

Unlocking the Power of Measurement for Continuous Insights

Tim Guiterman
IEPEC 2015

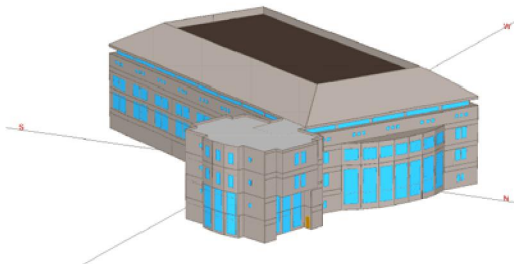
A Bit About Me



SERA Inc.

Skumatz Economic Research Associates

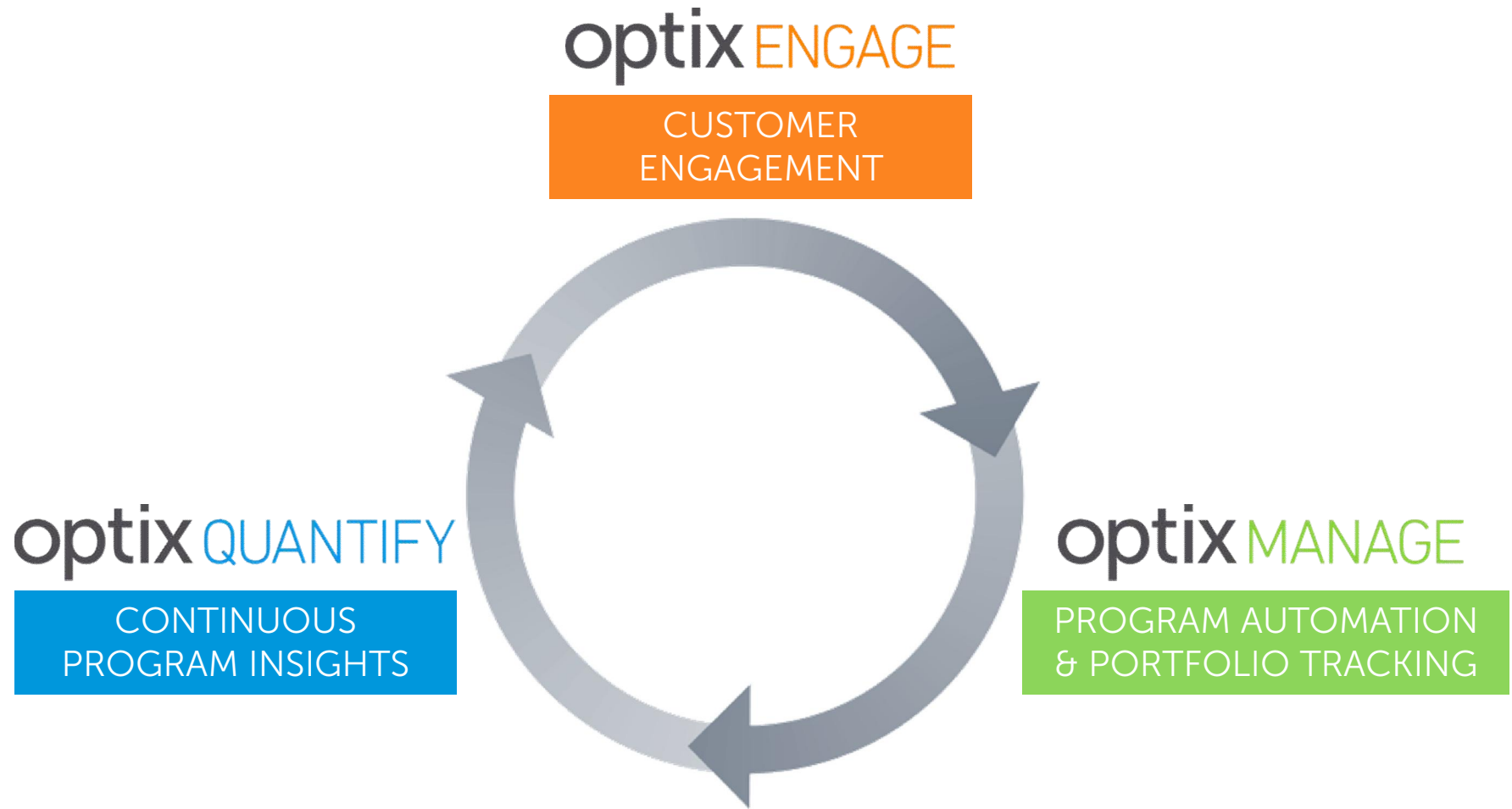
**Analysis of Measurement and
Verification Methods for Energy
Retrofits Applied to Residential
Buildings**



