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BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of KCP&L Greater Missouri Operations	**)**	
Company's Application for Approval of Demand-	**)**	
Side Programs and for Authority to Establish a	**)**	**File No. EO-2012-0009**
Demand-Side Programs Investment Mechanism	**)**	

DIRECT TESTIMONY OF
PHILIP MOSENTHAL

ON BEHALF OF

NRDC, SIERRA CLUB AND RENEW MISSOURI

PUBLIC VERSION

MARCH 13, 2012

HC

Q. Please state your name and business address.

A. Philip H. Mosenthal, Optimal Energy, Inc., 14 School Street, Bristol, VT 05443.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of the Natural Resources Defense Council (NRDC), Sierra Club and Renew Missouri.

Q. By whom are you employed and in what capacity?

A. I am the founding partner in Optimal Energy, Inc., ("Optimal Energy") a consultancy specializing in energy efficiency and utility planning. Optimal Energy advises numerous parties including utilities, non-utility program administrators, government, and environmental groups.

Q. Please provide a summary of your qualifications and experience.

A. I have 30 years of experience in all aspects of energy efficiency, including facility energy management, policy development and research, integrated resource planning, cost-benefit analysis, and efficiency and renewable program design, implementation and evaluation. I have developed numerous utility efficiency plans, and designed and evaluated utility and non-utility residential, commercial and industrial energy efficiency programs throughout North America, Europe and China.

I have also completed or directed numerous studies of efficiency potential and economics in many locations, including China, Colorado, Kansas, Maine, Massachusetts, Michigan, New England, New Jersey, New York, Quebec, Texas, and Vermont. These studies ranged from high level assessments to extremely detailed, bottom-up assessments

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evaluating thousands of measures among numerous market segments. Recent examples of the latter are analyses of electric and natural gas efficiency and renewable potential along with the development of suggested programs for New York State, on behalf of the New York State Energy Research and Development Authority (NYSERDA).

I am currently a lead advisor for business energy services in Rhode Island and Massachusetts on behalf of the Energy Efficiency Resource Management Council and the Energy Efficiency Advisory Council, respectively, overseeing and advising on utility program administrator's plans, program designs, implementation and performance.

I have been actively engaged in the Illinois Stakeholder Advisory Group (SAG) since its inception, representing the People of Illinois on behalf of the Illinois Office of the Attorney General. I have also been involved in the past few years on issues in Missouri related to KCP&L's and Ameren's IRP filings.

Prior to co-founding Optimal Energy in 1996, I was the Chief Consultant for the Mid-Atlantic Region for XENERGY, INC. (now KEMA). I have a B.A. in Architecture and an M.S. in Energy Management and Policy, both from the University of Pennsylvania.

Q. Have you previously testified before this Commission?

A. Yes. I submitted direct and rebuttal testimony in the most recent Ameren UE IRP docket, EO-2011-0271.

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Q. Please summarize your Testimony.

A: My testimony addresses GMO's proposal for adoption of a DSIM and performance incentive.[1] I support the overall structure GMO has proposed to establish a reasonable framework for an incentive mechanism that provides GMO with appropriate and timely recovery of direct and indirect program costs as well as a reasonable incentive for exemplary performance. I also support GMO's proposed initial demand-side management (DSM) targets as a reasonable first step in a ramp-up to all cost-effective achievable DSM resources, consistent with the intent of MEEIA, and meeting the default MEEIA targets for the first 3 years of program delivery.[2] However, I address a number of concerns with the specifics of GMO's proposal, as follows:

1. The DSIM analysis that provides a 12% share of gross electric system benefits provided by GMO is a reasonable planning estimate of actual numbers and performance of GMO's DSM portfolio. However, it is not appropriate to lock in all these factors *a priori,* nor are some of the proposed factors used appropriate even if it is reasonable to lock them in for some period. Rather, ultimate payments related to DSIM should be based on the actual performance of the portfolio, using best estimates of net-to-gross values, and tracked data on measure savings and load shapes.[3] Failure to do this will result in significant perverse incentives to

[1] Note that GMO proposes all financial flows be done through the DSIM Rider applied to customer bills. This would ultimately include any "performance incentive" award, as well as the 12% share of gross benefits. For simplicity, I differentiate these components, and use the term "DSIM" to refer only to the 12% share of benefits component, and "PI" to refer to the performance incentive component, throughout my testimony, unless otherwise specified.
[2] Note that MEEIA envisioned goals beginning in 2012. Because of the current timing, in theory GMO's proposed savings of 0.5% per year for 3 years is lower than intended by MEEIA because program goals would not begin until 2013. However, as the first full post-MEEIA program cycle of program delivery, I believe this one year shift in default goals is reasonable.
[3] Note that GMO has also proposed "deeming" the average measure life of all measures except behavioral ones at 15 years. While the optics of this parameter may appear to reduce accuracy, I believe given the full GMO proposal this

GMO, and will increase risk to both GMO and ratepayers of inappropriate and unintended financial flows to or from ratepayers and GMO.

2. The DSIM 12% share of benefits component is intended to make GMO "whole" in terms of direct and indirect costs of delivering DSM programs. As such, it is designed to recover direct program expenditures and lost margins related to the net savings from the programs. However, as I understand it GMO has proposed an *additional* lost margin component separate from the share of benefits portion of the DSIM.[4] This additional component would only be triggered if actual kWh delivered fell below that expected based on the most recent rate case.[5] GMO indicates it is unlikely that this component would be triggered, and they do not include any assumptions about additional lost margins recovered beyond that captured through the DSIM share of benefits component.[6] I agree with GMO that this component may never be triggered. However, because the DSIM is already designed to recover 100% of the lost margins, if it were triggered it would likely lead to over-collection of lost margins by GMO. I therefore recommend this component be eliminated as unnecessary and problematic. I further note that a true decoupling arrangement rather than an incentive component designed with a similar planned outcome would be preferable because it would ensure greater overall protection to ratepayers and GMO from unanticipated fluctuations in actual electric deliveries.

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is a reasonable assumption that protects GMO and ratepayers from inappropriate variances in payments, as explained further below.

[4] Rush direct testimony p. 21, ll. 1-13.

[5] Rush direct testimony p. 21, ll. 8-10.

[6] Verbal confirmation at GMO Technical Conference, March 1, 2012.

3. I support the additional "performance incentive" (PI) that GMO has proposed as a mechanism to provide some up-side earnings for GMO shareholders tied directly to evaluated performance. However, I find the current design somewhat problematic. I recommend some modifications to the structure of the PI component to ensure that it only rewards GMO for excellent performance, while providing a strong incentive to continue to strive for even better achievements.
4. Finally, I have some concerns related to specific program designs. I fully support the MPSC allowing utilities flexibility to modify program designs, add or delete measures promoted or programs delivered, and even shift funds and effort between programs, with some restrictions.[7] I believe that this flexibility is appropriate and desired, and in the benefit of ratepayers as well as GMO. If an appropriate framework is established, GMO should have the proper incentives and authority to modify programs as appropriate to maximize net benefits to ratepayers, and this should also translate into maximized GMO earnings. However, based on the current filing, I have some recommendations for changing some program details that currently do not reflect best practices.

