

Inadequacy of the DSM Portfolio Achievable Potential Estimate

The Low Risk DSM portfolio as presented in the IRP does not warrant considerable attention as it is an invention developed by Ameren in response to perceived and unfounded risks associated with lost revenue. Given that the Low Risk portfolio projects savings at lower levels than those achieved by Ameren's current DSM programs, and far lower than many other jurisdictions including in Illinois where Ameren is already capturing greater savings, it cannot be viewed as a valid estimate of energy efficiency and demand response savings potential. Instead, Ameren's estimate of achievable potential is scrutinized to show that the analysis methodology used to determine achievable potential is flawed, and the resulting estimate of achievable potential is not only lower than other regional estimates of achievable potential but is also lower than the *actual* savings currently being realized by existing regional programs.

The IRP analysis of achievable potential includes a Maximum Achievable Potential (MAP) scenario and a subset of MAP dubbed Realistic Achievable Potential (RAP). Realistic Achievable Potential (RAP) represents an arbitrary reduction in MAP under the assertion that "[i]t is commonly-accepted in the industry that MAP is considered the hypothetical upper-boundary of achievable savings potential simply because it presumes conditions that are ideal and not typically observed in real-world experience." While it is true that *maximum achievable* is typically viewed as an upper bound of attainable savings potential, it is untrue to suggest that such program performance is inherently *unachievable*. Further, Ameren's modeling of MAP diverges from a true maximum achievable potential estimate because it constrained it based on funding and incentive levels offered to customers. Therefore, by definition, they diverged from estimating an upper-bound potential.

A recent potential study for Wisconsin¹ referenced in the DSM Study views achievable potential

...as representing the reasonable upper limit by assuming that policymakers want to achieve high levels of energy savings.

This study focuses on estimates of achievable efficiency potential, defined as "the amount of energy use that efficiency can realistically be expected to displace assuming the most aggressive program scenario possible.

¹ "Energy Efficiency and Customer-Cited Renewable Resource Potential in Wisconsin," Energy Center of Wisconsin, August 2009

There is nothing outside of Ameren’s control that would impede the development of an aggressive energy efficiency and demand response portfolio pursuing maximum achievable potential. Even if Ameren’s premise that maximum achievable potential is *not* achievable is taken at face value, the methodology used to reduce the estimate of MAP to what is deemed “realistic” undermines the remainder of the analysis by arbitrarily reducing savings estimates with little substantiation and inappropriate self-imposed restrictions.

The AmerenUE Demand Side Management Market Potential Study (DSM Study) is the foundation for the estimates of MAP and RAP as presented in the IRP. The DSM Study indicates that the MAP scenario was altered to develop the RAP scenario as follows:

To estimate RAP, two additional factors are introduced into the analysis.

- First, awareness is not assumed to be 100%. AmerenUE is just beginning to offer a number of its energy efficiency programs, so awareness of these programs across the entire population is low. To address this, an assumption was made that awareness would be ramped up over an eight-year period. It starts at 25% in 2010 and ramps up to 85% by 2019.*
- Second, AmerenUE is not likely to offer incentives across all programs that will result in a one-year payback as doing so would lead to substantial budgetary requirements that would cause significant regulatory disruption. So, the take rates at the three-year payback level were considered the most reasonable and realistic representation for generating estimates of RAP.*

These two adjustments result in a 34% decrease in the cumulative energy savings of the portfolio through 2030 as compared to MAP. Interpreting the first adjustment factor, “awareness,” as a linear ramp up from the years 2010 to 2019, this assumption alone would result in an average decrease in achievable potential of approximately 45% for the 3-year IRP period (2012 – 2014) as compared to the MAP scenario. Very little substantiation is offered in the IRP or the DSM Study to support this slow ramp-up assumption, and the response to a direct data request was similarly fruitless.² It is very probable that an aggressive marketing campaign could rapidly increase customer awareness.

