



eStar™ Electric Truck Overview

NYC & Lower Hudson
Valley Clean Cities EV
Symposium
II: Electrifying Urban
Delivery

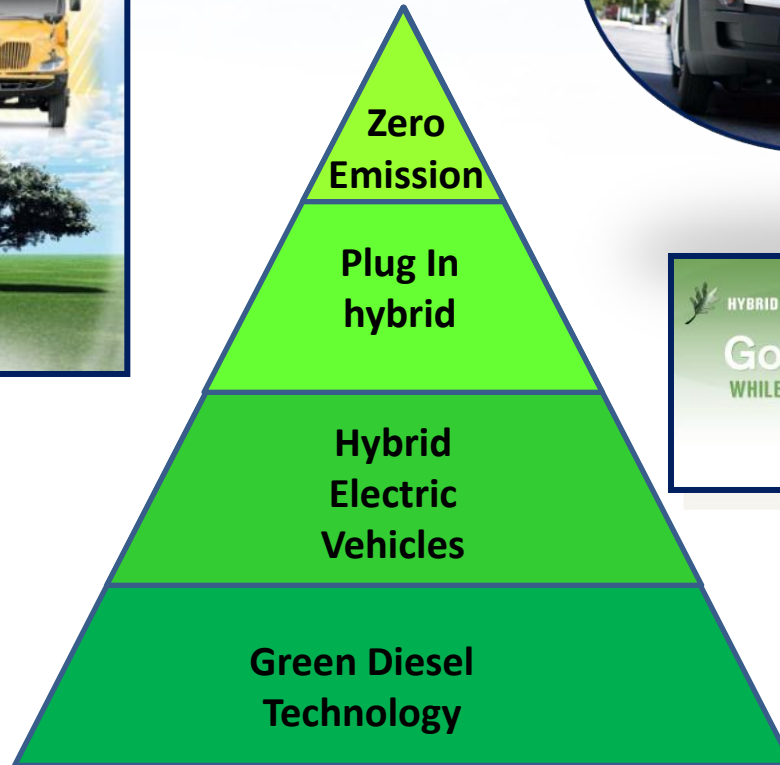
Date: April 11th, 2011

Navistar: Commercial Leader



- **Navistar (NAV)** is a leading U.S. manufacturer of commercial trucks, buses, diesel engines and military vehicles with annual sales of more than \$15B
- Company brands include:
 - **International**[®] commercial and military trucks
 - **MaxxForce**[®] diesel engines
 - **IC** school and commercial buses
 - **Monaco**[®], **Holiday Rambler**[®] **Safari**[®], **Beaver**[®] and **R-Vision**[®] RVs
 - **Workhorse**[®] brand chassis
- Navistar intends to extend its strong market position through leadership in the emerging U.S. market for commercial electric vehicles
- To achieve this objective, Navistar has partnered with Modec – a leading European developer and manufacturer of commercial EVs based in Coventry, England to form a JV (NMEVA, LLC) to manufacture and distribute EVs in the US
- Navistar has the majority share of the JV, controls all Operation and the Board
- Navistar was awarded a \$39,2M grant by the DoE un the ARRA to develop and deploy EVs

