New Flyer Xcelsior CHARGE™
XE35, XE40 and XE60 Battery Electric Buses

June 26, 2018
Transportation currently accounts for up to one third of air pollution in urban areas.
NFI Group
North America’s Leading Bus Manufacturer

• **87 Years** of Bus Experience
• **> 5,900** Employees
• **32 Locations** throughout North America
• Manufacture approximately **4,200** buses and coaches, annually*
  • Delivered **45%** of North American heavy-duty transit buses in 2016
  • Delivered **39%** of North American motor coaches in 2016
• Support **41%** of heavy duty transit buses in service
  • Supply **33%** heavy duty transit bus parts
  • Supply **40%** motor coach parts
• Publicly traded on TSX under the symbol NFI.TO

* Equivalent Units, including ARBOC 2017 estimated deliveries
Xcelsior Heavy-Duty Transit Buses
Transforming Your University Community with Sustainable, Clean Transit Technology

Proven Heavy-Duty Bus Platform
- Superior Performance at Altoona
- Quietest Ride
- Built for Accessibility
  - Expanded front door widths
  - 1:7 wheelchair ramp ratio (an industry best)
- Designed for Maintainability
- BRT Styling & Optional Features

LOW EMISSIONS
Clean Diesel
Natural Gas
Hybrid-Electric

ZERO EMISSIONS
Electric-Trolley
@xcelsior CHARGE
Hydrogen Fuel Cell

Transforming Your University Community with Sustainable, Clean Transit Technology

NEW FLYER OF AMERICA
New Flyer’s Next-Generation Battery-Electric Transit Bus

- Builds on the proven Xcelsior® transit bus platform
- Extended range battery technology designed in America
- Industry-leading gradeability
- Highest passenger load-carrying capacity, ensuring best passenger capacity
- Interoperable, compliant with developing OppCharge, CharIn and SAE Standards
- Available in 35, 40, and 60-foot bus rapid transit articulated models
Advancing Innovation in Transit

North America’s First Designed and Built Zero-Emissions 60-foot Electric Bus (Equipped with a Fuel Cell Range Extender)

Testing Complete
Active and Upcoming ZEB Projects

NEW FLYER OF AMERICA
Workforce development and training on electrification will is a key priority for OEM’s, APTA, transit agencies and universities

- Electrical engineers
- Battery / powertrain assembly technicians
- Electric powertrain maintenance
- Bus operators
- Safety personnel & first responders
Our Vision:
To be North America’s leader in the exploration and advancement of bus and coach technology connecting people to places.

Our Mission:
1. **Explore** and advance bus and coach technology through sustainable research and development, fresh innovation, progressive manufacturing, and bold thinking;

2. **Foster** dialogue through discussion, education, and training on the latest zero-emission, connected and autonomous driving vehicle technologies;

3. **Engage** learning through current and interactive exhibits, simulation and hands-on experiences, and observations;

4. **Generate** energy and commitment to clean air quality, safety, and economic benefits for people, communities, and business;

5. **Harness** the positive influence of collaboration, environmental stewardship, and social change to advance smart mobility solutions.
Anniston, Alabama

- 30,000 sq. ft. facility
- Interactive Technology Lab
- Demonstrator Buses
- Manufacturing Lab
- Classroom Training
- Hands-On Training Bay
- Engineering Test Lab
- Battery Assembly Area
World’s Most Advanced Electric Bus Simulator

Driver Training Improves Regenerative Energy Recovery up to 20%
### DAY 1 of 2 Curriculum

<table>
<thead>
<tr>
<th>Activity</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome to Vehicle Innovation Center (Training Room)</td>
<td>7:30 AM</td>
<td>7:40 AM</td>
</tr>
<tr>
<td>Overview of 2-Day Program / Objectives</td>
<td>7:40 AM</td>
<td>7:50 AM</td>
</tr>
<tr>
<td>New Flyer Electric Bus Experience &amp; Technology Road Map (Learning Lab / Training Room)</td>
<td>7:50 AM</td>
<td>8:30 AM</td>
</tr>
<tr>
<td>Ride and Drive - Battery-Electric Demo Bus</td>
<td>8:30 AM</td>
<td>9:15 AM</td>
</tr>
<tr>
<td>High Voltage Safety – (Training Room)</td>
<td>9:15 AM</td>
<td>10:00 AM</td>
</tr>
<tr>
<td>Break / Refreshments</td>
<td>10:00 AM</td>
<td>10:15 AM</td>
</tr>
<tr>
<td>Introduction to Lithium-Ion Battery Technology (Learning Lab)</td>
<td>10:15 AM</td>
<td>10:45 AM</td>
</tr>
<tr>
<td>Power Conversion, Inverters and Motors (Learning Lab)</td>
<td>10:45 AM</td>
<td>11:30 AM</td>
</tr>
<tr>
<td>Lunch</td>
<td>11:30 AM</td>
<td>12:45 PM</td>
</tr>
<tr>
<td>Tour of Anniston Manufacturing Battery String Assembly</td>
<td>12:45 PM</td>
<td>1:45 PM</td>
</tr>
<tr>
<td>Break / Refreshments</td>
<td>1:45 PM</td>
<td>2:00 PM</td>
</tr>
<tr>
<td>Electric Accessories (Learning Lab)</td>
<td>2:00 PM</td>
<td>3:00 PM</td>
</tr>
<tr>
<td>Steering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HVAC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Compressor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric Doors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instrument Panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charging Strategies / infrastructure</td>
<td>3:00 PM</td>
<td>4:30 PM</td>
</tr>
<tr>
<td>Dinner TBD</td>
<td>5:00 PM</td>
<td></td>
</tr>
</tbody>
</table>

