

SUSTAINABLE FREIGHT: OPPORTUNITIES FOR ITS AND CONNECTED AUTOMATION

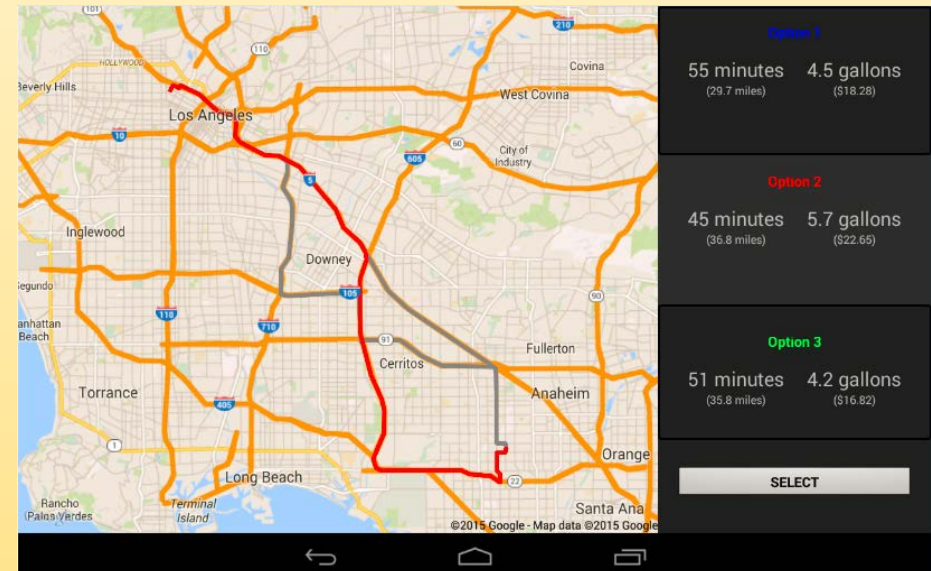
- **Truck Platooning**

- Coordinated Adaptive Cruise Control
- Energy consumption & emissions reduction by 5% - 15%



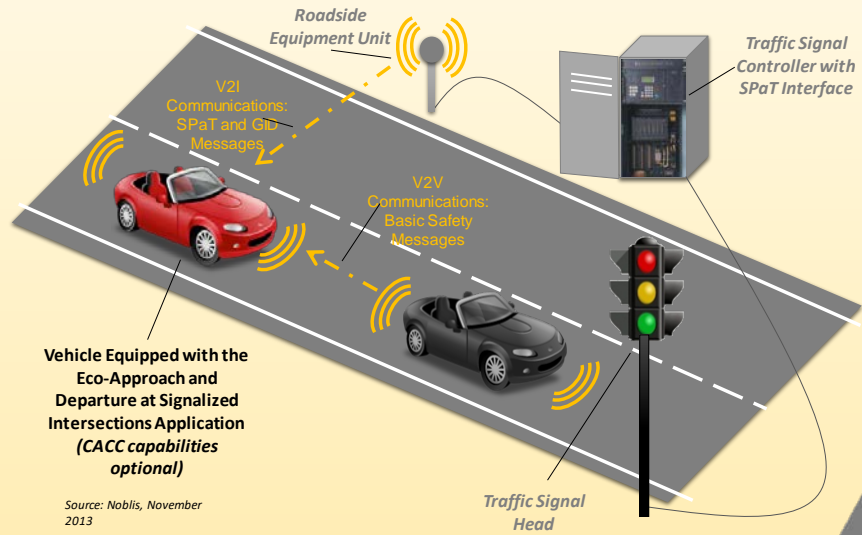
- **Truck Eco-Routing**

- Calculate route that minimize fuel consumption or a specific emission
- Account for real-time traffic, road grade, and combined vehicle weight
- Simulation shows tradeoff between fuel consumption and travel time: 9%-18% fuel savings with 16%-36% travel time penalty



CONNECTED VEHICLE APPLICATIONS FOR FREIGHT

Freight Eco-Approach and Departure at Signalized Intersections

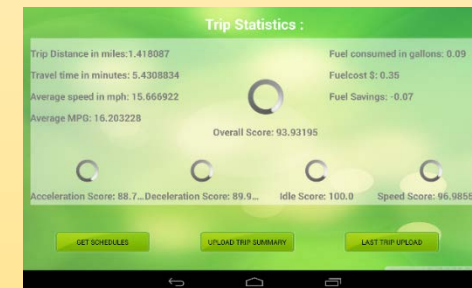
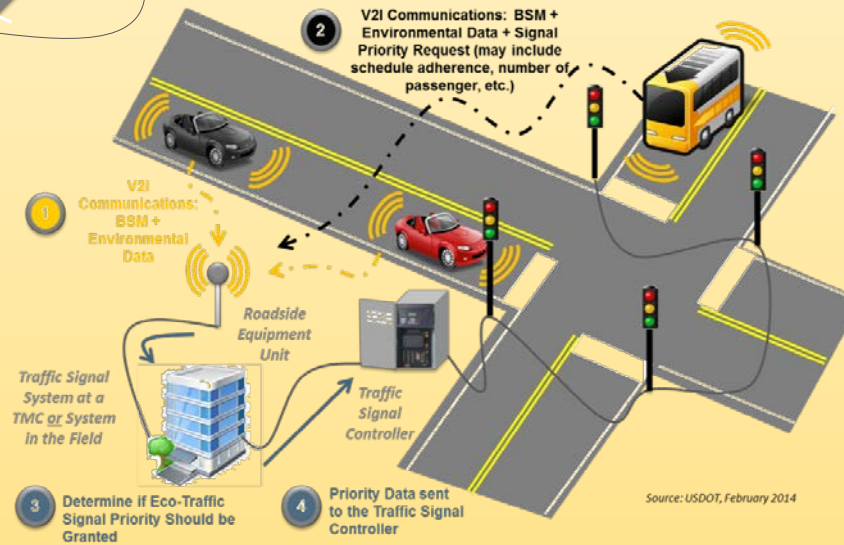


