KENTUCKY CLEAN FUELS COALITION

Plug-In Electric Vehicle Analysis for the Commonwealth of Kentucky

Developed by the Kentucky Clean Fuel Coalition's
Electric Vehicle Leadership Team
October 10, 2016

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I. Summary and Purpose

Serving the state of Kentucky, the Kentucky Clean Fuels Coalition (KCFC) is a successful non-profit 501(c)(3) organization and a national leader in the alternative fuels and advanced technology vehicle arena.

The KCFC was established in 1993 to provide the first alternative fuels resource for Kentucky educators, consumers and providers of alternative fuels/vehicles.

While remaining fuel neutral, the KCFC recognizes the evolving vehicle technology markets. With successes in all alternative fuels/advanced technology areas, the KCFC strives to be the best resource for electric vehicle/infrastructure information and resources in Kentucky.

The KCFC was designated a Clean Cities partner in 1994 and houses the Kentucky Clean Cities Partnership. A program of the U.S. Department of Energy (DOE), Clean Cities advances the nation's economic, environmental, and energy security by supporting local actions to reduce petroleum consumption in transportation. A national network of nearly 100 Clean Cities coalitions brings together stakeholders in the public and private sectors to deploy alternative and renewable fuels, idle-reduction measures, fuel economy improvements, and emerging transportation technologies.

In 2011, the DOE funded over $8 million for 16 Clean Cities' Community Readiness Projects in 24 states to help communities prepare for plug-in electric vehicles (PEVs or EVs) and charging infrastructure. Kentucky Clean Cities Partnership did not apply for this funding, and instead is using existing resources and creating new partnerships to advance PEVs in Kentucky. A successful EV industry workshop was held in October 2011, followed by the establishment of the KCFC Electric Vehicle Team. The team is representative of all aspects of the EV industry across Kentucky.

The following analysis is a follow up from a readiness assessment first completed in October 2011 for the Clean Cities Partnership. This working document provides the most comprehensive and up-to-date information available on plug-in electric vehicles in Kentucky and will serve diverse stakeholders, including the general public, consumers, policy makers, industry, and other interested parties.

More information about KCFC can be found on our website.

II. Electric Vehicle Leadership Team

The Kentucky Clean Fuels Coalition has formed an EV Leadership Team made up of diverse stakeholders, including vehicle manufacturers and dealers, utilities, governments, universities, and businesses. This team will provide direction for KCFC's *Plug-In Kentucky* efforts.

EV Leadership Team members:

- Arthur Boykin, **Paducah Area Transit System (PATS)**
- Bob Hook III, **Chevrolet**
- Jeremy Slucher, **Kentucky Department for Environmental Protection**
- Carisa Robertson, **Kentucky State Fair Board**
- Christine Smith, **Zenith Motors**
- Claude Christensen, Mayor of Sadieville, **Kentucky League of Cities**
- Don Neltner, **Transit Authority of Northern Kentucky (TANK)**
- Jay Robertson, and Jeff Myers, **LG&E/KU**
- Dr. John Naber and Dr. Mike McIntyre, **University of Louisville**
- Geoffrey Hobin and Chris Ward, **TARC**
- Jon Tyson and Stuart Ungar, **EVolve Kentucky**
- Kenya Stump and Michael Kennedy, **Kentucky Department for Energy Development & Independence**
- Lane Boldman, **Kentucky Conservation Committee**
- Len Dunman, **Mercer Transportation**
- Maria Koetter and Andrea Webster, **Metro Louisville Office of Sustainability**
- Michael Hennessy, **Proterra**
- Michael Rodgers, Lewis Nall and Christy Ellis, **Owensboro Community and Technical College (OCTC)**
- Ruben Aradas, **UPS**
- Vickie Carson, **Mammoth Cave National Park**
- Will Johnson, **Graybar**

III. Existing and Planned Plug-In Electric Vehicles (PEVs) and Chargers

Existing PEVs

- **University of Louisville** became the first entity in Kentucky to partner with U.S. Department of Energy's Workplace Charging Challenge program. This adds to their efforts with their six campus EVs and seven recharging systems with data tracking.
- **Transit Authority of River City (TARC)**, in Louisville, operates 15 all-electric zero emission buses. Nine of the Proterra Zero Busses will replace outdated high polluting trolley vehicles that circulate free of charge through downtown routes. Two charging centers have been constructed that will provide a charge in less than a ten minutes. The other six busses will be used on the 4th street bus line which goes from Museum Row in downtown Louisville to Iroquois Park.
- **In 2012, the Kentucky Utilities/KCFC partnered** to place vehicles and chargers with: the Kentucky Division of Water (2 vehicles, 1 charger), Kentucky Division of Air Quality (2 vehicles, 1 charger), Lexington Fayette County Urban Government (1 vehicle, 1 charger), University of Louisville (2 vehicles), and Division of Fleet Management (2 vehicles, 1 chargers).
- **Bob Hook Chevrolet**, in Louisville, sells Chevy Volts, has a charger on site, and works with the University of Louisville's Speed School of Engineering to gather charging data for accurate usage and cost information.
- **Kentucky Department for Environmental Protection** has four PEVs and one charger, for department use.
- **Kentucky Division of Fleet Management** has two PEVs and one charger, for department use.
- **Lexington Fayette Urban County Government** operates two low speed electric vehicles.
- **Lexington Fayette Urban County Government** operates one plug-in hybrid electric vehicle with one charger.
- **Lextran** – Fall 2016, Lextran will be receiving 5 all-electric busses to operate in Lexington.
- **Louisville Metro Government** – the first fully electric vehicle (Ford Fusion to operate in a Kentucky municipality was placed in December 2013.)
- **Murray State University** operates eight low speed electric vehicles on campus.
- **Louisville Gas & Electric Utilities** operates 7 plug-in hybrid electric vehicles in their fleet.
- **Mercer Transportation** operates 2 low speed electric vehicles in their fleet.
- **Mammoth Cave National Park** operates six low speed electric vehicles.
- **Brown Forman – charging for employees at downtown parking garage.**
- **Individuals** across the Commonwealth own Chevrolet Volts, Nissan Leafs, and Zenn electric vehicles. Polk data last published February 2016 reported 247 electric vehicles, 542 plug-in electric vehicles, and 26,362 hybrid electric vehicles operating in Kentucky.
- **Off road charging** -- Mercer Transportation, in downtown Louisville, has fifty parking spaces for heavy duty freight vehicles to plug in for all electric APU charging. UPS uses electric vehicles at its Worldport facility in Louisville.

Existing Public Chargers

Below is a list of EV chargers organized alphabetically by city. Data was collected through U.S. Department of Energy's Alternative Fuels Data Center – Alternative Fueling Station Locator and PlugShare. Only chargers included, available 120 volt and Nema 14-50 outlets were not included.

Station Name	Street Address	City
Mike Castrucci Ford	7400 Alexandria Pike	Alexandria
Bill Cole Nissan	2701 Winchester Ave	Ashland
McDonald's - Ashland KY	150 Russell Road	Ashland
The Party Source	95 Riviera Dr	Bellevue
Boone Tavern Hotel	100 N Main St	Berea
General Motors Bowling Green Assembly Plant	600 Corvette Dr	Bowling Green
Greenwood Ford Lincoln	3075 Highway 231	Bowling Green
Hilton Garden Inn – Tesla	1020 Wilkinson Trace	Bowling Green
Jim Johnson Nissan	2200 Scottsville Rd	Bowling Green
Meijer – Tesla	1676 Westpark Dr	Bowling Green
Tri County Ford	4032 Commerce Pkwy	Buckner
Franklin Nissan	705 Jamestown St	Columbia
Fidelity	100 Howe Dr	Covington
Fidelity	100 Crosby Pkwy	Covington
Fidelity	100 Magellan	Covington
Fidelity	200 Magellan	Covington
Bob Allen Nissan	725 N Maple Ave	Danville
Bob Swope Ford	1307 N Dixie Hwy	Elizabethtown
Swope Nissan	1100 N Dixie Hwy	Elizabethtown
Balluff, Inc.	7055 Industrial Rd	Florence
Kerry Nissan	8053 Burlington Pike	Florence
AAA	476 Orphanage Rd	Fort Wright
Capitol Nissan of Frankfort	1220 Versailles Rd	Frankfort
Goodman Chevrolet Cadillac Nissan	1003 Happy Valley Rd	Glasgow
Wendell H Ford Regional Training Center	4675 KY-181 N	Greenville
Shaker Village of Pleasant Hill – Tesla	3501 Lexington Rd	Harrodsburg
Cincinnati Northern Kentucky International Airport	2939 Terminal Dr	Hebron
CVG Airport ValuPark	2462 Donaldson Rd	Hebron
FASTPARK	609 Petersburg Rd	Hebron
Garland Nissan	2507 Fort Campbell Blvd	Hopkinsville
Jeffersontown Free Public Library	10635 Watterson Trail	Jeffersontown

Audi of Lexington	3000 Pike Pigeon Pkwy	Lexington
Gay Brewer Jr Golf Course	469 Parkway Dr	Lexington
Glenn Nissan	3360 Richmond Rd	Lexington
Holiday Inn Express & Suites	2255 Buena Vista Rd	Lexington
Kentucky Utilities	10 Quality St	Lexington
Meijer Store #161 – Tesla	2155 Paul Jones Way	Lexington
Paul Miller Ford	975 E New Circle Rd	Lexington
University of Kentucky Health Care Marketing Building	2233 Alumni Park Plaza	Lexington
Legacy Nissan	395 W Highway 192	London
Tesla Charger	218 Russell Dyche Memorial Highway	London
Tourist Information Center – Tesla	140 Faith Assembly Church Rd	London
21c Hotel Louisville	700 W Main St	Louisville
Anchor Building	2509 Portland Ave	Louisville
Bill Collins Ford	4220 Bardstown Rd	Louisville
Blue Grass Audi	4730 Bowling Blvd	Louisville
Bob Hook Chevrolet	4144 Bardstown Rd	Louisville
Byerly Ford Nissan	4027 Dixie Hwy	Louisville
Collins Nissan	4142 Bardstown Rd	Louisville
DMB Transport	5500 Poplar Level Rd	Louisville
Highland Green Building	1401 Bardstown Rd	Louisville
Jeff Wyler Nissan	4136 Shelbyville Rd	Louisville
Louisville International Airport	600 Terminal Dr	Louisville
SAM SWOPE BMW	4 Swope Autocenter Dr	Louisville
Speed Art Museum Garage	2035 S 3rd St	Louisville
Springs Business Center	950 Breckenridge Ln	Louisville
Springs Medical Center	6400 Dutchmans Pkwy	Louisville
Sullivan University – Tesla	2120 Gardiner Ln	Louisville
The Green Building	732 E Market St	Louisville
University of Louisville - Belknap Parking Garage	2205 S Floyd St	Louisville
Watermark Nissan of Madisonville	1801 Lantaff Blvd	Madisonville
Parker Ford Lincoln	701 Main St	Murray
Don Moore Nissan	4216 Frederica St	Owensboro
Hampton Inn	401 West 2nd St	Owensboro
Mike Smith Kia	2101 Irvin Cobb Dr	Paducah
Nissan of Paducah	3164 Park Ave	Paducah
Walters Nissan	30 Walters Ln	Pikeville
Gates Nissan	4098 Atwood Dr	Richmond
Kentucky One Medical Center Jewish South	1903 W Hebron Ln	Shepherdsville
Aspen Dental	2911 U.S. 27 S	Somerset
Don Marshall Nissan	1147 S Highway 27	Somerset
A Storybook Inn	277 Rose Hill Ave	Versailles

IV. Strategic Planning

The EV Leadership Team will evaluate the baseline 2013 PEV Readiness Scorecard to access improvement in PEV readiness and leverage the U.S. Department of Energy Alternative Fuel Data Center's updated PEV Readiness Scorecard to create future goals and identify areas for development.

