

Driving innovation

THE VANCOUVER FUEL CELL VEHICLE PROGRAM



Canada 



**International Partnership for the Hydrogen Economy
Globe 2006
March 29, 2006**



The Vancouver Fuel Cell Vehicle Program

Program Overview

- Five Ford Focus fuel cell vehicles, “real world” conditions
- Demonstrate Canadian leadership in sustainable transportation
- Test, evaluate and refine Canadian-made technologies
- Vancouver and Victoria, British Columbia

Partners

- Government of Canada – NRCan, NRC, TEAM (funding)
- Province of British Columbia (funding)
- Ford Motor Company (vehicles)
- Fuel Cells Canada (project management)





VFCVP Objectives

Communications

- increase public awareness and understanding of hydrogen fuel cells

Technology

- assess vehicle and systems performance, required technology improvements

Fueling Infrastructure

- address infrastructure issues for fuel cell vehicles

Environment

- demonstrate zero-emission transportation
- evaluate potential reduction in levels of greenhouse gases and regulated emissions

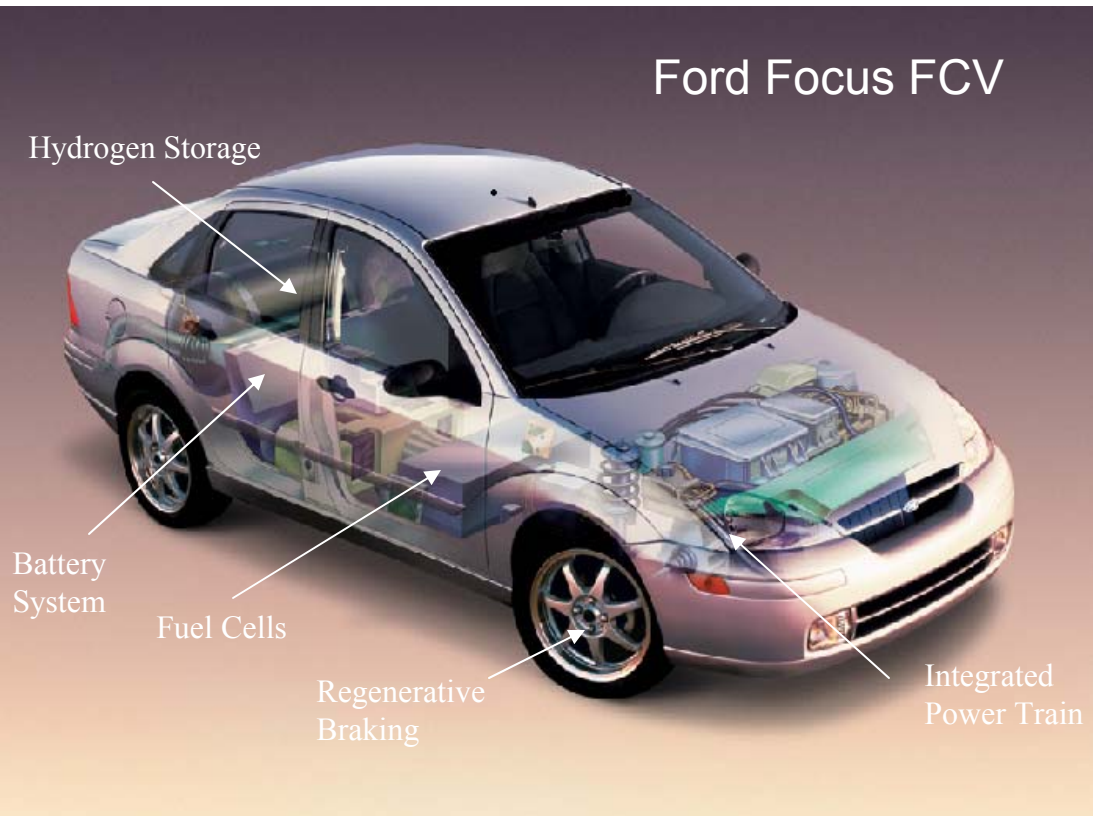
Regulations

- address codes and standards, regulatory requirements





Ford Focus FCV Features



- Limited production vehicles
- Ballard Mk 902 Fuel Cells
- Ballard Integrated Power Train
- Dynetek H2 Storage System
- Hybrid Battery System
- Regenerative Braking
- Weight – 1600 kg
- Peak Power – 67 kW (87 hp)
- Fuel – 350 bar H2 gas
- Max. Speed – 128+ km/h
- Driving Range – 260-320 km
- Emissions - Zero