NAVIGANT

ENERGYSAVVY

What We Do



Challenges in Measuring EE



Data Lag

Slows utilities, implementers, and regulators



After the Fact

Backwards looking analysis doesn't allow for optimization



Effort-Intensive and Paper-based

EM&V costs can consume 3-5% of program budgets



Contentious

Lack of transparency and consistency across jurisdictions

What We Hear

I'd like to do more value-add evaluation, but we just don't have the time or the budget

T&D says DSM isn't a real resource

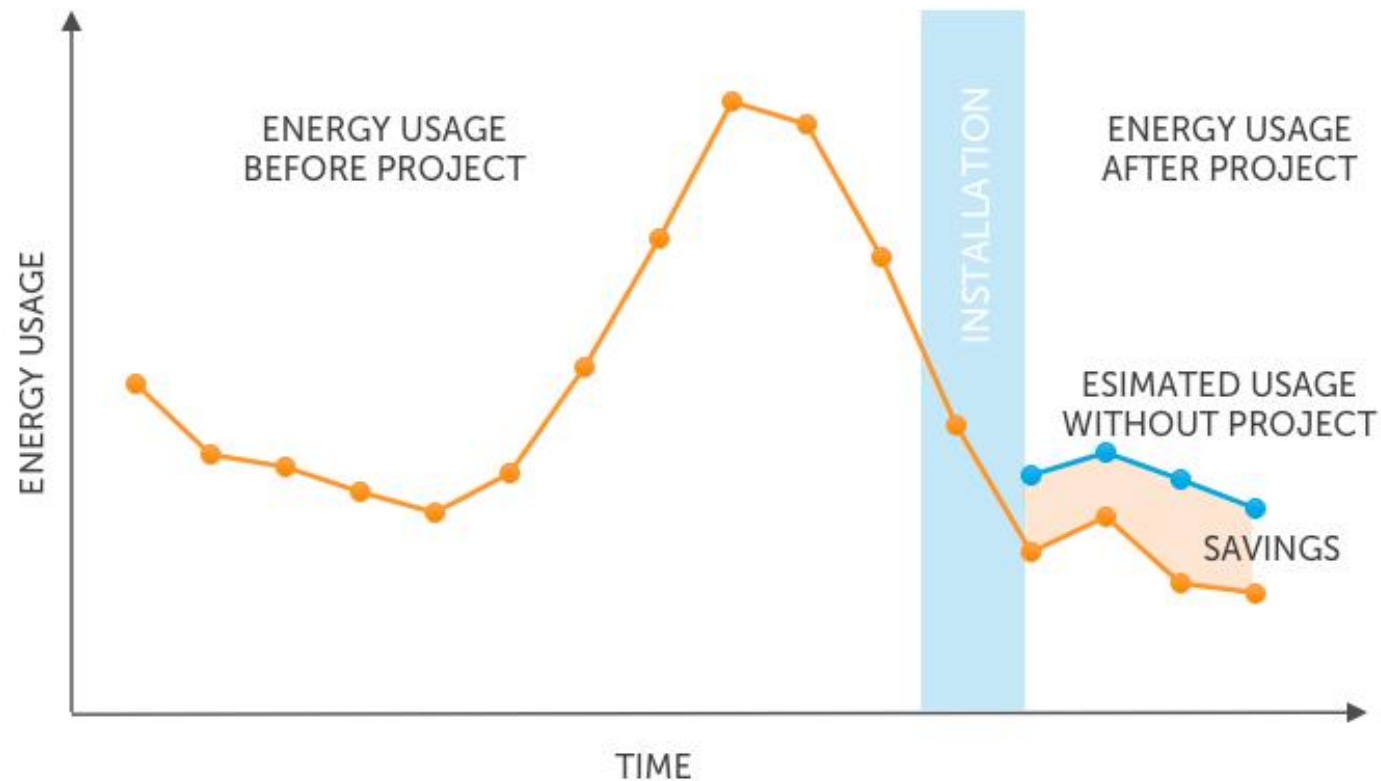
I'd like to have information I can use to improve the program during the year to adjust the program in order to improve results before it's too late