The second adjustment, stemming from Ameren’s assumption that they would not be able to offer incentives that would result in MAP due to “significant budgetary requirements,” is inappropriate and unfairly diminishes the potential role of energy efficiency and demand response without conducting the proper analysis. Given that Ameren’s own analysis shows the DSM resources to be far cheaper than *any* supply-side resources — which they presumably would expect ratepayers to fully fund — this arbitrary constraint has no basis and ignores the policy intent of the IRP requirement. Rather, maximum achievable potential should consider the maximum amount of DSM

² Response to Data Request No.: NRDC 1-011

resources that could be captured with *100% incentives* (in other words an immediate customer payback), to determine if they offer ratepayers lower cost solutions to paying 100% of supply-side costs. To address this shortcoming in the achievable potential estimate, the methodology employed by the DSM Study to develop participation rates must be explored. For the DSM Study, Ameren contracted Global Energy Partners, LLC and its subcontractors to conduct primary market research. This research, conducted primarily through online surveys, was used to develop a “take rate” for each efficiency measure described as a “realistic estimate of likelihood [of a customer] to take part in the program.” These take rates were determined for 1-, 3-, and 5-year payback scenarios – with the 1-year payback achieving the highest of the three participation levels. For the MAP portfolio, Ameren applies the take rates associated with a 1-year payback. For RAP, the take rates were reduced to those associated with a 3-year payback.

There are two fundamental issues with this approach that both lead to inappropriately reduced estimates of program potential. First, an estimate of MAP should assume the program can cover 100% of the incremental customer costs associated with energy efficient practices and equipment procurement. In other words, the “take rates” used for the MAP scenario should have been based on a zero-year, or instant payback. This approach is the same as that taken by Global Energy Partners (the same firm hired by Ameren to perform the DSM Study) in the recent national potential study completed for the Electric Power Research Institute. This study states that “MAP involves incentives that represent 100% of the incremental cost of energy efficient measures above baseline measures, combined with high administrative and marketing costs.”³ Following this standard industry practice would substantially increase the estimate of maximum achievable potential.

Second, extending the customer payback from 1 year to 3 years presumes that offering the incentives levels required to reach a 1-year payback would present “significant budgetary requirements” that Ameren finds unacceptable. The incentive component of a DSM portfolio budget should be a product of the analysis, not an input. In other words, if the Maximum Achievable Potential (at 100% incentives, let alone with a buy-down to a 1-year payback) scenario leads to least-cost resource procurement, that scenario should not be abandoned because of the perceived “significant budgetary requirements.” It is therefore inappropriate and unacceptable for Ameren to implicitly assume a budget-constrained portfolio in the estimate of “realistic” achievable potential.

Other concerns surrounding the use of fixed take rates for each DSM portfolio considered also call into question the adequacy of the potential study results. First, it appears that for measures that have paybacks of less than 3 years without incentives, only a portion of the potential measure savings was included in the estimate of RAP. This assumption omits some of the most cost-effective savings from the analysis thereby significantly reducing the cost-effectiveness of the entire portfolio. As previously

³ Assessment of Achievable Potential from Energy Efficiency and Demand Response Programs in the U.S. (2010-2030), Electric Power Research Institute, January 2009.

described, Ameren has arbitrarily set take rates that correspond to a 3-year payback for RAP. The potential impact of this erroneous assumption can be illustrated with a simple example. The market research conducted for the DSM Study found that 37% of residential customers would purchase and install efficient light bulbs at a three-year payback. This value jumped to 44% when the payback was reduced to one year.⁴ Most residential light bulbs have paybacks of less than one year even without financial incentives. However, Ameren's RAP scenario assumes 3-year payback take rates regardless of the actual payback of a given measure. Therefore, a take rate of 37% would be assumed even though Ameren's own data suggests that the take rate would actually be 44% or higher for this measure even without any financial incentives offered to customers. As a result, the analysis would omit up to 7% of the potential savings (neglecting the questionable "awareness" impacts) for this measure. It is clear that the cumulative effect of such omissions could greatly reduce the estimate of RAP.

