

Massachusetts EM&V Approach

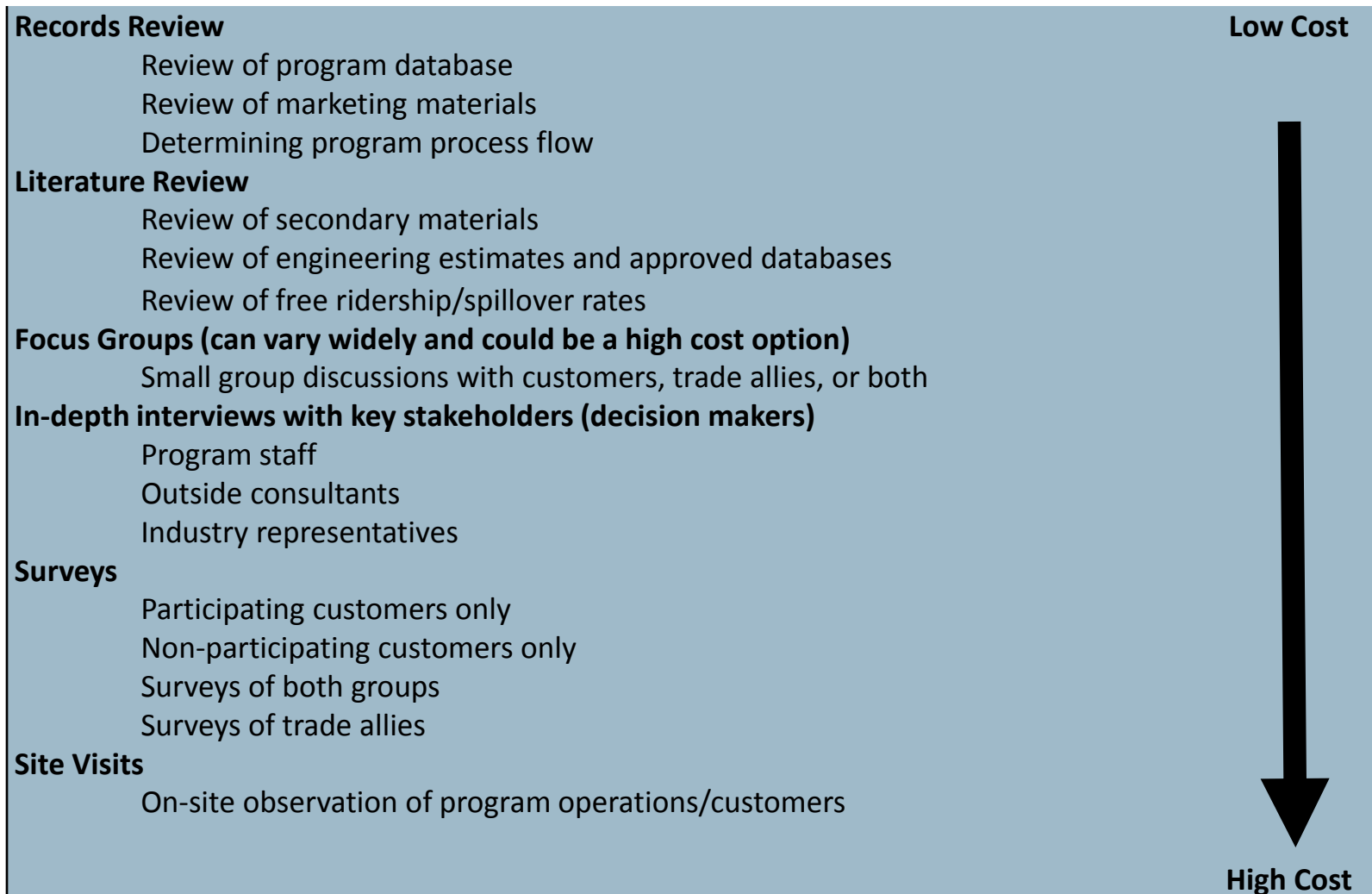
Energy Efficiency Resource Standard (EERS) Stakeholder Workshop 4
Evaluation, Measurement, & Verification (EM&V)

