

# NAVIGANT

ENERGY

## Comparison of Illinois NTG Approaches

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November 15, 2013

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# How Many Approaches Are There?

- » The NTG approach for all C&I projects in Illinois is based at the core on participant self-report.
- » The NTG approach for C&I projects for ComEd, Ameren, Nicor Gas, Peoples Gas, and North Shore Gas (referred to as “Joint Utilities Approach”) is largely the same. Any differences are nuances to fit particular circumstances.
- » The NTG approach for DCEO C&I programs for EPY4 is different in substantial ways.

# Similarities between the two approaches

- » All research for both the Joint utilities and DCEO are based on the self-report method.
- » All self-report research includes consideration of financial criteria in decision-making.
- » All also includes questions getting at a range of issues that may indicate the presence or absence of free ridership.
- » All combine multiple questions in sets designed to capture broad constructs.

# Joint Utilities Approach

- » Includes participant response on
  - Program Components
  - Program Influence
  - No-Program
- » Includes consistency checks and adjusts free ridership rate when appropriate.
- » For enhanced approach, takes other information into account.
- » Uses the participant's responses to scale questions directly in the free ridership calculation (i.e., does not convert them to another scale before using them).
- » Explicitly recognizes that free ridership is not a binary, all or nothing issue. Each question feeds into a formula that places the respondent on a continuum.
- » True “preponderance of the evidence” approach. Each question asked influences the final result.
- » Uniform Methods Protocol (UMP) NTG draft: The California C&I NTG method is cited on pages 30-32 as a model for estimating NTG. This approach is largely the same as the Joint Utilities approach.

# DCEO Approach

- » Includes participant response on
  - Financial ability
  - Previous plans
  - Program influence
  - Previous experience
- » Does not adjust for consistency checks.
- » Does not have an enhanced method to take other information into account.
- » Does not use the participant's responses to scale questions directly in the free ridership calculation. Rather the method converts groups of participant responses into five yes/no binary variables that are then used in another construct to calculate a participant-level free ridership rate.
  - The approach results in one of four free ridership rates given to each respondent (0, 33, 67, 100).
- » Described as “preponderance of the evidence” approach but as designed effectively throws out much of the evidence gathered in the surveys.

# DCEO Approach – High Level Issues

- » Both approaches use constructs to combine answers to produce a project-specific free ridership rate. In the Joint Utility approach the participant responses each can have a proportional impact on the result. The DCEO approach by design re-interprets participant responses making the construct the driving factor.
- » The binary approach erases all the nuance in each respondent's answer.
- » The binary approach, as implemented, ensures that only extreme cases will get labeled as free riders.
- » Even if the general approach to the DCEO analysis were accepted, there are serious flaws in how that approach was implemented that appear to strongly and consistently skew the results, as the following pages will show.

## “Had Financial Ability” Threshold

- » Question 25. Would you have been financially able to install the [Equipment Type] without the financial incentive or grant from the Public Sector Energy Efficiency Program?
  - 62% said “No” and were assigned 0% free ridership. No other questions were considered for this set.
- » Question 26. If the financial incentive or grant from the Public Sector Efficiency Program had not been available, how likely is it that you would have installed [Equipment/ Measure] anyway?
  - 40% said definitely or probably would have installed anyway.
- » Q26 was **not** used as a cross-check on Q25.
- » The survey design was flawed minimizing the value of Q26. It was asked immediately after Q25. Respondents would not want to appear inconsistent.
- » UMP chapter on survey design: “Since participant decision-making is complex, the survey must ask a carefully designed series of questions rather than a single-question, as that could result in misleading findings.”

## “Had Plans” Binary Variable

- » This flag is based on a combination of several questions: Q21 and Q21c Had plans to install; Q26 would have installed without incentive; Q29 affect timing; Q28 affect the level of efficiency. The report is not clear but it appears to be the case that the respondent has to answer that the program had no effect on **all four questions** in order for this flag to be set to Yes/free rider.
  - The formula only counted “definitely” not “probably” on the incentive question (Q26).
- » This approach made it a foregone conclusion that almost all respondents were going to have this flag set to “No”. Only by passing a very high hurdle will these questions have any effect on the free ridership rate.
- » All nuance in the respondent answers to the four questions is ignored.



## “Program Influence” Binary Variable

- » Two questions asked – if **either** indicated low free ridership the flag was set to “Yes”
- » Question 22a ‘How important was previous experience with the programs in making your decision to install [Equipment/Measure]?’. “Very important” sets flag to “Yes”.
  - This approach does not comply with theory: A “very important” answer is evidence that the previous year’s program inspired the measure. It provides no information on the effect of the current program. (This is an indication that the measure should be classified as spillover.)
- » Question 23 “Did a representative of the programs recommend that you install [Equipment/Measure]?”. “Yes” sets the binary flag to “Yes”.
  - This is not evidence of program influence by itself. E.g., if a participant already was planning to install something when the representative recommended it, then the recommendation may have had NO influence on the decision.

