



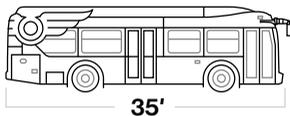
# xcelstor *CHARGE NG*<sup>™</sup>

Our next generation, battery-electric,  
zero-emission bus.

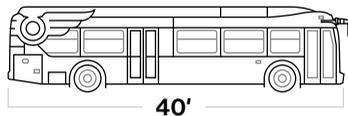


**Xcelstor CHARGE NG<sup>™</sup> is New Flyer's next generation battery-electric, zero-emission bus. It is lighter, simpler, has longer range with better energy recovery and is smart city capable – making it the most advanced electric bus on the market.**

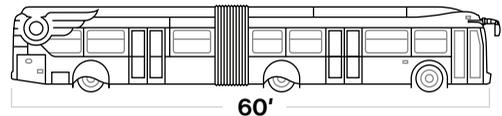
### Available in 3 Lengths



35'



40'



60'

## Three distinct technology advancements to deliver a high-performance bus.



### High-Energy Batteries

Next generation high-energy batteries.



### Battery Packaging

Advanced protective battery packaging designed for easy installation and streamlined maintenance.



### Traction Propulsion System

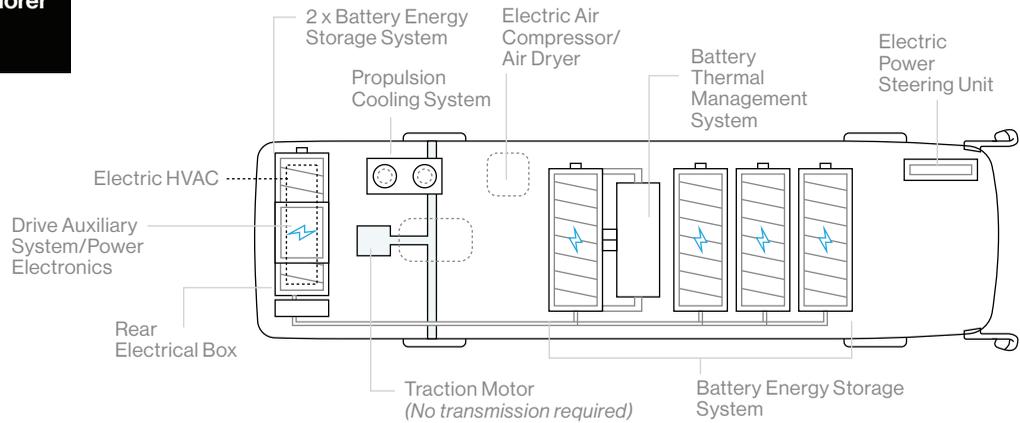
A new lightweight electric traction propulsion system with up to 90% energy recovery.

# How it works.

The Xcelsior CHARGE NG™ uses an electric motor powered by energy stored in rechargeable batteries.

Virtual Technology Explorer  
newflyer.com/tech

Xcelsior CHARGE NG™ 40'



## Technology advancements.

### 1 More efficient and streamlined battery enclosure.



A standardized waterproof battery enclosure is mounted on the rooftop and in the propulsion compartment using a “plug and play” approach, lending simplicity and efficiency in design, install, maintenance and manufacturing.

Rooftop application uses a modular approach with a simplified mounting system comprised of two rails running the length of the bus.

The same standardized battery enclosure is also mounted in the propulsion compartment on a rack. With this approach, the same battery enclosure can be mounted in any position on the bus.

#### Simpler

- ✓ One simple and standardized approach for better quality, consistency, and accuracy.
- ✓ If a battery needs to be replaced, the module can be removed and replaced with a new/backup module. The module needing troubleshooting can be serviced in the shop while the bus with the new/backup module onboard returns to service.
- ✓ With every battery having the same enclosure, service manuals are the same for every single bus model and length.
- ✓ Service parts are reduced by 90% going from 250 to less than 50 parts.

#### Waterproof

- ✓ With an ingress protection rating of IP67, the battery enclosure is 100% waterproof if submerged in water, which greatly reduces the likelihood of water leaking into the battery enclosure.
- ✓ With an ingress protection rating of IP69 for dust, high temperatures, and high-pressure washing, there is 100% protection from intrusion of dust or water particles. This is ideal for demanding operating conditions, and situations where sanitization and rigorous cleaning is undertaken.

#### More Efficient

- ✓ Modules are better insulated resulting in better management of battery temperature for optimal performance.

#### Easier to Service

- ✓ The casings are built using a reinforced composite fiber that is non-conductive.
- ✓ Service technicians can simply and safely plug in or unplug the battery module with less exposure to high-voltage electricity.

#### Lighter

- ✓ The standardized battery enclosure is lighter in weight, increasing the maximum passenger capacity on the bus by 4 additional standees.

## 2 High-grade Accelera™ by Cummins ELFA 3 traction system.

Accelera™ by Cummins ELFA 3 is next generation traction system that introduces a more efficient design with compact inverters and embedded drive controllers.

### Safer

It's easier and safer to maintain with shorter cable runs and touch-safe high voltage connections.

