



Florida Public Service Commission Electric Vehicle Charging Roundtable

Florida Power & Light Co.

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Florida Power & Light (FPL) has acquired extensive Electric Vehicle (PEV) experience in the past seven years

Executive Summary

- **The vehicle and infrastructure landscape has evolved since FPL participated in the FPSC May 2012 workshop**
 - More models available with better range and lower price
 - More charging stations, including DC fast charging stations and workplace charging
- **Our PEV strategy remains unchanged and focuses on:**
 - Reliability
 - Meeting customer expectations
 - Supporting market expansion
- **FPL is planning for and evaluating the reliability impacts of new PEV load**
- **FPL views PEV related activity as part of normal business and has not filed any requests with the commission**

Our actions support the expansion of the PEV market for the benefit of all FPL customers



The vehicle and infrastructure landscape has evolved since the FPSC May 2012 workshop

Vehicle and Infrastructure Landscape

Vehicle

Then

- Battery Electric Vehicles (BEV) <100 mile range¹
- 14 models in Florida in October 2013
- High price
- Mostly affluent buyers
- ≈ 24k in US at YE 2011
- Some OEM's not in-the-game

Now

- Battery Electric Vehicles (BEV) with >200 range¹
- 36 models in Florida in July 2017
- Price still a premium but declining
- \$30k-\$40k models available
- ≈ 750k in US at YE 2017
- Virtually all OEM's announcing big plans for 2020 and beyond

Infrastructure

- Limited number of public stations
- ARRA² funding with few private investments
- No clear business model
- Primarily site host driven
- Primarily free
- Primarily level 2 (3-6kW)
- Very little interoperability

- ≈2k public charging stations in Florida – third most in the country³
- US highway corridor connected for Tesla
- Volkswagen emission settlement presents tremendous opportunity⁴
 - Electrify America (EA) created to install \$2B in ZEV infrastructure nationwide
 - Highway corridors and metro areas
 - Mitigation trust – Florida can spend up to \$25M on PEV infrastructure
- Shift towards DC fast charging at 50-350kW per handle
- 1-3 MW banks being installed
- Interoperability expanding

¹ BEV is fueled exclusively with batteries versus a Plug-in Hybrid Electric (PHEV) which has a back up gas engine. The Nissan Leaf and Tesla S are BEV's while the Chevy Volt is a PHEV.

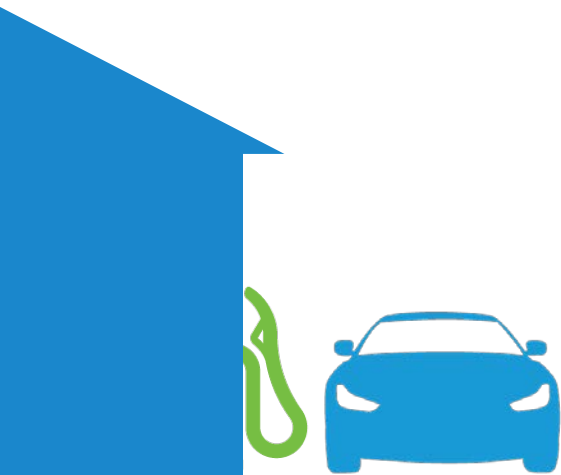
² American Recovery and Reinvestment Act

³ https://www.afdc.energy.gov/fuels/stations_counts.html

⁴ See Appendix slides 11-14

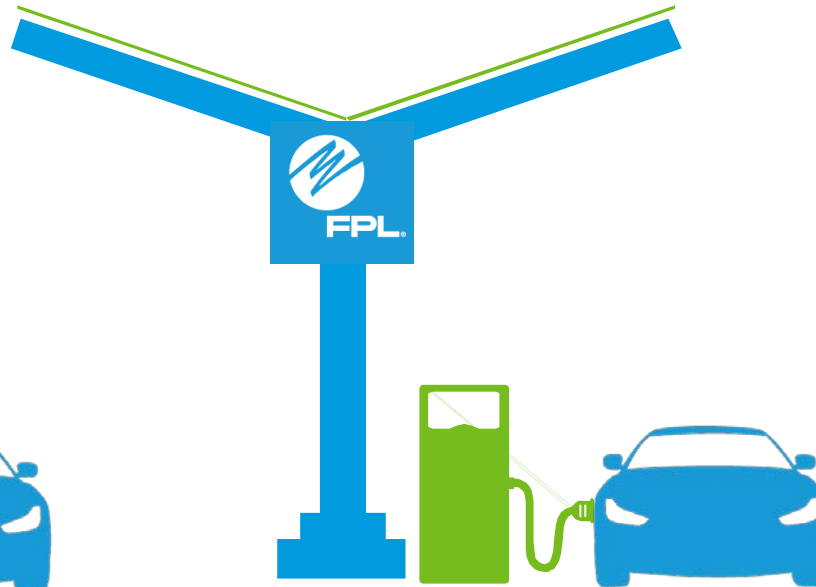
The industry charging model keeps evolving