Corporate Environmental Leadership



eStar overview



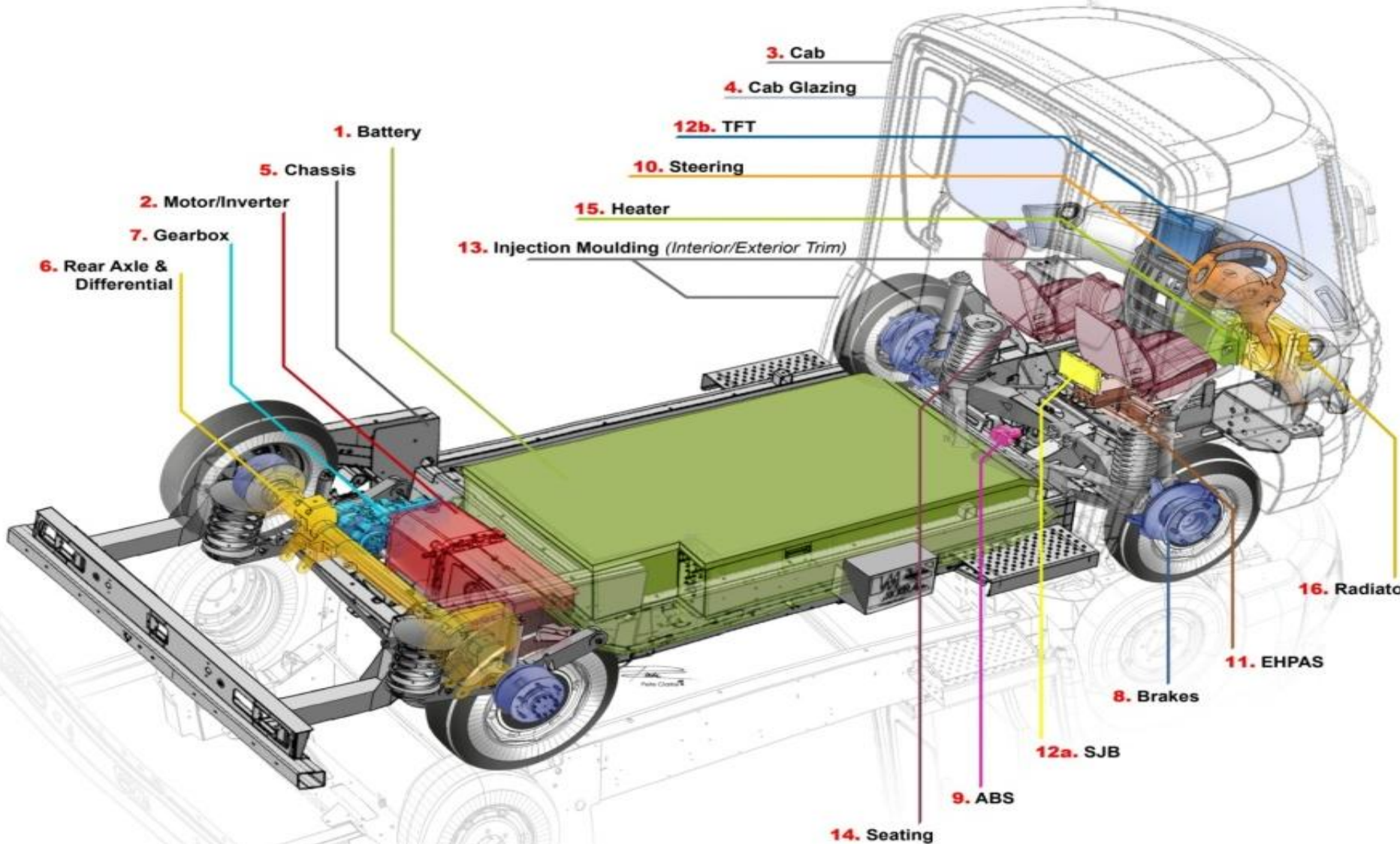
- Pure Plug-in Electric Vehicle
- Purpose-designed and built as EV – not a conversion of conventional ICE vehicle, with BIC features such as 36' turning circle, 180° field of view and low floor
- More than 300 are already in service in Europe
- Gross Vehicle Weight – 12,100 lb (Class 3 truck)
- 4,500 lb payload
- 100 mile range
- Charging requirements:
 - Level II charging station (J1772)
 - 6-8 hours for a complete charge cycle
 - Battery replacement time - 20 minutes



- First recipient of ARRA funding under Transportation Electrification Act to deliver a product to customers
- First commercial EV (and only Class 3 EV) to achieve EPA, CARB and FMVSS certification as a zero emission vehicle
- First production vehicles deployed by FedEx in daily service in LA area



