

# 2018 FLORIDA AUTOMATED VEHICLES SUMMIT

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*Electric & Autonomous Infrastructure*



# Drive Electric Florida



# Central Florida Clean Cities



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Drive Electric Florida

Central Florida Clean Cities Coalition



# National Clean Cities Program

- Nearly 100 coalitions with 15,000 stakeholders across U.S.
- Has awarded nearly \$400 million to fund hundreds of transportation projects nationwide, which have leveraged more than \$740 million in matching funds
- With MotorWeek, has helped produce over 100 national TV segments on transportation success stories
- Biodiesel, Ethanol, Electric Drive (EVs, PHEVs, HEVs), Propane, Natural Gas, & Fuel Conservation





# Central Florida Clean Cities Program

- Annual National Clean Cities Training Workshop
- Drive Electric Orlando
- E-School Bus Emergency Energy System
- Drive Electric Florida
- Volkswagen Mitigation Funding
- Alternative Fuel Corridors
- Alt Fuel First Responder Training
- Other Initiatives
  - LYNX Electric Paratransit
  - Orlando Greenworks and Smart Cities
  - UCF/SWAT
  - UCF/Duke Park & Plug
  - FSEC/FPL/DEF STEM Electrathon
  - iREV
  - NAFA, FLAGFA, FDOT, SunTrax, Florida AV Summit







- Promote electric transportation and infrastructure
- Focused on legislative initiatives
- Deeply involved in Volkswagen funding
- Broad spectrum of stakeholders







## **Plug-in** to a revolution in motion

Advancing the energy, economic, and environmental security of the state of Florida by promoting the growth of electric vehicle ownership and the accompanying infrastructure.

### **What Electric Transportation Means for Florida**

- ∞ *EVs produce no tail pipe emissions and provide the largest NOx reduction potential*
- ∞ *Increased use of renewables and clean fuels, continues to make Florida's electric grid cleaner*
- ∞ *EV's total environmental impact decreases as the grid becomes cleaner*
- ∞ *The electricity to fuel EV's is produced and sold in Florida, an in-state economic benefit*
- ∞ *Reduced fuel and maintenance costs result in a lower total cost of vehicle ownership*
- ∞ *The greatest impact on declining fuel tax revenue comes from overall fuel economy improvements and hybrids vehicles, not EVs*



# EVs-The Logical Autonomous Platform



THE PERSON IN THE DRIVER'S SEAT  
IS ONLY THERE FOR LEGAL REASONS.  
HE IS NOT DOING ANYTHING.  
THE CAR IS DRIVING ITSELF.

Tesla Autopilot





# EVs-The Logical Autonomous Platform

## Inductive Charging (AKA, Wireless)

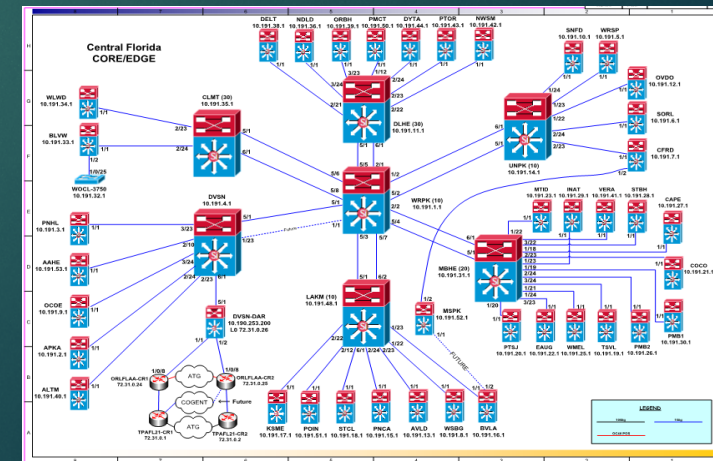
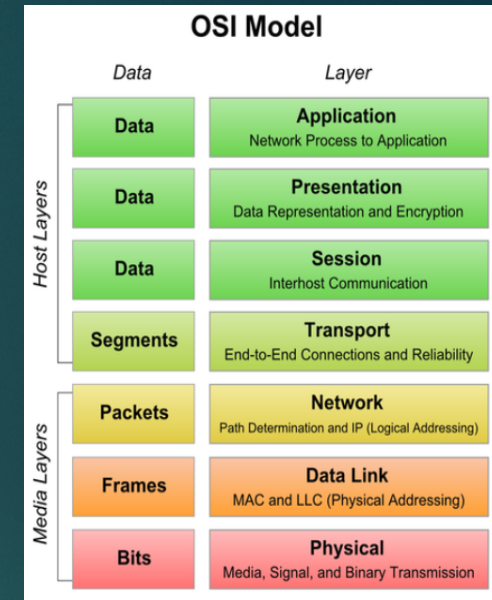
- ▶ *Stationary Application Stats*
  - ▶ *Power transfer efficiency 90%*
  - ▶ *3.3-20kW power*
  - ▶ *SAE TIR J2954, IEEE C95.1-2005 (EMF exposure)*
- ▶ *Commercially Available*
  - ▶ *Plugless*
  - ▶ *Qualcomm HALO*
  - ▶ *WiTricity*
- ▶ *Dynamic Inductive Charging*
  - ▶ *Up to 20kW at highway speed*
  - ▶ *Utah State University*
  - ▶ *Qualcomm/VEDECOM, France*
  - ▶ *England*





