Building Efficiency Accelerator





GLOBAL ENERGY EFFICIENCY ACCELERATOR PLATFORM

Tracking Building Efficiency Progress in Cities & Using the BEA Tracking Progress Template

BEA city exchange and learning webinar - April 25, 2017

Eric Mackres (WRI) and Brian Dean (IEA)

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Session agenda

- The importance of tracking progress
  - Why do we track progress
  - How does it connect to the BEA Action Process?
- Tracking progress
  - Goals, indicators & methods to track progress on BEA actions
  - The impacts of energy efficiency actions
  - Assessing the impacts of energy efficiency actions
- Walk-through example use of template
  - Selecting goals, indicators and methods
  - Updating the template to track progress

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THE IMPORTANCE OF TRACKING PROGRESS AND ITS CONNECTION TO THE BEA PROCESS

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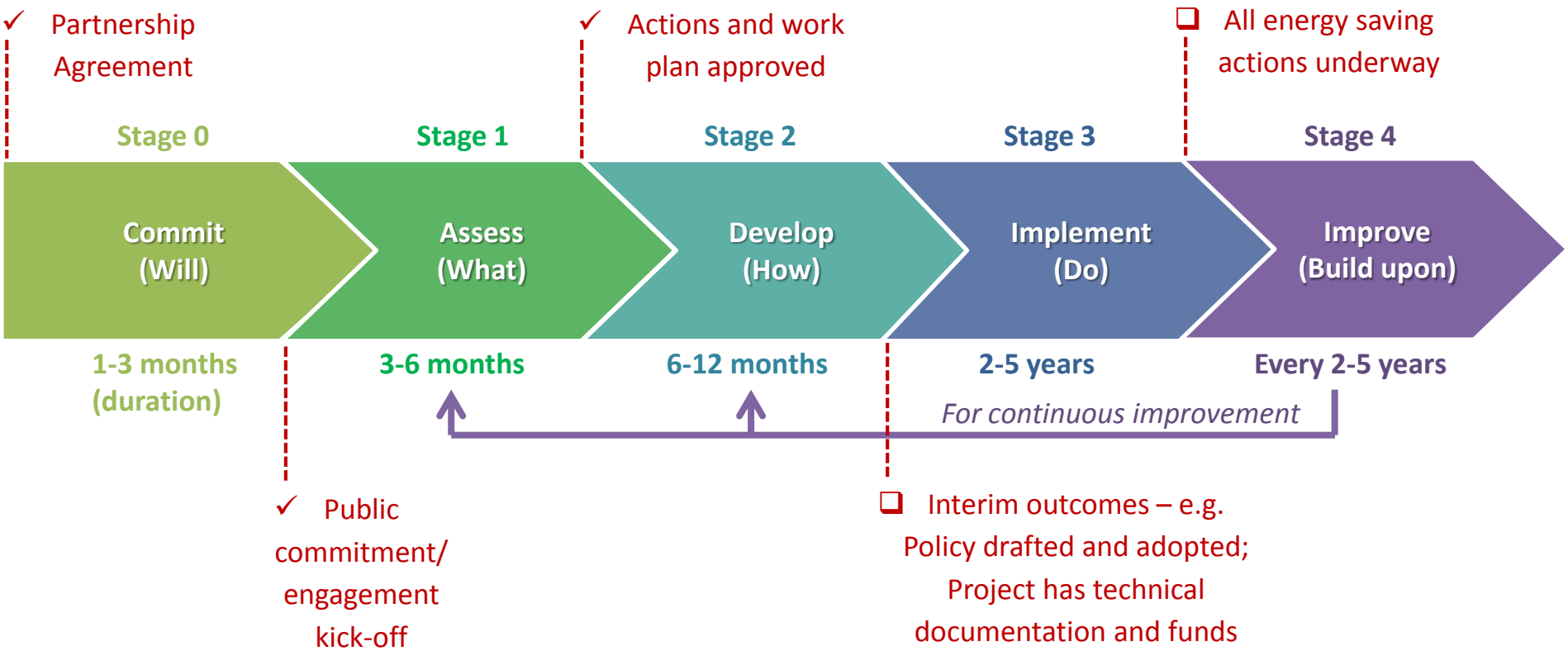
Why do we track progress?

- Assessing progress against goals
- Prioritizing activities
- Determining impacts
- Accountability and transparency
- Communicating with important stakeholders
  - Decision-makers
  - Influencers
  - Funders / Investors
- Improving our efforts and scaling up actions

