Greater Kansas City Plug-in Readiness Strategy

Proposed, for public comment
February 16, 2011

Submitted by
the steering committee of the

Greater Kansas City Plug-in Readiness Initiative

Chaired by Mid-America Regional Council and Kansas City Regional Clean Cities Coalition

In partnership with Project Get Ready, a Rocky Mountain Institute program
Members of the Greater Kansas City Plug-in Readiness Initiative

The Greater Kansas City Plug-in Readiness Initiative, an ad hoc group of high-level stakeholders, played a guiding and consulting role in developing this strategy document. Each member of the task force agreed to participate in shaping this strategy without formally endorsing the recommendations.

Steering Committee

Ron Achelpohl, Mid-America Regional Council; co-chair
Kelly Gilbert, Metropolitan Energy Center and Kansas City Regional Clean Cities; co-chair
Terry Akins, IBEW Local 124
Troy Carlson, Initiatives, Inc.

Mark Dehner, KD Equities
Bryan Fox, KCP&L
Tim Gelvin, Johnson County Community College
Chris Gutierrez, Kansas City Area Development Council and KC Smart Port
James Joerke, Johnson County, Kan.
Larry Kinder, LilyPad EV
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Burns and MacDonnell, Laura Girard
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Commerce Bank, Tim Lawler
Concerned Citizens of Platte County, Susan Brown
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Kansas City, Mo., Sam Swearngin
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KCP&L, Janet Waddell
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Mid-America Regional Council, Tom Jacobs
Mid-America Regional Council, Marc Hansen
Missouri Department of Natural Resources, Bob Painter
Metropolitan Community Colleges, Stan Abrahamson
Metropolitan Community Colleges, Kevin Kelley
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Mission, Kan., Mike Scanlon
Mission, Kan., Martin Rivarola
Mission, Kan., Danielle Murray
Missouri Dept of Economic Development, Jason Archer
Nissan, Brian Verprauskus
Olathe Ford, Debi Jones
Real Clear Consulting, Kim Verhoeven
Roeland Park, John Carter
Smith Electric Vehicles, Kevin Beck
Smith Electric Vehicles, Ryan Taylor
Sprint, Amy Hargroves
Staples, Inc., Ken Perdue
UMB Bank, Malendra Shahane
University of Missouri – Kansas City, Dr. Caroline Davies
University of Missouri – Kansas City, Robert Simmons
University of Missouri – Kansas City, Henry Marsh
Wrap It Up, LLC, Brian Porembski
Wichita, Kan., Kay Johnson
**Narrative**

**Methodology and timeline from start to finish**
In September 2009, the Kansas City Regional Clean Cities Coalition hosted an electric vehicle symposium, which introduced the idea of a plug-in task force. In January 2010, the Coalition and Mid-America Regional Council (MARC) held an exploratory meeting of electric vehicle stakeholders to determine public need and interest, and in March, MARC signed an MOU with Rocky Mountain Institute to join Project Get Ready to determine a plug-in strategy for Greater Kansas City in a joint effort with the Coalition.

Using recommendations from Project Get Ready, the Greater Kansas City Plug-in Initiative met monthly to approve its general charter and then the charters of its six teams: Charging Infrastructure, Government Policy, Vehicle Availability, Fleet Demand, Retail Demand, and Incentives. In April 2010, it held a public meeting to increase participation in the teams and elect a steering committee to monitor the teams’ activities and guide the task force. The teams met separately and reported to the steering committee. By November 2010, each team had completed its strategy work, and some had moved to the first implementation steps. At that time, the steering committee drafted its first strategy document.

**Current output**
Two members in the task force have undertaken charging infrastructure projects in Greater Kansas City: 1) Metropolitan Energy Center’s Midwest Region Alternative Fuels Project and 2) KCP&L’s Smart Grid project, both funded by the U.S. DoE under the Recovery Act. Each project includes installation of at least 10 electric vehicle charging stations. In addition, several individual installations have already occurred.

Together, these installations comprise the Phase 1 charging installation.

The **Charging Infrastructure** team plans on using GIS maps (see Appendix I) to produce a map with recommendations for Phase 2 installations. The map will combine regional demographic and traffic data and Nissan LEAF “hand-raiser” data.

