
Subject Focus on Energy Evaluation

**Apartment and Condominium Efficiency Services
Market Potential**

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Public Service Commission of Wisconsin
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WECC

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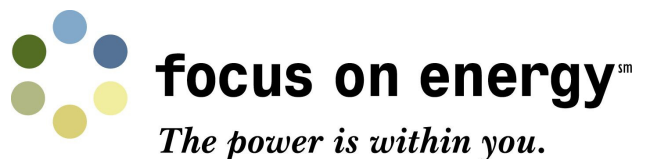
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In order to assist the Apartment and Condominium Efficiency Services (ACES) program in the identification of measure categories where the potential for additional energy savings is strong, we compared program-to-date savings with the savings potential findings of the report, *Energy Efficiency and Customer-Sited Renewable Resource Potential in Wisconsin: for the years 2012 and 2018* (“the Potential Study”), prepared by the Energy Center of Wisconsin (ECW). We compared the market potential in 2012 with what had been achieved between July 1, 2008, and June 30, 2009.

We note that the frame of reference of our evaluation is much narrower than the perspective of the ECW Potential Study. The authors of that study consider their findings most accurate at the program portfolio level.¹ At the measure category level there is more uncertainty: potential savings for some measures might be overstated and for others might be understated. Across many technologies, however, those errors are likely to cancel out. This renders the aggregate savings estimate more accurate than its composite parts. With this caveat in mind, we give credence only to relatively strong signals and discount weak ones.

We first assigned measures installed through Focus to markets identified in the Potential Study. Assignments were based on feedback provided by ECW about the specific measures that were comprised within each market and end-use category. We equated the ACES program to the market segment “Rental, Large” (RL) in the potential study. This includes rental properties with five or more units. The RL segment was further disaggregated into markets (New Construction, Retrofit, Replace on Burnout), and end-uses (space heating, water heating, space cooling, lighting, home appliance, and other). Each end-use comprises between one and seven specific measure categories. Not all measure categories tracked by Focus could be linked to a market/end-use/measure in the Potential Study.



¹ Personal communication with Steven Khim, ECW, February 11, 2010.

In a separate communication, supplementing findings of the published report, ECW provided annual (2012) energy savings values for each measure category. We summed ACES savings for each measure category tracked by Focus and compared that value to its market potential for the year 2012. For measures where current annual savings are low relative to the 2012 potential we believe there is an opportunity for the ACES program to increase its efforts.²

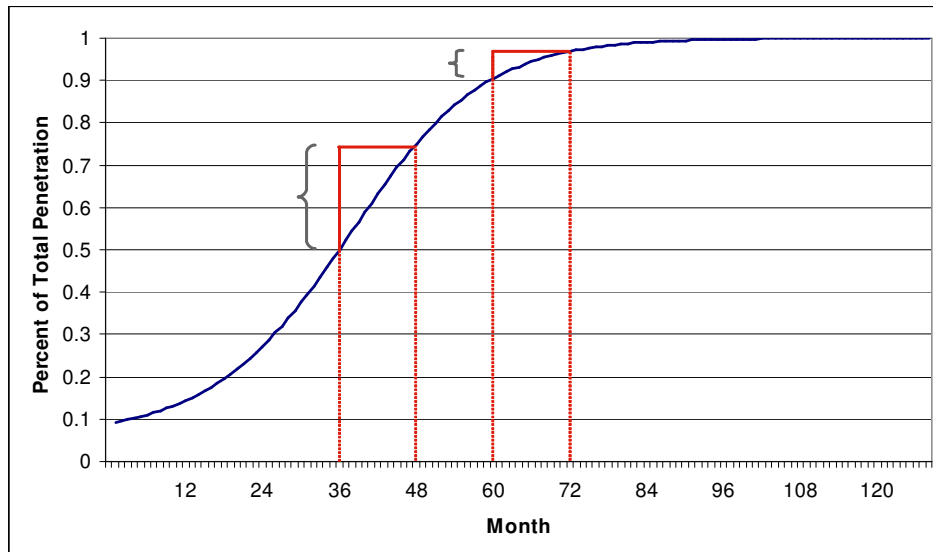
Table 1 shows a comparison of ACES program savings with estimated 2012 potential for both kWh and therms. The two right-hand columns show the percentage of 2012 potential that was achieved from July 2008 to June 2009, for kWh and for therms. A low number indicates significant savings potential. A high number, especially a number above 100 percent, indicates a market that is mature and has decreasing additional opportunities going forward.³

There are several categories of measures for which we were not able to make a comparison. One measure, New Construction, Improved Plumbing Design was present in the potential study but is not tracked by Focus. Savings potential for this measure is low, however. Two

² We do not dispute that there may be good reasons why annual savings for a given measure are low relative to potential. For example, a measure may not have been in the market long enough to gain acceptance, or there may be substantial measure-specific market barriers.