Tracking progress in the BEA City Action Process

Starting status:
Limited building efficiency action in city

BEA 2030 vision:
Doubled energy efficiency improvement in city



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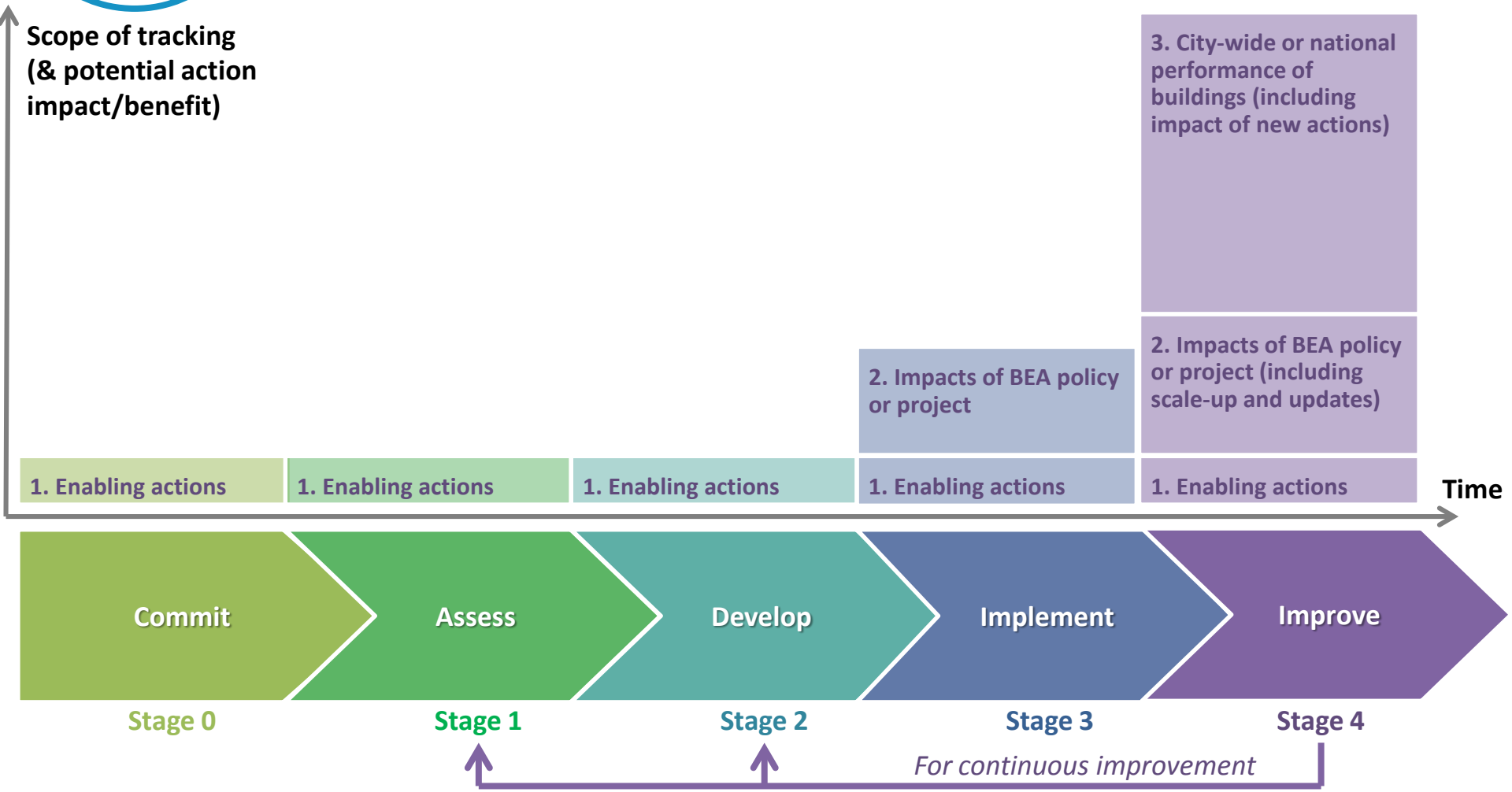
Tracking progress steps in the BEA City Action Process

Three types of progress to track



BEA interim outcome – Deadline: September 2017

- Each BEA city should aim to have an interim outcome for both its policy and project by September
- What is an interim outcome?
  - Tangible, specific, compelling, fundable
  - Data + business case for implementation/ investment
  - Often the final outputs of the "development" stage or the first successes of "implementation"
- Examples:
  - Completed building audits with documented cost-effective efficiency measures
  - Benchmarked portfolio of buildings committed to an energy saving target
  - Policy adopted of drafted and pending approval
  - City investment opportunity concept note

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QUESTIONS AND REFLECTIONS

What has your city been able to achieve so far on your three commitments, policy, project and tracking progress?

What concerns or challenges do you have?

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TRACKING PROGRESS :

GOALS, INDICATORS & METHODS TO TRACK PROGRESS ON BEA ACTIONS

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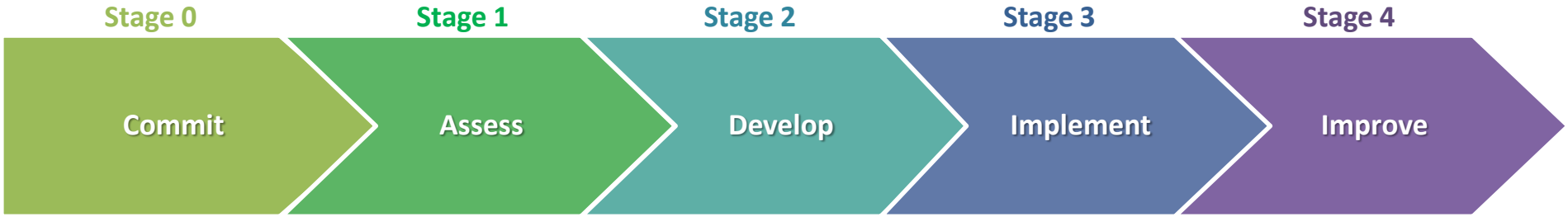
The elements of a tracking plan

