

## *How Upstream Lighting Programs Are Affecting Markets for Standard CFLs in the U.S.: Lessons from Michigan*

2014 International Energy Policies & Programmes Evaluation Conference

Berlin, Germany



September 9, 2014

©2014 Navigant Consulting, Inc.  
Confidential and proprietary. Do not distribute or copy.

## Content of Report

This presentation was prepared by Navigant Consulting, Inc. **exclusively for presentation at the 2014 International Energy Policies & Programmes Evaluation Conference.** The work presented in this report represents our best efforts and judgments based on the information available at the time this report was prepared. Navigant Consulting, Inc. is not responsible for the reader's use of, or reliance upon, the report, nor any decisions based on the report.

NAVIGANT CONSULTING, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESSED OR IMPLIED.

Readers of the report are advised that they assume all liabilities incurred by them, or third parties, as a result of their reliance on the report, or the data, information, findings and opinions contained in the report.

September 9, 2014

©2014 Navigant Consulting, Inc. All rights reserved. Navigant Consulting is not a certified public accounting firm and does not provide audit, attest, or public accounting services. See [navigantconsulting.com/licensing](http://navigantconsulting.com/licensing) for a complete listing of private investigator licenses. Investment banking, private placement, merger, acquisition and divestiture services offered through Navigant Capital Advisors, LLC., Member FINRA/SIPC.

## A Michigan study of CFL program influence included market effects in its scope and found greater program influence than other regions.

- » Michigan's regulator mandated a review of assumptions used for standard CFLs in 2014 and 2015.
- » Evaluators for the state's two large electric utilities, Consumers Energy and DTE Energy, used multiple research methods and engaged expert judgment, making an effort to capture market effects.
- » Findings support 90% attribution for the 2009-2013 period, decreasing to 82% for 2014-2015.



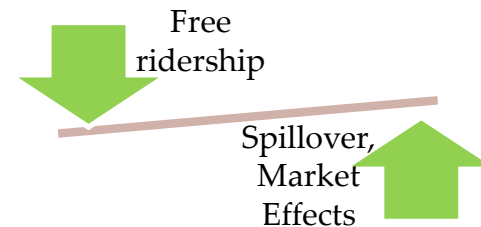
# Table of Contents

1	Introduction and Overview
2	Background
3	Approach
4	Program and Market Data
5	Evaluator Net-to-Gross Analysis
6	Advisory Panel Results
7	Conclusion

**“Net program savings” is akin to the concept of “additionality.” It estimates the total savings attributable to a program.**

$$\text{Net-to-Gross (NTGR)} = 1 - \text{Freeridership} + \text{Spillover} + \text{Market Effects}$$

$$\text{Net Program Savings} = \text{Gross Program Savings} \times \text{NTGR}$$



**Table 1. Net –to-Gross Ratio Elements**

**Free Ridership:** savings from someone who would install an energy-efficiency measure without any program incentives, but receives a financial incentive or rebate anyway.

**Participant Spillover:** savings from participants influenced by a program to adopt energy-efficiency measures that qualify for financial incentives or rebates, but do not receive them.

**Non-Participant Spillover:** savings from a non-participant influenced by a program to adopt energy-efficiency measures; this can include both direct and indirect influence.

**Market Effects:** “..[savings] that reflect significant program-induced changes in the structure or functioning of energy efficiency markets.”<sup>1</sup>