Second, incentive levels and the assumed take rates for the RAP portfolio are inconsistent. As confirmed by Ameren via data request, measure incentives for the RAP portfolio were set such that target incentive levels were set to pay down to a 2-year simple payback. These incentives were then adjusted to comply with imposed minimum and maximum thresholds and finally manually adjusted as necessary to reflect market conditions, field experience, etc. However, as previously discussed, the 3-year payback take rates were assumed for the RAP portfolio. It is unclear why Ameren would assume a 3-year payback for the purposes of determining measure participation and a 2-year payback for setting incentive levels. The end result will be either an artificially reduced level of savings or an artificially high program cost resulting in diminished cost-effectiveness.

In fact, the entire development methodology and use of the "take rates" is flawed. As noted previously, the DSM Study included primary attitudinal research of both residential and C&I customers toward energy efficiency programs and equipment. However, as explicitly stated in the DSM Study regarding the program interest surveys, "...the research contained in this report is concerned with exploring Realistic Achievable Potential" and was not intended to support an estimate of maximum achievable potential.⁵

The survey data on program interest was collected almost exclusively via on-line self-report surveys and required that residential respondents had "primary or shared responsibility for making energy-related decisions" and that C&I respondents were "knowledgeable about decision-making about energy issues for the business at the specified location," but there is no indication that such suppositions were verified.

⁴ AmerenUE Demand Side Management (DSM) Market Potential Study Volume 2: Market Research, Global Energy Partners, LLC, January 2010.

⁵ AmerenUE Demand Side Management (DSM) Market Potential Study Volume 2: Market Research, Global Energy Partners, LLC, January 2010.

For the purposes of determining maximum achievable potential, Ameren assumes that each survey respondent has “full awareness of the program”.⁶ However, simply because a customer responded to a postcard inviting them to take part in an online survey does not indicate that they have a “full awareness” of potential efficiency programs and their benefits. Many respondents are likely undereducated about such issues and may not have the familiarity necessary with any given efficiency measure or service to make an informed decision about their willingness to adopt such measures. Clearly, these respondents cannot be fully aware of hypothetical programs that do not yet exist. Further, actual DSM programs focus much of their services on identifying and analyzing customer-specific solutions to problems that save energy and provide additional benefits. Only once these analyses are done does the program administrator sell them to customers with financial offers. Simply asking a customer if they would adopt a hypothetical 3-year payback for some undefined efficiency with no education and sales services will substantially underestimate the ultimate possible program participation rates. Given that many jurisdictions have implemented programs that achieve participation rates of 70% or higher, Ameren’s assumptions about “take rates” are simply implausible.

Furthermore, the methodology used to translate survey data into anticipated penetration rates is artificially capped at 70% regardless of what the respondents indicate. As described in the DSM Study,

...this adjustment says that if respondents rate a given program as a “10” (“extremely likely to participate”), then the adjustment says that, realistically, only about 70% of those people will sign up for the program; at the other end of the scale, it says that anyone who rates their likelihood to participate as “7” or lower is unlikely to do so at all.⁷

To put it another way, the study assumes that it is absolutely impossible to capture more than 70% of potential participants before conducting even a single survey. In addition, if customers provide a 70% scoring (by most standards still quite positive toward participation), they are reduced to 0% participation. Rather than considering the actual participation rates achieved by some of the most aggressive and well funded programs throughout the country, as well as the significant body of literature on the subject, Ameren has instead developed a flawed methodology that unfairly constrains assumptions about what could be achieved in Missouri.