- **Goals** - *What do you want to achieve?*
- **Indicators** - *How will you measure your achievements?*
- **Methods** - *How will you track and report your indicators?*

Tracking progress steps in the BEA City Action Process

Potential goals at each stage



Potential goals

- Visible commitment
- Joint vision

Potential goals

- Stakeholder engagement
- Baseline data
- Option evaluation

Potential goals

- Action plan
- Project documentation
- Draft policy
- Funding

Potential goals

- Energy savings
- Cost savings
- Pollution reduction
- GHG emissions reduction
- Other benefits

Potential goals

- Improvements made to policies and programs
- City-wide energy bill
- Distribution of energy intensity by location, building types, etc.

Tracking Progress Template

Goals, indicators and methods

Jurisdiction name: _____ Date updated: _____				
	Step 1. Identify what you want to track and how you will do so			*Step 2. Track your results*
	Goals: *What do you want to achieve? (address both your policy and project actions)*	**Indicators:** *How will you measure your achievements?*	**Methods:** *How will you track and report your achievements?*	**Outcomes**: *What have you achieved so far?*
Stage 0. Commit				
Stage 1. Assess				
Stage 2. Develop				
Stage 3. Implement				
Stage 4. Improve				

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TRACKING PROGRESS:

THE IMPACTS OF ENERGY EFFICIENCY ACTIONS

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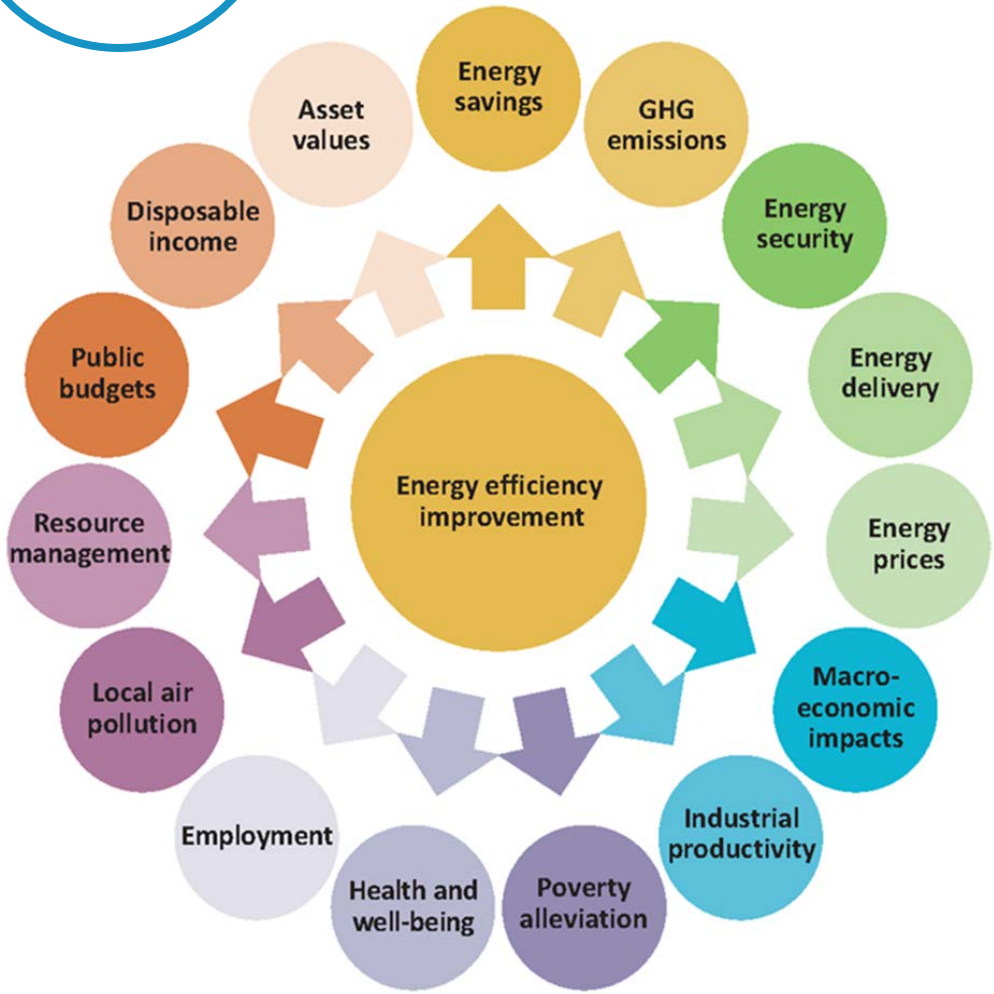
The Multiple Benefits of Energy Efficiency