## “Previous Experience” Binary Variable

- » A respondent would have to answer Yes to BOTH of these questions for the binary variable to be set to “Yes” indicating free ridership (although the report is not clear on this point):
  - Q20 “Before participating in the programs, had you installed any equipment or measure similar to [Rebated Equipment/Measure] at your facility?”
  - Q15 “Has your organization purchased any energy efficient equipment in the last three years for which you did not apply for a financial incentive through the programs?”
- » An answer of Yes to EITHER question should have been sufficient to set the free ridership flag to “Yes”.

## Combining the Binary Variables

- » The first binary variable (Financial Ability) was used as a filter. Anyone saying “NO” was assigned 0% free ridership. And no other answers were considered.
- » Free ridership rates were assigned to various combinations of the remaining four binary variables. (Table 3-1 in the report – next slide.)
- » The logic shown in the table is incomplete and perhaps flawed.
  - Had Plans definition 1 and Had Plans definition 2 are introduced as substitutes for each other, one more restrictive than the other. That should mean that Table 3-1 would treat them with the same logic but it does not. Thus any row with “Y” for definition 1 and a given pattern of answers for the Influence and Experience variables should have the same free ridership score as any row with “Y” for definition 2 and the same pattern. E.g.,
    - Y-NA-Y-Y = 100% but there is no row for N-Y-Y-Y. It should be 100%.
    - Y-NA-N-Y=100% but there is no row for N-Y-N-Y. It should be 100%.
    - Y-NA-N-N =100% but N-Y-N-N=33%, which appears inconsistent.

# DCEO Approach Binary Variable Matrix

*Table 3-1 Free Ridership Scores for Combinations of Indicator Variable Responses*

<i>Indicator Variables</i>				<i>Free Ridership Score</i>
<i>Had Plans and Intentions to Install Measure without the C&amp;S Program? (Definition 1)</i>	<i>Had Plans and Intentions to Install Measure without the C&amp;S Program? (Definition 2)</i>	<i>C&amp;S Program had influence on Decision to Install Measure?</i>	<i>Had Previous Experience with Measure?</i>	
Y	N/A	Y	Y	100%
Y	N/A	N	N	100%
Y	N/A	N	Y	100%
Y	N/A	Y	N	67%
N	Y	N	Y	67%
N	N	N	Y	33%
N	Y	N	N	33%
N	Y	Y	N	0%
N	N	N	N	0%
N	N	Y	N	0%
N	N	Y	Y	0%

# DCEO Approach Compared to Joint Utilities

Table 3-24 Free Ridership as Assessed using EPY3 and EPY4/GPY1 Methodologies

Respondent	PY 3 Methodology				PY4 Methodology					
	Program Components score.	Program Influence score.	No-Program score.	Net-to-Gross	Had Financial Ability	Had Plans I	Had Plans II	Program Influence	Had Previous Experience	Net-to-Gross
1	10	8.0	2	67%	Y	N	N	Y	N	100%
2	10	7.5	10	92%	N	N	N	N	N	100%
3	10	1.0	10	70%	Y	N	N	N	N	100%
4	9	2.5	2	45%	Y	N	Y	N	N	67%
5	10	5.0	10	83%	Y	N	N	Y	N	100%
6	8	2.0	4	47%	Y	N	N	Y	Y	100%
7	6	1.5	4	38%	Y	N	N	N	N	100%
8	9	2.5	4	52%	Y	N	Y	N	Y	33%
9	10	7.5	10	92%	N	N	N	Y	N	100%
10	10	2.5	4	55%	Y	N	Y	N	N	67%
11	10	6.0	4	67%	N	N	N	N	N	100%
12	10	5.0	10	83%	Y	N	N	Y	N	100%
13	10	1.3	10	71%	Y	N	N	N	N	100%
14	10	7.5	4	72%	N	N	N	N	N	100%
15	10	3.0	6	63%	N	N	N	N	N	100%
16	8	4.0	10	73%	N	N	N	N	N	100%
17	9	9.0	8	87%	N	N	N	Y	N	100%
18	10	9.9	10	100%	N	N	N	N	N	100%
19	7	4.0	2	43%	Y	N	Y	Y	N	100%
20	10	9.0	8	90%	N	N	N	Y	N	100%
<b>Average</b>				<b>69%</b>						<b>93%</b>

# Joint Utilities Approach

- » The Joint Utilities approach has been well-vetted and used in multiple jurisdictions and is considered best practice.
  - Used successfully in many states: California, Illinois, Pennsylvania, also in New York (Iberdrola, current NYSERDA work).
  - Well-vetted question batteries, and NTG algorithm
  - Standard framework, adaptable to multiple program designs

# Key CONTACTS



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