

# Catenary Drayage Truck for Zero-Emissions Goods Movement

Advisory Committee 1/29/15

## Project Review & Status



# Agenda

- Siemens OCS Project
- Project Status
- TransPower OCS Vehicle Project
- Project Overview and Status

# Catenary Demonstration Project

- Designed to prove catenary truck concept in real-world drayage operations
- Catenary system
  - One mile length, both directions
  - Pole spacing similar to street lights
  - DC power substation with remote monitoring
  - Small test track and monitoring station
- Four demonstration trucks
  - Volvo Diesel hybrid, TransPower CNG hybrid and Battery-electric trucks
  - BAE/Kenworth CNG hybrid truck from ZECT II project



# Progress – Traction Power Supply/Substation

- **Completed and in progress activity:**
  - Meeting in Germany in Aug. 2014 design review for the EHWY design
  - Ordered long lead major equipment: DC switchgear, AC switchgear, traction power transformer, prefabricated substation building shell
  - TPSS and major equipment designs completed and released for fabrication
  - Major equipment currently in the manufacturing process, with assembly of equipment over next several months



# Progress – OCL

- Received pantograph data from Siemens AG in including operational dimensions and electrical parameters to incorporate OCL design
- Prepared preliminary OCL design for coordination with site civil design review
- Began procuring long lead OCL equipment
- OCL design finalized and procurement of OCL equipment continues



# Progress – Pantograph

- Technical data packages for Volvo and TransPower Hybrid pantographs have been provided to the manufacturers
- Placed order for the first two pantograph frames
- PM visit to Germany to meet the pantograph team and to view the eHighway test track
- Meetings with Volvo to finalize schedule and to continue interface clarification work
- Interface clarifications with Volvo and TransPower completed in Oct. 2014
- Manufactured and assembled first pantograph in process



# Progress – Civil Works/Permitting

- Developed preliminary site civil design and performed constructability and design review - Nov. 2014
- Completed site civil design in Dec. 2014
- Site civil design, permitting application, and supporting documentation submitted to the City of Carson for approval in Dec. 2014
- City of Carson permitting still under review
- Proceeding with preliminary procurement for roadworks installation, such as median improvements/modifications along Alameda Street and OCS foundation civil works



# Project Timeline

**6/2013- 5/2014**

**7/2014-7/2015**

**8/2015-8/2016**

<b>Infrastructure</b>	Design	Permitting (CEQA)	Construction	Demonstration
<b>Volvo Trucks</b>	Vehicle Pantograph Integration		Development & Testing	Demonstration
<b>TransPower Trucks</b>	Component & System Design	Vehicle Build	Testing	Demonstration

- Catenary system development
  - Design - Completed
  - Permitting in Process & CEQA Completed
  - Construction Break Ground March 2015
  - Vehicles designed and modified in parallel with system construction
  - Total development time: 27-33 months (completed mid 2015)
- One year demonstration and data collection (completed in 2016)





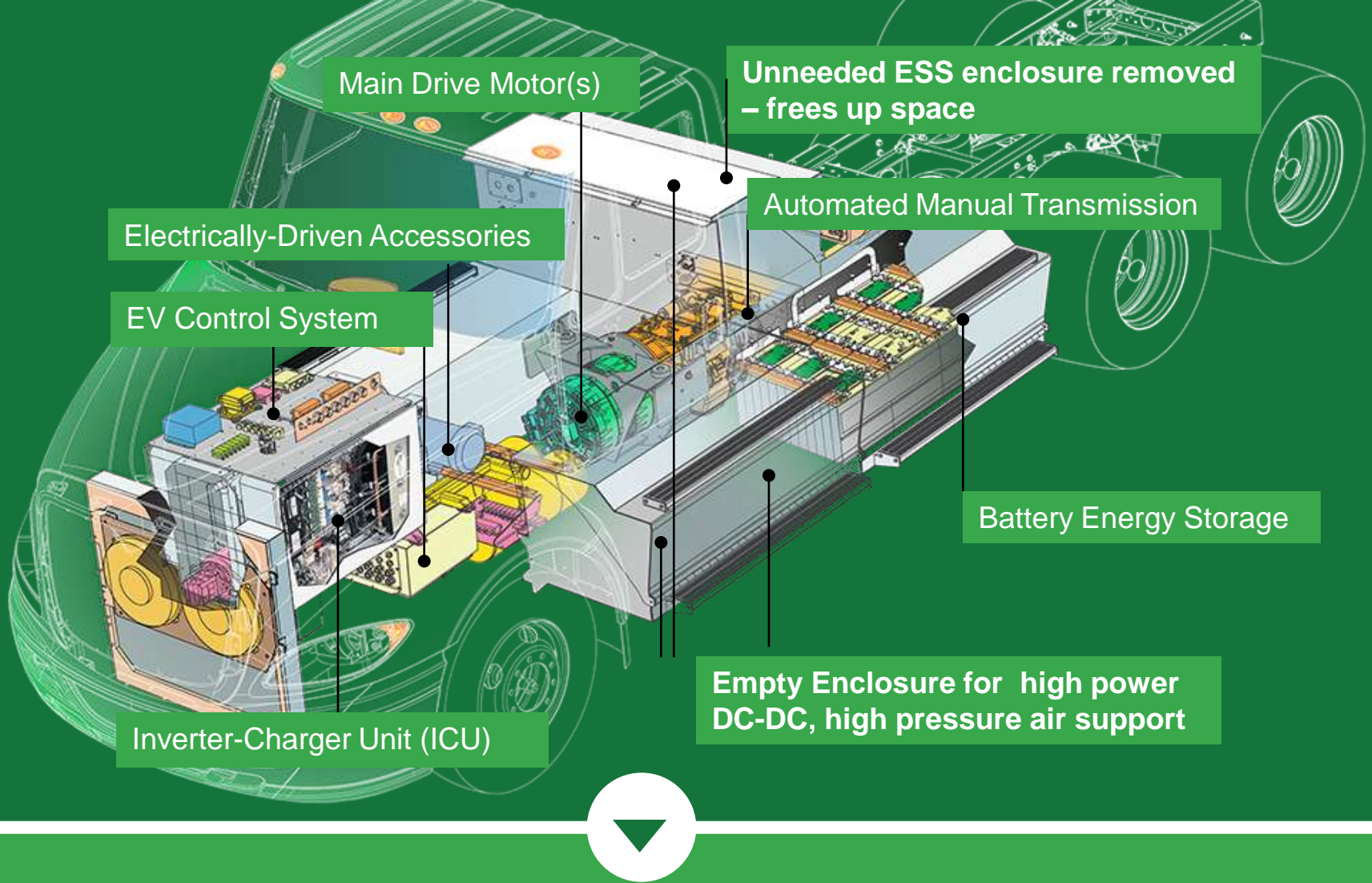
*Update: TransPower /  
Siemens Catenary Class 8  
Truck Project*

