GOVERNANCE AND MONITORING, VERIFICATION AND EVALUATION

IEA / ENSPOL / RAP WORKSHOP

BRUSSELS

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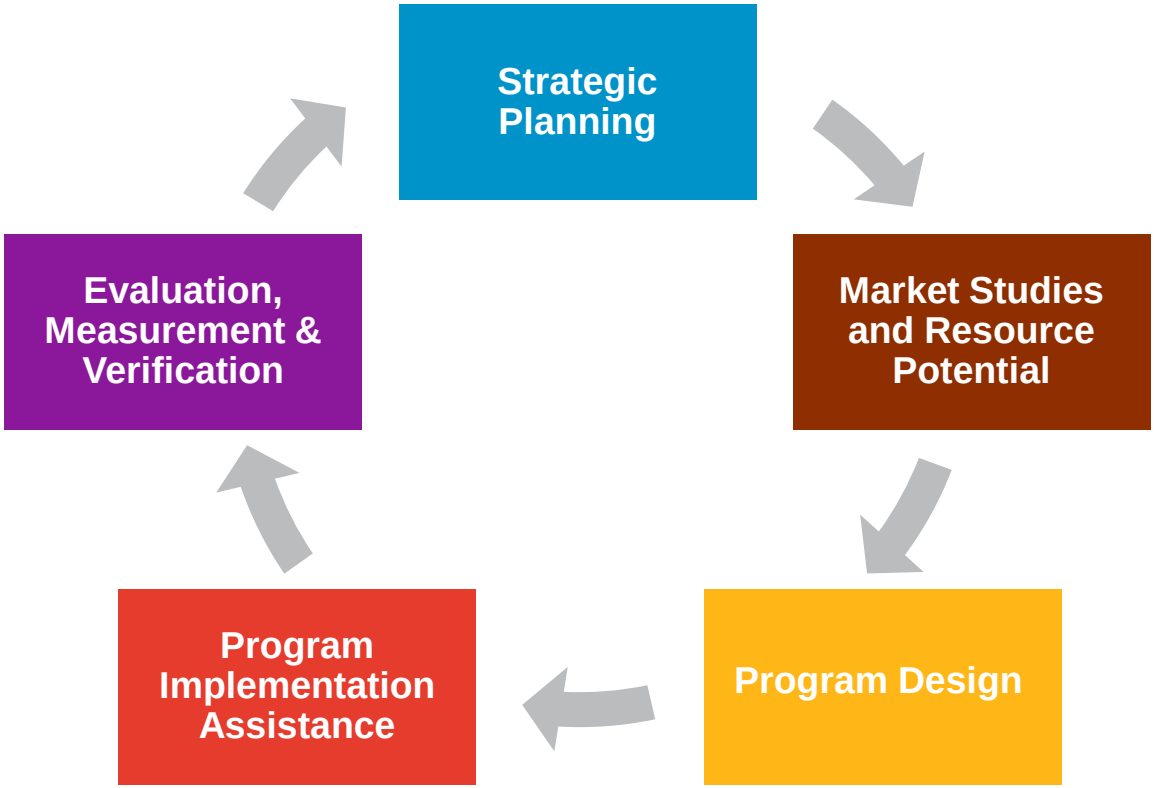
ENERGY EFFICIENCY / DSM POLICY & PROGRAM CYCLES



Source: Navigant

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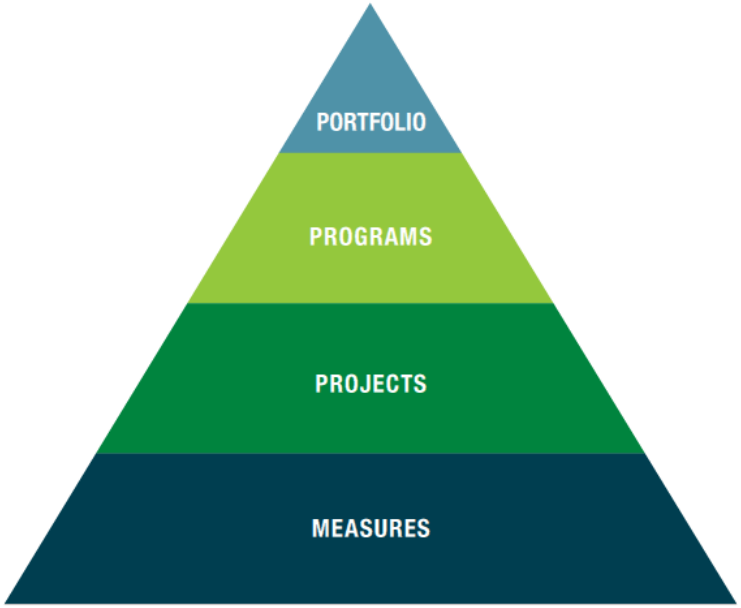
ENERGY EFFICIENCY FROM THE GROUND UP

