Electric Transportation Initiatives

PSC Workshop: Electric Vehicle Charging

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State of Plug-in Electric Vehicles in PEF's territory

- Plug-in Electric Vehicles (PEV) have arrived
  - Tesla, Mitsubishi "i", Nissan LEAF, Chevy Volt, Fisker Karma, Smart Electric Drive, Wheego
  - Many others coming soon: Ford Focus EV, Fusion and C-Max Energi, Prius PHEV, BMW i3, Chevy Spark…
- 2020 estimates vary greatly, 2% to 10% of new purchases
- Growth beyond 2020 depends on customer acceptance, government policy, price of gasoline, efficiency standards, and battery cost

Strategic objective

Progress Energy will provide safe, reliable, and affordable electricity to power the movement of people and goods.

Progress Energy will help advance the infrastructure and technology necessary to support the widespread use of plug-in electric vehicles to help our customers save money and reduce their impact on the environment.

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Approach

- Collaborate
  - Stakeholder engagement across multiple industries, communities, and other organizations
  - Support and contribute to industry standards
- Investigate
  - Understand the technology
  - Understand the customer
  - Understand the impact
- Educate
  - Sharing what we learn
  - Providing essential and balanced information to customers

Approach: Collaborate

Our customers are also their customers

- Plug-In electric vehicle stakeholders share the same customer.
  - Vehicle Manufacturers
  - Charging Equipment Manufacturers and Installers
  - Local Governments and Communities
  - Utilities

- Shared Critical Issue: Safety and maintaining the integrity of the local power distribution system

- Shared Desired State: End-to-end customer satisfaction. A positive customer experience is important to each stakeholder.

Approach: Collaborate

- Partner with our customers and other key stakeholders to investigate and educate:
  - Project Get Ready: Rocky Mountain Institute
  - Get Ready Central Florida (PlugAndGoNow.com)
  - Get Ready Tampa Bay (GetReadyTampaBay.org)
  - NC Get Ready!
  - DOE Clean Cities
  - Electric Power Research Institute
  - Electric Drive Transportation Association
  - Edison Electric Institute

Approach: Investigate

- Research new vehicle offerings and understand potential for fleet use
  - Light vs. Medium vs. Heavy Duty
- Fleet integration
- Prototype testing: Ford Escape PHEVs
- Charging technology and needs
  - EVSE R&D
  - Communication pathways
  - Charge management
  - Grid impacts

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Approach: Educate

Public outreach and education

- Project Get Ready
  - Get Ready Central Florida & Tampa Bay
- Supporting development of educational websites www.GoElectricDrive.com
- Company Channels
  - www.duke-energy.com/plugin
  - Brochures and newsletters
  - FAQs
  - Outreach events

Initial results and next steps

Initial results:

- At the macro level, the impact will likely be negligible for many years.
- In the near term, issues may arise closer to the customer due to clustering, unique transformer loading, age of home.
- Impact depends on vehicle adoption rates and customer charging behavior.
- Simple smart charging can help shift load/avoid peaks…if needed.

Focus on research and standards:

- To better understand customer charging behavior and grid impacts
- To develop products and services that meet our customers needs, while maintaining safe, reliable and affordable electricity.

Watch List:

- Higher levels of residential charging (> 6kW) and DC Fast Charging
- Clustering, PQ, and thermal degradation at higher penetrations
- Communication standards and charge management technologies

Summary

- Electricity provides a cleaner, cheaper, and locally produced fuel solution to our transportation challenges
- Serve our customers energy needs by providing reliable electricity
- Collaborate, investigate, educate
- Minimal impact near term…more to learn