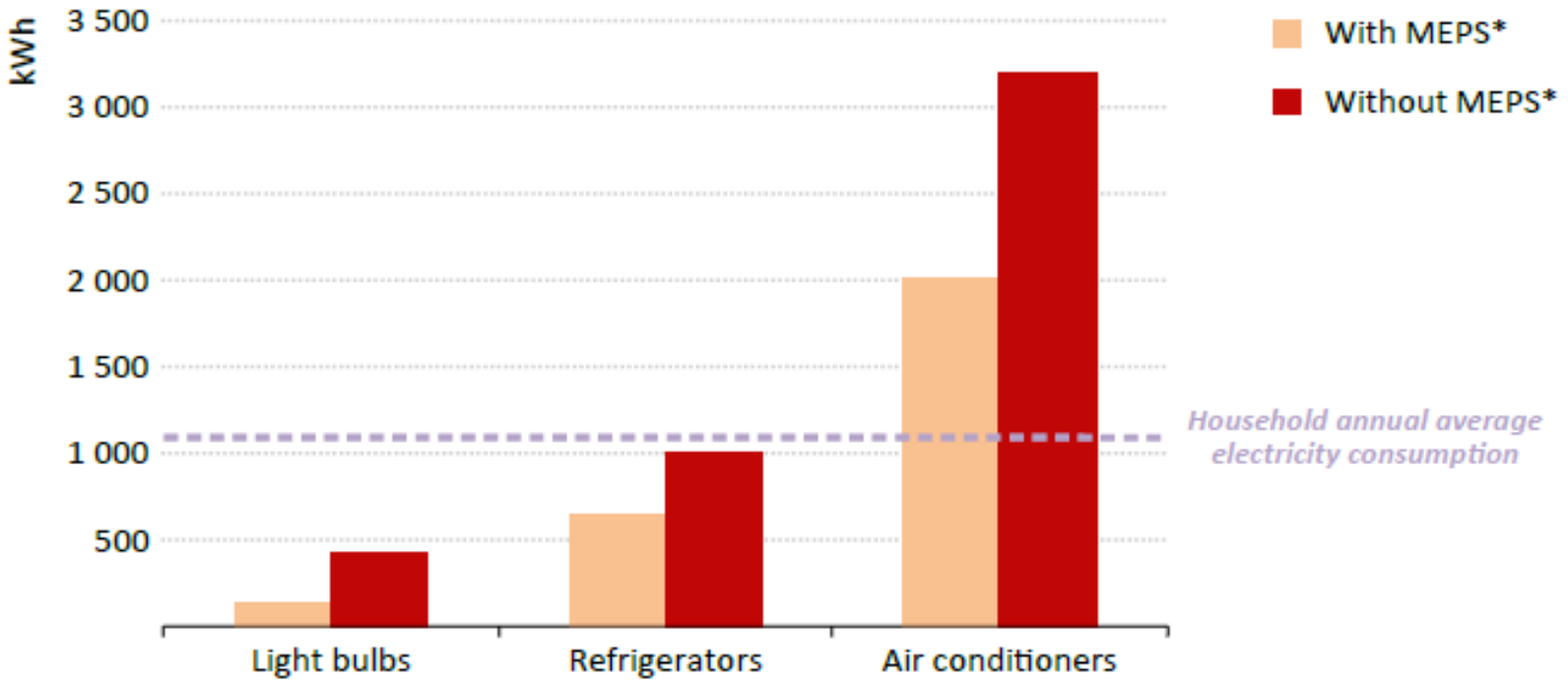
Energy Efficient Prosperity

Energy efficiency as a means to support economic and social development

www.iea.org/topics/energyefficiency/

The Multiple Benefits of Energy Efficiency

Energy efficiency measures can *expand access to energy services*



*MEPS = minimum energy performance standards.

Household average electricity consumption of selected equipment in Ghana with and without energy efficiency

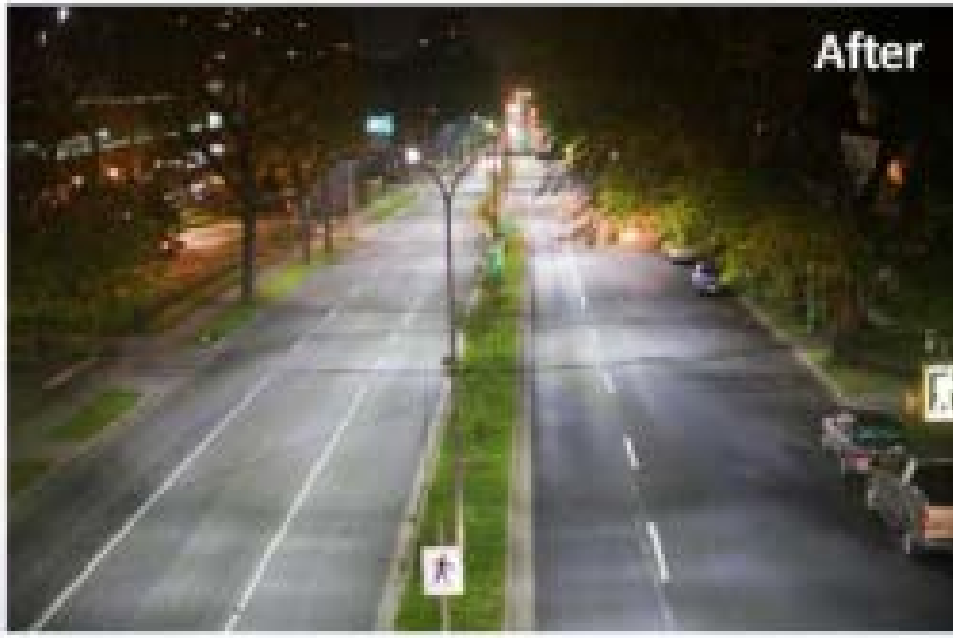
The Multiple Benefits of Energy Efficiency