Complete Scorecard questions, responses, and resources can be found in the Appendix. The scorecard will be used to guide strategic planning and to benchmark progress. Results are as of March 28, 2016.

Will be inputting data summary when screenshot capabilities enabled.

Electric Vehicle Supply Equipment (EVSE) Permitting and Inspecting Process

All electrical work in Kentucky needs to be inspected by a licensed electrical contractor and permitting is done on a local basis by county. An online permitting system would need to simplify permitting from 180 different inspectors in 120 counties. Utilities may need to be involved for new service or a change in service. The same permit would be required for residential or municipality.

Laws, Incentives, and Financing

One of the primary goals of the EV Leadership team is to collaborate with state and local governments to better ascertain government perspective and to identify challenges and opportunities. A number of state and local representatives are members of the team.

In 2012, the state's economic development plan, *Kentucky's Unbridled Spirit*, specifically listed hybrid-electric vehicles and lithium-ion battery manufacturing and battery R&D are identified as key sectors for Kentucky's business and industry development.[1] The Kentucky-Argonne Battery Manufacturing Research and Development Center in Lexington and the Conn Center for Renewable Energy Research at the University of Louisville are involved in battery research. Hitachi Automotive Systems Americas operates a lithium-ion battery pack production facility in Harrodsburg. In there are more than 400 automotive related facilities, including automotive assembly plants for Ford, General Motors, and Toyota.

The Cabinet for Economic Development's 2015 Annual Report, 2016 Kentucky Economic Development Guide and Kentucky's Automotive Industry Profile all highlight the importance of

[1] *Kentucky's Unbridled Future* Strategic Economic Development Plan, Boyette Strategic Advisors, January 2012. Accessed July 27, 2016 <http://kwib.ky.gov/stateplan2012/AttachmentC.pdf>

the automotive industry to Kentucky's economic wellbeing. In 2015, 12.7% of all exports from Kentucky were in the automotive industry. The industry also accounts for $14.3 billion of the gross state product. The industry has also shown growth with new investments announced in 2015 totaling $2.8 billion and 5,400 new jobs. Hybrid-electric vehicles are an important part of this development as two of the major models produced in Kentucky are the Toyota Camry Hybrid and the Toyota Avalon Hybrid.

However, despite the support for EV related manufacturing and research in Kentucky, no state or local financial or non-financial EV incentives currently exist. State incentives for the purchase of electric vehicles or infrastructure installation would provide a more comprehensive EV industry strategy as well as likely encourage vehicle manufacturers to target Kentucky for vehicle rollout. The only related policy is vehicle acquisition priorities. The Kentucky Finance and Administration Cabinet by statue must develop a strategy to replace at least 50% of the commonwealth motor fleet light-duty vehicles with energy efficient vehicles which can include alternative fuel and advanced technology vehicles.

Possible incentives include:

- State Tax Credit for purchase of EV or PHEV ($3,000-$6,000)
- State tax credit for conversion of hybrid to PHEV
- Tax credit or rebate for purchase of electric vehicle supply equipment (EVSE)
- Waive registration fee
- HOV access and parking incentives (reduced rates or preferred parking)
- Work with banks and dealers to offer low-interest loans for plug-ins, based on projected lower operating costs from gas savings
- Bundle all incentives at vehicle point of purchase
- EV-only parking at charging stations
- Incentives that recognize early adopters as typically those who prefer low ongoing fuel costs despite higher upfront costs.

Legislators in support of electric vehicles would need to be contacted to support state incentives. In addition, a solution would need to be found to offset PEV's avoided gasoline tax in way that does not disincentivize PEVs. At this time there is no known specific legislative support for EVs in Kentucky. There is a current bill in the Kentucky State Senate, An act relating to motor vehicle registration fees (SB27). The bill was introduced January 2016 and is being reviewed by the Transportation Senate Committee. The bill would establish an additional registration fee of $100 for both initial and renewal of registration for plug-in electric vehicles.

Education & Outreach

Internal Stakeholder Education

A key initial step is for the EV Leadership Team to further educate itself on best practices, barriers and opportunities. Analyses need to be broken down into geographic regions of Kentucky, at the local, state, and regional level. To support this internal education, KCFC will

coordinate a number of educational activities for the EV team in 2016. These activities may include:

- **Case studies from Kentucky** on existing EV vehicles and infrastructure and best practices.
- **Case studies from other areas** on existing and planned EV vehicles and infrastructure and best practices.
- **Educational Workshops** to further educate the team on Permitting and Inspection; Laws, Incentives, and Financing; Education and Outreach; Plug-In Vehicle Market Conditions; & Long Term Vehicle and Infrastructure Planning.

Technician Education

KCFC worked with Owensboro Community and Technical College (OCTC) to create the Preparing Vehicle Technicians for Advanced Transportation Fuels program. Electric vehicle technician training is a part of the program and now hybrid electric, plug-in hybrid electric, and all-electric vehicles is a permanent part of the college's curriculum. Representatives from OCTC are part of the EV team.

KCFC will work to continue to support OCTC and work to expand electric vehicle technician training throughout the Kentucky Community and Technical College System (KCTCS).

Safety & First Responder Training

In March 2016, KCFC held first responder training. The National Alternative Fuels Training Consortium (NAFTC) was brought in to provide the instructors and curriculum for the workshop. The participants were all trainers in their organization. KCFC covered the cost of the training with the agreement that participants would share the curriculum with their organizations. KCFC acknowledged the need for additional workshops and is planning another first responder training session in fall 2016.

Kentucky has seen success in stakeholder education by equipment providers as part of hybrid-electric school bus adoption in the state, as supported by KCFC. Eaton, which manufactures the hybrid system used in many of the buses, has worked directly with first responders, mechanics, and other stakeholders to provide education on safe operation and maintenance of hybrid-electric school buses.

Marketing / Public Education & Outreach

KCFC will expand on the previously developed public outreach campaign*: Plug-in Kentucky*. Education will leverage early adopter experiences in Kentucky, such as existing and planned government led infrastructure in Frankfort, Lexington, and Louisville, campus PEV at the University of Louisville, individual residential charging through customers of

Bob Hook Chevrolet and other Chevrolet, Ford, and Nissan dealers across Kentucky, and developing private sector workplace charging. Outreach will focus on local, statewide, and regional levels, and will consider leveraging Kentucky's central geography to market regional charging infrastructure. Outreach may include cost savings calculators and Frequently Asked Questions for EV buyers, as well as air pollution benefits of EV.

KCFC's existing fleet recognition program, Green Fleets of the Bluegrass, encourages reductions in petroleum use and increased use of advanced technology vehicles and alternative fuels, including plug-in electric vehicles. The Green Fleets program provides analysis and annual ratings of participating fleet efforts across the state.

Past outreach activities have included featuring electric powered vehicles at KCFC meetings and industry events all over the state throughout each year. In 2015, KCFC through their position on the Louisville Sustainability Council ensured electric powered vehicles were a main feature at the 2015 Sustainability Summit. KCFC supported outreach through the KCFC cornerstone project, Hybrid Horsepower for Kentucky Schools completed in 2013. The program involved the placement of 156 hybrid-electric schools buses in countries across Kentucky as well as data tracking and project outreach. KCFC also used a 2012 Chevy Volt donated from Bob Hook Chevrolet in Louisville as a rolling educational tool all over the state.

Beyond KCFC, manufacturers, equipment providers (i.e. Eaton, GE), utilities, and municipalities will have a role in education/marketing to include maintenance, safety, and battery replacement, among other issues.

Utility Involvement

Kentucky currently has some of the lowest electricity rates in the country, making plug-in electric vehicles competitive against other fuel options. In 2014, Kentucky tied Idaho for 7th lowest average retail electricity price in the nation.[2]

Increasing the availability of electric vehicles and electric vehicle charging infrastructure will further spur the electric vehicle adoption rate in Kentucky.

Members of the EV Leadership Team, Louisville Gas and Electric Company and Kentucky Utilities Company (LG&E and KU), work directly with their customers who are EV drivers, automobile manufacturers, and dealers to assess how changes in customers' electric usage, through EV charging and battery storage capabilities, may impact EV drivers' electric service feeding their home or business and the overall electric grid.

LG&E and KU have investigated grid infrastructure requirements and operational impacts of plug-in electric vehicles. Additionally, LG&E and KU monitor the network for increased loads from a variety of causes. Reviews of load growth due to EV adoption revealed that current infrastructure is able to withstand low adoption of 240v PEV charging for EV's like Volts and Leafs. Widespread adoption of PEVs with long distance abilities, like the Tesla, could require

[2] U.S. Energy Information Administration. State Electricity Profiles. <http://www.eia.gov/electricity/state/>

additional planning. Utilities like LG&E and KU are particularly aware of the "clustering" effect of EV penetration in neighborhoods and the corresponding impacts it could have on individual or groups of transformers. LG&E and KU, through automobile dealerships, encourage new EV owners to contact them to help assure their electric service continues to be delivered reliably.

Additionally, the utilities continually assess how EV driving may influence a customers' overall energy use habits and have explored various rate programs that may be appealing to EV drivers. Currently, the utilities offers for up to 500 residential customers the Time of Day Energy Rate and Time of Day Demand Rate that may appeal to EV drivers. The Residential Time-of-Day Energy Service includes a basic monthly charge of $10.75 plus a variable kWh charge depending on time of year and peak usage periods ranging from $0.06128 per kWh to $0.23263 per kWh. The Residential Time-of-Day Demand Service includes a basic monthly charge of $10.75 plus an energy charge of $0.04565 per kWh and a variable kW charge depending on time of year and peak usage periods ranging from $3.25 per kW to $12.38 per kW. The other charging option is the Electric Vehicle Charging Rate which is designed for company-owned public charging stations. The current rate is $2.85/hr.[3]

The Tennessee Valley Authority (TVA), operating in southwestern Kentucky, is pursuing electric vehicle infrastructure in Tennessee as part of The EV Project's nationwide charger deployment effort with Ecotality. TVA's EV efforts include Smart Station deployment partially using solar power. More information about TVA's EV efforts in Tennessee can be found on their website.[4]

The following map shows the breakdown of utility coverage across Kentucky and shows Kentucky's largest utilities, LG&E and KU, as well as Duke Energy, the Tennessee Valley Authority and rural electric cooperatives.[5]

[3] https://lge-ku.com/sites/default/files/lgereselectric.pdf

[4] https://www.tva.gov/Energy/Technology-Innovation/Electric-Cars-and-Infrastructure

[5] Kentucky Public Service Commission. ftp://162.114.3.171/Electric/Electric_Service_Areas_Wall_Map.pdf

Electric Distribution Service Areas

PSC Regulated Rural Electric Utilities

Members of East Kentucky Power Cooperative (transmission cooperative)

- Big Sandy RECC
- Blue Grass Energy Cooperative
- Clark Energy Cooperative
- Cumberland Valley Electric
- Farmers RECC
- Fleming-Mason Energy Cooperative
- Grayson RECC
- Inter-County Energy Cooperative
- Jackson Energy Cooperative
- Licking Valley RECC
- Nolin RECC
- Owen Electric Cooperative
- Salt River Electric Cooperative
- Shelby Energy Cooperative
- South Kentucky RECC
- Taylor County RECC

Members of Big Rivers Electric Corp. (transmission cooperative)

