

Net-to-Gross Research Methodology Overview: Standard Compact Fluorescent Lighting

Energy Optimization Collaborative
Evaluation Working Group
May 21, 2013



Commission Orders

- DTE Energy – Case No. Case No. U-17049 - December 20, 2012

“Thus, the Commission finds it reasonable to revisit the appropriate net-to-gross for conventional CFL in 2013, for 2014 and 2015 planning and evaluation purposes. To clarify, for program years 2012-2013, a net-to-gross of 0.90 may be used for calculating energy savings for conventional CFLs.”

- Consumers Energy – Case No. U-17138 – January 31, 2013

“The company will use a net-to-gross ratio of 0.90 for calculating energy savings for its conventional CFLs for 2012-2013. The parties agree that the Commission shall revisit the appropriate net-to-gross ratio for conventional CFLs in 2013 for the 2014 and 2015 program years.”

Objectives

- Respond to the Commission orders to revisit the net-to-gross ratio (NTGR) for standard CFLs for 2014-2015 program years
- Collaborate in an attempt to establish consistent approaches to measuring the NTGR within the state
- If possible, determine a common NTGR for use by DTE Energy and Consumers Energy for 2014 and 2015 for standard CFLs

Definitions

- **Net Savings** are changes in energy use attributable to a particular energy efficiency program; a **net-to-gross ratio** (ratio of net savings to gross savings) is applied to convert gross savings to net savings.
- **Free ridership** is savings from someone who would install an energy-efficiency measure **without any program incentives**, but receives a financial incentive or rebate *anyway*.
- Spillover is savings from someone **influenced by a program** to adopt energy-efficiency measures that qualify for financial incentives or rebates, *but does not receive them*.
- A **market effect** is a change in market structure or market actor behavior **due to program influence** that results in *(un-incented)* adoption of energy-efficiency measures.

Savings Calculations

$$\text{Verified Net Savings} = \text{Gross Savings} \times \text{Installation Rate} \times \text{NTGR}$$

