and CAPABLE

4

## ADVANCE

- Start the journey:
- Inform innovation/ RD&D strategies
  - Advise decision makers
  - Participate in public debate
  - **Spin-out Consortia-led Projects within a Hub formation**

Engage motivated stakeholders including industry, governments, academia, other researchers

Iterative interactions to co-develop visions, chart pathways and validate direction

Empower innovators to drive transformative change. Shift terms of policy debate

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## Why The Transition Accelerator?

The Accelerator's role is that of an **enabler, facilitator, and force multiplier** that forms coalitions to take steps down these pathways and get change moving on the ground.

In working with communities across Canada and gaining experience in establishing and operationalizing Canada's first Hub - the Edmonton Region Hydrogen Hub, the Accelerator has further **refined its methodology and improved its utility while minimizing the cost and time required.**

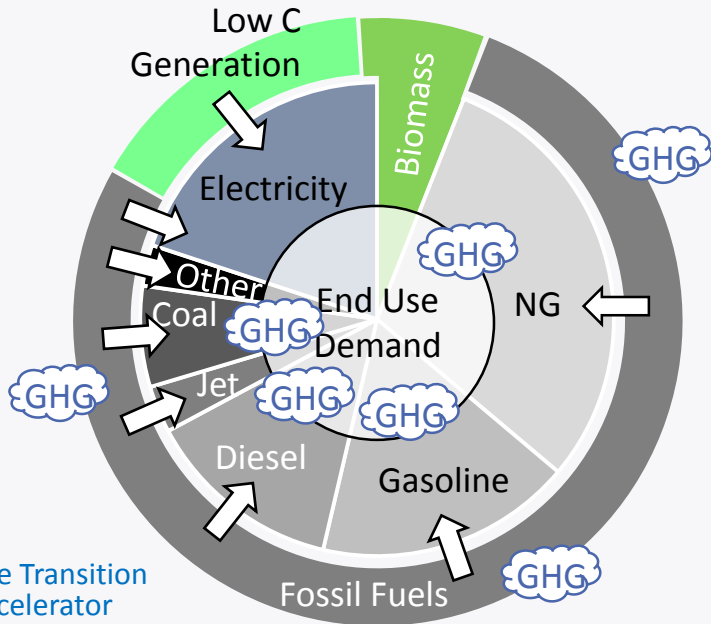
This has positioned the organization to be a **trusted, experienced organization in helping to catalyze these solutions.**



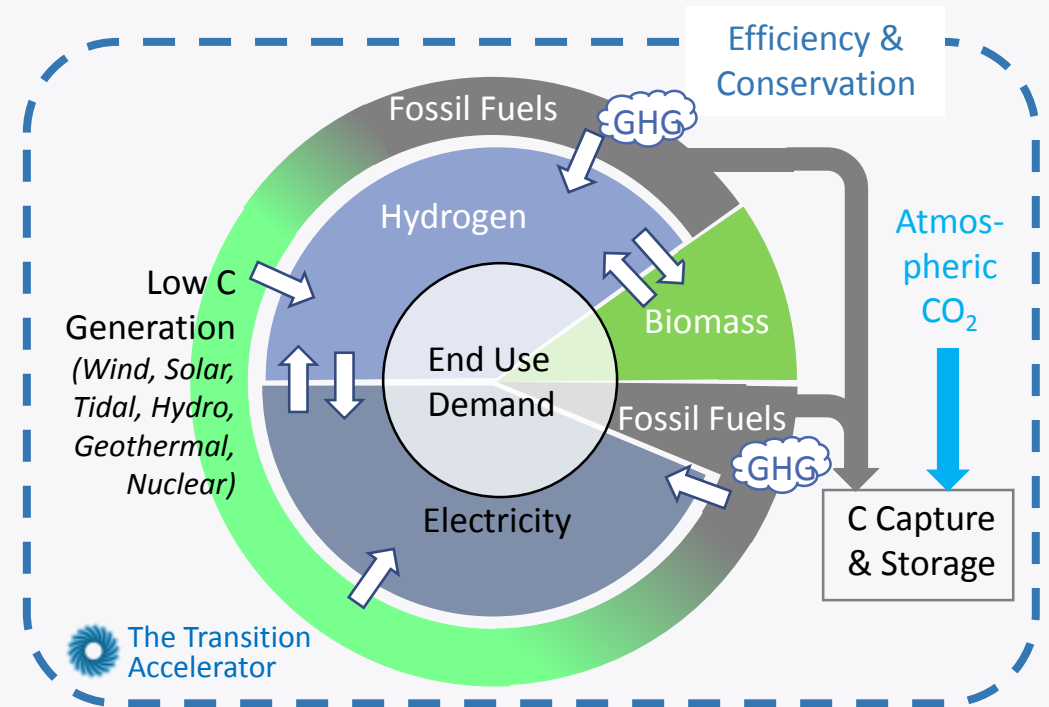
# Net Zero Changes Everything

Many ways to reduce emissions  
Few ways to eliminate emissions

Existing Energy System



Net-Zero Energy System



A Hub will help create new energy systems to position Hamilton to compete globally and attract investment in a net zero world!

