Abstract
FirstEnergy Ohio’s (FE) Smart Grid Modernization Initiative (SGMI) includes a consumer behavior study that evaluates the impacts of different levels of enabling technologies combined with various time-based rate programs on energy consumption and peak demand.

Consumer Behavior Study Features
Goals and objectives center on customer acceptance and response during peak demand events to varying combinations of enabling technologies, providing end-use controls and information and time-based rate options. FE is also interested in assessing the effects of enhanced customer understanding of their electricity usage.

Study design involves a study sample of approximately 5,000 residential customers, and a test period from June 2012 to August 2014. The study is conducted using a randomized control trial design. Customers are recruited into the study and randomly assigned to control and treatment groups among the time-based rate and technology options. Study participants may opt-out of the critical peak rebate (CPR) treatment at any time during the program.

Rate treatments include the implementation of a CPR that provides a payment to customers for reducing electric load during declared critical peak events, while the price charged by FE for electricity consumed stays at the customers’ existing flat rate. FE is testing two levels of rebate and two critical peak periods (4 hours and 6 hours) during the summer season (June to August). Customers receive day-ahead notification of critical peak events and can receive such notification up to 15 times per year.

Control/Information technology treatments include the deployment of in-home displays, two types of programmable communicating thermostats (customer self-controlled and utility-controlled), and direct load control power switches operated by the utility. These devices, in conjunction with customer Web portal access, facilitate two-way information exchange and enable customers to better manage their electricity bills through improved understanding of electricity consumption patterns of appliances and equipment. All participants receive education materials and training about program benefits to enable them to take full advantage of the in-home technology they receive and improve their eligibility for rebates. A Web presentment tool provides information regarding energy usage and energy management strategies.
Key Milestones

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<tr>
<th>Key Milestones</th>
<th>Target Dates</th>
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<tr>
<td>FE Consumer Behavior Study test period begins</td>
<td>June 2012</td>
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<tr>
<td>FE provides Interim Evaluation Report</td>
<td>September 2012</td>
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<tr>
<td>FE Consumer Behavior Study test period ends</td>
<td>August 2014</td>
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<td>FE provides Final Evaluation Report</td>
<td>September 2014</td>
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