



EARTHJUSTICE



Attachment A
SIERRA CLUB
FOUNDED 1892



NATURAL RESOURCES DEFENSE COUNCIL
THE EARTH'S BEST DEFENSE

May 14, 2014

Via Email

Re: 2014 Ameren Missouri Draft IRP Chapters 3-6

Dear Ameren IRP Core Team:

On behalf of the Sierra Club and the Natural Resources Defense Council, and their members who live, work, and/or recreate throughout Ameren Missouri's service territory, we respectfully submit the following comments and questions regarding draft chapters from the 2014 Ameren Missouri Integrated Resource Plan.

Concerns Regarding Resource Plan Scenarios

In Ameren's February 3, 2014 Integrated Resource Plan Stakeholder Meeting, slides 50 – 54 of the company's presentation provide an overview of potential new resource characteristics, including, among other information, LCOE estimates for "Final Candidate Resource Options." Although Ameren has developed cost curves and LCOE equivalents for a range of DSM options and portfolios, these demand-side resources are not listed and evaluated alongside the supply-side resources analyzed here. In order to evaluate demand-side resources on an equivalent basis, they should be analyzed in the same process and by metrics as similar as possible to supply-side resources. When the company finalizes the IRP chapters evaluating DSM and evaluating planning scenarios, it should include a full accounting of DSM cost curves as a least-cost resource option. This resource option should be exhausted prior to considering higher-cost options, in order to minimize PVRR.

The 18 candidate Alternative Resource Plans outlined on slides 84 – 87 exhibit a similar potential deficiency in their treatment of demand side resources. Of the 18 scenarios, only three consider the company's MAP level of DSM from its potential study. By definition, all DSM included in these scenarios would be cost-effective and cheaper than supply alternatives, since MAP only includes cost-effective EE. Therefore, increasing the addition of cost-effective EE resources should reduce PVRR. However, Ameren simply includes a few scenarios with higher than RAP levels that are similar on the supply-side to scenarios they already modeled for RAP. This treats EE as completely separate from other resources and fails to optimize the mix of resources in each scenario. For example, going from RAP to MAP in a scenario should by definition be adding additional EE that is cheaper than some supply resources. However, holding the supply-side mix of resources constant in this scenario shows a higher PVRR. This is likely a result of a mix of static supply resources being static that effectively result in excess supply rather than the full benefits of a different, optimized supply resource mix.

In addition to the process concern that Ameren may not be evaluating DSM on an equivalent basis with this range of scenarios, the company may also be underestimating the size of the available DSM resource base it will be able to draw upon. Ameren's existing DSM programs' success in their first year of implementation provides the most direct and compelling evidence of the market potential for DSM in Ameren's service territory. This real-world performance clearly establishes a floor for what the company should consider "realistically achievable program potential." Ameren has reported that these programs created 337 MWh in 2013 – 81 MWh more than the company's 2013 potential studies identifies as average annual incremental *maximum* achievable potential for 2016 through 2018, and more than *double* its estimated Program-level RAP for the same period.

The Natural Resources Defense Council has previously pointed out to the company that this market potential study finds significantly lower levels of potential than many of its peers in comparable years and neighboring territories. NRDC requested that the company evaluate the basis for what appeared to be comparatively low efficiency potential estimates in Ameren's study, compared to several peers' studies. Ameren denied the existence of any such discrepancy and refused to perform any further investigation or analysis. Since that time, NRDC has performed further analysis of Ameren's study and several peers in order to ensure that its original observation is grounded in solid analysis, and NRDC has reached the conclusion that its original observation was correct. NRDC compared Ameren's study to recent market potential studies performed for Ameren Illinois, ComEd, the State of Michigan, KCP&L – GMO, and KCP&L – Legacy. Ameren's estimated potential levels were lowest in every category of potential (Technical, Economic, Measure-level Maximum and Realistically Achievable, and Program-level Maximum and Realistic Achievable Potentials). On average, Ameren's estimates for the period 2016-2018 were approximately 69% of their peers (and 65% for the studies' full study periods).¹