The **Incentives** team has drafted a plan for the creation of an EV Business Coalition (see Appendix II), which businesses in the Greater Kansas City Chamber of Commerce Climate Protection Partnership and other area businesses may adopt.

The **Government Policy** team has compiled a list of best practices by other municipalities also working on plug-in readiness and further along in the process than the Kansas City area.

The **Vehicle Availability** team has established contacts with each of the major EV manufacturers.

The **Retail Demand** team has drafted an invitation to area business, civic and public leaders to participate in and endorse the task force’s regional EV readiness strategy.

**Lessons learned**
The task force consists almost entirely of volunteers from a diverse set of stakeholder groups, including charging infrastructure providers, electric utilities, vehicle manufacturers, area business leaders, municipalities, fleet managers, educators, planners and more. A strong leadership team and knowledgeable staff with time dedicated to this project was a must. With monetary resources, a dedicated project coordinator would have made progress much faster.

The task force agreed to address all aspects of plug-in preparedness, in an effort to think about the problem holistically. It then created a prioritized set of goals and identified the work necessary to accomplish them. Such a wide-ranging set of goals proved unwieldy for the limited resources available to tackle the work. The steering committee suggests more closely matching goals to available resources as the task force continues.

The goal is to develop agreed-upon definitions and develop standards in order to help avoid reinventing the wheel. To this end, the task force is
making good use of definitions, practices, and lessons learned in other areas of the country.
## Action Plan