We'd like to do a pilot or add new measures, but it takes a really long time to figure out whether or not these changes work

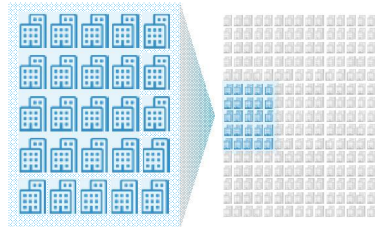
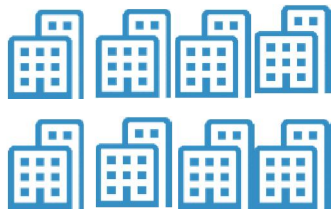
I'd like confirmation that our deemed savings are, or are not, reasonably estimating the savings for the measures in my program

Optix Quantify: How it works

Billing analysis for all projects in a program, in an on-going manner, with comparison groups



Optix Quantify: How it works



Weather-normalized models built for each participant

Models applied to comparison group to correct for bias and determine confidence interval

All projects automatically analyzed with each new addition of data

Analysis of factors driving overall program performance (e.g., measures, location, contractors)

Our Vision



Metered Savings



Assess real-world impact of programs



Census Approach



Measure every project instead of sampling



Actionable Insights



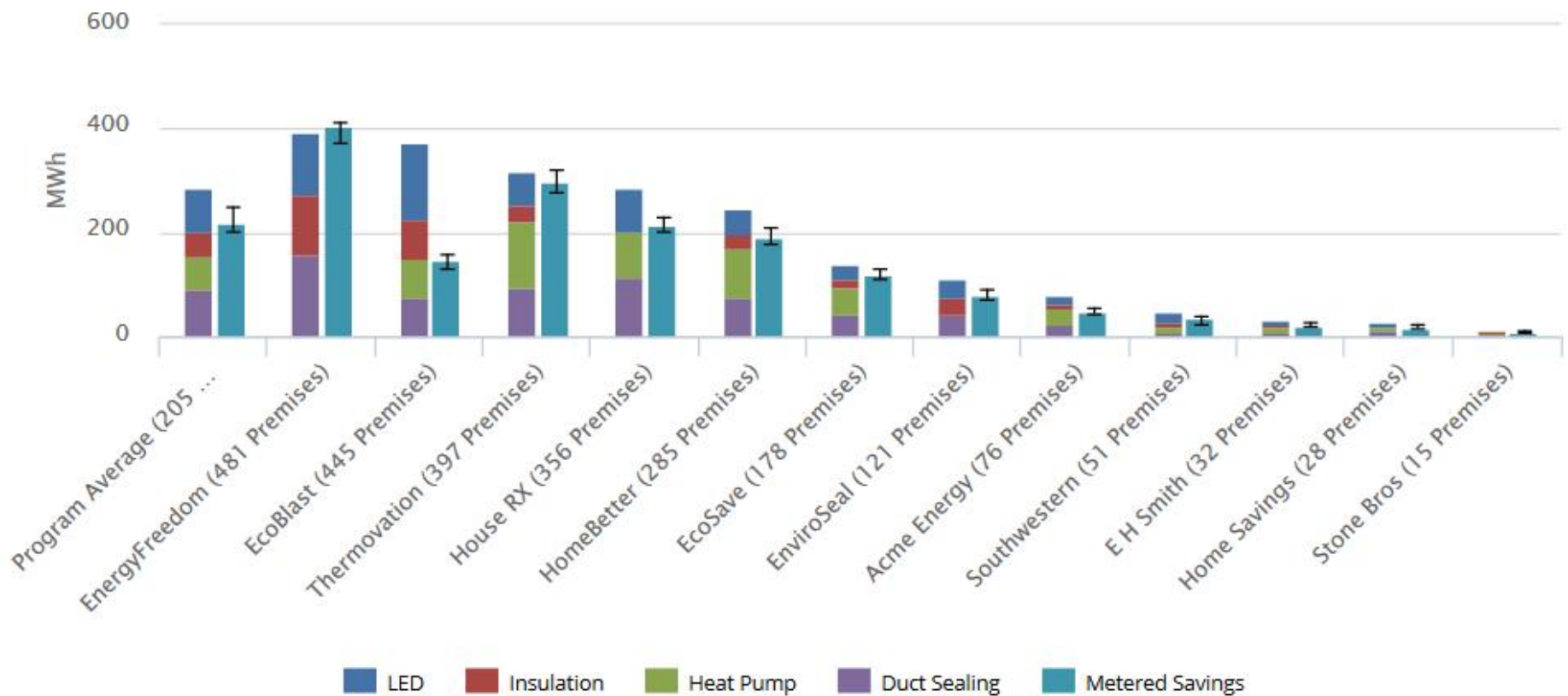
Data analytics from the grid edge

Continuous
monitoring

Continuous program
improvement

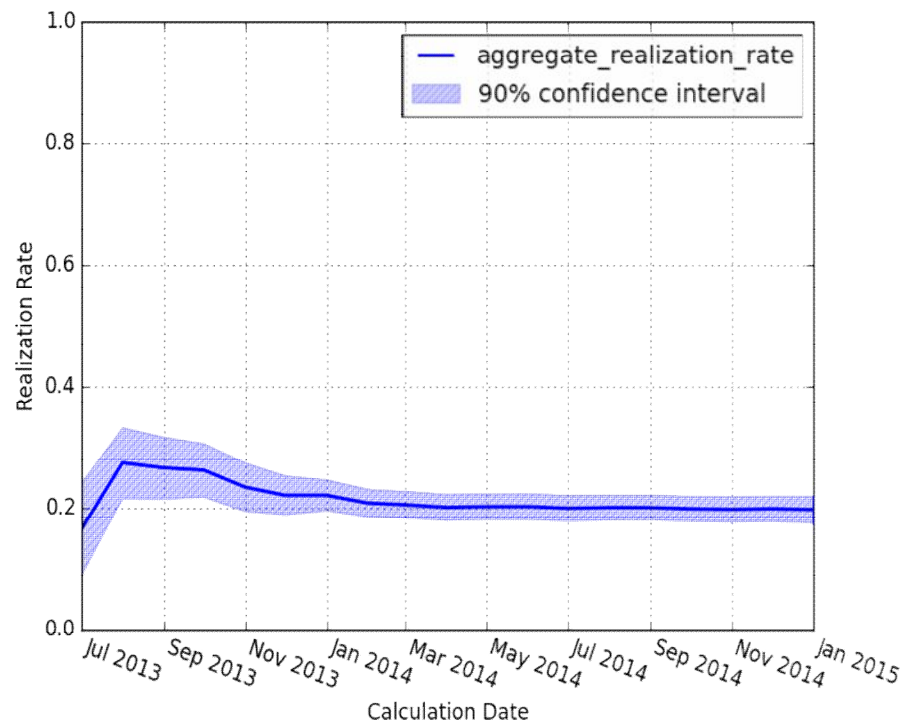
Performance Metrics

Savings by Contractors

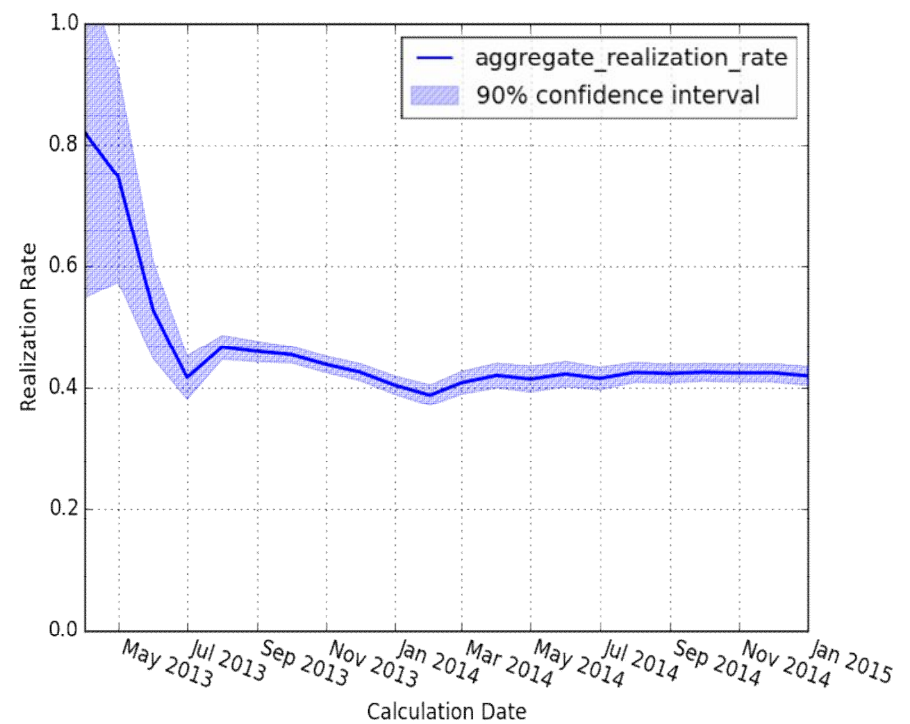


Granular Insights

Heat Pumps
Replacing Electric Furnace

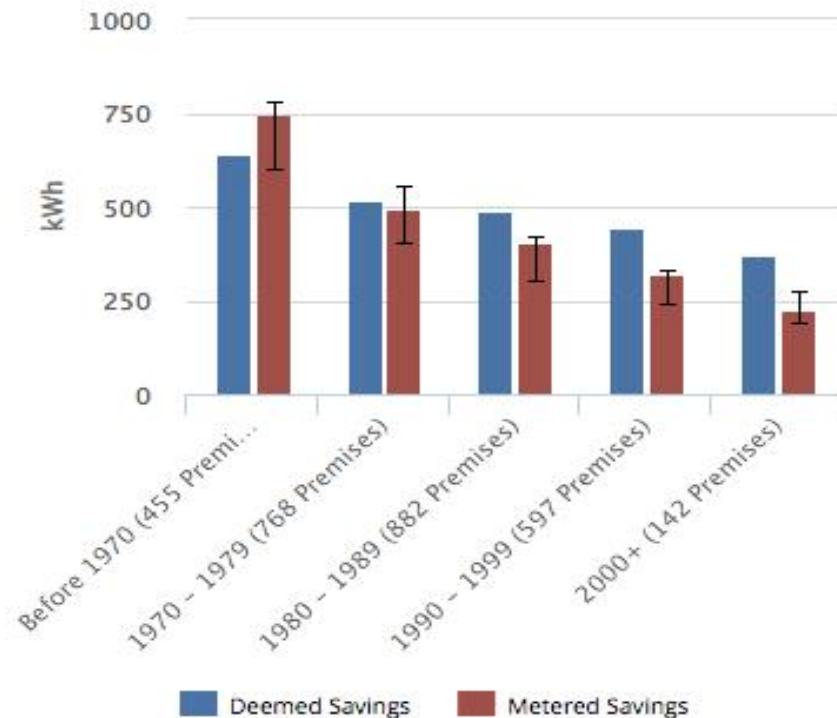


Heat Pumps Not Replacing Electric
Furnace

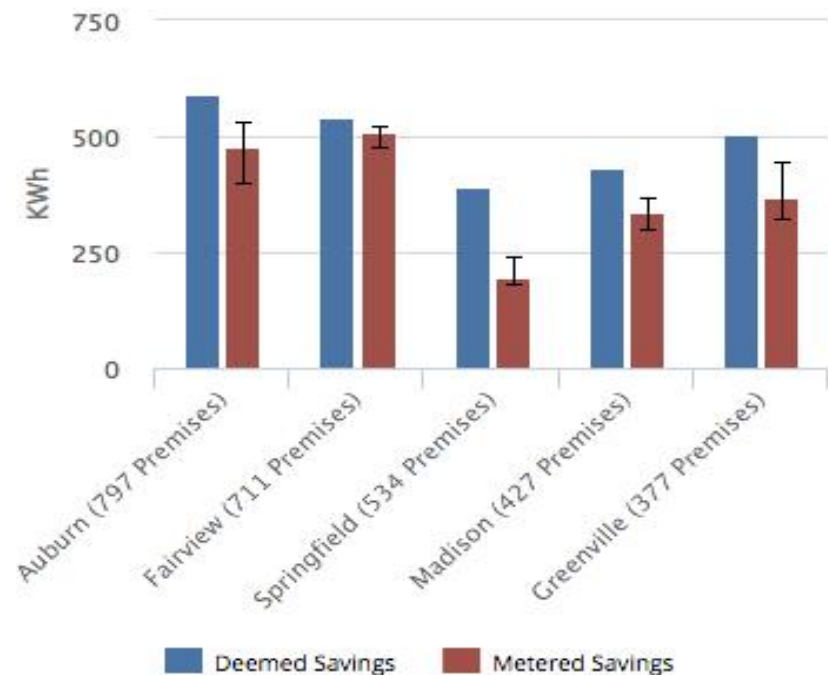


Performance Metrics

Savings per Premise by Year Built