We believe that the unusual results in Ameren's study are a result of a methodology in the study that relied heavily on customer surveys to estimate adoption rates, with responses then discounted on the basis of a single white paper that attempted to quantify the difference between survey respondents' stated intent and actual actions in a non-energy efficiency program context. The questions in the survey did not account for several factors that likely reduced the take calculation, such as the customers' likely increased skepticism based on a perception that the survey may have been a sales call, that the survey did not provide education of the customers and a basis for understanding the value of efficiency (both of which are present in actual DSM programs), and the fact that some programs achieve adoption rates far in excess of the theoretical maximum allowed under this study's methodology. Finally, and in addition to these other shortcomings, the study ignores the realistic potential to achieve savings through DSM Rates, such as an inclining block rate.

Based on the weaknesses in the potential study and on the excellent performance of Ameren's existing DSM programs, we believe that the IRP should not assume that either RAP or MAP as projected by the market potential study reflect the full range of DSM potential that can be achieved by the company under real-world conditions. We therefore suggest modeling, at

¹ For more detail, please see Appendix A.

minimum, MAP scenarios that match every RAP variation, as well as additional scenarios that assume the possibility of MAP+1/3 and MAP+2/3.

Chapter 3—Load Analysis and Forecasting

- Page 1 notes that fifteen different energy forecasts were prepared. Does this include high energy efficiency / high renewables scenarios, or does it solely assume that Ameren’s existing EE/DSM portfolio of programs will continue without growth?
 - Note: On pg. 2, Ameren states that “[f]uture energy efficiency programs are the subject of the DSM chapter of this IRP and the impacts of those programs will be included according to their role in the various candidate resource plans.” Unfortunately, we do not yet have access to the DSM chapter of the IRP.
- On pg. 1, one of the highlights listed is that “[t]he estimated range of peak demand uncertainty is 2,180 MW in 2030.” Please explain the phrase “peak demand uncertainty” and how it is measured.
- On pg. 22, the underlying efficiency data from the Enernoc analysis is based in part on estimates of energy efficiency from “secondary sources determined to be relevant to Ameren Missouri’s service territory.” Please provide this list of secondary sources.
- On pg. 25, Ameren states that “natural gas prices were excluded from final model specifications used to generate the energy forecasts used in this IRP.” Please explain why this is the case.
- On pg. 28, Ameren states that “[a]ll future DSM impacts beyond the first 3-year MEEIA cycle are excluded from the base forecast and are the subject of the DSM chapter of this IRP.” Does this mean that Ameren does not see its current portfolio of DSM/EE programs continuing for the duration of the planning period?
- On pg. 30, Ameren assumed that solar installations would slow from their current pace to 5 MW per year going forward. What is the current pace? Please describe the basis for the 5 MW assumption as it was calculated using PV Watts? Is 5 MW fixed in the model? What assumptions underlie the high penetration DG sensitivity?
- According to the brief discussion of sensitivities and scenarios on pg. 32, it does not appear that off-system sales is included as a sensitivity. Please address this deficiency.
- Clean Line Energy Partners recently petitioned the PSC to obtain a certificate of convenience and necessity for the Grain Belt Express high-voltage direct-current transmission line. According to Clean Line, this transmission line will facilitate the

connection of up to 500 MW of wind power into Ameren Missouri's territory. Please discuss whether and to what extent Ameren has modeled procuring this 500 MW of wind-generated electric power.

