



Northeast Energy Efficiency Partnerships

Streamlining Evaluation, Measurement & Verification Reporting and Review

June 30, 2016

WEBINAR OVERVIEW

1. Background and Introductions
2. U.S. DOE Uniform Methods Project
3. Standardized EM&V Methods Reporting
4. National EE Registry (NEER)
5. Q&A

BACKGROUND

Why this webinar?

- Share information with Forum members, NEEP allies and partners on national EM&V protocols and reporting developments
- Build understanding of EM&V Forum's role to inform, and also reference, national EM&V efforts
- Bring together range of stakeholders/audiences relevant to these developments

SPEAKERS



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**Audrey
Starkebaum**
E34theFuture



Uniform Methods Project Overview & Status Update

June 30, 2016

Chuck Kurnik
National Renewable Energy Laboratory

UNIFORM METHODS PROJECT



What is the Uniform Methods Project?

What have we done to date?

How do we do it?

How can you use them?



What is This Project?

Develop and Publish Protocols for Savings Calculations of Energy Efficiency Measures

- Addresses most common residential and commercial efficiency measures in incentive programs
- Presents step-by-step calculations to determine gross savings
- Includes additional sections to address cross-cutting evaluation requirements



Project Goals & Benefits

Greater consistency of savings calculations

- Quickly establish good M&V practices
- Facilitate meaningful comparisons

Greater transparency reduces risks

Educational value to broad stakeholder community

- Protocols identify key inputs
- Documentation of methods and calculations
- Educating those new to EM&V

Supports development of best practices for energy efficiency

- Sets data requirements early on
- Confidence when setting and meeting savings targets

- **Jurisdictions with no existing protocols or TRMs**
- **Regulators**
- **Program Administrators**
- **Implementers**
- **Evaluators**





Phase 1 – April 2013

Efficiency Measures

- Residential Lighting
- HVAC, Unitary Commercial
- Commercial Lighting
- Residential Refrigerator Recycling
- Residential Whole-House Retrofit
- Commercial Lighting Controls
- HVAC, Residential Boilers and Furnaces

Cross-cutting Protocols

- Assessing Persistence and Other Evaluation Issues
- Metering
- Peak Demand and Time-Differentiated Energy Savings
- Sample Design
- Survey Design and Implementation for Estimating Gross Savings

Phase 2 – February 2015

Efficiency Measures

- Adjustable-Speed Drive Motors
- Chillers
- Commercial New Construction
- Commercial HVAC Controls — Energy Management Systems/Direct Digital Control systems
- Retrocommissioning
- Compressed Air Systems
- Data Center Efficiency — Servers and Data Storage
- Residential Behavioral Programs

Cross-cutting Protocols

- Estimating Net Savings: Methods and Practice



Have you heard of the protocols created under the US DOE Uniform Methods Project?

–Yes, no, don't know

Have you used any of the UMP protocols?

– Yes, no, don't know



Phase 3 – In Process

Efficiency Measures

- **Combined Heat & Power**
 - Publish in September 2016
- **Strategic Energy Management**
 - Stakeholder Review Fall 2016
 - Publish in Winter 2017



Table of Contents

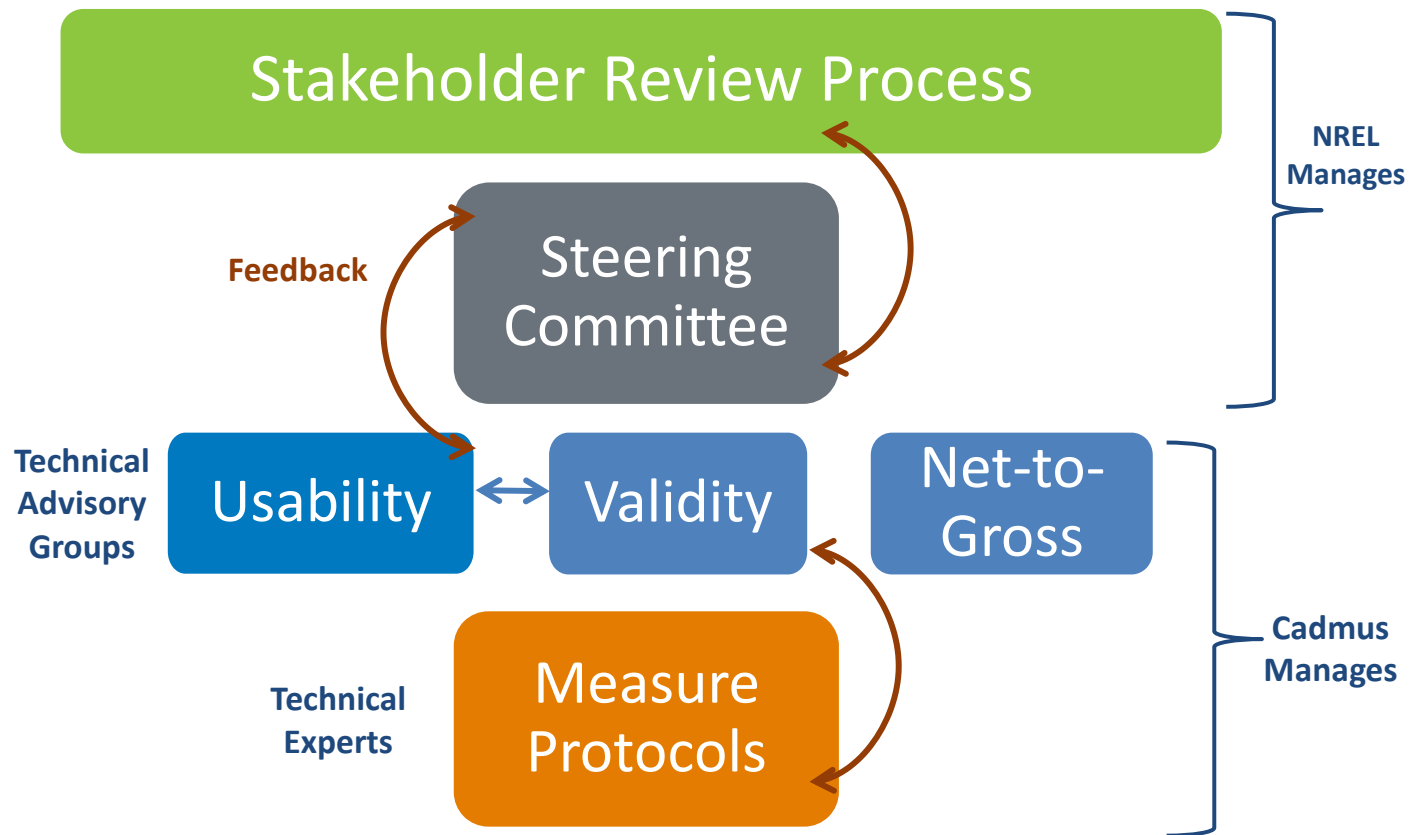
1	Measure Description	1
2	Application Conditions of Protocol	2
3	Savings Calculations	3
	3.1 Determining Baseline Consumption	3
4	Measurement and Verification Plan	6
	4.1 Measurement and Verification Method	6
	4.2 Data Collection	7
	4.2.1 Measurement Boundary	7
	4.2.2 Measurement Period and Frequency	8
	4.2.3 Measurement Equipment	8
	4.2.4 Savings Uncertainty	9
	4.3 Interactive Effects	9
	4.4 Detailed Procedures	9
	4.4.1 Chillers.....	9
	4.4.2 Auxiliary Equipment.....	11
	4.5 Regression Modeling Direction	12
	4.5.1 Recommended Method for Model Development.....	13
	4.5.2 Testing Model Validity	13
5	Sample Design	15
6	Other Evaluation Issues	16
	6.1 Net-to-Gross Estimation	16
	6.2 Early Replacement.....	16
	6.3 Dual-Baseline Realization Rates.....	16
	References	17
	Bibliography	18