Vehicle Operations

- 5 of 30 Ford vehicles
 - Vancouver/Victoria, California, Florida, Michigan, Germany
- 3 years operation April 2005 to March 2008
 - Fuel Cells Canada/Province of BC
 - BC Hydro
 - BC Transit
 - Ballard
 - City of Vancouver
- Vehicles driven by employees
- Target annual 12,000-15,000 km per vehicle





Fueling

NRC Fuel Cell Innovation Centre at UBC

- Tube trailer gas delivery, BOC compressor and intermediate storage
- General Hydrogen storage and dispensing, 8 x 450 bar Dynetek cylinders, 67 kg



Powertech, Surrey

- Stuart Energy electrolyzer and compression Dynetek storage, 11 x 440 bar cylinders, 60 kg
- FTI dispenser



BC Transit, Victoria

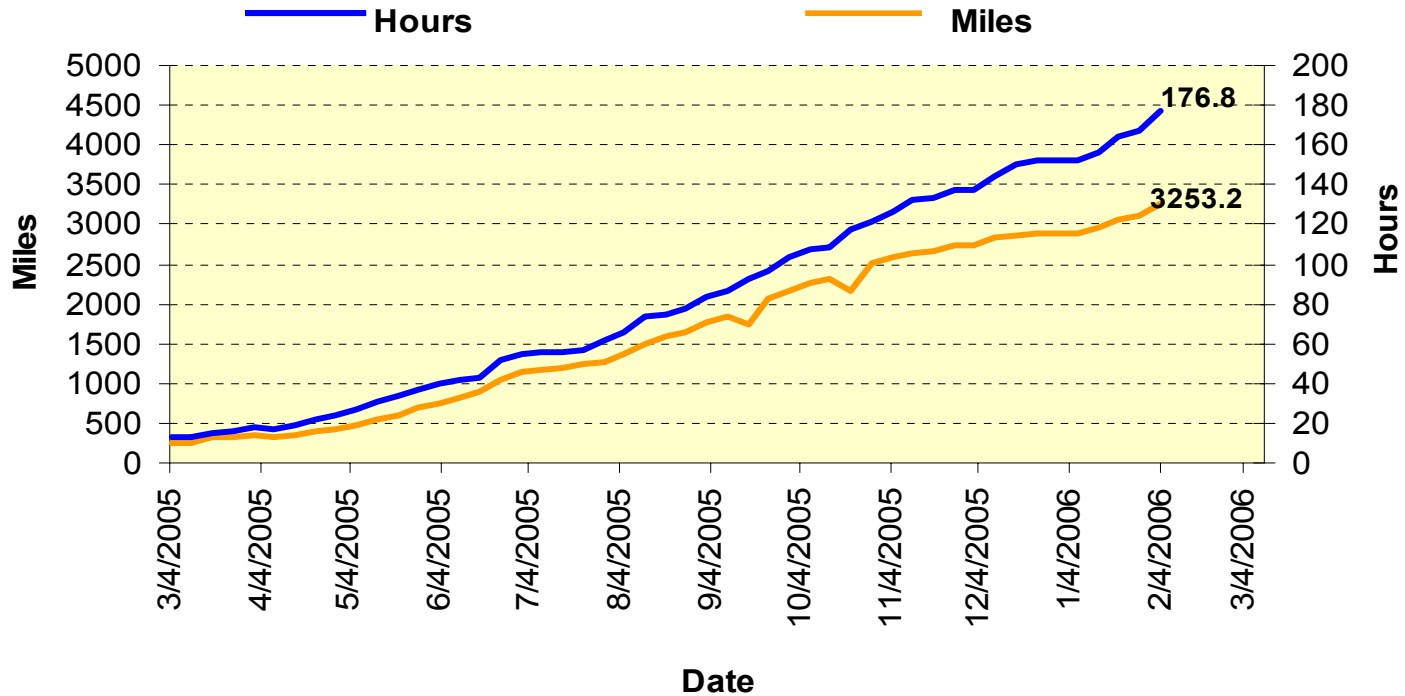
- Supply by Powertech in Surrey, transported to Victoria by trailer





