Volvo - Class 8 Plug-In Hybrid Electric Tractor

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Background

- One of the Agency’s top three priorities for 2011 is to initiate Zero Emissions Container Movement System Projects
- Staff has been working with Ports and providers to identify technologies
Emissions

Figure 1: 2009 DPM and NOx Emissions by Port Source Contribution

- DPM:
  - HDV: 20%
  - RL: 5%
  - CHE: 4%
  - HC: 11%
  - OGV: 60%

- NOx:
  - HDV: 32%
  - OGV: 43%
  - RL: 8%
  - CHE: 6%
  - HC: 11%
Emissions Contribution & Population

The graph illustrates the percentage of population and annual NOx emissions contributed by different categories of vehicles and other sources. The y-axis represents the percentage of population and annual NOx emissions, while the x-axis lists various vehicle categories:

- Passenger Cars
- Light-Duty Trucks (0-3750 lbs)
- Medium Duty Trucks (3751-5750 lbs)
- Light-Heavy Duty (5751 - 10000 lbs)
- Medium-Heavy Duty (10001 - 14000 lbs)
- Heavy-Heavy Duty (> 14001 lbs)
- Other Buses
- Urban Buses
- Motorcycles
- School Buses
- Motor Homes

The bars show the distribution of population and NOx emissions across these categories, indicating which contribute more significantly to the overall emissions.
I710 Electrified Corridor
Volvo Project Proposal

- Develop a class 8 prototype parallel hybrid in drayage and regional delivery application
- Engine downsizing in heavy haul applications
- Plug-in & charging technology to enable short distance zero emission driving
Technology

- Pre-transmission hybrid electric
- Grid-charged electrical energy storage
- Electrified engine accessories
- Regenerative braking
- Diesel engine downsizing
- Further potential evolution to a wayside power connection
Vehicle Attributes & Benefits

- Demonstration of an HEV with commercial potential
- Initial HEV has the potential for a reasonable payback to the end user
- HEV adoption develops the EV supply chain
- Potential for wayside connectability
Questions