Q: You indicate that you support the overall framework proposed by GMO for cost recovery and GMO's proposed DSM goals. Please elaborate on why.

A: GMO has developed a proposed framework that generally is consistent with the intent and specifics of the MEEIA statute and rules. Specifically, GMO proposes a DSIM

[7] Restrictions should include adequate equity protections such as ensuring each customer class is only paying for DSM services available to that class, minimum low income requirements, and perhaps other key Missouri policy criteria.

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Rider that would offer GMO a 12% share of *gross* electric system benefits.[8] Based on GMO's planning estimates, this would return $16.545 million to GMO over the 3-year plan cycle.[9] This roughly reflects recovery of all direct program costs (trued up periodically to account for any time value of money at an agreed upon interest rate), and recovery of expected lost margins for the DSIM plan cycle until a new rate case. As GMO shows, under this framework the likely outcome of meeting 100% of the goals, after spending 100% of the full program budgets, would be roughly a break-even proposition for GMO. In other words, they would be "made whole" in recovering all direct and indirect costs of DSM delivery, but not any significant amount more. I believe this is a fair and reasonable arrangement that ensures GMO has no strong disincentives to aggressively pursue DSM, while protecting ratepayers from unnecessary and excessive additional costs. In addition, I believe the DSIM design of being tied to gross benefits is a reasonable and workable approach. This is because it provides a positive incentive to GMO to maximize the gross benefits achieved within the budgetary and other constraints it faces. As a result, GMO's and the ratepayers incentives are sufficiently aligned in that both parties will benefit from maximizing the benefits captured.[10] I note that a share of net benefits rather than gross would be somewhat more consistent with the MEEIA rules, and arguably provide a better metric because it would protect ratepayers from any excess

[8] The term "gross" benefits here refers to the full electric avoided cost benefits achieved, as opposed to "net" benefits which reflect the gross benefits less the societal costs incurred to capture them, namely the utility program costs plus any customer co-payments toward efficiency measures. It should not be confused with the distinction between "gross" and "net" savings, which are further explained below under the net-to-gross ratio discussion.
[9] Rush direct testimony p. 17, l. 21.
[10] As noted above, I believe that completely removing disincentives could be better done through a DSIM direct cost recovery mechanism combined with decoupling. As a general rule, focusing on exactly reimbursing utilities for "lost revenues" from DSM programs rather than decoupling the electric delivery to profits is not the best practice for aligning incentives. This is because even though DSIM is designed to make GMO whole, they could still benefit in the long term from increased sales. That said, I believe given the policy and regulatory environment in Missouri GMO has developed a reasonable and workable proposal. Because GMO can increase its earnings by capturing more cost-effective efficiency, overall the alignment between GMO shareholders and Ratepayers is reasonable.

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spending over approved budgets. However, if net benefits were used, the actual percentage amount would need to increase to result in the same projected financial impact. Because budgets are established and generally reliable, the result of shifting from a gross to a net benefit share would be primarily academic as either approach could be designed to generate the same results. For this reason, I have no objection to shifting to a share of net benefits but have not proposed this in an attempt to adopt as much of GMO's proposal as is reasonable and workable.

In addition to the DSIM, the PI offers GMO an additional earnings opportunity more directly based on performance toward goals.[11] I also support this component, with modifications. As currently designed and envisioned, the DSIM serves to "make GMO whole" thereby removing a significant *disincentive*. However, it does not provide a significant *positive* incentive, and in the long run DSIM could still be viewed by GMO as less desirable than future new investments in traditional supply that it could earn a rate of return on. I therefore support the creation of an additional positive incentive to encourage GMO to strive for maximum DSM performance. While I believe the MPSC has the authority to mandate utilities to deliver DSM programs without financial incentives under traditional low-cost principles, I believe the long term result of aligning ratepayer and shareholder interests will result in better, more aggressive, and more efficient DSM efforts. In my experience, utilities mandated to perform DSM that believe it is not in their best interests will likely not do as good a job and ultimately ratepayers suffer.

[11] Note that the DSIM — because it is designed as a share of electric system gross benefits achieved, can also be considered a performance incentive in that the DSIM amount is directly related to the DSM achievements as well.

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Finally, I support GMO's proposed first 3-year plan goals of 0.5% incremental kWh savings per year. MEEIA's default targets for the first 3 years are 0.3%, 0.5% and 0.7%, or a cumulative savings of 1.5% by the end of the 3-year period. GMO's proposal exceeds the initial annual target, but is lower in the final year. However, cumulatively it reaches the same level of 1.5% over 3 years. Because GMO has some experience and believes it can meet this higher level in its first year, it seems reasonable to levelize the goals during this period. However, I would expect that GMO may find they can ramp up to higher levels, which I encourage them to do so they are better able to handle higher goals in years 4–6, consistent with the minimum default targets articulated in the MEEIA rules, or higher.

GMO has indicated a commitment to perform a comprehensive energy efficiency potential study and pursue all cost-effective achievable DSM opportunities in the future.[12] I support this intent and encourage the PSC to articulate this future DSM goal in its final order. I also encourage the PSC to specifically allow for GMO to pursue savings that *exceed* goals, to allow savings at a minimum up to the MEEIA 3rd year goal of 0.7% in the third year of the plan. Under this scenario, any excess prudently incurred expenditures could be recovered through the DSIM annual reconciliation process GMO has proposed.

Q: Please address the specific concerns you have with the DSIM Rider as proposed by GMO?

A: GMO has proposed a DSIM that provides them with 12% of the NPV of lifetime gross electric system benefits achieved. As mentioned above, this should help align incentives between GMO and ratepayers, who both will benefit from maximizing benefits

[12] Rush direct testimony p. 32, ll. 5-16.

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captured from the DSM portfolio. However, a number of features of the detailed mechanics of how the DSIM would be calculated unfortunately undermine this incentive alignment. As a result, these details work against the overall benefits of the framework, and introduce risk to both GMO and its ratepayers that actual payments may be inappropriately too high or low. In addition, because much of the performance of the DSM portfolio will be within the control of GMO, it creates significant perverse incentives that could encourage GMO to pursue strategies that ultimately are not in the best interests of ratepayers, but could provide GMO with excess earnings. These concerns are related to GMO's proposal to "deem" many of the variables that influence the DSIM calculation, or to rely on unreasonable values in its deeming. Specifically:

1. The DSIM would not calculate actual benefits based on the *net* savings achieved. Rather, they would assume a 1.0 net-to-gross ratio for all programs, despite the fact that GMO already has credible NTG estimates for its existing programs that are on average significantly less than 1.0. In essence, DSIM would be based on gross rather than net savings.[13]
2. The DSIM would not calculate actual benefits achieved based even on the actual *gross* savings achieved. Rather, GMO proposes to "deem" savings per participant, and then only use actual participation as the variable to drive the DSIM values.
3. The DSIM would not calculate actual benefits achieved based on the actual time periods and coincident peak demand impacts that are achieved. Rather, GMO proposes to "deem" all savings based on its planned average load shapes and

[13] The term gross savings here refers to the total tracked savings of the program based on the estimated savings of each measure installed. Net savings are the net difference between estimated energy usage with and without the DSM program effort. In other word, net-to-gross ratios are designed to account for any portion of gross savings that would have occurred even without the DSM programs. This is explained in more detail below.

coincident factors for expected savings. In addition, GMO has proposed "deeming" a 15 year average measure life for all savings. While this feature may seem problematic at first blush, I actually believe it is appropriate and necessary, as I explain below.