March 2, 2017

EM&V refers to the systematic collection and analysis of information to document the impacts of energy efficiency programs and recommend improvements in program design and delivery

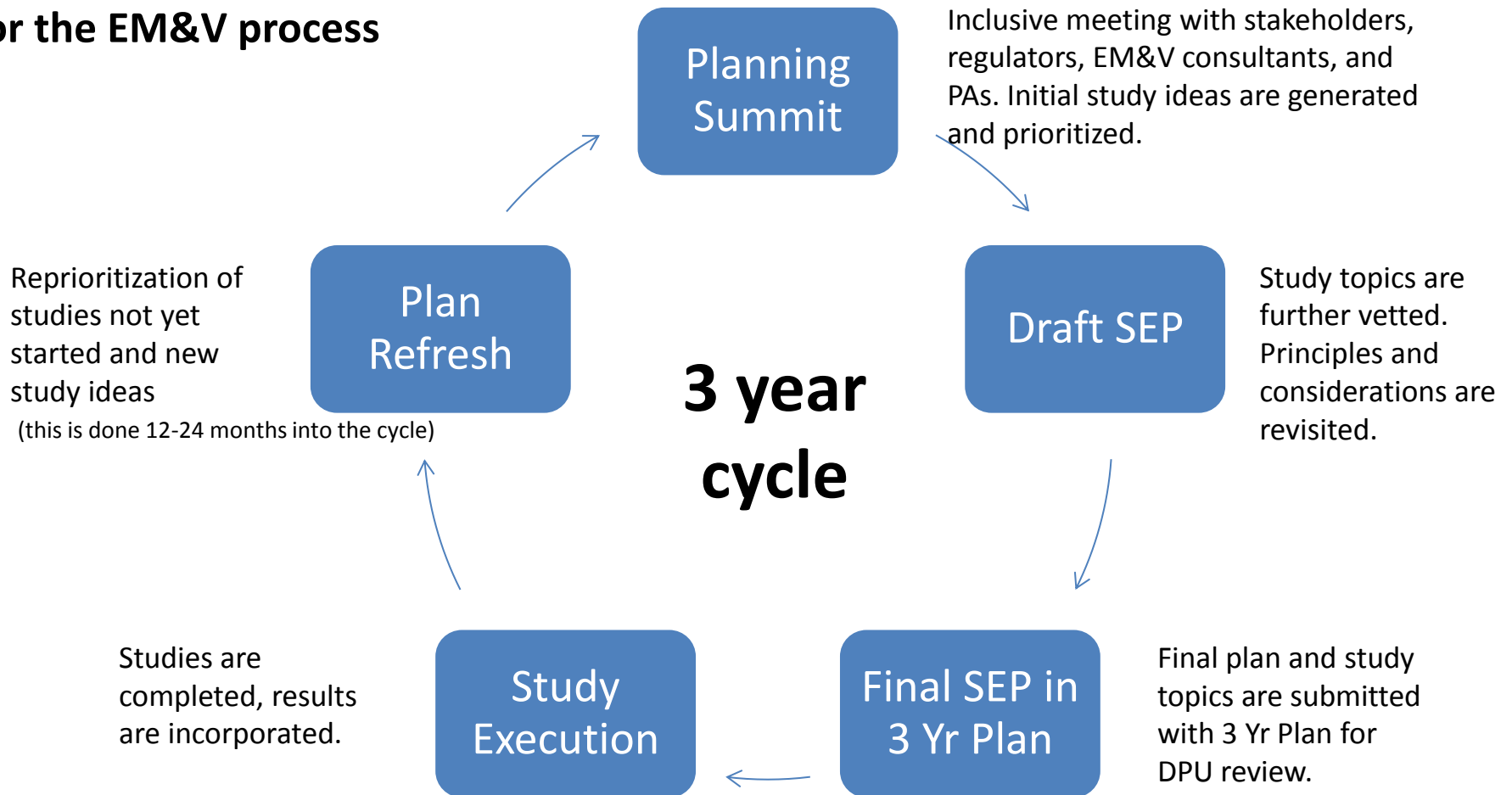
- *Impact Evaluation* refers to the measurement of savings achieved within overall program populations.
- *Market Effects Evaluation* refers to the measurement of the effects that programs have on the structure and functioning of their target markets.
- *Process Evaluation* refers to the systematic assessment of programs for the purpose of documenting their operations and developing recommendations to improve their effectiveness.
- *Market Characterization or Assessment* refers to the systematic assessment of energy efficiency markets for the purpose of improving the effectiveness of programs targeting those markets.

