

EXPANDING US EVALUATION MANDATES



2015 ECEEE Summer Study

Gary Epstein

ERS

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US ENERGY EFFICIENCY PROGRAM SCENARIO



❑ US Program Scenario

- Key Point: Programs Are Not Driven by Federal Government
- State Based But Considerable State-to-State Variation
- System Benefit Utility Rate Charges Fund Programs

❑ Increasing Drivers for Energy Efficiency

- Growing Regulatory Mandates for Energy Efficiency and DM
- More Challenging Targets for EE

❑ Key Concerns and Questions

- Are Planned and Estimated Savings Being Achieved?
 - Difficulties in Accurate Project Savings Estimation
- Addressing Biases of Program Managers, Vendors, ESCOs
- Are Programs and Projects Effective?
- Can Appropriate Evaluations Help Answer These Questions?

CHARACTERISTICS OF US PROGRAM EVALUATION



- ❑ Mature US Energy Program Evaluation Practice
 - Numerous Dedicated Energy Program Evaluation Firms
- ❑ Regulatory Mandates for Evaluation
 - 3rd Party or Independent – Not by Project Implementers
- ❑ Traditionally, Has Been Strictly Post-Installation
- ❑ Types of Energy Program Evaluation
 - Impact Evaluation and M&V – Determination of Achieved Savings
 - Process Evaluation – Procedural Effectiveness of Programs
 - Market Characteristics and Effects



KEY STANDARD EVALUATION PROTOCOLS



- ❑ There are many evaluation manuals and protocol documents that have guided the US industry for years:
 - International Performance Measurement & Verification Protocol (IPMVP) (Note that Volume 1 of this seminal document has been produced in fourteen languages.)
 - California Energy Efficiency Evaluation Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals
 - The California Evaluation Framework
 - DOE NREL Uniform Methods Project (Department of Energy National Renewable Energy Laboratory)
 - Many more....

EU EVALUATION CONSIDERATIONS



- ❑ Considerable Member State Variation
 - Emerging Programs have or will have different evaluation and M&V requirements
- ❑ Projects and Programs – What are the evaluation mandates?
- ❑ Third Party Evaluation – Not Always Mandated?
- ❑ As New Programs Develop, we will see...
 - New Evaluation and M&V Requirements
 - Implementer or Third-Party Mandates
 - Approaches for Quality Assurance and Savings Verification

NEED FOR CHANGE IN US PROGRAM EVALUATION



- ❑ Many Drivers for Enhanced Evaluation Approaches
- ❑ Increasing Scrutiny on Energy Efficiency Industry
 - Climate Change
 - EE Integration with Renewable and Distributed Generation
 - Micro-Grid Development
 - Resource and Demand Constraints
 - Huge Expectations of Energy Efficiency Industry
- ❑ Need for Reduced Evaluation Costs
- ❑ Need for More Immediate Results
- ❑ Usefulness of Results
 - Overall Quality Assurance
 - Information for Energy and Program Policy
 - Information for Program Managers
 - Feedback for Vendors, ESCOs, and End Users

EVALUATION INTEGRATED WITH PROGRAM DELIVERY



- ❑ Third Party Independent Evaluation Needs to Persist
- ❑ But:
 - Evaluation Done in Isolation, Without Closer Integration with Program Delivery Staff Cannot Persist
 - A Process Where Evaluators Develops an Effective Relationship with Implementers and Installers is Necessary
- ❑ Integrated Program Evaluation Enables
 - Continual and Dynamic Program and Project Improvement
 - Enhanced Program Tracking
 - Improved Baseline and Existing System Insights
 - Enhanced Estimation of Savings
 - Continual Quality Assurance

INCORPORATING PRE- AND POST-INSTALL M&V



- ❑ Evaluators Involved in Projects Prior to Installation
 - Facility and System Inspection Prior to Install
 - Enhanced Insights into Baseline Performance
- ❑ Immediate Post-Installation M&V
- ❑ Results are More Accurate
 - Insights into the Pre-installation Systems
 - More Immediate M&V
 - Ability to Acquire More Comprehensive Facility Data
- ❑ System for Dynamic and Continual Improvement of Savings Estimations and Projects
- ❑ Evaluators Continue to Work as an Independent Third Party, But Clearly Have to Work Closely with Project Implementers

MOVING TO REAL TIME EVALUATION



- ❑ Integration of Several Approaches
 - Immediate Post-M&V
 - Facility Data Collection
 - (Pre-M&V) or Baseline Assumptions or Models
 - Web-enabled Metering
 - Web-enabled Analysis
- ❑ Real Time Delivery of Data and Results
 - Raw Metering Data
 - Analysis Based Data and Project Information
 - Single Site and Aggregate Analyses
- ❑ Dashboard and Reports for Real-Time Savings
- ❑ Moving to the NegaWatt “Meter” (nW; nWh)
 - System Must Integrate the Analytics