Q: Please explain Net-To-Gross ratios?

A: Net-to-gross ratios generally adjust for two primary things: free-ridership and spillover. Free riders are customers who participate in a program but who would have installed the efficiency measure anyway. As a result, a pure free rider does not actually create any new (or "net") savings compared to the reference case of no DSM program because by definition they would have installed the measure anyway. Spillover refers to customers who were influenced by the program (either in the short or long term) to save energy, although did not directly participate in a program and were not tracked and accounted for in program savings data. For example, a customer may choose to install a high efficiency measure because of vendor recommendations and program marketing that are due to the program strategies, but may never actually complete a rebate form and get counted by the program tracking system. To estimate the actual net savings attributable to the DSM program (compared to what would have occurred if the program did not exist), the gross tracked savings from all the measures installed in the program must be adjusted for these factors.

Q: What is your concern related to Net-To-Gross ratios?

A: In developing its DSIM, GMO has assumed 1.0 NTG ratios for all programs. Essentially, GMO proposes for purposes of DSIM calculating all savings at the gross,

rather than net level.[14] However, the primary component of DSIM beyond direct program cost recovery is related to lost margins. Lost margins reflect lost revenues to GMO because of the impact of *net* DSM savings — in other words, revenues are "lost" when DSM reduces the actual kWh usage below *what it would have been absent DSM*. As a result, relying only on gross savings calculations undermines the inherent elegance of the DSIM in directly scaling in proportion to the actual amounts of lost margins occurring. Further, I believe it would provide GMO with excess payments, because these 1.0 NTG assumptions appear to flow to GMO's estimates of actual lost margins as well. What is perhaps more important, deeming 1.0 NTG ratios creates perverse incentives to GMO that could encourage it to pursue less than optimal strategies simply because it could maximize its financial reward.

Q: Can you provide an example of how deeming of a single 1.0 NTG ratio for all programs and measures in DSIM creates perverse incentives?

A: Yes. Different programs, technologies and strategies will result in different NTG ratios, and utilities delivering programs can have significant influence over ultimate NTG ratios, even within a specific market, technology or program. For example, compact fluorescent lamp (CFL) promotions often have low NTG ratios compared with some other programs or measures. While they are still cost-effective and worthwhile to capture, because the market has significantly transformed in recent years, a large portion of participants are likely to be free riders who would have purchased the CFLs anyway. On the flip side, LED lamps are a relatively new technology, are significantly more

[14] Alternatively, this could be viewed as calculating based on net savings, but believing all NTG ratios are equal to 1.0. I don't believe GMO takes this position, as it clearly has historic evaluations (see for example, Witness Dennis Exhibit ADD3-10 HC) that show NTG estimates significantly lower than 1.0.

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expensive than CFLs, and enjoy much less customer awareness. As a result, LED lamp promotions would likely have a very high NTG ratio.[15] LED lamps also offer significant cost-effective efficiency, with the promise that programs focused on this technology can spur even greater innovation and price declines over time, ultimately resulting in greater and more cost-effective savings.

Under the current DSIM, GMO would count a kWh of gross savings equally from these two technologies. However, if the actual NTG ratio for CFLs was 0.5 and for LEDs 1.0, then each kWh of gross LED savings would actually be worth twice as much to ratepayers and society, and result in twice as much lost revenue to GMO. However, because CFLs are cheaper and savings from them are easier to capture at this stage, GMO would have a perverse incentive to pursuing more CFLs at the expense of efforts to promote LEDs, thereby resulting in lower overall net benefits to ratepayers but likely higher earnings to GMO. Because of GMO's single-value deeming approach, under this scenario GMO would recover double the actual lost revenue for every kWh associated with additional CFLs (over and above the proportional amount assumed in GMO's plan), possibly resulting in a windfall to GMO under DSIM.

While the above is just one example, there are numerous ways a utility can influence NTG ratios. As a result, rewarding the utility financially for only gross rather than net savings can encourage a utility to pursue gross savings that actually are less worthwhile in terms of net savings, or even intentionally target free riders which would drive down actual NTG ratios. Because actual net savings drive lost margins, GMO

[15] Given the early stage of LED products and potential significant market transformation effects from promoting these in programs, actual NTG ratio for a well-designed LED initiative could exceed 1.0.

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would benefit from collecting DSIM on gross savings but actually minimizing the true net savings. I am not suggesting GMO has any intent to do this, or that it would. However, I believe it is bad policy to create perverse incentives, and ultimately unfair to utility staff, who will naturally feel some conflict between maximizing overall societal benefits versus maximizing shareholder earnings.

Q: Doesn't requiring use of specific estimates of NTG ratios create undue risk for GMO?

A: No. It increases some risks slightly, however, it also reduces some risks, and those reduced are the more important risks. I propose that the DSIM still allow for deemed NTG ratios used prospectively, with updates when new evaluation results become available to be used going forward, with periodic reconciliations and true-ups to adjust for variances going forward from any changes to NTG assumptions. In theory, this presents some future risk to GMO because it does not know in advance what the impact evaluations will be. However, I believe this also reduces other risks to GMO, and is not as large as one might assume.

First, GMO has evaluated its existing programs and has estimates of their NTG ratios. While these can change, they are likely to be reasonable planning estimates and on average will likely not vary dramatically. Furthermore, by allowing deeming of the actual program or measure specific NTG ratios, it still allows GMO to rely on defined rules and formulas without exposing it to risk of retroactive adjustments from a new evaluation that indicates a much lower NTG ratio. More important, however, is that the actual financial impacts on GMO from lost margins are directly related to actual *net savings, not gross*

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savings. As a result, while using net results could make it somewhat harder for GMO to exactly match projected results, it also ensures the ultimate amount much more accurately reflects the real costs (direct and indirect) to GMO from delivering the DSM effort and the real benefits that accrue to ratepayers. Under GMO's current proposal, they could over or under collect significantly compared to the actual lost margins that occur. While GMO might have slightly greater certainty about the amount, they would also be exposed to significant under collection risk if it turned out that NTG ratios were significantly higher than had been assumed in planning (for example, if GMO were relatively more successful with measures that had NTG ratios, or discontinued promoting a measure that had a low NTG ratio). Because the result of awarding significantly incorrect amounts to either GMO or ratepayers is ultimately the most significant risk to avoid, I see no benefit to relying on arbitrary 1.0 NTG values. For any programs or measures that GMO does not have completed evaluations and estimates of actual NTG values, reasonable estimates of expected NTG ratios can be used and deemed until such time as evaluations are completed and better estimates are available. By still allowing deeming and no retroactive adjustments, this introduces very little risk to GMO and protects both GMO and ratepayers from unintended and inappropriate (either high or low) significant variations in incentive awards to GMO.

