BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of	)	
the Resource Plan of	)	File No. EO-2015-0252
KCP&L Greater Missouri Operations Company	)	

Comments of Natural Resources Defense Council

NRDC offers these comments, confined to the demand-side aspects of the IRP.

Introduction

NRDC understands the purpose of the IRP process to be ensuring that utilities objectively and systematically analyze all potential resources to meet future customer electricity needs and determine the optimal mix of resources that would result in the lowest present value of revenue requirements (PVRR) over the next 20 years.[1] These potential resources include both supply-side and demand-side resources, which should be analyzed and treated on an equal footing.[2] Ultimately, the intent of the IRP process is to determine the optimal resource mix and a Preferred Plan designed to attain that mix.

NRDC submits that KCP&L Greater Missouri Operations Company's (GMO's) IRP sub-optimally analyzes and recognizes demand-side resources. Specifically, GMO made several adjustments to the MAP and RAP scenarios identified in the Navigant Potential Study that resulted in a 30% reduction in cumulative savings in each scenario. Then GMO made further reductions to the RAP scenario to arrive at DSM "Option C." This Option C achieves almost 60% less savings in the first three years of the IRP, for a higher cost per MWh than the full RAP scenario. The Preferred Plan produces 2016-2018 savings as a percent of load that is lower than 24 out of the 50 states, and that is on average than the savings achieved by GMO in 2014. GMO fails to convincingly explain the reasons for these significant reductions.

Further, GMO does not design their models in manners which best take advantage of the benefits of DSM. For example, GMO considers MAP scenarios where the only change from RAP scenarios is the level of DSM savings achieved. If the additional DSM savings only serve to provide excess capacity, it makes sense that they would not lead to a lower NPVRR. However in reality the increased level of DSM savings should allow GMO to retire a coal plant earlier, reduce the size of planned additional generation, or enable similar supply-side savings. Since even MAP has a lower levelized cost than most supply side options, it is likely that given an optimized scenario, MAP would achieve the lowest NPVRR. Also, since as MAP is approached costs per kWh saved increase more and more dramatically, it is very likely that scenarios

[1] 240 CSR 240-22.010.
[2] Id.

between RAP and MAP could result in lower NPVRR. However, these scenarios are never examined in the IRP, despite GMO's consultant Navigant having analyzed three additional scenarios between RAP and MAP.[3]

Despite the non-optimized IRP scenarios, GMO does not select the scenario with the lowest NPVRR. Instead, GMO selects a DSM "Option E" for its Preferred Plan, which represents the reduced level of savings for 2016-2018 and full RAP savings for 2019-2034. While NRDC disagrees with the arguments presented for selecting Option E as the Preferred Plan over RAP despite RAP's lower NPVRR, it does show that GMO believes that a RAP level of savings is feasible.

Further, the IRP rules require that GMO examine the impact of rate structures designed to produce energy or demand savings. While Navigant's potential study did look at demand-side rates, they only looked at rates that could be used as demand response, and not rate structures that could potentially save energy. The study by the Brattle Group looking at Ameren's service territory, and filed by Ameren in its 2015 IRP, notably concluded there were very significant energy savings from certain rate structures, in particular a residential inclining block rate.[4] This rate structure change could significantly decrease GMO's electric load and drastically lower the NPVRR for the next 20 years. However, GMO failed to consider this proven rate strategy in its IRP.

Lastly, given that the IRP was completed before the final Clean Power Plan rules were issued by the U.S. EPA, GMO will need to modify the IRP to show scenarios in compliance with the more stringent requirements of the final rule. Further, because RAP and MAP were cost-effective not including any CPP compliance benefits, this additional requirement will add significant additional benefits to demand side management that are not captured in GMO's analysis to date.

The following comments explore concerns with the filed IRP in greater detail, and outline specific ways to potentially change the proposed efficiency portfolio to increase savings.

GMO's Measure Roll-Off Adjustments to the RAP and MAP Scenarios Are Inappropriate

GMO made several adjustments to the RAP and MAP scenarios found by the potential study to the scenarios modeled as RAP and MAP in the IRP. For example, the table below shows the 20-year cumulative savings of RAP and MAP in both the Potential Study and the IRP.

GMOGMO	MWh

[3] GMO IRP, Volume 5: Demand-Side Resource Analysis, April 2015, p. 33.
[4] Enernoc and the Brattle Group, Ameren Demand-Side Management Market Potential, Volume 6: Demand-Side Rates Analysis and Volume 7: The Potential Impact of Demand-Side Rates for Ameren Missouri.