Hierarchy of Energy Efficiency Activities



(Source: State and Local Energy Efficiency Action Network, 2012)

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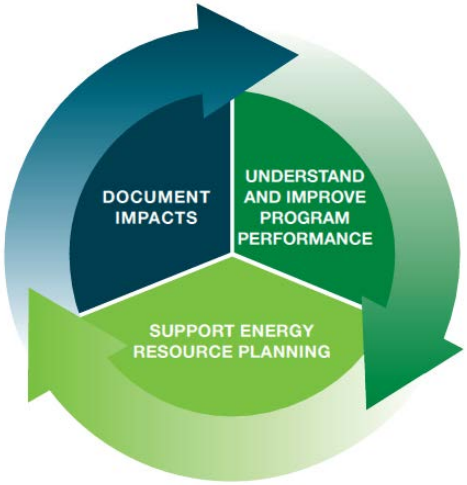
WHY EVALUATE POLICIES & PROGRAMS?

- Evaluation, measurement, and verification (EM&V) has three primary objectives, as shown in figure at right:
  - **Document the impacts** of a program and determine whether the subject program (or portfolio) met its goals
  - **Identify ways to improve current and future programs** by determining why program-induced impacts occurred; attribution of theory and logic 'did the program induce changes in supply chain?'
  - **Support energy demand forecasting and resource planning** by understanding the historical and future resource contributions of energy efficiency compared to other energy resources

Objectives of Energy Efficiency EM&V



(Source: State and Local Energy Efficiency Action Network, 2012)

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SELECT THE RIGHT TOOLS TO ASSESS IMPACTS

Engineering

- Tracking System Review
- Engineering Review
- Customer Surveys
- Onsite Verification
- End-use Metering

Modeling

- Calibrated Building Energy Simulation
- Site Specific billing analysis with Energy Simulation

Econometric

- Billing Analysis
- Survey Based Approach

Source: Navigant

PROTOCOLS AND METHODS COMPARISON

EVALUATION METHODOLOGY	ACCURATE	TIMELY	COST-EFFECTIVE
Tracking System Review	○	●	●
Engineering Review	◒	●	◒
Customer Surveys	◒	◒	◒
Onsite Verification	◒	◒	◒
End-Use Metering	●	○	○
Calibrated Building Energy Simulation Modeling	●	◒	◒
Site-Specific Energy Simulation Modeling	●	◒	○
Billing Analysis	◒	●	◒
Survey-Based Approach	◒	◒	○

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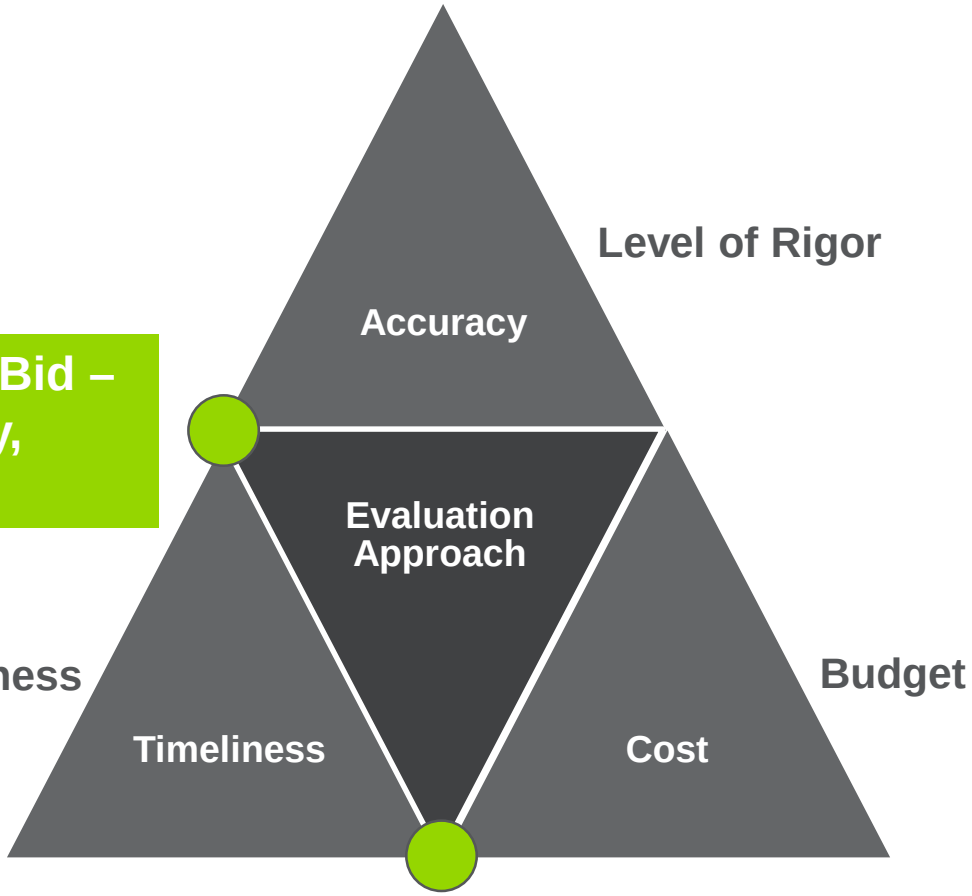
PRIORITIZING EVALUATION EFFORTS: ANALYZE TRADEOFFS