Q: If GMO is currently assuming a 1.0 NTG ratio, could it ever be higher?

A: Yes. NTG ratios account for both free riders and spillover. Spillover refers to savings that resulted (directly or indirectly) from program strategies, but does not get directly counted in data tracking systems. For example, a builder who has been trained by the program in how to build high efficiency homes may continue to build these types of

homes despite not directly collecting rebates from the program. Therefore, there are certainly occasions where NTG ratios can exceed 1.0.

Therefore, if actual NTG ratios are lower than assumed GMO would over collect lost margins. In fact, the lower the actual NTG ratios, the greater the windfall would be to GMO — a directly opposite incentive to the interests of ratepayers. While it is certainly possible that a NTG ratio for some program or measure may exceed 1.0 (in which case the ratepayers could benefit and GMO might under-collect), the record shows that overall GMO has NTG ratios significantly lower than 1.0 from past program activity.

Q: You mention that GMO already has some estimates of NTG ratios. What are they?

A: Exhibit ADD3-10 (HC) shows NTG ratios from the latest evaluation findings for selected programs. They average **[redacted]**. If these reflect the other programs not yet evaluated as well, it would mean that for each kWh of gross savings captured, roughly only **[redacted]** would translate into actual net savings that will drive actual benefits accrued and lost margins. However, under GMOs current proposal, it is asking for collection on roughly 30% of the gross savings that would not actually produce any benefits or generate lost margins. GMO Witness Dennis confirms that all existing programs have undergone evaluations so reasonable estimates of NTG ratios should be readily available for all existing programs.[16]

Q: What are the other problems with DSIM related to deemed versus actual benefits?

A: GMO's planning estimates calculate DSIM based on a few global assumptions that appear reasonable from a planning perspective, but could vary considerably in

[16] Dennis direct testimony p. 29, l. 5.

practice. For example, it assumes a weighted average load shape and coincidence for all energy and peak demand savings, respectively, effectively assuming a fixed mix of measures to be installed. GMO proposes locking these factors in, and in fact not even considering savings at the discrete measure level. Rather GMO proposes measuring only *program participation* as a variable that would be tracked and used in calculating the DSIM. As a result, each program participant will credit GMO with the same amount of DSIM money, regardless of the actual savings or load shapes of the mix of measures installed, or the true benefits associated with them.

This is a significant concern that creates major perverse incentives and prevents the ratepayers from being protected against windfall earnings by GMO, and similarly exposes GMO to risk of under collections. If the exact mix of customers installs exactly the same mix of measures as GMO has planned, then the DSIM will properly calculate the benefits. However, this is almost guaranteed not to happen. Rather, the mix of measures and participant types and sizes often varies considerably from planned impacts. Therefore, counting participants rather than actual estimated net savings by measure can significantly reduce the accuracy of the DSIM calculation. Similarly, the weighting of capacity to energy benefits, or the varying value of energy at different times, can result in significantly different benefits and lost margins from one kWh versus another.

As an example, consider a program choice to pursue measures with little peak coincident impacts such as CFLs, versus measures with high peak coincident impacts such as air conditioners which save the most during the hottest summer days when the utility system is hitting its peak. Under the proposed framework, GMO would earn the same DSIM credit for each kWh claimed as coming from either of these. However, the

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air conditioner savings will provide substantially more benefits/kWh saved than the CFL will. This is because the AC will have significantly higher impacts coincident with system peak (relatively, as compared to annual energy impacts) and therefore contribute much more avoided capacity benefits. For example, based on GMO's Exhibit ADD-12 (HC) the Residential lighting and appliance program (which includes promotion of CFLs) will provide a ratio of ** [redacted] ** $benefits-from-energy/$benefits-from-demand, whereas the Cool Homes program which targets air conditioning has a planned ratio of only ** [redacted] **. In other words, shifting between AC and CFL measures would result in errors that could be an order or magnitude or more off ** [redacted] **.

While GMO appears to calculate participants separately for each program, this does not resolve the problem. For example, the Cool Homes program includes both AC measures and CFLs. Therefore, the much lower ratio of energy to demand benefits for the Cool Homes program actually reflects a mix of some AC and some CFL savings. If GMO were to capture less AC, but decided to provide more CFLs to each participant, this ratio could dramatically shift, even just within this single program. Similarly, the C&I programs reflect a mix of numerous measures with different load shapes and there is no reason to believe this mix will in fact occur.

The result of locking in these factors is that GMO would have an incentive to shift efforts from measures that save proportionately more at peak times and have high system peak coincidence in favor of measures with less peak impacts. This perverse incentive would be a profit maximizing strategy for GMO, and would undermine best practices and the desire to capture the maximum benefits for all ratepayers. Additionally, even if GMO did not act on this perverse incentive (and I have no reason to believe they would),

random fluctuations to measure mixes across a portfolio and over time are common. As a result, just by pure random variability, this flaw could result in years where either GMO or ratepayers over or under collected significantly.

Finally, there is no reason this approach is necessary because GMO should be tracking all the appropriate measure-level data that I recommend be fed into DSIM calculations. These data are critical to proper program evaluations regardless of whether they are used in the DSIM calculation, and are standard practice for DSM tracking systems. Simply changing from deemed values to a simple benefits calculation based on actual results will solve this problem.

Q: Can you point to any examples from the record that show the timing of energy savings and the coincident peak impacts can significantly impact the true benefits generated?

A: Yes. GMO Exhibit ADD3-10 (HC) provides a number of program impact evaluations. These evaluations show some very substantial variances in terms of actual versus tracked savings. Further, they often show significant divergences between the savings proportion coming from energy versus peak demand. Because the benefits derive from both energy and peak capacity components, these shifting proportions result in different benefits actually accruing to Missouri. For example, the C&I Rebate program achieved **[redacted]** of its program energy (kWh) savings goals, while only capturing **[redacted]** of its peak demand (kW) goals. In other words, the ratio of kWh to kW savings was increased by **[redacted])**. This means that each of the kWh saved were worth significantly less in benefits than was initially projected, because of the loss of

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roughly [redacted] of the anticipated capacity benefits. Under this scenario, even if GMO used actual net kWh savings rather than participation figures, they could still over collect.

Q: What is your concern with GMO's approach to using program participation as the DSIM variable that is tracked and used?

A: Rather than tracking savings at the measure level, along with actual measure lives and load shapes, GMO has proposed simply scaling its deemed assumptions by the actual program participants in each year. Because GMO's planning analysis is based on an average savings and benefits per participant, GMO argues this will result in the same numbers in the end, and simplify the process. However, just as measure mixes can change over time, so too the average savings per participant. Therefore, this significantly reduces the accuracy of the DSIM calculations. Further, it creates strong perverse incentives to focus efforts on smaller customers, or on less comprehensive projects that have lower savings per customer.[17]

Because of the extreme heterogeneity of commercial and industrial customers, savings per participant can and typically do vary by orders of magnitude. Under GMO's proposal, it would have an incentive to avoid marketing to large customers and instead capture relatively small savings from a large number of smaller customers. This would significantly undermine efforts at all cost-effective DSM. Alternatively, GMO could have good success capturing deep and comprehensive savings with a small number of large customers and would effectively be financially penalized for this success. Even a relatively minor program change — for example, restricting the allowed number of CFLs

[17] Effectively, because per participant savings are deemed, a profit maximizing strategy would drive GMO to maximize the number of participants while reducing the savings per participant as much as possible.

a homeowner could purchase to less than originally planned — could result in windfall savings to GMO simply by driving down per participant impacts within a specific program.