### DAY 2 of 2 Curriculum

<table>
<thead>
<tr>
<th>Activity</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 2 Welcome and Overview (Training Room)</td>
<td>7:30 AM</td>
<td>7:40 AM</td>
</tr>
<tr>
<td>New Flyer CONNECT Electrical Bus Telematics</td>
<td>7:40 AM</td>
<td>8:40 AM</td>
</tr>
<tr>
<td>Service Diagnostic Tools Overview</td>
<td>8:40 AM</td>
<td>9:30 AM</td>
</tr>
<tr>
<td>Preventative Maintenance</td>
<td>9:30 AM</td>
<td>10:15 AM</td>
</tr>
<tr>
<td>Break</td>
<td>10:15 AM</td>
<td>10:30 AM</td>
</tr>
<tr>
<td>Electric Bus Driving Simulator</td>
<td>10:30 AM</td>
<td>12:00 PM</td>
</tr>
<tr>
<td>Lunch</td>
<td>12:00 PM</td>
<td>1:00 PM</td>
</tr>
<tr>
<td>Energy Consumption Assumptions / Route Modeling</td>
<td>1:00 PM</td>
<td>2:00 PM</td>
</tr>
<tr>
<td>CTE/ CALSTART/ Alabama Power</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q&amp;A, Handouts, Participation Certificates</td>
<td>2:00 PM</td>
<td>2:30 PM</td>
</tr>
<tr>
<td>End of Training</td>
<td></td>
<td>2:30 PM</td>
</tr>
</tbody>
</table>
Battery Capability Continues to Improve

- Optimized Battery Cell Design
- More Efficient Battery Packaging
- Improved Cell Chemistry

= Higher ESS Capacity per Bus
U.S.A Based Battery Supplier
Quality and Manufacturing Designed for the Transit Industry’s Rigorous Duty Cycle

Headquarters: Midland, Michigan

The World’s Most Advanced Manufacturing
XALT Energy’s fully-automated facility is one of the first of its type in the nation: designed and built from the ground up to ensure safe, efficient manufacturing to the highest standards of quality control. Our high-end robotic stacking and vision systems, supported by class 1,000 and class 10,000 clean rooms, enhance quality, reliability and consistency.

This world-class facility is matched by best practices at every step of the process:
- **Design and Development**: in-house, single-source engineering using carefully defined GD&T, DFMEA, CTQ and DFA/DFM systems
- **Supply Chain**: materials are tested, confirmed and tracked through the entire process, ensuring quality and traceability
- **Change Management**: data-driven change management process accelerates necessary changes while minimizing impact on cost and delivery

XALT Energy’s R&D Facility in Michigan includes:
- Wet chemistry lab
- Process R&D Lab
- Dry-room cell assembly
- Cell testing and quality assurance labs
New Flyer Leading Efforts Towards Standards and Interoperable Charging Equipment

SAE Standards Committees, CUTRIC, EPRI and OppCharge

Charging infrastructure – with interoperability, everyone wins

Battery-electric buses are gaining fast ground in mid-bus transit fleets, a key reason being the deployment of charging infrastructure.

Charging infrastructure can vary significantly in type. This includes the power type (AC – alternating current, or DC – direct current) and the power transfer type (inductive, using a plug or connector, or direct, based on wireless transmission). Variations in charging infrastructure means successful public investment must be cross interoperable.

What is interoperability? An integral part of the bus manufacturer, and regardless of the charging equipment supplier, electric buses of all makers should be capable of charging with equipment available from multiple equipment suppliers. Charging infrastructure also needs to operate as simply, effectively, and safely as a fuel nozzle for a diesel or compressed natural gas (CNG) bus.