Savings per Premise by Weather Station



Whole Home

Dashboard

Savings

Explore



Program To Date

⚡ PROGRAM SAVINGS

Metered Savings
2064 MWh \pm 270
Deemed Savings
2457 MWh

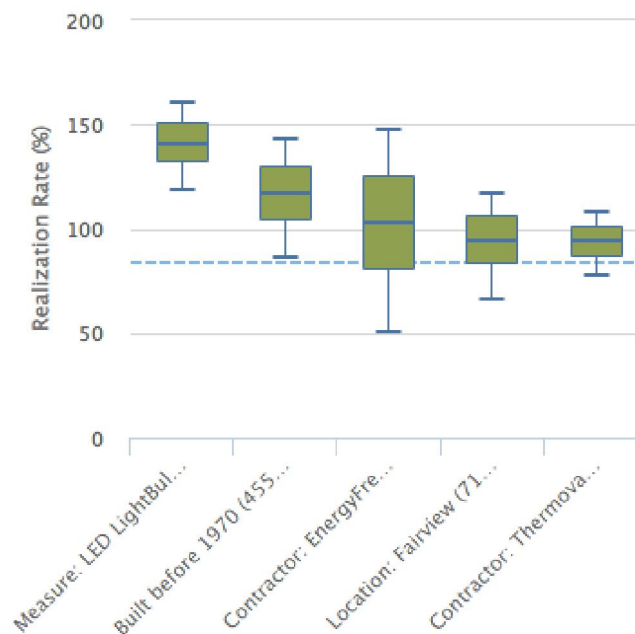
📈 REALIZATION RATE

84% \pm 11%

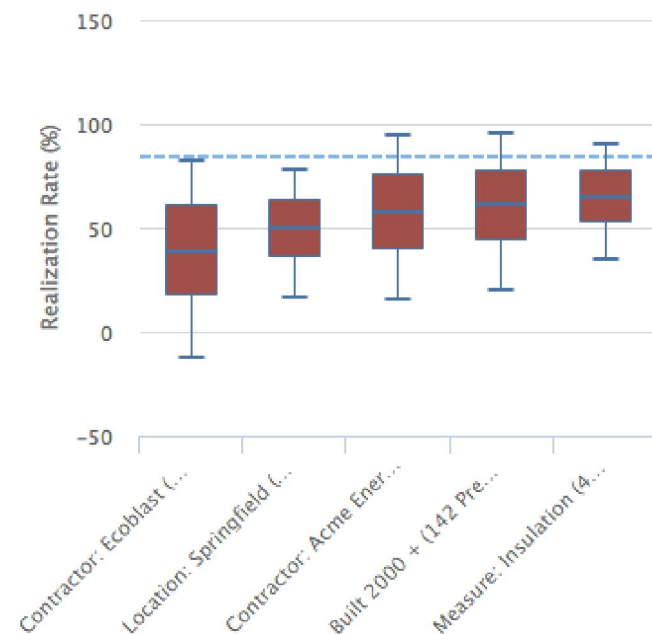
⚡ PER-PREMISE SAVINGS

Metered Savings
725 kWh \pm 95
Deemed Savings
864 kWh

Top Factors of Increased Savings



Top Factors of Decreased Savings



Whole Home

Dashboard

Savings

Explore



Program To Date

⚡ METERED SAVINGS

2,064 MWh \pm 270

84% Realization \pm 11%

✓ 876,373 PREMISES ANALYZED

✓ PROGRAM PROGRESS

2,845 Projects



\$801,270 Spent



💰 COST EFFECTIVENESS

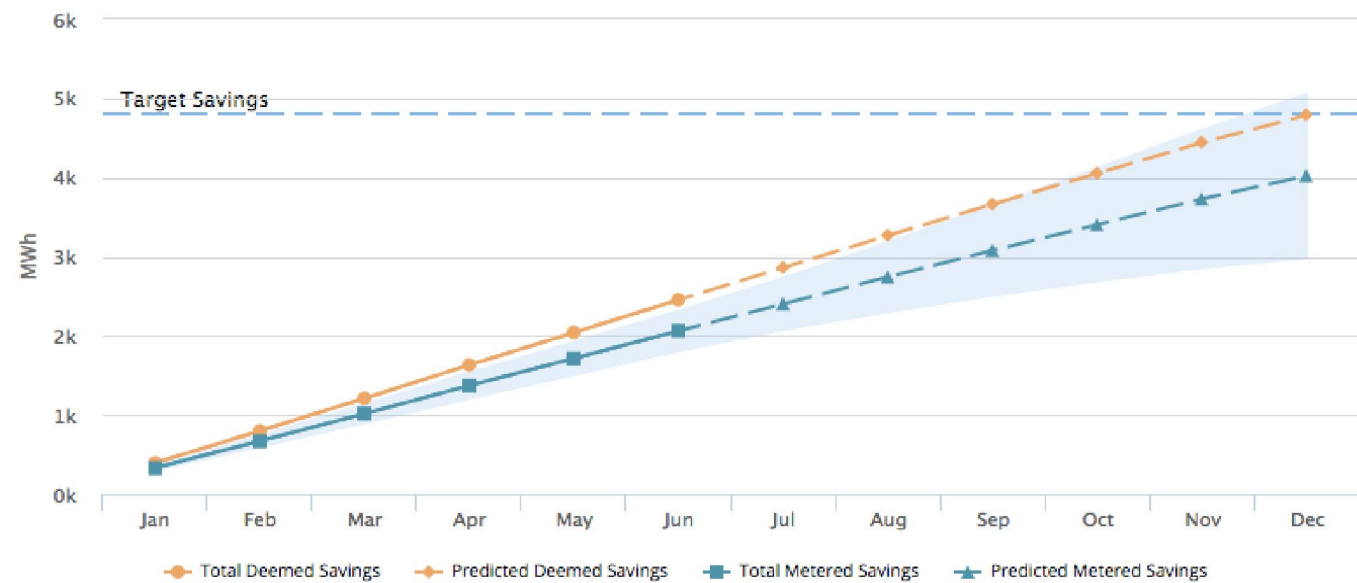
TRC 1.01