MAP - Potential Study[5]	3,270,051
RAP - Potential Study[6]	2,548,082
MAP – IRP[7]	2,182,987
RAP – IRP[8]	1,570,733

As seen, the RAP and MAP scenarios have been reduced by about 30-40% from the potential study to the IRP. The reduction is dramatic enough that the Maximum Achievable Potential modeled in the IRP achieves lower cumulative savings than the Realistically Achievable Potential scenario identified in the potential study.

While some of this reduction comes from the elimination of a portion of the potential savings from large C&I customers to account for opt-outs, the large majority of the reduction is due to a combination of adjustments to account for measure roll-offs, which occur when efficient technologies that have been installed as a result of DSM program activity reach the end of their lives and are replaced with either standard efficiency equipment or a new version of efficient technology. The reductions made for measure roll-off in the RAP and MAP scenarios are inappropriate. It is unclear exactly how these roll-offs were handled in the Navigant potential study, and GMO's work papers do not give enough detail to determine exactly how the adjustments were made. This lack of detail is unimportant, however, because the details of how roll-off is handled should not impact the estimate for the 20-year cumulative potential. If roll-offs are included in the potential study, then incremental savings for each subsequent year should include the potential savings from measures of previously promoted efficient technology that have reached the end of its useful life and are now available to be replaced again with high efficiency measures. In other words, it should not be assumed that a participant in the efficiency program will automatically revert back to baseline technology, and could never choose to continue being efficient. Rather, once the old measure needs replacement, the old participant can participate in the program again and install the efficient equipment again, or likely will simply pursue the higher efficiency option even without additional program participation. While this does not increase the *cumulative* savings (since the efficient measure was in place the year before), it does prevent decay in the cumulative savings that occurs as efficient measures reach the end of their lives. In other words, the full efficiency potential for efficient replacements would still exist, and no downward adjustment is appropriate. Further, because the primary focus and value of this IRP is to select a Preferred Plan to inform the

[5] Navigant GMO Demand Side Resource Potential Study. Table ES-8.
[6] Navigant GMO Demand Side Resource Potential Study. Table ES-2.
[7] GMO 2015 IRP 22.050. Table 48.
[8] Ibid

upcoming MEEIA Cycle 2 Plan for 2016-2018, any potential drop in cumulative savings far in the future does not justify the unreasonably low efficiency scenarios modeled for these early years.

On the other hand, if measure roll-off were not included in the potential study, this would impact the incremental annual savings, but not the cumulative savings. In this case, incremental savings decrease because no efficient technology ever reaches the end of its life and so the program is not able to recapture the savings. However, the total cumulative savings remains the same in both scenarios – in one scenario measure decay is recaptured, and in the other scenario there is no measure decay. This implies that the adjustments made for measure roll-off in the RAP and MAP scenarios are inappropriate, and that the actual RAP and MAP scenarios are significantly higher than those modeled in the IRP.

GMO also adjusts the cumulative potential by subtracting the 2014 and 2015 savings from the 2016-2034 savings found in the potential study. They do this to align the years of the potential study with the years of the IRP. The result is that RAP shows 11% fewer cumulative savings in 2033 after the adjustment than it did before the adjustment. However, RAP and MAP show higher savings levels than what has been achieved to date. The table below shows the savings from 2013 and 2014, and the planned savings for 2015 and compares it to the RAP scenario.

	Current Savings
GMO 2013 Gross MWh[9]	30,697
GMO 2014 Gross MWh[10]	57,639
GMO 2015 Planned MWh[11]	60,392
Cumulative Total	**148,728**
RAP cumulative after 2015[12]	**191,727**

As seen, the cumulative potential that will be achieved by GMO at the start of the IRP is significantly lower than the cumulative potential from RAP by 2015. To adjust for this time difference, GMO should not subtract out the first two years of RAP, but rather only the savings already achieved by the programs. Any additional potential identified by the potential study in RAP does not simply go away – it is still available for capture in subsequent years. Further, this adjustment, combined with the measure roll-off adjustment, implies that when the equipment rebated in 2014 and 2015 reach the end of their lives, the equipment will automatically go back to baseline efficiency. In reality, however, it is likely that once a person has bought and installed

[9] GMO MEEIA DS MAG REPORT Q2 2015
[10] Ibid
[11] Ibid
[12] Navigant GMO Demand Side Resource Potential Study. Table ES-2.

efficient technology, she will continue replacing the equipment with efficient technology. If that is not her natural inclination, the DSM programs could recapture these savings and prevent the cumulative savings from declining.

