

A large, decorative blue wave graphic that starts as a light blue shape on the left and curves upwards and to the right, ending as a solid blue shape on the right side of the page.

# **Plug-in Electric Vehicles**

**Florida Public Service Commission Staff - PEV Workshop**

**September 6, 2012**

**FPL's experience with Plug-in Electric Vehicles (PEVs) is extensive, and we operate one of the largest green utility fleets in the nation**

## FPL's Green Fleet

- FPL managed an active electric vehicle program during the 1990s
- First utility to put a medium-duty hybrid bucket truck into service in 2006
  - Deployed first plug-in hybrid electric bucket truck in 2008
  - Currently have 53 PEV's in our fleet and have installed about 56 chargers to support them
  - Will continue to convert our fleet to PEVs whenever possible



**By 2009, there were signs that the PEV market was making a comeback**

## **Market Developments**

- **Major auto manufacturers announced that they were bringing PEVs to the market**
  - August 2009, Nissan announces they will launch the Leaf in late 2010
  - December 2009, GM announces 2010 launch of the Volt
- **Passing of the American Recovery and Reinvestment Plan (H.R.1.) in February 2009**
  - Includes substantial funding to spur PEV growth
- **FPL began receiving inquiries from customers**

**FPL recognized these developments and took action**

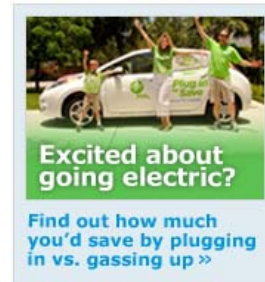
# In response to market developments, FPL launched a PEV program in November 2010

## FPL PEV Program Categories

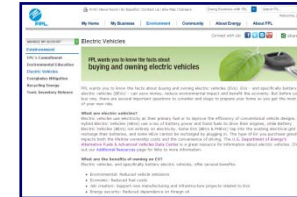
### Ensure Reliable Service



### Meet customer PEV expectations



Share:



### Support expansion of the PEV market



### Utilize PEVs in our fleet

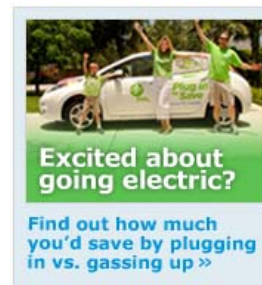


# In response to market developments, FPL launched a PEV program in November 2010

## FPL PEV Program Categories

- Processes to support customer questions
- Creation of brochures and fact sheets
- PEV website on FPL.com
- Dedicated email address for technical or complex issues

### Meet customer PEV expectations



Share:

### Support expansion of the PEV market

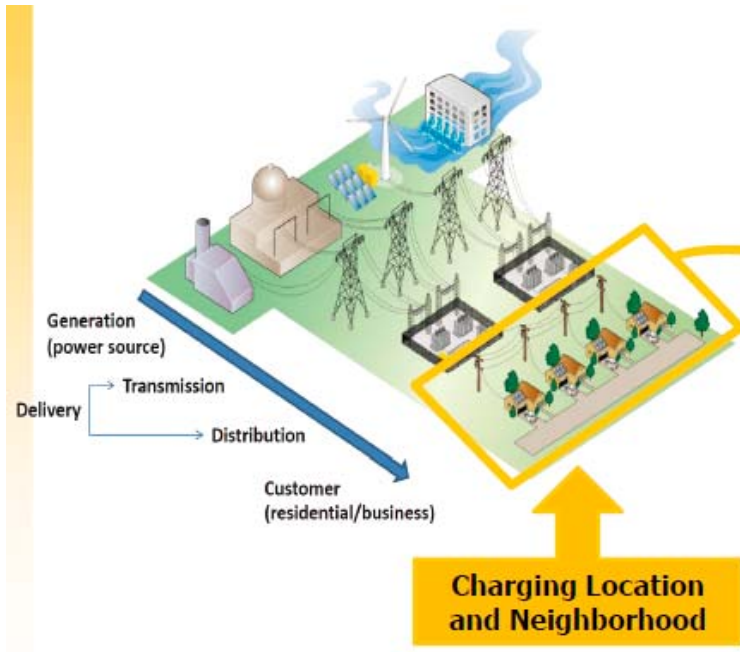


- **Working closely with local and state government entities**
  - Sub recipient of a Department of Energy (DOE) PEV planning grant
  - Charging initiatives
- **Support numerous PEV events across our service territory**
- **Education and outreach**