Operational Data

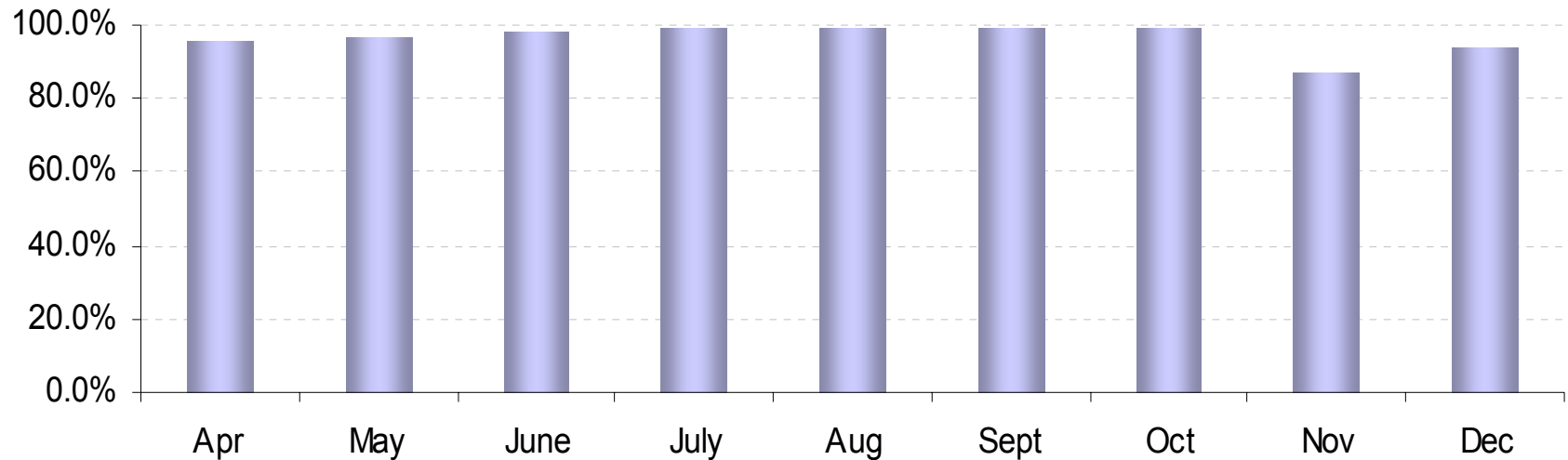
Ford Fuel Cell Vehicles - VFCVP Average Usage