If anything, GMO should have incentives to attempt to maximize per participant savings by going as deep as possible and pursuing all cost-effective opportunities with each participant. Therefore, relying on the participant metric for DSIM directly encourages poor practices, cream skimming, and a lack of comprehensive savings.

Q: Are these theoretical perverse incentives really significant enough to require modifying GMO's proposal?

A: Absolutely. GMO has provided in exhibit ADD-1 (HC) data on historic participation and savings from its programs. A quick review of this table shows that there were significant variances between goals and actual achievements. Further, and more concerning given GMO's proposal, is that variances in achievement for participation and savings are not at all correlated, and often actually go in opposite directions.

For example, variances in participation range from a low of ** [redacted] ** *under* goal (** [redacted] ** achievement as % of goal) to ** [redacted] ** *over* goal, for the efficiency programs. Similarly, variances in kWh savings ranged from a low of ** [redacted] ** to a high of ** [redacted] **. It is important to note that these variances were not at all correlated either — in other words, participation and savings often moved in opposite directions. This clearly shows that participation planning numbers may be significantly different from actual achievements, and this alone makes relying on participation levels rather than savings problematic. Specific program examples below show that savings and

participation did not track each other in a highly correlated way, which would be necessary for GMO's proposal to ensure a reasonable level of accuracy.

For example, the Change-A-Light Program had **[redacted]** *greater* participation than planned, yet actual savings in this program were **[redacted]** *lower* than planned. As a result, under GMO's proposal, if this happened again, then GMO would collect **[redacted]** *higher benefits in DSIM, while actually creating*** [redacted]** *lower benefits to Missourians. This would ultimately result in an overpayment to GMO for this program of roughly*** [redacted]**

Q: Is this an extreme example?

A: No. Numerous other programs show similar problems. For example, the Low Income program has a **[redacted]** participant shortfall but only a **[redacted]** savings shortfall. In this case, GMO would be the one hurt by its proposed participant-driven method, under collecting by roughly **[redacted]**.

The Building Operator and Certification program had a participant shortfall of **[redacted]** while capturing **[redacted]** *greater* savings. Again, under GMO's proposed DSIM it would be hurt by this and would only capture **[redacted]** of its fair share of benefits from this program.

Another even more extreme example is the C&I Custom Retrofit program, which captured only **[redacted]** more participants but roughly an **[redacted]**. In this situation GMO would be significantly hurt with the DSIM

[18] Note the **[redacted]** estimate is only a rough approximation because it is based on the energy savings. In actuality, the true payments could vary somewhat depending on the variance for peak kW and the value of the avoided capacity benefits as well.

HC

proposal receiving only about ** [redacted] ** of what they should have and ratepayers would receive a windfall. However, aside from the DSIM calculation, this is clearly a good outcome for Missouri. GMO was able to obtain drastically more savings and benefits than expected, presumably by working with larger than expected customers or by being more comprehensive in capturing savings with each participant. These are all good things that the policy framework should encourage. Unfortunately, under GMO's proposal they would have a strong incentive to avoid this outcome in the future.

In terms of the overall portfolio, the energy efficiency programs resulted in average participant overachievement of ** [redacted] ** while overachieving savings by ** [redacted] ** Clearly, this shows that tying the DSIM only to participation rather than actual savings introduces huge potential for unreasonable outcomes. As I show above, these variances can go in either direction, so not only is my proposed remedy important to protect ratepayers, but will in fact reduce risk of under collection by GMO as well. Finally, I note that GMO will need to track actual savings by measure and participant anyway to support reasonable evaluation. So, while GMO's proposal would use a slightly simpler calculation using actual savings results is not particularly burdensome or difficult to do.

Q: You mention above that while you opposed much of the "deeming" GMO proposes, that you support the fixed 15 year measure life. Why is that?

A: My initial reaction was that deeming measure life was inappropriate and created perverse incentives to focus on shorter-lived measures because the DSIM would award the same benefits either way, while shorter lived measures will result in less benefits and

long term lost margins, all else equal. However, there is an important nuance in GMO's proposal that causes me to support the average 15 year life, absent a more in-depth reworking of the DSIM framework. This nuance relates to the fact that there are *two different and distinct periods of importance*. One is the actual lifetime of the efficiency savings, which necessarily directly impact the overall benefits achieved from the savings as well as the long term lost margins. However, there is also the program-cycle/DSIM-cycle period of 3 years.[19] The framework GMO has proposed uses the first time period (lifetime) to effectively calculate and provide financial payments that *only exist over the second time period* (3-years). This decoupling of time periods requires some sort of deeming of measure life to ensure a reasonable outcome.

Explained another way, GMO has designed the share of benefits to be based on a share of the lifetime benefits. Clearly, if they shifted to promotion of relatively more short-lived measures, such that the actual weighted lifetime was only 10 years rather than the 15 years assumed, the true benefits captured in Missouri would be much lower.[20] However, they have selected the 12% target based on making them whole *over a period of only 3 years of lost margins, assuming a new rate case and resetting of the DSIM after each program cycle.* As a result, what matters is no longer whether the gross lifetime benefits are accurate, but rather whether the formula results in the correct recovery over *just 3 years of the lost margins*. Therefore, any measure with a life of at least 3 years will still create the same lost margins during that 3-year DSIM cycle, regardless of whether its life ends in year 4 or year 20. Using actual measure lives runs the risk that overall

[19] Disregarding any one time 4 year cycle to align rate cases, EM&V activities, etc.
[20] Ignoring the time value of money and assuming constant avoided costs in real terms, the true lifetime benefits would only be two-thirds. Including time value of money would result in the actual benefits being even less unless avoided costs are increasing significantly in later years.

benefits are significantly lower or higher, resulting in different DSIM rewards, while the actual lost margins occurring over only the first 3 years do not actually change. I believe this is why GMO has proposed fixing the measure life, and I agree this is reasonable for this purpose only. An alternative approach would be to provide GMO with a share of only the NPV of 3 years of benefits rather than the 15 years. However, under this approach, the 12% share would need to be considerably increased to ensure that GMO is made whole.

Q: Are there any exceptions or other purposes for which 15 year fixed measure lives could be problematic?

A: Yes. First off, any measures that have a lifetime of shorter than 3 years clearly would stop providing savings during the 3-year cycle. Therefore, these need to be accounted for using actual lifetimes. GMO has explicitly used a shorter lifetime for behavioral programs such as the Residential Energy Report in its planning estimates. As I understand it, GMO would track these programs differently and use the correct shorter lives for them.[21] GMO should be ordered to separately calculate that portion of the DSIM coming from those shorter savings using actual lives, which will protect ratepayers if GMO expands these efforts relative to other programs.

