# Evaluating Positive and Normative Messages in Real Time Energy Management

E2e & EnerNOC | October 20, 2015

# Why are we here?

**EnerNOC & E2e conducting research**

- **Goal:** Better understand how commercial and industrial customers respond to different types of messaging regarding their energy practices
- **How**: Test the effectiveness of these messages, primarily the effect of positive and normative messages, on businesses' energy usage, program participation, and engagement with EnerNOC's products
- **Why you care:** This research can help us close the efficiency gap

- **Paper & Slides Available Online:** All slides will be available online, additionally we have submitted a paper. Further research will be available through E2e (MIT, Berkeley, Chicago)
- **Work in progress:** Today we're presenting anecdotal findings and hypotheses, plan to publish RCT/RED findings at a later date

# Who Are We?

## EnerNOC Fast Facts:

- Founded in 2001, publicly traded since 2007 (ENOC).
- Saved our enterprise customers >$1.1B, >20mm tons $CO2_e$ – enough to take 3 million cars off the road for a year
- 4,500 enterprise customers across 80,000 locations in over 100 countries across many industries: Commercial, Industrial, Institutional, Municipal, etc.

Newell Rubbermaid · comcast · PEPSICO · 3M · Coca-Cola · Kimberly-Clark

- 50 Utility customers serving over 1,000,000 end-users across 137 Verticals

Southern California Edison · Xcel Energy · PG&E · TVA · TEPCO · British Gas

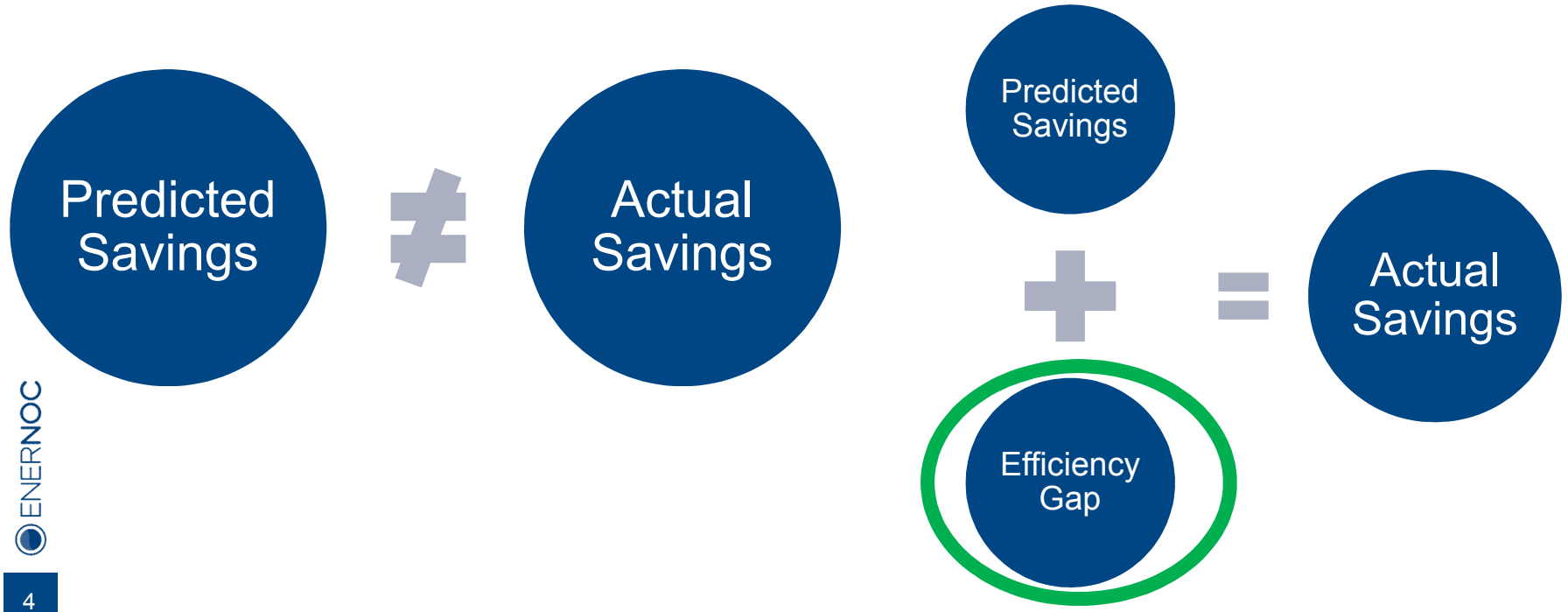
## E2e Fast Facts:

- Joint initiative of University of California: Berkeley, the Massachusetts Institute of Technology, and the University of Chicago: three recognized leaders in energy research.