Operational Data

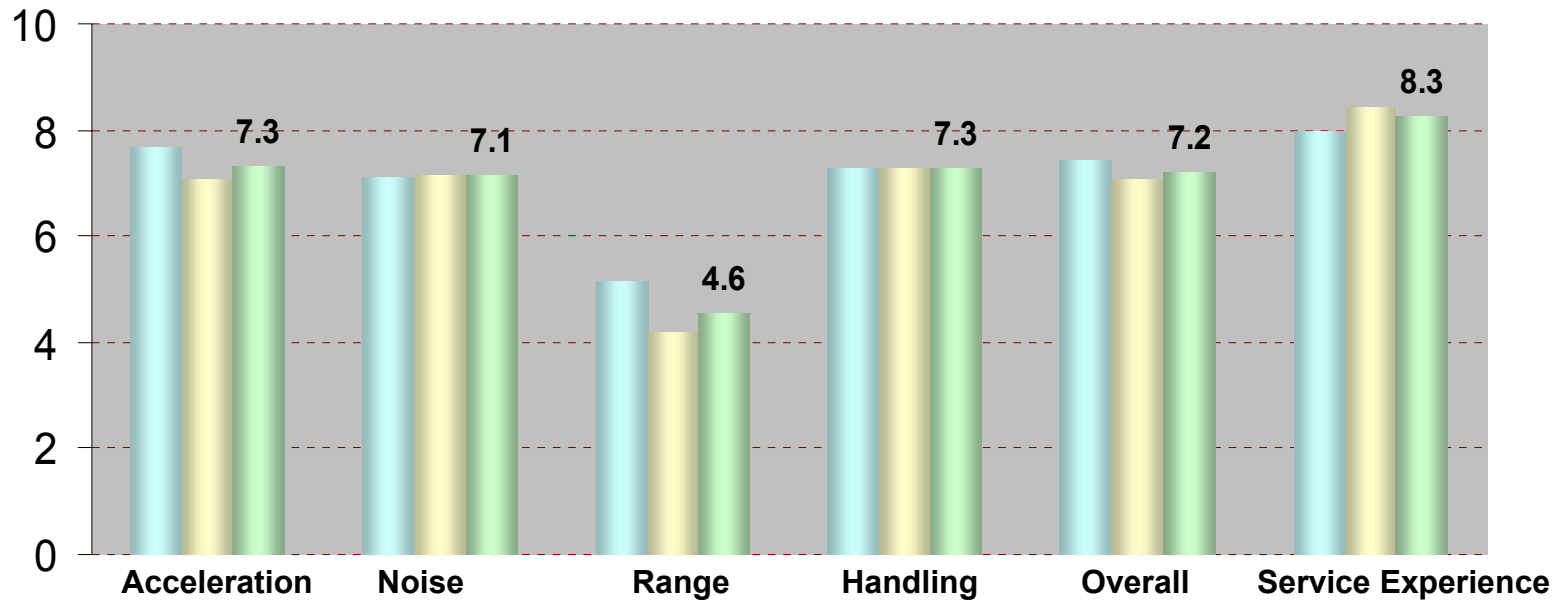
AVERAGE % AVAILABLE TO CUSTOMERS





Driver Survey - Performance

DRIVER AVERAGE PERFORMANCE RATINGS - All Ford





Operator Experience – City of Vancouver

- \$165 million fleet – 4200 units – light, medium and heavy duty vehicles
- Strategic partnership with Ford
- One of the largest Ford fleets in Canada
- “Green the City Fleet”
 - Alternative fuels
 - Hybrids
 - Vehicle right sizing
 - Green Fleet Accreditation
 - Idle reduction, tire inflation, fleet pooling





Operator Experience – City of Vancouver

- Operating a Ford Focus Fuel Cell Vehicle with VFCVP
 - City driving – engineering staff and site inspectors
 - Commute under review with Ford
- Good experience with fuel cell vehicle to date
 - Reliable
 - Good performance
 - Zero emissions
 - High interest level
- Driver survey – rated performance between 7-8
 - Comparable to other Ford locations





Fueling Experience – NRC-IFCI

- Quality of hydrogen fuel is critical
 - Regular sampling and analysis to control, quality is costly and time consuming
 - Specifications are evolving
 - New quality assurance procedures
 - New sampling and analytical techniques
- Current specifications have numerous contaminant restrictions in ppm range
- Need to understand contamination occurring in production, transfers, compression and dispensing





Fueling Experience – NRC-IFCI

- Issues
 - How to measure and maintain quality
 - Low cost analytical equipment and methods are required
 - Hydrogen quality and liability restrictions
- Challenges
 - Detection limit capabilities
 - Development of sampling equipment
 - Procedures
 - Analytical methods
 - Fuel quality control must align with capabilities





The Vancouver FCV Program

THANK YOU!

For additional information please visit our website
vfcvp.gc.ca

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