Energy efficient lighting can *improve safety and security*

Poor visibility

More energy use

Better light quality

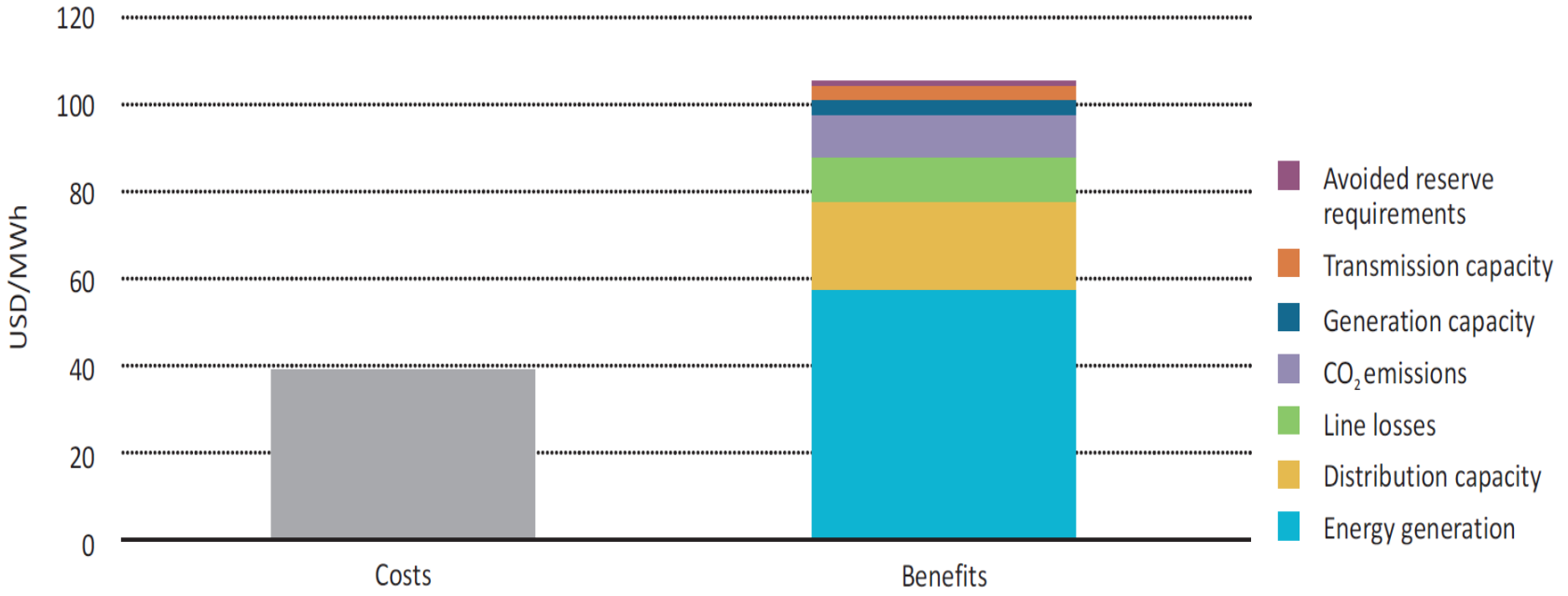


Less energy use

Improved lighting has improved safety in Nova Scotia, Canada

The Multiple Benefits of Energy Efficiency

Energy efficiency measures can *benefit utilities*



Benefits for utilities: operational benefits in a resource constrained operating context

Indirect benefits for utilities: increased affordability reduces customer default and costs

The Multiple Benefits of Energy Efficiency

Energy efficiency measures can *benefit owners and occupants*

Comfort	Improved lighting comfort, thermal comfort and noise comfort
Health	Improved physical and mental health from indoor air quality and comfort.
Operations and maintenance	Improved building and systems durability with reduced need for maintenance.
Safety and security	Improved safety and security through lighting and controls; reduced chance of fire from gas leaks.
Property value	Increased rental income, reduced tenant turnover, increased habitable floor area.