### Smaller

It's smaller and lighter allowing for increased passenger capacity.

### More Efficient

- ✓ Minimal rack requiring no covers.
- ✓ Shorter cable runs offer decreased risk of issues or faults, improved electromagnetic compatibility (EMC) and greater power efficiency.
- ✓ Delivers up to 90% energy recuperation.
- ✓ Delivers smooth, quiet, emission-free driving (with no engine noise, no idling, and zero local emissions).
- ✓ Better torque accuracy.

## 3 Next generation, high-energy batteries.

The batteries are made of world-class energy storage systems (ESS), engineered for safe, robust, and reliable use in transit.

The battery chemistry is Lithium Nickel Manganese Cobalt (NMC), providing the best balance of energy, power, safety, and life.

### More Energy

- ✓ 13% more energy available.
- ✓ Greater capture of regenerative energy (during braking at top state of charge).

### Extended Range

Range is extended by 13% without compromising quality.



## CONNECT 360

Connect 360® is included on every new Xcelsior CHARGE NG™. Learn more at [nfigroup.com/connect](http://nfigroup.com/connect)



**Additional range** capability with improved driver performance.



**Decision-making information** to optimize charging strategies.

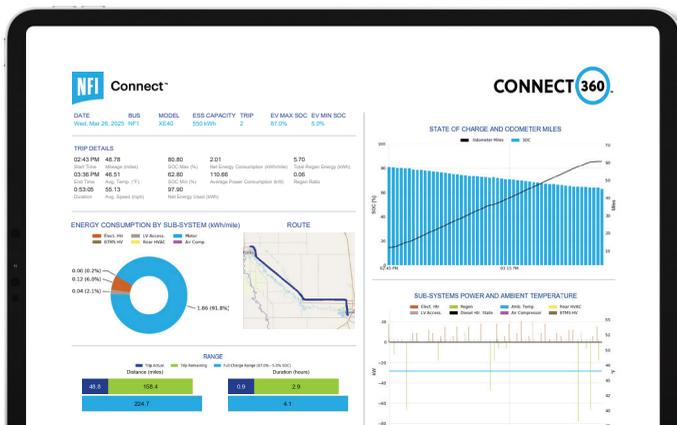


**Intelligence** on how to preserve battery energy throughout the day.



**Reduced operating cost** and maximum fleet utilization.

**Connect 360®**, operated by NFI Connect™, is a customizable performance dashboard that provides smart analytic reporting to expand insight and intelligence for managing your Xcelsior CHARGE NG™ battery-electric bus.





**Six minutes** of rapid recharge time with a 450 kW charger equals 1.5 hours of operation.

Rapid charge configuration fully compliant with OppCharge and charging protocols.



## Charging.

New Flyer buses are interoperable with charging equipment that supports all heavy-duty electric vehicles. You can customize your Energy Storage Systems (ESS) and charging solutions so you can develop the right ESS and infrastructure solution for your needs.

Xcelsior CHARGE NG™ is interoperable with charging systems available from:



### On-Route Charging

The on-route rapid charger provides the means for the Xcelsior CHARGE NG™ to stay in service 24 hours daily. To charge, the bus stops underneath the charger and the pantograph makes contact with the charge bars. Depot charging for a full charge requires 4.9 hours\*\* for a 660 kWh ESS.

\*\*200A depot charger (150kWh), charging time varies by charger size.

### Plug-In Charging (CCS1 Connector)

Plug-in chargers are available as a supplement or alternative to on-route rapid chargers and can be used for overnight, mid-day and on-route charging.

### Compliant with Charging Standards

- ✓ SAE J1772 CCS Type 1 plug-in charging
- ✓ SAE J3105-A overhead charging
- ✓ ISO 15118-2 protocol

**The 40' Xcelsior CHARGE has a range of up to 320 miles (660kWh)\* on a single charge, but with on-route charging, range is unlimited.**

\* Range per FTA Altoona test protocol - HVAC off.

Length	ESS (kWh)	Range (Miles)
<b>35'</b>	440	221
	550	273
<b>40'</b>	440	218
	550	270
	660	320
<b>60'</b>	660	151
	770	175
	880	199



## Functionality + accessibility.



### Dual-Sided Boarding Option

New Flyer offers an optional three-door configuration for all Xcelsior® 40' and 60' buses that includes a street-side door for bus rapid transit application.



### Kneeling

SmartRider™ enables kneeling to variable heights and minimizes the slope difference between a low-floor ramp and the bus floor.



### Self-Leveling

SmartRider™ ramp achieves a 1:6 slope ratio with a self-leveling feature that can withstand up to 1000lbs.



### Capacity

Industry-leading passenger carrying capacity with up to 88 total (40 seated and 44 standees).

## **NFI** Infrastructure Solutions™

NFI Infrastructure Solutions™ is a service dedicated to providing safe, reliable, smart and sustainable charging and mobility solutions.

Learn what Infrastructure Solutions can do for you at [nfigroup.com/IS](https://nfigroup.com/IS)

## What our Infrastructure Solutions team provides.

Supports mobility projects from start to finish.