Chapter 4—Existing Supply Side Resources

- On pg. 4, Ameren states that “[t]he Burns & McDonnell Condition Assessment for Meramec Energy Center is expected to be complete in May and will be discussed in Section 4.2.4 of the Final 2014 IRP.” Will this study be available for review prior to the October 2014 Final IRP filing?
- On pg. 11, Ameren cites a 2009 Black & Veatch Report on Life Expectancy of Coal-Fired Power Plants to support its assumption that the units (on average) at its four coal energy centers will retire when they are 71 (Labadie), 66 (Meramec), 73 (Rush Island), and 66 (Sioux). Please disclose this 2009 Report.
- On pg. 16, Ameren discusses the potential conversion of the Meramec coal-fired facility to natural gas. Did Ameren also run a scenario to determine whether Meramec’s load could be replaced entirely by DSM/EE, renewables, storage, or some combination thereof? If not, why not?
- Please provide information in the final IRP filing about the extent to which different candidate resource plans rely on off-system sales from existing resources to generate revenue.

Chapter 5—Environmental Compliance

- On page 10, Ameren indicates that the U.S. Environmental Protection Agency has not yet issued final regulations of carbon dioxide emissions from new power plants under section 111(b) of the Clean Air Act, and that it has not yet issued proposed regulations of carbon dioxide emissions from existing power plants under section 111(d) of the Clean Air Act. Although neither rule is finalized, both are entirely foreseeable. As a component of its risk analysis, Ameren should provide an analysis of the current draft carbon dioxide emissions standards under 111(b) and either a range of potential standards under section 111(d), or provide an update to the IRP with an analysis of EPA’s proposed 111(d) rule, which EPA has committed to release on June 2, 2014. In both cases, a prudent analysis should begin from the premise that both rules will be implemented in their most stringent proposed forms and schedules, rather than assuming, as Chapter 5 appears to do, that the rules will be delayed and modified to the point that their effects cannot be analyzed for even a most stringent boundary case.
- On pg. 22, Ameren very helpfully depicts future costs related to its coal-fired generation.
 - Does Ameren believe that Rush Island, located in an SO₂ nonattainment area for the 2010 1-hour NAAQS, can operate in compliance without a scrubber for the foreseeable future?

- Has Ameren evaluated whether more stringent ozone NAAQS, in particular when combined with CSAPR and other regulations, would require installation of SCRs at Rush Island, Labadie, or Meramec?
- Has Ameren evaluated whether additional PM control upgrades will be required to comply with more stringent NAAQS or other regulations?
- What is Ameren's basis for believing that Labadie and Meramec are economical to run after installing FGDs?
- What is Ameren's basis for assuming that FGDs will not be required at Labadie or Meramec until 2022?
- Ameren assumes that final Effluent Limitations Guidelines will require installation of new wastewater treatment plants at its coal-fired units. What specific treatment processes (e.g., physical-chemical, biological, etc.) does Ameren assume will be required?

Chapter 6—New Supply Side Resources

- We are pleased to note that Ameren is now accurately depicting wind energy as the lowest cost resource on an LCOE basis among all candidate resource options; however, we further note that energy efficiency and demand-side management remain the lowest cost resource altogether.
- On pg. 23, Ameren discusses a high-level wind project siting analysis conducted by Black and Veatch. Can this study be shared with stakeholders for their review?
- Has Ameren evaluated whether the cost of purchasing wind through PPAs is below the avoided cost of energy generated from its existing supply-side resources?

We appreciate the opportunity to comment at this early stage.