*January 28, 2015*



# Overview

- ***TransPower and Siemens are collaborating to produce electric trucks capable of drawing power from an overhead catenary line***
- ***TransPower is building one pure electric truck and one CNG hybrid electric truck***
- ***Trucks are slated to be shipped to the test site in July***
- ***Trucks will be demonstrated for one year on Alameda St. in Carson Ca.***
- ***Data collected will help assess catenary functionality for future uses***

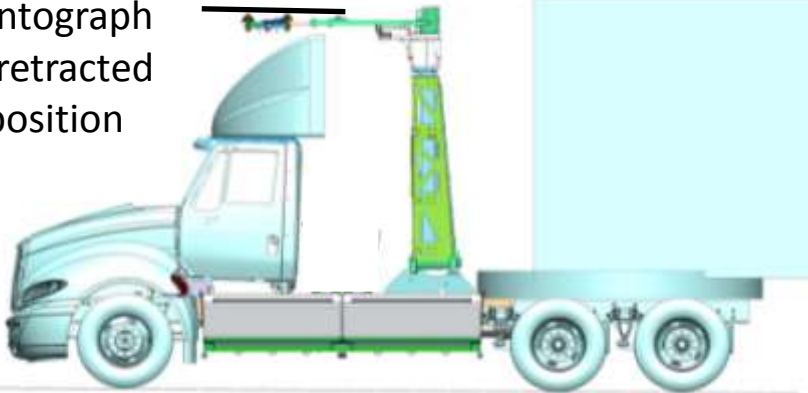


- ***Base vehicle component layout easily accepts range extending technologies***

# The Catenary Trucks

## Electric Truck

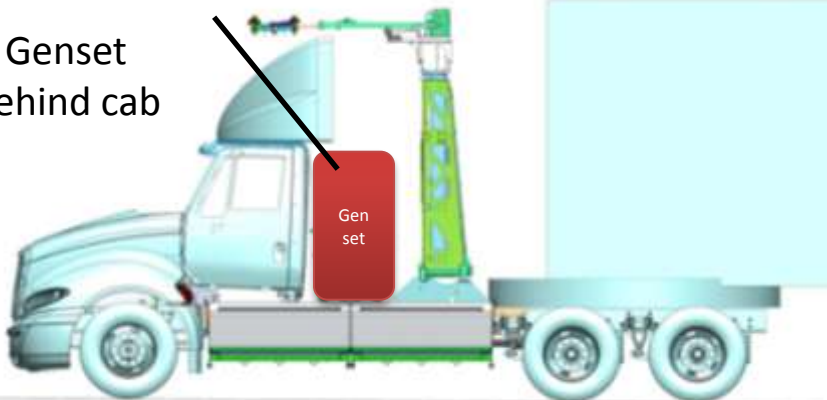
Pantograph  
in retracted  
position



## CNG Hybrid Truck

Gen-set located behind cab

Gen set  
behind cab



## System Based on the ElecTruck Platform

Flexible full speed, load, and grade capable class 8 tractor

Catenary versions use half of the ESS



# Project Milestone Update

<b>E-Catenary</b>	
<b>1.1 - 1.5</b>	Closed
<b>2.1</b>	Closed
<b>2.2</b>	Vehicle Modification: In process, base vehicle complete mid February.
<b>2.3</b>	New Component Integration: Expected to begin in March / April. Pantographs to arrive mid May.
<b>2.4</b>	Initial System Verification: Expected to start late February
<b>2.5</b>	Field support and final catenary validation: Expected Start mid July.
<b>Hybrid-Catenary</b>	
<b>3.1 - 3.3</b>	Closed
<b>3.4</b>	Hybrid Truck Subsystem Integration: In Process. Base truck subsystems in build. CNG Genset work set to begin in April. Pantographs to arrive mid May.
<b>3.5</b>	CNG Hybrid Truck Integration: Base truck to be complete in March. CNG Genset and pantograph installation in May / June time frame.
<b>3.6</b>	Initial System Verification: Base truck commissioning to start late March. Additional CNG Genset and pantograph systems verified May / June time frame.
<b>3.7</b>	Field support and final catenary validation: Expected Start mid July.

# Status and Schedule

