



ASIA CLEAN ENERGY FORUM 2017

Evaluation Overview

Edward Vine
Lawrence Berkeley National Laboratory

ACEF Evaluation Workshop

Manila, Philippines

June 5, 2017



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

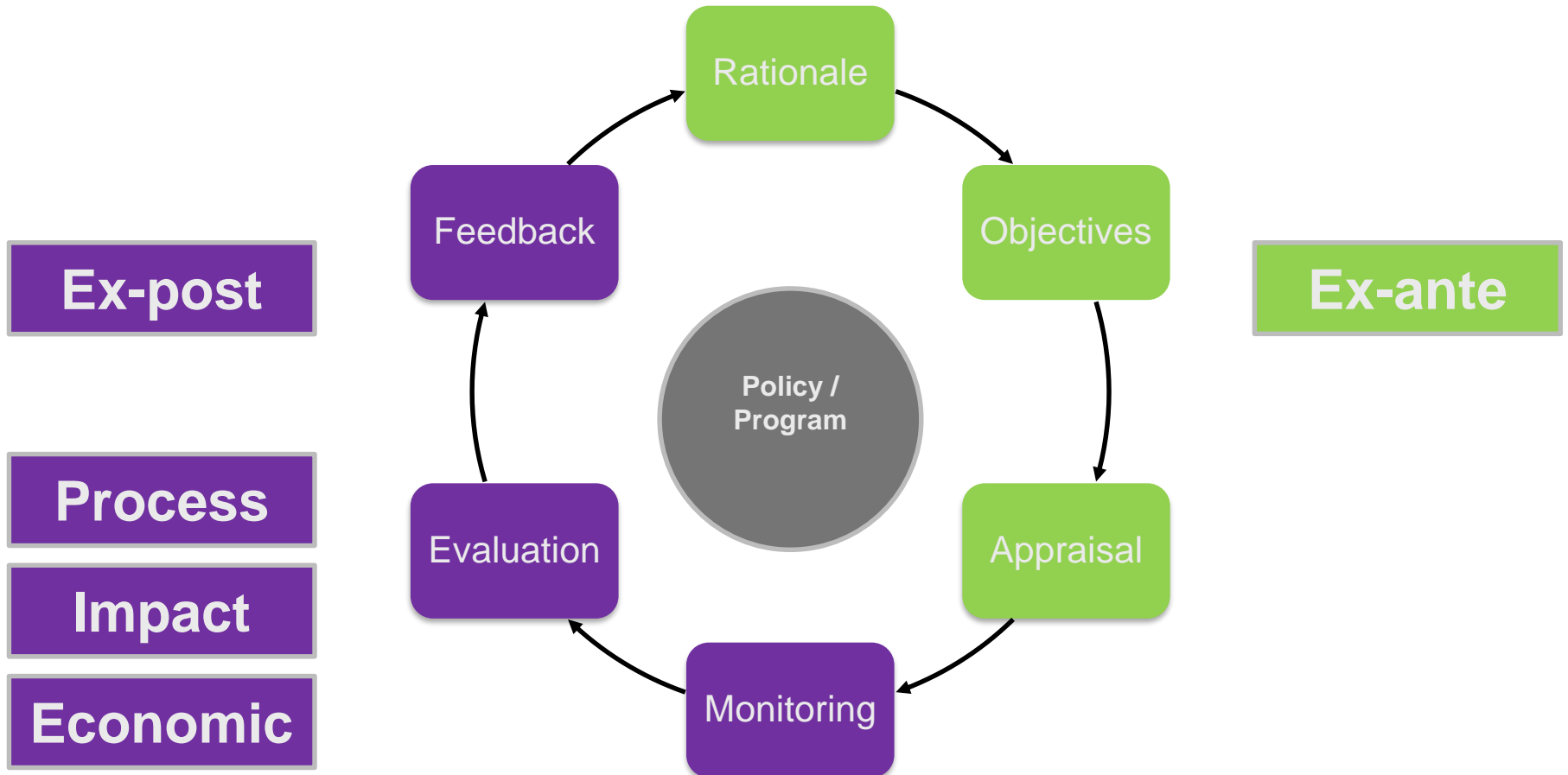
Why Do We Evaluate?

