Modern Measurement for Energy Efficiency

Data-Powered Solutions for Utility Programs

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Prepared for the Illinois Stakeholder Advisory Group

SAG Proposal: Program Change

Savings Measurement Software to support program operations

- Use commercially available technology to improve operations of existing programs & measures within programs, e.g.,
    - Home Performance programs
    - Smart Thermostat measure / HVAC programs
    - Small/medium business programs

- Through usage data analysis, gain insights that otherwise remain hidden

- Requires no installation of equipment

Agenda

1	EnergySavvy Overview
2	Savings Measurement Software
3	Optix Quantify Demo
4	Applications and Next Steps

EnergySavvy Overview

Data-driven cloud solutions for utility DSM

optix ENGAGE

CUSTOMER ENGAGEMENT

optix MANAGE

PROGRAM AUTOMATION & PORTFOLIO TRACKING

optix QUANTIFY

MEASURE IMPACT AT THE METER

Savings Measurement Software

EnergySavvy Presentations

Savings Measurement Software at industry conferences

Modern Measurement Gaining Attention

Two leading EE organizations announced papers TOMORROW

ACEEE — American Council for an Energy-Efficient Economy

How Information and Communications Technologies Will Change the Evaluation, Measurement, and Verification of Energy Efficiency Programs
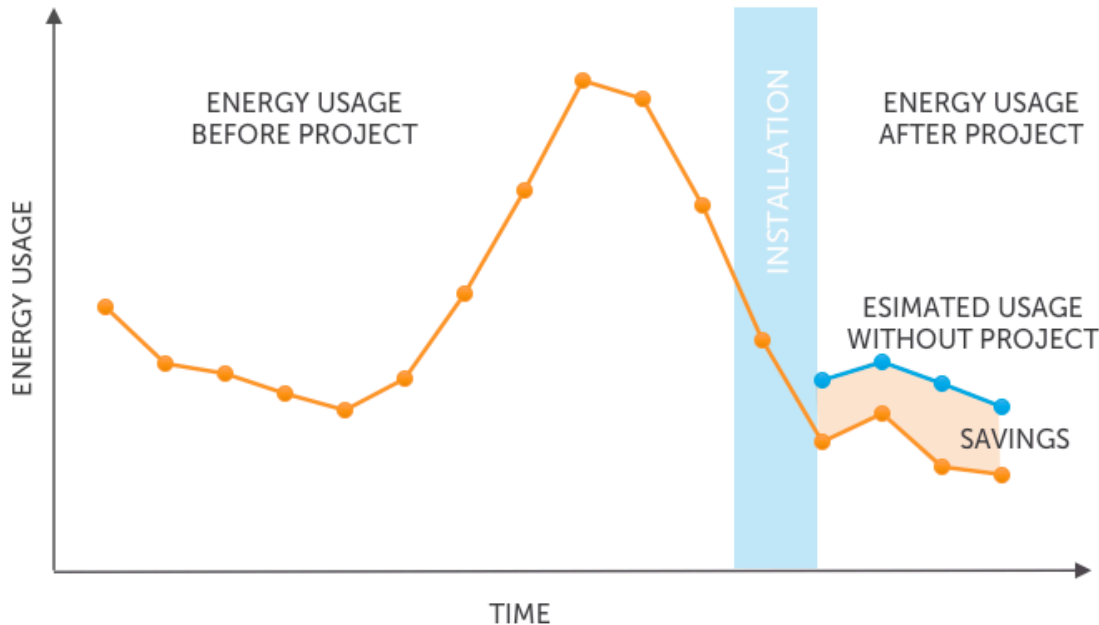
neep — REGIONAL EVALUATION, MEASUREMENT & VERIFICATION FORUM

The Changing EM&V Paradigm, A Review of Key Trends and New Industry Developments, and Their Implications on Current and Future EM&V Practices