SAMPLE PROJECT: CON EDISON M&V



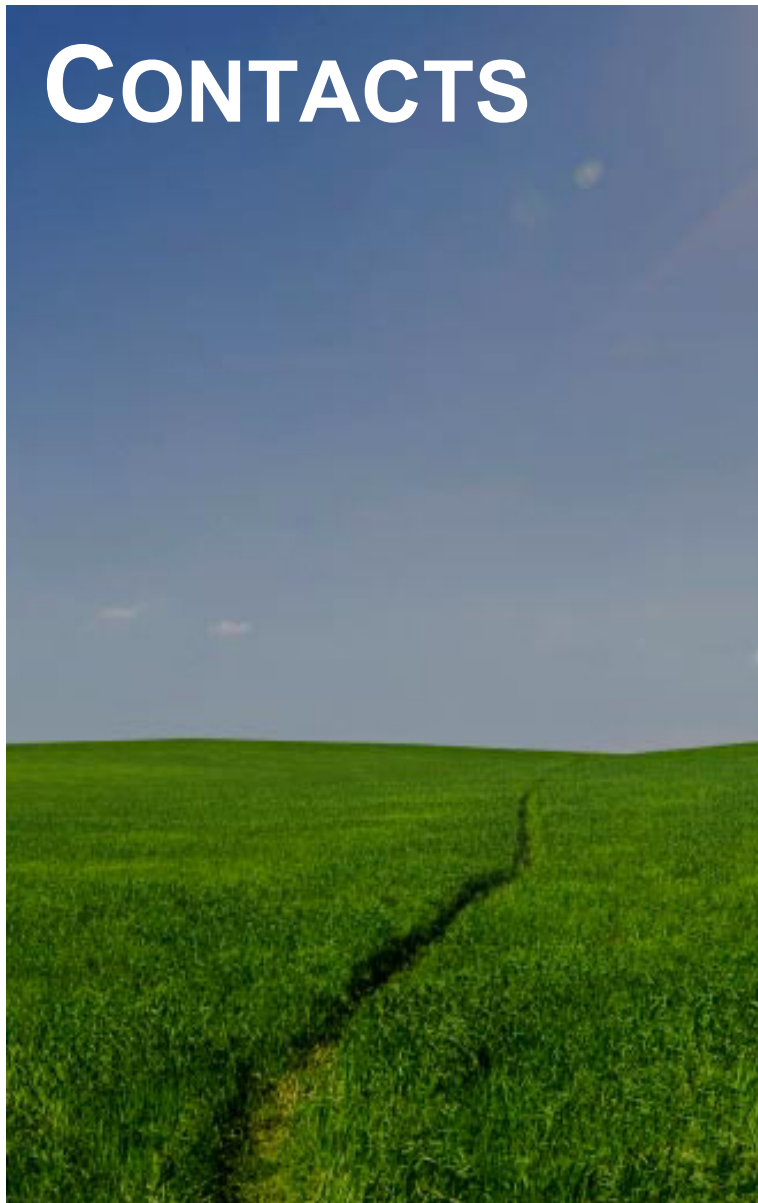
- ❑ Client: Consolidated Edison of New York
 - Focused EE and DM Program Efforts
 - Need for Immediate Reporting of Results for Demand-Constrained Regions of New York City
 - Some Sampling but Mostly Census-Level M&V
 - Addressing Multi-family, Small Business, and Large Custom
- ❑ Progressively Adopting Enhanced Eval Approaches
 - Dynamic Relationship Between Program Delivery and Evaluators
 - Pre-install M&V for Many Projects
 - Comprehensive Post-install M&V and Data Collection
 - Prompt Reporting of Results (Online and Summary Reports)
- ❑ Real-Time Evaluation: Being Developed

CONCLUSIONS AND DISCUSSION



- ❑ Past Evaluation Approaches Need to be Enhanced
 - More Immediate Results
 - Usefulness of Evaluation Results
 - Reflect New Technologies and Software Approaches
- ❑ Key Questions
 - Will enhanced approaches facilitate improved implementer – evaluator relations?
 - Will enhanced approaches lead to more US state-to-state consistency?
 - Will aspects of evolving US evaluation approaches have applicability in the dynamic EU market?
 - Are web-enabled M&V and analytics going to drive how all future evaluations are done?

CONTACTS



Gary Epstein

ERS

gepstein@ers-inc.com

1-(978)-521-2550 x225