



Transitioning to a more sustainable future

Whistler Fuel Cell Bus Project

Reid Rothwell & Associates
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The Project

- Five year demonstration 2009-2014
- 20 fuel cell buses at Whistler, BC
 - total Whistler fleet 23 buses
- 1,000 kg capacity per day Fueling station
- \$89 million total cost
 - \$57 million incremental funding over incumbent
 - Buses, fueling station, maintenance and fuel
 - Funding by Province of BC, Government of Canada and Canadian Hydrogen and Fuel Cell Association
- Support Province of BC initiatives for Climate Action Plan, GHG reductions and Carbon Tax Act



Buses, Fueling and Maintenance

- Buses: New Flyer
 - Fuel Cells – Ballard HD6
 - Integration – ISE
 - ISE/Siemens drive system
 - Valence Li phosphate batteries
- Fuel supply – Air Liquide Canada
 - Liquid hydrogen produced by electrolysis Becancour, Quebec
 - Truck liquefied hydrogen to Whistler approximately 5200 km
- Operations/Maintenance: Pacific Western Transportation
 - Operating partner in Whistler
 - 6 maintenance bays in new transit facility





Whistler Operating Conditions

- Winter conditions -20C to +40C
- Heavy passenger loads
- Operate up to 22 hrs/day
- 3.4 million km
- 19,500 fuelings
- 515,600 kg H2 dispensed
- NREL evaluation reports
 - First Oct/Nov 2013
 - Final mid-2014

Whistler Operations





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Challenges

The Whistler buses and fueling station have demonstrated the ability to operate in extremely challenging conditions in meeting scheduled bus service

However, there are a number of remaining challenges to be addressed based on the Whistler buses and their components and systems:

- Availability / reliability
- Overall bus price with warranties
- Maintenance costs (simplify systems and integration)
- Fuel costs (consumption and hydrogen)
- Bus weight

These are being addressed through demonstrations in other programs and initiatives in the US and Europe

- FTA fuel cell bus projects
- CaFCP roadmap
- CHIC and other European programs

These programs target market-ready fuel cell bus products for growth beyond demonstration quantities and capabilities




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