- **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?





Who Are the Key Stakeholders?

- Program implementers
- Funders
- Regulators
- Planners
- Policymakers
- Elected and appointed officials
- Special-interest groups

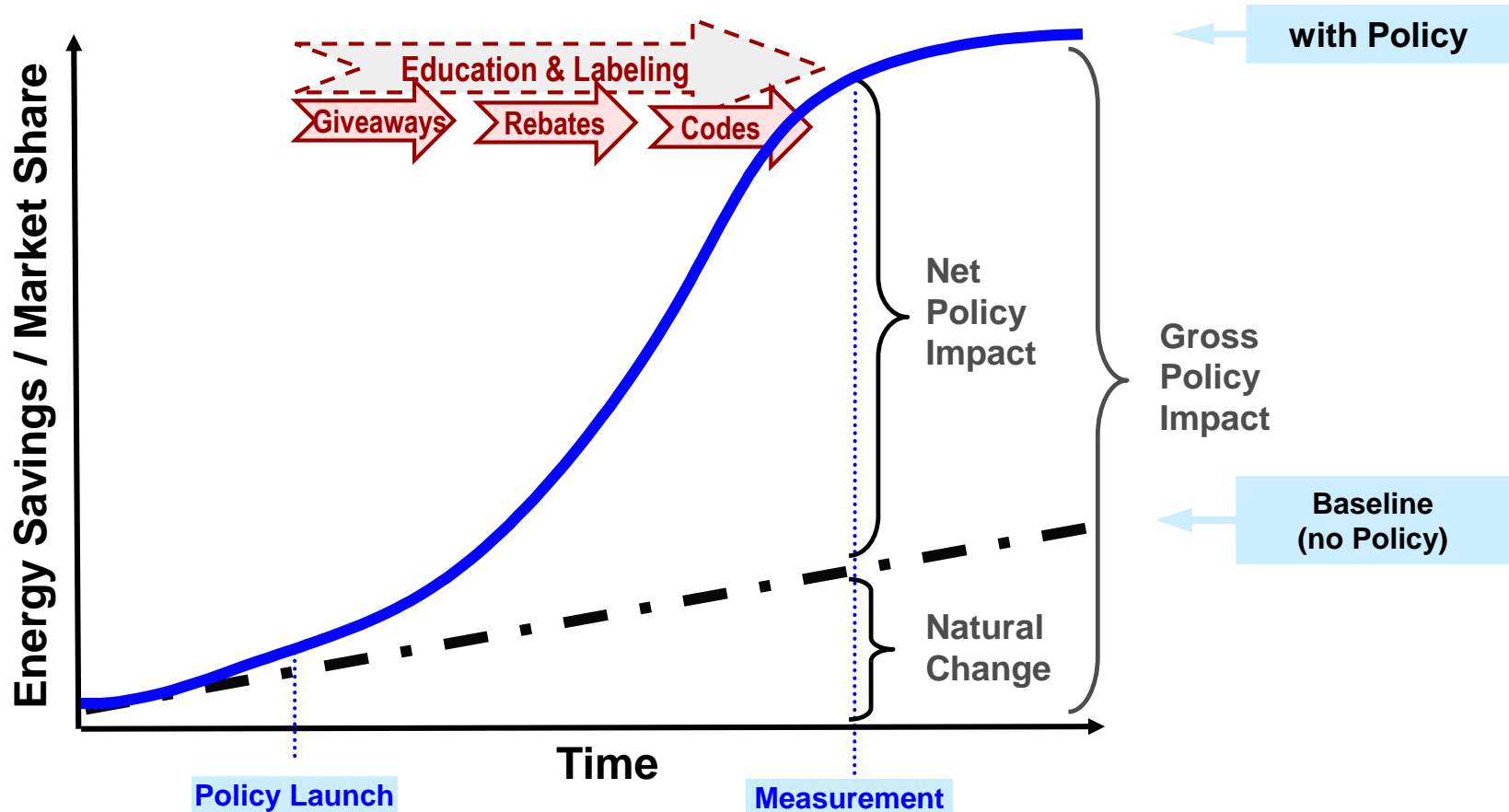


What is Impact Evaluation?

