

# M&V 2.0 & Program Optimization: Emerging Data Analytics Technologies

**Residential Case Studies:  
PSE&G Long Island &  
APS**

Presented to :



# Continuous Measurement...



Analytic tools and services that provide automated, ongoing analysis of energy consumption data.

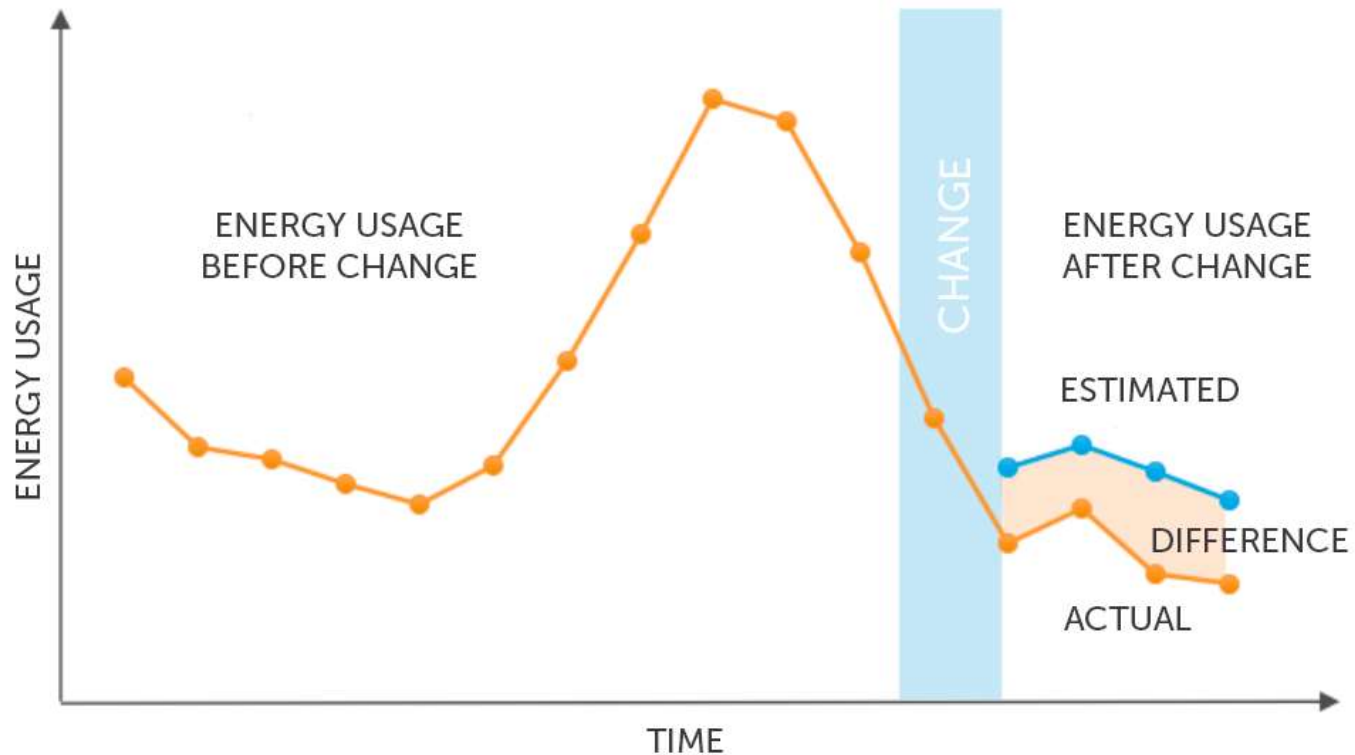
NEEP, Regional Evaluation, Measurement & Verification Forum

Floating Names

M&V 2.0

Program Optimization

# How Does Continuous Measurement Work?



# Continuous Measurement: FAQ's

## AMI or Interval data?

- 2.0 applications are meter agnostic and work with interval, monthly or bi-monthly meter data

## 10% of savings?

- A billing analysis with a Continuous Measurement approach can estimate savings down to 2-3%

## Black box?

- EnergySavvy provides a written methodology to clients, evaluators and regulators. Same as done by traditional evaluators.

