Designing a Commercial Building M&V2.0 Pilot

Connecticut Regulatory Perspective

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CT pilot connects critical stakeholders

- Regulatory: CT DEEP
  - Pilot management, regulatory buy-in, first-hand audience for results
- Utility: Eversource and UI
  - Building data, engineering and measure implementation, use of traditional and M&V2.0
- Regional Energy Efficiency Organization (REEO): NEEP
  - Transfer of results, connection with national developments, facilitation of regional scale-up
- National Laboratory: LBNL
  - Technical experience and resources for application of M&V2.0 tools

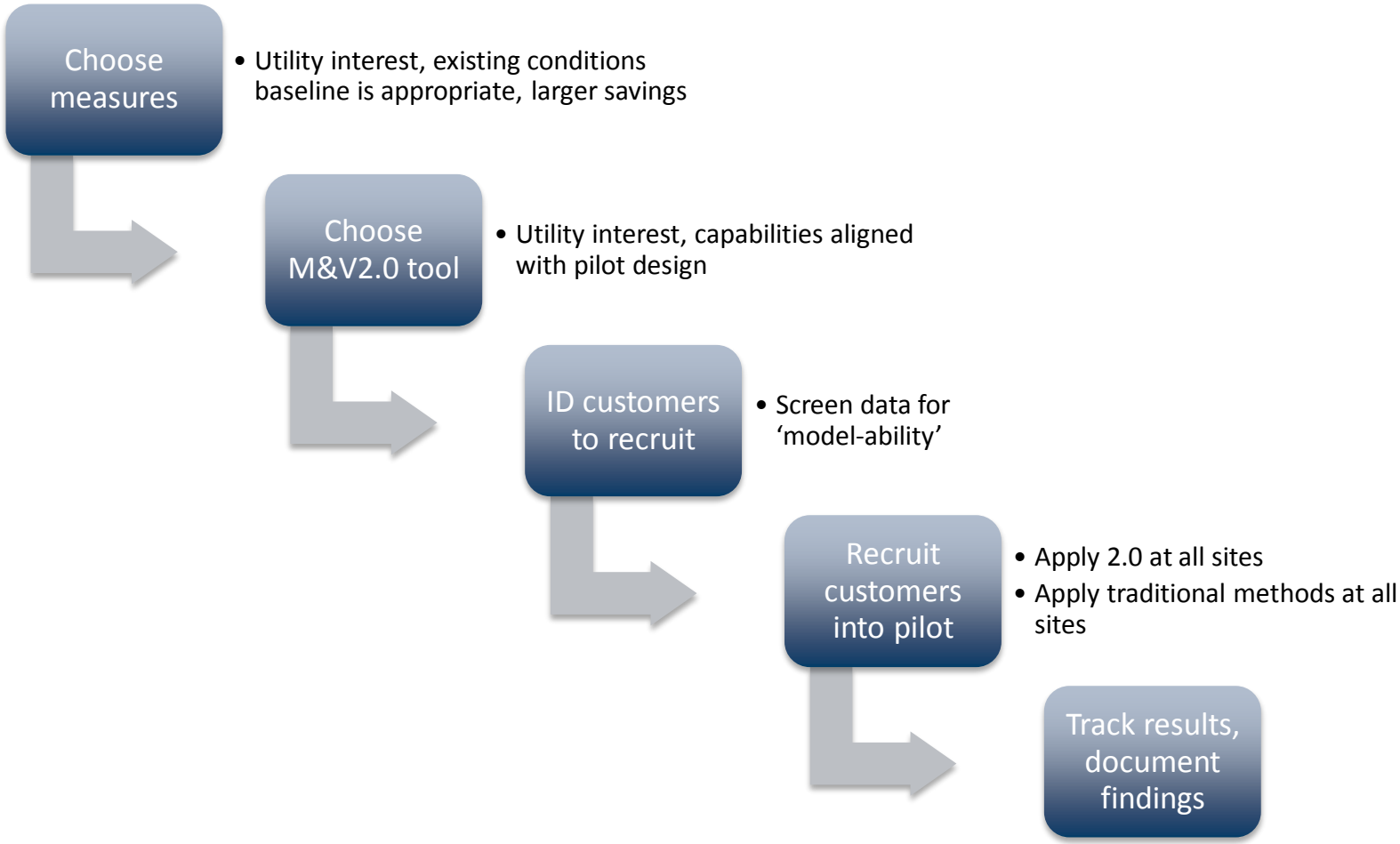
Overall project objectives

- **Test use of, i.e., pilot M&V 2.0**, and compare to traditional M&V techniques
  - Accuracy of result, labor time, difference/similarity in savings estimates
- Assess **how M&V 2.0 tools** are best **coordinated with** supplemental evaluation and analysis (**'EM&V 2.0'**)
- **Transfer knowledge** to build state capacities in the region
- **Support efforts to build transparency** of EM&V methods used by states, through the use of standardized EM&V reporting forms
- **Inform, coordinate** learning and pilot results with other REEOs and **national efforts**

Pilot scope: Walk before you run

- Many questions of interest for M&V2.0, resources always practical constraint
- CT pilot to focus on ground-level M&V2.0 performance & benefits issues: good results can inspire deeper investigations to address questions of scale, etc…
- Highest priority questions: achieved accuracy, labor time tradeoffs, value of continuous feedback, proper handling of non-routine adjustments, comparability of savings results

Commercial M&V2.0 investigation - process



Tracking results and documenting findings

- Document fraction of buildings that are model-able (from screening phase)
- Conduct ‘traditional’ M&V
  - Use whatever M&V method typically applied to measure types
  - Document calculations, adjustments, ranges of uncertainty at site and aggregate level
  - Track, record labor time, calendar time
- In parallel, conduct continuous M&V2.0
  - Leverage feedback to flag non-routine events, ‘off-line’ measures
  - Document adjustments, quantify savings and uncertainty due to model error, site and aggregate level
  - Track, record labor time, calendar time
- Compare, contrast results: value of continuous feedback, savings and uncertainty results, handling of adjustments, labor and calendar time requirements