Savings Measurement Software

Continuous and automated measurement, for all projects

Utilizes accepted M&V protocols

Key outcomes

- More timely insight
- More granular insight
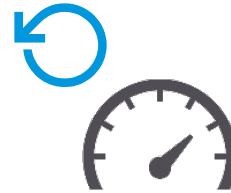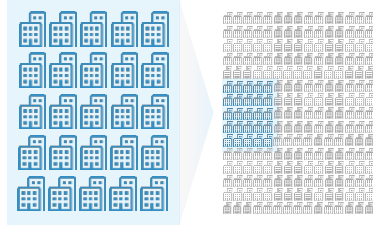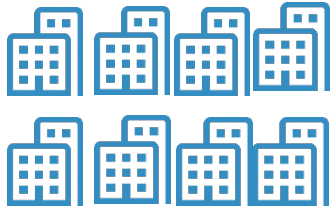- Complements traditional evaluation

What it is not

- Replacement for formal EM&V
- Right solution for all program types

How It Works
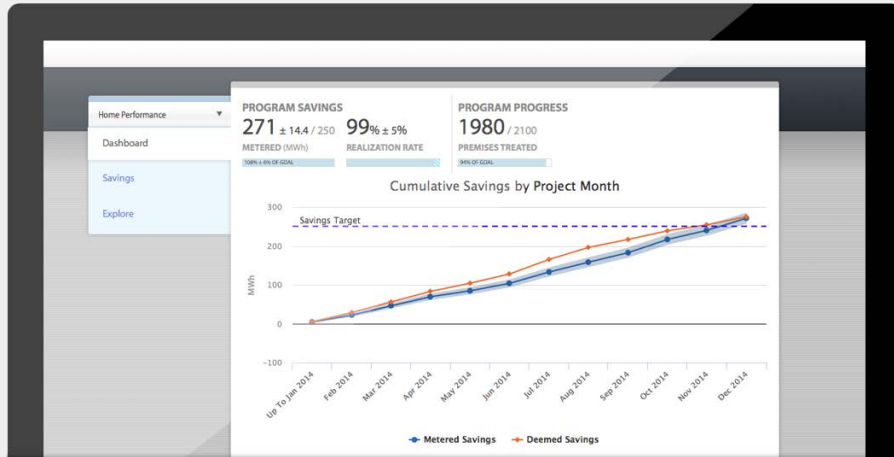
Repeatable, transparent results

Build weather-normalized models for each customer

Compare changes in usage for treated customers vs. overall population

Repeat analysis for all customers with each new addition of data

Power Quantify solutions based on changes in customer energy usage

Optix Quantify

Key Features

» Faster results

⊕ "X-ray vision across a program"

▯▯ Program optimization

🔓 A host of data-powered solutions

Use Cases

- Rank contractors based on actual savings results
- Identify top factors bringing up and down results
- Target QA/QC to outlier projects, not random
- Provide customer feedback on upgrade performance
- Analyze data to inform measurement process

Sample clients

Optix Quantify Demo

Optix Quantify Product Snapshot

Experienced data analytics

Data Analyzed

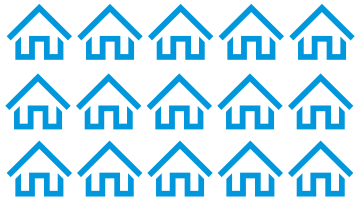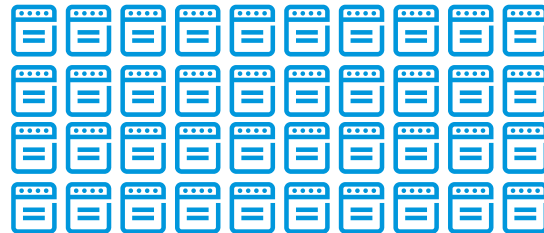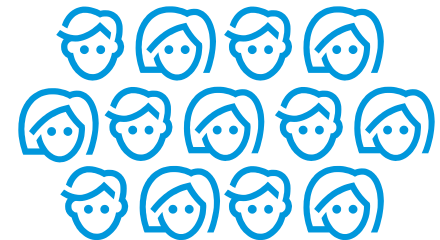|			
1+	**2.8**	**48**	**1**
Billion calculations	Million customers	Million usage data points	Million weather data points