Product / Technical Overview





The Heart of the Matter

Traction Battery

- A123 Systems 80kw Li-ion Nanophosphate™ battery pack
 - Prismatic cells arranged in modules
 - Modules housed in steel enclosure
- Enclosure / Cassette mounts underneath between frame rails
 - Low Centre Gravity
 - Replacement in 20min
- Provides power to drive system, power steering system and cockpit heating
- Sophisticated diagnostics



A123
SYSTEMS

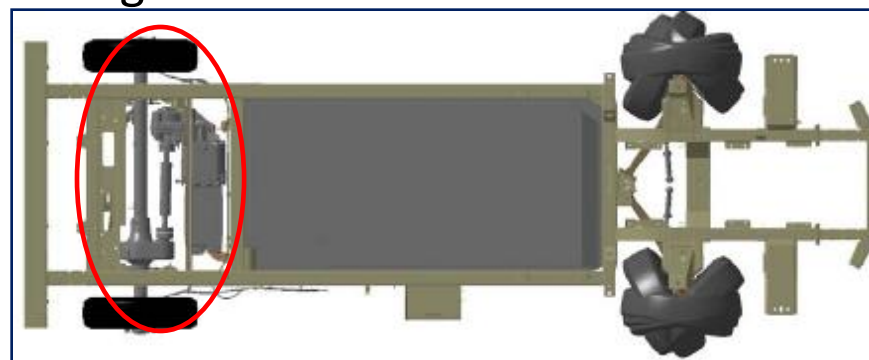




The Heart of the Matter

Traction Motor

- 70kW electric engine (102hp, 212ftlbs torque)
- PM electric machine with integrated inverter and drive train controller
- Operated by a simple PRND system
- Configured in a space-saving “Z” shaped layout with a clutch-less transfer box driving the rear wheels
- Speed limited to 50mph
- Electric engine provides additional energy to the battery through regenerative braking
- Sophisticated diagnostics

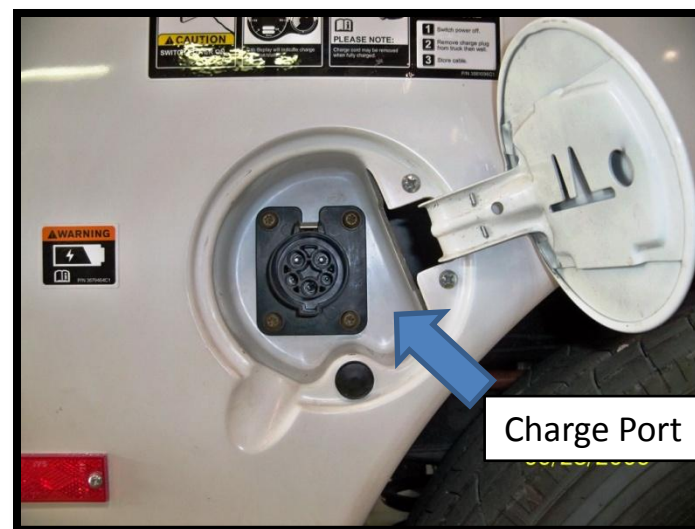
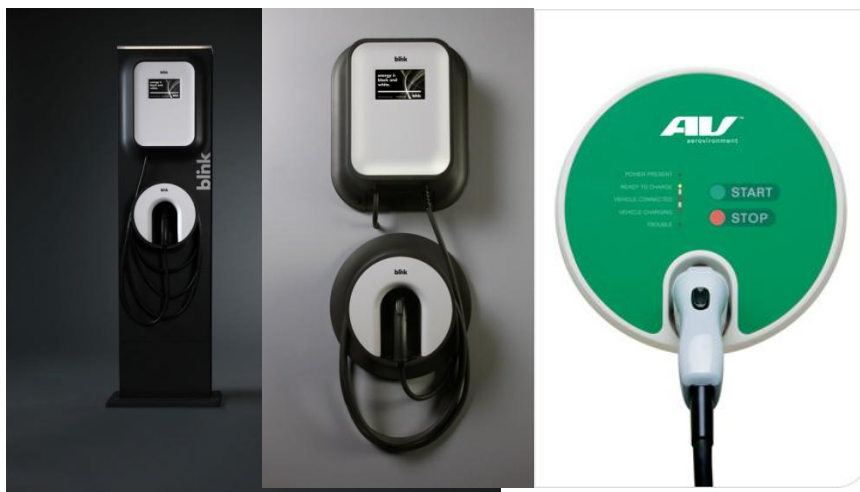