- Jackson Purchase Energy Corporation
- Kenergy Corporation
- Meade County RECC

- County Boundaries
- City

Multi-Service Areas

- Jackson Energy Cooperative & KU
- Meade County RECC & LG&E

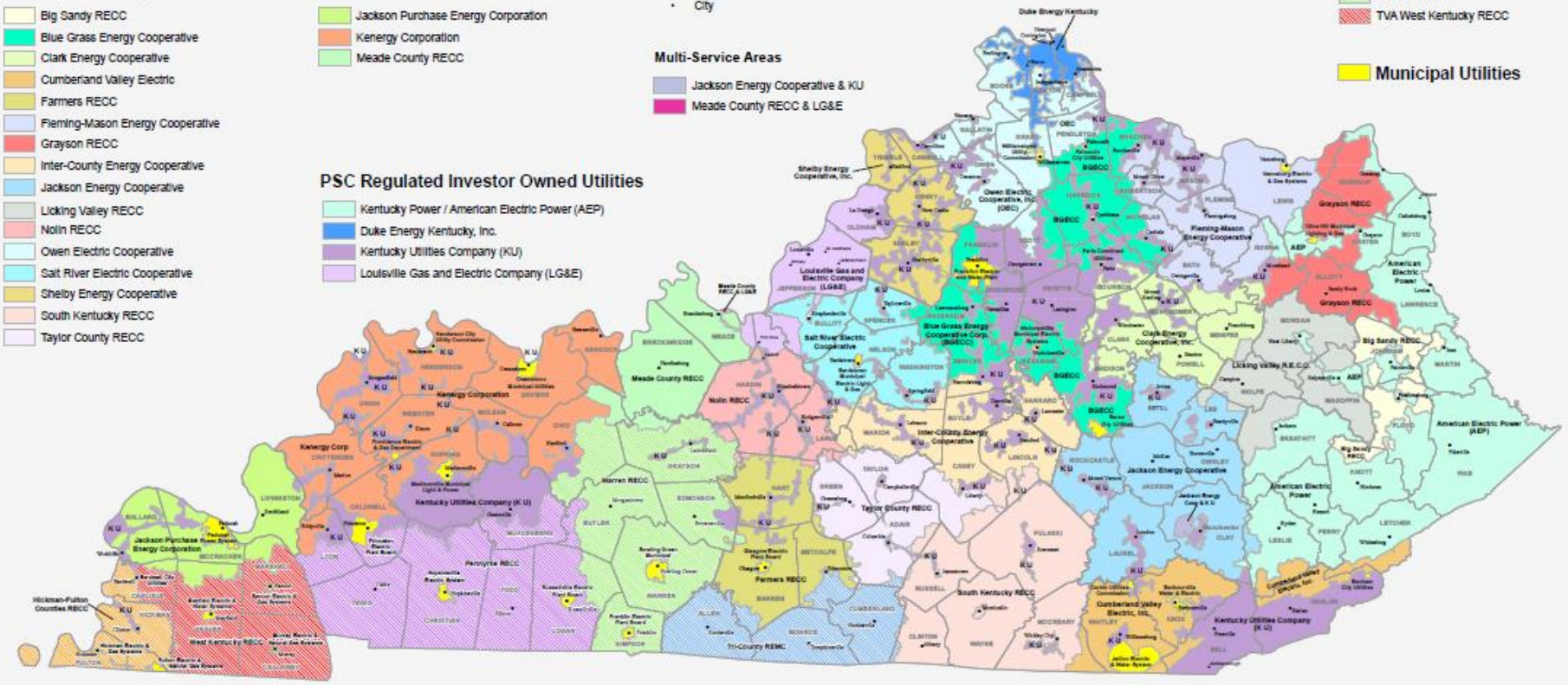
PSC Regulated Investor Owned Utilities

- Kentucky Power / American Electric Power (AEP)
- Duke Energy Kentucky, Inc.
- Kentucky Utilities Company (KU)
- Louisville Gas and Electric Company (LG&E)

TVA Regulated Utilities

- Hickman-Fulton Counties RECC
- Pennyrile RECC
- Tri-County REMC
- Warren RECC
- TVA West Kentucky RECC

Municipal Utilities



Kentucky has 30 municipal systems serving over 300,000 customers. Twelve of these are provided wholesale power by the Tennessee Valley Authority (TVA) and are regulated by them. The others are self-regulated by the municipality. The boundaries for the municipal systems were either derived from the Public Service Commission's certified territory maps, or from boundaries submitted for informational purposes to the PSC from the municipals. If the municipal service area boundaries were unknown, a circle was placed around the urbanized area.

The electric service areas are compiled from certified territory maps on file with the Public Service Commission. These are legal documents which define the retail service area of electric suppliers regulated by the Commission (Kentucky Statute 278.017). The legal certified territory boundaries are drafted on 1:24,000 USGS topographic maps, and can be assumed to have an accuracy of 100 feet. This map, which was compiled from the data, is for informational purposes only, and has no legal standing.

10 5 0 10 20 30 40 Miles

Kentucky Public Service Commission
February 8, 2013

Plug-In Vehicle Market Conditions

All major automakers currently market to Kentucky including plug-in electric vehicles except Tesla. Kentucky is not a priority rollout state by major auto manufacturers. Both new and used plug-in electric vehicle models are currently for sale throughout the state. With EV manufacturers currently targeting the general public for electric vehicle adoption, vehicles need to be priced competitively. In Kentucky, extremely low electricity rates would likely make EVs an affordable choice for consumers.

In 2016, the Transit Authority of River City (TARC), announced the purchase of 6 new all-electric, zero emissions transit buses. The new buses replaced diesel-powered transit buses on the 4th street line running from downtown's Museum Row to Iroquois Park. The additional buses brought the fleet's total to 15 all-electric buses in operation making them the 2nd largest electric transit fleet in the country and the largest east of the Mississippi River. The previously purchased 9 all-electric buses replaced aging trolleys on downtown routes.

To reduce barriers to EV availability in Kentucky, policy incentives and ready buyers need to be available where vehicle manufactures already have market share and manufacturing capacity. Building infrastructure alone will not be enough to stimulate the industry as Kentucky is not currently a target for large scale EV distribution. Permitting and siting criteria must be established before installation and vehicle availability can proliferate.

Kentucky needs to work towards becoming a strategically important region for the rollout of EVs. The automotive industry is a vital par of the state's economy.

Long Term Vehicle and Infrastructure Planning

Residential

Residential charging is the primary charging location for PEVs, and the installation of chargers in residences will be key to expanded PEV in Kentucky.

Workplace

Workplace charging stations for private and fleet vehicles will likely first be piloted by early adopters, and the EV Leadership Team will leverage the Department of Energy's EV Everywhere Workplace Charging Challenge to engage these early adopters. There are currently five workplaces in Kentucky that have signed the Workplace Charging Challenge Pledge. Three of the five workplaces are a direct result of the work of KCFC and the EV Team.

Public & Business

There are currently 55 public electric charging stations in Kentucky. Strategic planning for charging station placement has focused on public charging as secondary to residential and workplace charging. Non-residential charging stations, such as parking garages and shopping

malls, have been key in placement decisions. The public charging stations are very important to reduce “range anxiety” for all electric drivers who can only charge at home. The private sector will be needed to provide public charging in restaurants, parking lots, venues, and other frequented locations statewide. Evolve Kentucky is an electric vehicle owners group. They designed the Adopt a Charger program which has been responsible for the installation of three free to use public chargers in Louisville, KY. Over the next year they expect two more chargers to be added. In 2016, LG&E/KU announced their plans to install 10 public charging stations in both Louisville and Lexington. Workplace charging is also a key infrastructure need.

Universities, colleges, and government

University and college campuses in urban settings are ideal for the adoption of plug-in electric vehicles. The University of Louisville partnered with GE to install charging stations for employee use. The University of Kentucky, Murray State University, and the University of Louisville have all incorporated low speed electric vehicles on campus; making the move from charging in regular 120v outlets to charging stations will be smoother for these early adopters. Representatives from the University of Louisville’s Engineering Department are part of the EV Leadership Team. Mammoth Cave National Park also uses low speed electric vehicles.

Regional planning will be impacted by recent efforts stemming from the identification of the Lexington-Louisville corridor as a potential super-region by the Brookings Institute and the Bluegrass Economic Advancement Movement (BEAM). The mayors of Lexington and Louisville are involved in ongoing discussions regarding developing this “super-region”. The use of alternative fuel and advanced technology vehicles are part of both Lexington-Fayette Urban County Government’s and Louisville Metro Government’s strategic plans.

APPENDIX I – Contact Information

Contact	Company	Email
Bob Hook III	Chevrolet	bhook3@bobhook.net
Jon Tyson	Electric Vehicle Owners of Kentucky	jtyson@fastmail.com
Stuart Ungar	Electric Vehicle Owners of Kentucky	stuartungar@me.com
Will Johnson	Graybar	will.johnson@graybar.com
Emily Carpenter	Kentucky Clean Fuels Coalition	ecarpenter@kentuckycleanfuels.org
Melissa Howell	Kentucky Clean Fuels Coalition	mhowell@kentuckycleanfuels.org
Lane Boldman	Kentucky Conservation Committee	director@kyconservation.org
Kenya Stump	Kentucky Department for Energy Development and Independence	Kenya.Stump@ky.gov
Michael Kennedy	Kentucky Department for Energy Development and Independence	michael.kennedy@ky.gov
Jeremy Slucher	Kentucky Department for Environmental Protection	jeremy.slucher@ky.gov
Mayor Claude Christensen	Kentucky League of Cities	christensen13@bellsouth.net
Carisa Robertson	Kentucky State Fair Board	crobertson@ksfb.ky.gov
Jay Robertson	LG&E/KU	Jay.Robertson@lge-ku.com
Jeff Myers	LG&E/KU	jeff.myers@lge-ku.com
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Michael Hennessy	Proterra	mhennessy@proterra.com
Don Neltner	Transit Authority of Northern Kentucky	dnetler@tankbus.org
Chris Ward	Transit Authority of River City	cward@ridetarc.org
Geoffrey Hobin	Transit Authority of River City	ghobin@ridetarc.org
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Dr. Mike McIntyre	University of Louisville	michael.mcintyre@louisville.edu
Ruben Aradas	UPS	raradas@ups.com
Christine Smith	Zenith Motors	christine.smith@zenith-motors.com