Results From

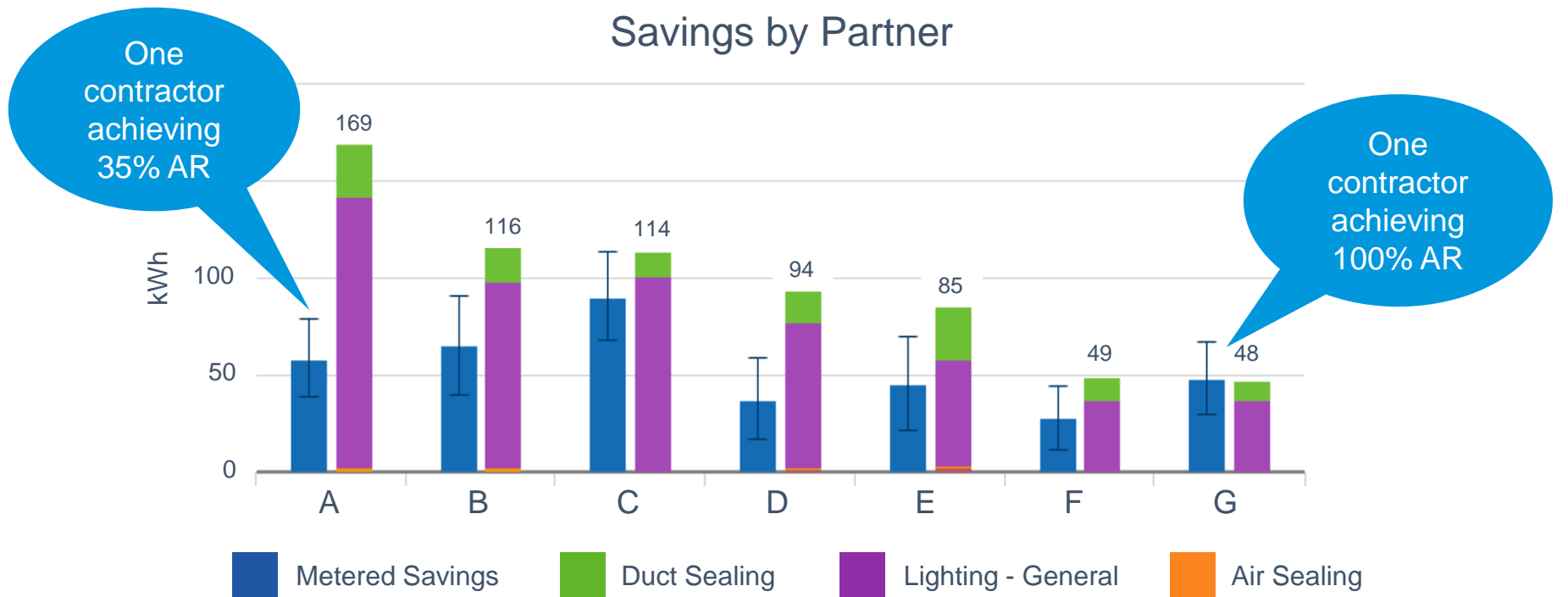40,000 projects   105,000 measures   550 contractors
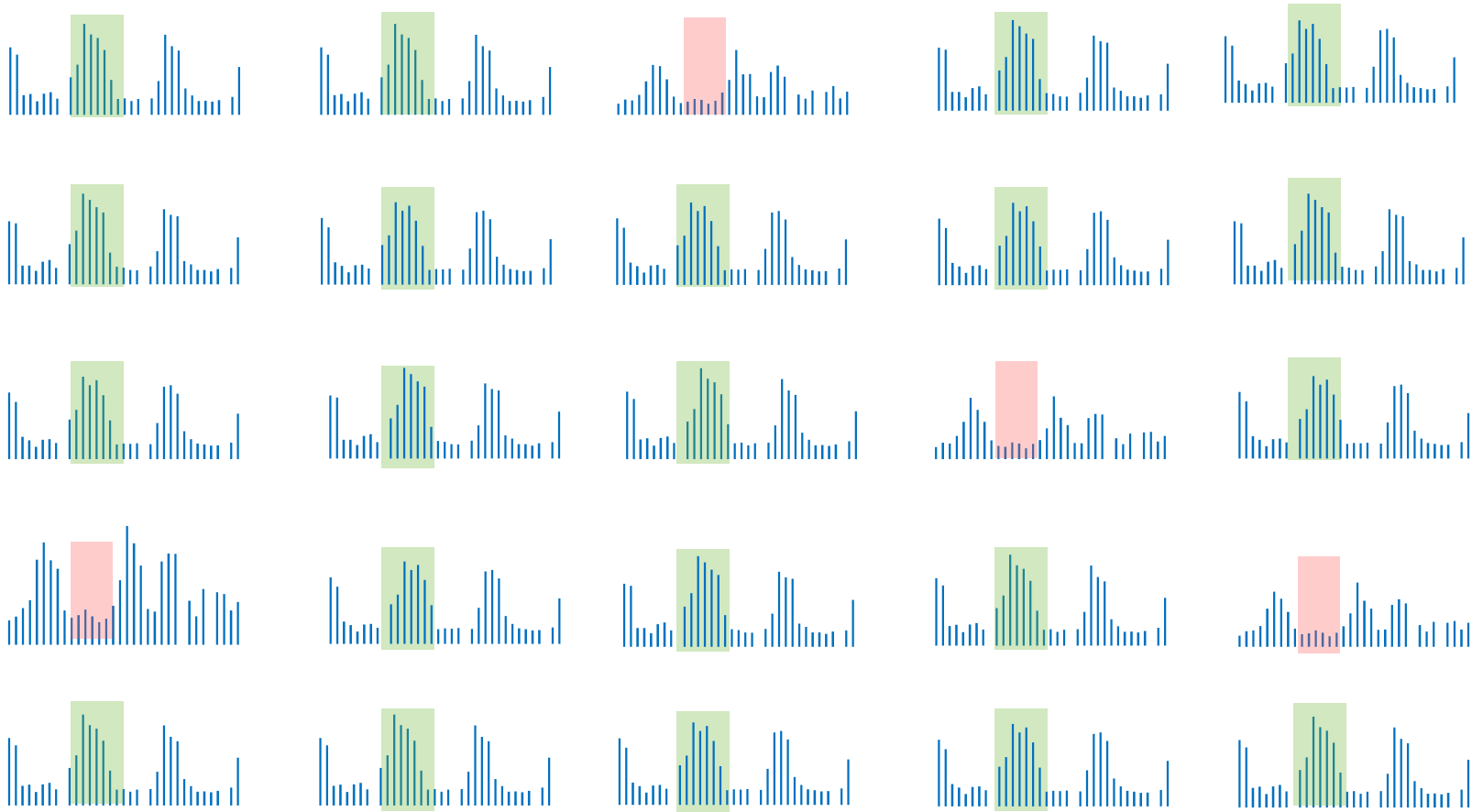
Real World Applications