From the MEMD or custom calculations

From evaluations or engineering review

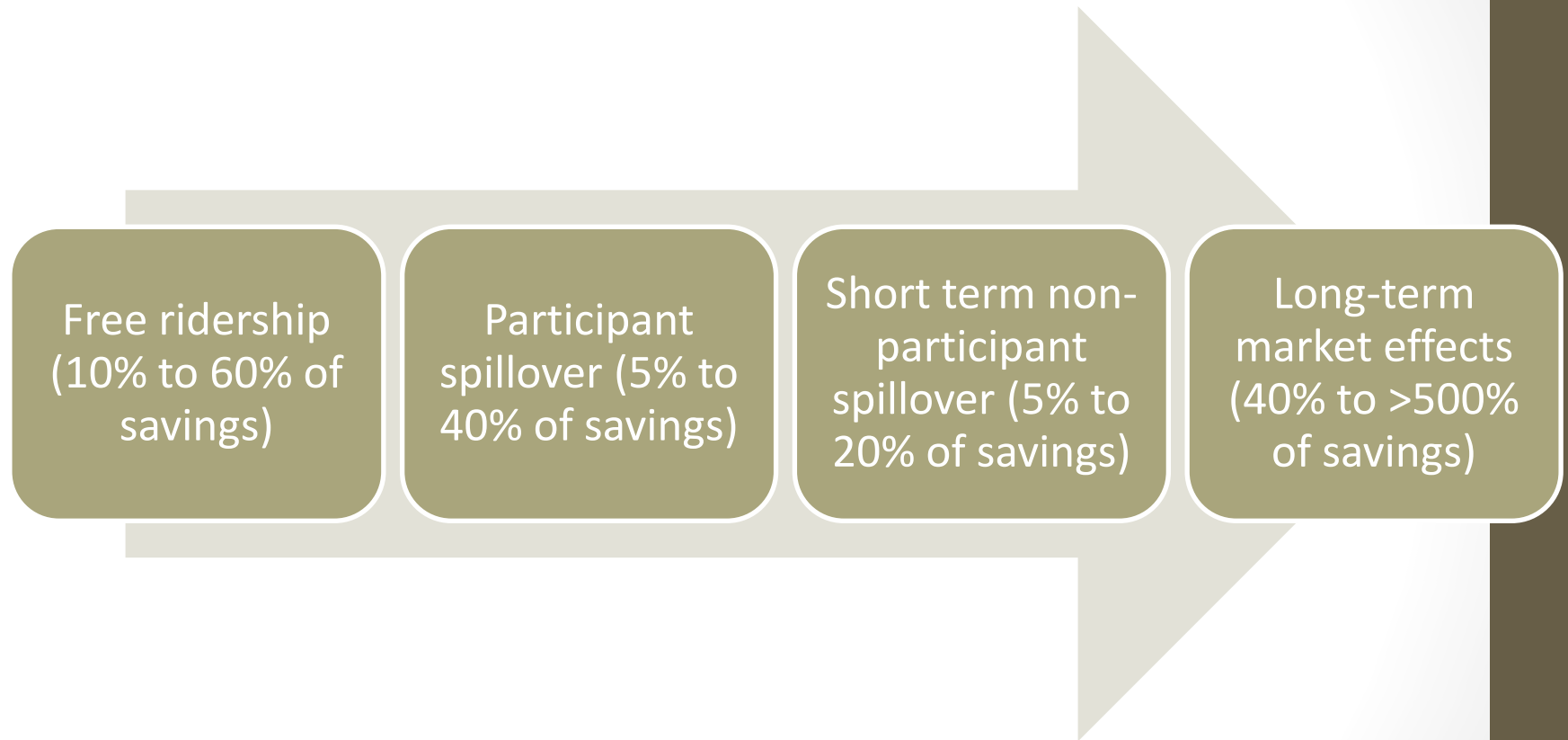
Currently deemed at 0.9

Net to Gross Ratio

NTGR = 1 – Freeridership + Spillover + Market Effects



Elements of Net-to-Gross Can Be Significant*



* Nick Hall, Presentation to National Association of Regulatory Utility Commissioners, Winter Committee Meeting 2008

Estimating NTGR

- The most research exists around freeridership
 - “Easier to measure”
 - Baseline and biases need to be accounted for
- Spillover and market effects
 - Methodologies are still evolving
 - Participant spillover can be captured through the program evaluation, but non-participant spillover and market effects, by definition, happen outside of the program and over time

10. How much influence did the program have on your decision to purchase a high-efficiency vs. standard efficiency cooling unit?
 Significant Some None

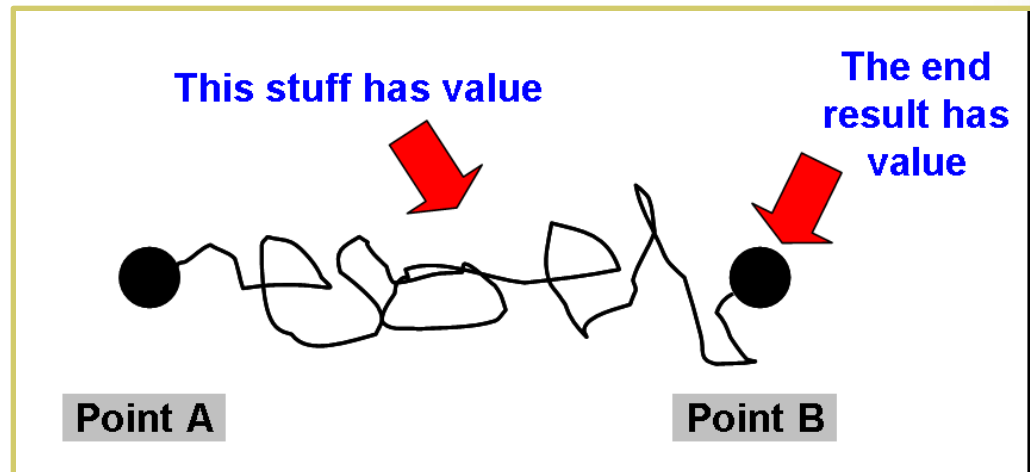
11. Without the incentive, what would you have purchased? (Specify type and efficiency or make and model) Same as purchased

12. Comments Thanks so much for the \$ ☺ (3100)

Without the programs, would the option be there to purchase, with or without the incentive?