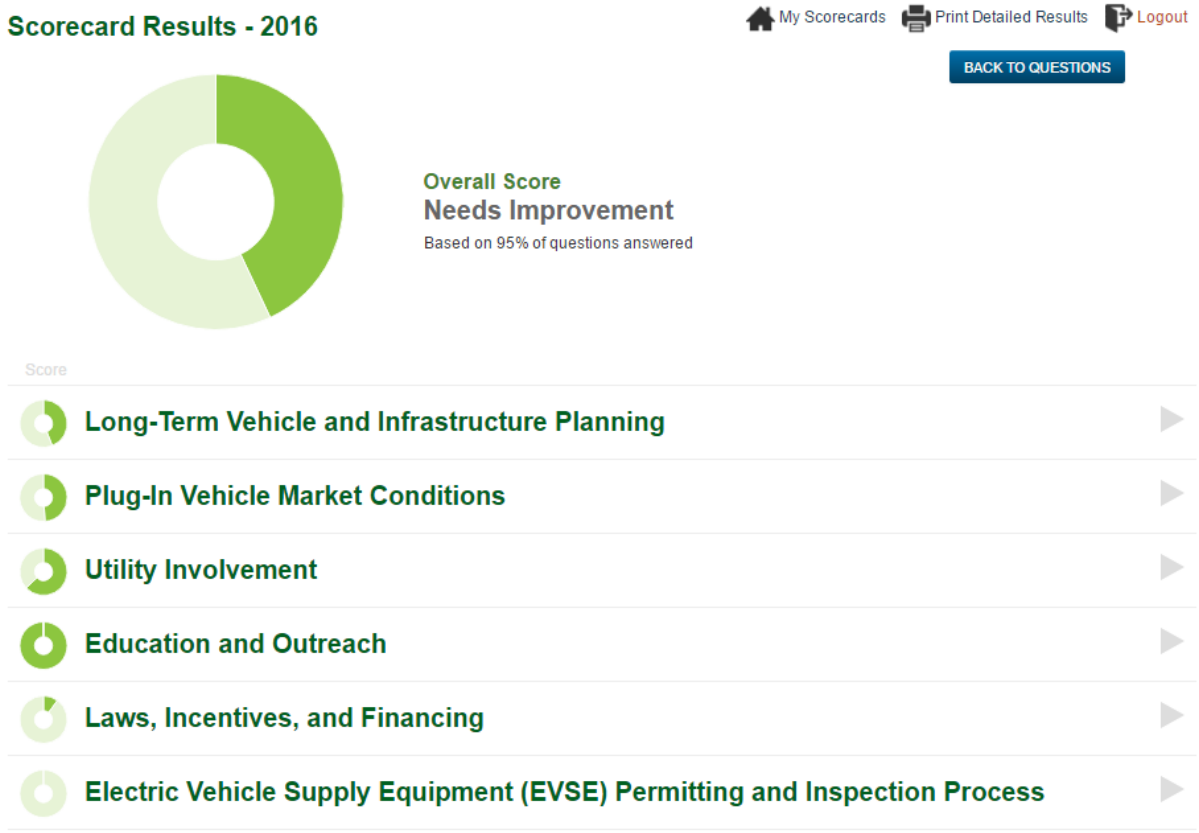
APPENDIX II – PEV Scorecard Readiness Results

U.S. Department of Energy Alternative Fuels Data Center PEV Scorecard

https://www.afdc.energy.gov/pev-readines (KCFC login required).

Send updates to KCFC Executive Director Melissa Howell at mhowell@kentuckycleanfuels.org or EV Team Project Manager Emily Carpenter at ecarpenter@kentuckycleanfuels.org.

As of March 28, 2016:



Section 1: Planning

Long-Term Vehicle and Infrastructure Planning

PLANNING TOPICS

- ✓ Planning and Collaboration
- ✓ Market Potential and Analysis

Topic 1

Planning and Collaboration

1. Does your area have, or is your area in the process of creating, a comprehensive plan for PEV infrastructure deployment?

   ○ No ○ Yes ◉ I don't know

2. Has your area created a collaborative group of local stakeholders to help align PEV interests and plan for deployment?

   ◉ Yes ○ No ○ I don't know

3. Has an elected leader in your area (for example, mayor or governor) appointed a single agency or person to oversee the development and implementation of a PEV infrastructure deployment plan?

   ○ No ○ Yes ◉ I don't know

SAVE AND CONTINUE

Section 1: Planning

Long-Term Vehicle and Infrastructure Planning

PLANNING TOPICS

- ✓ Planning and Collaboration
- ✓ **Market Potential and Analysis**

Topic 2

Market Potential and Analysis

1. Has someone in your area performed an analysis to select the best locations for initial public EVSE?

   ○ No ◉ Yes ○ I don't know

2. Has your area selected a cohesive set of signage to designate and direct drivers to EVSE?

   ◉ No ○ Yes ○ I don't know

PREVIOUS SAVE AND CONTINUE

Section 2: Market

Plug-In Vehicle Market Conditions

MARKET TOPICS

- ✓ PEV, EVSE, and Service Availability
- ✓ Plug-in Vehicle Projections

Topic 3

Plug-in Vehicle, EVSE, and Service Availability

1. **How many PEV models do you expect to be available for purchase or lease in your area during the next one to two years? If more than 10, please enter the expected number of available models in the notes section below.**

   ○ Less than 3 ○ 3 to 5 ◉ 6 to 10 ○ More than 10 ○ I don't know

   Enter any additional notes:

2. **How many dealerships in your area are currently selling PEVs?**

   ○ None ○ 1 ○ 2 to 10 ◉ More than 10 ○ I don't know

3. **How many public EVSE charging outlets are currently in service in your area? Note: An electric charging station may have multiple charging outlets.**

   ○ None ○ Less than 10 ○ 10 to 25 ◉ More than 25 ○ I don't know

4. **What percentage of PEV buyers are installing residential level 2 (240 V) EVSE in your area?**

   ○ Less than 25% ○ 25% to 49% ○ 50% to 75% ○ Greater than 75% ◉ I don't know

5. **How many public EVSE charging outlets do you anticipate will be constructed in your area during the next one to two years? Note: An electric charging station may have multiple charging outlets.**

○ None ○ Less than 10 ○ 10 to 25 ◉ More than 25 ○ I don't know

6. **How many workplace EVSE charging outlets do you anticipate will be constructed in your area during the next one to two years? Note: An electric charging station may have multiple charging outlets.**

○ None ○ Less than 10 ○ 10 to 25 ○ More than 25 ◉ I don't know

PREVIOUS SAVE AND CONTINUE

Section 2: Market

Plug-In Vehicle Market Conditions

MARKET TOPICS

- ✓ PEV, EVSE, and Service Availability
- ✓ **Plug-in Vehicle Projections**

Topic 4

Plug-in Vehicle Projections

1. **How many PEVs are in use by government fleets (federal, state, and local) in your area?**

○ None ○ Less than 5 ◉ 5 to 10 ○ More than 10 ○ I don't know

2. **How many PEVS are in use by private and utility fleets in your area?**

○ None ◉ Less than 10 ○ 10 to 25 ○ More than 25 ○ I don't know

3. **How many PEVs do government fleets (federal, state, and local) in your area plan to add in the next one to two years?**

○ None ○ Less than 10 ○ 10 to 25 ○ More than 25 ◉ I don't know

4. **How many PEVs do private and utility fleets in your area plan to add in the next one to two years?**

○ None ○ Less than 25 ○ 25 to 50 ○ More than 50 ◉ I don't know

PREVIOUS SAVE AND CONTINUE

Section 3: Utility
Utility Involvement

UTILITY TOPICS

- ✓ Electricity Rates and Programs
- ✓ Utility Planning and Implementation

Topic 5
Electricity Rates and Programs

1. Do utilities in your area have a program to address grid infrastructure requirements and operational impacts of PEV charging?

   ○ No ◉ Yes ○ I don't know

2. Do utilities in your area offer a separate rate for PEV charging? If so, please use the notes section to describe the rate.

   ○ No ◉ Yes ○ I don't know

   Enter any additional notes:

   EV charging handled under residential rate class and there is a specific EV charging rate for company-owned charging stations.

3. Do utilities in your area offer any tools to help consumers understand the costs and benefits of PEVs under different rate structures?

   ◉ No ○ Yes ○ I don't know

PREVIOUS SAVE AND CONTINUE

Section 3: Utility

Utility Involvement

UTILITY TOPICS

- ✔ Electricity Rates and Programs
- ✔ **Utility Planning and Implementation**

Topic 6

Utility Planning and Implementation

1. **Are the utilities in your area engaged in local efforts to deploy PEVs and charging infrastructure (for example, participation in planning efforts, working with local jurisdictions to understand building permitting and codes, or working with public utility commissions on how to help with PEV rollouts)?**

   ○ No, not engaged ○ Yes, somewhat engaged ◉ Yes, moderately engaged ○ Yes, highy engaged ○ I don't know

2. **Have the utilities in your area analyzed the impacts of PEVs on the local grid or forecasted the location of potential PEV concentrations?**

   ○ No ◉ Yes ○ I don't know

3. **Is there a procedure in your area to notify utilities before installing EVSE so they can plan for additional demand?**

   ○ No ◉ Yes, via automated reporting ○ Yes, via voluntary reporting ○ I don't know

4. **Have the utilities in your area deployed "smart grid" technologies, like smart meters, to assist with development of future PEV markets and capabilities?**

   ◉ No ○ Yes, planned in next 2-5 years ○ Yes, as a pilot with limited coverage
   ○ Yes, with full implementation for PEV owners ○ I don't know

PREVIOUS SAVE AND CONTINUE

Section 4: Education

Education and Outreach

EDUCATION TOPICS

- Educational and Outreach Efforts

Topic 7

Educational and Outreach Efforts

1. Does your area have a website that provides local information about PEVs and charging infrastructure?

   ○ No ◉ Yes ○ I don't know

2. Does your area utilize Clean Cities educational resources for PEVs, such as the Alternative Fuels Data Center, FuelEconomy.gov, or local Clean Cities coalition websites? Use the notes section to explain.

   ○ No ◉ Yes ○ I don't know

   Enter any additional notes:

3. Does your area work with a national outreach program to encourage the use of PEVs (for example, Clean Cities, Project Get Ready, or National League of Cities)? Use the notes section to explain.