Contractor Performance and Feedback

Comparing savings at the meter to expected savings reveals good, bad and ugly
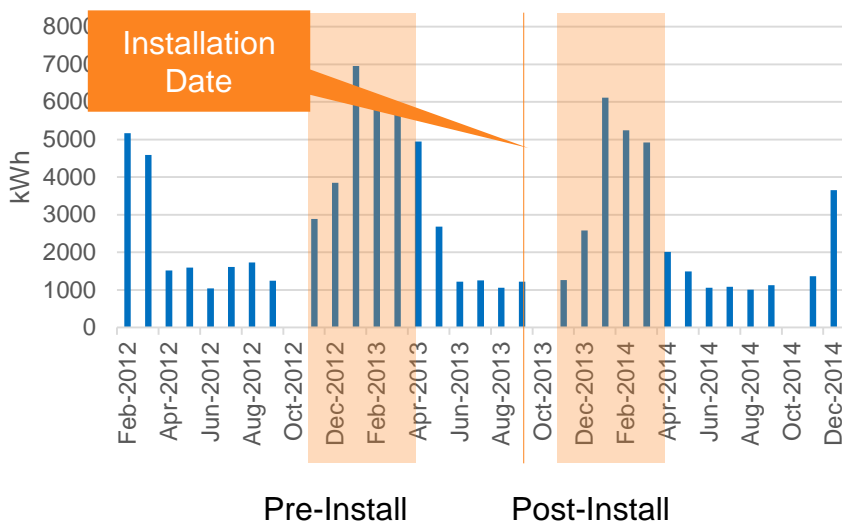
Intelligent QA/QC Targeting