Scenario 1: ISO Bid – Accurate, Timely, and Expensive

Scenario 2: New Program – Less Rigor, Timely, and Low Cost. May be Process Focused

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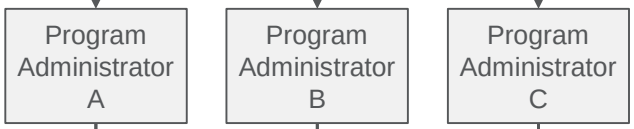
EXAMPLE: ISO NEW ENGLAND'S FORWARD CAPACITY MARKET
VALUE CHAIN CREATION

ISO New England's Forward Capacity Market

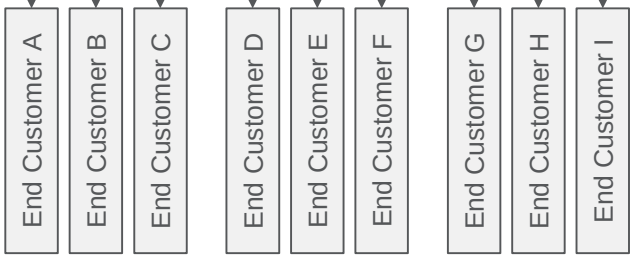
- ISO New England runs an **auction** process, setting a total required capacity and a floor clearing price
- **Energy efficiency** capacity competes with electricity **generation** and **demand response** capacity
- Approx. **1.8 GW** of energy efficiency resources cleared in the last auction rounds, accounting for approx. 5% of total cleared capacity

Energy Efficiency Program Administrators



- Program administrators can **secure revenue stream** 3 years in advance for the **full expected life** of the energy efficiency measure
- Revenue from ISO-NE's Forward Capacity Market can **cover 10% of the budget** of a typical energy efficiency portfolio

Customer-Level Energy Efficiency Measures



- Capacity bid for by program administrators needs to be **aggregated** to reach the **minimum threshold of 100 kW** – equivalent to peak savings of 20,000 compact fluorescent lamps
- Typical **energy efficiency measures** include residential compact fluorescent lamps, commercial lighting, efficient room air conditioning, and efficient refrigerators

Source: Navigant's subject-matter expert interviews, Regulatory Assistance Project report, Synapse Energy Economics report, ISO-NE Energy-Efficiency Forecast Background Report, European Council for an Energy Efficient Economy report

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Final draft

SUMMARY

- Independent EM&V of EE investments provides assurance to funders/regulators/stakeholders that the EE resource is reliable
- Common evaluation protocols help assure metrics & methods are consistent across jurisdictions, allowing for comparisons of impacts/success
  - UMP (DOE), IEPPEC (NA, Europe, and now Asia) share best practices
  - Similar programs may require different evaluation approaches depending on stakeholder needs, the EE scheme & the regulatory environment
- What else is needed to assure EE targets are being met?
  - More real-world data (to compare ex-ante assumptions to ex-poste measure, program, portfolio savings – improving estimates for next cycle)
  - Determine proper baselines in fast changing markets (e.g. LED lighting)
- Are other policy goals being considered in evaluation planning?
  - Is detail needed on additionality, societal considerations, multiple impacts?
- Governance: who needs to be at the table to determine specific evaluation requirements & to review findings?

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