Protocols developed in collaboration with EM&V industry and major energy efficiency stakeholders

- Protocols developed in collaboration with energy efficiency program administrators, stakeholders, and EM&V consultants
 - Including the major U.S. firms that do as many as 70% of energy efficiency evaluations
- Stakeholder Review process allows for input from large array of stakeholders

Project Organization



Protocol Development Process



U.S. DEPARTMENT OF
ENERGY





Steering Committee Provides High-Level Guidance

- The Uniform Methods Project Steering Committee is composed of energy efficiency stakeholders, including:
 - Energy efficiency program administrators
 - Regulators from public service commissions
 - Investor-owned, public, and cooperative electric and gas utilities
 - Electric utility associations
 - Federal and state agencies involved in energy efficiency programs
 - Energy efficiency advocates
 - Regional energy efficiency organizations

Technical Experts & Technical Advisory Group



U.S. DEPARTMENT OF
ENERGY



APEX
ANALYTICS, LLC



Left Fork Energy



Jacobson Energy Research LLC 



BuildingMetrics, Inc



Pioneering Solutions for a Sustainable Energy Future

GDS Associates, Inc.
Engineers and Consultants



TETRA TECH



- **Protocols published as a reference**
- **Voluntary in nature**
- **Three primary pathways for adoption**
 - Formally by regulators
 - Adopted by program administrators and provided to implementers and evaluators
 - Recommended to clients by evaluators



What new UMP work would you find most valuable?

- Summaries of existing protocols**
- Updates to existing protocols**
- Additional measure protocols**
- Additional cross-cutting protocols**
- Trainings on use of protocols**



Questions? Chuck.Kurnik@nrel.gov

UMP Protocols: <http://energy.gov/eere/about-us/ump-protocols>

Thank you!

Streamlining EM&V Reporting and Review via Standardized Forms



**Impact
Evaluation
Studies**

Overarching Goal

Build credibility of energy efficiency as a resource **by building transparency and basic understanding of EM&V practices** to support inclusion of growing energy efficiency resources in state, regional, and national energy and environmental policies and markets.

EM&V Methods Reporting

What can standardized forms tell us?



EM&V Plan (what will you do?)

- Program/project description
- EE provider
- Implementation schedule
- Savings projections and EUL
- EM&V methods to be used (alignment with protocols)
- Sampling plan
- Verification plan
- Planned overall certainty of savings estimates (accuracy and reliability of savings)

EM&V Reporting (what did you do?)

- Program/project description
- EE provider
- Implementation schedule
- Reported savings
- EM&V methods used (alignment with protocols)
- Sampling results
- Verification approach used
- Certainty of savings

Standardized EM&V Methods Forms



Intended Uses and Potential Applications

Reporting Entity (evaluators, program administrators, others)

- Use forms to present EM&V methods and results to regulators/others in a consistent format, streamlining reporting and reducing reporting burden

PUCs (and other state officials/agencies)

- Forms build basic understanding and easy review of EM&V, serves as filter to identify where further review is needed. Allows for benchmarking practices across states

ISO/RTOs

- Forms can help streamline review of evaluation studies supporting EE in forward capacity markets, and flag where deeper review is needed

US DOE

- Forms help to identify where the Uniform Methods Project EE Savings Protocols are used (and how)

US EPA / State DEPs

- Forms can support EE EM&V documentation in state compliance plans

NEER

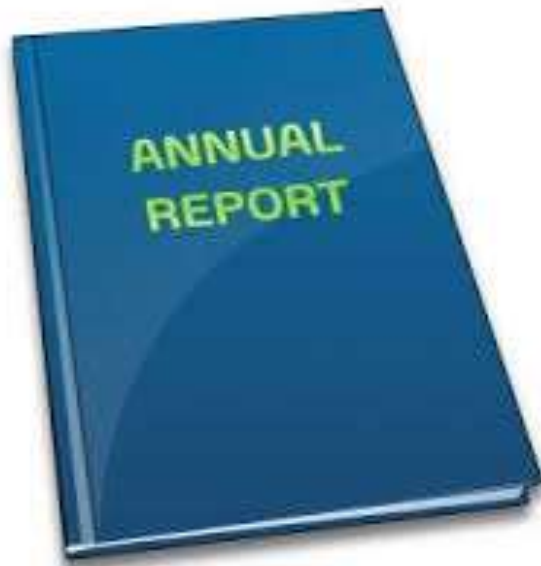
- Forms serve as are model for EM&V reporting/documentation for EE registries

AUDIENCE POLL #4

With which stakeholder group do you identify?

- Program Administrator
- Implementer
- Evaluator
- Regulator / State Official
- System Planner
- Other

Two Forms (Prototypes)



Program Form



Study Form

Content – Program Form



Program Form

1 – Program Year Summary

2 – EM&V Methods
Summary

3 – EM&V Rigor Summary

4 – EM&V Protocols

Content – Study Form



Study Form

- 1 – General Information
- 2 – Study Summary and Results
- 3 – EM&V Methods for Gross Savings
- 4 – EM&V Methods for Net Savings
- 5 – Study EM&V Rigor Summary
- 6 – EM&V Protocols
- 7 – Recommendations