- Economists, engineers, and behavioral scientists focused on understanding the energy efficiency gap

# What is this? Why is this important?

- Too Much Carbon
- C&I Energy Consumption >50% of Total
- 1/3 is wasted!
- Renewables + Efficiency Important
- Efficiency Gap



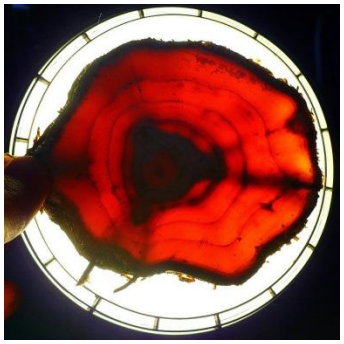
# How do we close the gap?

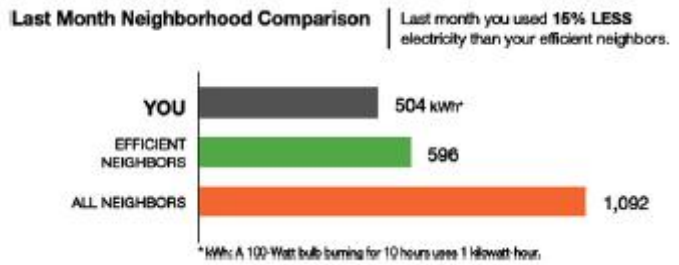
Let's start with some background

- **Messaging is important, and it's important to get right**
- **What kind of messaging are we studying?**
  - **Descriptive (Positive):**

    **vs.**
  - **Injunctive (Normative):**
  - **'What is'**

    **vs.**
  - **'What Ought'**
- **Has anyone studied this?**
  - **Yes! You may have read the study**



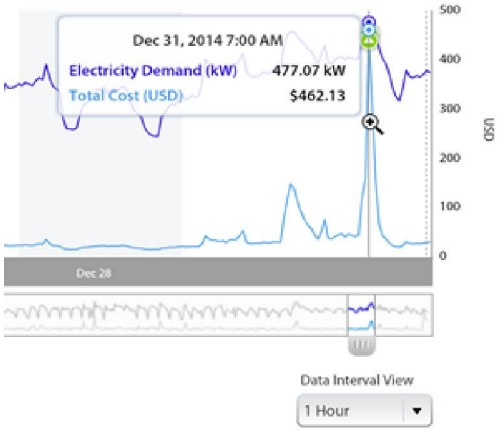


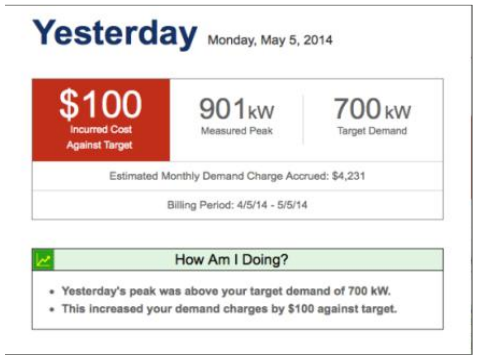

Sources: (Cialdini et. al. (2006): "Managing social norms for persuasive impact"., Allcott, H. (2011). "Social Norms and Energy Conservation."

# Residential = C & I?

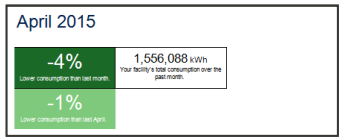
So why the heck are we talking about this?