<table>
<thead>
<tr>
<th>Team</th>
<th>Objective</th>
<th>Strategy</th>
<th>Action</th>
<th>Actor</th>
<th>Metrics/Outcome /Output</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Charging Infrastructure</td>
<td>Develop strategies and a plan to create an organized charging infrastructure in the metro area that includes charging stations at home, at the workplace, in public places, and at fleet facilities.</td>
<td>Map and collect data from existing and planned (Phase 1-Demonstration) stations.</td>
<td>Create map of existing and planned stations</td>
<td>MARC</td>
<td>Map</td>
<td>Feb 2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Develop methodology to collect usage pattern data where public charging stations are already installed. Include data from other cities as well as from Greater KC. Collect demographics data if possible?</td>
<td>Local stations: KCPL Other locales: Project Get Ready Demographics: unknown</td>
<td></td>
<td>Hours idle; hours/minutes per charge; kWh per charge; etc; ratio of chargers to owners; demographic profile of EV owner</td>
<td>Begin data collection Feb 2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collect data from private stations</td>
<td>Voluntary opt-in by household</td>
<td></td>
<td>Same as above</td>
<td>Begin data collection April 2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Determine ideal placement for Phase 2 stations.</td>
<td>Develop a methodology using demographics and traffic patterns to determine areas most likely to use charging stations</td>
<td>MEC/MARC</td>
<td>Charts; GIS maps; etc</td>
<td>Completed Oct 2010</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Create a map and narrative showing suggested areas for public charging infrastructure deployment.</td>
<td>Initiatives, Inc.</td>
<td>Map and description</td>
<td>Feb 2011</td>
</tr>
<tr>
<td>2-Government Policy</td>
<td>Identify current best practices and develop strategies and governmental policies that can be adopted by cities, counties, and states inspectors (have electrician present to permitting and inspector meetings)</td>
<td>Collect building codes in other areas that support and/or hinder charging infrastructure</td>
<td>Moot—fire codes already address</td>
<td></td>
<td>File repository</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collect examples of streamlined inspection and building permit processes adopted in other markets</td>
<td>MARC, Roeland Park, Johnson County, IBEW</td>
<td></td>
<td>File repository</td>
<td>May 2011</td>
</tr>
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<td></td>
<td>to encourage widespread adoption of plug-in vehicles and to simplify deployment of infrastructure.</td>
<td></td>
<td>Collect building inspector training and policies adopted in other markets</td>
<td>MARC, Roeland Park, Johnson County, IBEW</td>
<td>File repository</td>
<td>May 2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adapt the best practices for this market and create a proposed building code policy document and a proposed building code/inspection process</td>
<td>Make findings available to all jurisdictions for recommended adoption</td>
<td>Plug-in Speakers Bureau</td>
<td>1 building code policy recommendation document; 1 building code and inspection process recommendation document</td>
<td>June 2011</td>
</tr>
<tr>
<td></td>
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<td>1–3 presentations, for policymakers, codes professionals, etc.</td>
<td>July 2011</td>
</tr>
<tr>
<td></td>
<td>Develop a plan for pricing options (including during peak demand, and special EV charging rates)</td>
<td></td>
<td>Coordinate with the Missouri Public Service Commission and Kansas Corporation Commission to determine regulatory structure and approach.</td>
<td>KCP&amp;L, Missouri PSC and Kansas CC, other utilities</td>
<td>Updated rates and tariffs</td>
<td>December 2011</td>
</tr>
<tr>
<td>3-Incentives</td>
<td>Develop a strategic plan for a menu of incentives encouraging consumer and fleet purchase of plug-in vehicles and infrastructure</td>
<td></td>
<td>Identify initial (2 year commitment) financial and non-financial incentive opportunities for regional businesses to assist in the promotion of EVs through an early adoption period</td>
<td>Incentives team</td>
<td>File repository; recommendation document</td>
<td>Completed October 2010</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Research existing incentive models utilizing best-practices and develop new opportunities</td>
<td></td>
<td></td>
<td>Completed October 2010</td>
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<td></td>
<td></td>
<td>Establish a coalition of Kansas City–area businesses committed to</td>
<td>Identify stakeholders and key influencers with the capacity to influence policy formulation (both public and private)</td>
<td>Incentives team</td>
<td>Completed October 2010</td>
<td></td>
</tr>
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<td></td>
<td>promoting early adoption of electric vehicles (EV) within our area.</td>
<td>Two-way OEM / Task Force Communication</td>
<td>Research and develop rapport with single point of contact at each major electric vehicle manufacturer</td>
<td>Clean Cities</td>
<td>Document</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>activated list of questions for vehicle manufacturers</td>
<td>All</td>
<td>1 portal or POC for maintaining questions</td>
<td>Mar 2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Create and maintain database/spreadsheet of questions and responses for vehicle manufacturers</td>
<td>Olathe Ford, Clean Cities</td>
<td>1 document</td>
<td>March to December 2011</td>
</tr>
<tr>
<td>4-Vehicle Availability</td>
<td>Determine conditions necessary for OEM deployment of plug-ins to Greater KC and to demonstrate KC has a vibrant advanced technology marketplace</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Feb 2011</td>
</tr>
<tr>
<td>5-Fleet Demand</td>
<td>Develop strategies and a plan to educate public and private fleet owners in developing business cases for deploying plug-in vehicles in their fleets where they fit operational requirements</td>
<td></td>
<td>Create education materials and campaigns directed to fleet decision makers.</td>
<td>Clean Cities</td>
<td>Presentations, and marketing pieces</td>
<td>June 2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Collect soft orders from fleets</td>
<td></td>
<td></td>
<td>Sept 2011</td>
</tr>
<tr>
<td>6-Retail Demand</td>
<td>Create expanded involvement and Reach out to gain involvement and</td>
<td></td>
<td>Write an invitation to area business, civic and public</td>
<td>Task Force</td>
<td>1 letter written; 100 copies sent; 100</td>
<td>February 2011</td>
</tr>
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<td></td>
<td>awareness by the general public and private businesses of the importance of EVs</td>
<td>endorsement by other area groups such as chambers, KC Area Development Council and other associations.</td>
<td>leaders to become involved in and endorse the regional EV readiness strategy.</td>
<td></td>
<td>follow-up calls</td>
<td></td>
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<tr>
<td></td>
<td>Create public education and a marketing campaign</td>
<td>Partner with higher education institutions for demonstrations</td>
<td>Collect resources for public and private agencies seeking funding sources, both public and private (make a case for private businesses to invest—EV business coalition), and Federal and state tax credit information; vehicle availability information; safety and public policy information; GHG information; more</td>
<td>Clean Cities; vehicle manufacturers; area vehicle dealers</td>
<td>Web site</td>
<td>Feb–Dec 2011</td>
</tr>
<tr>
<td></td>
<td>Provide information and outreach to the regional public</td>
<td>Hold combined educational event to showcase vehicles and charging equipment, view area maps, discuss model building codes, and more. Audiences: fleet groups, such as National Association of Fleet Administrators (NAFA) and American Public Works Association (APWA); public policymakers; cities, counties, businesses</td>
<td>Clean Cities, MARC</td>
<td>1 event; recorded webinar and/or videos</td>
<td>July 2011</td>
<td></td>
</tr>
</tbody>
</table>
ORIGINS