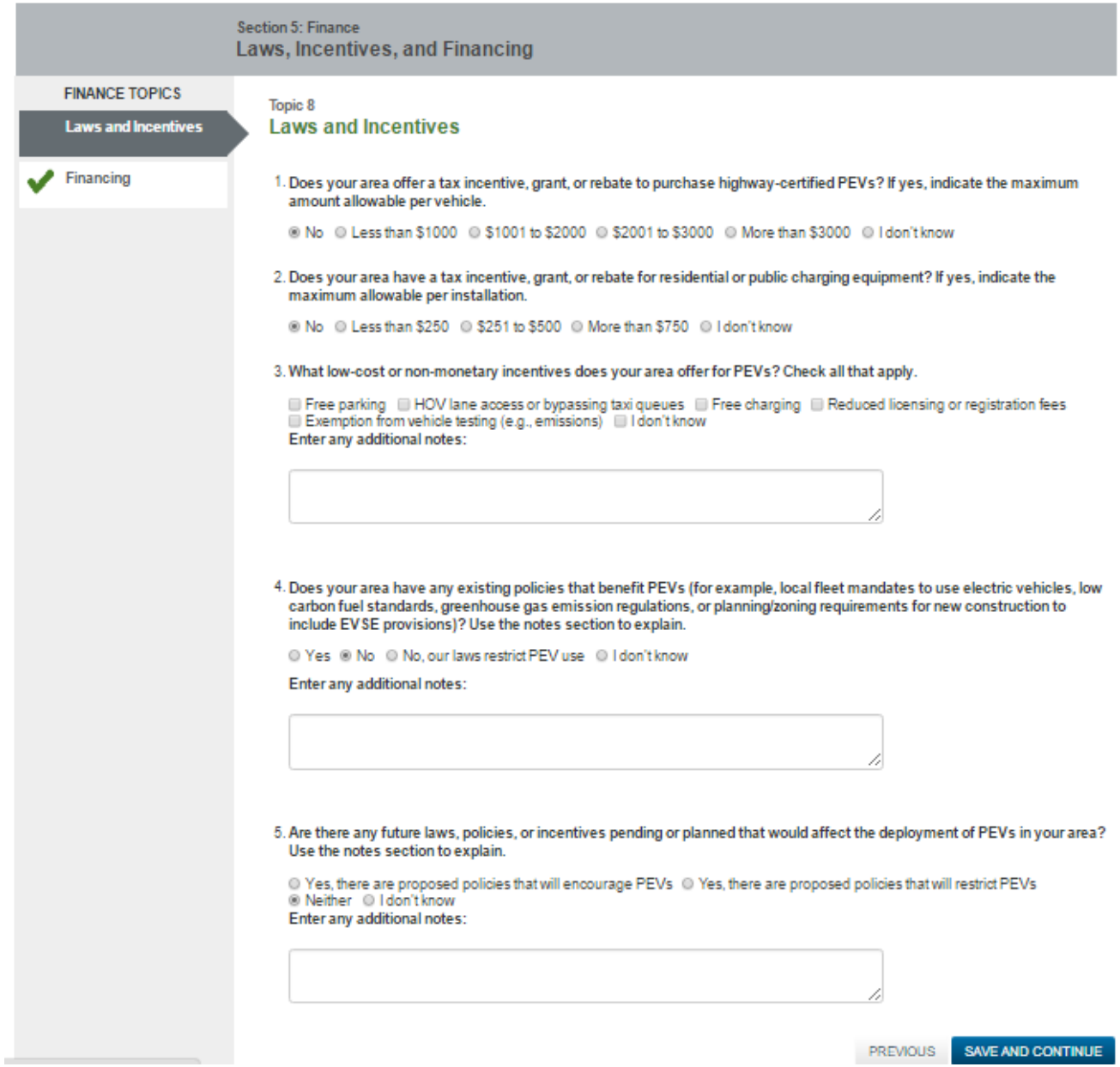
   ◉ Yes ○ No ○ I don't know

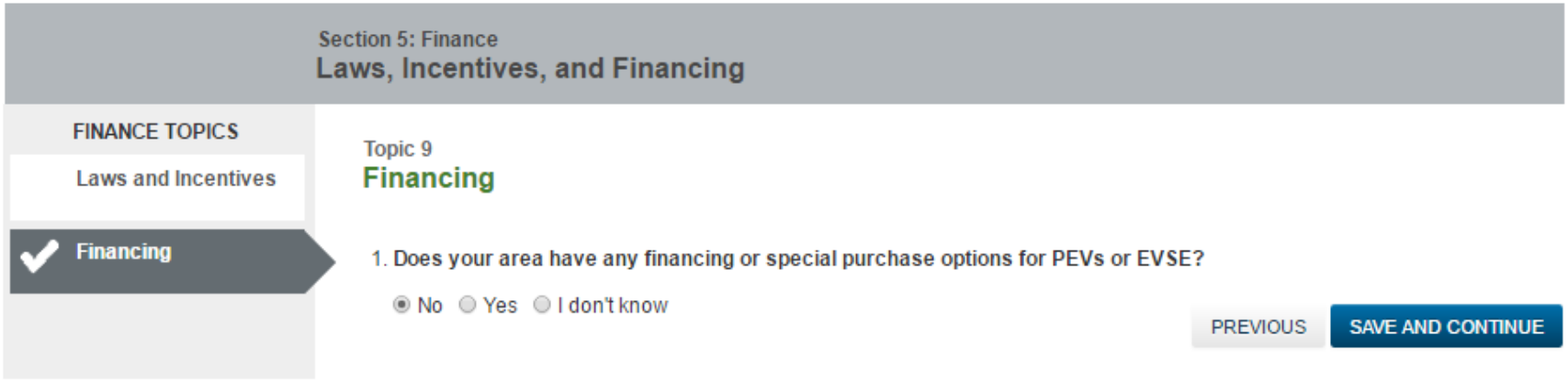
   Enter any additional notes:

4. Is there regional- or state-level coordination for educational efforts in your area?

   ○ No ○ Yes ○ I don't know

PREVIOUS SAVE AND CONTINUE


Section 5: Finance
Laws, Incentives, and Financing
FINANCE TOPICS
Laws and Incentives
Financing
Topic 8
Laws and Incentives
1. Does your area offer a tax incentive, grant, or rebate to purchase highway-certified PEVs? If yes, indicate the maximum amount allowable per vehicle.
No Less than $1000 $1001 to $2000 $2001 to $3000 More than $3000 I don't know
2. Does your area have a tax incentive, grant, or rebate for residential or public charging equipment? If yes, indicate the maximum allowable per installation.
No Less than $250 $251 to $500 More than $750 I don't know
3. What low-cost or non-monetary incentives does your area offer for PEVs? Check all that apply.
Free parking HOV lane access or bypassing taxi queues Free charging Reduced licensing or registration fees
Exemption from vehicle testing (e.g., emissions) I don't know
Enter any additional notes:
4. Does your area have any existing policies that benefit PEVs (for example, local fleet mandates to use electric vehicles, low carbon fuel standards, greenhouse gas emission regulations, or planning/zoning requirements for new construction to include EVSE provisions)? Use the notes section to explain.
Yes No No, our laws restrict PEV use I don't know
Enter any additional notes:
5. Are there any future laws, policies, or incentives pending or planned that would affect the deployment of PEVs in your area? Use the notes section to explain.
Yes, there are proposed policies that will encourage PEVs Yes, there are proposed policies that will restrict PEVs
Neither I don't know
Enter any additional notes:
PREVIOUS
SAVE AND CONTINUE


Section 5: Finance
Laws, Incentives, and Financing
FINANCE TOPICS
Laws and Incentives
Financing
Topic 9
Financing
1. Does your area have any financing or special purchase options for PEVs or EVSE?
No
Yes
I don't know
PREVIOUS
SAVE AND CONTINUE

Section 6: Process

Electric Vehicle Supply Equipment (EVSE) Permitting and Inspection Process

PROCESS TOPICS

- ✓ Application Process
- ✓ Information Access and Assistance
- ✓ Permit and Inspection Fees
- ✓ Installation Workforce Training

Topic 10

Application Process

1. **How long does it take an EVSE owner or site manager to complete the permitting, installation, and inspection process?**

   ○ Less than 1 day ○ 1 to 2 days ○ 2 days to 1 week ○ More than 1 week ◉ I don't know

2. **What are the options for submitting an EVSE permitting application? Check all that apply.**

   ☐ Online ☐ In-person ☐ By telephone ☐ Mail ☑ I don't know

   Enter any additional notes:

3. **What EVSE-specific permits have been developed in your area? Check all that apply.**

   ☐ Residential ☐ Commercial/workplace ☐ Public ☐ Fast charger ☐ None ☑ I don't know

PREVIOUS SAVE AND CONTINUE

Section 6: Process

Electric Vehicle Supply Equipment (EVSE) Permitting and Inspection Process

PROCESS TOPICS

- ✔ Application Process
- ✔ **Information Access and Assistance**
- ✔ Permit and Inspection Fees
- ✔ Installation Workforce Training

Topic 11

Information Access and Assistance

1. **Where can applicants find information about the EVSE permitting process? Check all that apply.**

☐ Online ☐ Telephone hotline ☐ Print publications ☐ Training sessions ☑ Other/Not Available ☐ I don't know

Enter any additional notes:

2. **Is there an accessible, designated point of contact for questions about the EVSE permitting process?**

○ No ○ Yes ◉ I don't know

Enter any additional notes:

PREVIOUS SAVE AND CONTINUE

Section 6: Process

Electric Vehicle Supply Equipment (EVSE) Permitting and Inspection Process

PROCESS TOPICS

- ✓ Application Process
- ✓ Information Access and Assistance
- ✓ **Permit and Inspection Fees**
- ✓ Installation Workforce Training

Topic 12

Permit and Inspection Fees

1. **What is the average fee for a residential EVSE permit and inspection? If your area charges a separate fee for these two services, add the two together.**

   ○ $0-50 ○ $51-100 ○ $101-300 ○ $301-500 ○ More than $500 ◉ I don't know

2. **What is the average fee for a commercial EVSE permit and inspection? If your area charges a separate fee for these two services, add the two together.**

   ○ $0-50 ○ $51-100 ○ $101-300 ○ $301-500 ○ More than $500 ◉ I don't know

PREVIOUS SAVE AND CONTINUE

Section 6: Process

Electric Vehicle Supply Equipment (EVSE) Permitting and Inspection Process

PROCESS TOPICS

- ✔ Application Process
- ✔ Information Access and Assistance
- ✔ Permit and Inspection Fees
- ✔ **Installation Workforce Training**

Topic 13

Installation Workforce Training

1. Are there EVSE installer training or certification programs available for electricians in your area? If so, please enter the program name(s) in the notes section below.

○ No ○ Yes ◉ I don't know

Enter any additional notes:

2. Have permitting inspectors in your area been trained on the specifics of EVSE installations?

○ No ○ Yes ◉ I don't know

PREVIOUS RESULTS

APPENDIX III -- Plug-In Electric Vehicle Readiness Scorecard Resources

The following next step guidance and resources were provided based on our responses to the PEV Readiness Scorecard, as of March 28, 2016.

Electric Vehicle Supply Equipment (EVSE) Permitting and Inspection Process

- **Develop separate permit applications for each type of** EVSE so that you can incorporate applicable requirements and gather the appropriate information for each permit type. A model permit*(PDF)* is available on the EV page of the Alternative Fuels & Advanced Vehicles Data Center (AFDC) website.

  Examples and Resources

  Oregon

  In 2008, the Oregon Building Codes Division adopted statewide electric vehicle supply equipment (EVSE) permitting and inspection requirements and then approved use of a demand factor table for calculating EVSE services and feeders in 2009. In 2010, the process was streamlined by allowing licensed electricians to install standard EVSE using Oregon's Minor Label Program. This approach treats standard EVSE like a large appliance, such as an electric water heater. See the full case study for more information.

  The U.S. Department of Energy has developed a model permit template*(Microsoft Word)* specifically for EVSE.

Diversify permit submission options to allow more applicants to apply with greater ease. In particular, online submissions encourage a more automated process.

- **Streamline EVSE permitting and installation** through automated processing, fast-tracking, and dedicated and specialized staff.

- **Use online and print materials, telephone hotlines, and in-person training** to educate and ensure that all entities understand the permitting process. Be sure that communication materials are clear, concise, and accessible.

Examples and Resources

Raleigh, North Carolina

The permit is completed as the applicant is walked through the process by permitting personnel. Getting a permit takes about one hour, and inspections can be performed the day after installation. The entire assessment, permitting, installation, and inspection process for a simple home-based EVSE project can be completed in as few as two days. See the full case study page for more information.

Orange County, Florida

Orange County is adopting the Raleigh, North Carolina electric vehicle supply equipment (EVSE) permitting process for residential units. The Orange County Building Division "fast tracks" residential permits with a mostly online process.

Houston, Texas

Online permits from Houston's Code Enforcement Group are issued automatically and instantaneously for standard EVSE, and an inspection can be performed on the same day as installation. The entire assessment, permitting, installation, and inspection process for a simple EVSE project can be completed in one day. See the full case study for more information.

Los Angeles Department of Water and Power

The Los Angeles Department of Water and Power and the Los Angeles Department of Building and Safety have teamed up to streamline the process of providing electric service for a basic home charger. For basic installations, the process will be completed in seven days. Customers can apply online for residential EVSE permitting approval, expedited charger inspection, and meter installation.

Atlanta, Georgia

The city has guides on permitting and inspection for both single-family and multi-family dwellings. The City of Atlanta's permitting process for EVSE has been streamlined to ensure easy and safe installation.

Identify a designated point of contact within the permitting agency that will be accessible and responsive to consumers and others; list the contact information prominently on all permitting materials.

Examples and Resources

Los Angeles Department of Water and Power

The Los Angeles Department of Water and Power has a dedicated e-mail address and telephone hotline for questions about its Electric Vehicle Program.

Raleigh, North Carolina

The City of Raleigh directs potential PEV owners to contact a City of Raleigh Plans Examiner as part of its online resources. Links to the key staff members involved in the process are provided on the website.

