Net-to-Gross Estimation
for use in Calculating Energy Savings
DRAFT Outline -- March 11, 2013

SECTION A. Introduction

1. Definitions *(NOTE: These definitions will draw from previous works with a goal of maintaining consistency—e.g., Schiller's work for SeeAction, NAPEE EM&V Guide, NEEP NTG study)*
    a. Net savings definition
    b. Free riders definition – including levels or degrees of free-ridership
    c. Spillover definition – including different types of spillover
    d. Market effects
    e. Net-to-Gross ratio definition

2. Uses of NTG measurement in the energy efficiency industry.
    a. Overview of how NTG is and is not being used in energy efficiency
    b. Different uses of NTG estimates in energy efficiency industry
        i. Planning
        ii. Design
        iii. Tracking market changes
        iv. Other

3. Structure of the Report *(NOTE: This would discuss how the balance of the report is structured and why included certain sections and how the methods are ordered, e.g., deemed savings methods (although widely used) is presented at the end of the methods section because it is usually based on reviews of the results of other methods)*

SECTION B. Defining the NTG Estimation Problem

(NOTE: A point of emphasis in this section will be that a perfect control group addresses all NTG issues)

1. Establishing an appropriate baseline
    a. Free Riders – a biased baseline

i. Self-selection as a biased control group

ii. Other biases

b. Spillover – an impacted or contaminated baseline

i. Participant spillover

ii. Non-participant Spillover

c. Market effects

2. Time – the relationship between NTG and program maturity

a. There are difficulties in separating Free Riders from spillover in mature programs.

b. Market transformation can influence the baseline in mature programs

SECTION C. Strategies for NTG Measurement

(NOTE: The goals of this section include setting out the advantages and challenges for each as they apply to different NTG approaches, and characteristics of programs that make them more applicable to different methods. This section will differ somewhat from other recent work by containing example applications in addition to a focused description of methods It will also contain specific practitioner issues and guidance from the literature from the point of view of someone trying to perform the analyses).

1. Listing and identifying potentially confounding factors in estimating NTG.

a. Discuss in greater detail the specific challenges faced in NTG estimation.

b. Develop a table that lists these factors (e.g., hypothetical bias, recall issues, self-selection and other baseline biases, and other to be identified)
(NOTE: The goal of this section is to set out these estimation issues upfront thereby allowing the authors to illustrate how each approach to NTG estimation addresses these issues. This revised part of the outline is believed to better set up a framework for the presentation of the different approaches.)

2. Controlled Experiments and Quasi-Experimental Designs *(NOTE: Could be two sections)*

a. Establishing the baseline or control/comparison for participant groups – use of participants themselves as part of the control/comparison group.

b. Non-participant control/comparison groups.

(NOTE: Methods to include various matching, discrete choice to match on likelihood of participation; and propensity score matching)

c. Analysis designs *(NOTE: This is for the comparative analyses of control and treatment groups)*

i. Cross-sectional-Time Series comparisons

ii. Prior-period consumption (Time series only)

iii. Same-period control/comparison groups (Cross sectional analyses only)

3. Survey-based approaches
    a. Key issues in survey design (refer to other chapter)
    b. Survey structure – self report and market expert surveys
    (NOTE: We think there should be a distinction between market expert surveys that support self-report methods, expert judgment-based approaches, and/or elicitation of confidence/uncertainty)
    c. Use of multiple views – triangulation
        i. Self-reports from participants and non-participants
        ii. Self-reports from market actors (e.g., retailers)
        iii. Surveys of other market experts
    d. Survey timing and protocols to address key issues.
4. Regression/Econometric analyses
    a. Setting up the model framework
    b. Issues in applying regression methods.
    c. Producing net estimates
    d. Getting to net-to-gross values using regression methods.
5. Market sales data analysis (program and non-program area comparison)
    a. Data comparisons
    b. Regression model approaches
6. NTG with dynamic baseline *[NOTE: may be folded in to items 1 and 5 above]*
7. Top-down evaluations (or macro-economic models) which I know CA and MA are either doing (CA) or strongly encouraging (MA)—see Schiller discussion
8. Structured Expert Judgment Approaches
    a. Structuring the Approach

   b. Feedback methods
   c. Trade panels
   d. Role in assessing net savings

9. Deemed or stipulated NTG ratios
   a. Methods for developing deemed values
   b. Value (and cost) of deemed value approaches.
   c. Combination methods were deemed values are updated periodically by other methods

10. Other Methods
   a. Stated and Revealed Preference Approaches.
   b. Conjoint Analysis
   c. Historical Tracing

SECTION D. Conclusions and Recommendations

1. Factors that drive the strategy and selection of methods for NTG.
2. DSM activity/program typology and implications for approaches to NTG.

NOTE: As this chapter is being written, it may make sense to separate out or combine certain "approach" sections.