Benefits for owners: increased quality & property value

Benefits for occupants: increased health, comfort, safety and affordability

The Multiple Benefits of Energy Efficiency

Energy efficiency measures can *benefit society*

Jobs	Shifting from global to local jobs and from polluting to green jobs
Economic	Investment that provides economic benefit for many years.
Emissions	Reduced direct and indirect emissions from efficiency, refrigerants and reduced product size / quantity.
Energy	Energy use benefit from improved efficiency and reduced embodied energy from increased durability
Environmental	Air pollution, solid waste, wastewater, and reduced input materials

Benefits for society: **broader benefits that last for many years**

The Multiple Benefits of Energy Efficiency

Energy efficiency measures can *benefit cities and nations*

Energy access	Expand access to supply power to more people through the existing energy infrastructure.
Economic development	Supporting economic growth including through industrial productivity and reducing fuel import bills.
Poverty alleviation	Increasing the affordability by reducing the per-unit cost of lighting, heating, refrigeration, etc.
Combatting local pollution	Reducing direct and indirect emissions through energy efficiency on supply side and demand side.
Climate change resilience	Reducing vulnerable energy infrastructure and improving the durability of buildings.

Benefits for cities and nations: **of particular importance for emerging economies**

The Multiple Benefits of Energy Efficiency

Macroeconomic impacts on public budgets (part 1)

Sales tax revenue from sales of energy efficient products and services	Income	↑
Sales tax revenue from other goods when crowded out by energy efficiency	Income	↓
Initial costs of public investment in energy efficiency products and services	Expense	↑
Expenditures on health, social welfare and unemployment benefits	Expense	↓
Revenues from real estate transactions if properties become more valuable	Income	↑

Energy efficiency can be an expense or income for public budgets

The Multiple Benefits of Energy Efficiency

Macroeconomic impacts on public budgets (part 2)

Expenditures on public sector energy consumption	Expense	↓
Energy subsidies to final consumers	Expense	↓
Energy excise duty, emissions trading, and carbon tax revenues	Income	↓
Sales and income tax revenues from sales of goods and services	Income	↑
Public investment in energy supply infrastructure and subsidies	Expense	↓

Energy efficiency can be an expense or income for public budgets

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QUESTIONS AND REFLECTIONS

Which benefits are important to your stakeholders?

- Local policy makers
- Influential stakeholders
- Project investors
- Building occupants

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TRACKING PROGRESS:

ASSESSING THE IMPACTS OF ENERGY EFFICIENCY ACTIONS

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BEA Impact Assessment pilot: energy & emissions

- Impact estimation analyses for 7 deep dive BEA cities
- Assess the energy, environmental and economic effects of policies and projects in a relevant, consistent, and accurate way
- Process for cities:

- 4 training webinars for all cities (April-July)

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Energy Efficiency Indicators

Learn from other governments' experiences

Energy Efficiency Indicators Statistics: Country Practices Database

A supplement to the publication Energy Efficiency Indicators: Fundamentals on Statistics, this database presents practices on collection of data for developing efficiency indicators from a variety of OECD Members and non-Members.

Practices are searchable by country and territory, sector, methodology and type of available documentation. By sharing these experiences, we hope to help countries and organisations to develop their own energy efficiency indicators programmes.

Countries and territories

- Albania
- Australia
- Austria
- Belgium
- Bosnia and Herzegovina
- Brazil
- Bulgaria
- Canada
- China

Sector

- Industry
- Residential
- Services
- Transport

Methodology

- Administrative sources
- Measuring
- Modelling
- Surveying

Available content

- methodology
- project web site
- questionnaire
- report
- results

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www.iea.org/eeindicatorsmanual/

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Energy Efficiency Indicators

Example: residential data collection in Spain

Data collection	
Sample design	Equal probability of selection, according to certain characteristics. The selection is based on definitions of a typical dwelling corresponding to six sample spaces, divided by type of climatic area (Mediterranean, Continental, Atlantic) and type of dwelling (house, apartment).
Sample sources	List of addresses
Equipment used	One piece of equipment measuring the real consumption (Watt-hours) by each household appliance. Another piece of equipment recording the hourly consumption of the dwelling.
Sample/Population size	600 households
Time to complete	Four days per household
Who took measurements	Energy auditors
End uses covered	Space heating, space cooling, water heating, refrigerators, freezers, dishwashers, washing machines, clothes dryers, televisions, computers, other.
Geo-climatic measurements	Yes
Frequency	Every three years