Secondly, it will be important that GMO still properly tracks all savings at the measure level with appropriate actual estimated lifetimes. This is because the data on historic DSM are critical for long term planning, forecasting, IRP, and ratemaking. While the DSIM is designed to make GMO whole during a specific window and then be reset, it will be important that these longer DSM resources are properly taken into account when

[21] Based on verbal statement in GMO Technical Conference on March 1, 2012.

establishing likely future sales and appropriate rates going forward. Absent this detailed accounting of DSM impacts, GMO could effectively "double-dip" by collecting past lost margins but then setting rates that implicitly cover future assumed lost margins depending on whether this DSM data is properly incorporated into forecasts and test year calculations.

Q: Are there any other deemed factors in the DSIM that you agree should be deemed?

A: Yes. There are ultimately many other factors that are used in the DSIM calculations that should be deemed, for example, the avoided costs, discount rates, line losses, and other factors necessary to calculate the benefits that I have not discussed above. It is entirely appropriate to deem these factors because they help to control for things like gas costs that can be very volatile and could result in wildly erroneous outcomes. These factors are largely outside of GMO's control, and therefore do not create perverse incentives, but rather simply define the rules and help to create greater certainty and accuracy for all stakeholders including the ratepayers.

Q: Given your DSIM concerns, what remedy do you propose?

A: GMO has proposed an annual reconciliation and true up of the DSIM.[22] In particular, this reconciliation would adjust for any variances in actual versus planned program costs, as well as variances in actual versus planned participation. I support an annual reconciliation process such as GMO envisions. Under this process, they could base the DSIM on estimated deemed NTG ratios from past evaluations or best planning practice based on industry and market knowledge for those programs that have not yet

[22] See, for example, Rush direct testimony p. 16, and Exhibit TRM-1.

been evaluated. In addition, GMO can and should be tracking all individual measures installed by participant, and the savings associated with them, by avoided cost periods and including estimated peak coincident demand savings. Therefore, this same reconciliation process can occur using these tracked data.

GMO has proposed completing impact evaluations 6 months after the second full program year, with results available by the start of the next 3-year cycle. Therefore, at the end of each 3-year cycle, this annual true-up can also incorporate any changes to NTG ratios or other findings from the evaluation results for use going forward for the next 3-year cycle. In fact, GMO has already proposed a similar mechanism for the PI component of the DSIM.[23] However, GMO proposes that for the PI actual evaluation results be used retroactively to determine the PI. I support this for the PI, but am not recommending retroactive adjustments to the NTG ratios because I believe creates greater uncertainty without a significant benefit since many evaluated NTG ratios are already available.

With these annual and 3-year true-ups, both GMO and ratepayers are protected from substantial financial flows between ratepayers and shareholders that may not accurately reflect the intended financial deal agreed to. Any time value of money issues can and should be accounted for based on when actual funds were collected versus when savings and lost margins occurred, based on a reasonable interest rate, such as GMO's weighted cost of capital.

A small issue around GMO's proposed reconciliation process is the timing of evaluations. As explained by Witness Rush, evaluations would be on a 2-year cycle,

[23] Rush direct testimony pp. 19-20.

typically starting six months following close of the second program year.[24] As a result, at the end of a given 3-year cycle, evaluations would only provide results for the first two years of program activity. Therefore, there will be a lag on truing up the final third year of results until the next evaluation results are obtained. However, by using actual projected NTG values and tracked measure-level savings, these true ups should be relatively small, and grow smaller over time as NTG ratios stabilize and GMO gains more experience. This issue is only of concern for the PI component that would be adjusted retroactively based on evaluation results.

Q: Why do you recommend deeming the NTG ratios rather than using retroactive evaluated results for all calculations?

A: I believe using retroactive results from evaluations would be acceptable, and in theory (assuming accurate evaluations) provide the greatest accuracy. However, I also recognize that this creates a great deal more uncertainty for both GMO and ratepayers because they will not know until after the fact what those values will be. In addition, because evaluated results exist for most programs now, I don't believe deeming reasonable NTG ratios from past evaluations will result in major inaccuracies. Under this method, it avoids possible wild swings in the DSIM Rider that could occur from unexpected evaluation results. Finally, some utilities perceive retroactive NTG risk to be so burdensome that it in itself can create risk-avoiding behavior that undermines willingness to try new and innovative ideas because they don't know what the evaluation results will be like.

[24] GMO Witness Rush, direct testimony, pps 12-13.

In theory my proposed approach preserves a slight *short-term* perverse incentive in that GMO could choose to do things that might reduce actual NTG ratios while still collecting the DSIM based on a deemed value until the next evaluation. However, a strategy like this would ultimately harm GMO so they would have strong incentives to continue to try to maximize NTG ratios. This is because if NTG ratios are driven down, then the next set of evaluations would result in deeming lower NTG ratios for DSIM and make it significantly harder for GMO to meet savings goals and capture desired financial rewards. I believe this long term incentive to maximize NTG ratios is sufficient that the additional certainty and consistency with short term deeming of NTG ratios is reasonable.

Q: Are there any other concerns you have related to the DSIM reconciliation and true-up process?

A: Yes. GMO Witness Dennis states:

> "At the end of each calendar year, GMO will compare the actual results of each program with the savings goal. Variances to each program will be calculated and the result either added or subtracted to the annual savings **goal** for the current year." [Emphasis added] [25]

As I understand this statement, GMO is proposing to change its program savings *goals* to reflect actual estimated results retroactively. In other words, if GMO only achieved 50% of the planned savings, they would simply adjust the goal down by 50% to still "achieve" 100% of goals under any scenario. This does not seem appropriate, and given the PI financial component is explicitly calculated in terms of achievements as compared to goals, this is clearly not acceptable in that it would result in a guarantee of

[25] Dennis direct testimony p. 29, ll. 16-19.

meeting 100% of all "goals" once adjusted. I suspect that perhaps GMO intends this statement to work in some other way, but it appears to suggest my interpretation. Absent any clarification from GMO, the PSC should specifically reject this proposal.

Q: You mentioned some concerns with the PI component of GMO's plan. Please explain how the PI would work and your concerns about it?

A: The PI component as proposed by GMO offers an additional performance-based earnings opportunity of up to $4 million for the full 3-year program cycle, tied to performance compared to goals. GMO has proposed the following award schedule:

Achieved savings (% of goal)	Financial Award
<50%	$0
51%-100%	$2 million
101%-150%	$3 million
>150%	$4 million

Note: No interpolation between achieved savings levels (e.g., 52% and 99% of goal both earn the same $2 million)

While I am supportive of a PI component and additional earnings available to shareholders from exemplary performance, I have a few concerns with the current proposal. First, GMO proposes that it reach the $2 million award once it exceeds 50% of planned savings. In most aspects of our lives, achieving only 50% of planned accomplishments would not be considered "exemplary" and deserving of a bonus. For example, in education a 50% score typically translates into a failed grade. Additionally, the levels for the first 3-year program cycle have been shown to be quite achievable by

many other jurisdictions, and should not pose an extreme challenge to GMO. Providing GMO shareholders with a performance award for only reaching half of its target is inappropriate.

