



International Partnership  
for Hydrogen and Fuel Cells  
in the Economy

## *Canada* Update

32<sup>nd</sup> IPHE Steering Committee Meeting  
23 – 24 October 2019  
Seoul, Republic of Korea

# Announcements and/or New Initiatives *Canada*



## Investments/Funding

Building on ongoing investments R, D&D, through the Low Carbon Economy Fund (\$2B), and Strategic Innovation Fund (\$800M), announced in 2017 and 2018,

- Deploying Hydrogen stations –7 under construction, 2 open to public and 15 planned by 2022
- Supporting US DOE Center for Hydrogen Safety
- **Federal Budget 2019:**
  - Over \$430M/ 5yrs for Zero Emission Vehicle recharging and refuelling infrastructure, \$ 5000 incentive for zero emission vehicle purchase and accelerated capital cost allowance for commercial purchase
- British Columbia included \$107M for Zero Emission Vehicle Purchase incentives (\$6000/ FCEV), and zero emission vehicle mandates

## Collaborations

- World's largest hydrogen electrolyzer facility (20MW) – partnership between Air Liquide and Hydrogenics
- AVL investing in Canadian Fuel Cell industry
- Cummins now major shareholder in Hydrogenics

# Announcements and/or New Initiatives *Canada*



## New research & development, demonstration and or deployment activities

- Alberta Zero-Emissions Truck Electrification Collaboration (AZETEC) project - \$15M/ 3yrs to test **two** heavy-duty, extended-range, **hydrogen fuel cell electric hybrid trucks**
- Supporting innovative projects related to hydrogen refuelling, and EV fast charging technologies.

## Enabling factors Other

- National Zero Emission Vehicle sales targets announced (10% by 2025, 30% by 2030, and 100% by 2040)
- Released Hydrogen Pathways report, currently undertaking more indepth analysis
- Clean Energy Ministerial, Hydrogen Initiative launch
- Province of British Columbia released a Roadmap, and study on Hydrogen Export Potential

## Announcements:

- First 2 hydrogen retail refuelling stations opened
- Two fleets of 50 Toyota Mirai delivered
- Hyundai Nexo available for rental/ car-sharing

# Examples of Lessons Learned and Impact *Canada*

Program initiative, policy, regulation or mandate	Lessons Learned/Outcomes
CEM Hydrogen Initiative (May)	<ul style="list-style-type: none"> <li>• International interest in hydrogen has grown significantly</li> <li>• Leveraging existing initiatives</li> </ul>
ZEV mandates in 2 provinces	<ul style="list-style-type: none"> <li>• Vehicle supply is becoming an issue</li> </ul>
Conventional Energy Companies	<ul style="list-style-type: none"> <li>• Conventional fuel producers and gas utilities see a clear role for hydrogen in Canada's low carbon future.</li> <li>• Stakeholders are eager for federal-level leadership</li> </ul>



# Examples of Lessons Learned and Impact *Canada*



Program initiative, policy, regulation or mandate	Lessons Learned/Outcomes
Investing in Infrastructure (\$182.5M/ 6 years)	<ul style="list-style-type: none"><li>• If you build it, they really do come (Toyota deploying 100 FCEV)</li></ul>
Alignment of Codes/ standards, and Regulations across jurisdictions	Feasible, but industry needs to be engaged, and involved Communication with relevant regulators is essential
Regulations for Hydrogen Metering for Retail Sales	Applying best practices for other alternative fuels (e.g. natural gas) is not always technically feasible for hydrogen.

# Applications - Current Status and Goals *Canada*



Application	Status (As of <i>Month, Year</i> )	Goal (For <i>Year</i> )
Fuel cell vehicles	<i>Over 100 (as of Sept, 2019)</i>	<i>ZEV 100% new vehicle sales by 2040</i>
Hydrogen stations	<i>2 open, 7 under development</i>	<i>15 (Federally supported)</i>
Fuel cell buses	<i>1</i>	<i>NA</i>
Electrolyzers	<i>Multiple small scale 20MW electrolyzer</i>	<i>NA</i>
Primary fuel cell power units	<i>1</i>	<i>NA</i>
Backup power fuel cell power units	<i>100s</i>	<i>NA</i>
<i>Power -to - gas</i>	<i>2 (200kw, and 5MW)</i>	<i>NA</i>

# Thank you



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