ADDITIONAL TRC ISSUES:
MEASURING INTERACTIVE EFFECTS AND DUAL BASELINES

Jennifer Morris, ICC Staff

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Dual Baselines: Background

May 5th Teleconference:

- Program Administrators were asked whether dual baselines were accounted for in TRC analysis (on an ex post basis) for 8-103, 8-104, and IPA programs, and if so, how they are accounted for.

Current Practice:

Program Administrator	Are dual baselines accounted for when TRC analysis is performed, on an ex post basis?
Ameren IL	Yes, using Method 1.
ComEd	Yes, using Method 1.
DCEO	Yes, using Method 1.
Nicor Gas	Currently using Method 4, which understates NPV Lifetime Benefits. Nicor Gas is reviewing whether it is possible to use Method 1. Update: *"We will calculate TRC results taking into account dual baselines, but we will not replicate the dual baseline calculation as performed in DSMore."*-Hammad (7/20/15)
Peoples Gas-North Shore Gas	Does not have dual baseline measures.

Dual Baseline Methods with Example of Numerical Impacts (5/5/15 Mtg)

- **1.** Using a dual baseline approach; use first year savings for the remaining useful life (RUL) (Δexisting to efficient), and use lower savings (Δnew standard efficiency baseline to efficient) for the remaining measure life. *[Example: 4 years at first year savings, 11 years with reduced savings. (NPV Lifetime Benefits=$3,205)]*
- **2.** Inappropriately using the first year savings for each year of the EUL. *(NPV Lifetime Benefits=$4,622)*
- **3.** For each year of the EUL, using the average savings over the course of the EUL. *(NPV Lifetime Benefits=$3,659)*
- **4.** Use the first year savings for the remaining useful life (4 years), 11 years with zero savings. *(NPV Lifetime Benefits=$1,789)*
- **5.** Use the first year savings and back into the artificial lifetime to arrive at the correct NPV Lifetime Benefits. Then apply first year savings over the artificial lifetime. *(NPV Lifetime Benefits=$3,205)*
- Analytically, Method 1 is definitely most appropriate.

Dual Baselines: Follow-up Questions

- **Q:** How difficult would it be to begin applying/use a dual baseline? Can Method 1 or any of the other methods be applied?
- **A:** (Navigant) We could use a dual baseline for evaluations and we would apply Method 1. Method 1 is the best method.

Method 1 is also consistent with IL-TRM:

IL-TRM Version 4.0, 5.3.6 Gas High Efficiency Boiler, p. 575

- Early replacement:
- ΔTherms for remaining life of existing unit (1st 8 years):

= Gas_Boiler_Load * (1/AFUE(exist) - 1/AFUE(eff)))

- ΔTherms for remaining measure life (next 17 years):

= Gas_Boiler_Load * (1/AFUE(base) - 1/AFUE(eff)))

- The two equations are provided to show how savings are determined during the initial phase of the measure (existing to efficient) and the remaining phase (new baseline to efficient). In practice, the screening tools used may either require a First Year savings (using the first equation) and then a “number of years to adjustment” and “savings adjustment” input which would be the (new base to efficient savings)/(existing to efficient savings).

Dual Baselines: Proposal

Use Method 1 for dual baselines:

Follow what is included in the IL-TRM. In the TRC analysis, use first year savings for the remaining useful life (RUL) (Δexisting to efficient), and use lower savings (Δnew standard efficiency baseline to efficient) for the remaining measure life.

Ex. Assume expected measure life is 25 years. Assume remaining useful life of existing equipment is 8 years.

Higher first year savings Δexisting to efficient, used for RUL=8years, and

Lower savings Δnew standard efficiency baseline to efficient, used for remaining measure life 17years=(25-8).

Interactive Effects: Background

May 5th Teleconference:

- Program Administrators and evaluators were asked how interactive effects are being taken into account, for both TRC and savings goal purposes for 8-103, 8-104 and IPA programs.
- See Issue/Response Tracking document for responses and follow-up questions.

- **Considerations in Developing Interactive Effects Policy:**
- Technical Consistency: Whatever the decision, should it apply to all types of interactive effects (custom and prescriptive measures, projects, programs)?
- Statewide Consistency: Whatever the decision, should it be applied consistently across all of the program administrators and their programs?
- What is the expected impact of policy on joint utility programs or dual fuel programs?

Interactive Effects: Follow-up Questions

- **Q:** Can interactive effects be included for gas programs?
- **A:** (Rob Neumann, Navigant) We could show interactive effects for TRC calculations in evaluation reports. TRC calculations would be shown with and without interactive effects so that the numbers could be compared easily (correctly). This requires an extra calculation, but we can show TRC calculations with interactive as well as without interactive effects.
  - Detail in evaluation reports – Evaluation can provide the additional detail in evaluation reports when the issue arises. This would include Residential Lighting, Business New Construction and other programs. We will incorporate this topic into our discussions with evaluators so that their assessments include interactive effects and it's documented properly.

