Joint Response from Consumers Energy, DTE Energy, and MEGA

Energy Efficiency Question 15: How have energy efficiency programs in Michigan or other jurisdictions addressed non-traditional proposals for energy efficiency (e.g. digital metering, grid management technologies, or improvements on the utility side of the meter)? What has been the effect of the inclusion or lack thereof?

Executive summary

1. Utilities in Michigan are working to take a thoughtful approach to non-traditional approaches to energy efficiency programs that are in alignment with statutory energy-efficiency goals and that balance cost-effectiveness, innovation, customer satisfaction, and energy and demand impacts.

2. DTE Energy and Consumers Energy are in early stages of a whole-system AMI/Smart Grid implementation. The new technology afforded by the implementation will better enable each utility to pursue new nontraditional energy-efficiency programs.

3. Some jurisdictions have implemented nontraditional grid management technologies including conservation voltage reduction (CVR). Utilities in Michigan currently efficiently use voltage regulation and voltage boosting rather than CVR, although they will continue to evaluate CVR's benefits.

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1. Utilities in Michigan are working to take a thoughtful approach to non-traditional approaches to energy efficiency programs that are in alignment with statutory energy-efficiency goals and that balance cost-effectiveness, innovation, customer satisfaction, and energy and demand impacts.

Utilities are working to offer customers a broad-range of energy efficiency offerings that seek to balance cost-effectiveness, customer satisfaction, innovation, and energy reduction impacts. The result is a program portfolio that includes a mix of best practice energy efficiency programs, new programs and pilots. Some nontraditional programs currently being implemented or piloted include:

- Web Portal Solution (Consumers Energy and DTE Energy): A web based solution that provides customers with detailed information about their energy consumption as well as comparisons to other similar homes in order to increase awareness of customers' current level of energy efficiency and promote more efficient energy consumption habits.

- Smart Energy Drives (Consumers Energy): A nontraditional marketing approach for energy efficiency under development that relies on social connections and group cooperation to promote energy-efficient measures and behavior changes. For example, this program will challenge different community organizations (e.g. schools, churches, etc…) to enroll their

members into energy efficiency programs with those local groups achieving the highest participation winning valuable energy related upgrades (e.g., efficient boiler, efficient lighting system, etc…).

2. DTE Energy and Consumers Energy are in early stages of a whole-system AMI/Smart Grid implementation. The new technology afforded by the implementation will better enable each utility to pursue new nontraditional energy-efficiency programs.

Many utilities are in the midst of implementing[1] a digital metering Advanced Metering Infrastructure (AMI)/Smart Grid program. While the Smart Grid program will provide a wide range of operational benefits, it is also expected to allow utilities to eventually offer even more nontraditional programs which can enhance existing energy efficiency offerings. For example, more granular interval data made available through Smart Grid, a web portal program (offered by Consumers Energy and DTE Energy) can provide more accurate and useful insights as customers learn how much energy various systems in their homes or businesses consume. With increased information about the cost and value of their energy use, customers are better able to make consumption decisions. The combination of AMI and demand-side management initiatives may take the following forms:

- AMI and incentive-based programs (e.g., direct-load control programs);
- AMI and customer systems, (e.g., information and control technologies);
- AMI and time-based rates; and
- AMI, customer systems, and time-based rates.

Figure 1 shows the variety of devices and communication channels that, with the information provided through advanced metering, can assist customers in managing electricity consumption and costs.[2]

[1] http://www.consumersenergy.com/content.aspx?id=4959 and http://www.dteenergy.com/residentialCustomers/productsPrograms/smartCurrents/smartCurrents.html
[2] http://www.smartgrid.gov/sites/default/files/doc/files/peak_demand_report_final_12-13-2012.pdf