FORM CONTENT

Program Form

1 – Program Year Summary

2 – EM&V Methods
Summary

3 – EM&V Rigor Summary

4 – EM&V Protocols

Study Form

1 – General Information

2 – Study Summary and Results

3 – EM&V Methods for Gross Savings

4 – EM&V Methods for Net Savings

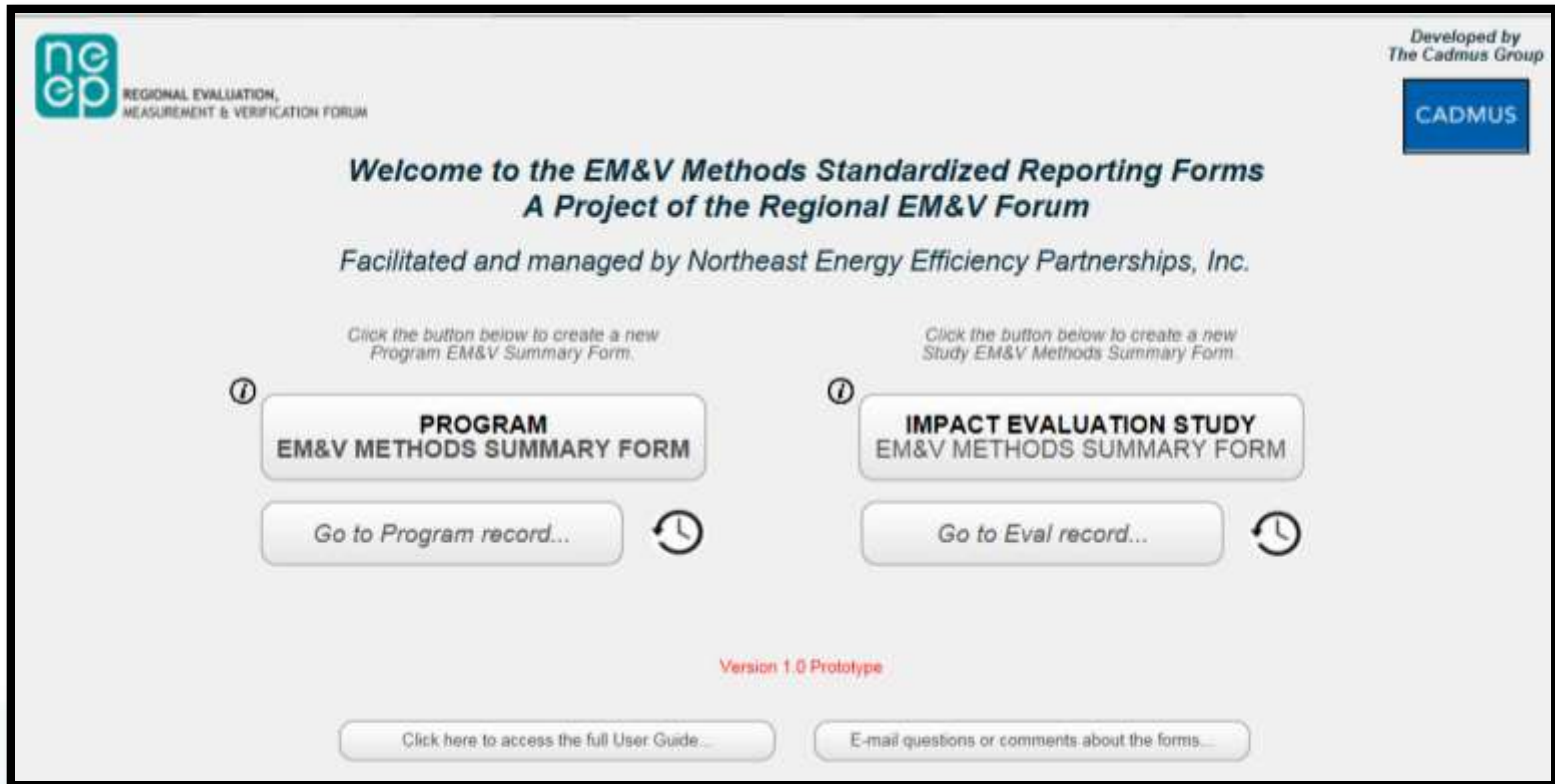
5 – Study EM&V Rigor Summary

6 – EM&V Protocols

7 – Recommendations

Online Forms

Public “playspace” available online



The screenshot shows a web interface for the Regional Evaluation, Measurement & Verification Forum. It features the ne ep logo in the top left and the CADMUS logo in the top right, with the text "Developed by The Cadmus Group". The main heading reads "Welcome to the EM&V Methods Standardized Reporting Forms A Project of the Regional EM&V Forum". Below this, it states "Facilitated and managed by Northeast Energy Efficiency Partnerships, Inc.". There are two main sections for creating forms: "PROGRAM EM&V METHODS SUMMARY FORM" and "IMPACT EVALUATION STUDY EM&V METHODS SUMMARY FORM". Each section includes a button to "Go to Program record..." or "Go to Eval record..." with a refresh icon. At the bottom, there are two buttons: "Click here to access the full User Guide..." and "E-mail questions or comments about the forms...". The text "Version 1.0 Prototype" is displayed in red.

ne ep REGIONAL EVALUATION, MEASUREMENT & VERIFICATION FORUM

Developed by The Cadmus Group

CADMUS

Welcome to the EM&V Methods Standardized Reporting Forms
A Project of the Regional EM&V Forum

Facilitated and managed by Northeast Energy Efficiency Partnerships, Inc.

Click the button below to create a new Program EM&V Summary Form.

PROGRAM EM&V METHODS SUMMARY FORM

Go to Program record...

Click the button below to create a new Study EM&V Methods Summary Form.

IMPACT EVALUATION STUDY EM&V METHODS SUMMARY FORM

Go to Eval record...

Version 1.0 Prototype

Click here to access the full User Guide...

E-mail questions or comments about the forms...



Program Form – PY Summary

Completed by [] Approved by []
Program Administrator National Grid Program Name C&I Retrofit Electric
State MA Program Sector C&I Program Year 2014

User Guide I. Program Year Summary III. Program EM&V Summary Documents

1. Program Year Savings Summary

Savings Type	Electric Energy	Electric Demand	Natural Gas
Units	MWh	KW	MMBtu
Adjusted Gross Annual Savings	[]	[]	[]
Net Annual Savings	137549	23612	-17322
Adjusted Gross Lifetime Savings	[]	[]	[]
Net Lifetime Savings	1639680	[]	[]

2. Adjusted Gross Annual Savings Percentage of Portfolio Savings

% of Portfolio, Electric Energy 19.75
% of Portfolio, Electric Demand 16.54
% of Portfolio, Natural Gas []

3. Program Year EM&V Summary

A. Are there new evaluation results that influence program savings from the previous reporting year?
 Yes No N/A

B. Describe new EM&V activity that influence savings for this program year compared to the previous year.
There were two new studies submitted with the 2014 Play Year Report that impacted C&I Retrofit savings: the Variable Speed Drive Loadshape Project and the Retrofit Lighting Controls Measures Summary of Findings.

C. Describe any ongoing or planned EM&V activity that will impact program savings estimates in future years.
There are a number of ongoing studies that will directly influence C&I Retrofit program savings going forward. There are two custom electric evaluations, looking at process and HVAC measures.

4. Capacity Market Participation

ISO-New England
 PJM
 Not reported
 Other (describe below)

[]

Reported Savings

% of Portfolio

High level discussion of EM&V activities

Indicate participation in capacity markets

Program Form – EM&V Methods

1. Are EM&V activities performed at the program level? ?

Yes No N/A

2. Are EM&V activities conducted by independent, third-party evaluation contractor(s)?

Yes No N/A

3. Indicate EM&V methods used to evaluate program savings for each savings component. ?

Baseline

- Stipulated baseline
- Building code or federal/state standard
- Standard practice Existing conditions
- Dual or dynamic baseline
- Other (describe below) Not applicable

Verification

- None
- Document review
- Participant survey
- Visual (on-site) inspection
- Other (describe below)
- Not applicable

In some cases additional, more detailed commissioning studies are performed to verify operation of equipment before the full incentive is paid.

