



PROGRESS REPORT 2003-2004

FLCOME to the 2003-04 update of Milestones, a snapshot of the progress and highlights stemming from the activities of the Canadian Transportation Fuel Cell Alliance (CTFCA).

The CTFCA's Core Committee, Project Advisory Committee and five Working Groups rely on the vision and energy of more than 100 individuals representing Canadian hydrogen and fuel cell companies, industry associations, non-government organizations, municipalities, gas and electric utilities, academic institutions, provincial governments, and federal government departments and agencies.

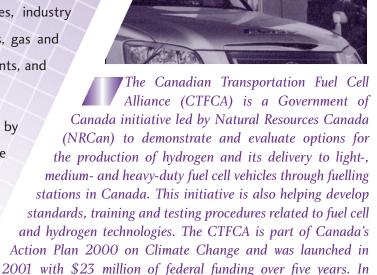
The CTFCA is proud to report the accomplishments made by these individuals and organizations whose contributions are helping advance the commercialization of hydrogen and fuel cell technologies for vehicles and vehicle fuelling systems.

Nick Beck, S&T Director

Hydrogen, Fuel Cells and Transportation Energy

CANMET Energy Technology Centre

Natural Resources Canada



PARTNERS

ATCO Gas
Ballard Power Systems
BC Hydro
BC Transit
BMW of North America
Bureau de normalisation du
Québec
California Air Resources Board
Canadian NGV Alliance
Canadian Petroleum Products
Institute
Dynetek Industries Ltd.

E-H² inc.
Ford Motor Company
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of Canada Ltd.
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Fueling Technologies Inc.
General Hydrogen
General Motors of Canada Ltd.
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Government of Manitoba
Government of Ontario

Government of Québec
HERA Hydrogen Storage
Systems
Hydrogenics Corporation
Imperial Oil
IMW Industries Ltd.
Industry Canada
Kraus Global Inc.
Manitoba Hydro
Membrane Reactor
Technologies Ltd.
Methanex Corporation

program through to 2008.

National Research Council
Canada
Natural Resources Canada
New Flyer Industries
Northeast Advanced Vehicle
Consortium
Nova Bus
Pembina Institute
Petro-Canada
Powertech Labs Inc.
QuestAir Technologies Inc.
(S&T)2 Consultants Inc.

October 2003, Canada's Technology and Innovation initiative

provided the CTFCA with an additional \$10 million, funding the

Sacré-Davey Engineering
Saskatchewan Research Council
Services Mij Inc.
Standards Council of Canada
Stuart Energy Systems
Corporation
TISEC Inc.
Toyota Canada Inc.
Transport Canada
University of Québec at
Trois-Rivières
University of Toronto







CTFCA WORKING GROUPS UPDATE

1 Light Duty Vehicle Fuelling Demonstration Working Group

Progress was made across Canada. In the West, the Vancouver Fuel Cell Vehicle Program was initiated. Hydrogen Highway initiatives included the commissioning of a hydrogen storage and dispensing system at NRC-IFCI in Vancouver, the upgrading of a hydrogen fuelling station in Surrey and the continuing development of a fuelling station based on recovered industrial waste hydrogen for North Vancouver.

In Saskatchewan, a dual hydrogen/diesel-fuel internal combustion engine pick-up truck was developed.

In the Toronto area, Hydrogen Village projects included the creation of a mobile hydrogen fuelling station and

continuing progress on both natural gasand electrolysis-based fuelling stations. Preliminary engineering is underway for fuelling stations in Toronto, Ottawa and Charlottetown.

Heavy Duty Vehicle Fuelling Demonstration Working Group

Progress was made at home and abroad. In Canada, a major fuel cell transit bus study was initiated. Continuing involvement with fuel cell bus programs in the U.S. and the European Union kept CTFCA members engaged internationally. The European Fuel Cell Bus Club invited two members of the Working Group to join, providing them with access to EU practices and opportunities to promote Canadian solutions.

Codes and Standards Working Group

Major objectives were achieved last year, including the initiation of the Canadian Hydrogen Installation Code. A project to develop clearance distances and other safety factors for hydrogen fuelling stations was also launched and is being coordinated with a similar project for the U.S. Department of Energy. A Virtual Hydrogen Fuelling Station was also developed. This design tool enables the modelling of hydrogen filling stations and links station components to codes, standards and regulations.

4 Studies and Assessments Working Group

The Electrical Capacity Project – Greenhouse Gas and Cost Impacts of Canadian Electric Markets with Regional Hydrogen Production – was completed. This study estimates to 2020 the electricity supply expected to be available for electrolysis as a fuelling pathway to hydrogen and determines the associated greenhouse gas emissions. The Policy/Economic Analysis Project – An Economic Analysis of Various Hydrogen Fuelling Pathways from a Canadian Perspective – was also completed. It assessed the economics and socio-environmental implications of nine off-board hydrogen fuelling pathways and outlined policy tools to enable these technologies to better compete in

the current economic environment. NRCan's GHGenius was expanded to include new hydrogen pathways. The Working Group is participating in a University of California, Davis, market study concerning hydrogen economy pathways and strategies.

"Through the CTFCA, NRCan is leading a government and industry partnership focused on advancing fuel cell and hydrogen technology commercialization. Developing codes and standards and demonstrating hydrogen fuelling infrastructure are critical to success."

Christopher Curtis, Interim
President and CEO,
Fuel Cells Canada

5 Communications Working Group

Numerous CTFCA communications materials were produced and distributed including annual and progress reports, a GHGenius fact sheet and bookmark, and a Team Canada brochure. Public education and outreach initiatives included a display at the National Museum of Science and Technology, support to the National Hydrogen

Association's Hydrogen Refueling Design Competition and the development of an interactive educational website. Support was also provided to the Vancouver Fuel Cell Vehicle Program through the development of its communications strategy, display and brochure. Several CTFCA projects were also announced.

For more information, visit www.ctfca.nrcan.gc.ca

or contact Richard Fry, Program Manager, Fuel Cell Infrastructure, Natural Resources Canada, at (613) 943-2258 or rifry@nrcan.gc.ca.