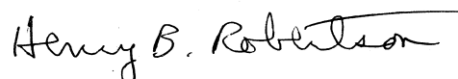
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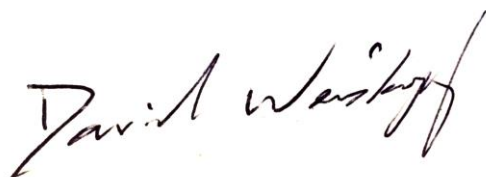
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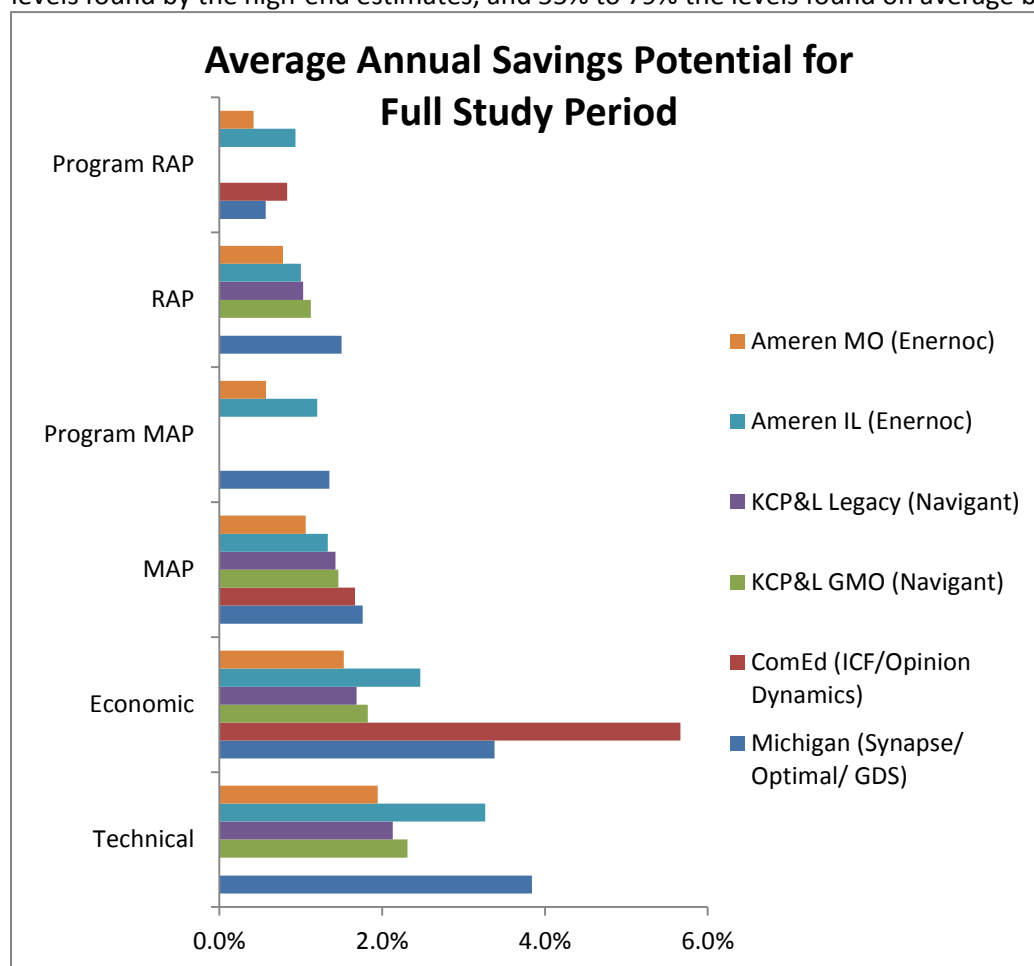
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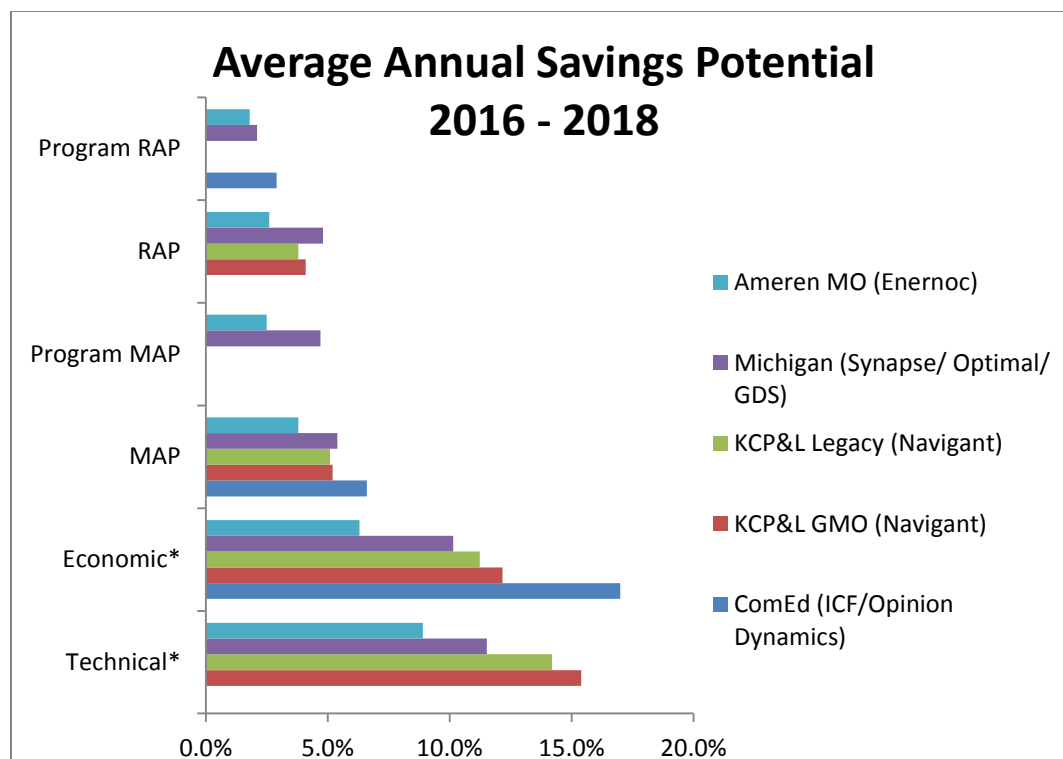
APPENDIX A: Comparison of Ameren’s 2013 Potential Study to Peer Studies