RESIDENTIAL LOCATION OF LIKELY EV PURCHASERS

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Dataset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher income</td>
<td>Median household income by blockgroup</td>
</tr>
<tr>
<td>Higher education</td>
<td>Population with bachelor’s degree or higher by blockgroup</td>
</tr>
<tr>
<td>Older population</td>
<td>Population 55 or older by blockgroup</td>
</tr>
<tr>
<td>Homeowners/Vehicles</td>
<td>Owner-occupied households with 2+ vehicles by blockgroup</td>
</tr>
<tr>
<td>Leaf hand-raisers</td>
<td>Nissan Leaf hand-raiser data* by ZIP code</td>
</tr>
</tbody>
</table>

ORIGINS ANALYSIS PROCESS

1. Data was collected from the above sources and converted to raster format
2. Three datasets (education/older/vehicles) were converted to densities by dividing by acres in each blockgroup. Without doing this, large blockgroups receive inflated scores.
3. All datasets were reclassified to a scale of −10 by decile.
4. All datasets were combined to make one suitability map, using the following weights:
   - Leaf hand-raisers (25)
   - Median household income (25)
   - Households with 2 or more vehicles (20)
   - Educational attainment (15)
   - Population 55 years old and older (15)

* Through their web site, Nissan asked interested consumers to put a $99 deposit on their future Leaf electric car. People who did so were called “hand-raisers.” Nissan shared anonymous data with the task force in June 2010.
Vehicle driver residence analysis

- Counties
- Cities
- State boundary

High: Likely EV drivers
Low: Not likely EV drivers

MARC: Mid-America Regional Council

More information and data use policy available at www.marc.org/gis

SEPTEMBER 2010
## DESTINATIONS

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Dataset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentration of high-paying jobs</td>
<td>2008 LEHD employment by block by income level</td>
</tr>
<tr>
<td>Destinations of EV purchasers</td>
<td>LEHD OD 2008; Destinations of origin areas</td>
</tr>
<tr>
<td></td>
<td>Travel demand survey data for origin area residents</td>
</tr>
<tr>
<td>Regional employment centers</td>
<td>Existing &amp; planned major activity &amp; employment centers</td>
</tr>
<tr>
<td>Special destinations</td>
<td>Subset of activity centers data</td>
</tr>
</tbody>
</table>
EV Business Coalition, Proposed

**Purpose and Method**
Establish a coalition of Kansas City businesses that are committed to promoting the early adoption of electric vehicles (EV) within the metro area.
- Propose to the GKC Chamber Climate Protection Partnership and other business groups
- Commitments required to sign on (see below)
- Benefits include recognition, reduced Scope 3 GHG emissions, increased employee satisfaction and retention.

**Proposed Commitments**
Coalition members would be expected to:
- Install at least one charging station at one of their KC-based facilities
- Allow employees to charge their EVs free at this facility
- Offer at least $5K (in aggregate) in cash incentives for employees purchasing EVs
- Actively promote EV availability to their local employee base

In addition, they may choose to:
- Offer “energy passes” for free public charging
- Adopt the MARC Smart Commute Program to ensure employees purchasing EVs record their impact on reducing KC GHG emissions
- Offer discounted employee EV purchasing through corporate vehicle purchasing programs
- Integrate EVs into company fleet
- Offer preferred parking for employees who have purchased EVs

