

Interactive Effects: DRAFT Proposal for Savings and Cost- Effectiveness Treatment to Illinois SAG

Introduction

This document defines interactive effects and addresses issues related to how they should be treated for purposes of counting savings, tracking, EM&V, and TRC cost-effectiveness analysis. The following proposal first defines the various types of interactive effects, the various uses of impact data, other policy considerations to consider, and then follows with a proposal for the Illinois SAG consideration. Each section provides a brief list of major items, followed by some discussion around these items.

Types of Effects

- Interactions that always exist from a measure independent of any other measures installed
- Interactions between measures dependent on the combination of measures installed

This proposal distinguishes between two major categories of impacts. The first one relates to ancillary impacts from a single measure, and is not dependent on what combination of measures a customer pursues. Examples include things like the waste heat penalty and cooling bonus from interior lighting, electric furnace fan impacts from a high efficiency gas furnace, etc.). These effects are often captured in the TRM and typically are not dependent on the package of measures included in a project. While some of them can be site-specific (*e.g.*, there may be no lighting cooling bonus if the facility does not have cooling), they are generally based on overall averages and not calculated on a customized basis. For purposes of this memo, we refer to them as “**Measure Dependent Interactive Effects.**”

The second category refers to the fact that savings from individual measures can vary depending on the overall package of measures adopted within a single facility. Examples include the reductions in savings from a high efficiency furnace if a customer also installs insulation that reduces the building heat load (or, alternatively, reductions in insulation savings if first counting the furnace measure). We refer to these as “**Package Dependent Interactive Effects.**”

An added nuance related to potentially any interactive effect is that there may be policy or other reasons to consider different treatments depending on when the effect's impact the same primary fuel or an alternate fuel. For example, we currently count the electric cooling bonus from interior lighting but not the gas heating penalty for prescriptive lighting savings. Issues around cross fuels may also have different implications depending on whether a program is jointly delivered or not. These nuances are further discussed below.

Issues related to effects

- Counting savings
- Tracking savings
- Using impacts for PA savings claims toward goals
- Using savings for TRC calculations

In addition to the two primary categories of interactive effects, there are reasonable practical and policy reasons to consider different treatment depending on the ultimate use of the data. Broadly, this proposal addresses two primary areas of data use: 1) **Counting and claiming savings toward PA goals;** and 2) **Including impacts in cost-effectiveness analyses.** Some additional nuances are discussed regarding tracking and transparency of data, recognizing that it may be desirable to fully track certain information for planning, forecasting or EM&V purposes even when not including in formal PA savings claims. Below we address some basic principles to guide these issues that support the proposal.

Savings Claims

For purposes of PA-specific savings claims, we propose the following principles guide any proposed framework:

- Accuracy is desirable, but must be considered in light of administrative burden, data availability and tracking, EM&V and tracking certainty and overall precision, and other pragmatic issues.
- Ideally, we should create a single set of policies that are consistent across all types of measures and interactions, and across all fuel, customer and program types.
- We should strive to avoid creation of perverse incentives for PAs and strive for policies that encourage fuel-neutral delivery of integrated gas-electric programs, comprehensive savings, and treating all efficiency opportunities on an equal footing, including fuel switching.
- PAs should not be subject to major negative impacts from other PAs for which they have no control.
- We should take advantage of data normally collected when relevant, but avoid the need for significant new efforts at research and data collection.
- We should track and report in transparent, understandable and replicable ways.
- Rules should be consistent Statewide, and work well for electric and gas PAs as well as DCEO.
- Rules can, and likely should, vary between different program types (*e.g.*, pure prescriptive vs. prescriptive packages vs. custom).

Cost-Effectiveness Analyses

For purposes of TRC cost-effectiveness analyses efforts should be made to capture all impacts across all fuels, either positive or negative, regardless of the program type or who is delivering the program. This is consistent with Illinois Statute (8-103/104), and does not need to be done in the same fashion as official savings claims are counted. This should include non-regulated fuel costs and benefits as well, such as from oil. This is consistent with current agreements on including all “reasonably quantifiable” costs and benefits. For consistency and ease of interpreting benefit-cost ratios, we recommend all

energy impacts be treated as benefits (*e.g.*, increased ancillary fuel usage counts as a “negative benefit”).

To support the ability to analyze cost-effectiveness, ensure a level of transparency, and to assist with future planning, forecasting and EM&V, all known and quantifiable energy impacts should be tracked even if/when they will be ignored for purposes of claiming savings.