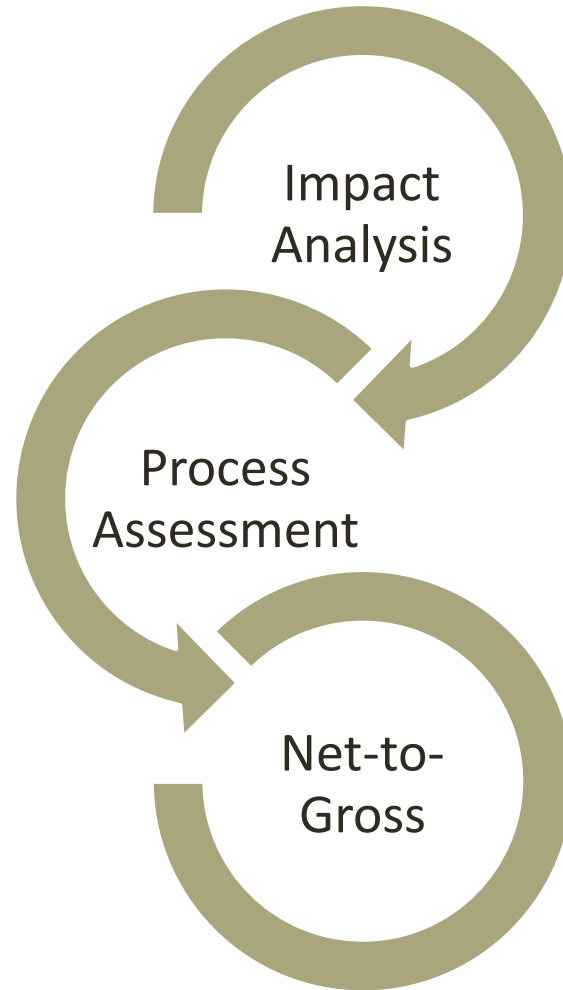
An Analogy

- We bought the bus
 - We built the road
 - We hired the driver
 - We trained the driver
 - We paid for the gas....
-
- Yet, when we ask passengers if they would have gotten to point B on their own,....**





** Tom Eckman (Manager, Conservation Resources, Northwest Power and Conservation Council)

Evaluation Elements



Research Tasks

Research Task	Navigant / 	Cadmus /NMR/ 
Customer Perspectives	<ul style="list-style-type: none"> • Intercept Surveys • In-Home Audits 	<ul style="list-style-type: none"> • Telephone Survey • In-Home Audits
Trade Ally Research	<ul style="list-style-type: none"> • Corporate Manufacturer/ Retailer Interviews 	<ul style="list-style-type: none"> • Local Retailer Interviews <ul style="list-style-type: none"> • Corporate Manufacturer/ Retailer Interviews
Program Sales Modeling	<ul style="list-style-type: none"> • Price Elasticity Model 	
Other Data	<ul style="list-style-type: none"> • Secondary Research, including natural experiments <ul style="list-style-type: none"> • Market Data (as available) 	
Integrated Analysis and Synthesis	<ul style="list-style-type: none"> • Market Effects Modeling (Pending available data) <ul style="list-style-type: none"> • Delphi Panel 	

Research Tasks Inform Multiple Objectives

Research Task	Impact (IRAF)	Process	Net to Gross		
			FR	SO	ME
Customer Surveys (Telephone and Intercept)	√	√	√		
In-Home Audits	√				√
Trade Ally Interviews		√	√	√	√
Price Elasticity Modeling			√		
Secondary Research and Market Data					√
Delphi Panel			√√		

Customer Surveys

- √ Impact (IRAF)
- √ Process Assessment
- √ Net-to-Gross (FR, SO)