Source: Noblis, November 2013

Truck Eco-Driving

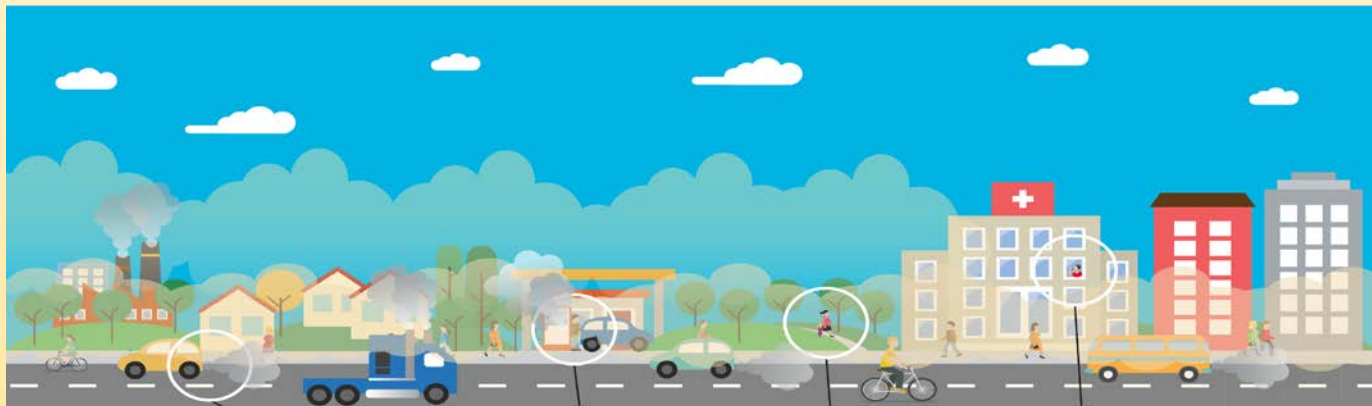


Freight Signal Priority



DYNAMIC MANAGEMENT OF ENERGY AND EMISSIONS (DEEM)

- ***Managing Energy Consumption and Emissions in Real-Time***
 - Dynamic in terms of both spatially and temporally
 - Management from both industry and regulatory perspectives
 - Emissions of greenhouse gases, criterial pollutants, and air toxics
- Objectives of DEEM strategies



EMISSIONS



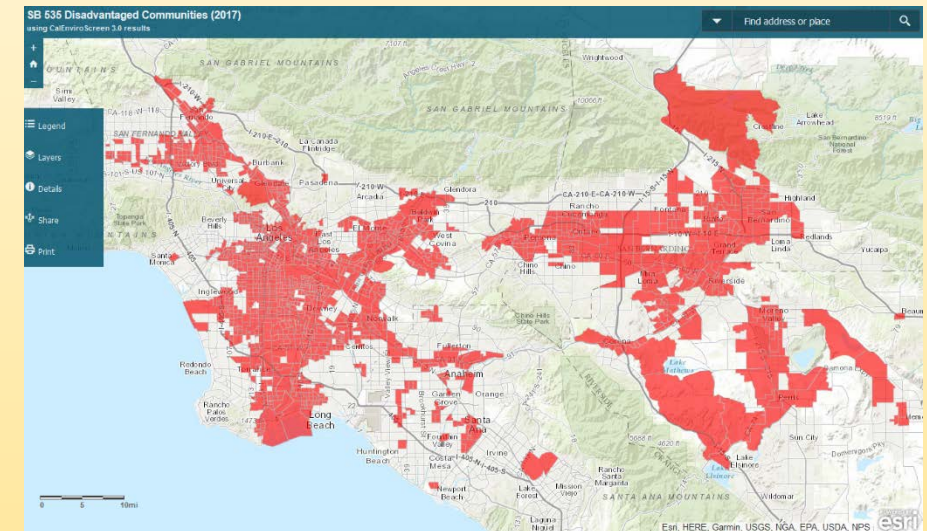
DISPERSION



EXPOSURE



HEALTH IMPACTS



Disadvantaged Communities