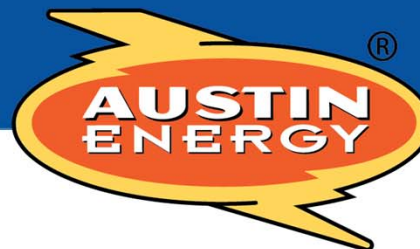


[www.austinenenergy.com](http://www.austinenenergy.com)



# Plug-In Electric Vehicles Program Update May 2015

## Resource Management Commission

Austin Energy Contact:

Karl Popham  
Mgr, Electric Vehicles & Emerging Technologies



CLEAN, AFFORDABLE, RELIABLE ENERGY AND EXCELLENT CUSTOMER SERVICE





# Strategic Vision

City Resolutions to promote the environmental, community, utility, national security, and economic benefits:

- PEV Incentives & Leadership (050301-48)
- PEV Feasibility Report (040729-78)
- Energy Research; Pecan Street Inc. (20080925-084 & 20090806-033)
- Supports Imagine Austin Plan
- Supports Climate Protection & Gen. Plan
- PEV station parking enforcement 20140213-045



Austin Energy PEV programs are fully compliant with COA Resolutions





# Recognition & Awards

Top 10 Networked  
Utility North America &  
#1 "coolest" EV project  
–GreenTech Media

Two "Bronze Quill"  
Communications  
Awards -IABC  
2015 Best EV Practices  
-eSource

2014 & 2015,  
Top 10 City for EVs  
-ChargePoint  
2015 EV Best Practice  
-Chartwell Inc.

*"Austin Energy's charging network – now with more than 170 stations – is one reason people are looking at electric cars." –YNN News*

*"Austin a top city for electric cars," –Austin Business Journal*

*"The utility has earned a reputation as a national player in plug-in vehicles..."  
–Austin American Statesman*

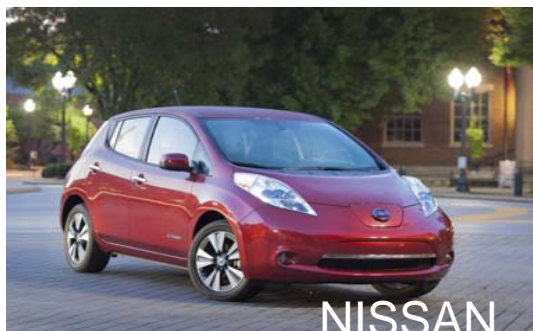
*"Which are best cities for electric vehicles?" Austin ranked #4 nationally.  
–USA Today*