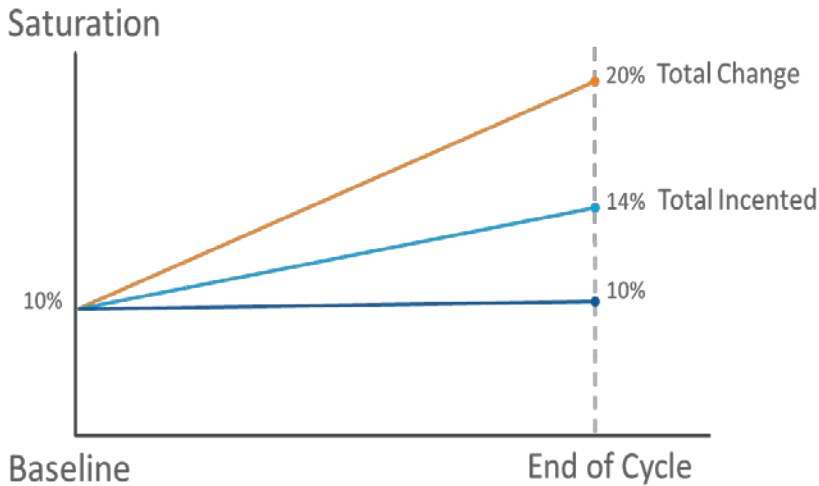
- Intercept survey fielded in conjunction with an in-store event held (October 2012)
- Obtained 258 completes
- Telephone survey to be fielded in June 2013
- 500 completes targeted
- Topics include:
 - Freeridership
 - Residential and commercial split
 - Installation rates
 - Process questions: program awareness and marketing effectiveness

In-Home Audits

√ Impact (IRAF)
√ Net-to-Gross (FR, ME)

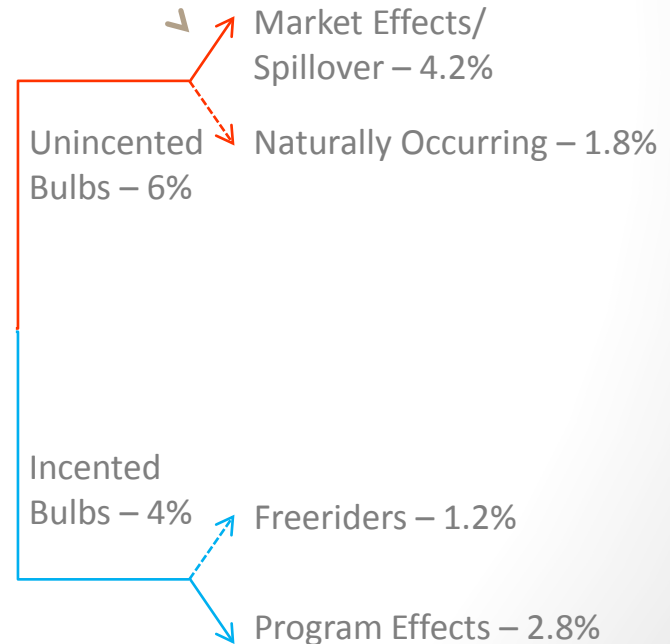
- 100+ site visits conducted in each service area (DTE completed in early 2013, Consumers Energy site visits scheduled for late June-July)
- In home audits capture socket saturation and CFL storage
- Comparison to earlier in-home audits inform changes in socket saturation

Attribution of Saturation Changes (Illustrative)



Δ Saturation = 10%

Freeridership = 30%



Trade Ally Interviews

√ Process Assessment
√ Net-to-Gross (FR, SO, ME)