GMO's Additional Downward Adjustments to RAP are Inappropriate

GMO's Preferred Plan takes the already reduced IRP RAP estimate (as compared to the Navigant potential study RAP estimate) and, for the first three years of the Preferred Plan, additionally reduces these estimates by about 50%. The main reasons given for these adjustments are:

1. Evaluation, Measurement, & Verification results from the 2013 programs have caused a net decrease in the amount of savings able to be claimed per measure
2. Gas impacts for electric measures were included in the TRC cost-effectiveness analysis of the potential study. These impacts were removed for the Preferred Plan, causing some measures with marginal TRC to fail the test
3. New codes and standards are going into effect that will decrease the savings available from efficiency
4. Adjustments for opt-outs from large commercial and industrial customers
5. Program modifications to reflect enhanced performance and recent program and technological developments.

None of these arguments are convincing as justifications for the dramatic reduction in estimated potential. GMO's current programs are not currently experiencing diminishing returns as implied by the EM&V and program modification adjustments. Rather, GMO achieved net savings of 54 GWh in 2014, about double the savings achieved in 2013[13]. The average annual savings in the Preferred Plan for 2016-2018 are in a similar range, at 57 GWh.[14] This represents a plateau during a prime period in the DSM programs' histories when one would normally expect to see continued ramping up of savings. Typically, as programs establish themselves in the marketplace and gain momentum, they are able to achieve more savings. Judging from the 2013 and 2014 results, this is clearly true for GMO, and the current momentum can and should be allowed to continue. There is no reason that GMO cannot sustain and increase the level of savings achieved in 2014 in the 2016-2018 time period to begin to approach levels already being achieved by other jurisdictions. Further, these adjustments are asymmetric in that GMO appears to only make downward adjustments and ignores potential increases in savings opportunity from new technologies and program strategies that can significantly increase participation rates. Finally, GMO's Preferred Plan represents reduced levels of savings for the first three years of the IRP planning process, but ramps up to RAP

[13] GMO EMV report, tables ES-5 and ES-7
[14] GMO 2015 IRP. Table 48.

starting in 2019. While the arguments for choosing this plan over RAP are unconvincing, it clearly indicates that GMO believes that a RAP level of savings is practical and achievable. Rather, it appears they simply don't want to actually pursue the RAP levels in their upcoming MEEIA Cycle 2 Plan, for unexplained reasons.

EM&V Results

GMO cites the fact that the potential study did not take into account free ridership (with the exception of the appliance recycling program) as a major reason for the drop in savings from RAP to the Preferred Plan. However, the potential study did in fact consider net savings potential, but just assumed the NTG to be 1.0, stating that "due to the inherent uncertainty in forecasting net-to-gross (NTG) ratios, we agreed with stakeholders to use a NTG value of 1.0 for all measures except appliance recycling (where 0.52 was used). This is consistent with both GMO's current stipulation and its projected overall NTG ratio for MEEIA Cycle 1. While the 2013 EM&V study showed a slightly lower result at 0.93, given the the typical range of uncertainty in these studies, it is in the same range as the 1.0 explicitly assumed by both GMO and Navigant in its study. Finally, the NTG ratios found in the EM&V study vary significantly by program and by measure – the C&I programs, for example, actually achieve a NTG of greater than one. This shows that NTG is a function of program design and implementation, and can be influenced by GMO. The better reaction to free ridership, therefore, is not to simply lower the savings goals leaving the programs unchanged, but rather to more aggressively promote the measures and programs with higher NTGs, and structure programs in a way as to minimize freeridership. In summary, Navigant did include NTG ratios, using explicit assumptions developed by GMO, to estimate the net potential. To now further adjust these downward reflects double counting and ignores GMO's ability to modify programs to capture higher NTG ratios in the future.

Gas Impacts

The second argument GMO advances to explain its dramatic reduction to RAP is that the potential study included gas impacts in the TRC and thus overstated cost-effectiveness. In other words, if gas benefits are removed from marginally cost-effective measures that have significant existing gas benefits, these measures would fail the TRC and thus total potential would be reduced. However, while the MEEIA rules state that only electric benefits should be counted when analyzing TRC, they also state that utilities can promote other measures that fail TRC as long as they pass UCT and any additional costs are borne by the customers or other non-electric ratepayer parties. Because the electric benefits are only a portion of the benefits of these measures that also save gas heating energy, they need to be compared to a corresponding fraction of the incremental costs of the measure. In other words, these measures will pass the utility cost test, as the electric utility will only pay for the portion of the costs that yield electric benefits, and the other costs will be borne either by the gas utility or by

the customer. The measures should still pass the TRC, because the only way to properly screen these measures under the circumstances is to look at the portion of the costs that directly create electric benefits. However, the TRC is unimportant in the context of an IRP, as the primary criterion is NPVRR, which is effectively dependent on UCT and not TRC. Any measure with both electric and gas benefits can be made to pass the UCT by only paying for the portion of the costs that yields electric benefits. In fact, given that GMO already pursues some coordinated programs with the gas utility, this is exactly how any future gas-electric programs would likely be funded.