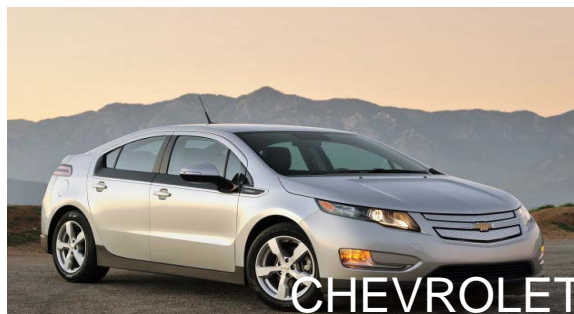


# Plug-In Vehicles on the Road

## Economy



## Mid-Tier

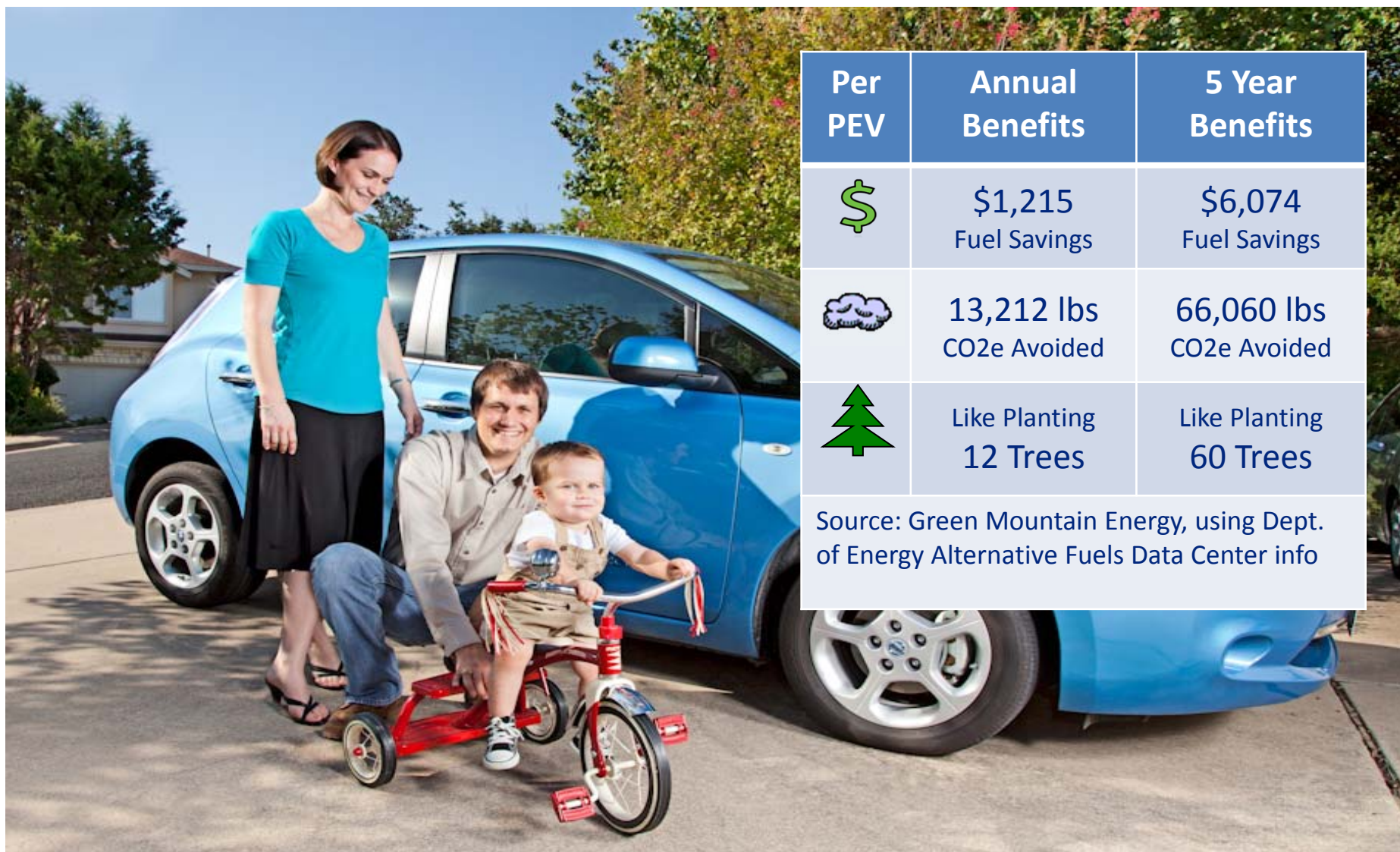


## Luxury





# A Cleaner, Cost-Effective Choice

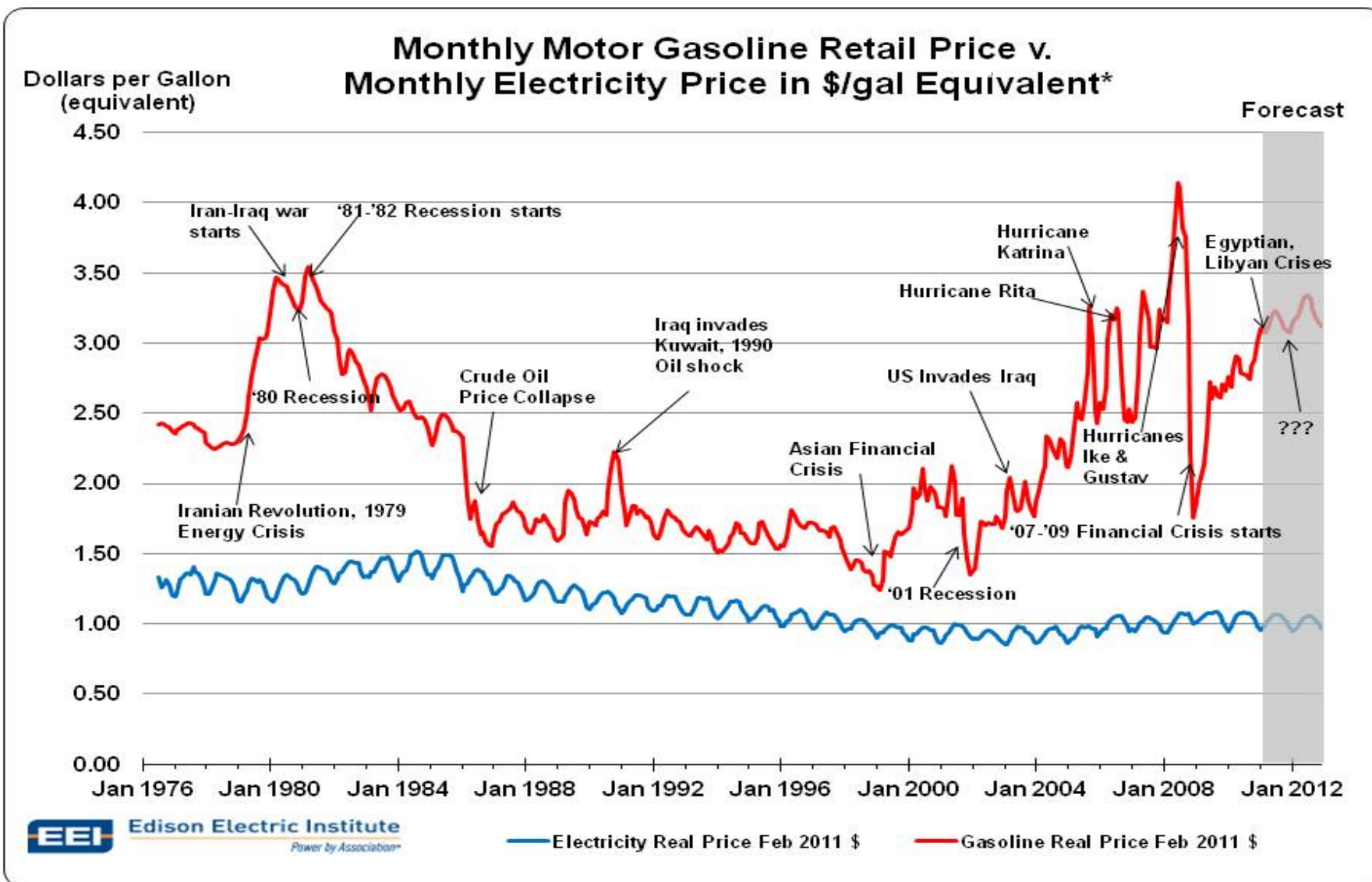


Per PEV	Annual Benefits	5 Year Benefits
\$	\$1,215 Fuel Savings	\$6,074 Fuel Savings
	13,212 lbs CO2e Avoided	66,060 lbs CO2e Avoided
	Like Planting 12 Trees	Like Planting 60 Trees
Source: Green Mountain Energy, using Dept. of Energy Alternative Fuels Data Center info		