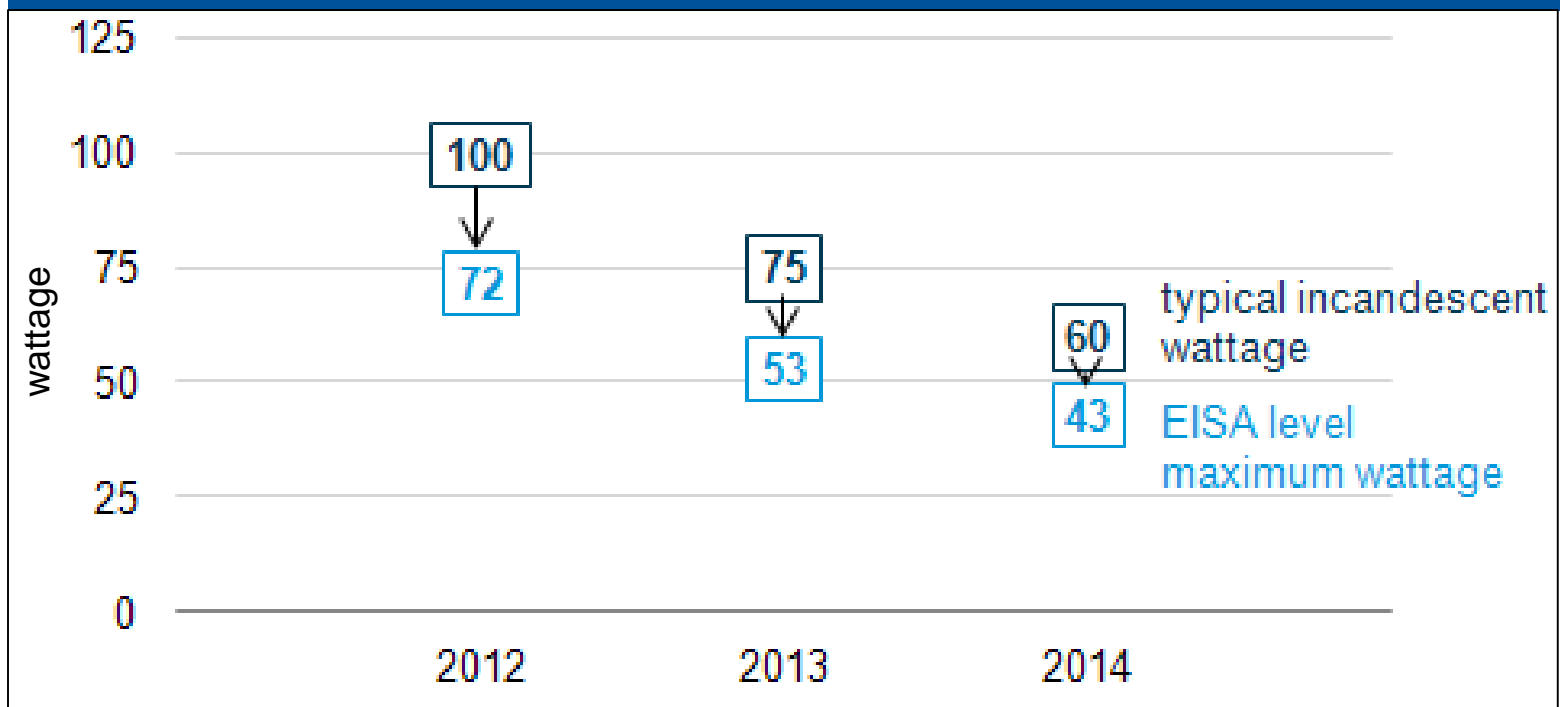
<sup>1</sup> Prah, Ralph, Rick Ridge, Nick Hall, William Saxonis. “The Estimation of Spillover: EM&V’s Orphan Gets a Home.” Paper presented at the International Energy Program Evaluation Conference, Chicago, Illinois, August 13-15, 2013.

Source: Consumers Energy and DTE Energy evaluation teams

# As U.S. efficiency standards take effect, markets are shifting and the baseline is changing from traditional incandescents to halogen variations.

» What do these market changes mean for CFL savings?