Keep permit application and inspection fees low to allow for more extensive infrastructure development. Consider setting fee structures that offer low fees for straightforward permits and higher fees for complex installations.

Examples and Resources

Raleigh, North Carolina

The City of Raleigh*(PDF)* calculates electrical permit fees based on the square footage of the building and an established cost per square foot. For a house of 5,000 square feet, the electrical permit fee would be approximately $210. The minimum fee is $76.

Los Angeles Department of Water and Power

The Los Angeles Department of Water and Power charges $75 for a permit on a standard EVSE installation. More complex installations have different permit requirements and potentially different costs.

Bellevue, Washington

The City of Bellevue,*(PDF)* Washington, has established a flat fee of $98 for permitting and inspection of EVSE.

State of California

The PEV Collaborative put together a list of permit fees for various cities in the State of California*(PDF)*. These range from under $60 to over $600. The Collaborative recommends that the permit fee include the time to inspect the installation.

Connect with a national training program (e.g., Electric Vehicle Infrastructure Training Program, Advanced Electric Drive Vehicle Education Program) or a qualified local university to educate EVSE installers and ensure efficient, reliable, and safe installations.

- **Connect with a national training program or organization (e.g., International Association of Electrical Inspectors)** or a qualified local university to educate electrical inspectors on EVSE and ensure efficient and thorough inspections.

Examples and Resources

Installation Training

The Electric Vehicle Infrastructure Training Program (EVITP) provides structured training programs for EVSE installers and trainers. The course work addresses the requirements, regulations, products, and strategies that enable electrical contractors and electricians to master successful, expert, and professional customer relations, installation, and maintenance of infrastructure. EVITP is a collaborative that includes major vehicle manufacturers, utilities, and the National Electrical Contractors Association. A training program was held in

April 2011 to educate master instructors on EVSE installation, to enable them to return to their regions and train additional instructors. EVITP courses are offered through a national network of Electrical Industry Training Centers and Community Colleges.

The U.S. Department of Energy, through the Clean Cities TV online video library, has developed a training video for installation and inspection of EVSE. The video provides information for electrical contractors and inspectors as they assist homeowners in ensuring that proper residential EVSE standards, practices, and safety precautions are followed.

The National Alternative Fuel Training Center (NAFTC) at West Virginia University is creating an Advanced Electric Drive Vehicle Education Program for the U.S. Department of Energy, which will include an educational component for EVSE installers. NAFTC provides its curricula through a series of affiliated community and technical colleges throughout the United States.

For additional information about alternative fuel and advanced vehicle training programs, see Technician Training for Alternative Fuels.

The International Association of Electrical Inspectors may also be able to assist inspectors seeking training on the specifics of EVSE installation.

Laws, Incentives, and Financing

- **Identify local and state incentives that will encourage EVSE investment**. For examples of infrastructure incentives already in place in other locations, see the AFDC Incentives & Laws website.

Examples and Resources

Arizona Electric Vehicle Charging Equipment Tax Credit

A tax credit of up to $75 is available to individuals for the installation of a PEV charging outlet in a house or housing unit they have built. To qualify, the outlet must meet certain codes and standards. (Arizona Revised Statutes 43-1090 and 43-1176)

Colorado EVSE Grants

The Electric Vehicle Grant Fund provides grants to local governments for the installation of qualified EVSE. Grants are prioritized based on the local government's commitment to energy efficiency. As of July 2011, no funding is available for this program. (Colorado Revised Statutes 24-38.5-103)

Hawaii EVSE Rebates

Qualified Hawaii residents, businesses, government agencies, and non-profit agencies may apply for rebates for the purchase of EVSE through the Hawaii EV Ready Rebate Program. Rebates are 30% of the charging system cost including installation, up to $500. EVSE must be purchased on or after August 1, 2010, and installed before the rebate program ends; EVSE product and installation requirements apply. Rebates are issued on a first come, first served basis. The Hawaii EV Ready Rebate Program was extended past its original deadline of September 2011, but funds were eventually exhausted in May 2012.

San Antonio, Texas, EVSE Rebates

For a limited time, CPS Energy and the City of San Antonio are offering a rebate of 50% of the actual cost of the Level II EV charger and installation, up to a maximum of a $1,000.00 for any single-family home. A limited number of rebates are available. Rebates will be made on a 'first come, first served' basis until the funds for the program are exhausted.

Los Angeles EVSE Rebate

The Los Angeles Department of Water and Power provides rebates of up to $2,000 to residential customers who purchase or lease a new electric vehicle and install Level 2 EVSE with a separate time-of-use meter at their home. Customers living in apartment buildings or condominiums may also qualify for the rebate so long as they have received permission from the property owner and/or homeowner association. The rebate is available to the first 1,000 customers that submit a completed application. The program will expire on June 30, 2013, when the program goals are met, or when the funds are exhausted, whichever occurs first.

Bay Area EVSE Deployment Program

The Bay Area Air Quality Management District (BAAQMD) Board of Directors has authorized $3.9 million in funding to provide incentives for up to 3,000 residents who purchase new PEVs and install level 2 home charging stations in the San Francisco Bay Area. PEV drivers that choose to participate in this program will be required to provide PEV usage data over a three-year period. This data will be used to evaluate Bay Area PEV driver charging patterns and help to inform and develop future PEV incentive programs.

- **Identify local and state fleet mandates and emissions regulations that will encourage PEV deployment**. For examples of such laws, see the AFDC Incentives & Laws website.

Examples and Resources

Minnesota Plug-In Electric Vehicle Initiatives

When reasonably possible, Minnesota state agencies must purchase on-road vehicles that use alternative fuels, including biodiesel blends of 20% (B20) or greater, compressed or liquefied natural gas, ethanol blends of 70% (E70) or greater, hydrogen, propane, or electricity, or

(with the exception of buses, snowplows, and construction vehicles) have a fuel economy rating that exceeds 30 miles per gallon (mpg) in the city and 35 mpg on the highway. In addition, all solicitation documents that include the purchase of passenger automobiles issued under the jurisdiction of the Minnesota Department of Administration must assert the intention of the state to begin purchasing all-electric vehicles (EVs), plug-in hybrid electric vehicles (PHEVs), and neighborhood electric vehicles (NEVs) as soon as they become commercially available. Vehicles must meet the state's performance specifications and be priced no more than 10% above the price for comparable gasoline-powered vehicles. (Minnesota Statutes 16C.138 and 169.011)

Alternative Fuel Vehicle Acquisition Requirements - Albuquerque, New Mexico

All motor vehicles purchased by the City of Albuquerque must be dedicated, flexible fuel, or dual-fuel alternative fuel vehicles (AFVs). Alternative fuels are defined as fuels other than gasoline and 100% petroleum diesel and may include ethanol, biodiesel, natural gas, electricity, propane, or other alternative fuels approved by the city's Chief Administrative Officer. (See Executive instruction no. 26.)

California Low Emission Vehicle and Zero Emission Vehicle Standards

California's LEV II exhaust emissions standards apply to model year (MY) 2004 and subsequent model year passenger cars, light-duty trucks, and medium-duty passenger vehicles meeting specified exhaust standards. New MY 2009 and subsequent model year passenger cars, light-duty trucks, and medium-duty passenger vehicles must meet specified fleet average greenhouse gas (GHG) exhaust emissions requirements. Each manufacturer must comply with these fleet average GHG requirements. Grid-connected hybrid electric vehicles may be eligible for an alternative compliance method. New passenger cars, light-duty trucks, and medium-duty passenger vehicles are certified as zero emission vehicles (ZEVs) if the vehicles produce zero exhaust emissions of any criteria pollutant (or precursor pollutant) under any and all possible operational modes and conditions. Manufacturers with annual sales greater than 60,000 vehicles must produce and deliver for sale in California a minimum percentage of ZEVs for each model year. Manufacturers with annual sales between 4,501 and 60,000 vehicles may comply with the ZEV requirements through multiple alternative compliance options that include producing low emission vehicles and obtaining ZEV credits. Manufacturers with annual sales of 4,500 vehicles or less are not subject to this regulation. (California Code of Regulations Title 13, Section 1961-1961.1)

Local Government Electric Vehicle EV Charging Infrastructure Requirements, State of Washington

Jurisdictions must develop regulations to allow the use of EV infrastructure and battery charging stations in all areas except critical areas or areas zoned for residential or resource use. This regulation applies to jurisdictions that meet specific location criteria. The Washington Department of Commerce included a model ordinance, development regulations,

and guidance for local governments for site assessment and installing EV infrastructure in "Electric Vehicle Infrastructure: A Guide for Local Governments in Washington State." This requirement is contingent upon federal funding. Additionally, cities or municipalities may adopt incentive programs to encourage retrofitting of existing structures capable of charging EVs. (Revised Code of Washington 35.63.126-35.63.127, 35A.63.107, 36.70.695, and 36.70A.695)

To find out about PEV deployment projects and incentives in your area, visit the following Alternative Fuel Data Center resources:

- Incentives & Laws Database
- Hybrid and Plug-In Hybrid Vehicle Deployment Projects

- **Identify local and state incentives that will encourage PEV investment**. For examples of infrastructure incentives already in place in other locations, see the AFDC Incentives & Laws website.

Examples and Resources

Connecticut Alternative Fuel and Advanced Technology Vehicle Grants

The Connecticut Clean Fuel Program provides funding to municipalities and public agencies that purchase, operate, and maintain alternative fuel and advanced technology vehicles, including those that operate on compressed natural gas, propane, hydrogen, and electricity. The program also provides funding to install diesel retrofit technologies, including diesel particulate filters, diesel oxidation catalysts, and closed crankcase filtration systems. Diesel retrofit technologies must be certified by the U.S. Environmental Protection Agency or the California Air Resources Board to be eligible for funding.

New York City - Alternative Fuel and Advanced Vehicle Funding

The New York State Energy Research and Development Authority (NYSERDA) administers a program in cooperation with New York City Department of Transportation. The program helps private companies and non-profit organizations operating vehicles in New York City to acquire alternative fuel vehicles and advanced vehicles. NYSERDA awards program funds on a competitive basis for up to 50% of the incremental cost of purchasing new electric vehicles (EVs) and up to 80% of the incremental cost for purchasing new or converting medium- and heavy-duty EVs. For more information, see the NYSERDA Transportation Projects website.

Tennessee Electric Vehicle Rebates

Through Tennessee participation in the EV Project, the Tennessee Department of Revenue offers a rebate of $2,500 on the first 1,000 qualified electric vehicles purchased in Tennessee. The department will administer the rebate program in cooperation with Nissan's automotive

dealerships in the state. Customers will receive the rebate at the time they purchase their vehicles. For additional information, see the State of Tennessee Electric Vehicle Purchase Rebate*(PDF)*description. (Tennessee Senate Bill 2090, 2011)

Long Island Power Authority (LIPA) Plug-In Electric Vehicle Rebate

Long Island Power Authority (LIPA) offers residential customers a $500 mail-in rebate for qualifying plug-in hybrid electric or all-electric vehicles. Vehicles must be purchased, registered, and owned by the LIPA customer during the period beginning December 20, 2010, and ending December 31, 2011. For additional information, see the LIPA Plug-in Electric Vehicle Rebate Program.

