Guidance for ARRA Smart Grid Program Metrics and Benefits		
Guidance ID	A-001	
Metric	Hourly Customer Electricity Usage	
Smart Grid Category	AMI, Cross-Cutting	
Metric Type	Impact	
Issue Date	April 21, 2010	
Revision and Date	N/A	

Background

Hourly customer electricity usage data will help demonstrate the impact of Smart Grid technologies and pricing programs on peak demand and electricity consumption, one of the key themes underlying the Smart Grid Investment Grant program. In order to ensure that the hourly customer electricity usage data can be accurately compared, aggregated and analyzed across multiple projects, it is important that the data is collected and prepared consistently. The following guidance applies to award recipients ("Project Teams") who will be reporting the "Hourly Customer Electricity Usage" Impact Metric in the AMI or Cross Cutting category.

Guidance

Project Teams should report hourly customer electricity usage by providing hourly load (usage) curves for the reporting period. In general, these load curves should be created in ways consistent with the statistical techniques used in utility class load research. Metrics and Benefits Reporting Plans should describe the approach used to create these hourly load curves.

- Hourly load data should be reported for a representative customer or profile in each of three classes - residential, commercial, and industrial. The determination of a representative customer or profile will be at the discretion of the Project Team, but should incorporate sound statistical sampling techniques.[1]
- Utilities using a general classification other than residential/commercial/industrial should map their internal classification to DOE's classification (e.g., a utility who classifies customers as residential, small commercial and large commercial, would map its small commercial class to "commercial" and its large commercial class to "industrial");
- Each class can contain up to 5 sub-classes (i.e., Residential A, Residential B, Residential C, Residential D, Residential E), and Project Teams can use these sub-classes to distinguish between various customer or tariff classes as necessary;
- The load curve for each class/sub-class should include a data point for each hour in the reporting period (e.g., 4380 hourly points for a 6-month period);
- Project Teams should report a baseline annual load curve for each customer class/sub-class at the beginning of the project; and

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[1] If a project team does not normally utilize statistical sampling techniques for customer load data, simpler approaches such as calculating average hourly loads for each class or profile may suffice.

- At the discretion of the Project Team, load curves may be normalized to account for weather, economic conditions, or other factors that could skew the load data. If the Project Team normalizes the load data, then the methodology and assumptions used to do so should be described in detail. In such cases, DOE requests that Project Teams provide non-normalized load curves so that the data across all projects could be normalized consistently at in the future.

By using this approach, DOE intends to obtain the information necessary to answer key questions about the impact of AMI on customer demand and energy consumption, without creating overly large data sets that would require excessive resources to process and analyze. Furthermore, this approach is intended to leverage the extensive experience and expertise of utility load researchers, and facilitate subsequent analysis of the data by industry practitioners and researchers. Finally, this approach guarantees that no sensitive customer information related to electricity consumption is reported to DOE.