Vehicle Charging (J-1772)

Battery charging accomplished using the Model CS-40 charging system.

- The unit operates on either 220/240V single phase, 208V 3-Phase, Wye-Connected voltage or 240V 3-Phase, Delta connected, with center-tap on one leg
- Charge port located curb side behind rear wheel; cannot be driven while the charger is connected



Applications for the NYC Customer



100 mile range/day, 50 MPH, Frequent stop/start & Central Hub, and as we go forward you “our customer” will tell us what else you need!!

Industry Examples

- Food/Beverage
- General Freight
- Government
- Grocery Delivery
- Telecom
- Utilities
- Universities



Temperature (-5°F to 95°F) in places like...Vancouver, Detroit. Boston, Chicago, San Francisco

Today's Options:



Today our vehicles will come standard with the following:

- 14 foot box
- Heater
- Roll up rear door
- Curb side door
- Power windows/mirrors

Options:

- AM/FM/CD Player
- Rear View Camera
- Front License Plate Holder
- Spare 17.5 Goodyear Tire
- Stand alone AC prototype
- 16 foot box (coming in June)
- Barn Doors (coming in June)

Truck King Locations:



Truck King International

9505 Avenue D
Brooklyn, NY 11236
718-649-8400

5001 2nd Avenue
Brooklyn, NY 11232
718-492-8600

58-80 Borden Avenue
Maspeth, NY 11378
718-894-4850

1370 Viele Avenue
Bronx, NY 10474
718-328-1616

191 Cabot Street
West Babylon, NY 11704
631-454-7888
(IC & Idealease only)

2222 Smithtown Avenue
Ronkonkoma, NY 11779
631-981-1960

650 Commercial Avenue
Carlstadt, NJ 07072
201-372-0600



WWW.TRUCKKINGINTL.COM

FAQ



- **Is there any special training required to operate the eStar?** *Because it utilizes standard automotive controls operating the eStar is very simple. It only takes a few minutes to learn the start up procedure. We do recommend that all operators become familiar with the emergency response guidelines.*
- **Are there any special license requirements?** *There are no special license requirements because it is an electric vehicle. The driver must be properly licensed for a vehicle of 12,200 pounds GVWR.*
- **How long is the warranty?** *Standard warranty on the eStar is 3 years/60,000 miles.*
- **What is the life expectancy of the battery?** *The battery cassette should last 10 years.*

FAQ



- **What is cab constructed of?** *The cab and body are made of composite materials and mounted on a steel frame.*
- **How is the cab heated?** *The cab uses an electric heating element. A separate heating element is built into the windshield to defog/defrost it.*
- **Does the cab have A/C?**
Not today, however, starting the summer of 2011 will be available as a stand alone option that runs separate from the main traction battery.
- **Does heavy accessory use (wipers, heater, lights, radio) affect driving range?** *Accessory drain is very small compared to the energy required to move the vehicle, so the effect of accessory use on range is negligible.*

Wakarusa, IN Plant





Thank you.

Mark McGrew

Sales Director– East Region

eStar™ Electric Truck

M: 480.540.6139

E: mark.mcgreg@navistar.com

W: www.estartrucks.com