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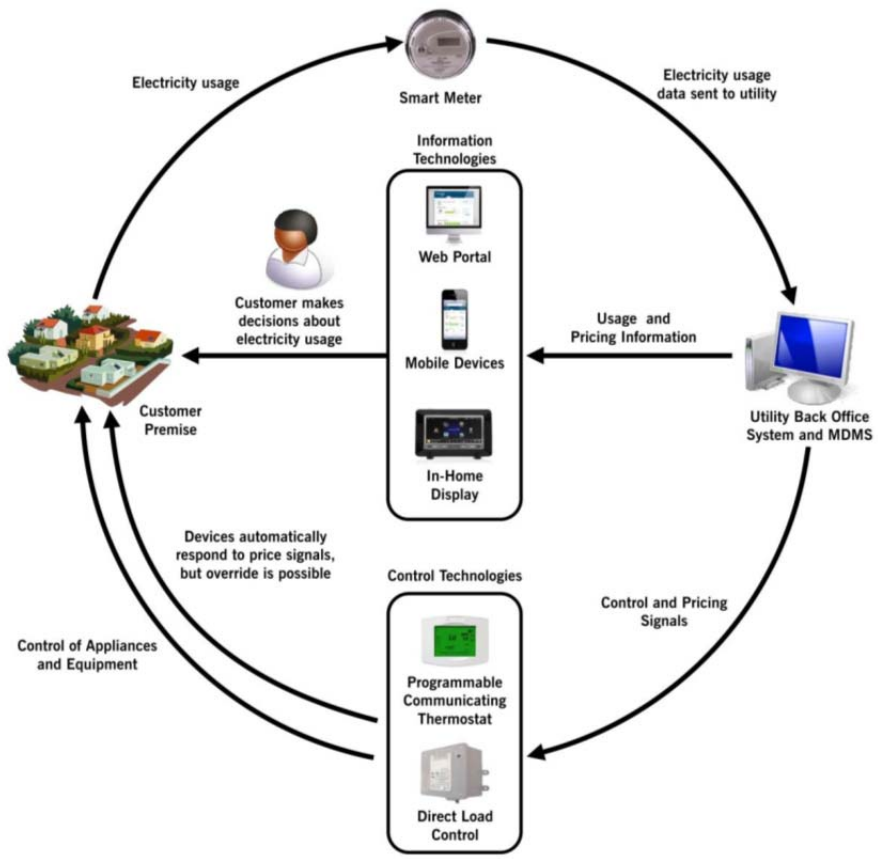
Figure 1. Demand-Side Devices and Systems for Managing Electricity Consumption



Source: Demand Reductions from the Application of Advanced Metering Infrastructure, Pricing Programs, and Customer-Based Systems—Initial Results, December 2012, USDOE.

A number of potential customer and utility system benefits result from deployment of these technologies, including:

- Deferred capital expenditures and improved asset utilization;
- Reduced generation and environmental impacts; and
- Increased options for managing energy consumption and costs.

The book[3] "The Smart Grid: Enabling Energy Efficiency and Demand Response" claims the Smart Grid can increase energy-efficiency savings between 56 and 203 billion kWh by 2030. The improved measures cited include continuous building

[3] The Smart Grid: Enabling Energy Efficiency and Demand Response, Clark W. Gelling, 2009

commissioning, reduced line losses, customer energy consumption feedback, and accelerated energy efficiency program deployment.

On the distribution side, Consumers currently performs grid optimization through its grid engineering teams, outside of the energy efficiency initiatives, as part of its day-to-day operations activities, and currently does not claim credit for the associated savings. Just as the Smart Grid will allow energy efficiency to expand its programs offerings, the Smart Grid will enable more effective grid optimization. As engineers are able to gather more detailed and more granular information from more points on the system, they can more effectively implement system upgrades and modifications that improve the system's efficiency. Approximately 100 U.S. utilities provide examples of Smart Grid programs and their initial results on the Department of Energy's Website, SmartGrid.gov.

3. **Some jurisdictions have implemented nontraditional grid management technologies including conservation voltage reduction (CVR). Utilities in Michigan currently efficiently use voltage regulation and voltage boosting rather than CVR, but continue to evaluate its benefits.**

A nontraditional grid management EE program gaining more popularity as more detailed grid data become available is "Conservation voltage reduction" (CVR). A few utilities (e.g., PECO[4] in Pennsylvania, and Snohomish Public Utility District[5] in Washington) have used CVR activities as an efficiency activity. CVR essentially has the utility optimizing or lowering system voltage, which results in savings experienced before the customer meter. CVR was used for the Phase I of PECO's three-year energy-efficiency standard, and, now that CVR is substantially in place, the utility is not claiming additional savings from this measure. Distribution efficiency, including CVR, is included as part of the conservation supply curves developed by the Northwest Power and Conservation Council for development of the region's Sixth Power Plan. [6]

Several utilities in Michigan continue to assess CVR for application in Michigan. Indiana Michigan Power recognizes possible benefits through reduced demand and energy consumption beyond the utility meter by remote monitoring and dynamic management of the voltage on the distribution circuit.

[4] Quarterly Report to the Pennsylvania Public Utility Commission, For the Period June through August 2011 Program Year Three, PECO Energy Company
[5] http://neea.org/docs/reports/utility-distribution-system-efficiency-initiative-dei-phase-1-final-report-no-3.pdf
[6] http://www.nwcouncil.org/energy/powerplan/6/plan/

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In California, as part of the biennial California Energy Commission's Integrated Energy Policy Report Proceeding (IEPR),[7] utilities are instructed to seek nontraditional energy efficiency resources and to explain how they work and how they can impact utilities' energy policies. The effect of this inclusion has enabled California utilities to compare multiple supply and demand-side initiatives side by side and to select the proposals that would lead to the most appropriate outcomes.

[7] IEPR, 2007 http://www.energy.ca.gov/2007publications/CEC-100-2007-008/CEC-100-2007-008-CMF.PDF