# Price Stability vs. Gasoline





# Electric Vehicle "Fill Up"





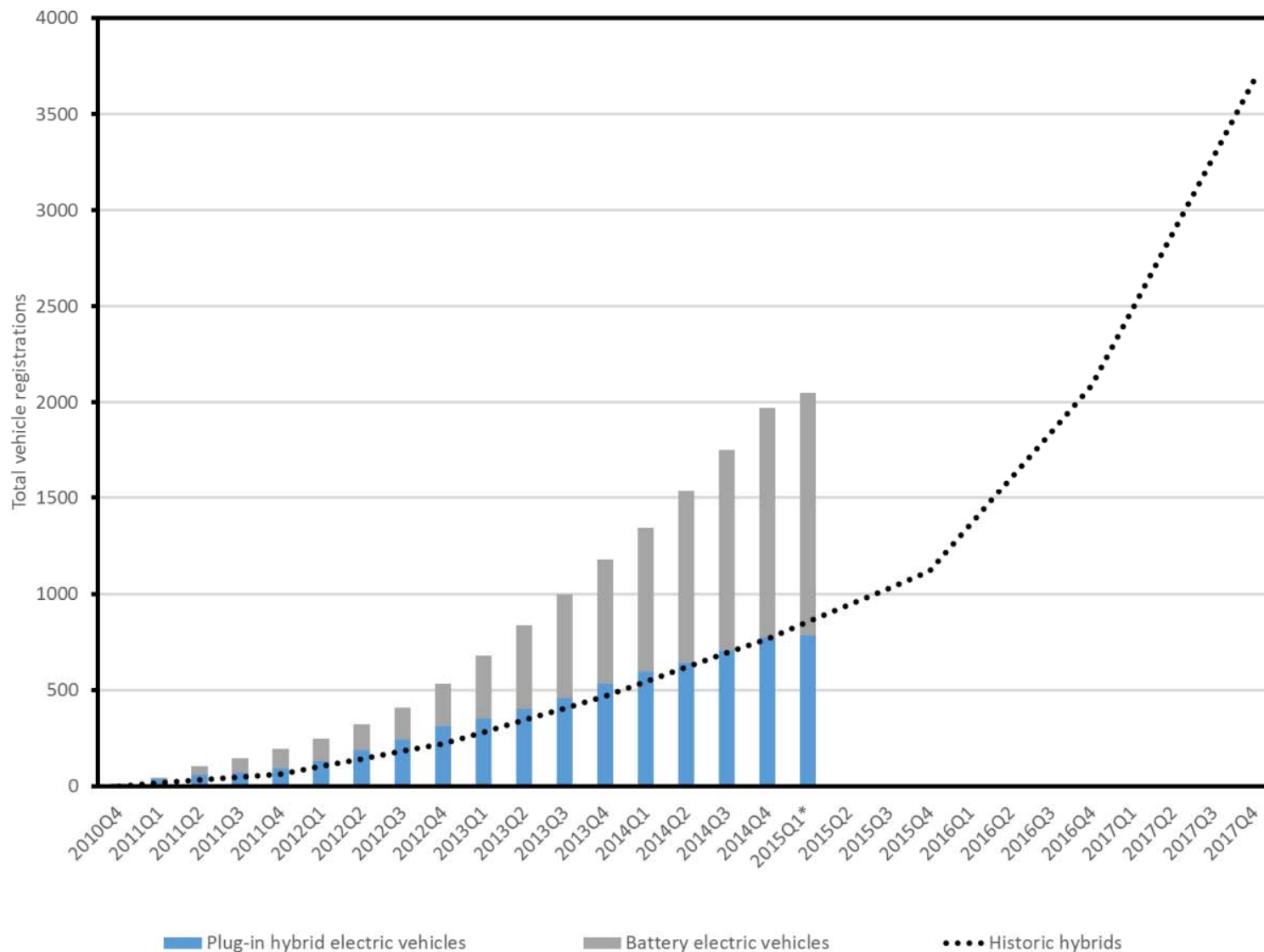
# Types of “Electric Fuel Pumps”

Charge Level	Voltage	Current	Power	Power Similar To	Time To Fully Charge PEV
Level 1	120V	8 – 12 Amps	1.0 – 1.4 kW	Toaster	12-14 HOURS
Level 2	240V	15 – 100 Amps	3.3 – 6.6 kW	Clothes Dryer	4 – 8 Hours
DC Fast-Charger	480-600V	80 – 120 Amps	20 – 72 kW	5 – 10 Central AC	30 Minutes





# Austin's PEV Adoption Curves





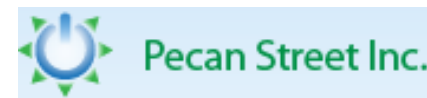
# Key Programs

## Plug-In EVerywhere™

- \* Under \$5/month for unlimited station access or \$2/hour; powered by 100% renewable energy via GreenChoice®
- \* Up to \$1,500 rebate for home PEV Level-2 charging stations
- \* Up to \$4,000 rebate for public, workplace, multifamily, and fleet Level-2 PEV charging stations