Codes and Standards

Finally, GMO claims that increased codes and standards, and in particular the Energy Independence Security Act of 2007 (EISA), have a major role in the reduction of the RAP and MAP estimates from the Navigant potential study to the Preferred Plan used in the IRP. However, this is not true. As is standard practice for potential studies, Navigant took into account all known future codes and standards when estimating the levels of net savings potential. In fact, Navigant explicitly mentions EISA multiple times in the potential study, including a detailed discussion of how the EISA regulations impacted the treatment of commercial T12 fluorescent lighting retrofits and residential lighting savings[15]. The potential study clearly states that, for residential CFLs, ''the incremental cost can actually become negative upon full implementation of the new EISA lighting standards, due to increasing costs of the baseline code compliant bulb[16].'' This clearly indicates that Navigant's estimates of RAP and MAP did indeed account for EISA and other known future standards. By further reducing Navigant's RAP and MAP estimates based on these standards, GMO is double counting their impact on the achievable cost effective efficiency available in their service territory.

Opt-outs for Large C&I customers

GMO discusses large industrial and commercial customer opt-outs as another reason for reducing the RAP savings. However, this adjustment was already made in the first set of reductions to the RAP and MAP scenarios in the IRP, which show significantly lower cumulative savings than the equivalent scenarios in the potential studies. It is unclear whether these adjustments were made twice or simply stated twice, but to the extent they were made in adjusting the IRP RAP scenario further down for Option C this is double counting the impact of large customer opt-outs. If they were not made twice, then opt-outs do not contribute to the reduction in savings from RAP to Option C.

Program Modifications

[15] Navigant KCP&L Demand Side Resource Potential Study. Pages 31-33.
[16] Navigant KCP&L Demand Side Resource Potential Study. Page 41.

GMO also explains that the significantly lower savings in the Preferred Plan of the IRP are caused by "recent program developments, evaluations, and new technology," as well as "a review of GMO's existing programs and the Potential Study, as well as interviews with GMO program managers and staff."[17] In other words, the Preferred Plan GMO modeled in the IRP is not consistent with the Navigant Potential Study, but rather reflects a lower level of efficiency that GMO simply prefers to consider. The purpose of the IRP is to consider all potential resources on an equal footing to analyze the optimal mix of supply and demand resources that achieves the lowest PVRR. Rather than make an honest effort to do this, GMO has simply decided first what types of programs designs and measures they are interested in pursuing and then constraining the demand-side resources to match this desire. However, as Navigant clearly showed in its potential study, much more can be achieved realistically. These reductions do not comply with the rules that require equal treatment of demand and supply resources possible that result in the lowest PVRR. As discussed, all of the reasons GMO gives for significantly reducing RAP and MAP for the IRP are inappropriate, double-adjusted, or dramatically overstated. It appears that GMO's IRP scenario represents a much more limited set of demand-side resources driven by external decisions, rather than a full accounting of the optimal mix of supply and demand-side resources that would result in the lowest PVRR.

The IRP DSM Scenarios are Significantly Lower Than What is Being Achieved in Other Jurisdictions

GMO's Preferred Plan achieves cumulative savings of about 1.9% of load in 2018. This is an average of about 0.64% of load per year. The table below shows the savings as a percent of load for the states that have achieved higher 2013 savings. As seen, 24 of the 50 states achieved higher savings than GMO's 0.6% of load. Please note further that because these are statewide averages, and many states have public or cooperative utilities that do little or no DSM, these figures are generally significantly lower than the best performing utilities within each state. In addition, some of the remaining states do not even pursue utility run efficiency programs.

Savings as a % of load by state[18]

1	Rhode Island	2.09%
2	Massachusetts	2.05%
3	Vermont	1.78%
4	Arizona	1.74%
5	Hawaii	1.67%
6	Michigan	1.51%
7	Oregon	1.43%

[17] GMO 2015 IRP 22.050. Page 4.
[18] Gilleo, Annie, et al. The 2014 State Energy Efficiency Scorecard. ACEEE. October 2014.