Another primary concern with the IRP’s estimate of achievable potential is that it is unclear if the baseline load forecasts used to develop the estimates of achievable potential are consistent with assumptions used to develop the program portfolio. It is explicitly stated in the IRP that the baseline forecasts have been adjusted to reflect the

⁶ AmerenUE Demand Side Management (DSM) Market Potential Study Volume 4: Program Analysis, Global Energy Partners, LLC, January 2010.

⁷ AmerenUE Demand Side Management (DSM) Market Potential Study Volume 2: Market Research, Global Energy Partners, LLC, January 2010.

likely impacts of the new general service lamp standards included in the Energy Independence and Security Act of 2007 (EISA), but is unclear if the forecast was adjusted for other increases in federal appliance and equipment standards. For example, the IRP notes that the impacts of EISA will greatly reduce the savings potential for electric motors, but it is unclear if the baseline forecast has been correspondingly lowered to reflect these savings.

Similarly, the IRP correctly points out that the Missouri Energy Efficiency Investment Act (MEEIA) allows certain customer classes to “opt-out” of utility energy efficiency programs. As described in the IRP,

[c]ustomers with single facilities exceeding 5.0 MW of peak demand could opt out immediately, and those with accounts that can aggregate to a peak demand over 2.5 MW can do so given that they demonstrate an achievement of savings at least equal to those expected by utility-provided programs.

Ameren Missouri estimates in its planning that 20% of the available DSM potential from C&I customers will opt out. The Low Risk portfolio is sized such that it can operate unaffected by this loss of potential. In more aggressive portfolios, however, Ameren Missouri has correspondingly reduced its business program potential estimates by 20% from those in the DSM Market Potential Study.

However, it is unclear if, and appears unlikely that, the baseline forecast has been adjusted to account for the savings that would have to be achieved by the aggregated 2.5 MW accounts. Failing to adjust the baseline forecast will overstate Ameren’s need for power, and, as a result, artificially reduce the potential estimates as a percent of total load.

In a related issue, Ameren’s estimate that 20% of the available DSM potential from C&I customers will opt out is speculative and reflects a 4-fold increase in the load of customers who have indicated their intent to opt-out. Given that customers representing 5% of the total load have pledged to opt-out at this point, it is reasonable to assume that most eligible customers have been made aware of their ability to do so and for whatever reason have elected not to do so. It is unrealistic to assume that such a substantial portion of the remaining eligible customers will eventually opt-out.

The cumulative effect of the substantial flaws detailed above is an estimate of DSM potential that is considerably less than similar estimates conducted in the Midwest. A meta-analysis of recent potential studies conducted for the Midwest region⁸ suggests that average annual achievable potential energy savings is 1.0% per year as compared to the Ameren RAP estimate of 0.38% per year and a MAP estimate of 0.58% per year. In fact, Ameren is already capturing more than its claimed MAP levels in Illinois, and poised to more than double this to 1.4% per year in its approved next 3-year plan. The

⁸ A Review and Analysis of Existing Studies of the Energy Efficiency Resource Potential in the Midwest, Energy Center of Wisconsin, August 2009.

same study also looked at potential estimates nationwide and found a higher average achievable potential of 1.5% annually.

While this evidence suggests that the Ameren estimate of energy efficiency potential is uncharacteristically low, the inadequacy of the potential estimate is clearly illustrated when comparing it to *actual* regional DSM portfolio performance. In 2007, DSM efforts in Iowa, Minnesota, and Wisconsin each individually reduced their respective statewide energy sales by 0.7%. Note that these levels of actual achievement far outpace Ameren's estimate of what they call *realistic* achievable potential. It must also be noted that these other regional program are not necessarily the most aggressive efforts, so there is almost certainly unrealized potential left to capture. The national leaders in energy efficiency in 2007, Vermont and Connecticut, saved 1.8% and 1.3% of annual sales, respectively. In addition, many jurisdictions have significantly ramped up efforts since 2007 and some exceed 2% per year. All of this data suggests that Ameren's estimate of achievable potential does not reflect a realistic estimate of what can be achieved in Missouri.