Types of Data Collection Activities for Process and Impact Evaluations



Strategic Evaluation Plan (SEP) Process

The SEP provides the framework for the EM&V process



Planning principles are utilized to assess potential evaluation activities, identify priorities, and determine the appropriate timing of all evaluation efforts

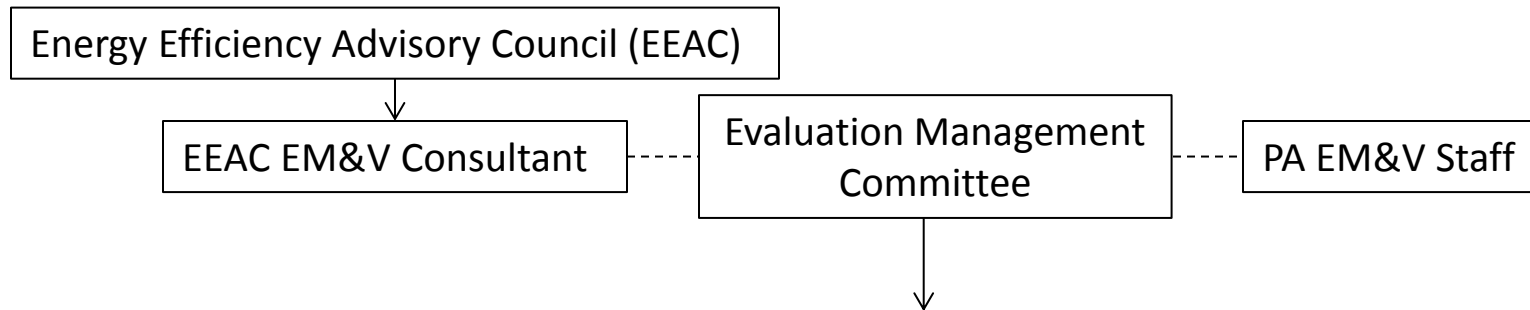
- *Importance.* Allocate evaluation resources to research questions that have a significant impact on demand-side management (DSM) investments or that directly inform significant policy questions and stakeholder interests.
- *History.* Make the most of existing research before investing in additional research
- *Uncertainty.* Allocate evaluation resources to research questions with the greatest uncertainty.
- *Timing.* Ensure the timing of the research is appropriate for the research questions being asked.

Additional Principles for Consideration When Developing EM&V Portfolio

- *Balance* -- Undertake a mix of studies each year, in terms of the evaluation elements assessed (impact, process, other) and which programs are evaluated.
- *Depth* -- Greater resources always allow for more in-depth study, and typically more reliable evaluation findings. Determine the level of study needed to cost-effectively estimate savings.
- *Flexibility* -- Unanticipated but not yet known or identified evaluation may arise over time. To ensure that these issues may be addressed, allow sufficient resources for unidentified ad hoc evaluation efforts.
- *Differences* – There can be legitimate reasons for variations in findings of statewide studies within small vs. large PAs, gas vs. electric PAs, or within definable economic/demographic areas of the state. When appropriate, evaluation research activities may be implemented in a manner that ensures consideration, identification, and documentation of any such legitimate differences.