8	Washington	1.35%
9	California	1.25%
10	New York	1.13%
11	Iowa	1.06%
12	Minnesota	1.04%
13	Illinois	0.99%
14	Maryland	0.97%
15	Pennsylvania	0.97%
16	Connecticut	0.97%
17	Wisconsin	0.90%
18	Ohio	0.89%
19	Colorado	0.88%
20	Utah	0.87%
21	Nevada	0.81%
22	Idaho	0.78%
23	Maine	0.78%
24	Montana	0.65%

Many states have continued to increase their savings levels. For example, in 2014, Massachusetts and Rhode Island saved 2.76% and 3.4% of load, respectively[19,20]. In other words, these States, last year, achieved between 4 and 5 times more savings than what GMO claims is possible in its Preferred Plan in the IRP. Both of these States plan to continue aggressive efficiency efforts in the 2016-2018 timeframe, despite facing similar constraints imposed by new and even more aggressive codes and standards than Missouri. Further, these States have a much longer and deeper history of efficiency programs than Missouri and are therefore more likely to run into problems with diminishing returns and lack of potential. This also shows that even with aggressive past programs lots of efficiency potential continues to exist, and therefore that GMO's removal of the potential from 2014 and 2015 is inappropriate.

Given these factors, it is clear that:

1. GMO's large downward adjustments in RAP and MAP between the potential study and the IRP are overstated and inappropriate
2. GMO's further reductions in RAP for 2016-2018 in its Preferred Plan are overstated or double counted, and inappropriate

[19] MassSaveData.com. Evaluated 2014 Data. http://masssavedata.com/Public/SalesandSavings.aspx#
[20] RI 2014 4th Quarter Report

DSM was Not Comprehensively Modeled in the IRP Process

Further, we do not believe that demand-side resources were modeled in a way that treats them equally with supply resources, as required by the IRP rules. Specifically, GMO:

- Does not optimize scenarios to take advantage of increased demand-side resources
- Does not look at any scenarios between RAP and MAP
- Does not choose the scenario with the lowest NPVRR as its Preferred Plan

The IRP Does Not Optimize Scenarios

The 2016 IRP MAP scenario, assuming a 12 year average measure life achieves a levelized cost of $70 per MWh. This is slightly higher than the $65/MWh estimated for pulverized coal, and the $66/MWh for gas combined cycle plants, but compares favorably to most other supply-side technologies. Further, in order for a technology to be included in MAP, it needs to pass the TRC test, which typically means that it is cheaper than the variable O&M costs of the marginal generation. Despite these facts, three of the four scenarios with highest NPVRR were the three scenarios with MAP levels of DSM.

This contradiction reflects the fact that the scenarios with MAP levels of DSM were not constructed to optimally take advantage of the increased savings. Indeed, if you look at the scenario selection, all three scenarios modeled with MAP levels of DSM are all exact replicas of other scenarios, but only with more efficiency savings at a higher cost. This necessarily means that GMO is not looking to take advantage of the increased savings to, for example, retire a coal plant earlier or reduce the size of additional generation needed in out years. Instead, the MAP scenarios simply represent the same supply-side additions and retirements as the other scenarios, but with excess capacity caused by paying for additional demand side savings. To truly treat DSM on par with supply, GMO needs to plan its supply side in a way that maximizes the advantages of demand side savings, instead of just creating unneeded excess capacity. This will become even more important, as GMO has to identify the least-cost compliance path for achieving the new more stringent targets of the Clean Power Plan. Because the current Preferred Plan does not meet the final Clean Power Plan targets, additional efficiency reductions will provide significantly more benefits that GMO has not yet modeled.

In addition, the MAP scenario inappropriately assumes the full cost of all measures, even when much of the benefits could come from gas savings, and these programs and measures can be jointly promoted by GMO along with gas utilities, or through additional customer contributions that would not impact the PVRR. By burdening the electric system with the full costs of all measures, even when GMO knows it would not actually fund 100% of these costs in programs it designs, unfairly burdens the MAP scenario and results in higher PVRR than would actually occur.