## Replacing evaluation?

- M&V 2.0 tools enhance and support formal third party evaluation. They are not intended as a replacement.

# Continuous Measurement Research

Two leading EE organizations published reports in December 2015

Estimated savings reductions from automated consumption data analysis can provide rapid feedback to programs whether or not this analysis is used as the final evaluated savings. Such rapid feedback is useful whether it is provided as part of program delivery or as part of evaluation.



REGIONAL EVALUATION,  
MEASUREMENT & VERIFICATION FORUM

As measures and projects are implemented, [M&V 2.0] techniques enable implementers to monitor energy savings as it happens (or does not) and make adjustments to maximize program success.



# States Taking the Lead on M&V 2.0 & PO

NY	<p>May 2016: REV Track 2 Order states that earnings adjustments related to net savings are “tied to advances in EM&amp;V that utilize direct customer information.”</p> <p>Nov 2016: New NY Evaluation Guidance adds section “encouraging” Advanced M&amp;V tools</p>
CA	<p>Oct 2015: Rolling Portfolio Order calls for utilities to plan for “data collection strategies embedded in the program” and “internal performance analysis during deployment.”</p> <p>Aug 2016: Rules on EM&amp;V based on “normalized metered energy consumption” finalized by the CPUC</p>
CT	<p>Dec 2015: Department directs \$1 million of annual EM&amp;V budget to “direct measurement and verification” via three year Conservation and Load Management plan</p> <p>Aug 2016: State receives DOE SEP grant for EM&amp;V 2.0 pilots starting in 2017.</p>
NM	<p>Aug 2016: Statewide RFP for EM&amp;V services include optional scope for “M&amp;V 2.0” solutions</p>
MO	<p>Late 2016: Writing report on how EM&amp;V 2.0 can support deemed savings updates for statewide TRM</p>

# M&V 2.0 Case Study: PSE&G Long Island

Does it work?

Is it accurate?

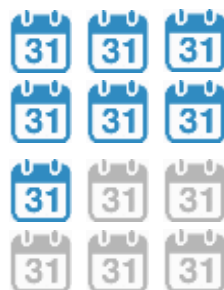
How long does it take?

Can M&V 2.0 match the existing results in less time w/ bimonthly data?



1,100 Homes in  
HPD program

Reproduce evaluation  
results with **M&V 2.0**



Reliable estimate of  
performance 7 months  
into program



**6%**  
margin of error



# Program Optimization Case Study: Arizona Public Service

What benefits does this provide to the program?