Gross Savings

- Deemed savings
- Engineering desk review
- Measurement & verification
- Large scale consumption data analysis
- Top-down analysis (macro consumption)
- Other (describe below) Not applicable

Net-to-Gross

- Stipulated NTG ratio
- Self-reporting surveys
- Trade ally panel
- Large-scale consumption data analysis
- Cross-sectional studies
- Top-down evaluations
- Market sales data analysis
- Structured expert judgement approach
- Historical tracing (case study)
- Other (describe below) Not applicable

Measure Life

- Stipulated value, program-level
- Stipulated value, measure-level
- Project-specific values

Persistence

- None Degradation
- Rebound
- Other (describe below)
- Not applicable

Program Form - EM&V RIGOR

	II. Program EM&V Methods Summary	III. Program EM&V Rigor Summary	IV. Relevant EM&V Documents
<p>EM&V Strategy</p> <p>In general we select end uses and measures to evaluate based on the relative size of the program, the last time the end use or measure was evaluated, and whether or not there have been recent programmatic changes. We regularly evaluate at least portions of our largest end uses and measures, an obvious example being our lighting programs. One or two end uses in our custom electric programs are also evaluated each year. Smaller, prescriptive end uses are evaluated less frequently.</p> <p>2. The following four questions aim to provide information on the overall rigor of the evaluation. In the context of this form, we define "rigor" in terms of the validity of the Characterization results, based on (1) the quality of the data, (2) appropriateness of the way the data was collected, (3) statistical confidence and precision of the results, and (4) of EM&V Rigor appropriateness of the measurement methods. See the user guide for general information about interpretation of this information: [link to user guide on NEEP website]</p>			
<p>Data Quality</p> <p><input type="radio"/> All program components are recent and based on primary research.</p> <p><input checked="" type="radio"/> Most program components are based on recent and secondary research.</p> <p><input type="radio"/> Program EM&V components are not based on recent research.</p>		<p>Describe your selection:</p> <p>Some assumptions feeding into the estimates of certain, small prescriptive measures may not be based on recent evaluation results. There may also be certain new technologies where we have not yet generated a large enough population to fully evaluate through primary or secondary research. That said, almost of all of the MA C&I Retrofit offerings have been evaluated within the last few years through primary research.</p>	
<p>Sampling Methods</p> <p><input checked="" type="radio"/> All program components use census or random sampling methods.</p> <p><input type="radio"/> Most program components use census or random sampling methods.</p> <p><input type="radio"/> Program components use non-random sampling methods.</p>		<p>All evaluations in MA C&I Retrofit are performed using census or random sampling methods.</p>	
<p>Confidence/Precision</p> <p><input type="radio"/> All program components achieve the planned level of confidence and precision.</p> <p><input checked="" type="radio"/> Most program components achieve the planned level of confidence and precision.</p> <p><input type="radio"/> Program components did not achieve the planned level of confidence and precision.</p> <p><input type="radio"/> EM&V does not quantify confidence and precision.</p>		<p>All MA C&I Retrofit evaluations are designed for statistically significant and rigorous confidence and precision values, however, some studies do not meet those levels. For example, our recent Prescriptive VSD impact evaluation relied on pre and post installation metered data. Because of the timing of installing meters on the existing pre condition, the full sample could not be met, and precision and confidence levels did not meet our goal.</p>	
<p>Measurement Methods</p> <p><input checked="" type="radio"/> Measurement methods address all major sources of bias.</p> <p><input type="radio"/> Measurement methods address some major sources of bias.</p> <p><input type="radio"/> Measurement methods do not address potential sources of bias.</p>		<p>All evaluations are performed in such a way as to remove all major sources of bias</p>	

Program Form - EM&V Protocols

User Guide	I. Program Year Summary	II. Program EM&V Methods Summary	III. Program EM&V Rigor Summary	IV. Relevant EM&V Documents
------------	-------------------------	----------------------------------	---------------------------------	-----------------------------

The EM&V studies supporting the reported savings for the program reference the selected national and regional protocols.

National Protocols

- U.S. DOE Uniform Methods Project
- International Performance Measurement and Verification Protocol

Provide additional information for selected protocols:

Region/State Protocols

Regional/State-Specific Protocols ?

- NEEP Regional EM&V Methods and Savings Assumption Guidelines
- ISO-New England Manual for M&V of Demand Resources

Provide additional information for selected protocols::

The supporting EM&V studies for this program are below.

Relevant EM&V Studies (provide name and links to studies)

1. 2011-2012 Massachusetts Prescriptive VSD Impact Evaluation.
2. Impact and Process Evaluation Building Operator Training and Certification (BOC) Program Final Report.
3. Impact Evaluation of 2004 Compressed Air Prescriptive Rebates.
4. Impact Evaluation of 2008 and 2009 Custom CDA Installations.
5. Impact Evaluation of 2009 Custom HVAC Installations.
6. Impact Evaluation of 2010 Custom Lighting Installations.
7. Impact Evaluation of 2010 Custom Process and Compressed Air Installations.
8. Impact Evaluation of 2010 Prescriptive Lighting Installations.
9. Impact Evaluation of 2011 Custom Refrigeration, Motor, and Other Installations.
10. Impact Evaluation of the Massachusetts Upstream Lighting Program, Final Report.
11. Massachusetts Combined Heat and Power Program Impact Evaluation 2011-2012

List of relevant EM&V Studies

Study Form – Summary & Results



(same tabs as Program Forms plus...)

User Guide | I. General Information | II. Study Summary and Results | III. EM&V Method for Gross Savings | IV. EM&V Method for Net Savings | V. EM&V Rigor | VI. EM&V Protocols | VII. Recommendations

1. Study Objective:
Describe the study objectives, including studied savings parameters and study population.

This study was primarily designed because the Sponsors were interested in seeing how operating hours and wattage saved have changed since the 1998 Process and Impact Evaluation of Joint Utilities Starlights Residential Lighting Program and the 2000 torchiere-only study and secondarily to provide gross and net savings impacts for the 2003 program year.

2. Study Description

The exterior installation

3. Tab Results

Parameter	Value	Units	Relative Precision	Confidence Interval
Delta Watt (CFL)	48.7	Watts	5.0	90
Delta Watt (interior fixtures)	48.7	%	10.0	90
Delta Watt (exterior fixtures)	94.7	%	11.4	
Delta Watt (torchieres)	115.8	%	15.5	
In-service rates (CFL bulbs)	61.6	%	7.5	
In-service rates (interior fixtures)	76.5	%	10.1	90
In-service rates (exterior fixtures)	79.8	%	9.9	90
In-service rates (torchieres)	81.0	%	13.1	90
In-service rates (overall)	66.5	%	5.1	90
Daily hours of use (CFL bulbs)	2.7	hours	17.7	90
Daily hours of use (interior fixtures)	2.1	hours	24.3	90

Parameter

Delta

Delta

Delta

Delta

In-se

In-se

In-se

In-se

In-Service rates (overall)

Daily hours of use (CFL bulbs)

Daily hours of use (interior fixtures)

Input Parameter

Input Parameter

Study Form – EM&V Methods

(more detail than Program Forms)



1. Select method(s) for gross impact analysis: [more info...](#)

- Deemed savings
- Engineering desk review
- Measurement & verification
- Large scale consumption data analysis
- Top-down analysis (macro consumption)
- Other (describe below) Not applicable

2. Select sampling method(s) for gross impact analysis: [more info...](#)

- Census Sampling Unit
- Sample Participant Sample Size
- Other Non-Participant Sample Size
- Not Applicable

3. Select method(s) for installation verification: [more info...](#)

- None Document review
- Participant survey
- Visual (on-site) inspection
- Other (describe below)
- Not applicable

4. Select data collection method(s) for gross impact analysis: [more info...](#)

- None
- Utility consumption ("billing") data
- Interval whole-building meter data
- Component meter or EMS data (proxy)
- Component meter or EMS data (power)

5. Indicate method(s) for estimating baseline: [more info...](#)

- Stipulated baseline
- Building code or federal/state standard
- Standard practice Existing conditions
- Dual or dynamic baseline
- Other (describe below) Not applicable

- Deemed Savings
- Engineering Review
- M&V (IPMVP)
- Large Scale Data Consumption Analysis
- Top-Down Analysis
- Other
- N/A

- Sample

- Participant survey
- Visual inspection

- Component meter

- Baseline assumptions

Study Form - Recommendations

Study Recommendations Complete the table below to describe the study recommendations and (if possible) The Program Administrator's response.