In November of 2013, Renew Missouri and Natural Resources Defense Council provide comments on the November 8, 2013 Ameren Potential Study draft completed by EnerNOC. Many of the comments provided remain relevant to the final draft of the study. Given that consideration of demand side resources in the IRP largely stem from results of the potential study, a discussion of the main issues related to the potential study is provided below.

In Table 6.2 of Volume 3 Ameren Missouri’s draft study estimates that the cumulative program level “maximum” achievable savings (MAP) by 2030 is 8.6% and that a more “realistic” level of savings by 2030 is only 6.3%. For the RAP scenario this represents an annual additional savings of approximately .4% of baseline consumption. For MAP, the study assumes .5% annual savings.

For purposes of comparison, the results of recent similar potential studies are in the chart below. This table provides a comparison of recent potential study estimates in nearby jurisdictions. As the chart suggests, Ameren Missouri’s estimates of annual savings are less than potential studies in other recent studies. Comparing across the studies’ full study periods, High end assessments found cumulative savings potentials ranging from 166% to 371% of potentials Ameren MO found. On average, Ameren’s study found only 65% the cumulative total potential its peers found. Comparing just within Ameren MO’s main study period (2016 to 2018), Ameren MO finds potential levels equivalent to 37% to 62% of levels found by the high-end estimates, and 55% to 79% the levels found on average by its peers.





In addition to potential savings, leading states and utilities are achieving much higher savings than those estimated in the Ameren potential study. According to the US Energy Information Administration the top twenty utility energy efficiency programs produced savings over 2% of annual kWh sales in 2010. This is approximately five times greater than the “realistic” estimate produced by Ameren’s draft¹. Entire states like Vermont, Massachusetts and Rhode Island have also achieved savings of around 2% of retail electric sales in recent years, despite already having captured significant low hanging fruit through leading programs since the late 1980s.

Some of the key assumptions that appear to depress estimates of potential energy savings include the following:

- a) Forecast of program participation based on Ameren Missouri customer survey responses. So-called “say/do” adjustment factors that discount the projected participation of survey respondents who indicated a “certainty” of program participation.
- b) The source of assumed .5% annual increases in adoption rates for program participation and whether this factor should be identical for both MAP and RAP scenarios. It is unclear how these assumptions compare with the “ramp up” rates used by EnerNOC in recent potential studies in Seattle Washington and other jurisdictions. The use of other factors could have a large impact on long term potential savings estimates.
- c) The relationship between both existing and potential state building energy codes and baseline assumptions for residential and commercial buildings. No information is provided documenting which codes are modeled, nor are provided with assumed compliance and enforcement rates during the study period.