Case Study: 13% of furnace replacements weren't replacing anything

Intelligent QA/QC Targeting

Slipped through 3 levels of QA/QC before being identified by Quantify

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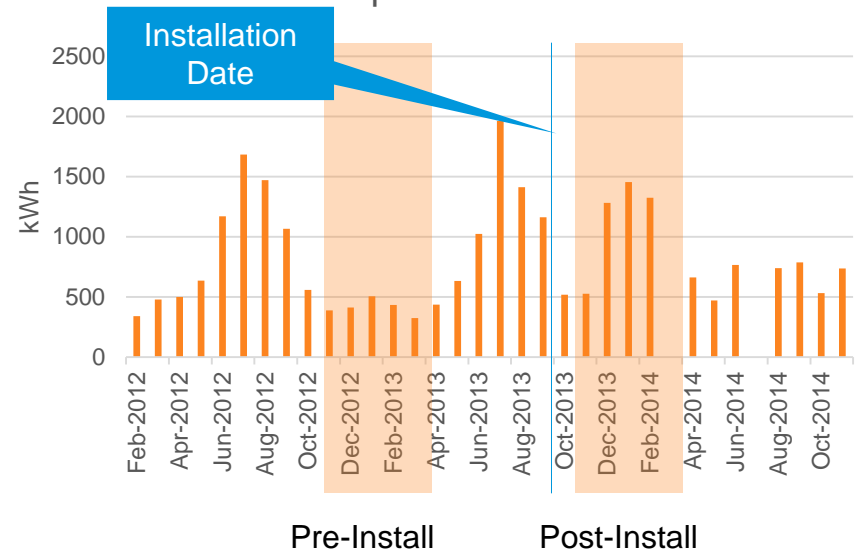
Targeted Marketing

Case Study: Identify future program candidates based on performance of others

Savings per Premise by Typical Annual Usage

Realization Rate by Cooling Load

Savings per Premise by Weather Station

Candidates for High Savings
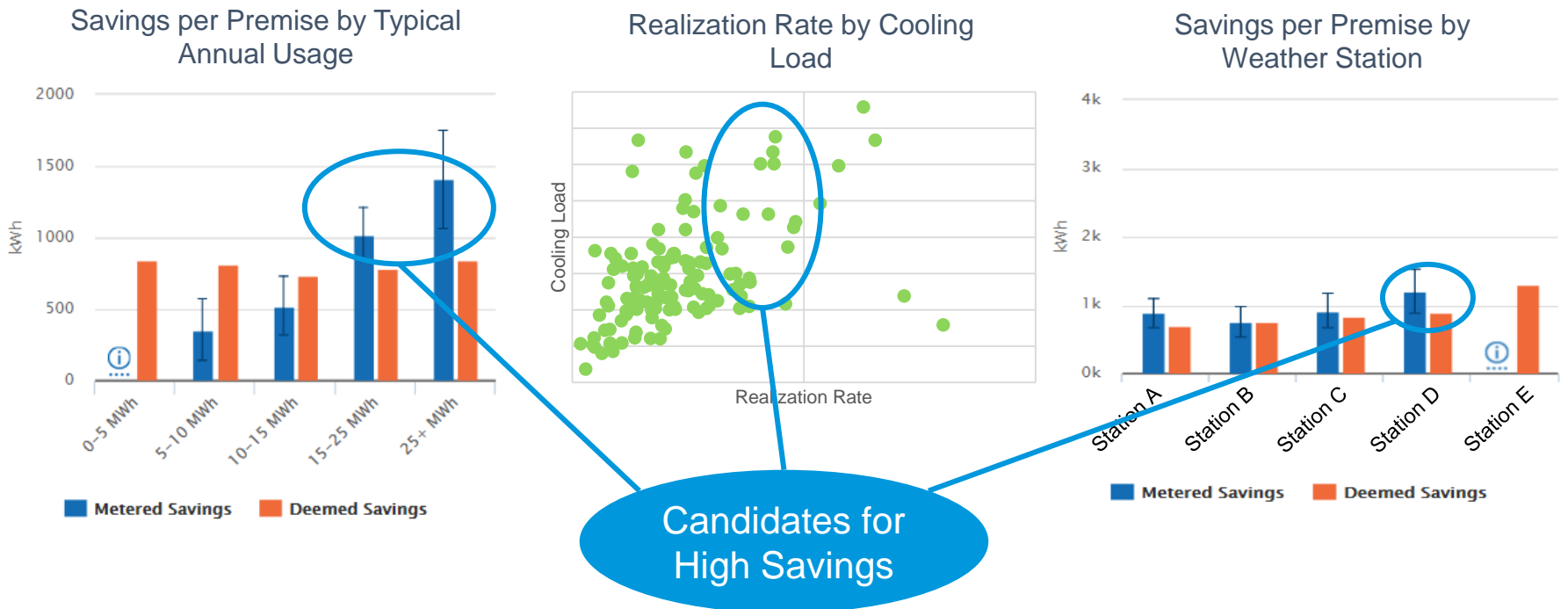
Integrated Evaluation Support