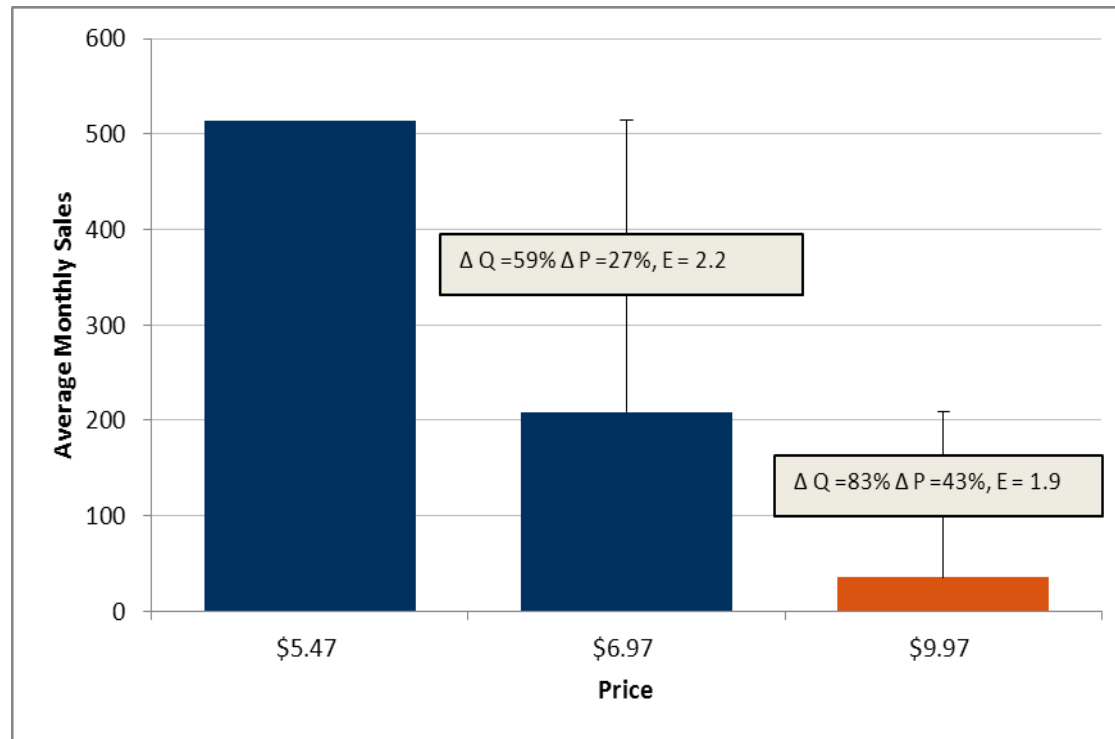
- In-depth trade ally interviews with manufacturers and retailers, both national and local
- Focus on key factors impacting sales of CFLs and level of influence of program on those factors
 - Shelf space, visibility, quality, staff knowledge, price
- Estimate of market share for medium screw based bulbs with and without programs
- Market effects touched on through questions on overall program impacts, sales levels prior to program, key factors that influence sales
- Process evaluation related questions
 - Program design, operation, marketing and consumer education

Price Elasticity Modeling

√ Net-to-Gross (FR)

- Using price and sales data from the program implementer, estimate the demand for CFLs at various price points
 - Requires fluctuating prices
 - Promotional data useful
- Will look at price elasticity by SKU as well as standard vs. specialty bulbs
 - The number of bulbs that would have been purchased at the pre-discounted rate form a basis for estimating what would have occurred in the absence of the program
- Interpretation of results
 - Individual service area and combined data will be modeled
 - Results will also be compared to analysis done using Revealed Preference Approach during DTE intercepts

Price Elasticity Model (Illustration)



- The observed price change and change in sales are used to predict sales at the original price
- Predicted sales in the absence of programs shown in orange

Secondary Data and Market Research

√ Net-to-Gross (FR, SO, ME)