Maryland Plug-In Vehicle Tax Credit

Purchasers of qualified all-electric vehicles (EVs) and plug-in hybrid electric vehicles (PHEVs) may apply for a tax credit of up to $2,000 against the imposed excise tax. The tax credit is limited to one vehicle per individual and 10 vehicles per business entity. Vehicles must be registered in Maryland, unless the vehicle manufacturer conforms to applicable state or federal laws or regulations governing clean-fuel vehicles or EVs during the year in which the vehicle was purchased, or the vehicle was originally registered in another state. A qualified vehicle must meet the following criteria:

- Has a gross vehicle weight rating not to exceed 8,500 pounds;
- Can achieve a maximum speed of at least 55 miles per hour;
- Is a two-, three-, or four-wheeled vehicle;
- Is propelled to a significant extent by an electric motor that draws electricity from a battery with a capacity of at least four kilowatt hours in the case of a four-wheeled motor vehicle, or at least 2.5 kilowatt hours in the case of a two- or three-wheeled motor vehicle;
- Has not been modified from original manufacturer specifications; and
- Is purchased between October 1, 2010, and July 1, 2013.

(Maryland Statutes, Transportation Code 13-815)

- **Identify opportunities to enact local and station incentives and laws that will assist in the deployment of PEVs into the future**. For examples of such laws, see the AFDC Incentives & Laws website.

- **Identify both monetary and non-monetary incentives that will encourage PEV investment.** For examples of non-monetary and monetary incentives already in place, see the AFDC Incentives & Laws website.

Examples and Resources

Idaho Inspection Exemption

All-electric vehicles are exempt from state motor vehicle inspection and maintenance programs. (Idaho Statutes 39-116B)

North Carolina High Occupancy Vehicle Lane Exemption

Qualified plug-in electric vehicles, including all-electric vehicles and plug-in hybrid electric vehicles, may use North Carolina HOV lanes, regardless of the number of occupants. (House Bill 222, 2011, and North Carolina General Statutes 20-4.01 and 20-146.2)

Hawaii EV Parking Fee Exemptions

Qualified vehicles affixed with special state-issued electric vehicle license plates are exempt from parking fees charged by any non-federal governmental authority. (Hawaii Act 290*(PDF)* , 1997)

Salt Lake City Free Metered Parking

Salt Lake City grants free metered parking to vehicles which can be powered solely by an alternative fuel, including electricity. No coins need be deposited into a city parking meter to park your vehicle for up to the time limit posted on the meter. All posted time limits on the meters are still in force. (Salt Lake City Ordinance 82, 2005)

Illinois Electric Vehicle Registration Fee Reduction

Individuals may register an electric vehicle (EV) at a discounted registration fee of no more than $18 per year. To qualify for the reduced fee, the EV must be designed to carry 10 or fewer passengers or designed to carry more than 10 passengers but weigh 8,000 pounds or less. (House Bill 4717, 2010, and 625 Illinois Compiled Statutes 5/3-805)

- Work with financial institutions to identify opportunities for collaboration programs that will assist in **low-cost financing for the purchase of PEVs and EVSE**.

Examples and Resources

Florida EVSE Financing

Property owners may apply to their local government for funding to help finance EVSE installations on their property or enter into a financing agreement with the local government for the same purpose. (Florida Statutes 163.08)

Alternative Fuel Vehicle Loans, Local Government Federal Credit Union

The Local Government Federal Credit Union offer green vehicle loans to purchase new and used qualified fuel-efficient vehicles. Vehicles with a combined fuel economy rating of a minimum of 28 miles per gallon, according to revised fuel economy ratings posted on

www.fueleconomy.gov, qualify. The loan interest rates are 0.5% lower than traditional new or used vehicle loan rates.

Utility Involvement

- **Work with your local utilities to implement tools and resources that will educate customers** about the costs and benefits of PEVs under different rate structures.

Examples and Resources

Southern California Edison

Southern California Edison (SCE) offers a number of resources for customers. SCE asks customers who are planning to acquire a PEV to complete a checklist and submit it to the utility. This notifies SCE of the pending PEV purchase and enables SCE to help the customer select an appropriate rate structure. SCE is participating in a program to install smart meters for all its 5 million customers by 2012.

San Diego Gas & Electric

San Diego Gas & Electric (SDGE) offers resources for customers regarding electric vehicles. The utility has a very active multi-family dwelling program to assist with PEV readiness in these kinds of housing units. SDGE is participating in a smart meter program to upgrade all meters in its service territory over a period of three years.

Pacific Gas & Electric

Pacific Gas & Electric (PG&E) offers a step-by-step guide for consumers considering electric vehicles, and a telephone hotline for customers to discuss PEV plans with the utility. PG&E is upgrading to smart meters for its customers.

Los Angeles Department of Water and Power

The Los Angeles Department of Water and Power (LADWP) offers a consumer hotline for consultations on rate and meter options, and will dispatch an electric service representative to the consumer's site to assess service for possible necessary upgrades.

- **Establish a simple procedure for customers to notify the utility of their plans to install EVSE**; prominently display information about the plan in any related publications.

Examples and Resources

33 Edison

Southern California Edison (SCE) offers a number of resources for customers. SCE asks customers who are planning to acquire a PEV to complete a checklist and submit it to the

utility. This notifies SCE of the pending PEV purchase and enables SCE to help the customer select an appropriate rate structure. The utility conducts forecasting to plan for infrastructure upgrades related to electric vehicles.

- **Work with utilities to help identify opportunities to deploy "smart grid" technologies** or establish policies that might encourage these technologies.

Examples and Resources

Duke Energy

Duke Energy has conducted several studies on its distribution infrastructure to understand where potential impacts occur. It also recommends that PEV owners notify Duke Energy about their vehicles in order for the utility to conduct assessments at the neighborhood level.

Plug-In Vehicle Market Conditions

Most manufacturers have established plans for vehicle roll-out. Work with manufacturers and engage local dealerships and other stakeholders to be sure that your area is ready for the vehicles well in advance.

Examples and Resources

PEV Projections

According to the U.S. Department of Energy's One Million Electric Vehicles by 2015: February 2011 Status Report*(PDF)*, the production capacity of PEV models announced to enter the U.S. market through 2015 should be sufficient to achieve the goal of 1 million PEVs by 2015.

The electricity industry association, Independent System Operators (ISO)/Regional Transmission Organizations (RTO) Council (IRC), published a report, Assessment of Plug-in Electric Vehicle Integration with ISO/RTO Systems*(PDF)*, which shows the projected distribution of consumer and fleet PEVs in the top 20 most populous metropolitan areas at the one-million-vehicle target. Based on these projections, the Los Angeles, San Francisco, New York, Washington, DC, and Boston metropolitan areas will have the greatest number of PEVs in use.

The U.S. Energy Information Administration's Annual Energy Outlook 2011 predicts that sales of PEVs will account for 0.65% of total new light-duty vehicle sales by 2015, and 1.26% of light-duty vehicles sales by 2020. The Annual Energy Outlook Transportation Demand Sector Data Tables report annual PEVs sales projections by region through 2035.

The Electric Drive Transportation Association (EDTA) tracks upcoming PEV models on its website. By 2016, there will be approximately 20 all-electric (EV) models available and

about nine plug-in hybrid electric vehicle (PHEV) models available in the United States. Also refer to FuelEconomy.gov's New & Upcoming Electric Vehicles and New & Upcoming Plug-In Hybrids and Plug In America's Plug-In Vehicle Tracker.

State of Maryland

As part of a comprehensive assessment of long-term electricity needs, the state of Maryland sponsored an analysis to project PEV market penetration in the state through 2030. Using data on state historical vehicle sales and use, household vehicle sales, and vehicle useful life, the report predicts that 79,299 PEVs will be on the road in Maryland in 2020 (base-case scenario), presenting a 1.5% market penetration. For more information, see the Long-Term Electric Report for Maryland: Plug-In Electric Vehicles White Paper*(PDF)*.

- **Identify opportunities for utilities, local government, and private entities to install publicly-accessible and workplace EVSE** in your area in the coming years.For information about the number of public EVSE in your jurisdiction, see the AFDC Alternative Fueling Station Locator.

Examples and Resources

Electrification Coalition

The Electrification Coalition's Electrification Roadmap*(PDF)* projects that 1.5 public EVSE units per PEV will be available in 2020. Once PEVs are adopted on a wider basis and initial range anxiety concerns are overcome, the number of chargers per vehicle will likely decrease. The Electrification Coalition predicts that there will be approximately one public EVSE location per PEV by 2030.

When considering the deployment of public charging infrastructure, it is important to keep in mind that most PEV owners will conduct the majority of their charging at home, via residential EVSE.

Alternative Fueling Station Locator

The AFDC Alternative Fueling Station Locator allows users to search for non-residential EVSE locations near you. The Total Counts by State and Electric Charging Station Locations Map show state-level EVSE counts, not including residential or legacy charging infrastructure. As of July 2012, the states with the most EVSE locations were California, Florida, Texas, Washington, and Oregon.

When considering the deployment of public charging infrastructure, it is important to keep in mind that most PEV owners will conduct the majority of their charging at home, via residential EVSE.

- Identify deployment initiatives and funding opportunities that will **encourage private fleet investment in PEVs**.

- **Encourage local private fleets make PEV investments** and identify opportunities for private companies to invest in such vehicles. For examples of fleets already using PEVs, see the AFDC Fleet Experiences website.

Examples and Resources

AT&T

In 2009, AT&T made a commitment to invest up to $565 million to deploy 15,000 alternative fuel vehicles. AT&T deployed two PEVs: a Smith Newton cargo truck in St. Louis, Missouri and a Ford Transit Connect Electric van in Dallas, Texas. AT&T expected to make additional deployments in 2011. The Smith Newton truck located in St. Louis, is the world's largest electric battery-powered truck and was the first commercial all-electric truck to achieve new vehicle emissions certification in California.

GE*(PDF)*

In November 2010, GE announced that at least half of its 30,000 vehicle fleet will be PEVs, and will partner with its fleet customers to deploy a total of 25,000 PEVs by 2015. This initiative began in 2011 with the purchase of 300 EVs. GE will also have two PEV customer experience and learning centers to provide customers, employees, and researchers first-hand access to PEVs and developing technologies.

Pacific Gas and Electric

Pacific Gas and Electric (PG&E) has a long history of piloting new vehicle technologies in its own fleet. Recently, PG&E added the nation's first all-electric bucket truck to the fleet. The fleet now includes multiple all-electric trucks, PHEV and HEV diesel-electric bucket trucks, and numerous electric passenger vehicles, including the Ford Escape PHEVs and two Toyota Prius PHEVs. PG&E added 20 Chevrolet Volt sedans to its fleet. To support these new vehicles, PG&E has installed more than 50 new EVSE stations at various locations, with plans to add more as new vehicles come into the fleet.

Frito-Lay

Frito-Lay has incorporated Smith Newton electric trucks into its fleet in multiple cities. By the end of 2012, Frito-Lay North America expects to have over 280 units in service, which would make them one of the largest all-electric truck fleets in the United States.

- Identify alternative fuel vehicle (AFV) acquisition requirement policies and funding opportunities that might **encourage public fleet investment in PEVs**.

Examples and Resources

New York City

New York City had the largest municipal PEV fleet in the country, now totaling 430 vehicles. The most recent infusion of vehicles includes 50 Chevrolet Volt sedans being used by New York Police Department, as well as 10 Ford Transit Connect vans and 10 Navistar eStar vehicles being used by the Department of Citywide Administrative Services, the Department of Correction, the Department of Environmental Protection, Department of Parks and Recreation, Department of Sanitation, Department of Transportation, New York City Fire Department, and Taxi and Limousine Commission. The City's electric vehicle program is possible through partnerships with the New York State Power Authority and the U.S. Department of Transportation, and is part of the sustainability goals set out in the city's PlaNYC.

