

Florida Utilities – Are you Ready for the Rapid Growth of Electric Transportation?

FMEA Annual Conference

July 19, 2018



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“Electric vehicles represent the largest opportunity for utilities to add load growth without extending or adding to peak”

Rocky Mountain Institute - 2016

What has Changed Since the 2016 FMEA Conference?

EV Market Highlights

- EV sales are increasing
 - 871k on the road; ~30% annual growth
 - 550,000 in 2016
- More EVs with larger batteries are coming to market
 - Longer range, e.g. 200+ mile range
 - Battery sizes of 60 kWh to 100 kWh
 - Nissan Leaf battery grew from 24 kWh to 40 kWh
- Charging power (for DC fast charging) is increasing
 - Moving to 120 - 350 kW per cord
- Utility investment in EV charging infrastructure
 - ~\$1.4B in North America

Electric Transit Buses

The total number of fully electric buses delivered for use in public transit in the US grew 83% in 2017, with total buses in service reaching 333.

9% of all transit agencies either have electric buses in service today or have electric buses on order (Source: MassTransitMag – Jan 2018)



Other Electric Vehicles



**City Furniture, Ft Lauderdale, FL Pre-Orders
5 Tesla Semis** They will operate and charge
at Winter Garden facility



Freightliner eCascadia electric semi-truck

**Daimler has 2 new electric trucks
to counter the Tesla Semi**

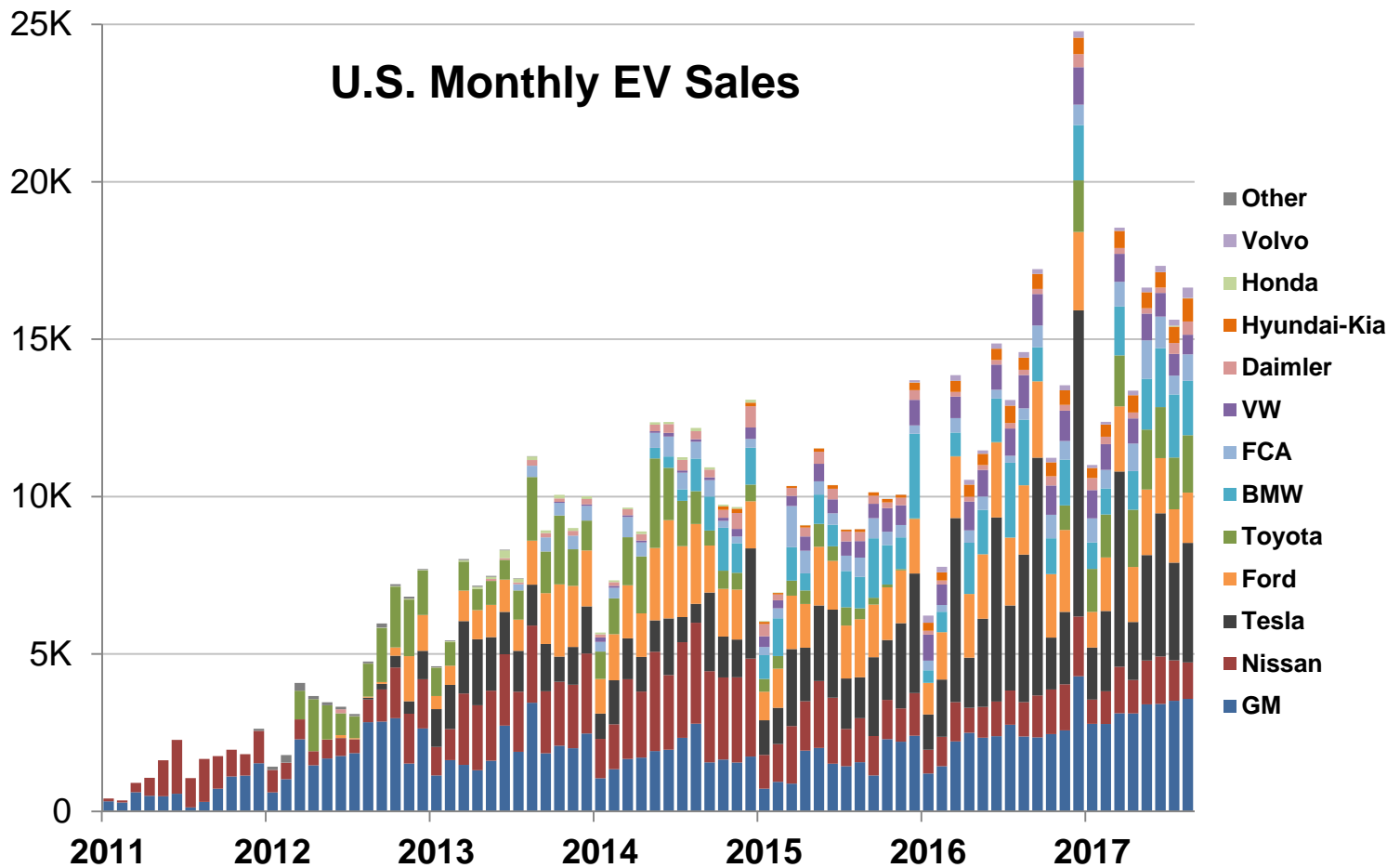
EV Sales Progress

871,000