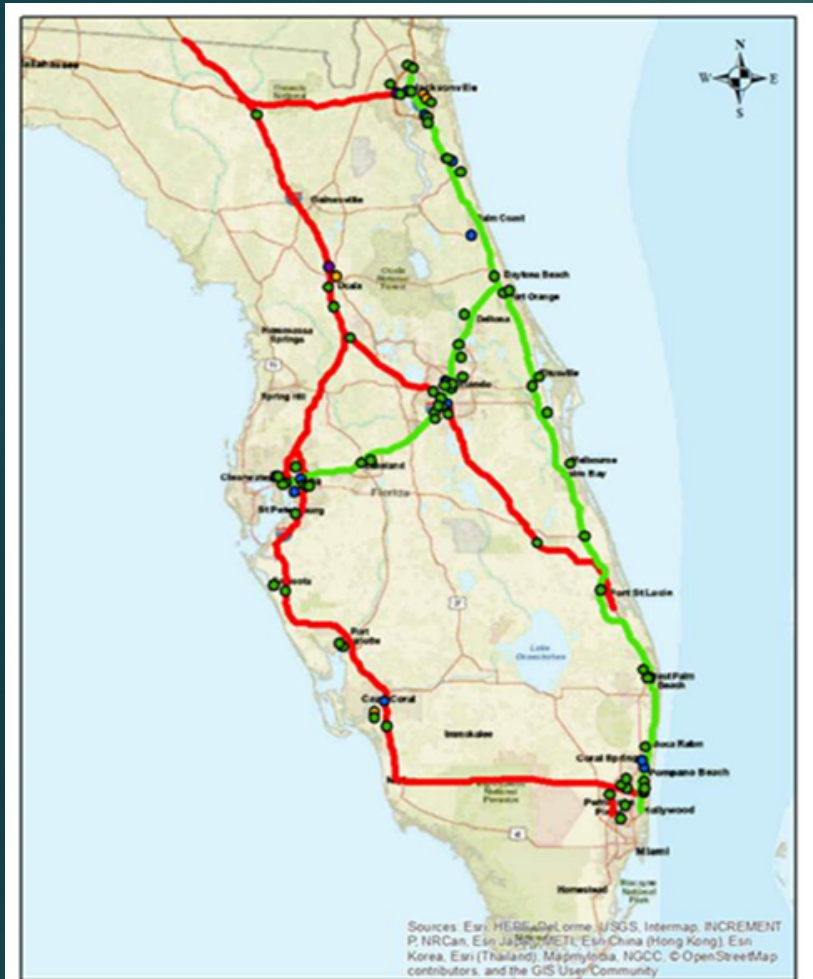
# Autonomous Network Infrastructure Challenges

- ▶ *Physical Plant*
  - ▶ *Network infrastructure has to be route redundant*
  - ▶ *Network powering has to be redundant*
  - ▶ *Network electronics have to be redundant*
- ▶ *Data Transport*
  - ▶ *Spectrum and bandwidth require management and augmentation*
  - ▶ *External applications will drive localized bandwidth demand*
  - ▶ *IP, MAC, software/firmware, inventory and network management*
  - ▶ *Standards management, DSRC interface with private networks*
- ▶ *Resources*
  - ▶ *Staffing has to grow and become/stay highly trained*
  - ▶ *Proactive network management and disaster recovery*
  - ▶ *Capital resource requirements are intense*
  - ▶ *Must be open-sourced, very flexible, outward facing*





# U.S. DOT Alternative Fuel Corridors



Legend		
<span style="color: green;">—</span> Primary Corridor	<b>Secondary Corridor Stations</b>	<b>Primary Corridor Stations</b>
<span style="color: red;">—</span> Secondary Corridor	<b>Fuel_Type</b>	<b>Fuel_Type</b>
	<span style="color: blue;">●</span> LPG	<span style="color: blue;">●</span> CNG
	<span style="color: purple;">●</span> LNG	<span style="color: green;">●</span> ELEC
	<span style="color: green;">●</span> ELEC	<span style="color: purple;">●</span> LNG
	<span style="color: blue;">●</span> CNG	<span style="color: orange;">●</span> LPG

- Establishes a national network of alternative fueling and charging infrastructure along the national highway system
- The Central Florida Coalition is working with the State, multi-state Clean Cities Coalitions, the Federal Highway Administration, Drive Electric Florida and alternative fuel providers on a designation submission
- Designation submission will include all of Florida's Interstates and the Turnpike.
- More information is available at:

► [https://www.fhwa.dot.gov/environment/alternative\\_fuel\\_corridors/](https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/)