To the extent there is a need to convert energy units between fuels (*e.g.*, gas and electric), BTU equivalency based on the methodology currently agreed to for counting CHP impacts (or any future methodology agreed to or ordered by the ICC) should be used.

Categories where rules may/should vary

- Pure Prescriptive
- Prescriptive within comprehensive programs with packages
- Custom
- Joint gas-electric programs vs. separate programs

Consistent with current practice in the Illinois TRM, approaches are likely to vary between prescriptive and custom projects. Further, it may be appropriate for prescriptive packages in comprehensive programs such as direct install to capture package dependent effects, while pure prescriptive programs may ignore these. For this reason, we distinguish below between these. Finally, there may be reasons to treat cross-fuel interactive effects differently for jointly delivered programs as compared to stand alone PA programs. However, ideally, we believe this is not desirable for consistency reasons. For example, this could lead to DCEO (or Ameren where they deliver both electricity and gas) using different rules than other PAs for the same program simply because they are administering both efforts simultaneously. Below we articulate some principles that we believe should guide any proposal.

- Pure Prescriptive programs should use TRM entries to claim savings, as developed by the TRM administrator/SAG/Evaluators and approved by the ICC. As a result, because one typically does not know what unique combination of measures a customer might adopt, and by definition cannot accurately anticipate that in the TRM, package dependent interactive effects should be ignored.
- Custom programs should strive to deliver comprehensive services in a fuel neutral, integrated fashion. As a result, they should analyze the overall net impacts of entire projects wherever possible. This approach inherently should recognize all package dependent interactions, especially if building modeling is used. In cases where a customer is installing some prescriptive measures as well as custom measures, the projects should be treated by PAs as a single custom project, even if honoring a specific prescriptive incentive offer as part of the overall package of incentives provided.
- “Prescriptive package” programs should attempt to capture expected and known package dependent interactions in the TRM, where this is reasonable certainty about the standard measures being adopted. For example, if a home performance project generally includes insulation, air and duct sealing, smart thermostats, and furnace and air conditioner tune ups as a

single package that most customers adopt, then these should be modeled to account for interactive effects in the TRM. Judgments about frequency and combinations of measures should depend on the program design and history, and the importance of the interactive effects, as appropriate, by the TRM administrator, EM&V consultants, and SAG parties.

- Where possible and reasonable, procedures should be consistent regardless of whether a program is jointly delivered or not. However, there may be reasons to diverge from this principle. Examples might include a decision that under a joint gas-electric program all cross fuel impacts should be counted, but with a single fuel program the alternate fuel PA should not be exposed to impacts it has no control over. However, because DCEO by definition delivers joint programs in all territories, ideally these differences should be avoided or minimized.

Proposal

Below are AG proposals, followed by a summary table.

Savings Claims

This section addresses how PAs would count savings toward goal claims, regardless of how data is otherwise tracked and used for cost-effectiveness analyses or other purposes. If not explicitly addressed, all existing TRM and EM&V rules and procedures would apply.

Measure Dependent Interactive Effects

This section proposes savings claim methodologies for measure dependent interactive effects, by program type.

Prescriptive

Prescriptive program savings claims should use whatever measure per unit savings are established in the TRM and approved by the ICC, consistent with current procedures. It is expected that the TRM will include all reasonably known and quantifiable measure dependent savings on average for each measure.¹

For effects that impact an alternate fuel (*e.g.*, gas or oil waste heat from interior lighting delivered by an electric PA), the TRM should recognize all impacts, which should be normalized based on BTU equivalence, and the PA delivering and claiming the savings should account for them. We propose this for three important reasons:

1. We do not believe it is fair to burden an alternate-fuel PA with penalties for something completely beyond their control, and for which they will likely also not have easy and ready data access to understand and manage. For example, a gas PA should not lose savings when an electric PA promotes interior lighting.
2. We believe all efficiency opportunities should be treated consistently, and planning decisions around efficiency resources should put all opportunities on an equal footing. For this reason, we

¹ In some cases, these may be dependent on some custom inputs, for example, a variable for whether a customer has cooling, or the type of heating fuel used.

have already adopted a BTU equivalency approach for CHP and potentially other fuel switching measures where one fuel is saved at the expense of another's usage going up. To not use this approach for other measures creates two different and inconsistent methods and could create some perverse incentives. This approach allows all measures to be considered on their true merits, consistent with cost-effectiveness, and ensures that if a measure that saves one fuel actually increases the use of another fuel, we are only counting the true overall net impact.