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## What is a Hub?

Hubs are coordinated, synergistic, regional initiatives for economic development to create an **economically viable value chains** where clean energy is a fuel and/or a novel industrial feedstock, thereby **achieving substantial reductions in greenhouse gas (GHG) emissions.**

A Hub is not a legal structure but a high-communication, high-trust, high-collaboration model that **leverages up** available funds across public and private sectors and focus investment decisions for all private and public sector actors.

The level of collaboration within a Hub will depend on the nature of the outcomes e.g.: the greater the complexity of the desired outcomes, the greater the level of collaboration required and expected.





# Hamilton Region Decarbonization Hub Potential Outcomes



## The City of Hamilton (and surrounding region):

- Becomes one of the world's first net-zero emission cities.
  - Leads the world in developing new net-zero value chains and business models that can be adopted by other jurisdictions.
  - Becomes a global example of creating economic development opportunities based on a new net-zero economy
  - Has a reputation as a global Environmental, Social and Governance (ESG) leader based on performance.
- 
- **A preferred jurisdiction for public and private investment!**



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## Hub Examples

- Joint Australia-Germany led **Energy Transition Hub** will generate collaborative and world-leading research to help the technical, economic and social transition to new energy systems and a low emissions economy.
- **EU Clean Hydrogen Partnership** to decarbonize industry, develop hydrogen 'valleys' to help foster a hydrogen economy
- US Government to invest \$8 billion to build at least **four hydrogen hubs in the US**
- **Lloyd's Register Maritime Decarbonization Hub** accelerates the sustainable decarbonization of the maritime industry, by enabling the delivery and operation of safe, technically feasible and commercially viable zero-emission vessels by 2030.
- **Edmonton Region Hydrogen Hub** – a fit for purpose hydrogen Hub to create a hydrogen value chain in the region and advance energy transition to low-carbon carriers.



**Existing  
Example**



## EDMONTON REGION Hydrogen HUB

Launched in April 2021 - fit-for-purpose process that:

Management and Leaders Team

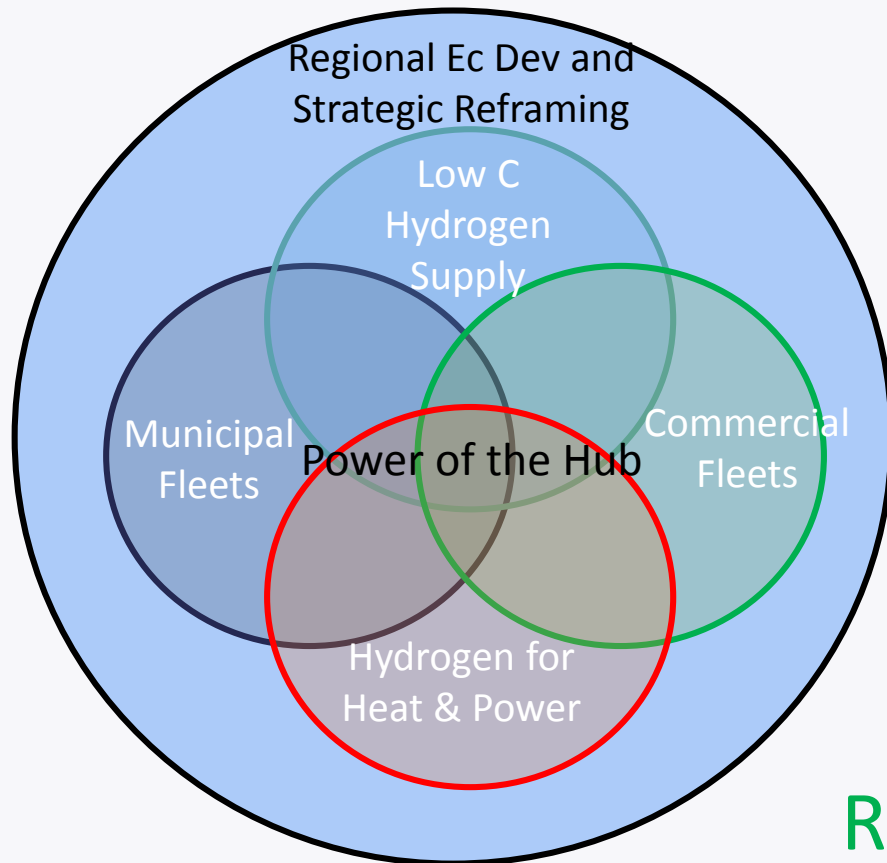
**Breaks vicious cycle:**

**No Market**



**No Supply**

- 1) **Creates critical mass of new hydrogen markets at regional scale, using existing technology**
- 2) **Couples new low-cost, low-C supply with new markets – creates hydrogen economy at scale**



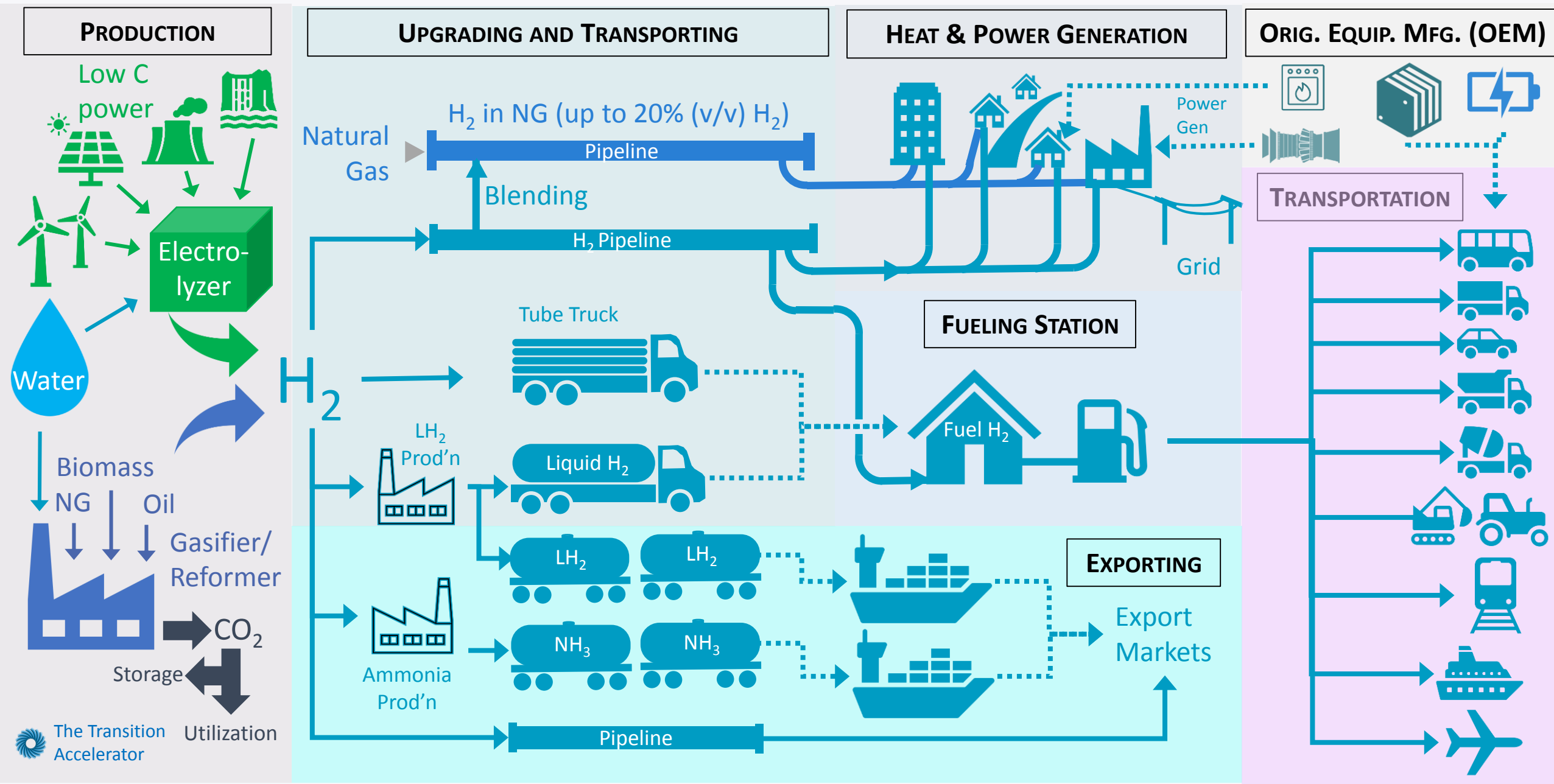
### How?

