Evaluation Overview

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Session Outline

- Key Evaluation Questions
- What is Impact Evaluation?
- What is Process Evaluation?
- General Discussion

Keep in mind:

This is relevant for ALL energy resources
Key Evaluation Questions

- What is evaluation?
- Why do we evaluate?
- What is the focus of evaluation?
- When do we evaluate?
- Who are the key stakeholders?
What is Evaluation?

- Evaluation is an **objective** process of understanding **how** a policy or program was implemented, **what** effects it had, for **whom** and **why**
- Leads to **more effective** policies and programs
Why Do We Evaluate?

• **To Reduce Uncertainty**
  — Provide the information necessary to make good decisions regarding policies and investments in programs

• **To Assess Impacts**
  — Estimate the change in energy usage and other targets due to programs & policies

• **To Improve Program & Policy Design**
  — Prioritize program & portfolio budgets, and inform resource planners and policymakers
Focus of Evaluation #1
When Do We Evaluate?

Rationale
Objectives
Appraisal
Evaluation
Monitoring
Feedback
Policy / Program

Ex-ante
Ex-post
Process
Impact
Economic
Who Are the Key Stakeholders?

- Program implementers
- Funders
- Regulators
- Planners
- Policymakers
- Elected and appointed officials
- Special-interest groups
What is Impact Evaluation?

• **Purpose/Objective**
  - Estimate the change due to programs or policies
    - Change in energy use, greenhouse gas (GHG) emissions, the market share for efficient products, other benefits, etc.

• **Methods**
  - Data collection (measurement and verification – M&V)
  - Engineering algorithms (deemed/stipulated savings), statistical/econometric analysis
  - Surveys, modeling, statistical analysis

• **Key Outcomes**
  - **Gross** energy and demand savings or changes in energy use
  - **[Net (attributable)]** energy and demand savings
    - reflecting free riders & spillover
What is Impact Evaluation?

Energy Savings / Market Share

Time

Policy Launch

Measurement

Baseline (no Policy)

Gross Policy Impact

Natural Change

Net Policy Impact

with Policy

Education & Labeling

Giveaways

Rebates

Codes
Which Impacts?

• Energy
  — Electricity: use (kWh) and demand (kW)
  — Natural gas

• Time period
  — Annually, seasonally, weekly, daily, hourly

• Increasing interest in multiple benefits (non-energy impacts)
  — Employment, indoor and outdoor air quality, health, climate change, etc.
Energy Impact Data Needed to Collect

- Monthly energy (electricity) consumption
- Metered or monitored energy usage
- Load shape data (day, season, year)
- Physical characteristics of the building and equipment (size and location)
- Other physical variables: temperature, flow, weather
- Building occupancy schedules (hours of operation) and occupant data
Data Collection and Analysis Methods for Energy Impact Evaluation

- Engineering methods
- Basic statistical billing analysis
- Multivariate statistical analysis
- End-use metering
- Short-term monitoring
- Integrative methods
Reduced Energy Consumption by Air Conditioners

- Laboratory testing (efficient and inefficient)
- In-field monitoring (efficient and inefficient)
  - Sample of homes
    - Analysis of billing data
    - Analysis of end-use metering data
Inefficient Air Conditioners Removed From Market

• Market Analysis
  — Interviews with manufacturers and retailers
    • Census or representative sample
  — Analysis of sales data
    • Availability of data
      • Pre-MEPS data
      • Post-MEPS data
International Energy Agency’s multiple benefits

15 categories for multiple benefits – at the household, system and economic levels.
In your country, which multiple benefits are most important?
What is Process Evaluation?

• Process (formative) evaluation focuses on **how** a program is **implemented** and **operating**
  – Identifies **procedures** and program **logic**
  – Describes how it **operates**, the **services** delivered and the **functions** (roles and responsibilities)
  – **Assesses** reasons for success or problems

• Results in **recommendations** to improve program effectiveness and efficiency
  – Energy and GHG impacts, risk reduction and other multiple benefits, and cost-effectiveness
Value of Process Evaluation

- Evaluations provide a systematic way to learn from program experiences, both within a particular program over time and across programs being fielded simultaneously or contemplated for the future.

- Evaluations provide assurance to interested parties that programs are being implemented effectively and modified or refined as necessary.
Focus of Process Evaluation

- Explaining why the program succeeds or fails to deliver savings
  - Barriers to participation
  - Unanticipated behavioral response
  - Program operations
Where Do We Start?

- Begin with:
  - Program design
    - Program activities
  - Program theory
    - Explains causal links of how program activities lead to desired program outcomes
Focus of Process Evaluation

- Examine how the program was actually implemented
  - What did the program do effectively?
  - How could efficiency and effectiveness be improved?
  - Did the causal links work as expected? If not, why?
Process Evaluation Activities

- Review of program theory, program plan, and all available program materials and records
  - Looking at input, activity, output, outcome and impact
- Interviews with program managers, others involved in the program, and key stakeholders
- Comparisons with similar programs
- Evaluation of available information on the targeted market and its structure
- Development of recommendations for program improvement
Closing the Loop

Ensure that evaluation results are useful and used by varied program stakeholders.
When to Close the Loop?

Rationale → Objectives → Appraisal → Evaluation → Feedback → Rationale

Ex-ante → Policy / Program → Ex-post

Process → Impact → Economic
EGAT Example
Recommended Ways to Communicate to Audiences

• Disseminate results through informal meetings, oral briefings, and media presentations
• Write final reports with brief and nontechnical executive summaries
• Circulate results to other researchers and people interested in the issue
• Create and distribute a monthly tracking report
• Involve third parties (professional organizations) to help disseminate results
Evaluation Profession

Program and policy evaluation have been conducted for many years relying on

- professional methods, protocols, and guidelines
  - to quantify the impacts from energy efficiency programs and policies
  - to improve program and policy effectiveness
  - to help policymaking and resource planning
A Professional Evaluation Community in Asia??

“The best way to predict the future is to invent it.”
Time for Questions