ID#	Recommendation	Response Type	Response
1	It is recommend that the Sponsors consider using "adjustment" or "correction factors" to guide assumptions that will be used for 2005 planning purposes.		
2	The proper "correction factor" of total CFL counts to use for other telephone surveys is the ratio of on-site counts (14.4 per household) to the self reports among the on-site sample (9.2 per household). The suggested ratio would result in a		
3	Correction factors for installed RLP are 0.68 of telephone results for CFLs, 1.40 for torchieres, 1.00 (no correction factor) for interior fixtures, and 1.13 for exterior fixtures.		
4	Correction factors for installation rate survey results are 0.74 for CFLs, 0.88 for torchieres, 0.84 for interior fixtures, and 0.90 for exterior fixtures.		
5	Correction factors for telephone survey results of average daily use are 0.81 for CFLs, 1.04 for torchieres, 0.84 for interior fixtures, and 0.93 for exterior fixtures.		

Form Guidance

Characterization of EM&V Rigor
 The following four questions aim to provide information on the overall rigor of the evaluation. In the context of this form, we are based on (1) the quality of the data, (2) appropriateness of the way the data was collected, (3) statistical confidence of the data, and (4) measurement methods.

1. Data Quality more info...

- All study components are recent and based on primary research.
- Most study components are based on recent and secondary research.
- Study EM&V components savings are not based on recent research.

2. Sampling Method more info...

- All study components use census or random (incl. stratified) sampling methods.
- Most study components use census or random (incl. stratified) sampling methods.
- Study components use non-random sampling methods.

3. Confidence and Precision more info...

- All study components achieve the planned level of confidence and precision.
- Some study components achieve the planned level of confidence and precision.
- Study components did not achieve the planned confidence and precision levels.
- The study does not quantify confidence and precision levels.

4. Measurement Methods more info...

- Measurement methods address all major sources of bias.
- Measurement methods address some major sources of bias.
- Measurement methods do not address potential sources of bias.

Describe your selection:

Developed by
The Cadmus Group

CADMUS

Methods Standardized Reporting Forms of the Regional EM&V Forum

Northeast Energy Efficiency Partnerships, Inc.

Click the button below to create a new
Study EM&V Methods Summary Form.

I **IMPACT EVALUATION STUDY
EM&V METHODS SUMMARY FORM**

Go to Eval record... 🕒

Version 1.0 Prototype

Click here to access the full User Guide...

E-mail questions or comments about the forms...

Application of Standardized EM&V Methods Reporting Forms Residential Lighting HOU Studies

<http://www.neep.org/residential-lighting-deep-dive-brief-comparison-savings-assumptions-across-northeast-and-mid>

Pilot Testing (Summer-Fall 2015)

- Test the forms, process, and value
- Program vs Study forms
- What questions were we trying to answer?
 - Level of difficulty to complete each form
 - Length of time to complete each form
 - Functional success of forms?
 - Value of the content? What's missing, what's not needed?
 - Form improvements?
 - Do the forms provide info needed by regulators to streamline EM&V review process?


Pilot Results - General feedback

- Forms easy to use
- Training was helpful
- Not too time consuming
- Improve guidance and clarifications throughout
- Level of detail in open text fields?
- Clarify audit/QC/approval/submit process
- Forms do not describe which and how new EM&V results impact reported savings, and how they compare to prior assumptions
- Avoid redundancy and minimize reporting burden

Take a Peek


<http://www.neep.org/initiatives/emv-forum/model-emv-methods-standardized-reporting-forms>





REGIONAL EVALUATION,
MEASUREMENT & VERIFICATION FORUM

Developed by
The Cadmus Group





Welcome to the EM&V Methods Standardized Reporting Forms A Project of the Regional EM&V Forum


Facilitated and managed by Northeast Energy Efficiency Partnerships, Inc.


Click the button below to create a new
Program EM&V Summary Form.

Click the button below to create a new
Study EM&V Methods Summary Form.

 **PROGRAM
EM&V METHODS SUMMARY FORM**

Go to Program record... 



 **IMPACT EVALUATION STUDY
EM&V METHODS SUMMARY FORM**

Go to Eval record... 

Version 1.0 Prototype

[Click here to access the full User Guide...](#) [E-mail questions or comments about the forms...](#)

This Project is supported by funding from the [Regional EM&V Forum States](#), the US Department of Energy, and the Lawrence Berkeley National Lab.



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AUDIENCE POLL #5

For what regulatory, policy, or market purposes would the EM&V method reporting forms be most helpful?

- EE Program Reporting to PUC
- Evaluation Planning
- State Air Quality SIPs and other compliance plans
- Capacity Markets Reporting
- Other

EM&V Methods Reporting Forms

Next Steps

2016

- Continue to gather input from Forum states on improvements to forms, building on pilot results
- Provide technical support to states interested in testing forms (private portal pilot site to store forms)
- Participate in national discussions on standardized documentation for EM&V methods (e.g., NEER)

2017 (TBD contingent on funding)

- Continue participation in national discussions
- Modify forms based on state feedback/pilot experience, and align with national efforts to ensure forms can support multiple policy needs
- Develop standardized EM&V Plan form?

NEER

NATIONAL ENERGY
EFFICIENCY REGISTRY

Streamlining EM&V Reporting and Review Webinar

June 30, 2016

Audrey Starkebaum, Policy Analyst
E4TheFuture



Disclaimer

The information in this presentation has been prepared by and is the sole responsibility of E4TheFuture. E4TheFuture is not a project partner and does not represent DOE, the six states, and/or partners TCR and NASEO. As such, the views expressed in this presentation are strictly those of E4TheFuture and may not coincide precisely with information provided by the above-referenced project, participating states, or project partners.

Audrey Starkebaum, Policy Analyst, E4TheFuture, serves as a member of the Steering / Advisory Committee for the above-referenced project; this presentation is not paid for under the DOE award.



