

Consumer Expectations for Electric Vehicle Infrastructure --

Defining the Utility's Role

Frequently Asked Questions

November 2010

What is the purpose of this EPRI consumer research initiative?

The goal is to provide an in-depth and actionable characterization of electricity consumers' understanding of electric vehicle (EV) ownership and operation, and reveal the role they see their utility playing in fostering and accommodating EV ownership.

How will the results be used?

Utilities will use the results to devise an EV readiness plan that is responsive to its consumers' needs and identifies needed operational changes, such as load forecasting and distribution planning. Regulators will be more responsive to initiatives that reflect the interests of the customers whose well-being they oversee. Local communities and regional consortia will find the information useful in determining how best to foster interest in EVs, and engages businesses in developing EV-friendly infrastructure and services.

What services is EPRI offering?

EPRI will design, administer, and interpret the result of a consumer survey in utility or regional electricity markets. The localized focus ensures that factors that influence how consumers view EVs are fully accounted for, including; gasoline prices and electricity rates, driving habits, current vehicle preferences, household readiness for charging equipment.

Has EPRI already developed the requisite research methods?

Yes. EPRI developed a research framework, designed a survey for administration to residential consumers, and tested it through its administration in Southern California Edison's market. The results are reported in EPRI 1020504. The results confirmed the efficacy of the approach and demonstrated its value in answering questions utility and their stakeholders are raising about

what consumers want and need to bring about electric vehicle-based society.

What is the primary goal of survey?

The goal is to build a better understanding of consumers' perspective on EVs as alternative to conventional combustion engine vehicles. It does so by eliciting their expectations of and preferences for the role electric utilities is providing transportation services, and implications of the electricity sector, especially in terms of how it changes the infrastructural requirements and service opportunities.

How is survey instrument structured?

The survey is comprised of a core set of questions that EPRI anticipates will be included in every application. Those questions concentrate on eliciting charging preferences and characterizing customers' expectations for the role of the utility. Asking the same question at every survey administration will allow us to develop a solid understanding of common themes among consumers, and identify important divergences there from associated with regional and even local factors.

Does the survey require extensive modification at each administration?

The survey was developed to address key issues, established by EPRI Members, regarding consumer perspectives. The structure and content were developed in cooperation with utility market researcher staff with the support of experienced market research firms. Initial testing included extensive focus groups and each application involved additional testing ensure that the responses would be meaningful, and the instrument met accepted requirements for organization, length, and how questions are structured, posed, and responses recorded.

What analyses will EPRI undertake?

EPRI will analyze the results of the individual utility surveys undertaken and produce a comparative analysis report that summarizes the differences and common themes that emerge.

Does EPRI envision other analytical efforts?

Yes. EPRI anticipates undertaking a variety of investigations to take advantage of the risk customer characterization database. These likely will involve market research and behavioral sciences modeling that seek to identify underlying relationships that are important to understanding what customer want and expect from a world where refueling involves the electricity infrastructure.

Can a utility administer the survey to selected sectors of my customer base?

Yes. A part of this initiative, EPRI will develop tailored versions of the survey to specific subpopulations such as utility employees, college students, neighborhood associates, and other communities of interest. EPRI expects the availability of a pre-packaged survey, which reduces the cost considerable, will entice organizations to team with the utility and EPRI to listen to and record what customers are saying and act accordingly.

Will the research support the development of EV preferences and intentions?

Yes, characterizing preference and attitudes around the concept of an EV provides several opportunities to elicit measures of intent of action, such as likelihood of purchasing an EV in the next five years. This provides an initial snapshot of purchase intent by demographics and other determining factors, such as gasoline and electric prices and the availability of places to charge.

Can an adoption curve (S-curve) be derived for the survey responses?

EPRI is offering a companion supplemental project that will develop the tools needed to forecast adoption rates at the localized level under: Product ID 1020731, Project ID 059276.

What are the benefits to Participation in this project?

Primary consumer research is expensive and fraught at the early stages of the product cycle. At this point, EVs represent a new concept in personal transportation; only

a few actual EV vehicles are on the road, and under very limited visibility. Accordingly there are no customer choice and satisfaction data upon which to develop estimate of the timing and ultimate level of adoption of EVs.

How will the survey instrument be administered?

The survey is administered by a web-based instrument using commercial web panels. The survey questions are encoded into an electronic survey instrument that streamlines answering questions and facilitates employing efficient but complex skip patterns (if yes go to Question X, if no go to Questions Y) that respondents complete and submit on-line.

Do web panels provide representative and reliable results?

Yes. Panels are constructed specifically to be representative of the population of defined geographical areas. The survey responses are weighted using U.S. Census and utility information about its customer bases to account for differences in panel members and the population for which inference is desired.

How are survey respondents recruited?

The survey administration firm issues and invitation to its panel to respond to the survey, and accepts responses until the desired number is achieved. In some cases the administrator has to use others' panels to achieve the requisite number of completions. This requires 2-4 weeks depending on number of responses achieved.

Can EPRI restrict who responds to the survey?

Yes. The survey instrument includes an up-front screening section that solicits data to determine if the panelist is eligible to response. For example, in the surveys conducted so far, respondents were required to: be over 18 years old, anticipate buying or leasing a new vehicle in the next five years, and be involved in new car purchase decisions.

Are respondents restricted to customers of the sponsoring utility?

Yes, if that is the population of interest. The screener include question about the resident's zip code or asks the respondent to name its electric utility to determine eligibility

How is the requisite number of survey responses determined?

EPRI prepares a statistical design analysis that shows how the level precision and power influence the number of surveys required to achieve those levels of performance. Precision refers to the nominal degree to which an effect can be detected (for example, establishing that at least 50% of consumers derive more than 40 miles on a typical weekday) and power to the statistical inference associate with the corresponding estimated value (the estimate of mile drives is associated with a 90% confidence interval). The greater to precision or power, the greater the number of survey responses required, and hence the cost to administer the survey. The sponsoring utility or entity determines the sample size.

How many surveys have been administered?

EPRI has administered the survey in three markets

- ✚ The first version of the survey was administered (900 respondents) in Southern California Edison's market in the summer of 2009, the results of which are reported in EPRI 10020504.
- ✚ The survey was refined based on the SCE learning and administered to an urban area served by Southern Company (500 responses) and area served by TVA distributors (1,000 responses). The findings will be available later in 2010.

What does EPRI deliver to the sponsoring entity?

EPRI summarizes the individual question responses, along with appropriate statistical inference, in a PowerPoint format; this provides the sponsor with easy to interpret findings. EPRI will prepare a top-line report in Word format that facilitates more complex inquiries that combine survey question responses with respondent demographic information (age, include) and other characteristics, such as current vehicle ownership, miles drive weekdays, and purchase intent. IN addition, EPRI will provide the sponsoring entity with the survey responses in a format that enables additional modeling using commercial statistical analysis software (SAS, Stata, SPSS).

Will any of these data sets include distinguishing and confidential information about the respondents?

No. The data provided by the survey vendor is scrubbed clean of anything that might serve as a trace back to the respondent.

Are billing records included for respondents?

No. As conveyed above, the surveys can not be matched to utility records to attached electricity bills.

Does this project qualify for tailored EPRI Tailored Collaborative funding?

Yes.

Contact Information

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