**Partnership Considerations**
- **Average cost for charging stations, installed: $10,000-14,000.**
  - Solutions to charging without a station through a 120-volt outlet, using the vehicle’s supplied charging cord
- **Typical charging costs**
  - Based on a typical workplace commute, average costs to charge a Nissan Leaf would equal $1.75 per day.
- **Discounted EV purchasing**
  - Include employee EV discounts with corporate discounts offered through auto manufactures
- **Energy Passes**
  - Prepaid credit cards can be used by various charging providers
  - RFID cards should be considered if available
- **EV Education**
  - Provide accurate information to debunk the myths around the capabilities and availability of mass market EVs
  - Inform employees of programs and opportunities available through CPP coalition partnership
Building Code and Zoning Code Strategies, Policies, and Incentives

Planning & Zoning

- Require new or a percentage of new apartment and mixed-use construction to have a minimum Level 1 and Level 2 circuit installation.
- Establish streets, sidewalks, and public works standards and guidance documents for installation of EV infrastructure in the public right-of-way, public parking facilities, government fleet parking facilities, and on private properties where EV charging is deemed a priority.
- Implement zero-emissions parking zones.
- Require remodeled non-residential parking to install electrical conduit between the service panel and a percentage of parking spaces to make future installation less costly.
- Create design standards for public roads within subdivisions and frontage improvements that enable eventual implementation of EV infrastructure.
- Create design standards for public common areas like parks.
- Require new or a percentage of new single-family and townhome construction to be EV-ready.
- Determine the ratio of parking spaces to be EV-ready in single-family dwellings, multifamily dwellings, mixed-use buildings and other uses, such as retail, hotel or office space.
- Offer a reduction in parking requirement to commercial or multi-family developments where parking spaces are converted to EV charging stations.
- Allow charging infrastructure to be exempt from site coverage requirements.
- Development regulation incentives such as bonuses to height, site coverage, floor area ratio, etc. for including EV parking
- Implement EV parking incentives such as free parking and/or less restrictive parking in municipal lots, garages, and on-street.
- Establish zoning regulations, vehicle and traffic regulations, public works standards, and guidance documents for EV infrastructure installations for use in private developments.
- Develop standard construction documents for the installation of EV infrastructure in the public-right-of-way, public parking facilities and government fleet parking facilities.
- Form county-wide or region-wide working groups whose focus is on all aspects of siting and installing EV infrastructure in an effective and efficient manner.
- Initiate a comprehensive mapping and information system identifying the location, hours of operation, and status of charging facilities.
- Coordinate the inclusion of EV infrastructure in any public infrastructure project that has been identified as a priority public charging station site. Use a set of standard construction plans and specifications, to the extent possible, to streamline installations and control installation costs.
- Post public charging-station locations on agency websites and use other forms of print and electronic media to inform the general public about the locations of charging stations.
- Relax covenants to allow outside storage of vehicles.
- Add charging stations to the allowable land-use list or accessory-use list.
- Require new residential construction to have basis premises wiring and panel capacity of EV charging units.
- Establish a required ratio of parking spaces to be EV-ready in multifamily dwellings and other uses such as retail, hotel, or office space.
- Require all public charging stations to have smart-charging capabilities, real-time communications, and data-collection capabilities to enable on-site and utility-level energy management.
Permitting

- Implement low, flat or no-fee permit rate structure.
- Provide reduced permit fees for permits for retrofitting existing residential development.
- Streamline permit processing (priority handling, fast turnaround, over-the-counter and or online permits, centralized coordination, permit czar, contractor-level or designated-rep sign offs) for EV infrastructure or retrofitting.

Incentives

- Establish state-level tax credits, rebates, licensing fee reductions and HOV-lane access for EVs
- Exempt EV’s from urban congestion restrictions and fees such as tolling.
- Provide funds to subsidize the installation of charging stations
- Waive local taxes
- Tax abatement
- Sponsor battery warranty programs
- Add to climate action plan as strategy to reduce green house gas emissions

Policies

- Promote workplace charging infrastructure installations for employees and public uses.
- Add EV’s to public fleet-purchasing programs.
- Require lifecycle cost estimates for public vehicle-purchasing programs.
- Create staff position
- Lobby state to adopt model regulations for EV’s