The IRP Does Not Look At Scenarios Between MAP and RAP

As stated earlier, the 2016 MAP scenario has a competitive levelized cost of $70 / MWh. However, this is significantly higher than the levelized cost from the RAP scenario of $32 / MWh. The cost increases so much between RAP and MAP because it is assumed that the last customers will only participate if 100% of the incremental measure costs are covered. Even though the vast majority of customers will participate for less than 100% of the cost, the incentive has to be raised for the entire customer base under the MAP scenario. This causes the total program costs to increase faster and faster as the program goes up the acceptance curve to achieve savings from the hardest to reach customers. Accordingly, the costs to achieve a level of savings midway between RAP and MAP will be significantly lower than half the additional costs associated with the full MAP scenario. Such a scenario would have significantly higher savings than RAP and significantly lower unit costs than MAP. This would very likely have a lower PVRR than the RAP scenario, which currently achieves the lowest PVRR.

In fact, Navigant even modeled such scenarios as part of its potential study. GMO's IRP states that, "Navigant considered multiple design scenarios including the realistic achievable potential (RAP) and maximum achievable potential (MAP) as well as three additional scenarios equally spaced between the RAP and MAP scenarios.[21]" However, despite the fact that Navigant provided the inputs to three scenarios between RAP and MAP, no such scenario is examined in the IRP. GMO should have modeled these scenarios at different levels between RAP and MAP to analyze if one of these would provide the optimal level of resources.

The Preferred Plan is Not the Plan with the Lowest NPVRR

The Preferred Plan with reduced savings levels from 2016-2018 had a higher PVRR than RAP. "Option C," which does not ramp up to RAP savings in 2019, has an even higher PVRR, and would cost $232 million more than the least cost scenario. GMO selected the Preferred Plan despite the requirement that PVRR be the primary criteria because RAP would cause higher costs in early years. This argument is unconvincing, as IRP rules call for looking at a full 20-year horizon and not just impacts in early years. Further, this argument can equally be made for the next IRP starting in 2019. GMO could feasibly choose more expensive scenarios for every future IRP under this same argument, ultimately leaving ratepayers significantly worse off over the entire 20-year period. What is quite clear from GMO's IRP is that pursuing the RAP levels of savings in the next MEEIA Cycle 2 Plan instead of GMO's Preferred Plan would reduce the present value of revenue requirement by $232 million, which would be directly saved by ratepayers. To deny ratepayers this opportunity simply because GMO prefers it is inappropriate.

[21] GMOGMO 2015 IRP 22.050. Page 33.

There was no Comprehensive Discussion of Targeted DSM

IRP rules also call for GMO to evaluate targeted DSM as an alternative to substation upgrades and other supply-side solutions to load constraints. However, GMO does not identify any possible scenarios for targeted DSM or even mention targeted DSM at all. Targeted DSM could potentially save ratepayers money by avoiding or delaying substation and other upgrades, and should be examined and discussed explicitly in the IRP.

The IRP did not Include Energy Savings from Changes in Rate Structure

Although the Navigant Potential Study and the IRP do discuss how changes in rate structures could be used to encourage demand response, there is no examination of how rate changes could impact the energy load. For its IRP, Ameren commissioned the Brattle Group to examine this question and found that "rates with inclining block structures would likely reduce energy consumption by up to 1.8% per year."[22] In other words, assuming this applies equally to GMO, this one approach alone would provide the same amount of savings by 2018 than the full amount of efficiency that GMO includes in its Preferred Plan. Further, rates can be designed to be revenue neutral (i.e. by definition be cost-effective) and potentially avoid any throughput disincentive or need for program cost recovery. However, GMO does not mention these exciting findings in its IRP, or even mention plans to examine inclining block rates and similar rate structures in the future. NRDC believes that the IRP rules require GMO to not only design rates that encourage reductions in the net consumption of electricity, but also to include the potential for rates to result in demand-side savings in the IRP scenario modeling. Finally, The Brattle Group only looked at inclining block rates for the residential sector, and the 1.8% savings of the full load equates to 4.4% savings in the residential sector.[23] It is very likely that this approach would also result in significant savings in the commercial and industrial sectors as well, making total savings well higher than the 1.8% available from the residential sector only. Inclining block rates alone would dramatically increase cost-effective demand-side savings and result in a significantly lower PVRR for GMO than its Preferred Plan. In addition, adoption of inclining block rates would have a spillover effect of encouraging more aggressive customer participation in GMO's DSM programs, thereby also increasing the RAP and MAP levels of achievable potential from programs.

Program Design Guidance

Throughout this document, we argue that the efficiency potential modeled in the GMO IRP is in fact a significant underestimate of the true cost-effective potential available. In this section, we provide some specific examples of how GMO's proposed portfolio of programs fails

[22] Ameren 2014 IRP. Chapter 8, page 76.
[23] The Brattle Group, *The Potential Impact of Demand-Side Rates for Ameren Missouri,* Slide 23 of Stakeholder webinar presentation, May 24, 2013.

to capture significant portions of the efficiency potential, and how GMO could modify the portfolio to increase savings.