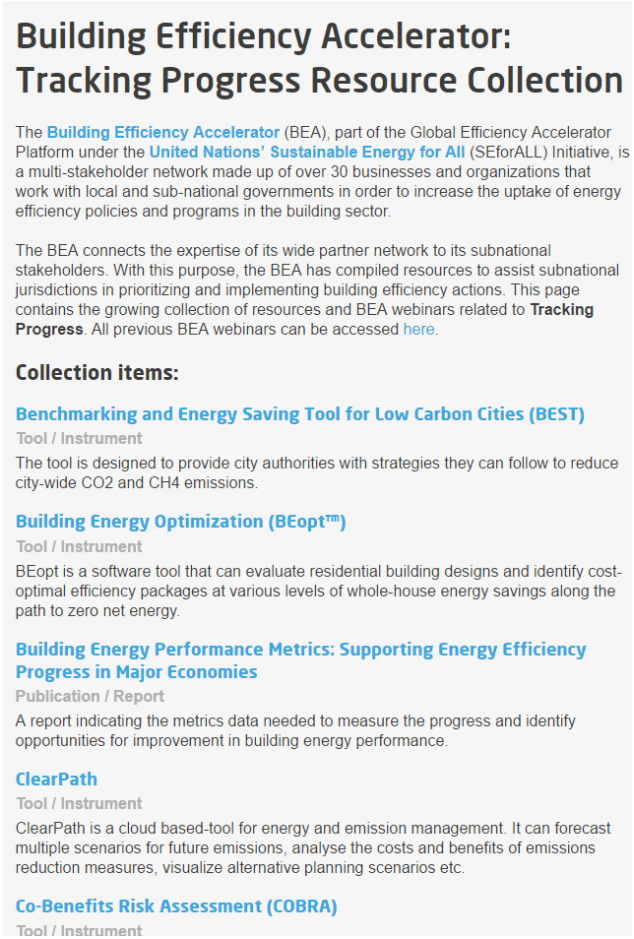
Energy Efficiency Indicators

Example: commercial building energy modeling in New Zealand

Data collection	
Model type	• Bottom-up statistical model • Purchased an existing model
Results validated	Yes: the estimates are validated with national New Zealand statistics and other organisations
Frequency	Every five years
Key model inputs	Technology life cycle Macroeconomic data Heating/cooling degree days Main building function Building floor area Building age Type of renovations Number of occupants/employees Occupancy time patterns Energy bills from building operator Energy consumption from energy supplier Diffusion of office equipment Number of lights Diffusion of lighting by type
Key model outputs	Space heating energy consumption, space cooling energy consumption, water heating energy consumption, equipment energy consumption, lighting energy consumption

Additional BEA Resources

- **Tracking Progress Template** identifies the suggested BEA format and steps to develop tracking progress method
- **Tracking Progress Framework** provides guidance on selecting *goals and indicators* based on types of actions.
- **Tracking Progress Resource Collection** provides *tools and methods* for tracking and reporting progress.



Building Efficiency Accelerator: Tracking Progress Resource Collection

The Building Efficiency Accelerator (BEA), part of the Global Efficiency Accelerator Platform under the United Nations' Sustainable Energy for All (SEforALL) Initiative, is a multi-stakeholder network made up of over 30 businesses and organizations that work with local and sub-national governments in order to increase the uptake of energy efficiency policies and programs in the building sector.

The BEA connects the expertise of its wide partner network to its subnational stakeholders. With this purpose, the BEA has compiled resources to assist subnational jurisdictions in prioritizing and implementing building efficiency actions. This page contains the growing collection of resources and BEA webinars related to **Tracking Progress**. All previous BEA webinars can be accessed here.

Collection items:

Benchmarking and Energy Saving Tool for Low Carbon Cities (BEST)
Tool / Instrument
The tool is designed to provide city authorities with strategies they can follow to reduce city-wide CO2 and CH4 emissions.

Building Energy Optimization (BEopt™)
Tool / Instrument
BEopt is a software tool that can evaluate residential building designs and identify cost-optimal efficiency packages at various levels of whole-house energy savings along the path to zero net energy.

Building Energy Performance Metrics: Supporting Energy Efficiency Progress in Major Economies
Publication / Report
A report indicating the metrics data needed to measure the progress and identify opportunities for improvement in building energy performance.

ClearPath
Tool / Instrument
ClearPath is a cloud based-tool for energy and emission management. It can forecast multiple scenarios for future emissions, analyse the costs and benefits of emissions reduction measures, visualize alternative planning scenarios etc.

Co-Benefits Risk Assessment (COBRA)
Tool / Instrument

kms.energyefficiencycentre.org/collection/building-efficiency-accelerator-tracking-progress-resource-collection

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TRACKING PROGRESS EXAMPLE

As we walk through an example, please think about how you would apply the steps to your city.

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Tracking Progress Template

Goals, indicators and methods

Jurisdiction name: _____ Date updated: _____				
	Step 1. Identify what you want to track and how you will do so			*Step 2. Track your results*
	Goals: *What do you want to achieve? (address both your policy and project actions)*	**Indicators:** *How will you measure your achievements?*	**Methods:** *How will you track and report your achievements?*	**Outcomes**: *What have you achieved so far?*
Stage 0. Commit				
Stage 1. Assess				
Stage 2. Develop				
Stage 3. Implement				
Stage 4. Improve				

Suggested steps to develop tracking progress method

1. Informed by your work plan, identify at least one goal for each BEA stage
   - Select the most important goals, but no more than three goals per stage.
   - For each stage, be sure that the goals you identify address both your policy and project actions.
2. Identify at least one corresponding indicator for each goal
3. Identify at least one corresponding tracking and reporting method for each indicator
4. Implement your work plan
5. Track and report your progress using your selected indicators and methods
6. If your work plan changes, adjust your goals, indicators and methods and document why you made the adjustments.