About the NEER

- A central repository that will allow the public and private sectors to transparently track attributes associated with energy efficiency initiatives
- Policy neutral
- Built on best practice
 - Registry design
 - EE accounting and reporting protocols
- Will help states demonstrate progress toward energy goals and potential compliance with existing and future regulation
- Will be able to track energy efficiency and other types of reduction efforts

NEER Objectives

- Provide a consistent framework for EE to be included as an “eligible resource” in federal and state plans
- Demonstrate verification of EE projects according to the appropriate eligibility standards
- Facilitate the opportunity for inter- and intrastate trading

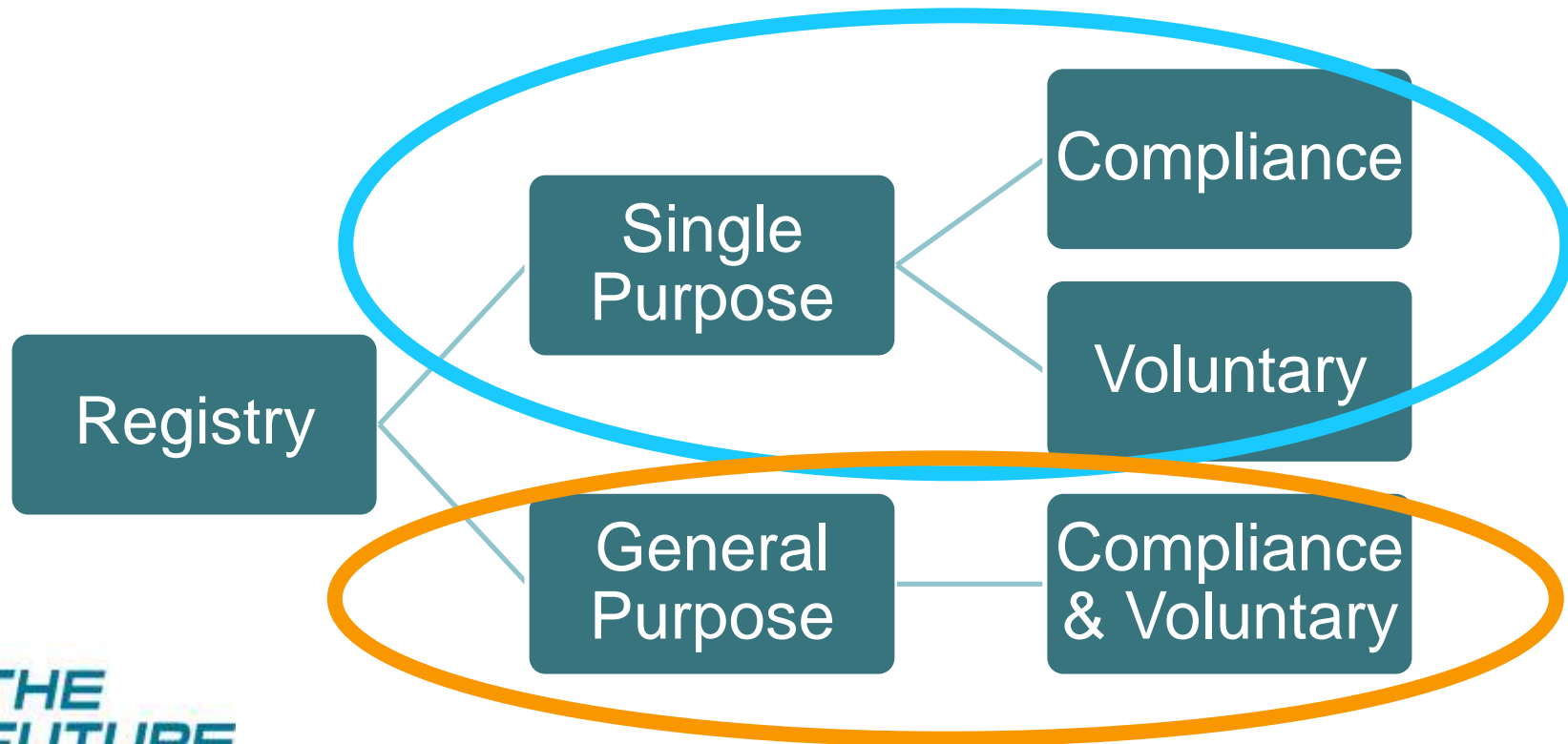
Benefits of a NEER

The NEER will:

- Not prescribe EM&V but will outline consistent requirements for data
- Aggregate rate payer and non-rate payer programs
- Support the development of financial instruments representing verified EE savings
- Be flexible to support a range of EE projects and program types

About Attribute Registries

- Attribute registries come in all shapes and sizes



About Attribute Registries

- Attribute registries track the non-energy attributes of generation

Single Purpose **Compliance** Registries

- Acid Rain Program Registry
- Ozone Transport Commission NO_x Registry
- RGGI Allowance Registry

Voluntary **Certification** Registries

- Verified Carbon Standard Registry
- Green-e
- Low Impact Hydropower Institute Registry

General Purpose “All Non Energy Attributes” **Certificate** Registries

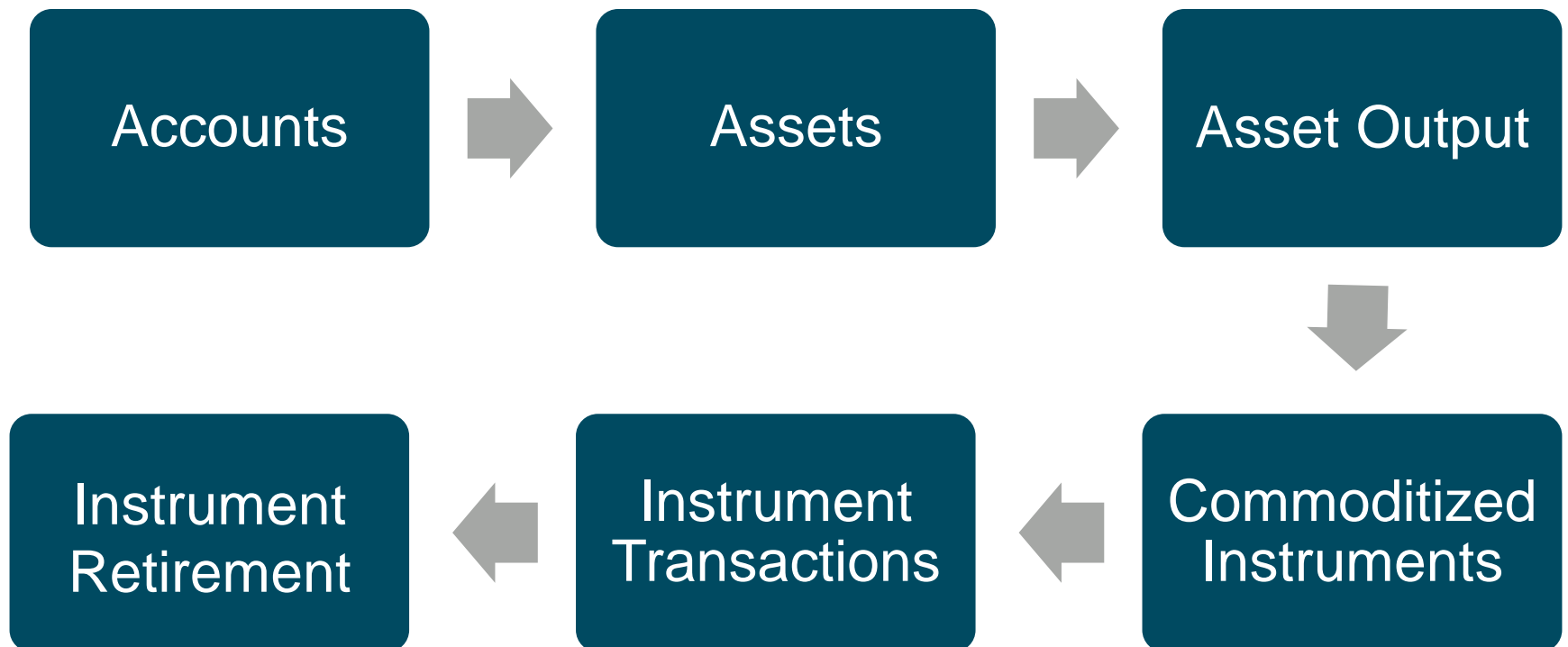
- NEPOOL Generation Information System (GIS)
- PJM Generation Attributes Tracking System (GATS)
- WREGIS
- NARR
- MRETS