**Pecan Street PEV Pilot** - Study the largest, non-fleet PEV adoption in the country



**E-Ride Program** – Up to \$300 rebate from the purchase of electric bikes & scooters





# Managed Network Snapshot

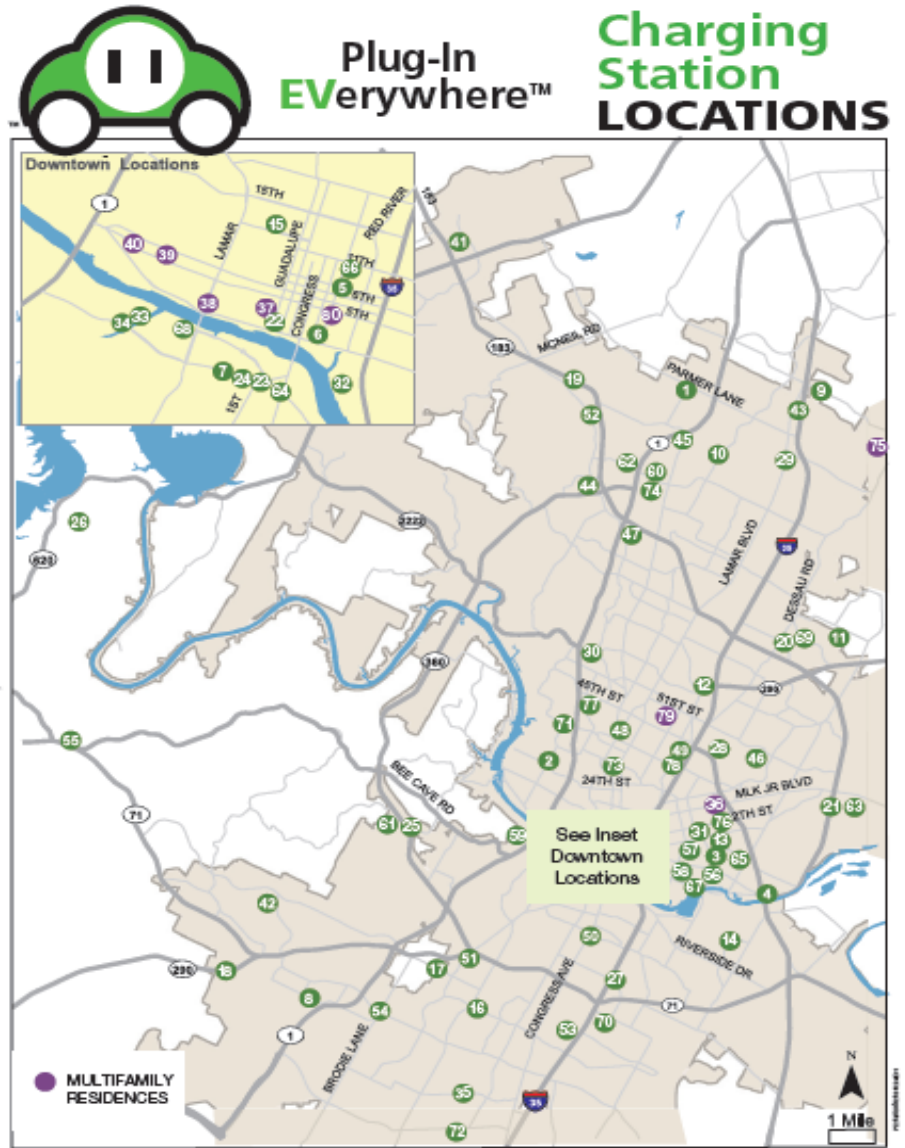
As of March 2015 there were:

91,034  
Charging  
Events

791  
Pre-Pay  
Subscribers

2,049 Area  
PEVs

230  
stations  
at 80  
locations

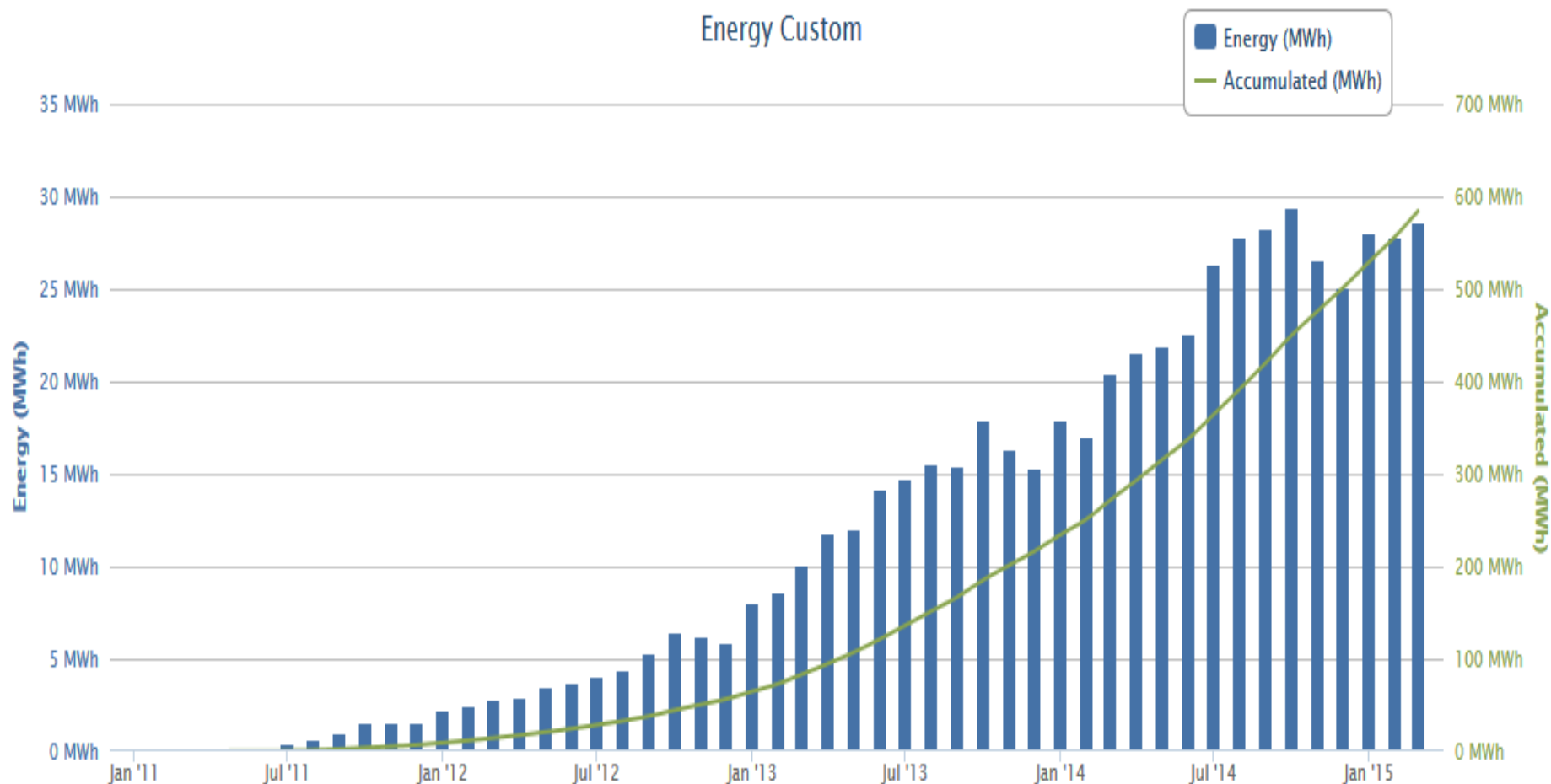






# Plug-In Everywhere Charging

Energy Custom



*585 MWh consumed through 91,034 public charging sessions since program inception. Data provided by ChargePoint Station Manager*



# Federal Grants of \$1.6M+

## ChargePoint America

- **\$633,000 – 100% Complete**
- Implementation of Austin's first 113 public charging stations



- **Texas River Cities Electric Vehicle Initiative**  
**\$500,000 – 90% Complete (6/30/2015)**
- Developed a regional action plan with participation from approx. 50 organizations



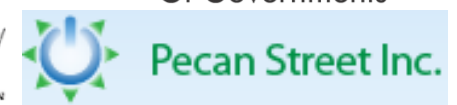
## Central Texas Fuel Independence

- **\$500,000 – 80% complete (9/30/2015)**
- Provide a forum, outreach, and first responder training for electric and natural gas vehicles, also:
  - Jobs training program with Austin Community College
  - Fleet analysis tool with University of Texas system