LED Opportunities

While GMO mentions that they investigated an LED streetlighting program for Option C, they make no further mention of the potential program. It is unclear why this program was not included in the Preferred Plan, but NRDC believes that this is an important program and wants to work with the Company to ensure that this is in place for the 2016-2018 timeframe. The cost-effective achievable savings from an LED streetlighting program should also have been reflected in the RAP and MAP scenarios. An aggressive LED program for parking garages and grocery stores should also be considered.

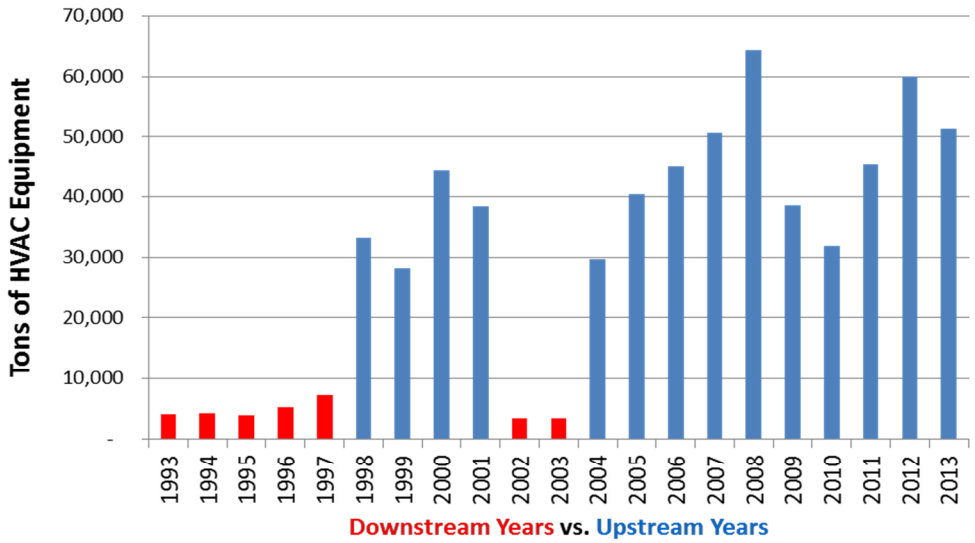
Upstream Programs

While GMO does have an upstream program for CFLs and certain LEDs, use of upstream strategies could be expanded significantly to include more lighting as well as other types of measures such as HVAC and consumer electronics.

Upstream programs involve working directly with manufacturers and distributors to promote high efficiency equipment, including giving incentives to the manufacturers and distributors rather than the end users. In this way, customers do not need to do any proactive activity to participate in the program – they just see the discounted products on the store shelves or in contractor's bids and may not even realize that they have just participated in an efficiency program. Further, since retail markups are usually based on a percentage of wholesale prices, by lowering the wholesale price of the product upstream incentives can use less program costs to achieve the same reduction in retail prices. In addition, these upstream market actors are best situated to promote high efficiency products to their customers and are necessarily involved at the appropriate time for time-dependent installations such as replacement-on-failure. Recent efforts in Massachusetts, California and New Brunswick moving standard rebates for lighting and HVAC measures completely upstream where distributors are provided an incentive based on wholesale incremental costs for each unit they sell have been very successful. For example Pacific Gas and Electric's HVAC program's participation increased by an order of magnitude during years when the incentives were moved upstream, as shown in the figure below[24].

Figure 2 | PG&E Commercial HVAC Program Results: 1993-2013

[24] Quaid, M. and Geller, H., *Upstream Utility Incentive Programs: Experience and Lessons Learned,* Southwest Energy Efficiency Project (SWEEP), May 2014, p. 7.



Further, in Massachusetts after only a few months of an upstream lighting program, administrators captured far more savings for the upstream products (high performance T8 and LED lamps) than they were capturing with downstream rebates at a lower utility cost. In addition, experience has shown that once manufacturers and distributors agree to participate, these programs have a dramatic effect in terms of transforming markets quickly. This is because they can sell the high efficiency products at the same customer cost as lower efficiency products, thereby only stocking and promoting high efficiency equipment. Moving more measures to upstream programs could result in significantly increased savings levels than those modeled in the IRP scenarios and in the Navigant potential study.