Good News & Bad News



Basic Registry Elements

- Basic elements are found in most attribute registries supporting various policies



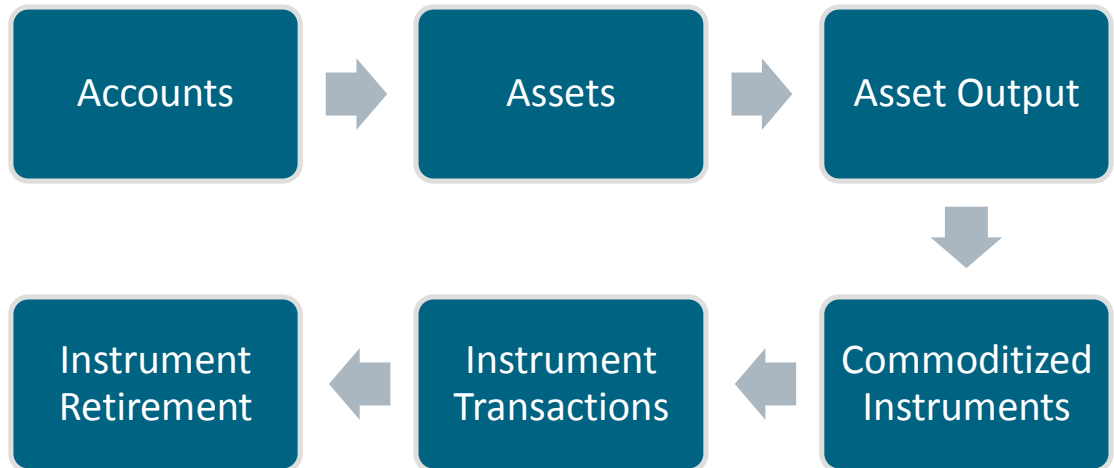
Accounts

Legally
Responsible
Parties

One Party = One
Account

Where
Account Holder
Static Data

Lives



Assets

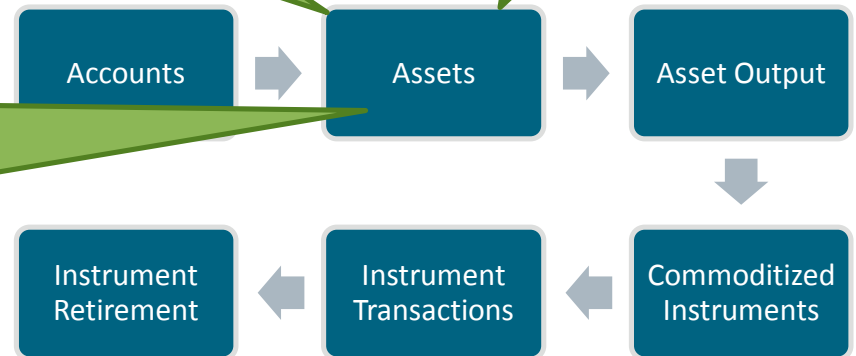
Projects,
Programs or
Policies

1 Account > multiple
Assets, but each Asset
only 1 Account

“Eligibility”
is recorded
here

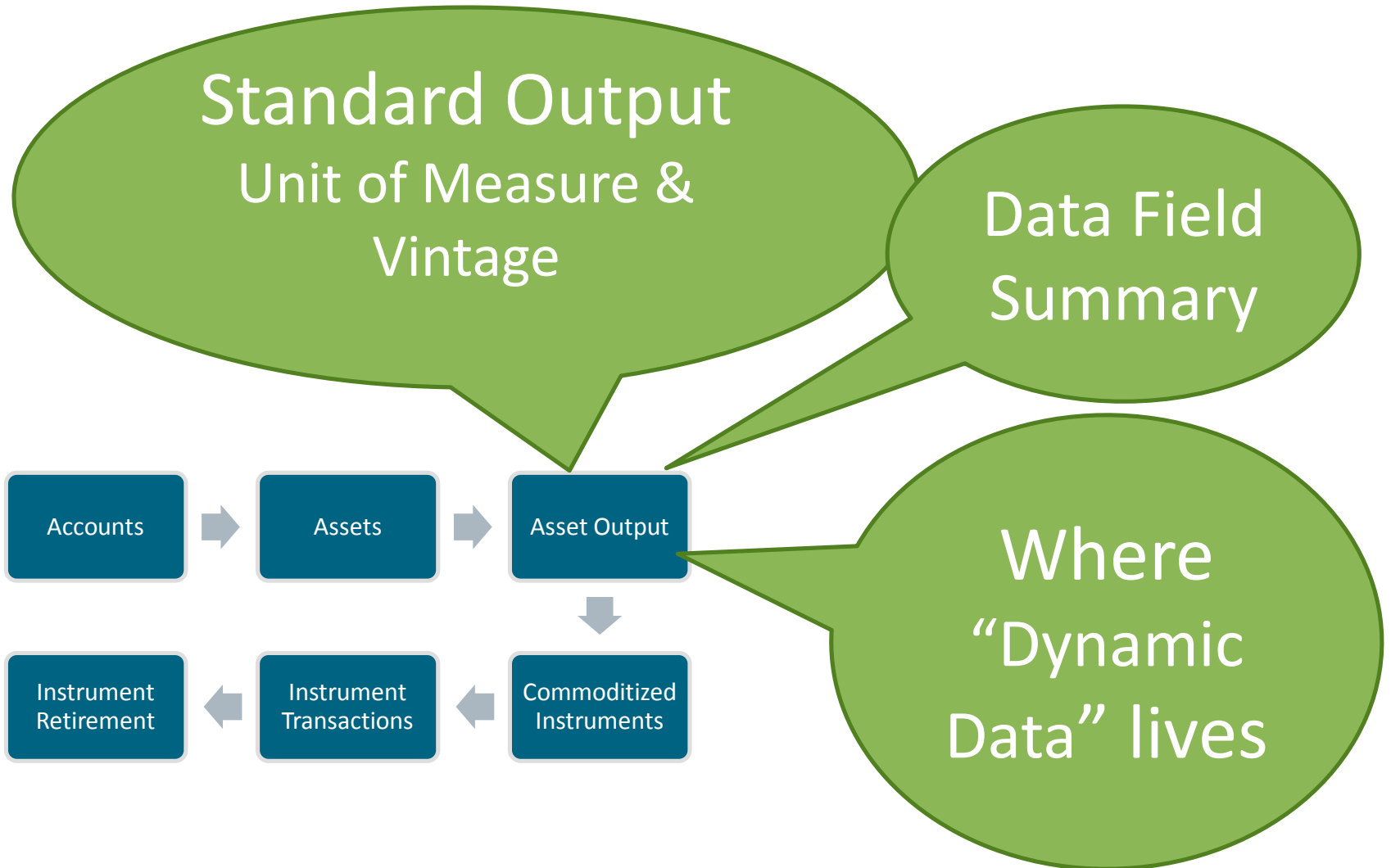
Data Field
Summary

Where Asset
“Static Data”
Lives

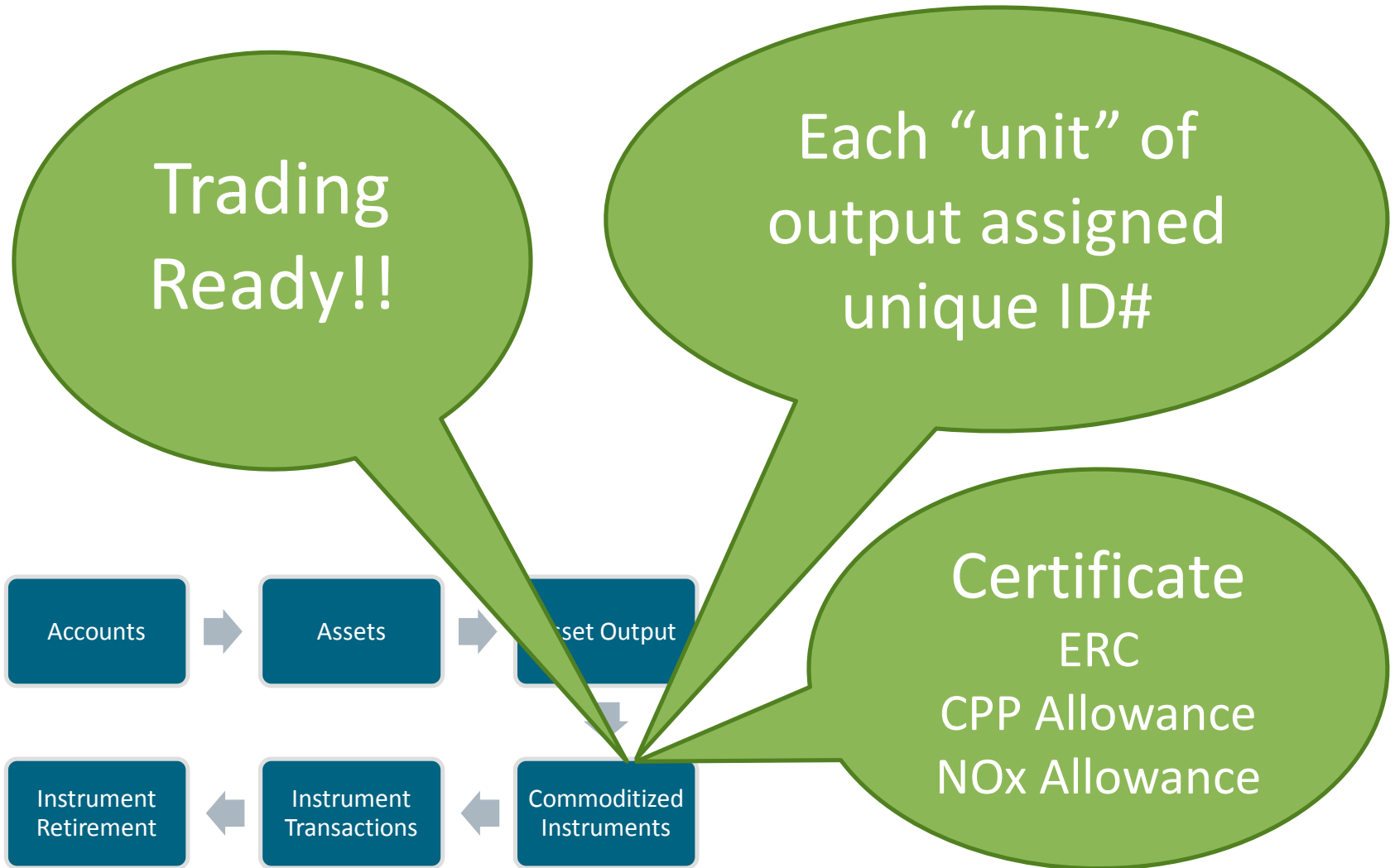


*or their agents

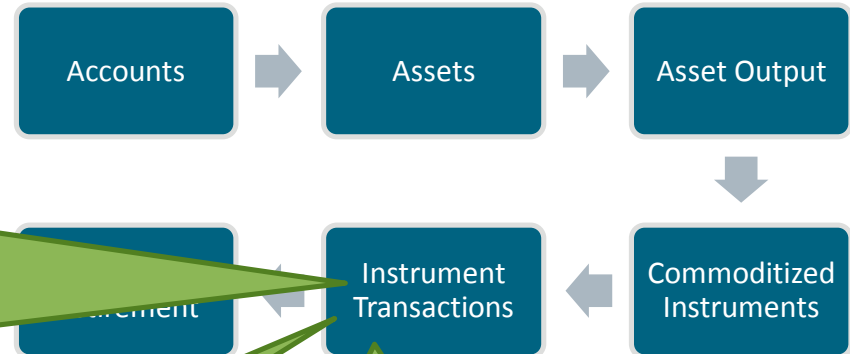
Asset Output



Commoditized Instruments



Instrument Transactions

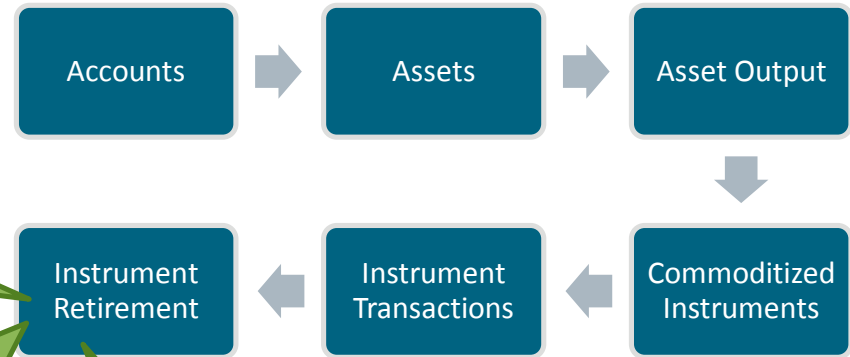


Account for every “unit of output”

Conservation of Instruments

Full “chain of custody”
from Asset Registration to Instrument Retirement

Instrument Retirement



Retired Instruments
can be included in
Compliance filing

PERMANENTLY

Remove a
“unit of output”
from trading

Retired Instruments
can be used to
support a marketing
claim

NEER Development Elements

States Initiative on
Principles and
Governance

Policy & Integration
Working Groups



Committee to Draft
Functional
Requirements

Development and
Implementation

State Initiative on Principles and Governance

- Two-year initiative to define:
 - NEER Principles and Operating Rules
 - Steering/Advisory Committee to develop and finalize
 - Multi-stakeholder Working Group ensures Principles and Rules meet the needs of all stakeholders
 - Demonstration software developed to inform rules
 - Roadmap for state adoption and implementation
 - Key functional platform components
- Funded through U.S. DOE 2015 State Energy Program Award to Tennessee

State Initiative on Principles and Governance Timeline

Timeframe	Task
March – April 2016	Formation of Multi-stakeholder Working Group & Steering/Advisory Committee
April 2016 – February 2017	Multi-stakeholder Working Group to draft NEER Principles and Operating Rules
April – May 2017	Public comment period for draft NEER Principles and Operating Rules
September 2017	Final roadmap for state adoption and implementation
October 2017	Key functional platform requirements

Poll Questions #6-8

Thank you!

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