sales since
Dec. 2010

+32%
2017 sales
YTD vs. '16

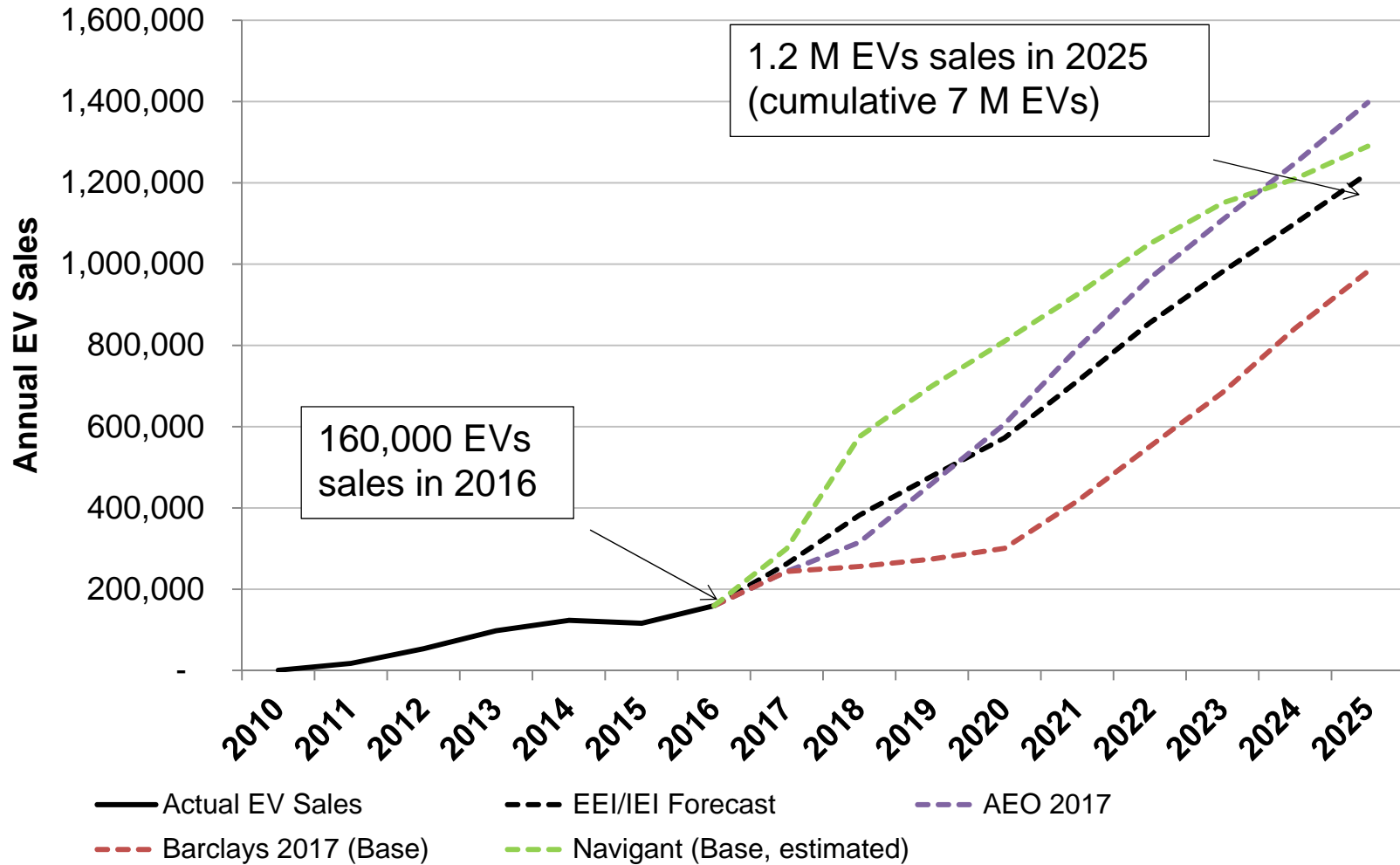
38
PEV models

20
auto brands



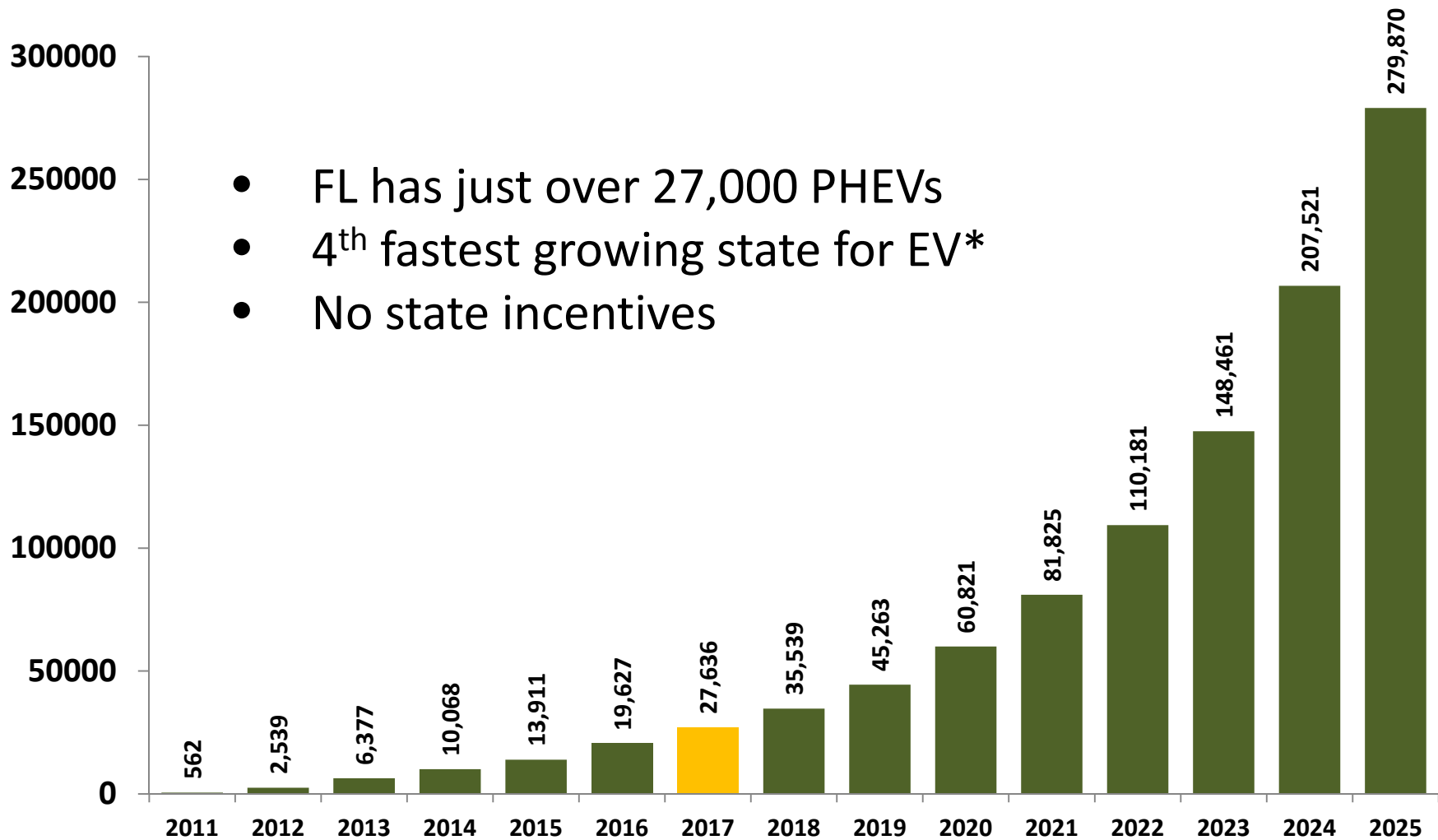
SOURCE: Sales data from InsideEVs.com and HybridCars.com

EV Forecast



Source: EEI

EV Adoption Forecast Florida



- FL has just over 27,000 PHEVs
- 4th fastest growing state for EV*
- No state incentives

Source: Florida Power & Light

Florida Projects

Duke Energy Park & Plug (\$8MIL)

NE Florida “Chargewell” network (\$750K, 4 counties)

Electrify America infrastructure metro areas - Miami one of 16 selected nationally

DC Fast charging islands – 1MW to 2MW per site

City of Orlando Fleet Services - Will add EV infrastructure & continues to add EV in fleet