Charging



at home

Always available and cheap



at work

Growing availability often FREE



Retail Center

on the go

Might be available and FREE

FPL's PEV strategy has remained unchanged

FPL PEV Strategy

Support Expansion of PEV Market

- Expand PEV fleet and utilize PEVs to perform work
- Support infrastructure development by others
- Engage government officials and commercial customers on PEV related initiatives
- Encourage supportive PEV regulatory and legislative policy

Meet Customer PEV Expectations

- Ensure FPL processes and systems support PEV buyers
- Understand PEV expectations of FPL
- Be the subject matter experts on PEV issues
- Support city, county and state informational needs

Ensure Reliable Service

- Track existing and forecast future adoption for planning purposes
- Understand impacts of chargers on FPL's grid
- Understand impacts to load forecasting

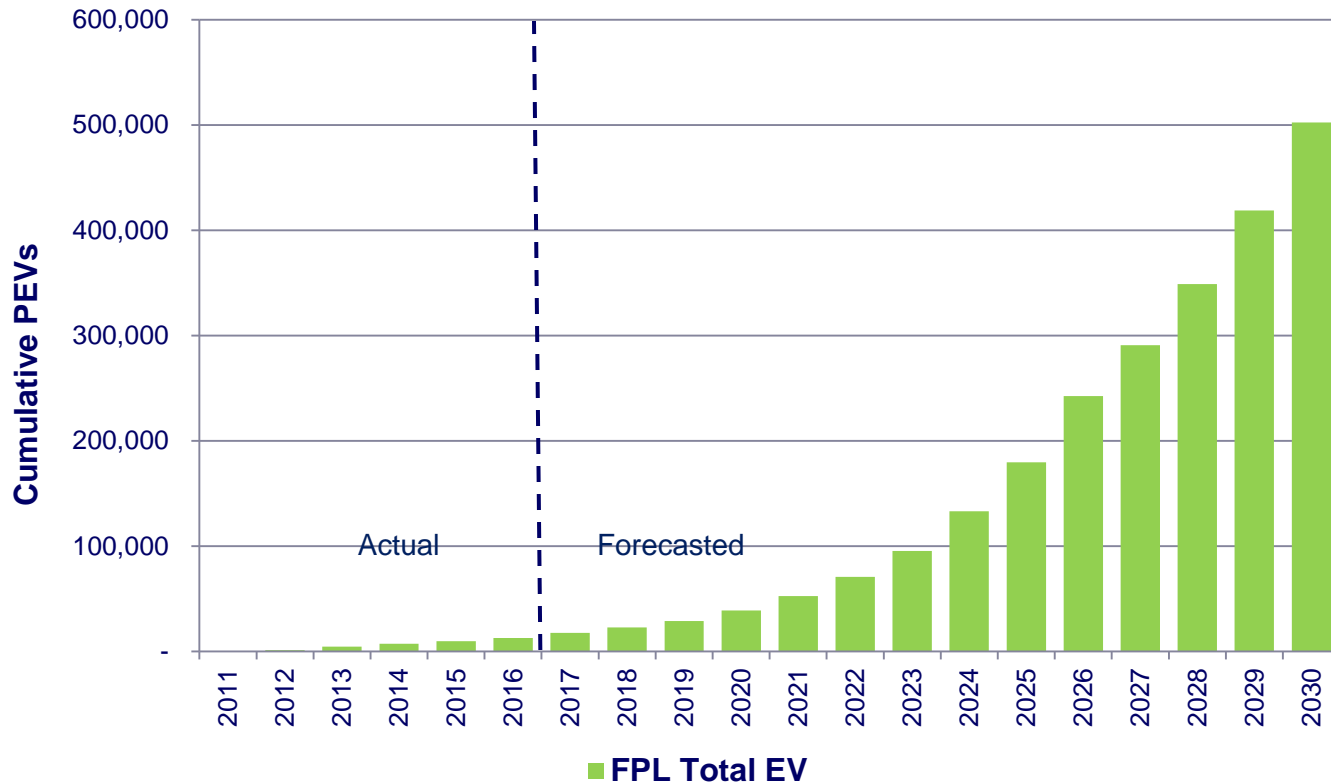


Our three pronged approach to PEV's supports adoption, customers needs and reliability



FPL forecasts PEV growth annually and incorporates into its ten year site plan

Plug-in Electric Vehicle Forecast¹



A PEV added to FPL's grid produces a net benefit, putting downward pressure on rates²