³ It is important to understand how the annual potential in 2008/2009 can exceed 100 percent of the potential in 2012. Since these are annual potential values, as the market for a class of technologies becomes saturated, there are fewer additional opportunities for savings. The figure below illustrates this possibility for a hypothetical measure category. The blue line represents the penetration of a technology over time, represented as months on the horizontal axis. The potential in any one year is the change in the vertical axis over twelve months. If the penetration of a technology in 2008/2009 were at the point represented by the left bar in the figure, and a market potential study represented the time period of the right bar in the figure, the market potential in the latter year could be substantially lower than current annual savings.

Hypothetical Diffusion of an Efficient Technology and its Effect on Annual Market Potential



measures (LED bulbs, purchased replacement (2018) and New Construction) were estimated to have zero energy savings potential in 2012.⁴ The final ten measures in the table are tracked by Focus but were not included in the ECW potential study.

Table 1 is sorted, roughly, from highest to lowest potential relative to current savings. Weatherization has the largest difference between current savings and savings potential, with approximately 2.7 GWh additional annual energy savings potential. ECM furnace fans have an additional annual energy savings potential of about 0.36 GWh. On the other end of the spectrum, the market for low flow showerheads appears to be in steep decline, suggesting continued effort on these may not result in significant savings.

⁴ We take no position in this memo on the size of the potential savings from new construction of large rental facilities in 2012. We merely note that the Potential Study does not provide a basis of comparison to inform our current purpose of indicating opportunities for program activity. We do note that current program activity produces substantial savings.

**Table 1. Comparisons of Focus Energy Annual Impacts (kWh and Therms)
(Net, July 2008 to June 2009) and Annual Achievable Potential—ACES Market**

| Measure Category | 2008/09 Actual | | 2012 Potential | | Percentage Achieved | |
|--|----------------|----------------|----------------|---------------|---------------------|---------------|
| | kWh Savings | Therms Savings | kWh Savings | Therm Savings | kWh Savings | Therm Savings |
| Weatherization – direct install | 39,552 | 31,218 | 2,770,320 | 112,544 | 1% | 28% |
| ECM furnace | 2,832 | 60 | 355,566 | 0 | 1% | n/a |
| Efficient electric water heater | 3,285 | 0 | 86,398 | 0 | 4% | n/a |
| ENERGY STAR dehumidifier | 160 | 0 | 1,314 | 0 | 12% | n/a |
| Boiler controls-gas and indirect-fired domestic water heater – natural gas boiler with EF = 0.65 | 75,114 | 118,994 | 0 | 199,677 | n/a | 60% |
| CFL bulbs, purchased replacement (2012) | 5,770,580 | 0 | 5,276,272 | (126,520) | 109% | n/a |
| Low-flow showerhead (with electric hot water) | 2,103,951 | 0 | 489,461 | 0 | 430% | n/a |
| Low-flow showerhead (with gas hot water) | 0 | 449,042 | 0 | 68,392 | n/a | 657% |
| Present in the Potential Study but not tracked by Focus | | | | | | |
| New construction, improved plumbing design | 0 | 0 | 36,168 | 7 | 0% | 0% |
| Estimated to have zero energy savings potential in 2012 | | | | | | |
| LED bulbs, purchased replacement (2018) | 202,676 | 0 | 0 | 0 | n/a | n/a |
| New Construction | 3,224,584 | 173,468 | 0 | 0 | n/a | n/a |
| Tracked by Focus but not included in the Potential Study | | | | | | |
| Unassigned – lighting | 814,850 | 0 | | | | |
| Unassigned – motors & drives | 70,003 | 0 | n/a | n/a | n/a | n/a |
| Unassigned – air conditioning | 13,406 | 0 | n/a | n/a | n/a | n/a |
| Unassigned – boiler | 29,351 | 308,568 | n/a | n/a | n/a | n/a |
| Unassigned – appliances | 156,825 | 4,344 | n/a | n/a | n/a | n/a |
| Unassigned – hot water – electric | 1,035,560 | 0 | n/a | n/a | n/a | n/a |
| Unassigned – hot water – gas | 0 | 262,684 | n/a | n/a | n/a | n/a |
| Unassigned – hot water – unspecified | 406,976 | (12,628) | n/a | n/a | n/a | n/a |
| Unassigned – HVAC – general | 5,797 | 41,611 | n/a | n/a | n/a | n/a |
| Other | 0 | 60 | n/a | n/a | n/a | n/a |