Electric transit buses

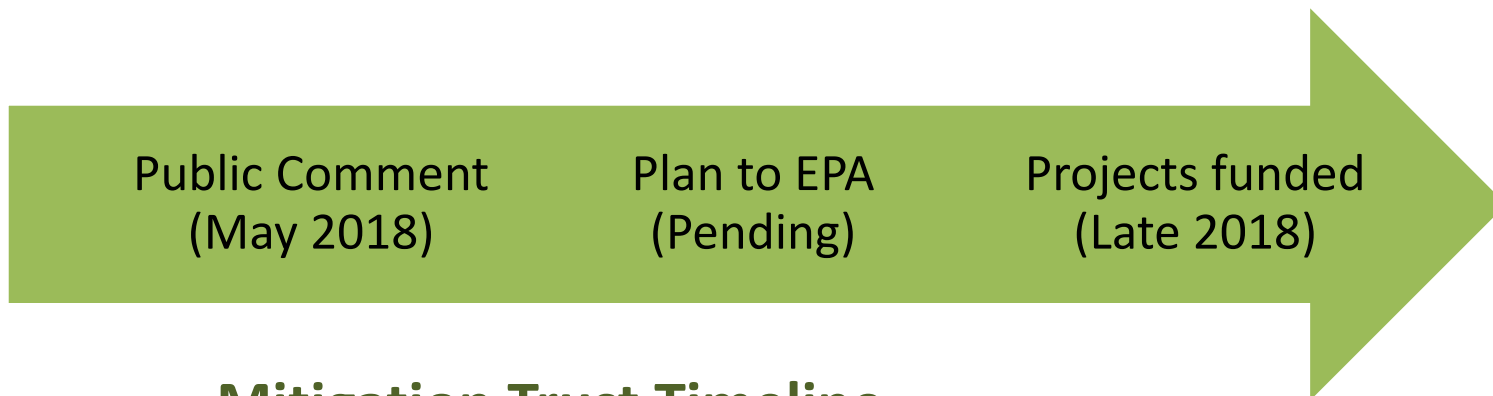
Pinellas, Jacksonville, Broward, Gainesville & Tallahassee

City of Tallahassee charging stations

VW Mitigation Trust & EV Infrastructure Funds?