¹ MICHIGAN ELECTRIC AND NATURAL GAS ENERGY EFFICIENCY POTENTIAL STUDY, GDS Associates, October 9, 2013.

- d) The assumption that currently opted out industrial customers will never participate in Ameren Missouri programs and produce no savings during the 17-year study period, even in the MAP scenario.
- e) No impact for the entire study period of changes in current Ameren Missouri rate structures, including the impact of the “demand side rates” investigated within the Potential Study. (See “Demand Side Rates” section below.)
- f) Uncertain inclusion of “emerging technologies” as identified by stakeholders.
- g) The nature of the “scaling back” of the Ameren Missouri program portfolios as vaguely described in the program level assessment in Volume 3 of the Study.
- h) Static programs over 17 years. As suggested in EnerNOC’s Seattle Study, higher rates of energy savings are typically achieved only by “mature” programs. The current draft appears to project no adoption of program enhancements that are currently utilized in other utility programs to reduce market barriers. By 2016, it is reasonable to assume substantial maturation of Ameren Missouri’s DSM programs, which the Company has had in place since 2009 in many cases. However, no such maturation or program enhancements are reflected in this study, even in the scenarios above RAP.

We suggest that the following modifications be made to the RAP scenario and that results be recalculated accordingly:

- a. The RAP analysis should assume the development, over time, of full Ameren Missouri program “maturity” similar to that assumed by EnerNOC in other jurisdictions. This would entail the development of program features and capabilities in place in jurisdictions with extensive program experience. EnerNOC’s long term estimates of savings should not be constrained because of the current limited program experience of Missouri’s utilities.
- b. Efficiency projects and savings in the analysis should not be limited to “end of equipment life;” full retrofit programs similar to those in place in other states should be included in assumed program portfolios.
- c. Utilization of transparent and well documented long term adoption or “ramp rates,” such as those used in EnerNOC’s 2012 Seattle Study, that reflect substantial program experience and stakeholder input.
- d. Inclusion of energy savings from unaddressed sectors such as street lighting, water treatment, telecommunications etc.

Ameren Missouri indicates that MAP represents an “ideal” implementation condition. However, the MAP scenario is actually defined very narrowly and artificially depresses the estimates of “maximum” potential substantially below that already achieved in many jurisdictions around the US. Note that the MAP scenario is estimated in the Draft to produce only .5% annual savings in dramatic contrast to the savings estimated by EnerNOC in other jurisdictions.

We recommend that a number of inputs in the current MAP scenario be adjusted and that these inputs and assumptions reflect close stakeholder review and discussion. We recommend that the following inputs be modified:

- a. The IBR residential rate structure identified by Brattle should be integrated into the “take rate” and participation analysis.
- b. The MAP analysis should model 100% utility incentive for program measures when assessing take rates, rather than basing the assessment of maximum take rates solely on a 1-year customer payback level of incentive.
- c. The MAP analysis should assume the development of full Ameren Missouri program “maturity” similar to that assumed by EnerNOC in other jurisdictions. This would entail program features and capabilities in place in jurisdictions with extensive program experience.
- d. Efficiency projects and savings should not be limited to “end of equipment life;” full retrofit programs similar to those in place in other states should be included in assumed program portfolios.
- e. Inclusion of savings from currently opted out industrial customers in a proportion typical to US utility programs with mature industrial offerings.
- f. Utilization of adoption or “ramp rates,” such as those used in EnerNOC’s 2012 Seattle Study, that reflect substantial program experience and stakeholder input.
- g. The Study’s economic analysis should include realistic long term assumptions about the future price trends of LEDs, photovoltaics and other technologies which are achieving significant economies.