Focuses on energy management optimization.

Provides infrastructure planning and development.

Provides cohesive transition of bus fleets to zero-emission electric technology.

	35'	40'	60'
<b>Measurements</b>			
<b>Length</b>	36' 3" (11.05m) Over bumpers; 35' 5" (10.80m) Over body	41' 0" (12.50m) Over bumpers; 40' 2" (12.24m) Over body	60' 10" (18.54m) Over bumpers; 60' 0" (18.29m) Over body
<b>Width</b>	102" (2.6m)	102" (2.6m)	102" (2.6m)
<b>Roof Height</b>	11' 1" (3.3m) Over charging rails	11' 1" (3.3m) Over charging rails	11' 1" (3.3m) Over charging rails
<b>Step Height</b>	14" (356mm)	14" (356mm)	14" (356mm)
<b>Front Step Height (Kneeled)</b>	10" (254mm)	10" (254mm)	10" (254mm)
<b>Interior Height – Floor to Ceiling</b>	79" (2m) Over front and rear axle; 95" (2.4m) Mid-coach	79" (2m) Over front and rear axle; 95" (2.4m) Mid-coach	79" (2m) Over front and rear axle; 95" (2.4m) Mid-coach
<b>Tire Size</b>	305/70R22.5	305/70R22.5	305/70R22.5
<b>Wheelbase</b>	226.75" (5.8m)	283.75" (7.2m)	229" (5.8m) Front / 293" (7.4m) rear

<b>Propulsion</b>			
<b>Motor</b>	Siemens electric drive system; Standard or optional high gradeability motor	Siemens electric drive system; Standard or optional high gradeability motor	Siemens electric drive system; ZF AVE130 in-wheel motor center drive axle
<b>Rated Power (standard)</b>	160 kW	160 kW	280 kW
<b>Rated Power (high-grade)</b>	209 kW	209 kW	N/A
<b>Rated Torque (standard)</b> (*Based on 1:5.67 ratio axle)	1,400 lb-ft	1,400 lb-ft	1,220 lb-ft
<b>Rated Torque (high-grade)</b>	2,000 lb-ft	2,000 lb-ft	N/A

<b>Passenger Capacity</b>			
*Based on 4-string (35'/40') & 6-string (60') ESS configurations, with ELFA 3 Siemens Traction System			
<b>Seats</b>	Up to 32*	Up to 40*	Up to 61 (with one exit door)*
<b>Standees</b>	Up to 35*	Up to 44*	Up to 62 (with one exit door)*

<b>Accessibility</b>			
<b>Doors</b>	2	2	2 or 3 (option for up to 5 doors)
<b>Wheelchair Accessibility</b>	32" (813mm) Wide, 1:6 slope; Flip out NFIL ramp, front door	32" (813mm) wide, 1:6 slope; Flip out NFIL ramp, front door	32" (813mm) wide, 1:6 slope; Flip out NFIL ramp, front door
<b>Wheelchair Locations</b>	2 - Front location, rear location also available (other options available)	2 - Front location, rear location also available (other options available)	2 - Front location, rear location also available (other options available)

<b>Approach Angle</b>			
<b>Approach/Departure/Breakover Angles</b>	9°/9°/12°	9°/9°/9°	9°/9°/12° (front) 9° (back)

<b>Turning Radius</b>			
(Body, with aluminum wheels; *Varies with wheel type)			
<b>Turning Radius</b>	39' (11.9m)*	43.5' (13.3m)*	42' (12.8m)*

<b>Main Components</b>			
<b>Floor</b>	Marine grade plywood floor; Optional composite floor; Composite rear interior step; Tarabus, Altro	Marine grade plywood floor; Optional composite floor; Composite rear interior step; Tarabus, Altro	Marine grade plywood floor; Optional composite floor; Composite rear interior step; Tarabus, Altro
<b>Electrical System</b>	Parker Vansco	Parker Vansco	Parker Vansco
<b>Propulsion Cooling System</b>	Electric cooling fans	Electric cooling fans	Electric cooling fans
<b>HVAC</b>	Thermo King TE15 (rear)	Thermo King TE15 (rear)	Thermo King RLFE (front) TE15 (rear)
<b>Axles</b>	MAN VOK 08 Front disc brakes; MAN HY-1350 Rear disc brakes; Single reduction axle	MAN VOK 08 Front disc brakes; MAN HY-1350 Rear disc brakes; Single reduction axle	MAN VOK 08 Front disc brakes; ZF AVN 132 Center disc brake; MAN HY-1350 Rear disc brakes; Single reduction axle

<b>Energy Storage System</b>			
<b>Long Range</b> (Rapid charging available)	440 kWh, 550 kWh	440 kWh, 550kWh, 660 kWh	660 kWh, 770 kWh, 880 kWh



# xcelstor *CHARGE NG*™

[newflyer.com/NG](http://newflyer.com/NG)



**VIC** | VEHICLE INNOVATION CENTER

Learn more about this technology at the Vehicle Innovation Center  
[newflyer.com/VIC](http://newflyer.com/VIC)