- 15% EV infrastructure
- Electric transit/school buses



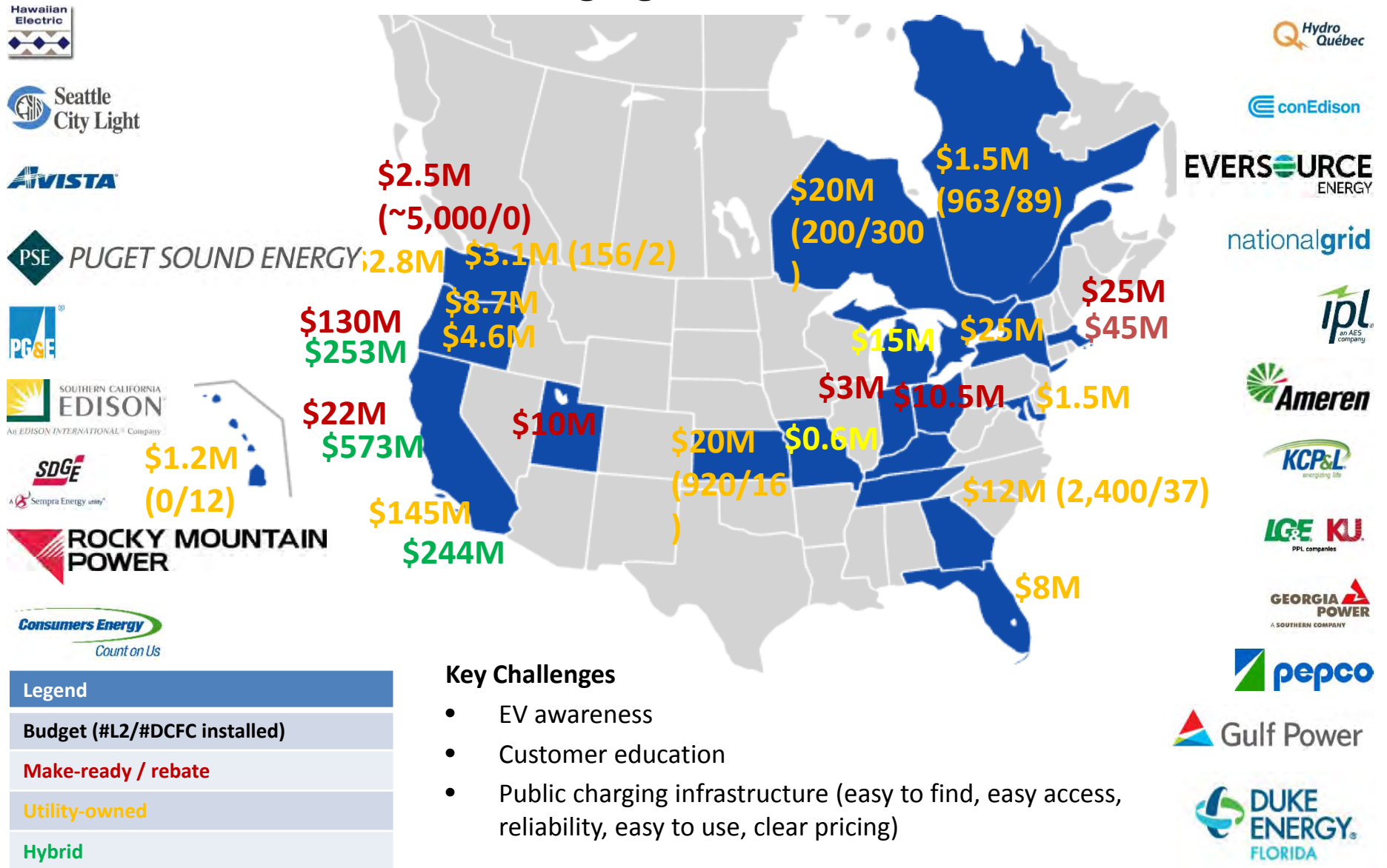
Mitigation Trust Timeline

Utilities and Electric Transportation



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Utilities are proposing ~\$1.4B in EV charging, part of the overall charging investment