- Develop: standard transparent processes for replication, documentation, reporting of results from 2.0 tools – screening, adjustments, uncertainty analyses

GROUP EXERCISE

Questions for group exercise

1. Given the pilot goals to investigate: labor/time requirements for 2.0 vs. traditional M&V methods, accuracy of 2.0 results, and differences in savings results obtained vs. traditional methods

   What are the strengths and weaknesses of the current design and how might weaknesses be improved?

2. Given the pilot goals to investigate: treatment of non-routine events when using 2.0 tools, and the value of feedback in realizing savings

   What are the strengths and weaknesses of the current design and how might weaknesses be improved?

3. Given funding limits the number of buildings that can be included in the pilot
   a. What are the advantages and disadvantages to targeting more or less than ~20 buildings for the pilot?
   b. Should the buildings in the pilot be similar (eg mid-sized office) or heterogeneous? What are the pros/cons to either approach?

4. Given that the pilot will compare M&V2.0 and traditional M&V
   a. Is is appropriate to conduct M&V2.0 and traditional M&V in the same buildings, side by side, or should the cohort be split?
   b. Should those who implement the M&V2.0 be different individuals from those who conduct the traditional M&V? How important is this?

5. Do you have questions about the application of M&V2.0 tools that are not addressed in the pilot design? If so, what are they, and what design elements would you add?

Scope of CT residential investigation

- Research technical methods used in 2.0 tools for residential
- Assess tools with respect to current practice in residential 2.0
- Conduct pilot using whole house retrofit data
- Document pilot design and 2.0 effectiveness
- Recommend key elements to include in software testing protocols

CT residential pilot design

- Identify tool or vendor to participate, analyze whole house retrofit program
- Assess how 2.0 process integrates with, compares to traditional 3rd party evaluation
  - How auto-M&V real-time data collection and analysis should be complemented by 3rd party evaluation of the data, and at what stage
  - Understand tool analysis methods, supplemental data needs, comparison group construction
- Address whether, to what extent comparison group method provides net savings
- Determine whether 9-12 month post program data collection period is long enough to capture all seasonal use patterns
- Assess cost effectiveness of the automated approach