



**NEW FLYER**



**ZBUS Workshop – Sep 17, 2013  
Panel 2 – Fuel Cell Electric Buses  
Glen Naylor**

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### **New Flyer Headlines 2013**

**January - Marco Polo Acquires 19.9% of New Flyer for \$116 Million**

**March – New Flyer acquires Orion parts business from Daimler and assumes two key contracts for New York City and King County**

**June – New Flyer acquires North American Bus Industries  
Manufacturing in Anniston AL  
Service Center in Jurupa CA  
NABI PARTS in Delaware OH**



## The #1 Heavy-Duty Transit Bus company in Canada & US

### Founded and Headquartered in Winnipeg, MB.

- 'Buy America' compliant with facilities on both sides of border
- Bus manufacturing plants in Manitoba, Minnesota and Alabama. Fabrication plant in Elkhart, IN
- Parts Distribution Centers in Manitoba, Ontario, Kentucky, Delaware and California
- Service Center: Arnprior, ON and Jurupa CA
- New Product Development Center (Winnipeg, MB)



### Market Leader in Technology and Innovation

- Over 40,000 buses delivered. Over 31,000 still in operation.
- Bus lengths range from 31', 35', 40', to 60' articulating buses
- Diverse propulsion options: Clean Diesel, Electric Hybrid, Electric Trolley, CNG, and Hydrogen Fuel Cells. Now All-Electric Battery ZEV.



### Focused on being an Employer of Choice

- Publicly Traded on TSX: NFI, NFI.BU.U
- Over 3,000 employees
- Renewed labor contracts: CAW (MB) and CWA (MN)



## New Flyer Parts are closest to the Customers

Quality, Price, Availability, Delivery.

**WESTERN PDC**  
WINNIPEG, MANITOBA  
Opened 1998



**SOUTHWEST PDC**  
FRESNO, CALIFORNIA  
Opened 2009



**ONTARIO PDC**  
BRAMPTON, ONTARIO  
Opened 2011



**NABI PDC**  
DELAWARE, OH  
Acquired in 2013



**MIDWEST PDC**  
ERLANGER, KENTUCKY  
Opened 2008



## New Flyer Fuel Cell Bus Experience

- 5 Generations of Fuel Cell bus
- Prototype developed in 1991
- First fuel cell bus operated in revenue service in Vancouver & Chicago
- Introduction of the largest fuel cell bus fleet in the world in 2010



1991



2010



## Sunline Transit Fuel Cell

- Originally the Whistler Pre-production bus
- Now in revenue service in the Coachella Valley
- Nearly 40,000 miles, 5300 hrs in revenue service
- Same configuration as the Whistler fleet



### Whistler BC Transit Fuel Cell Hybrid Bus

Bus manufacturer and model	New Flyer, H40LFR
Length/width/height	40 ft/102 in./137 in.
Gross vehicle weight rating	44,530 lb
Passenger capacity	37 seated with no wheelchairs
Hybrid system	ISE Corp hybrid drive incorporating Siemens ELFA components
Fuel cell or engine	Ballard Fcvelocity -HD6, 150 kW, PEM
Fuel/storage	GHG, 57 kg at 5,000 psi, 8 Type 3 tanks



### Whistler BC – Largest Fuel Cell Hybrid Fleet in the World

- **Logged more than 3.5 million kilometers in public transit revenue service**
- **More than 175,000 hours in revenue service**
- **More than 350,000 kilograms H2 dispensed**
- **More than 16,000 safe refueling events**