Interoperability achieves four important objectives:

- Supports flexibility of charging equipment becoming standard, allowing transit agencies to switch to new components with minimal work and disruption.
- Leverages existing and engaging crews using a collaborative approach for developing infrastructure for a common forward and backward compatibility.
- Enables operation in terms of power maintenance, service, and parts.
- Supports intelligent asset charging towards reducing energy costs.

As the only manufacturer of all four electric bus propulsion (battery, fuel cell, inductive, direct current), New Flyer anticipates a future filled with electric propulsion as the bus of choice. As such, joining and supporting charging standards committees and organizations is top priority.

New Flyer does not design or manufacture charging equipment; that is not the company’s business model or an approach used by recognized electric vehicle manufacturers. However, we support interoperable charging, which is a concept raised by the New Flyer TransitLink® Advanced, charging equipment manufacturers (including Siemens, ABB, and ChargePoint), the American Public Transportation Association, the Society of Motor Manufacturers, and non-profit organizations including the Center for Transportation and the Environment (CTA).

New Flyer’s performance for interoperable charging schemes evolved around long-range and short-range buses.

Long-range buses utilize plug-in charging and typically charge overnight. New Flyer has a direct current (DC) based on SAE J3068 and SAE J1772, and lithium-ion batteries are typically used by electric car manufacturers. DC charging, as opposed to AC charging, replaces the power conversion for the batteries of the vehicle, to potentially exist on DC charging requires fewer components on the bus for enhanced reliability. DC charging has also entered wide adoption as the standard public charging system of choice. These systems can be shared between cars, buses, and trucks.

OpFlow is a common plug-in charging solution for short-range buses, and is currently in service throughout many European countries. The system has high transmission for access to the forthcoming SAE J3068 standards. OpFlow enables interoperable charging equipment with an operational plug-in on the vehicle. The system uses an overhead plug-in to transmit power to the bus, based on the SAE J3068 standards, which is currently in use in New York, London, Los Angeles, and Paris, among many others. New Flyer Synergy charging is currently available from leading charging equipment suppliers. New Flyer Synergy charging is currently available from leading charging equipment suppliers, and is used in New York. Synergy charging is currently available from leading charging equipment suppliers, and is used in several other cities.

New Flyer offers technology that is capable of ensuring charging equipment purchased using public funds can achieve a high return on investment. Non-proprietary and interoperable charging solutions available from reputable suppliers will be a key determinant factor in the adoption of electric transit buses. With interoperability, everyone wins.

For more information on OppCharge, visit www.opcharge.org.

New Flyer has also invested in an early stage development of an automated charging process for New Flyer. For more information, visit www.newflyer.com for more information.

SAE J3068: Published
(AC Plug-in for high-power AC&DC)

SAE J1772 CCS: Published
(Plug-in for high-power DC)

SAE J3105: Early 2019
(Overhead Fast Charge)

SAE J2954-2: Late 2019
(In-Ground Inductive / Wireless)
Depot Charging - Upgrading Electrical Infrastructure Will Likely Be Necessary

“Make Ready” Upgrades:

- Dedicated service meter, panel, conduits and wiring
- New transformer (if the existing transformer does not have sufficient capacity)
xcelsior CHARGE
On-route Charging

NEW FLYER OF AMERICA
Key stakeholders include:

- Transit Bus Operations
- Transit Facilities
- New Flyer of America Inc.
- Charger Equipment Supplier
- Power Provider / Utility Company

Finalization of the Roles and Responsibility matrix should be undertaken in a soon to be held follow-up meeting with stakeholder representatives.
Infrastructure Deployment Approach

- Phase 1: Site Visit
- Phase 2: Assessment of Utility Service
- Phase 3: Design and Engineering
- Phase 4: Upgrade of Utility Service
- Phase 5: Installation of Charger System
- Phase 6: Charger Testing & Commissioning
Xcelsior CHARGE™

The Complete Solution.

- U.S. Based Battery Technology
- Established Parts and Service Organization
- Industry Proven Artic Platform
- Charging Equipment Based on Standards and Interoperable
- Highest Passenger Standee Capacity
- Reliable Supply Chain

NEW FLYER OF AMERICA
It’s bright ahead. Innovation to RELY ON.

- **Technology that Works**: Transforming your University and Community with Sustainable Clean Technology

- **Investment in Our Communities**: Leading Transit with Investment in American Jobs

- **Progressive, but Prudent Innovation**: Supporting Smart Cities with Technology, Training and Collaborative R&D

For More Information:

Mark Fisher  
Regional Sales Manager  
New Flyer of America Inc.  
mark_fisher@newflyer.com  
(909) 527-3543

Joe Gibson  
Vice President of Sales  
New Flyer of America  
Joe_gibson@newflyer.com  
(765) 702-0100

David Warren  
Director of Sustainable Transportation  
New Flyer of America Inc.  
david_warren@newflyer.com  
(256) 473-3246