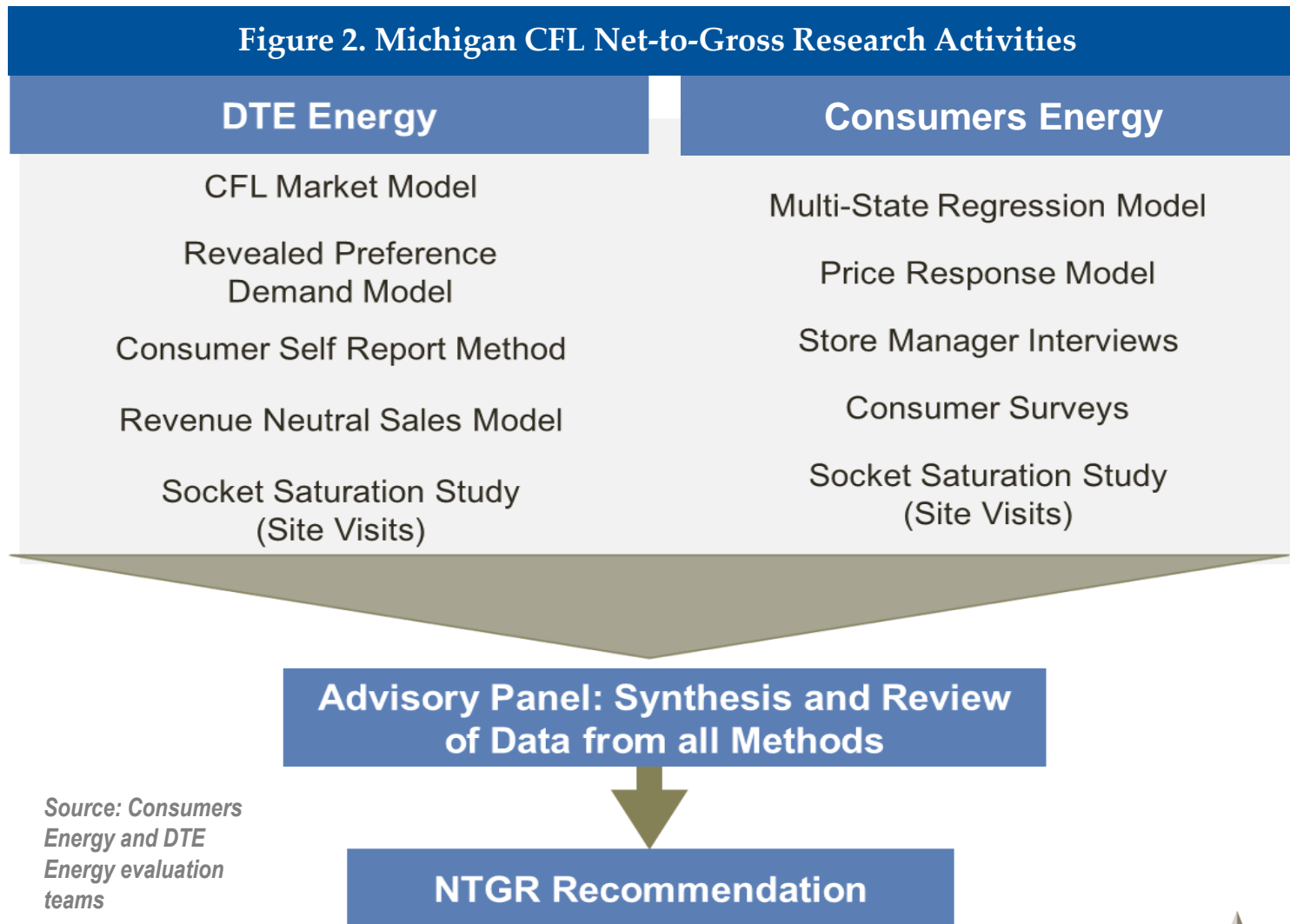
Figure 1. Summary of Phase-In of U.S. Federal Efficiency Standards for General Service Lamps



Source: U.S. Energy Information Administration



**A panel of industry experts provided statewide NTGR estimates based on findings from original studies, as well as program and market data.**