Updated: 11/7/017

Slide courtesy of EPRI 2017

Integral Electric Company Role

Grid Integration

- Managed charging / rate design
- System-level planning

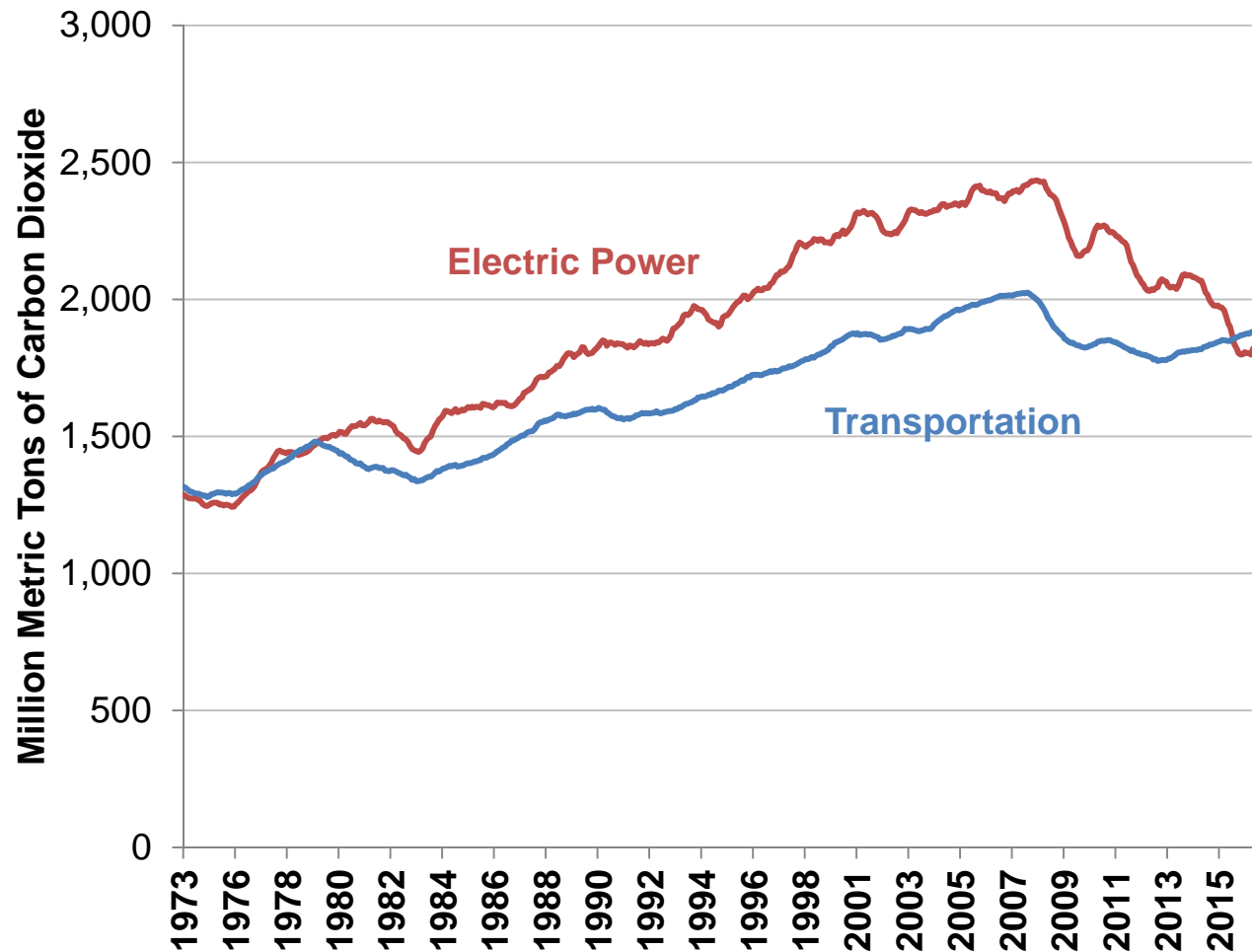
Market Acceleration

- Remove barriers to adoption
- Spur growth and investment

Customer Benefit

- Awareness and education
- Access, equity, reliability

Societal Benefit



Electric Power

nearly **25%** reduction from 2005 levels by end of 2016

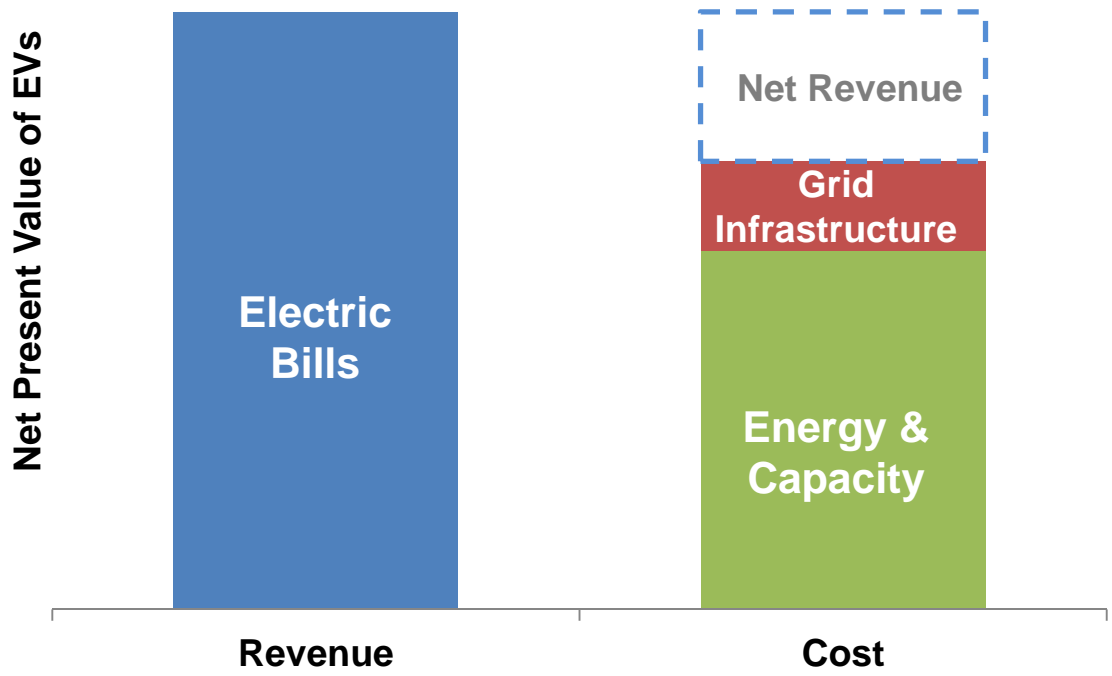
Transportation

decreased 10% 2005-2012, but increased 6% through 2016

SOURCE: EIA, August 2017 Monthly Energy Review



Grid Benefit



EV market is trending to BEVs with higher capacity batteries

Revenue from EV charging exceeds the cost to serve

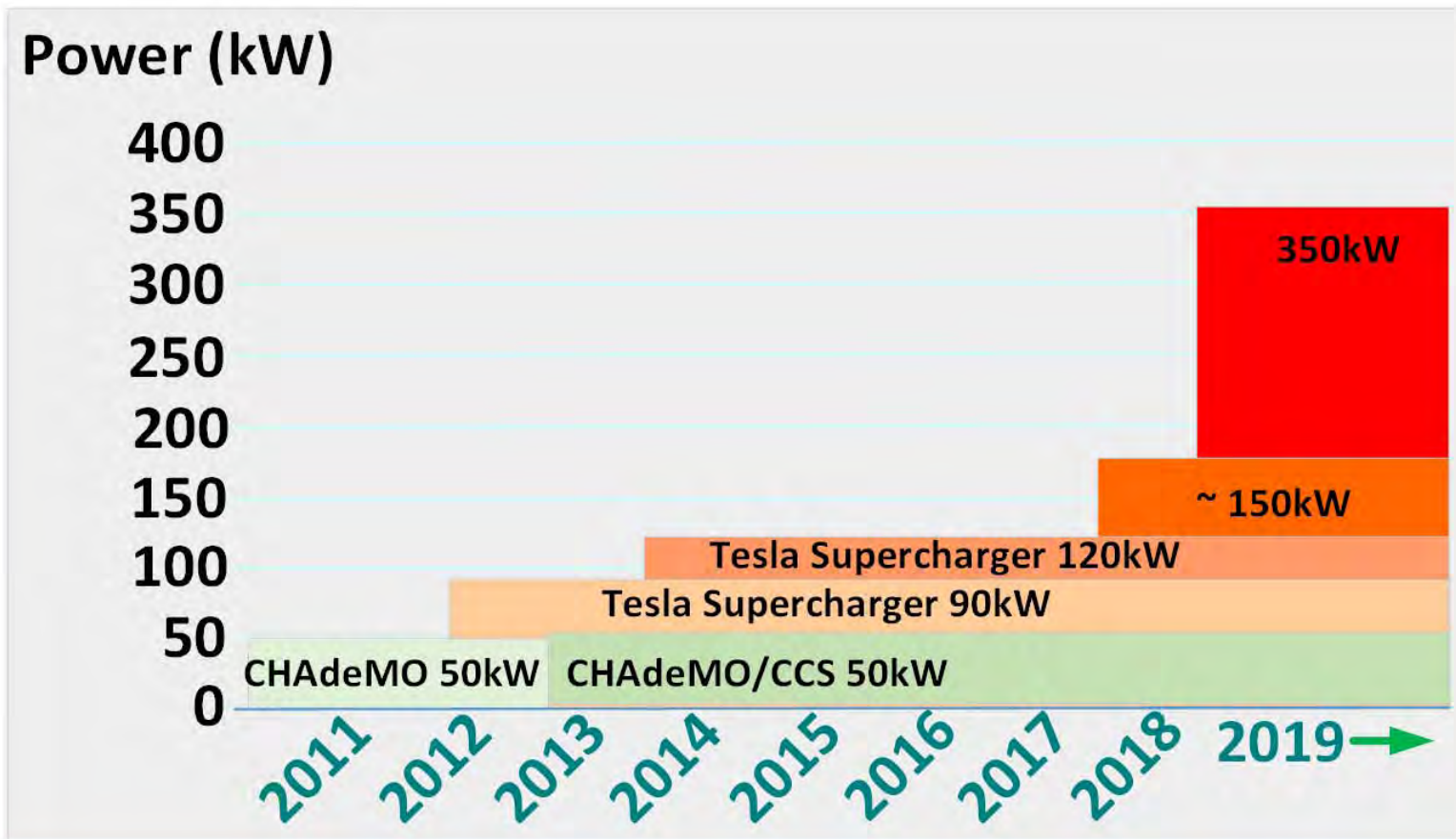


Infrastructure

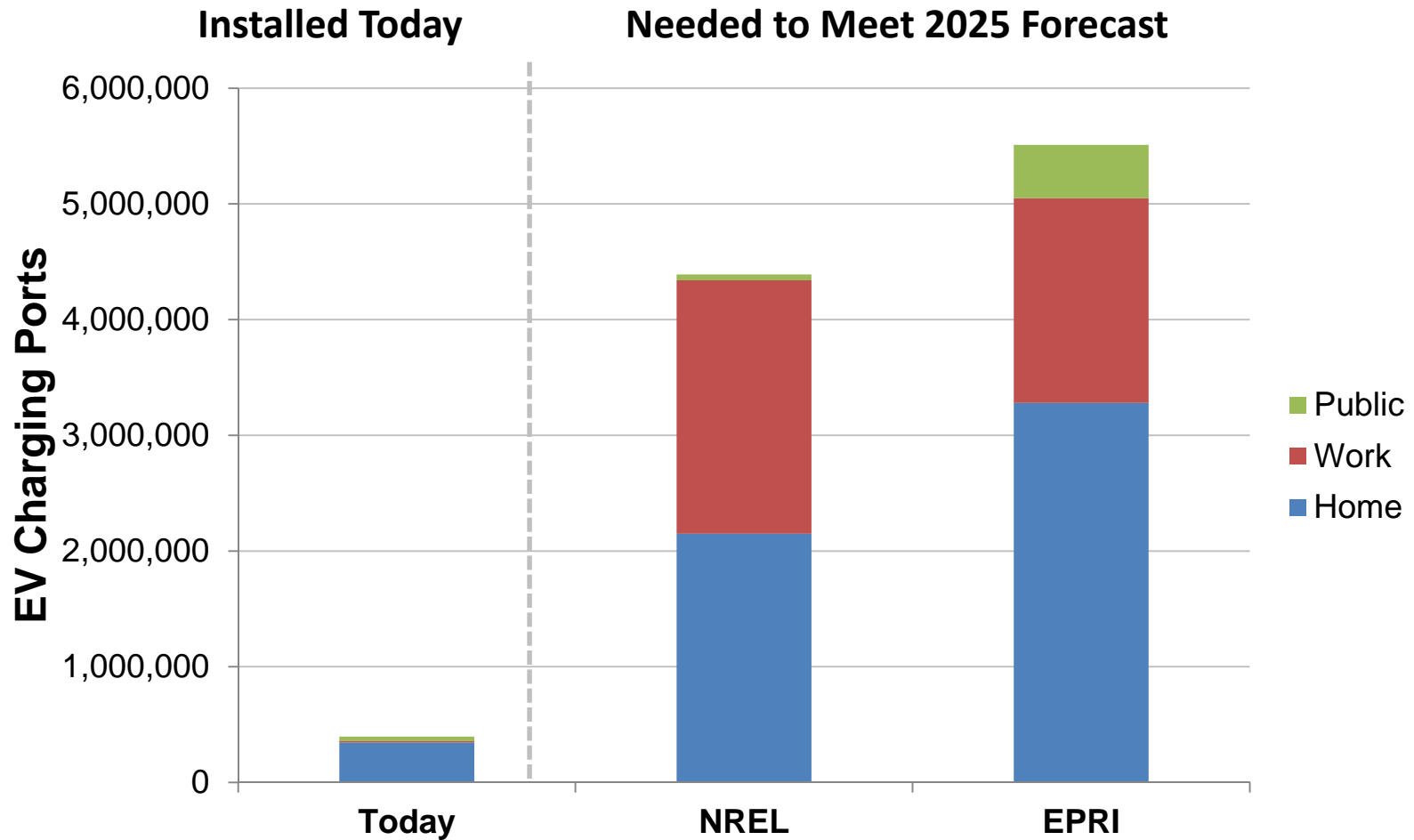


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Charging Levels have been Rising



Charging Infrastructure



Takeaways


- Electric transportation is coming – no longer a question of if, but how fast