Supports targeted research and sampling
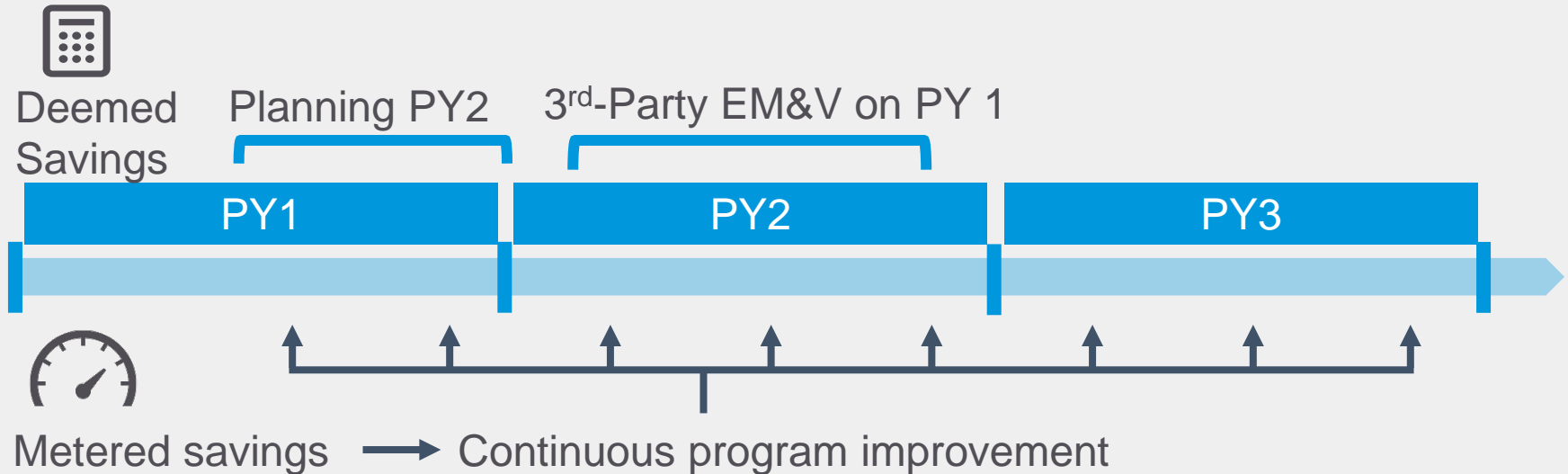
TRM Update Support

Collecting evidence to calibrate deemed savings

FILTERED TO

744 / 1110

MATCHING PREMISES

67% OF PROGRAM

PER-PREMISE SAVINGS

632 ± 163

METERED (kWh)

PROGRAM WIDE: 898 ± 122

256

DEEMED (kWh)

PROGRAM WIDE: 792

247 % ± 64%

REALIZATION RATE

PROGRAM WIDE: 113% ± 15%

Dashboard

Savings

Explore

Refine by…   Reset

Measure Mix   —

Premises by Weather Station

Premises by Local Annual Usage

Uncover Measure-Level Trends

☑ Measure   744

Filter to Specific Measure

Continuous Feedback Enables Continuous Improvement

What critical program insights can I discover in time to take action?