- **Roles and Responsibilities of Teams** determined
- **Strategic dialogues and techno-economic analysis:** along full value chain
- **Transparency:** results are public, de-risking potential investment
- **Linkages:** Creates coalitions equipped to deliver full value chain solutions
- **Better decision making:** Informs but leaves any investment decisions to public/private investors

**Results to Date:** 5 municipalities, key industry, have endorsed new vision for 2032 hydrogen economy and steps need to get there.



# Example of a New Hydrogen Value Chain





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## Examples of Projects to Advance Decarbonization

- Replacing diesel to reduce/eliminate emissions in heavy transportation
- Reducing/eliminating emissions in public transportation
- Replacing/reducing natural gas to reduce emissions in buildings
- Reducing/replacing fossil-fuel based energy in industry
- Replacing fossil fuels in Port's operations
- Storing energy from renewable energy sources

# Types of Projects to Advance a New Value Chain

<p>Alberta Zero-Emissions Truck Electrification Collaboration (AZETEC)</p> <ul style="list-style-type: none"> <li>• &gt;\$20 million</li> </ul>	       
<p>Fort Saskatchewan Natural Gas Blending Pilot</p> <ul style="list-style-type: none"> <li>• \$5.7 million</li> </ul>	  
<p>Alberta Zero Emissions Hydrogen Transit (AZEHT)</p> <ul style="list-style-type: none"> <li>• \$9.9 million</li> </ul>	        
<p>CP Line Haul H<sub>2</sub> Locomotive Program</p> <ul style="list-style-type: none"> <li>• &gt;\$33 million</li> </ul>	   
<p>H<sub>2</sub>-Diesel Dual Fuel (co-combustion) Pilots</p> <ul style="list-style-type: none"> <li>• Multiple projects</li> </ul>	          

# Types of Projects to Advance a New Value Chain

<p>H2 Truck Demonstration Road Show</p> 	 <div> <p>AMTA Road Show</p> <p> Prairies Economic Development Canada    Développement économique Canada pour les Prairies</p> <p> </p> </div>
<p>Hydrogen Technology Testing</p> <ul style="list-style-type: none"> <li>• In-Situ environmental Chamber</li> <li>• Legacy pipe material research</li> </ul> 	 <div> <p> Prairies Economic Development Canada    Développement économique Canada pour les Prairies</p> <p> </p> <p><small>A SUBSIDIARY OF ALBERTA INNOVATES</small></p> </div>
<p>Feasibility of additional Hydrogen Fueling Stations</p> <ul style="list-style-type: none"> <li>• Calgary</li> <li>• Mobile</li> <li>• Commercial Scale in Edmonton</li> </ul> 	 <div> <p> </p> <ul style="list-style-type: none"> <li>• Plus Many Others</li> </ul> </div>
<p>Hydrogen for Heat and CHP Microgeneration</p> <ul style="list-style-type: none"> <li>• Exploring feasibility studies</li> </ul> 	 <div> <p> </p> <p></p> </div>



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## The Accelerator proposes to launch a **Hamilton Region Decarbonization Hub (HRDH)**

- An **integrated approach for a system level change**, where solutions to decarbonize local industry can also decarbonize other sectors and emissions sources such as transportation, buildings, and other industries (e.g., Advanced Manufacturing).
- A full, regional Decarbonization Hub, centred on **both low carbon hydrogen and low carbon electricity and their interconnections**.