Inclusion of Interactive Effects Current Practice

Savings Goals/TRC	Program Administrator	Prescriptive: Are interactive effects included?	Custom
Savings Goals	Ameren IL	Only if impacts same fuel as original measure	Yes
	ComEd	Only if impacts same fuel as original measure	No
	DCEO	No	Yes
	Nicor Gas	No	No
	PG-NSG	No	No
TRC	Ameren IL	Yes	Yes
	ComEd	Only if impacts same fuel as original measure	No
	DCEO	Yes	Yes
	Nicor Gas	No, but therms with and without interactive effects are tracked and provided in evaluation report for Bus. New Construction Program. Assumes ComEd TRC incorporates the therm penalty from interactive effects from lighting measures.	No, see comment under prescriptive.
	PG-NSG	No	No

Interactive Effects: IL-TRM Version 4.0 Language

Issue: *The current language does not clarify whether the interactive effects should be included for savings goal compliance purposes or TRC purposes or both. See proposed clarification language in red (Option A) that satisfies the principles of technical consistency and statewide consistency. See next slide for other options.*

Section 3.9 of the IL-TRM (page 57) states:

- "The TRM presents engineering equations for most measures. This approach is desirable because it conveys information clearly and transparently, and is widely accepted in the industry. Unlike simulation model results, engineering equations also provide flexibility and the opportunity for users to substitute local, specific information for specific input values. Furthermore, the parameters can be changed in TRM updates to be applied in future years as better information becomes available.
- One limitation is that some interactive effects between measures are not automatically captured. Because we cannot know what measures will be implemented at the same time with the same customer, we cannot always capture the interactions between multiple measures within individual measure characterizations. However, interactive effects with different end-uses are included in individual measure characterizations whenever possible.* For instance, waste heat factors are included in the lighting characterizations to capture the interaction between more-efficient lighting measures and the amount of heating and/or cooling that is subsequently needed in the building.
- By contrast, no effort is made to account for interactive effects between an efficient air conditioning measure and an efficient lighting measure, because it is impossible to know the specifics of the other measure in advance of its installation. For custom measures and projects where a bundle of measures is being implemented at the same time, these kinds of interactive effects should be estimated."
- Interactive effects for both custom and prescriptive measures, projects, and programs should be accounted for in cost-effectiveness analysis.
- Interactive effects for both custom and prescriptive measures, projects, and programs should be accounted for in measuring savings for assessing compliance towards a Program Administrator's savings goal in cases where the interactive effect impacts a Program Administrator's energy deliveries.

*For more information, please refer to the document, 'Dealing with interactive Effects During Measure Characterization" Memo to the Stakeholder Advisory Group dated 12/9/11.

Proposals for Interactive Effects

For discussion: What is the expected impact of each of the 3 options set forth in table below on joint utility programs or dual fuel programs? Is there an option missing from the table that parties would prefer?

Proposals	Application	Prescriptive: Are interactive effects included?	Custom
Option A	Savings Goal	Yes	Yes
	TRC	Yes	Yes
Option B	Savings Goal	Only if impacts same fuel as original measure	Yes
	TRC	Yes	Yes
Option C	Savings Goal	No	Yes
	TRC	Yes	Yes

- Option A satisfies the principles of technical consistency and statewide consistency. Option A: Add language below to end of Interactive Effects section in IL-TRM:
- *"Interactive effects for both custom and prescriptive measures, projects, and programs should be accounted for in cost-effectiveness analysis.*
- *Interactive effects for both custom and prescriptive measures, projects, and programs should be accounted for in measuring savings for assessing compliance towards a Program Administrator's savings goal in cases where the interactive effect impacts a Program Administrator's energy deliveries."*

TRC Cost Classification Follow-Up

Item	Incremental Costs	Incentive Costs	Non-Incentive Costs
Cost of direct install labor and materials	X	X	X
Cost of measures provided in kits to participants	X	X	X
Cost of energy assessment (study-based service)	X	X	X

Original Cost Classification Memo 4/20/15

Compromise Agreed to at 4/28/15 TRC Subcommittee Meeting.

Key difference in classification is that NTG applies to Incremental Costs and NTG does not apply to Non-Incentive Costs in the TRC analysis. Assuming a NTG less than 1.0, the compromise approach in comparison to original results in lower costs in TRC analysis, and higher TRC net benefits, all else equal.

-Are there any objections to the 4/28/15 compromise set forth in table above?

Next Steps

- Discuss consensus on the proposals.
- Questions?