Overall Evaluation Process

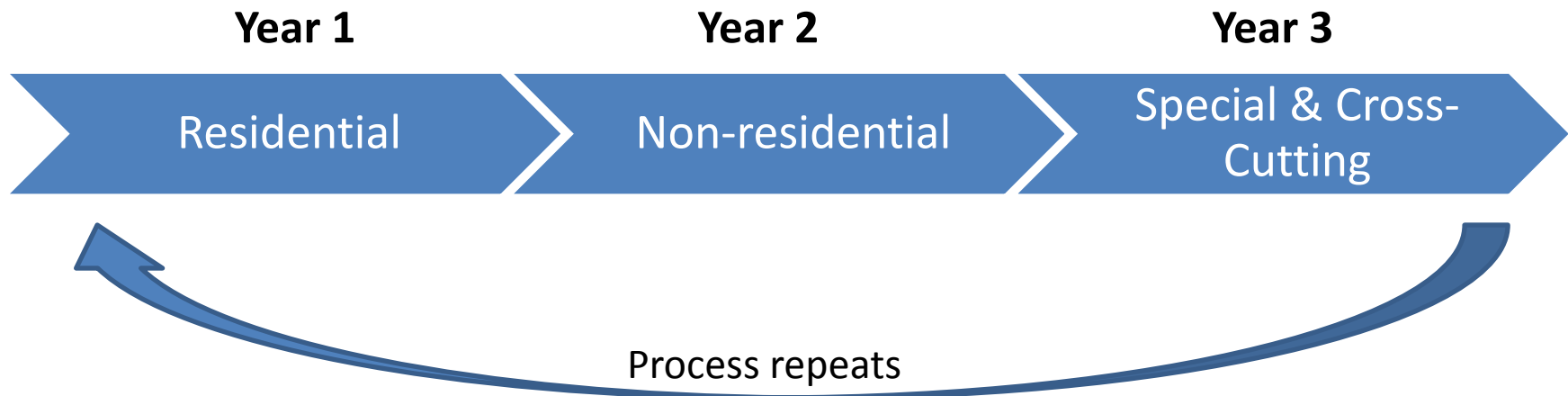
Communication is key – the EM&V process is collaborative, ensuring appropriate representation from interested stakeholders



Stage	Document Under Review	Description
Stage 1: Conceptual Framework	1 Page Summary	Provides conceptual framework for the project including a very high-level budget and timing, as well as the objective or goal.
Stage 2: Preliminary (High Level) Work Plan	2 - 3 Page Summary	Provides strategies to meet objective including more detail on the potential research design, level of effort (number of surveys, site visits) including additional detail on budget/timing.
Stage 3: Detailed Work Plan	3 – 25 Page Work Plan	Provides detailed sampling and analysis plans; specific staffing and milestone deliverables.
Stage 4: In Progress	Status Report	Work is conducted consistently with plan – there may be detailed planning occurring simultaneously with execution on early tasks.
Stage 5: Reporting	Draft Report	Period from draft report through final report and any review/communications/meetings in-between, includes paperwork for submittal.
Stage 6: Complete	Final Report	Report is finalized and either filed or ready to be filed with the DPU.

Vendors are selected using a collaborative approach, PAs and the EEAC's EM&V consultant each contribute to a weighted scoring matrix

Evaluation Contracting Process



Key Points

- 3 year contract with prime vendors for each research area
- Once vendor is selected, they get all work in that research area
- Work is not bid out for individual studies
- Process described in previous slides determines what gets studied

Measurement & Verification (M&V) and the Technical Reference Manual (TRM)

The *M&V* in EM&V is critical and linked to the TRM

Site visits are conducted as part of M&V activities

↳ In-Service Rates are developed to account for installation
Metering and/or logging is conducted to develop gross savings estimates



EM&V results are memorialized in the TRM

Technical Reference Manual

↳ Provides transparency into how savings values are derived
Defines savings algorithms, measure lives, non-energy benefits, etc...
Cites sources of information



TRM values are put into regulatory reporting model

Regulatory Reporting

↳ Values from the TRM are incorporated into the Benefit-Cost Ratio (BCR) Model
Outputs from tracking system are inputted into the BCR model
Model outputs are used for official reporting purposes

- What works
 - Collaboration and communication
 - Clear delineation of roles and responsibilities
- Room for improvement
 - Need to shorten the feedback loop while maintaining appropriate rigor
 - Ensure that implementation teams can absorb EM&V recommendations