St. Paul, Minnesota

St. Paul recently added one Ford Transit Connect vehicle to their fleet, which is being used to deliver equipment between recreational centers. As part of a collaboration with Xcel Energy and three additional local jurisdictions (City of Minneapolis, Hennepin County, and Ramsey County), St. Paul has ordered two additional Ford Transit Connect vehicles. Future uses for these vehicles could range from carting library books, interoffice mail and maintenance supplies to transporting staff and families in crisis. The cities will share performance and maintenance data with Xcel Energy, which will help the utility understand how the vehicles operate with heavy use and in extreme weather, and to gauge how plug-in vehicles might affect the region's electrical grid.

San Francisco Bay Area

The Bay Area Metropolitan Transportation Commission recently announced that it will invest in four electric vehicle projects that will deploy 170 vehicles, including 90 plug-in electric vehicles (including 79 Nissan Leaf sedans) for use in eight jurisdiction's fleets.

Seattle, Washington

As part of their Green Fleet Action Plan*(PDF)*, the City of Seattle will add 35 Nissan Leaf vehicles to their fleet by 2012. Seven of the vehicles have been delivered thus far, one for the Police Department Parking Enforcement Program and six for the City's centralized motor pool program. The City of Seattle compiled a cost and emissions comparison*(PDF)* for their small sedan fleet, which compares the Leaf to similar vehicles.

Houston, Texas

Reliant Energy sponsored the conversion of 10 City of Houston HEVs to PHEVs that can deliver 100 mpg, as well as lower emissions. The city fleet plans to acquire an additional 100 PEVs, including all-electric Nissan Leafs.

Long-Term Vehicle and Infrastructure Planning

- While involvement from diverse stakeholders is important, **appoint a single individual or agency to take responsibility for achieving deployment goals** and have final decision making authority.

- Work with the appropriate entities to **develop a microclimate and/or market analysis that takes into account EVSE siting considerations, including accessibility, costs, safety, and aesthetics.** Incorporate this analysis into any future plans or strategies related to PEV or infrastructure deployment.

Examples and Resources

Raleigh, North Carolina

The City of Raleigh gathered a list of EVSE siting considerations relating to costs, safety, and aesthetics for its public EVSE locations in EVSE Site Selection Considerations for Properties Owned/Operated by the City of Raleigh, NC*(PDF)*.

Work with your local Department of Transportation to identify common, accepted graphics, text, and practices for way-finding in your area. This will help PEV drivers locate EVSE within large parking lots or garages.

APPENDIX IV – Other Resources

Key resources are highlighted.

CLEAN CITIES

Clean Cities' Community Readiness Projects

On September 8, 2011, former Energy Secretary Steven Chu announced awards for 16 electric vehicle projects totaling $8.5 million. These projects in 24 states and the District of Columbia are helping communities prepare for plug-in electric vehicles (EVs) and charging infrastructure. Through Clean Cities' Community Readiness and Planning for Plug-In Electric Vehicles and Charging Infrastructure awards, local public-private partnerships collaborated to develop strategies to deploy electric vehicles.

Clean Cities' Plug-In Vehicle and Infrastructure Community Readiness Workshop

The U.S. Department of Energy (DOE) hosted the Plug-In Vehicle and Infrastructure Community Readiness Workshop on July 22, 2010. DOE created this workshop to advance deployment of electric plug-in vehicles and related infrastructure. In this meeting, DOE gathered information and lessons learned from communities in the process of launching programs to deploy electric drive vehicles.

Clean Cities' Publications

- Plug-In Electric Vehicle Handbook for Consumers
- Plug-In Electric Vehicle Handbook for Electrical Contractors
- Plug-In Electric Vehicle Handbook for Public Charging Station Hosts
- Plug-In Electric Vehicle Handbook for Fleet Managers
- And More

Clean Cities Electric Vehicle Infrastructure Training Program (EVITP)

EVITP provides training and certification for people installing electric vehicle supply equipment (EVSE). The Electric Vehicle Infrastructure Training Program offers training around the United States at community colleges and electrical training centers. Training is open to licensed electricians in compliance with requirements of state or municipal jurisdictions. Training on local requirements supplements core training when appropriate.

OTHER U.S. DEPARTMENT OF ENERGY RESOURCES

PEV Scorecard – See Appendix for Kentucky's Scorecard

The Plug-In Electric Vehicle Readiness Scorecard helps communities assess their readiness for the arrival of plug-in electric vehicles (PEVs) and electric vehicle supply equipment (EVSE).

Department of Energy Alternative Fuel Data Center

- Search vehicle availability
- Locate charging stations
- Search federal and state laws and incentives
- Deployment
- Maintenance & Safety
- Infrastructure Development
- And More

Department of Energy EV Everywhere Grand Challenge

The *EV Everywhere* Grand Challenge focuses on the U.S. becoming the first nation in the world to produce plug-in electric vehicles that are as affordable for the average American family as today's gasoline-powered vehicles within the next 10 years. The effort includes Research & Development; Modeling, Testing, and Analysis; The Workplace Charging Challenge; Community and Fleet Readiness; and Workforce Development.

EV Everywhere Grand Challenge Blueprint (January 2013)
This "Blueprint" provides an outline for the Department of Energy's (DOE) technical and deployment goals for electric vehicles over the next five years. DOE will pursue these targets in cooperation with a host of public and private partners.

Department of Energy's Workplace Charging Challenge (January 2013)

To support the deployment of PEV infrastructure, DOE has launched the Workplace Charging Challenge, with a goal of achieving a tenfold increase in the number of U.S. employers offering workplace charging in the next five years. Commit to assessing employee charging demand and developing a plan to install charging stations. Partner plans will include milestones for charging infrastructure installation with a minimum goal of provision of charging for a portion of PEV-driving employees at one or more major employer worksites, and a best practice goal of assessing and meeting all PEV-driving employee demand. Take action by implementing a plan to install charging stations for their employees. Share progress on achieving plan milestones over time, as well as best practices.

STATE AND REGIONAL PROJECTS

California Plug-in Electric Vehicle Collaborative (2012)

- Community PEV Readiness Toolkit
- PEVC Report: Streamlining the Permitting and Inspections Process for Plug-In Electric Vehicle Home Charger Installations
- PEVC Report: Accessibility and Signage for Plug-In Electric Vehicle Charging Infrastructure
- And More

Ecotality & The EV Project (Tennessee, Tucson, Phoenix, San Diego, Puget Sound, Oregon)

- EV Project EVSE and Vehicle Usage Report: 4th Quarter 2012 (Extensive Data)
- Electric Vehicle Charging Infrastructure Deployment Guidelines for the State of Tennessee (May 2010)
- Long-Range EV Charging Infrastructure Plan for Tennessee (November 2010)
- First Responder Training (March 2011)
- Accessibility at Public EV Charging Locations (October 2011)
- Battery Electric Vehicle Driving and Charging Behavior Observed Early in The EV Project (April 2012)
- A First Look at the Impact of Electric Vehicle Charging on the Electric Grid in The EV Project (May 2012
- DC Fast Charge-Demand Charge Reduction (May 2012)

Maryland Electric Vehicle Infrastructure Council (Feb 2013)

National Association of State Energy Officials (NASEO) (NASEO) Cluster Analysis (Feb 2013)

The EVSE Cluster Analysis proposes nine land use "clusters" that represent zones of opportunity for current and future EVSE deployment in the northeast. These cluster analyses can be leveraged by other cities.

North Carolina PEV Roadmap (February 2013)

The N.C. PEV Readiness Plans were created through the N.C. PEV Readiness Initiative: Plugging-in from Mountains to Sea (M2S) – one of only 16 projects awarded across the United States through the U.S. Department of Energy (DOE). The project covered the entire state of North Carolina with a focus on four metropolitan areas in the Greater Asheville, Charlotte, Piedmont Triad and Triangle areas. Partners include the Centralina Government and Advanced Energy. Key Highlights from the statewide roadmap:

- Records from the NC Department of Motor Vehicles revealed there are more than 700 PEVs registered in North Carolina as of August 2012 and estimates indicate there will be more than 750,000 PEVs on the road by 2030!

- Data collected through the planning process indicate there are 350 public and 170 private charging stations in North Carolina.
- An analysis of PEV incentives, including a survey of fleet managers provides recommendations on the types of incentives beneficial for North Carolina:
- Review of policies, codes and standards, including recommendations for updates to local zoning ordinances, municipal codes, historic districts, sign requirements; encroachment agreement processes, and Americans with Disabilities Act (ADA)
- Key messaging developed for target audiences

North Carolina PEV Community Readiness Plans (February 2013)

- Greater Triangle
- Charlotte
- Piedmont Triad
- Asheville

North Carolina - Advanced Energy (2010-2012)

- Community Planning Guide for Plug-in Electric Vehicles
- Plug-In Electric Vehicle (PEV) Charging Options: for Residents of Condominiums, Apartments and Rental Properties
- E-Learning Course on Electric Vehicle Supply Equipment Installations
- RESIDENTIAL CHARGING STATION INSTALLATION HANDBOOK for Single—and Multi—Family Homeowners and Renters
- PEV Usage Study Partners
- Installing Charging Stations
- NC PEV Taskforce – Building the Foundation for Change
- How to Drive Electric and Other FAQs on Electric Vehicles
- Bringing Electrified Transportation to the Triangle
- Charging Station Technology Review
- Charging Station Installation Handbook

Plug-In Ready Michigan

In the fall of 2011, Clean Energy Coalition was selected by the United States Department of Energy (DOE) to work with a coalition of more than 40 regional project partners to create an electric vehicle infrastructure readiness plan for Michigan.

Since the launch of this project, Clean Energy Coalition has been working with project partners, NextEnergy and Greater Lansing Area Clean Cities (GLACC) to identify existing barriers and opportunities related to planning, zoning, codes, permitting, and utilities. As part of this effort, the team held a series of stakeholder meetings, completed a Michigan-specific forecasting study, and conducted a survey of Michigan's municipalities to help gauge the level of awareness and on-the-ground readiness for electric vehicle deployment.

Rocky Mountain Institute EV City Casebook (2012)

In recognition of the importance of urban areas in the introduction and scale-up of electric vehicles, the EV City Casebook presents informative case studies on city and regional EV deployment efforts around the world. These case studies are illustrative examples of how pioneering cities are preparing the ground for mass market EV deployment. They offer both qualitative and quantitative information on cities' EV goals, progress, policies, incentives, and lessons learned to date. The purpose of the EV City Casebook is to share experiences on EV demonstration and deployment, identify challenges and opportunities, and highlight best practices for creating thriving EV ecosystems. These studies seek to enhance understanding of the most effective policy measures to foster the uptake of electric vehicles in urban areas.

OTHER RESOURCES

Safety Training

National Fire Protection Association's Electric Vehicle Safety Training project is a nationwide program to help firefighters and other first responders prepare for the growing number of electric and hybrid vehicles on the road in the United States. The NFPA project, funded by a $4.4 million grant from the U.S. Department of Energy, provides first responders with information they need to most effectively deal with potential emergency situations involving these types of vehicles.

Incentives-National Conference of State Legislators (May 2011)

These incentives include high-occupancy vehicle lane exemptions for EV's as well as monetary incentives, such as tax exemptions or credits and registration fee reductions, emission test exemptions and parking incentives.

Volt Tracker

Professor Andrew Dozier University of Louisville Speed School of Engineering and Cooper Dozier graduate student at Bellarmine University are at Bob Hook Chevrolet Louisville checking out the charging system and data collection system. The charging data is fed directly back to University of Louisville when Volts are charged at Bob Hook. Charging Station Presentation and Poster Overview.