# Case Study: Arizona Public Service



## Challenge

Managing a large network of contractors

## Solution

Monitor performance of individual contractors



60+  
independent  
contractors



Continuous monitoring of  
programs and contractor  
performance

# aps Case Study: Contractor Scorecard



## Challenge

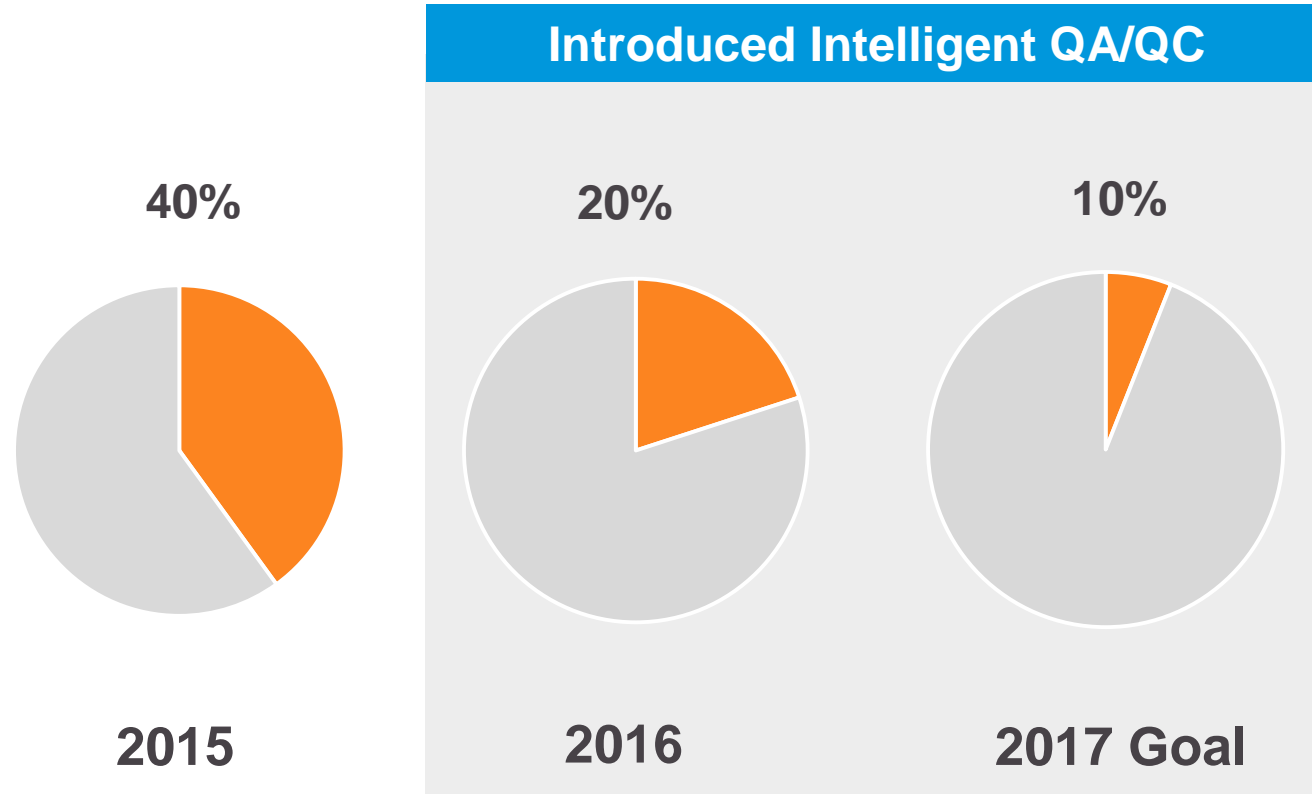
Contractors are unaware of their project performance

## Solution

Issue scorecards to contractors to communicate performance of projects



# Case Study: Attic Inspections



**Challenge**  
Reduce costs and intrusiveness of QA/QC process

**Solution**  
Use intelligent monitoring to reduce and target # of QA/QC inspections

**APS shifted approximately 25% of the overall inspection budget to directly improve the program.**

*\*All percentages are the percent of total annual projects (assumes 2,000 projects/year)*

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# Where doesn't M&V 2.0 fit?

M&V 2.0 is not the best approach for all applications

- ❖ Artificial baselines require ex-post engineering adjustments to M&V 2.0 impact analysis
- ❖ M&V 2.0 cannot assess free ridership or spillover
- ❖ Not appropriate for certain program types (e.g. industrial projects)
- ❖ Not designed for market studies or assessing penetration levels for certain technologies

# What can M&V 2.0 do?

## Capabilities offered by M&V 2.0 tools

- ❖ Updating deemed savings with local data and analysis
- ❖ Assessing persistence with continuous measurement
- ❖ Providing a billing analysis for ex-post M&V for certain programs
- ❖ Measuring "net" savings for certain programs\*
- ❖ Providing process improvement data to program administrators
- ❖ Faster feedback for estimating savings from pilots or emerging technologies (e.g. smart thermostats)
- ❖ Can provide independent analysis to evaluator and program administrator

\*SEEACTION Impact Evaluation Guide, Large-scale consumption data analysis approaches. pg 5-4, 5-5