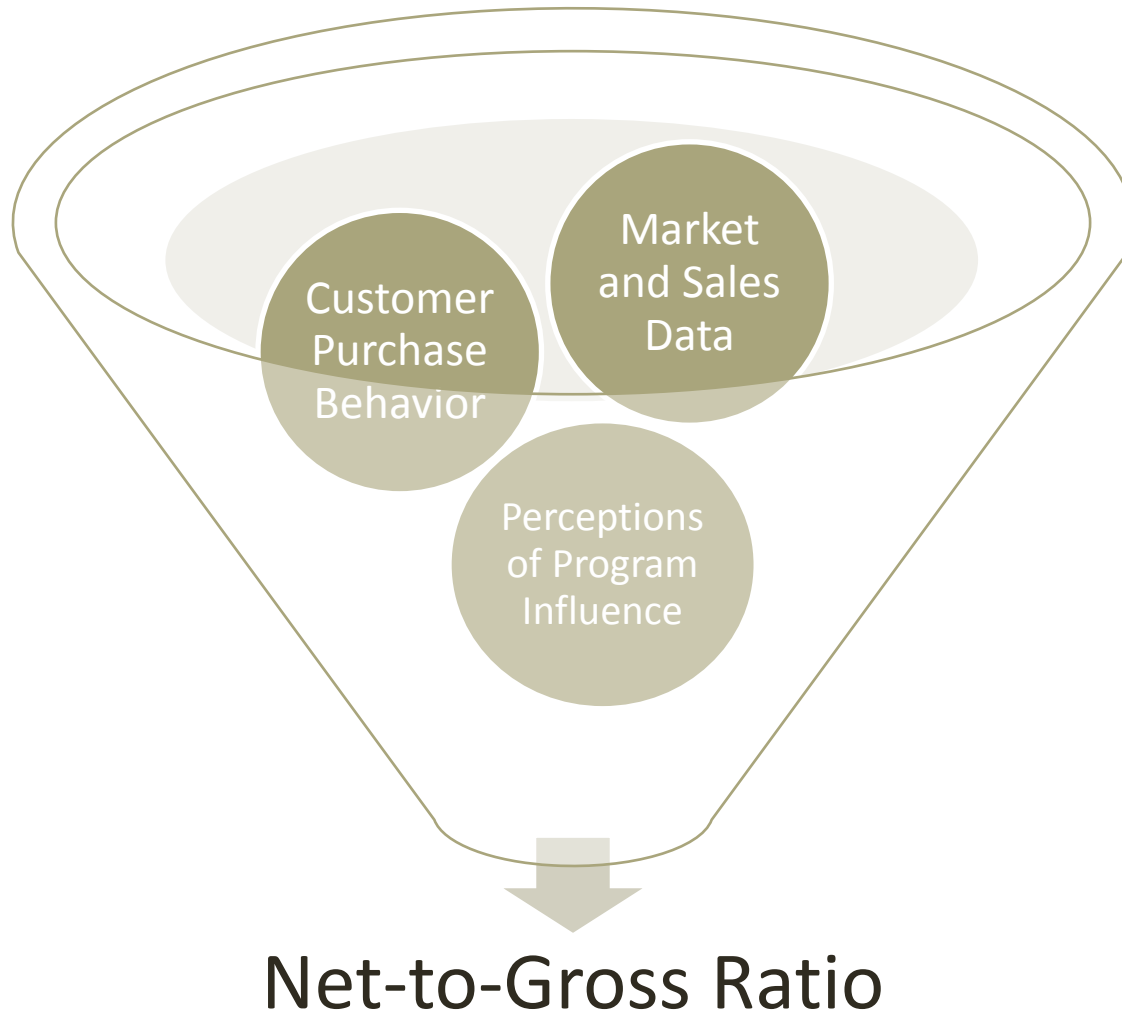
- CFL market data
 - Difficult to obtain directly, potential sources under review
- Case studies
 - Impacts of changes to programs made in response to EISA, market changes, etc.
- Other

Delphi Panel

√ Net-to-Gross (FR, SO, ME)

- Selected industry experts estimate the counterfactual or baseline in the absence of the program
 - Panelists selected to represent a broad range of perspectives
- Provide program history, market data, NTG results from other tasks
 - Ask panelists to rate the accuracy of other NTG estimates and provide their reasoning
 - Use an on-line tool to estimate a Bass adoption curve
- Conduct a second round of inquiry
 - Provide summary of results and associated reasoning to panelists; refined estimates provided to develop final result

Integration/Synthesis of Results



Next Steps

- Proposed Timeline
 - Through August: Completion of data collection, analysis and modeling tasks
 - September: Delphi Panel conducted
 - October/November: Joint memo from Cadmus/Navigant/NMR to the EO Collaborative with NTG findings to date after completion of Delphi Panel
- Ideally, the collaborative reaches consensus on a statewide recommended standard CFL NTG value to use for 2014-2015