3. While this is a divergence from the way some measure dependent interactive effects are currently treated, it brings greater consistency and equity to the savings process. For example, currently an electric utility will count the cooling savings bonus from interior lighting, and the waste heat penalty if the customer uses electric heat, but simply ignores the waste heat penalty if a customer uses gas or electricity.

Custom

Custom programs generally do not rely on the TRM, and use more site-specific calculations of savings. However, we see no reason the same basic methodological approach should not be used for measure dependent interactive effects. In other words, where reasonably known and quantifiable, these impacts would be counted, when either positive or negative, and all credited to the primary PA fuel if the project is only addressing a single fuel.

For joint programs and joint gas-electric projects, particularly when savings estimates are based on building modeling or other analysis of the entire package, the net impacts on each fuel can simply be counted with no need for a BTU equivalence approach between gas and electric.

Package Dependent Interactive Effects

This section proposes savings claim methodologies for package dependent interactive effects, by program type.

Pure Prescriptive

Pure prescriptive program savings claims should use whatever measure per unit savings are established in the TRM. It is expected that these will completely ignore any potential package dependent interactive effects. This is because a participant need not adopt a package of measures and each prescriptive measure must stand alone and be able to have deemed savings attached to it. It is recognized this could in theory result in slight overestimation of savings, however, this imprecision is likely to be small and it would not justify the significant administrative and data collection burden required to improve accuracy.

Prescriptive Packages

In the event that a program typically or always has a known package of measures adopted by each participant, the TRM should include any impacts associated with that typical combination of measures. For example, a prescriptive program might have an explicit track where a participant must install a package of measures to qualify for a given incentive (*e.g.*, an Energy Star New Homes Program). In others, based on program experience, it may be reasonable to expect the average participant to adopt a number of known measures simultaneously which interact with each other (*e.g.*, a Home Performance Program). Discretion on incorporating these effects into the TRM will be under the same procedures and

decision-making authority as development of any other traditional TRM entries, and should be based on the program design and participation history.

Custom

Custom projects should always estimate the overall net impacts on both gas and electricity from the entire project, based on site-specific customized analysis. Therefore, these custom analyses will automatically and necessarily incorporate all appropriate interactive effects. In the event a custom project participant is adopting some measures that a PA offers prescriptive incentives for (in addition to other custom measures), the entire project should be analyzed on a custom basis and tracked as a custom project. The PA may still choose to offer the same prescriptive incentive for those measures, but will by necessity be analyzing a single custom project.

Cost-effectiveness Analyses

This section proposes approaches for doing cost-effectiveness analyses. In short, the simple rule for cost-effectiveness analyses is that all known and reasonably quantifiable impacts that are otherwise being estimated should be included in screening, using physical units, regardless of program type or fuel.

Prescriptive

Because prescriptive measures will follow the TRM, cost-effectiveness should also be consistent with the TRM. Any interactions captured in the TRM (measure dependent and potentially package dependent for select package prescriptive programs) would also be included in any screening. The only distinction between savings claims and cost-effectiveness analyses is that all actual energy impacts should be used for cost-effectiveness screening based on the savings impact in physical units. In other words, a lighting measure waste heat penalty increasing gas usage would be screened based on the actual therm increase rather than converting to electricity based on BTU equivalence. This is because screening already uses established avoided costs based on physical units of energy, and this is consistent with current CHP and fuel switching practice.

Custom

Because custom program savings claims will already capture the net impacts of each fuel based on the entire project, including all interactive effects, the cost-effectiveness screening will simply use that same data and approach. As with prescriptive, actual physical units of energy impacts should be used even if a project is using the BTU equivalency approach.

Interactive Effects Summary Table

Interactive Effect	Count toward Savings Claims - Prescriptive	Count toward Savings Claims - Package Prescriptive		Count toward Savings Claims -- Custom		Count for TRC - Prescriptive	Count for TRC - Package Prescriptive		Count for TRC - Custom	
		Joint	Single Fuel	Joint	Single Fuel		Joint	Single Fuel	Joint	Single Fuel
Measure Dependent	Y when in TRM BTU equivalence	Y	Y	Y	Y	Y	Y	Y	Y	Y
		when in TRM Physical Units	when in TRM BTU equivalence	Physical Units	BTU equivalence	Physical Units	Physical Units	Physical Units	Physical Units	Physical Units
Package Dependent	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
		when in TRM Physical Units	when in TRM BTU equivalence	Physical Units	BTU equivalence	Physical Units	Physical Units	Physical Units	Physical Units	Physical Units

Notes: Where savings claims use physical units, they should still use BTU equivalence for non-regulated fuels.

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