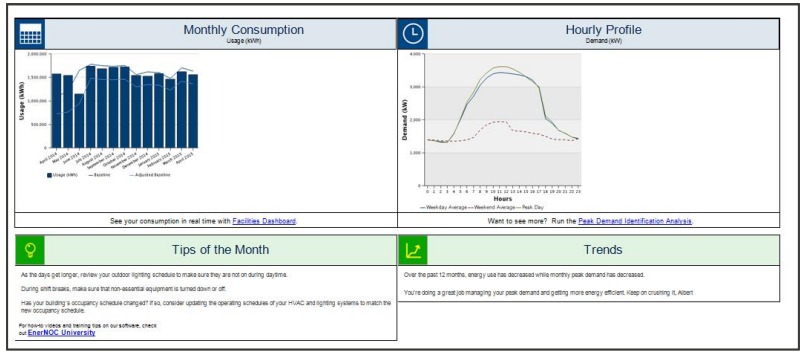
- **C & I ≠ Residential**
  - We don't know if they respond the same way
- **How will we find out?**
  - RED – EnerNOC EIS real time cost allows us to test varied enocouragement
  - RCT – Push features allow us to run RCTs with varied messaging
- **Information Asymmetry**
  - Frequency
  - Recipient
  - Delivery Vehicle



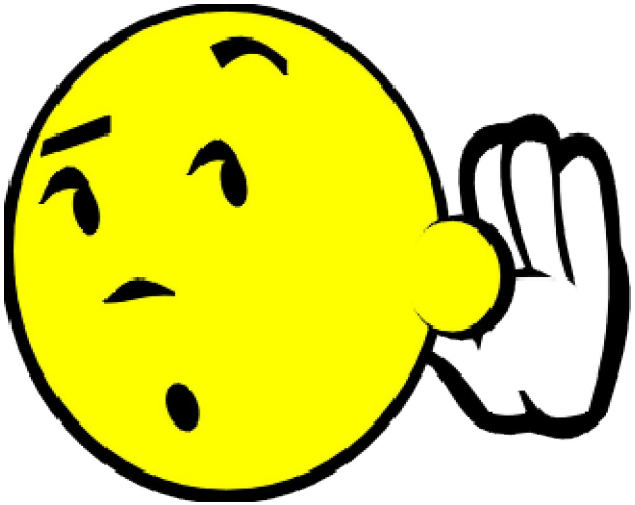




# What are we hearing?

Anecdotal Evidence



**A Portfolio Manager:**

"Our buildings **are all different**; they have all kinds of different systems."

**A sustainability Manger:**

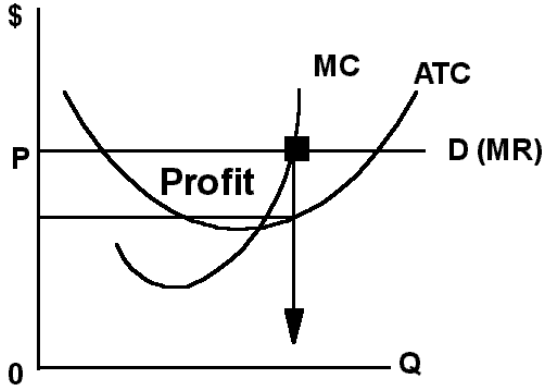
"I think it **always boils down to money** too because essentially we are using tax dollars to pay for things so people and community sees that too."

**An Engineering Manager:**

"Then I had to try to explain the difference to accounting that engineering uses different methods of keeping track of energy. So that was just one difficulty I had. **They were looking at it from an accounting standpoint.**"

# What do we expect to happen?

- **We think dollars will matter, but don't know exactly how**
  - Until you can speak in dollars, the messaging may not matter. Once you can, how do you message?
- **Different firms will respond differently. We may find multiple strategies.**
  - Based on maturity
  - Whether they feel they've already reduced energy and carbon costs (maximized profit)
- **What about signaling?**




# Questions

Any questions?

Please feel free to get in touch.

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# Appendix

# Evaluating Positive and Normative Messages in Real Time Energy Management

There has been extensive research about both positive and normative messaging for energy management – specifically efficiency in the residential sector. Given recent development, enterprise (C&I) users of EnerNOC's software have the ability to examine their energy consumption patterns and behavior in both Positive and Normative contexts – all in real time. In this talk, we will explore the implications of this, and enter into a discussion of energy efficiency impact evaluation. Attendees will benefit from learning about brand new toolset categories that were developed in response to market needs, and how different categories of messages shape enterprise energy management behaviors.