3.8¢/kWh

Avg Savings: 724kWh \pm 95

Avg Project Cost: \$1,254

Program Savings



How does this relate to EM&V?

On one hand, evaluation serves a regulatory function to ensure that programs are meeting statutory requirements. On the other hand, utilities and program administrators would like to use evaluation to inform continuous program improvement. Program managers are clamoring for evaluation to serve a developmental function and help programs improve.

– Brown, Brandy. [*Evolution of EM&V: Moving Towards a Systems Design*](#).
2014 ACEEE Summer Study.

On “Replacing” EM&V

New software-based methods won't replace EM&V work any more than QuickBooks replaced third-party audit firms.

-EnergySavvy blog, June 2015

...to the extent the new generation of data management and analytics firms can show they have a better mousetrap, Commissions will push for integrating them more fully into EM&V programs...

-Response to June 2015 GreenTech Media article

What's Next

- California
 - Rolling portfolio
 - EE → Grid Operations
- Clean Power Plan
 - Calculate performance relative to climate change
 - Moving towards valuing EE in market
- 2017 IEPEC Challenge!
 - Re-convene
 - Case studies

...guiding principle will be to have EM&V inform portfolio adjustments on a timely and transparent basis.

...shifting evaluation to a more frequent process.

OIR on Rolling Portfolio, R-13-11-005, p. 15

Thank you!

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