- Many different actions can help accelerate this transition
 - Technology cost reduction and model availability
 - Market awareness and customer education
 - Infrastructure access and availability
- Electric companies are well positioned to ensure grid benefits, positive outcomes, and accelerate the market



Duke Energy Florida Park and Plug




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Park & Plug: Bringing EV charging stations to Florida

- \$8MIL agreement with Florida Public Service Commission (FPSC) - *\$400,000 for outreach/education*
- Utility owned & operated through at least Dec 2022
- Seeking qualified site hosts in Duke Energy Florida service territory



Park & Plug: Bringing EV charging stations to Florida

Unique Opportunity to install foundational level of charging infrastructure and gather data for evaluation

- Critical load data for system planning
- Utilization across segment types
- Trends in usage, charging times, segments
- Corridor placement – evacuation routes
- Configurations i.e. DCFC with Level 2 or Single phase “Fast charge”
- Rural vs urban placements
- Inform CAIC calculations

<i>Segment</i>	Multi-unit dwellings (MUD)	Workplaces	“Longer dwell time” public locations	Highway Corridors
<i>EVSE Technology</i>	Level 2	Level 2	Level 2	DC Fast Charging
<i>Minimum EVSE to be deployed (number of plugs or ports)</i>	325 ports	100 ports	75 ports	30 Units Chademo/CCS Combo
<i>Examples</i>	Apartments Condos - Commons Dorms	Offices Employee Parking Small Fleets	Shopping Centers Museums Restaurants Gas stations Public Parking	Near major corridors Adjacent to Tesla Superchargers
<i>Sample driving ranges provided by charge</i>	20 to 30 miles/hour dependent on amperage	20 to 30 miles/hour dependent on amperage	20 to 30 miles/hour dependent on amperage	50 to 80 miles/ 30 minutes at 50KW
<p>**At least ten (10) percent of the charging stations shall be installed in low income communities, as that term is defined in Section 288.9913(3), F.S.</p>				