E2e's mission is to solve one of the most perplexing energy puzzles of our time—the efficiency gap.

Fossil fuels are crucial, though dirty, drivers of our economy. They produce 82% of all energy consumed in the U.S., but they pollute our air and water, contribute to global climate change, and increase our dependence on foreign energy sources. Yet relying on renewable energy sources instead could be costly and disruptive for the U.S. economy. Thus a critical question arises: how do we reduce fossil fuel use in the most cost-effective way?

We can cut fossil fuel use by reducing the amount of energy necessary to do things – by improving energy efficiency. Estimates of the expected savings from energy efficiency rely on detailed ex ante calculations, which typically predict massive savings. Yet reality has been far different, with the energy saving activities we observe far lower than expected. This disparity between the levels of investment in energy efficiency that appears to be cost effective based on ex-ante predictions and the levels actually observed is known as the energy efficiency "gap."

This gap matters. Encouraging investments in cost-effective energy efficiency improvements is a politically acceptable way to mitigate global climate change and reduce dependence on foreign fuel. Despite the amount of money spent on energy efficiency programs, the true size of the efficiency gap is the subject of intense debate (See, e.g., Allcott and Greenstone, 2012). Are consumers and businesses bypassing profitable opportunities to reduce their energy consumption? Are current energy efficiency programs in the U.S. providing the biggest bang per energy efficiency buck?

In summary, we depend on energy efficiency to:

E2e is a joint initiative of University of California – Berkeley, the Massachusetts Institute of Technology, and the University of Chicago: three recognized leaders in energy research. We are a group of economists, engineers, and behavioral scientists focused on understanding the energy efficiency gap.

We rely on randomized experiments and other state-of-the-art evaluation strategies to measure and enhance the impact of energy efficiency initiatives. We seek to understand the difference between what is technically possible and what is practically achievable for energy efficiency in a wide variety of settings. Uniting the goal of creation of knowledge with a commitment to non-partisan outreach, E2e aims to create a cheaper and greener future.

We conduct and catalyze energy efficiency research to expand the frontiers of knowledge.

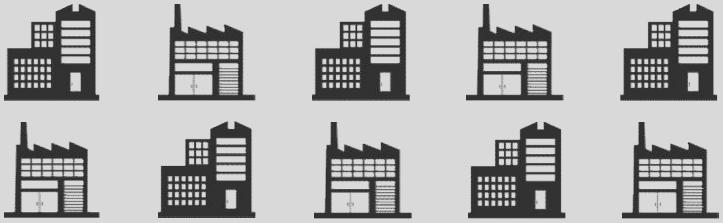
We build a community of world-class researchers and professionals focused on solving the energy efficiency gap.

We educate policy and business leaders on evidence-based energy efficiency evaluations.

# Proven track record across industries

- EnerNOC is helping companies and organizations across many industries where energy intelligence software is valued

**4,400 EIS customers globally** rely on EnerNOC to achieve energy savings across all three enterprise cost drivers



**More than 71,800 buildings** across multiple industries are already using EnerNOC's energy intelligence software and services

## Trusted by the largest companies in the world.

AEW · CBRE CB Richard Ellis · Equity Office · Glenborough · FSP Franklin Street Properties · Hines · Kimberly-Clark · PepsiCo · Staples · Koch Foods America's Chicken Specialist · American Red Cross · Adena Health System · Shriners Hospitals for Children · The George Washington University Hospital · Alexian Brothers Health System · Frederick Memorial Hospital · Coca-Cola · Comcast · United States Postal Service · Fujifilm Value from Innovation · Russell Stover Candies · Del Monte · Domino's · Smucker's · Kendall-Jackson · Blommer Chocolate · 3M · Boss Hugo Boss · Honeywell · Colgate-Palmolive · Harte Hanks · ITW Illinois Tool Works Inc. · Northrop Grumman · Philips · Thermo Scientific · Newell Rubbermaid · ConocoPhillips · CKF