



International Partnership for Hydrogen and Fuel Cells in the Economy



## Hydrogen and Fuel Cells in Canada Country Update

### 21<sup>st</sup> IPHE Steering Committee Meeting Oslo, Norway May 20-21, 2014



International Partnership for Hydrogen and Fuel Cells in the Economy



## Country Update Canada

### Policy Framework

**Currently Canada does not have a dedicated fund/mechanism for H2FC**

**Canada levers:**

- **National Research Council of Canada**
  - **Energy, Mining and Environment**
    - Works with emerging technologies including H2FC
  - **Automotive & Surface Transportation Portfolio**
    - Supports Canadian vehicle manufacturers and their supply chain
  - **Industrial Research Assistance Program**
    - Supports SMEs to undertake technology innovation
- **Natural Sciences & Engineering Research Council of Canada**
  - Hydrogen Canada (H2CAN) Strategic Research Network (concluded 2013)
  - Solid Oxide Fuel Cells Strategic Research Network (concluded 2013)
- **Scientific Research and Experimental Development tax incentive Program**
  - Available to industry for R&D

2

21st IPHE SC Meeting Oslo, Norway

 International Partnership for Hydrogen and Fuel Cells in the Economy



## Country Update Canada

### Activities

#### Completed H2FC project: Bus Fleet in Whistler, British Columbia

- BC Transit Fleet of 20 Fuel Cell Buses is the Largest in the World
- Fleet launched at the start of 2010 Winter Olympics
- Buses designed for 12year + operating lifetime
- Fleet performance since launch
  - 3.4M km of revenue service
  - Over 20,000 hydrogen refueling
  - 3,800 Tons of GHG emissions avoided
- Completed its 5 year demonstration period end of March 2014
- BC Transit engaged NREL to conduct a technical evaluation on the fleet's performance. NREL published the report in February 2014.
- NREL Report: <http://www.nrel.gov/docs/fy14osti/60603.pdf>

3

21st IPHE SC Meeting Oslo, Norway

 International Partnership for Hydrogen and Fuel Cells in the Economy



## Country Update Canada

### Activities

#### Canadian Hydrogen and Fuel Cell Sector Profile

- Published annually since 2004
  - Measures performance indicators in the Canadian H2FC sector
  - Collaboration between the Government of Canada, the Canadian Hydrogen and Fuel Cell Association and PricewaterhouseCoopers
- The Industry at a Glance in 2012:
  - Revenue was \$141M
  - Product Sales Generated \$99M of Revenue
  - R&D&D Expenditures were \$75M
  - Employment was 1,582
  - 59 Demonstration Projects
  - 71 Strategic Alliances
  - 331 Research Partnerships

<http://www.chfca.ca/resources/publications/>

21st IPHE SC Meeting Oslo, Norway

 International Partnership for Hydrogen and Fuel Cells in the Economy



## Country Update Canada

### Activities

**Other current H2FC project:**

**Clean Energy Dialogue**

- Co-convenor of a H2 Storage Workshop with the US Department of Energy
  - Sacramento, California, May 14-15, 2014

**Developing a strong Supply Chain of low cost FC components in Canada**

- Partnering with:
  - Automotive Parts Manufacturers Association
  - Canadian Hydrogen & Fuel Cell Association
  - Mercedes Benz Fuel Cells (Canada)
  - Ford/Automotive Fuel Cell Cooperation
  - 3 Canadian Universities
  - Canadian federal government departments
- Creation of a Canadian Fuel Cell Supply Chain Alliance
  - Bringing together the FC OEMS, current and potential suppliers
  - Improve manufacturing processes, determine product specifications

21st IPHE SC Meeting Oslo, Norway

 International Partnership for Hydrogen and Fuel Cells in the Economy



## Country Update Canada

### Markets

**Canada's Market for H2FC Products "is international"**

**Recent Announcements (last 6 months)**

- **Telecom Backup Power**
  - Philippines, US, Taiwan and India
  - Early Markets – Pakistan and Australia
- **Materials Handling- costumers such as:**
  - Central Grocers, Walmart and FedEx Express
- **Transportation (fueling stations/buses)**
  - Germany, UK and the Netherlands

21st IPHE SC Meeting Oslo, Norway

6

 International Partnership for Hydrogen and Fuel Cells in the Economy



## Country Update Canada

### Power-to-Gas

**Ontario Minister of Energy - Energy Storage Procurement Framework Totaling 50MW**

- The Independent Electricity System Operator issued a Request for Proposal (RFP)
  - 35 MW of energy storage, Phase 1 to be completed by June 2014
- The Ontario Power Authority is to issue a RFP
  - for an additional 15 MW, Phase 2 later in 2014

**Canadian firm Hydrogenics Corporation active in P-t-G**

- Contract to supply a micro-grid energy storage application in Canada
  - Announced on January 16, 2014
  - Awarded \$3.8M
  - Store surplus wind energy as H<sub>2</sub> using an electrolyzer operating at 320 kW of energy absorption
  - Hydrogenics expects to deliver this project in late 2014

21st IPHE SC Meeting Oslo, Norway 7

 International Partnership for Hydrogen and Fuel Cells in the Economy



# Questions

**Tim Karlsson**  
**Director**  
**Emerging Technologies Directorate**  
**Industry Canada**