Monitor 100% of premises (treated and untreated) in real time
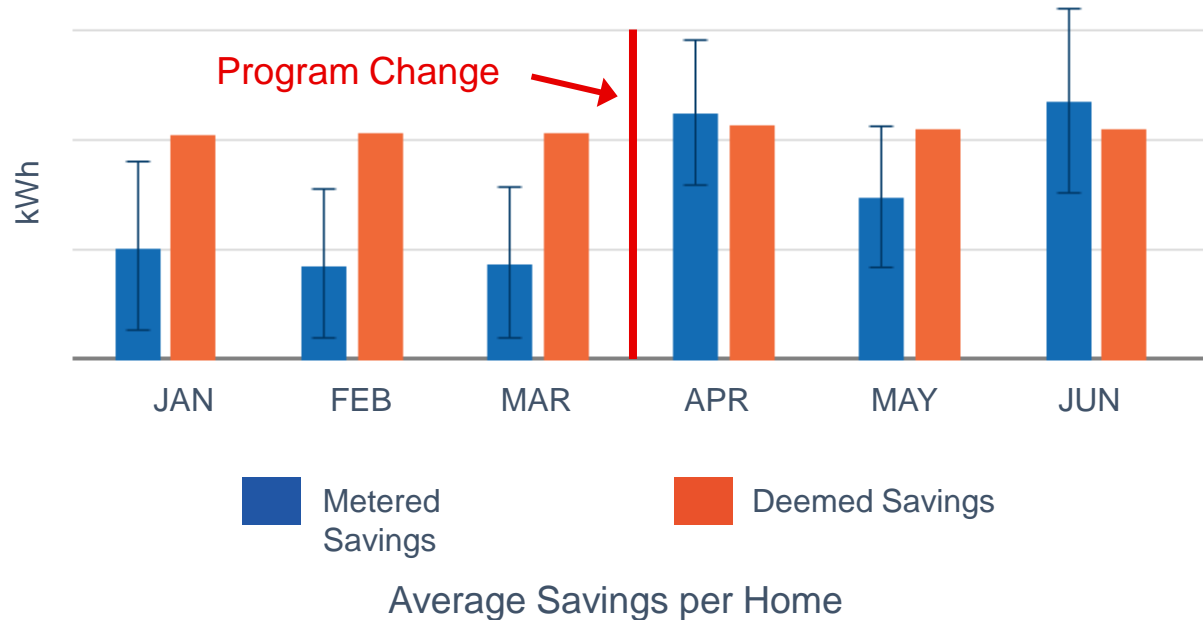
Timeliness of data makes it actionable

Quick feedback loop means lots of chances to iterate

Projects completed Jan – Mar:
44%
of deemed savings achieved

Projects completed Apr – Jun:
89%
of deemed savings achieved

Program Change

kWh

JAN   FEB   MAR   APR   MAY   JUN

Metered Savings   Deemed Savings

Average Savings per Home

Pay for Performance

Creating a market for energy efficiency savings, reliably

Procure EE "PPA" & Enable a Market

Bid out to meet savings targets

Define specifics or leave aggregators to innovate

Aggregators or implementers take risks, earn economic rewards

Measure delivery for reliability

Quantify ensures customers' get promised savings

Timely and trustworthy measurements make payout quick & reliable

Granular monitoring or all interventions ensures the utility retains control

Learn and grow

Track what works and what doesn't

Identify good and bad interventions and evolve offerings

Provide information to aggregators to improve delivery and build market

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For Discussion: Application in Illinois

Quantify as a savings measurement software tool to optimize programs

- Improve program performance for Home Performance, analyze Smart Thermostats, and improve Small and Midsize Business programs

  - ✓ Reduce QA/QC costs
  - ✓ Improve marketing effectiveness and targeting
  - ✓ Enhance measurement with meter data
  - ✓ Improve contractor performance
  - ✓ Deliver project feedback to customers

- Make use of AMI data

- More quickly review new measures/pilots – keep up with new tech

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Thank You

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