# Partnership







# Importance of “Smart Charging”

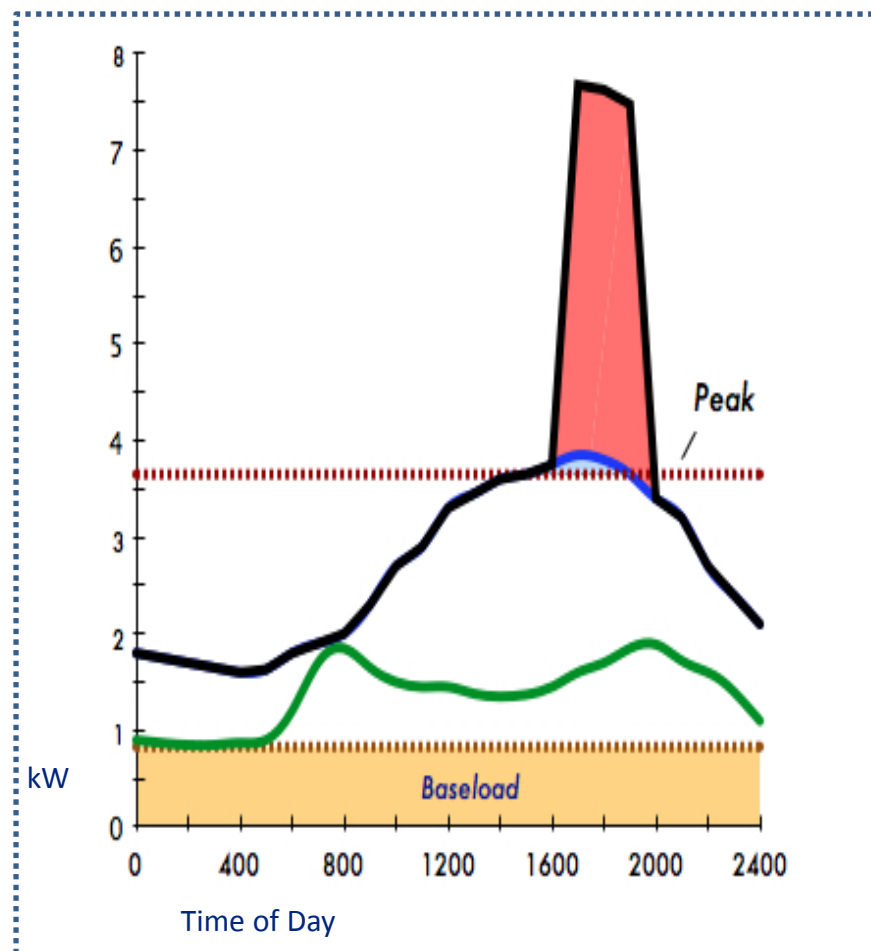
## Goal of “Smart Charging”

### Minimize Charging During Peak:

- Generates more CO<sub>2</sub> from utilizing peak generation
- Higher cost to provision
- May overload transformers

### Instead Charge Off Peak:

- Reduce CO<sub>2</sub>e
- Lower cost per kWh to provision
- Leverage wind generation