If GMO were to have spent 100% of the budget and only achieved 50% of the savings, then clearly the ratepayers would not have achieved anywhere close to the net benefits they paid for through the cost recovery component of the DSIM, and should not be asked to pay additional funds to GMO shareholders for this poor performance.[26] In some jurisdictions, performance at this level would expose utilities to significant penalties rather than rewards.[27]

I therefore recommend that a threshold level of at least 75% of goals must be reached to achieve the first financial reward. I further recommend that the overall PI funding be weighted more heavily to higher rewards for truly exemplary performance (e.g., in excess of 100% of goals). Finally, I propose a scaled formula that allows for marginal earnings to increase once the threshold level is met, even if the next major "step" is not achieved. In other words, if GMO only achieved 85% of goal, it would still receive a higher reward than if it achieved 76%, as opposed to the GMO mechanism where earnings would plateau until achievement of 100% or higher. This scaling is important to ensure that GMO sees an ongoing incentive for marginal improvement, even if it knows it cannot reach a specific target by the end of the program cycle (or alternatively, already has reached a target but can't get fully to the next one). The

[26] In fact, it is quite possible under this scenario that the portfolio would not be cost-effective and ratepayers would actually see negative net benefits.
[27] See, for example, performance incentive mechanisms in California and New York, as well as the Energy Efficiency Performance standard legislation in Illinois.

following table shows my proposed PI function. I have designed it to offer GMO the same financial reward at the high end ($4 million).

Achieved savings (% of goal)	Financial Award
<75%	$0
75%	$1 million
100%	$2 million
125%	$3 million
150% or higher	$4 million

Note: Awards would be scaled continuously from 75% to 150%, at the rate of $40,000/1% improvement.

Q: Do you have any other proposed changes to GMO's PI mechanism?

A: Yes. GMO has proposed goals for both kWh and peak demand. In addition to energy efficiency programs, it is also planning demand response programs. Based on data provided in Exhibit ADD-12 (HC) the demand response programs represent ** [redacted] ** of the total portfolio peak kW impacts. GMO has proposed an equal (50/50) weighting of the achievements toward kWh goals and peak kW goals. I recommend a different weighting that puts more emphasis on kWh goals. I propose this weighting be based on the average ratio of economic benefits expected to accrue from energy versus peak savings for the total portfolio of efficiency programs only. This will more closely reflect the real economic benefits to ratepayers than GMO's proposal. I calculate that ratio from the Exhibit ADD-12 (HC) to be ** [redacted] ** ($ of energy benefits)/($ of demand benefits). Using this value would result in a weighting of approximately 80% energy/20% demand.

It is important to realize that while demand response programs can be cost-effective and provide value, they are much less desirable than efficiency programs. This is because efficiency programs provide much more durable savings, and generate energy and environmental benefits in addition to just capacity and reliability benefits, while still typically providing significant durable peak demand savings in addition. Therefore, this weighting will provide GMO incentives that are more reasonably aligned with its ratepayer's interests, and avoid encouraging possible excessive focus on demand response at the expense of energy efficiency programs to meet combined goals. Because DR programs are essentially single year impacts dependent on GMO choosing to curtail loads, and they provide no actual energy savings, these resources provide far lower overall benefits to ratepayers in the long term.

Q: Please describe the specific program concerns you have with the GMO plan?

A: GMO Exhibit ADD-2 (HC) provides brief program descriptions. While these do not provide full details on every aspect of the programs, it does provide sufficient information to identify some concerns with the current program designs. These include:

C&I Prescriptive Rebate program:

1. **T8 versus HPT8 Fluorescent Lighting:** This program would offer rebates for standard T8 fluorescent technology. Standard T8 technology is now considered the floor level efficiency (baseline practice) for new linear fluorescent lighting systems. In fact, the standard (700 Series) T8 lamps have already been banned by Federal law starting in July 2012 because they are not

even considered standard efficiency any more.[28] Certainly, these products can no longer be viewed as "efficiency measures." Many DSM programs throughout the country have shifted from promoting standard T8s to promotion of "high performance" (HP)T8s. These shifts began over 5 years ago. HPT8s can be used in virtually any application where standard T8s are used with no loss of service or aesthetics, but offer considerably more savings, lower life-cycle costs and greater net benefits. The PSC should direct GMO to replace all measures currently planned to promote standard T8 lamps and ballasts with incentives for HPT8 lighting and/or T5 systems. HPT8 promotions should be consistent with publicly available Consortium for Energy Efficiency (CEE) criteria, which have been adopted by many programs across the U.S.

2. **Retrofit of T12 Fluorescent Lighting:** This program appears to have a significant focuses on retrofit (early retirement) replacement of T12 fluorescent lighting with standard T8 or other more efficient solutions. However, the same Federal standards that are eliminating 700 series T8s will also eliminate the manufacture or sale of standard T12 lamps in the U.S beginning July 14, 2012. [29] As a result, this measure, while providing some current cost-effective savings, is likely to result in high free-ridership and lower long term savings because customers will need to retire this technology

[28] Note that major lighting manufacturers have recently requested an extension from DOE on discontinuing the manufacture and sale of these T8 lamps because of concerns about recent large price increases in rare earths. However, the fact that DOE passed a rulemaking in 2009 to eliminate manufacture and sale of these lamps shows they are certainly not considered an "efficiency measure." U.S. DOE Rulemaking, 10 CFR Part 430, "Energy Conservation Program: Energy Conservation Standards and Test Procedures for General Service Fluorescent Lamps and Incandescent Reflector Lamps," 2009.

[29] U.S. DOE Rulemaking, 10 CFR Part 430, "Energy Conservation Program: Energy Conservation Standards and Test Procedures for General Service Fluorescent Lamps and Incandescent Reflector Lamps," 2009.

in the coming years anyway. Because of the relatively long life of fluorescent lamps and the ability for manufacturers to continue selling product until current inventories run out, many utility programs have been adopting strategies that assume the existing T12 systems would have to be replaced within about 5-6 years regardless of the program, and only count savings after this period based on the smaller difference between standard T8s and HPT8s (as compared to the full difference between T12 and HPT8s). GMO should modify any T12 replacement plans to both require the highest cost-effective alternative (e.g., HPT8s rather than standard T8s, or T5s or LEDs) and also reflect the accurate lifetime savings recognizing that virtually all T12 systems will likely be naturally replaced over the next 5-6 years anyway because of the standards.

3. **LED Lighting:** This program has a number of worthwhile prescriptive lighting measures. However, other than LED exit signs (which are only for retrofit and generally considered baseline for new exit signs already), it does not appear to promote any LED lighting, which is now cost-effective for certain commercial and industrial applications. GMO should be directed to include promotion of all appropriate cost-effective LED options for both interior and exterior lighting. The Northeast Energy Efficiency Partnership (NEEP), in cooperation with DOE, maintains a list of qualifying LED commercial products that meet stringent quality and performance standards, which is being adopted as the eligibility criterion for many U.S. programs.

HC

This can be used by GMO to vet products and ensure they are only promoting high quality, cost-effective LED solutions.