**Education and outreach are important steps to removing barriers to wide-spread adoption of PEVs.**

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

## Ensuring Reliable Service

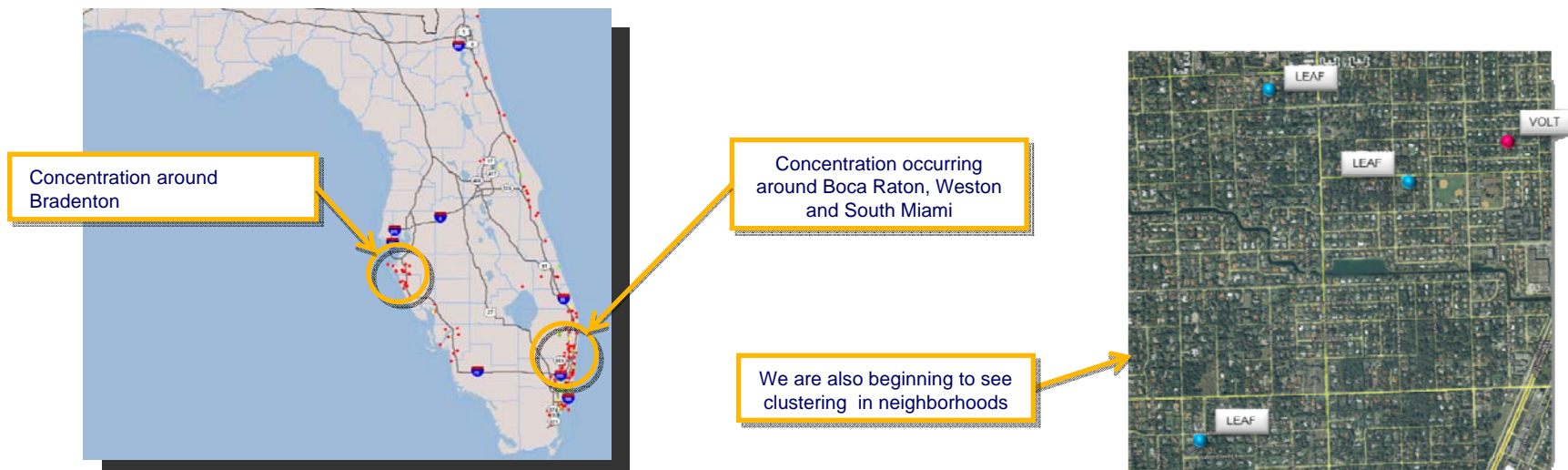


- The kW load to charge a PEV at Level 2, is comparable to a central air conditioner
- Slow penetration rate affords utilities time to prudently plan for it
  - PEV load in FPL 10 year site plan since 2009
    - 2020 estimated summer peak impact = 115 MW
- No foreseeable generation or transmission impacts for utility
- Focus is on the utility assets closest to the home
  - Transformers and secondary wires and conductors
  - Service drops

# Identification of PEVs in our service territory allows us to ensure continued reliability

## Known<sup>1</sup> PEV Distribution in FPL Territory

- Attempting to identify PEVs in our service territory
- Mapping those that we are aware of
- Assessing impacts on the system



<sup>1</sup> n=150. This represents approximately 1/3 of all registrations through April, 2012.

**There is currently no formal utility notification process. FPL is made aware of individual vehicles voluntarily through customers and some automakers**

**In January 2012, we launched a residential charging pilot to assess real-world charging impacts on our grid**

## Residential PEV Charging Pilot Program



Pilot launched in January with installations expected through Q3. Study period ends after one year, rolling basis.

- **We are capturing informative data from the pilot. To date:**
  - Most PEV charging naturally occurs when people arrive home from work (after FPL's peak)
  - The median charge session delivers 5.4 kWh in approximately 1.5 hours at the standard 3.3 kW charge rate

**The results of our pilot will help us plan for PEV market expansion without negatively impacting system reliability**





## **Some parts of the country have implemented off-peak PEV charging rates**

### **PEV Charging Rates**

- **There are primarily two reasons for offering an off-peak PEV rate**
  - Shift load off-peak
  - Incent PEV purchases
- **Requires a separate or sub meter which increases the cost to the customer and the utility**
- **Adds complexity and time to the charger installation process**
- **Implementation of a PEV rate in Florida is not needed at this time**

**Solar PV can provide energy for charging PEVs, however, it would be impractical for it to be the sole source of power for PEV charging**

## **Solar PEV Charging**



**Solar carport at NextEra Energy HQ, Juno Beach, Florida**

- 50kW at peak production
- 8 charging stations that can charge at up to 7kW each

### **Pros**

- Zero Emissions
- Relieves impact to grid during peak solar power

### **Cons**

- Only provides power for charging during daylight hours – peak times are 10:00am – 2:00pm daily
- Currently expensive to install
- Requires storage (currently large, expensive batteries) or a grid tie-in, for times when sun is not shining or to send power back to grid when charging demand does not equal solar output

**While solar PEV charging has great benefits, it is expensive and for practical purposes needs to be connected to the grid**

**Achieving mass market adoption of PEVs would provide many societal benefits but getting there will not be easy**

## **Final Thoughts**

- **Slow adoption affords utilities time to plan**
- **Plan for the future not for today's nascent market**
- **Our industry involvement gives us a seat at the table to make decisions and monitor changes as they occur**
- **Policy decisions should be based on the needs in Florida not necessarily what is happening in other parts of the country**

**FPL is taking action to ensure we understand PEV charging and its impact on the grid. We are positioned to leverage our knowledge and experience to maintain our outstanding reliability record!**