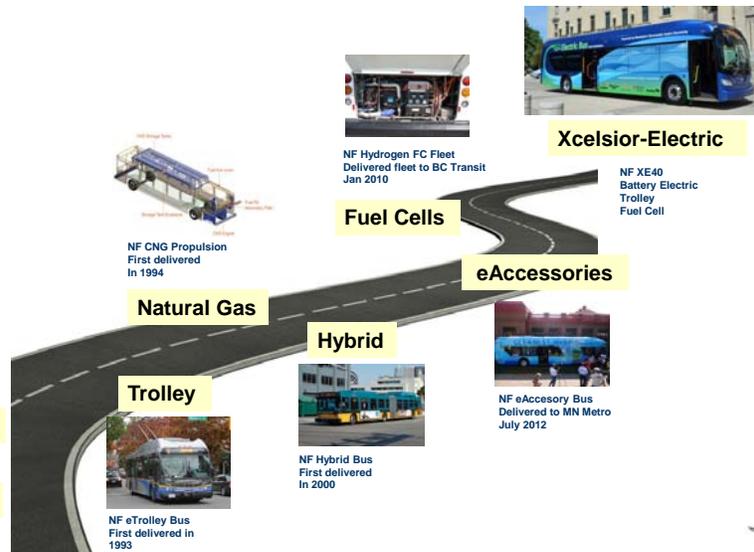
### Challenging Environment

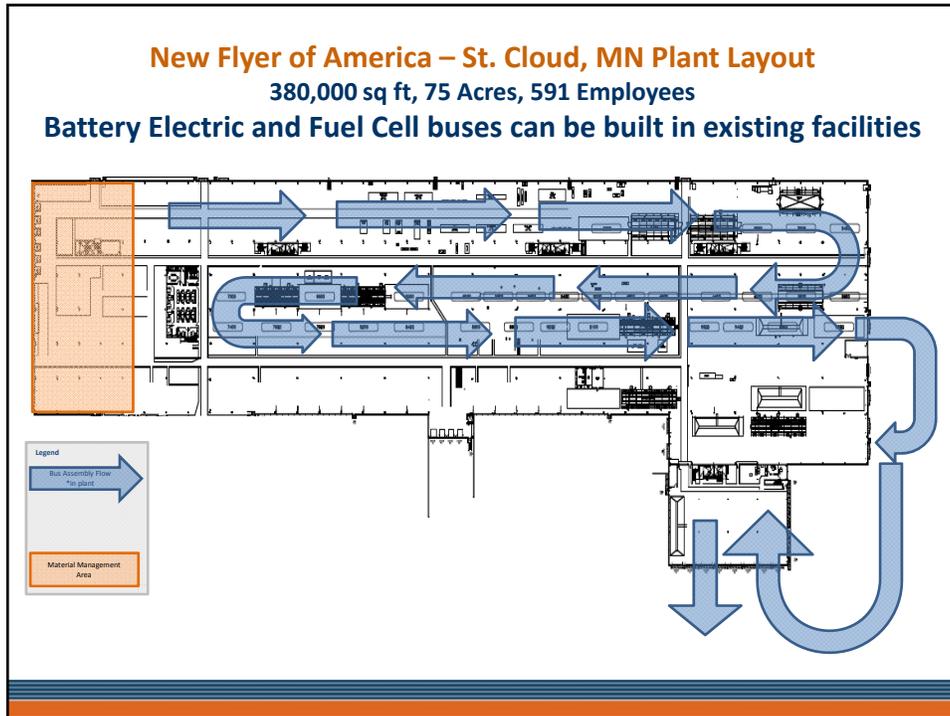
- One of the highest riderships per capital in Canada
- Routes include steep grades, highway speeds, village traffic
- Extreme temperatures
- Surprisingly –air quality issues related to glacial silt



### Committed to Propulsion & Technology leadership Xcelsior Electric – Trolley; Battery; Fuel Cell

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**Meeting Customer Requirement  
Future Xcelsior Fuel Cell Hybrids**

- APTA 10% Gradability Exceeded**
- APTA Accelerations Exceeded**
- Increased Seating Capacity 40**
- Increased Total Capacity 80**
- More Efficient Accessories & Next Gen Fuel Cells will Improve Fuel Mileage**
- Contract Lead Time: 24 months for small 10 bus fleet trail**

## Technology Enhancements Next Generation - 2 years

- Fuel Cell Suppliers will Provide a more complete solution (not only the FC, but Compressor, Cooling Circuit, and Control Systems for all FC related accessories)
- New Flyer will be the integrator of all powertrains including FC Hybrid and Battery Electric
- Future Developments will be based on Xcelsior, with reduced weight and other Xcelsior best-in-class features
- Battery Dominant FC Hybrids will permit smaller fuel cells – perhaps as small as 40 kW
- Costs will be reduced because of synergies with Battery Electric Bus Developments

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## Thank You



- Reduced Weight: 7 to 10% (model dependant)
- Durability Tested - Altoona
- Durability Tested - Exova Shaker table test = 6 Altoona tests
- 7:1 Best-in-class Wheelchair ramp
- Industry First LED headlights
- Increased Seating Capacity 40
- Increased Total Passenger Capacity 80
- Many Common Parts regardless of Powertrain