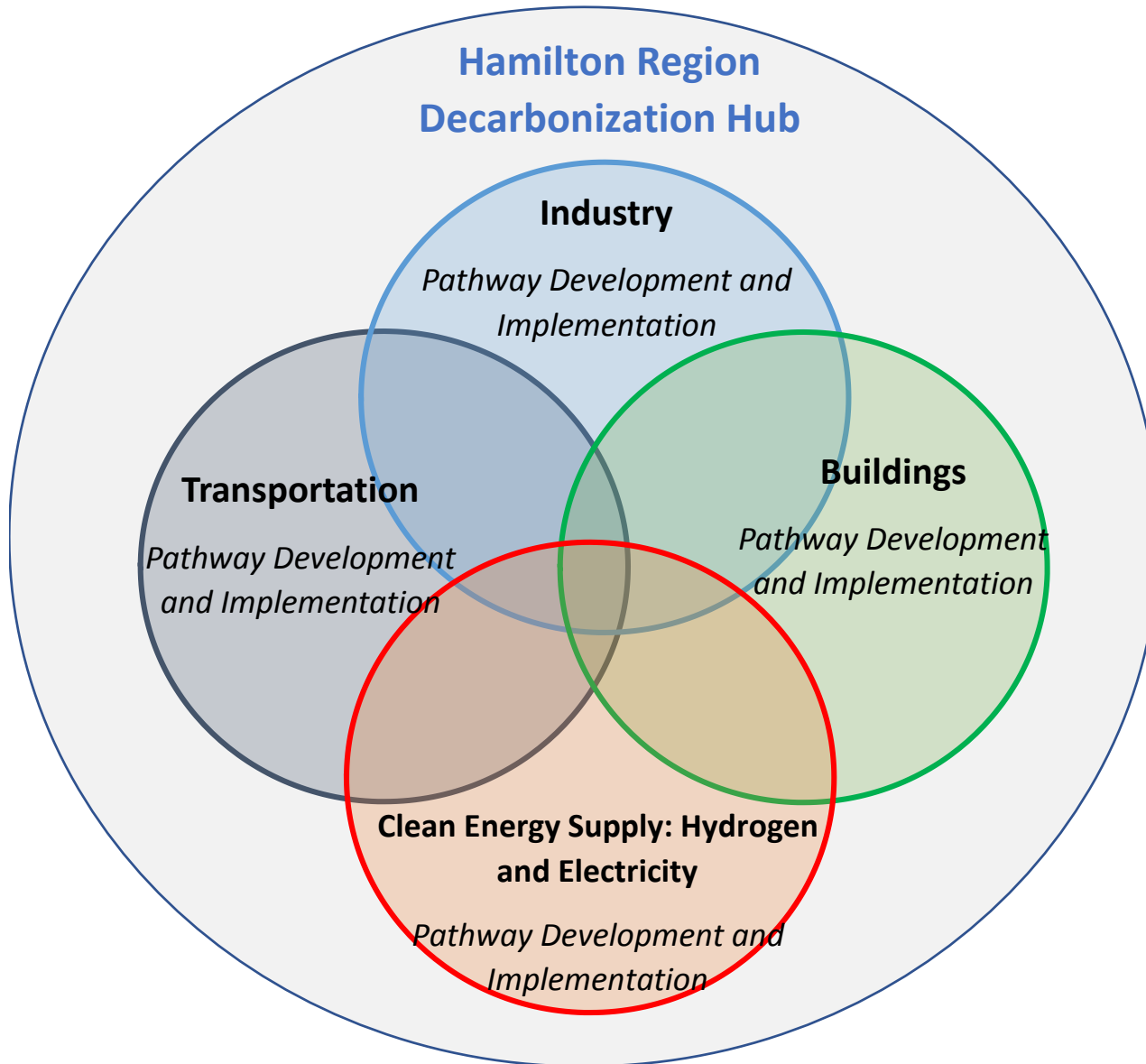
**This initiative also falls inline with the City of Hamilton's mission to reach net zero carbon emissions by 2050!**



# Launching a Hamilton Region Decarbonization Hub

- **First of its kind in Canada!**
- Is a forward-thinking, proactive, and unsilo-ed solution to reach net zero goals
- Bridges the gap between a sector-specific emissions reduction/elimination paradigm to a regional approach where multiple sectors and sources of emissions are eliminated
- Provides a scale of a national project because it's tied to many supply chain industries that need to go to net zero across the country.
- Fits with government priorities of how to utilize government incentives to create a bigger impact from both decarbonization and economic development angles.
- Could service as an example for other regions!





## Hamilton Region Decarbonization Hub: A new approach to speed progress to Net Zero

- **Evolve from:**
  - Sector specific decarbonization
- **To:**
  - Regional decarbonization
    - Systems based
    - Value chains
    - Market based
    - Synergies

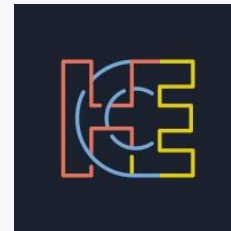
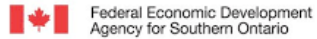


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## We are building the coalition now...



## ... leading to Hamilton Region Decarbonization Hub