4. **HVAC Rebate Structure:** This program would offer rebates for air conditioners and heat pumps on a fixed per unit basis regardless of size. However, incremental costs are generally fairly proportional to the capacity of the unit. Therefore, this incentive structure will likely significantly overpay for the smaller units within a rebate category, while not being sufficient to encourage maximum adoption of larger units. I recommend the PSC direct GMO to revise the incentive framework to offer an incentive per ton (12,000 BTU/hr) of cooling capacity, designed to reflect 50% or more of the incremental cost on a per ton basis for each category of equipment. This is a fairly common incentive structure for these types of measures.

Appliance Turn-In Program:

1. **Promotion Strategy:** GMO proposes an Appliance Turn-In Program that is designed to take off the grid older, inefficient refrigerators, freezers, room AC, and humidifiers. This is a common residential program offered by many jurisdictions that can provide significant savings. Often the primary target is removal of second refrigerators that are running but not needed. Overall, this program is appropriate, however, one aspect of it as described in ADD-2(HC) is concerning.

   The description states **[redacted]

HC

[redacted]** This seems to imply the primary delivery mechanism is through retail point of purchase marketing. This may be a good strategy to encourage purchase of high efficiency new appliances (which is already part of the Residential Lighting and Appliance Program), but does not adequately address the targeted market. If customers primarily learn about the program through retail point of purchase marketing, then these customers are presumably already contemplating purchasing a new appliance. Further, for refrigerators, many of the major appliance retailers already take back and fully recycle old units when purchasing a new one, for a nominal fee. Finally, if a customer is purchasing a new refrigerator and already have a second refrigerator (the targeted appliance), then even with the turn-in they would still have their old primary refrigerator to use as a secondary one. The program description does include additional customer marketing strategies, however, the retailer point of purchase marketing appears to be a primary vehicle for this program. I encourage GMO to modify this to target only removal of older appliances when a customer is *not* purchasing a new one. Because the Lighting and Appliance Program does promote high efficiency new purchases of refrigerators, freezers and room ACs, I recommend that GMO continue to cross market both this program through its relationships with retailers participating in the Lighting and Appliance Program, but focus other efforts at directly targeting customers with secondary units that can be retired.

[30] GMO Exhibit ADD-2(HC) p. 7.

HC

Residential Lighting and Appliance Program:

1. **CFLs and LEDs:** This program is also a common feature of program portfolios. To date, most programs have captured the largest share of savings from lighting. GMO's plan does indicate CFLs are a measure in this program, but indicate "N/A" under rebate. It is not clear if GMO simply has not determined the final rebate, or range of rebates for different products, or whether it plans only non-rebate promotion through retailers. The plan also notes **[redacted]**[31] However, the plan does not specifically show any rebates for solid state lighting (LEDs and OLEDs are both solid state lighting systems). I recommend GMO monitor the CFL market — where prices and market adoption are changing at a fast pace — and consider offering some financial upstream retailer buydown (rebate) if appropriate, particularly for specialty lamps which have generally had less success in terms of market adoption than standard spiral lamps. Further, I encourage GMO to add offering upstream buydowns for all appropriate and cost-effective LED (solid state) lighting. I believe many of the residential screw-in LED lamps now have Energy Star labels. However, even if they don't, GMO should analyze these products and aggressively promote those that offer high quality and performance and are cost-effective based on a TRC test.

[31] GMO Exhibit ADD-2(HC), p. 43

Q: Do you have any comments or concerns related to the GMO proposed variances?

A: Yes. GMO has proposed three specific variances to the MEEIA statute and rules.[32] I will briefly discuss each of these below.

Q: What is the first GMO proposed variance?

A: GMO requests a variance, pursuant to 4 CSR 240-20.093(13), of the requirement in section 20.093(4) (A) which requires adjustments to any DSIM Rider every 6 months. GMO proposes relaxing this criterion by expanding the adjustment period to be annual. GMO argues that such a frequent adjustment period would be "counterproductive until it has more experience with the MEEIA rule, the EM&V process and the DSIM mechanism."[33] I agree with GMO that a six month period is unnecessarily short and believe it would add considerable administrative burden without significantly benefiting ratepayers. Because the DSIM will include a mechanism to accrue interest and account for any time value of money differences from variances between collections and approved earnings, this more frequent adjustment period provides little actual benefit. Further, I would expect that once the DSIM is in place for a while, the adjustments necessary should not be huge.

Q: What is the second GMO proposed variance?

A: GMO requests a variance pursuant to 4 CSR 240-20.093(13), Section H of 20.093 which "requires that any utility incentive component of a DSIM shall be implemented on a retrospective basis and all energy and demand savings used to determine a DSIM utility

[32] Rush direct testimony pp. 22-24.
[33] Rush direct testimony p. 23, ll. 6-7.

incentives revenue requirement must be measured and verified through EM&V."[34] Without rendering a legal opinion, my read of this requirement is that it is unclear whether adoption of my proposed changes to the DSIM would eliminate a need for a variance on this or not. Clearly, the DSIM would be "implemented on a retrospective basis" in that true-ups would account for any past variances. While the use of deeming rather than full impact evaluation results could be viewed as in violation of this clause, the deemed factors would still be based on "measured and verified through EM&V" values (from past evaluations). Further, these values would still be "measured and verified" for use retroactively in the sense that under my proposed changes all DSIM incentives would be based on specific actual measures installed, verified for accuracy (through some sort of QA/QC approach or more formal evaluation) in terms of number of measures, claimed savings, etc.

One could certainly view this clause as requiring all DSIM incentives to be based only on fully retroactive application of ex-post impact evaluations. Because of the reasons stated above about certainty, timing, and risk, I believe if the MPSC adopts my proposed changes to the DSIM a formal variance for this clause is reasonable and appropriate, while still providing sufficient protection to ratepayers.

Q: What is the third GMO proposed variance?

A: GMO requests a variance pursuant to 4 CSR 240-20.094(9) which requires that any customers exercising the opt-out provision can still participate in other curtailment or interruptible programs. GMO has proposed to interpret this requirement to not pertain to any demand response curtailment programs that are funded through the overall DSM

[34] Rush direct testimony p. 23, ll. 9-12.

portfolio expenditures. Opt-out customers would still be eligible to participate in any interruptible or curtailment programs that are not funded within the DSM portfolio. I believe this is appropriate and reasonable, as it preserves the general principle that customers opting out of paying for a program should not be eligible to participate in it. Further, most interruptible rates are typically designed to be revenue neutral, so this variance should not prevent opt-out customers from participating in these types of rate schedules because there should be no general costs allocated to non-participants.

If the MPSC were to determine that GMO's demand response programs within its DSM portfolio must qualify as "curtailment" programs and therefore be eligible for opt-out customer participation, I propose a simple solution to remedy this problem. It would essentially be to carve out any expenditures for the DR programs and allow GMO to recover this portion of its overall DSM portfolio more broadly, including from all opt-out customers. This will still allow customers to opt out of efficiency programs, which represent the largest expenditures. An alternate solution would be for GMO to redesign its DR programs to be revenue neutral (in other words, costs would be limited to the actual capacity value to GMO of exercising the DR curtailments in a similar way to how interruptible rates are generally designed).

Q: Does this conclude your testimony?

A: Yes.