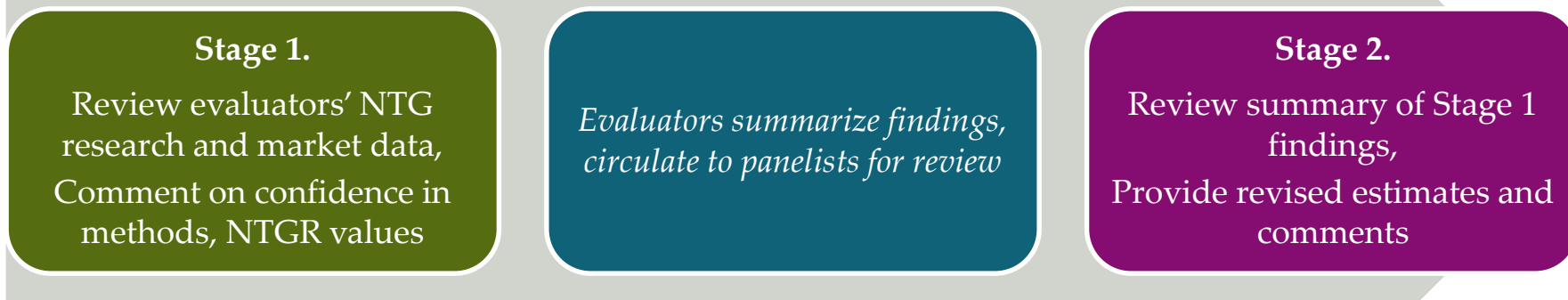


The Advisory panel comprised carefully selected industry experts who drew on their knowledge of CFL markets to estimate program influence.

Table 2. Panelist Distribution

Panelist Group	Count
Manufacturers and Retailers	4
Program Administrators and Market Support	6
Evaluators and Consultants	4
Government, Regulators, and Energy/Environmental Advocates	4