Hypothetical example: Identifying goals, indicators and methods

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Jurisdiction name: **Example City**	Date updated: **October 19, 2016**			
	Step 1. Identify what you want to track and how you will do so			*Step 2. Track your results*
	Goals: *What do you want to achieve?* *(address both your policy and project actions)*	**Indicators:** *How will you measure your achievements?*	**Methods:** *How will you track and report your achievements?*	**Outcomes**: *What have you achieved so far?*
Stage 0. Commit	• Establish shared vision for building efficiency action in city	• Number and type of organizations at kick-off event • Quality of engagement with organizations	• Recognition in event summary report and media coverage • Participation in working groups	
Stage 1. Assess	• Collect building data to inform selection of project actions • Collect data to inform selection of policy actions	• Number of buildings for which we collect energy and use data • Number of data sources we reach out to and review	• Enter building data into Energy Star Portfolio Manager • Enter city data into CURB tool	
Stage 2. Develop	***Project:*** • Select project site, develop project documentation, and obtain project funding ***Policy:*** • Draft regulation to adopt national building energy code in implementable way • Regulation adopted, with political support for implementation	***Project:*** • Investment grade audits for 4 buildings • Identify funding/ finance to implement EE measures in audits ***Policy:*** • Number and types of influencing stakeholders that shape policy	***Project:*** • Share audit results with key stakeholders and potential funders • Meet funders terms and metrics ***Policy:*** • Track stakeholder contact info, types, methods of engagement	

Hypothetical example: Identifying goals, indicators and methods

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Jurisdiction name: **Example City**	Date updated: **October 19, 2016**			
	Step 1. Identify what you want to track and how you will do so			*Step 2. Track your results*
	Goals: *What do you want to achieve?* *(address both your policy and project actions)*	**Indicators:** *How will you measure your achievements?*	**Methods:** *How will you track and report your achievements?*	**Outcomes**: *What have you achieved so far?*
Stage 3. Implement	***Project:*** • Successfully install EE measures in 10 buildings ***Policy:*** • Developers trained and using code • Effective implementation by buildings department	***Project:*** • Reduce energy costs of buildings by 15% or more ***Policy:*** • Compliance rate of 50% within 3 years, 80% in 5 years	***Project:*** • Track energy use and costs in Energy Star Portfolio Manager ***Policy:*** • Trainings and developer assistance • Plan review for buildings above 10,000 m2 and on-site checks for 5% of buildings	
Stage 4. Improve	***Project:*** • Develop retrofit project pipeline and investment program • Identify other options to improve city energy productivity ***Policy:*** • Adopt improved code in 5 years • Implement effective incentives for above code construction • Evaluate value of retrofit program for existing buildings	***Project:*** • Number of documented retrofit projects in pipeline • Results of assessment of additional action options ***Policy:*** • Additional feasible energy savings from new code • Number of buildings making use of incentives each year • Results of evaluation	***Project and Policy:*** • Implement building and energy data and management system for continuous measurement, monitoring and improvement	

Hypothetical example: Template used for tracking – 6 months later

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Jurisdiction name: **Example City**	Date updated: **April 19, 2016**			
	Step 1. Identify what you want to track and how you will do so			*Step 2. Track your results*
	Goals: *What do you want to achieve?* *(address both your policy and project actions)*	**Indicators:** *How will you measure your achievements?*	**Methods:** *How will you track and report your achievements?*	**Outcomes**: *What have you achieved so far?*
Stage 0. Commit	• Establish shared vision for building efficiency action in city	• Number and type of organizations at kick-off event • Quality of engagement with organizations	• Recognition in event summary report and media coverage • Participation in working groups	• 50 organizations at kick-off (20 business, 20 NGO, 10 government), 4 mentioned in media • 20 organizations joined working groups, 10 have participated in 2 or more meetings
Stage 1. Assess	• Collect building data to inform selection of project actions • Collect data to inform selection of policy actions	• Number of buildings for which we collect energy and use data • Number of data sources we reach out to and review	• Enter building data into Energy Star Portfolio Manager • Enter city data into CURB tool	• 15 public buildings entered into Portfolio Manager • All data points as of 2015 for baseline, public buildings and private buildings entered into CURB
Stage 2. Develop	***Project:*** • Select project site, develop project documentation, and obtain project funding ***Policy:*** • Draft regulation to adopt national building energy code in implementable way • Regulation adopted, with political support for implementation	***Project:*** • Investment grade audits for 4 buildings • Identify funding/ finance to implement EE measures in audits ***Policy:*** • Number and types of influencing stakeholders that shape policy	***Project:*** • Share audit results with key stakeholders and potential funders • Meet funders terms and metrics ***Policy:*** • Track stakeholder contact info, types, methods of engagement	***Project:*** • 4 audits in process, to be finished by July ***Policy:*** • Stakeholders engaged in workshops: 4 developers, 3 government, 6 service providers, 2 utilities

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NEXT STEPS FOR CITIES

Each city to finalize their goals, indicators and methods using the BEA Tracking Progress Template by 30 April.

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QUESTIONS AND DISCUSSION

What was your experience using the template?

Do you anticipate challenges to track these indicators in your city?

What other questions do you have?

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