Joint Response from Consumers Energy, DTE Energy, and MEGA

Energy Efficiency Question 10: Given current technology, how much energy efficiency is technically feasible in Michigan? What is the remaining cost-effective energy efficiency potential in MI, taking into account: 1) what has been tapped to date; and 2) what will be tapped by the end of 2015 through utility energy optimization programs?

Executive summary

1. Energy efficiency resource potential is typically divided into four categories that become progressively more constrained by factors such as cost-effectiveness, customer willingness to participate, and program delivery limitations.

2. Energy efficiency potential studies combine market data and energy-efficient technology data to estimate the total savings potential. Michigan had a statewide potential estimate developed in 2007 using data derived from Wisconsin, but has not completed a more rigorous statewide potential study, though one was started several years ago by the State of Michigan before losing funding. A new Michigan-based study in being planned that will help identify the state's remaining energy efficiency potential.

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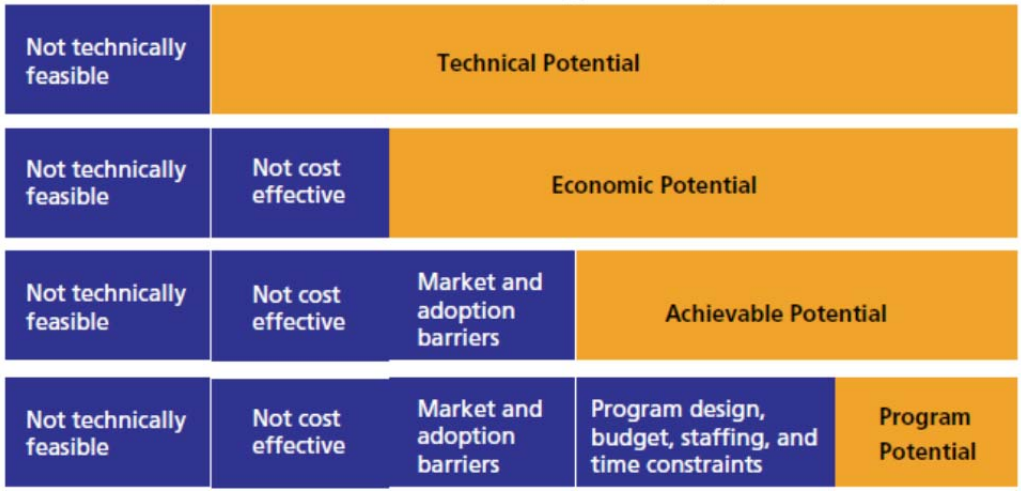
1. Energy efficiency resource potential is typically divided into four categories that become progressively more constrained by factors such as cost-effectiveness, customer willingness, to participate and program delivery limitations.

Energy efficiency resource potential is typically divided into four categories: "technical potential," "economic potential," "achievable potential," and "program potential."

Figure 10-1 illustrates these categories.

Figure 10-1. Definitions of Energy Efficiency Potential[1]



Source: "Guide for Resource Planning with Energy Efficiency", November 2007. US EPA.

[1] http://www.epa.gov/cleanenergy/documents/suca/resource_planning.pdf, p.2-2

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Technical potential assumes all demand-side resource opportunities may be captured, regardless of their costs or market barriers. For energy efficiency, technical potential can be divided into two types of potential: instantaneous and phased-in. Instantaneous technical potential assumes immediate retrofit and replacement of equipment in existing buildings and full installation at the time of new construction. Phased-in technical potential, or lost opportunities, assumes replacement only upon burnout of equipment in existing buildings, implementation of demand-side measures in new construction, and gradual implementation of retrofit actions. This distinction has important implications for the planning and timing of how conservation resources are acquired, and is used in developing alternative Demand Side Management (DSM) resource acquisition scenarios.

Economic potential is typically viewed as a subset of technical potential, and includes only those measures that pass a certain cost threshold or economic criterion, based on the utility's avoided costs. Typically, only energy-efficiency measures having a benefit-to-cost ratio of 1.0 or greater are deemed economic.

Achievable potential describes that portion of technical or economic potential that might be assumed to be achievable during the planning horizon, given barriers that impede customer participation in DSM. In the majority of DSM potential studies, estimation of achievable potential generally tends to be based on arbitrary expectations of market penetration. Achievable potentials can, however, more reasonably be assumed to depend on the utility customers' willingness to participate in DSM programs (or market potential), which is itself a function of price (incentive levels) and non-price factors, such as specific operational constraints that may impede participation in DSM programs (i.e., availability of efficient products and qualified service providers). These factors are generally difficult to quantify, and may only be determined through rigorous and systematic market studies.

Program potential is the subset of achievable potential that is realistic, given budget constraints, staffing levels, trade ally training, and the time required to adequately market the programs and ramp them up to full capacity.

2. Energy efficiency potential studies combine market data and energy-efficient technology data to estimate the total savings potential. Michigan has not had a statewide potential study since 2003. A more recent study would best identify the remaining energy efficiency potential.

The State of Michigan's 21st Century Electric Plan submitted to Michigan's Governor in 2007[2] is the state's most recent estimate of energy efficiency potential. This estimate

[2] http://www.dleg.state.mi.us/mpsc/electric/capacity/energyplan/index.htm

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was based on a 2005 Wisconsin plan, scaled to the Michigan economy and demographics. The plan indicated that electric generation requirements were expected to grow at an annual average rate of 1.3 percent from 2006 to 2025 – from 112,183 gigawatt hours (GWh) to 143,094 GWh. Summer peak electricity demand was likewise expected to grow from 23,756 MW in 2006 to 29,856 MW in 2025, an annual average rate of growth of 1.2 per cent. Resource modeling indicated that a conservative energy efficiency program could, after 10 years, reduce Michigan electric peak demand by 660 MW and annual energy use by 4,952 GWh, or roughly 3-4%.

Significant changes have occurred since the 2005 Wisconsin study that formed the basis of the most recent Michigan energy efficiency potential estimate, including the passage of the Energy Independence and Security Act of 2007, an economic recession, and the implementation of utility energy efficiency programs. Future savings, as a result, are likely to be somewhat more expensive to achieve than in the past. Considerations regarding costs and benefits are more fully discussed in the response to Energy Efficiency Question No. 7. A current and rigorous energy efficiency potential study for the state of Michigan that factors in the latest changes in baselines, Michigan Energy Measures Database deemed savings values, and codes and standards, as well as other criteria identified by interested stakeholders, would best serve to inform the planning process.