Figure 3. Summary of Advisory Panel Process

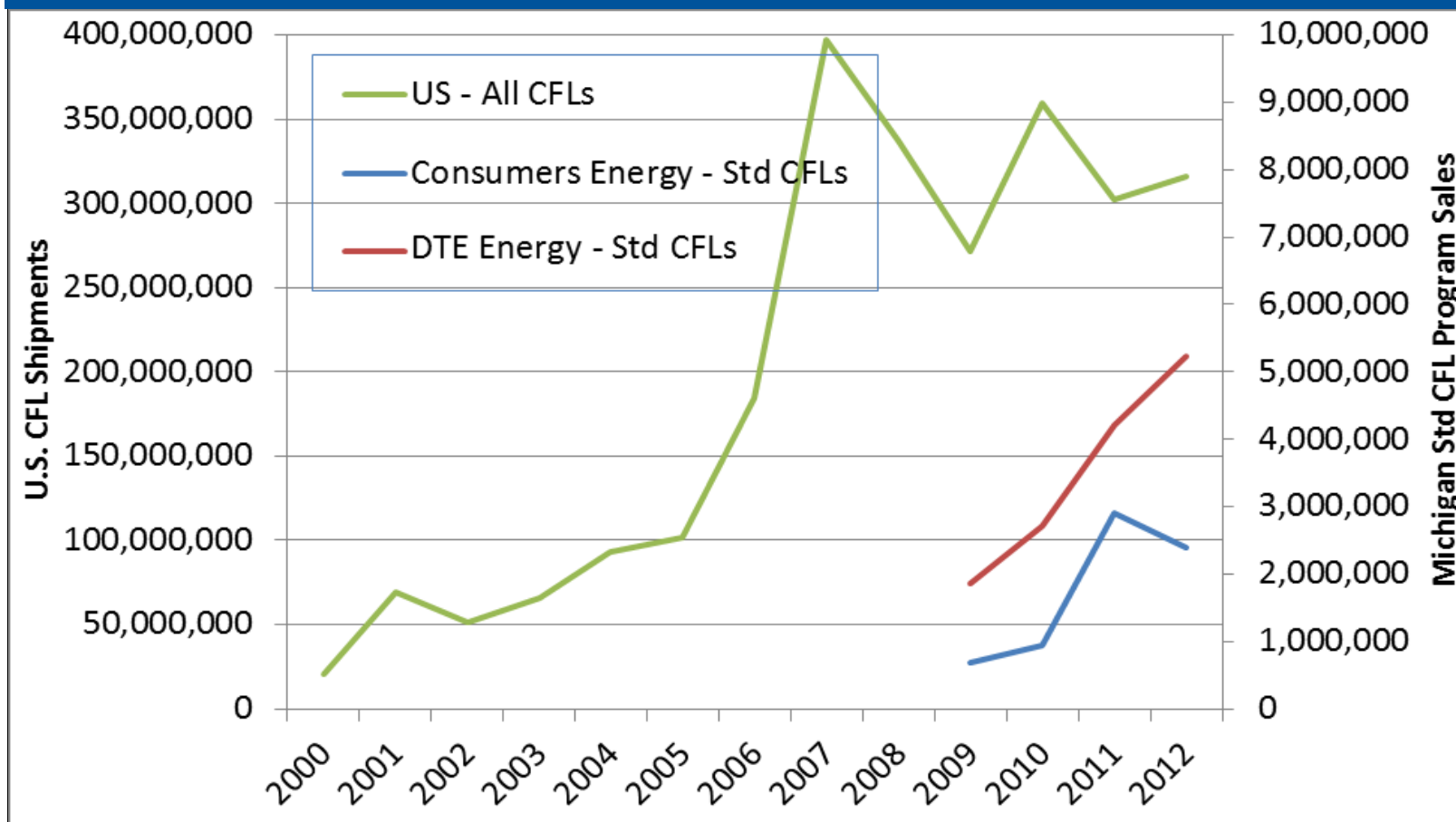


Source: Consumers Energy and DTE Energy evaluation teams



**Michigan program sales climbed while U.S. sales were more volatile. Michigan socket saturation also climbed after the programs launched.**

**Figure 4. Comparison of U.S. and Michigan CFL Sales**



Source: U.S. International Trade Commission – Import Statistics; DTE Energy and Consumers Energy upstream lighting program sales data 2009-2012

## Evaluators used a range of methods expected to reduce potential biases, leverage available data, and capture market effects and spillover.

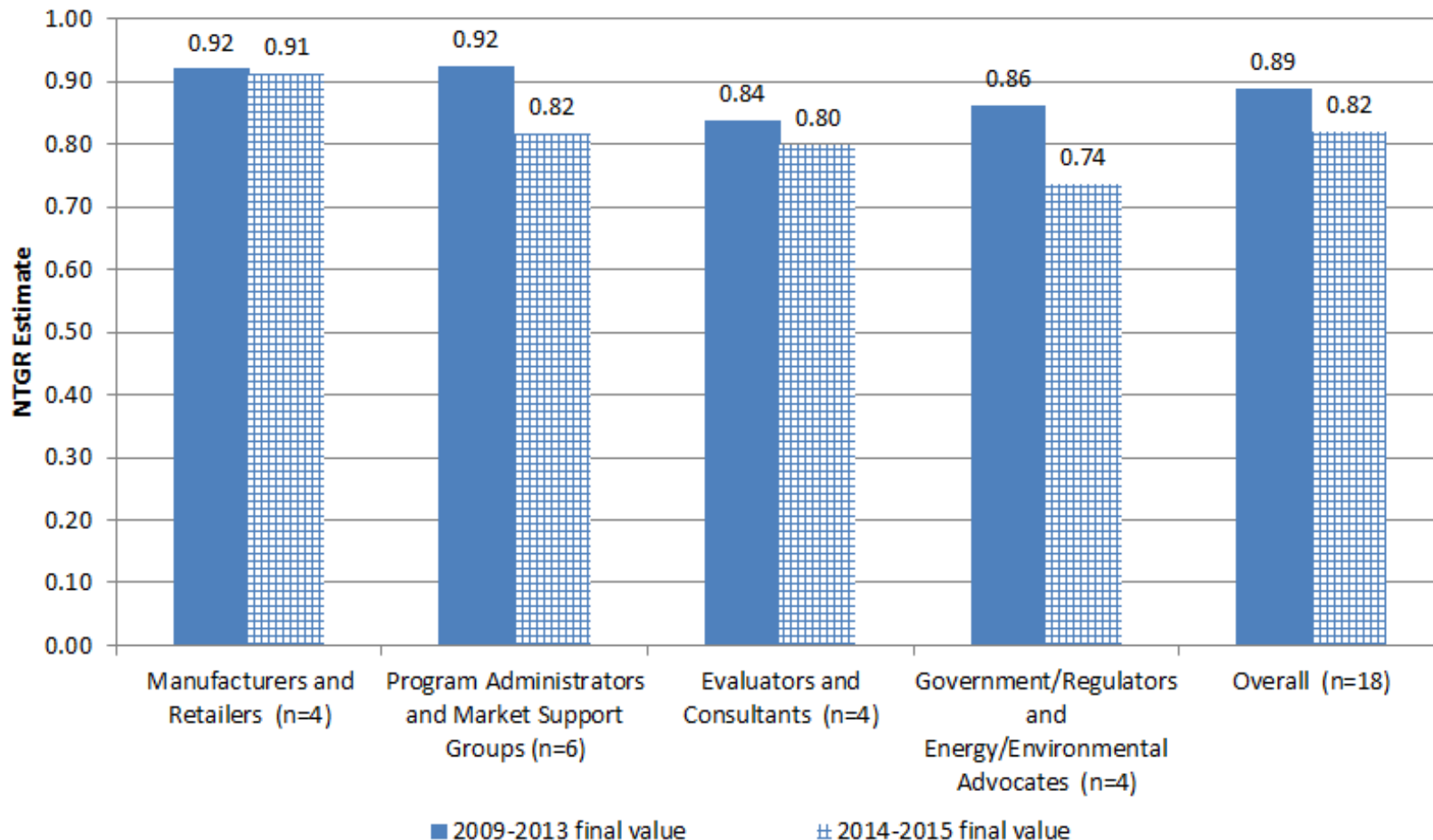
**Figure 5. Overview of Evaluator NTGR Methods and Values**