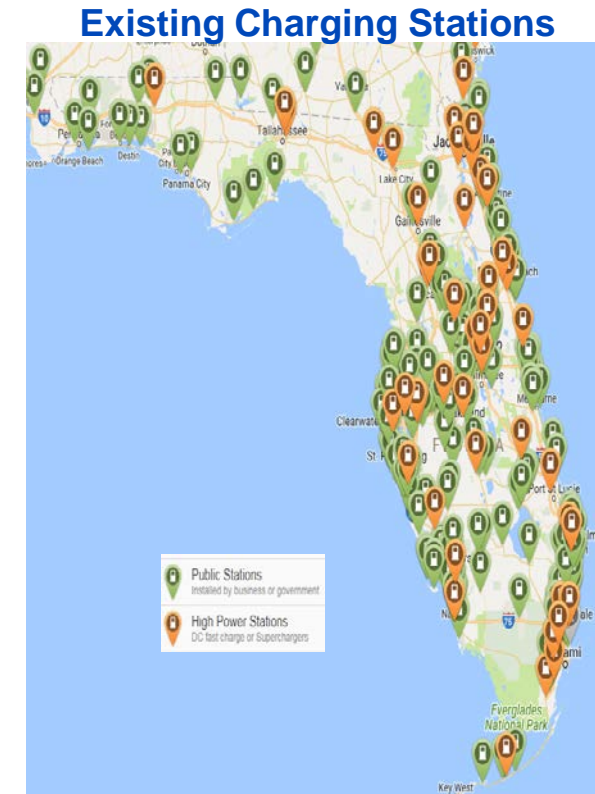
¹ FPL uses county level DMV data to track PEV growth in its service territory

² Cost effectiveness performed as part of PEV Analysis in September 2017

There are already a modest number of public charging stations in Florida

Public Charging Stations

- **FPL has worked closely with Tesla, EvGo, and others to ensure successful installations**
 - Some sites are as large as 1-3 MW's
- **Electrify America (EA) will be ramping up installations in early 2018**
 - FPL has met with EA to understand their Phase 1 Zero Emission Vehicle (ZEV) plans
 - Highway corridor and Miami metro
- **FPL advocates that the state allocate the 15% (\$25M) Mitigation Trust cap to PEV infrastructure**
 - If coordinated well, the mitigation funding and EA's ZEV plans will go a long way towards Florida's PEV infrastructure needs

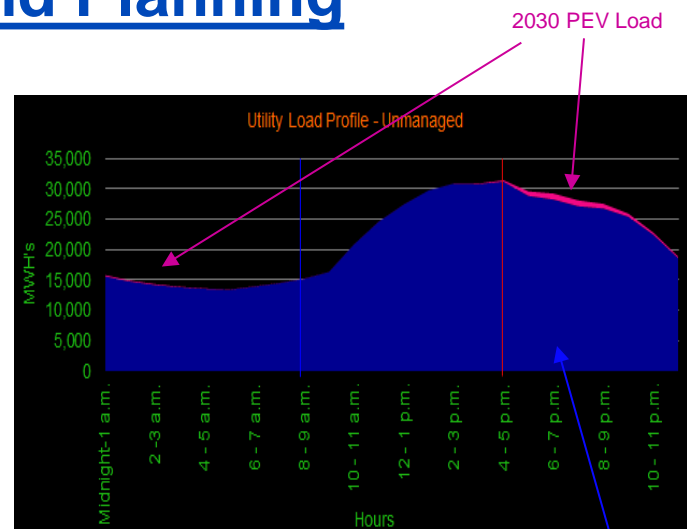


The citizens of Florida stand to benefit from existing and planned future infrastructure development

Managing load growth is a core competency for utilities, and FPL is taking steps to account for new PEV load

Impacts on Grid Reliability and Planning

- Forecast part of ten-year site plan
- FPL has modeled impacts to system peak under various scenarios through 2030
- Grid reliability study completed
 - Concluded that there will not be any significant impact on power distribution through 2030
 - Small residential transformers present the highest risk
- To date, FPL is not aware of a single outage caused by PEV charging
- Florida utilities accustomed to higher loads due to sub-tropical climate and air conditioning loads
- Work with infrastructure providers to understand plans



FPL views PEV related activity as part of normal business and has not filed any requests with the commission

Future Regulatory Considerations

• PEV rates

- There is no present need for FPL to request a special PEV charging rate
 - FPL research shows most PEVs naturally charge outside of FPL's peak hour
 - FPL standard rates are lower than some off-peak PEV rates across the country
 - By itself, a lower rate not likely to incent more adoption given FPL's already low rates
 - A PEV charging rate would likely require customer to make expensive investment to accommodate separate meter resulting in additional cost
 - PEV customers can opt for FPL's whole house TOU rate
- FPL will continue to evaluate PEV rate options for future consideration

• Infrastructure

- FPL is supporting infrastructure development in its territory using existing construction resources, policies and, procedures
- FPL is monitoring infrastructure activities of other utilities nationwide
 - FPL has analyzed scenarios on installing PEV infrastructure, but has not found them to be cost-effective
- FPL will continue to evaluate PEV infrastructure options for future consideration