Measure and Service Bundling

NRDC is also exploring ways to increase participation by packaging efficiency measures together in pre-set bundles. For large commercial (including municipal, university, hospitals) and multifamily buildings, efficient equipment and services such as retro-commissioning can be bundled together to provide a "one-stop-shopping" experience. For the residential sector, bundled measures could be effectively marketed and delivered via large employers, increasing participation rates and reducing acquisition costs. NRDC will be publishing a forthcoming white paper on this subject.

Active Account Management

The program description for the C&I programs implies that GMO will simply make available a rebate application and wait for customers to submit them for review. Without more aggressive, proactive efforts to engage with customers initially and help them identify and develop these projects, experience indicates participation will likely reflect a high level of free ridership and lower than possible participation levels. Additional services should be provided for GMO's largest C&I customers, including:

- Active account management for medium and large customers (e.g., customers with demand of 200kW and/or 500 MWh annually or more). This includes proactive, customer specific energy efficiency planning and continuous energy improvement strategies designed to reduce the customer's energy use intensity and provide a single point of engagement with the utility to facilitate customer identification, assess opportunities, and coordinate the process of moving forward with implementation. Account managers would also play a major role in engaging with customers as a marketing strategy. Experience indicates that personal, one-to-one marketing in the medium/large commercial and industrial sector is the most effective way to drive efficiency program participation.
- At the customer's request, the provisions of tiered energy services starting with on-premise walk-thru energy audits (tier I) at no/low cost to the customer.
- Provision of detailed technical assistance and feasibility studies (tier II). Many utilities offer these services initially with a customer contribution of 50% of the cost. If the customer follows through with implementation the 50% co-pay is waived and the program covers 100% of the study. This strategy has been quite effective. By requiring an initial commitment of half the cost if the customer does not follow through, it weeds out those customers that are not serious about making efficiency investments, while at the same time creates a strong incentive for customers to pursue the measures once they are analyzed.
- Turnkey project management services that include energy efficiency project identification, scoping and documentation services such as assisting in filling out program materials, engaging with design professionals and contractors, and generally helping to coordinate the participation and implementation process.
- Maintaining a group of expert process engineers in various industrial processes. These can be referred to industrial clients to examine their industrial process energy usage for efficiency improvements. There are often many low/no cost process measures that can significantly reduce process related energy expenditures.

Conclusion

NRDC is concerned that GMO's IRP process does not allow the full cost-effective achievable demand-side resource potential to effectively compete on an equal footing with supply-side

resources. This lack of competition is evidenced by a recitation of the steps GMO took in arriving at its Preferred Plan:

1) GMO improperly reduced cumulative savings for RAP and MAP by one third. Part of this adjustment is due to improper adjustments to account for measure roll-off.
2) GMO improperly further reduced the savings achieved in the RAP and MAP scenarios to arrive at its Preferred Plan.
3) GMO did not optimize the scenarios to best take advantage of the benefits of DSM.
4) GMO did not examine any scenarios with savings and costs between RAP and MAP, nor the actual RAP and MAP estimates made by its potential study contractor, Navigant.
5) Though the unreasonably reduced level of RAP still resulted in the lowest PVRR, GMO arbitrarily rejected the RAP plan and chose an even further reduced DSM potential as its Preferred Plan.
6) Although the Preferred Plan ramps up to the inappropriately low adjusted estimate of RAP in 2019, NRDC is concerned that GMO will make the same arguments for delaying implementation of RAP in its 2019-2022 IRP, thus saddling ratepayers with a higher PVRR indefinitely.
7) Though RAP still resulted in the lowest PVRR, GMO arbitrarily rejected the RAP plan and chose the reduced Option E potential as its Preferred Plan, potentially denying ratepayers $232 million in savings just in the next three years.

To correct these missteps, NRDC urges the Commission to direct GMO to:

1) Model the full RAP and MAP in the IRP using the full costs of programs that are designed to reach the full cost-effective savings available in Missouri as found by the Navigant potential study.
2) Model the mid-DSM scenarios between RAP and MAP, as identified in the Navigant Potential Study.
3) Create scenarios to better take advantage of the benefits provided by DSM through appropriate reductions in supply investments for all DSM scenarios modeled.
4) Modify and re-run the scenarios to ensure compliance with the final rules of the Clean Power Plan.
5) Include an assessment of implementing inclining block rates, as analyzed by the Brattle Group, on the PVRR, as well as the potential from additional targeted DSM to address T&D constraints.

Lastly, given the more stringent requirements of the Clean Power Plan just released by the EPA, GMO will need to revisit its IRP and DSM potential study to fully take advantage of all cost-effective demand-side resources as the best strategy for least-cost compliance and maximizing value for its customers and shareholders.