Method	Free Ridership	Participant Spillover	Non-Participant Spillover	Other Market Effects	NTGR Value
1. CFL Market Model	-0.27	+0.31			1.03
2. Multistate Regression Model					0.71
3. Consumer Self-Report Surveys	-0.37	+0.07		Free ridership adjusted to account for some Market Effects	0.70
4. Retail Store Manager Interviews		+0.24 to +0.33			1.24 to 1.33
5. Price Elasticity Model	-0.28				0.72
6. Revealed Preference Demand Model	-0.20				0.80
7. Revenue Neutral Sales Model	-0.39				0.61

Source: Consumers Energy and DTE Energy evaluation teams

The NTGR estimates were clustered with no outliers. There was a moderate decline in the 2014 – 2015 NTGR relative to the 2009 – 2013 value.

Figure 6. Summary of Final Advisory Panel NTGR Estimates by Panelist Category



Source: Advisory panel data

**This research addressed limitations of commonly used NTGR research methods by engaging expert judgment and capturing market effects. This resulted in higher NTGR values than have been found elsewhere.**

- » A NTGR of 0.82 will be used for standard CFLs for 2014-2015 program years.
- » Factors that likely contributed to the higher values resulting from this research include:
  - Inclusion of multiyear market effects in the definition of NTGR
  - Weaker condition of the Michigan economy relative to other regions
  - Michigan programs (launched in 2009) have operated for a shorter duration than those in some other regions
  - Advancements in methods for estimating NTGR

# Key CONTACTS



## Primary Study Contacts:

### Nicole Wobus

Navigant

Boulder, CO, U.S.

303-728-2514

[nicole.wobus@navigant.com](mailto:nicole.wobus@navigant.com)

### Tom Mauldin

NMR

Somerville, MA

617-284-6230

[tmauldin@nmrgroupinc.com](mailto:tmauldin@nmrgroupinc.com)

## Additional Authors:

Jill Steiner, Cadmus, Lansing, Michigan

Craig McDonald, Navigant, Boulder, Colorado

Julianne Meurice, Navigant, Chicago, Illinois

Alison Jaworowski, DTE Energy, Detroit, Michigan