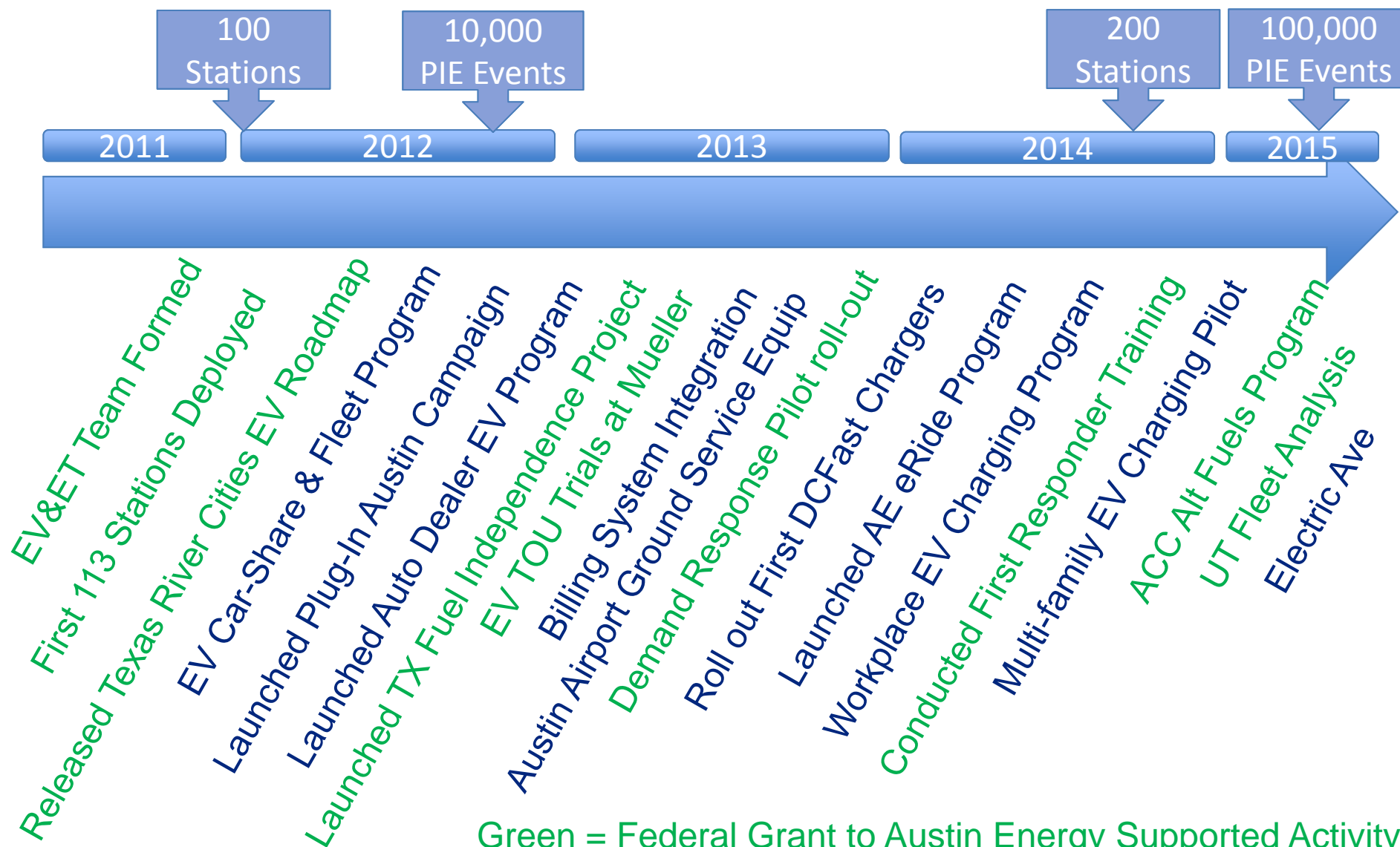


# EV Grid Management

	Uncontrolled Charge	EV Time of Use (Passive Control)	Grid to Vehicle (1-way control)	Vehicle to Grid/Home (2-way control)
<b>Status</b>	Default configuration	TOU Pilot Complete Reviewing EV-TOU	Pilot Phase 1 Complete	Researching
<b>Pros</b>	<ul style="list-style-type: none"> <li>•No specific utility resources required</li> <li>•Maximum convenience to the customer</li> </ul>	<ul style="list-style-type: none"> <li>•Direct opportunity sharing between customer and utility; supports peak, reliability, cust. service</li> </ul>	<ul style="list-style-type: none"> <li>•Ability to address peak via DR &amp; potential for AS</li> <li>•Supports grid reliability</li> </ul>	<ul style="list-style-type: none"> <li>•Ability to address peak &amp; the most potential for AS</li> <li>•Supports grid reliability</li> </ul>
<b>Cons</b>	<ul style="list-style-type: none"> <li>•Expected largest peak load</li> </ul>	<ul style="list-style-type: none"> <li>•New Tariff</li> <li>•May create new peak (4-5am)</li> </ul>	<ul style="list-style-type: none"> <li>•Requires infrastructure costs</li> </ul>	<ul style="list-style-type: none"> <li>•Requires infrastructure costs</li> </ul>
<b>Constraints</b>	<ul style="list-style-type: none"> <li>•None</li> </ul>	<ul style="list-style-type: none"> <li>•Billing System and Metering Infrastructure requirements</li> </ul>	<ul style="list-style-type: none"> <li>•Evolving industry standards (e.g. Open ADR2.0b)</li> <li>•Lack of mature products</li> </ul>	<ul style="list-style-type: none"> <li>•May void car warranty</li> <li>•Lack of mature products</li> </ul>



# Program Milestones





# Thank You!



Karl Popham  
Manager, EV&ET  
[Karl.Popham@austinenergy.com](mailto:Karl.Popham@austinenergy.com)