- **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?





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

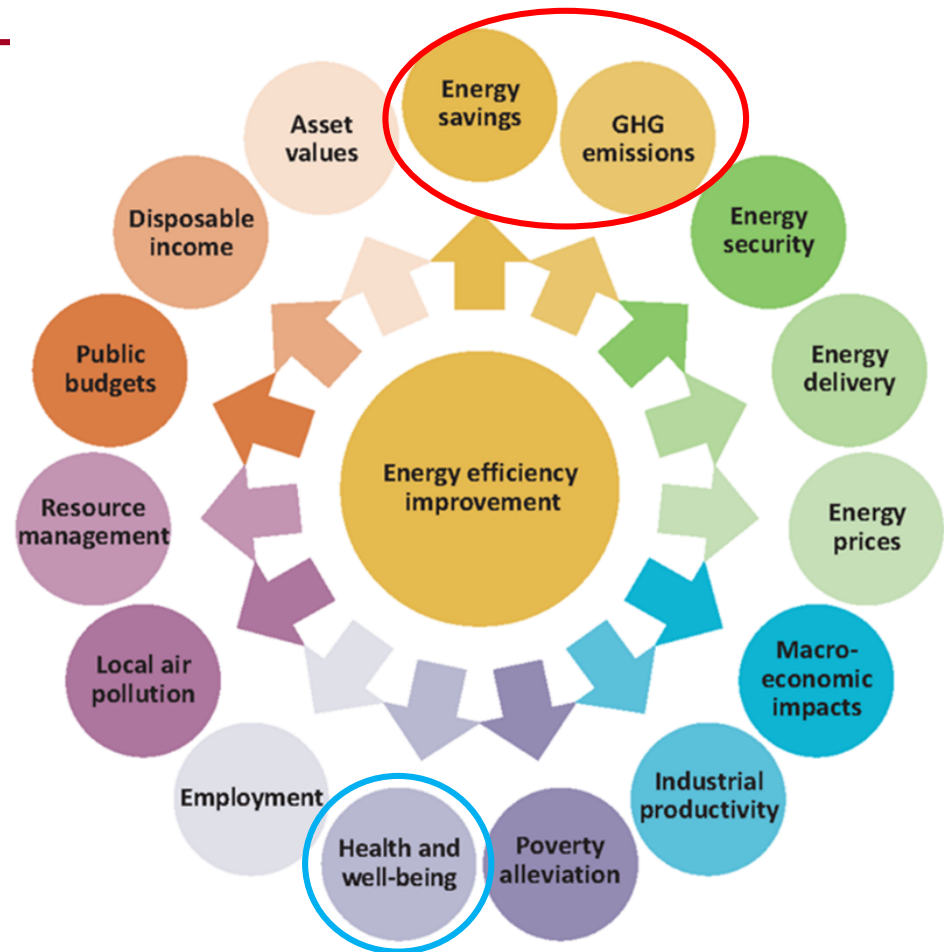
Inefficient Air Conditioners Removed From Market



- 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.





Discussion Question

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

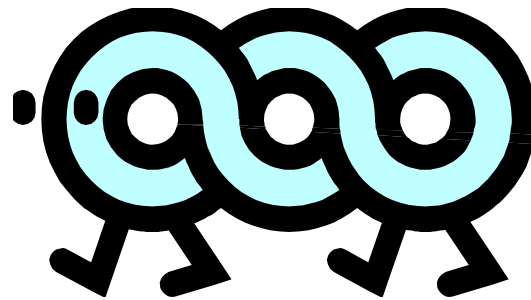
- Examine how the program was actually implemented
 - What did the program do effectively?
 - How could efficiency and effectiveness be improved?
 - Did the causal links work as expected? If not, why?

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?





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

