



ENERGY AND ATMOSPHERE - GREEN

BUILDING TECHNOLOGY TRAINING PROGRAM

FOR ENERGY AND GREEN BUILDING SPECIALISTS

KRISHNAJI PAWAR, LEED AP BD+C, GSAS CGP, ISO 14001:2015, GCP
ENERGY SPECIALIST CURRICULUM







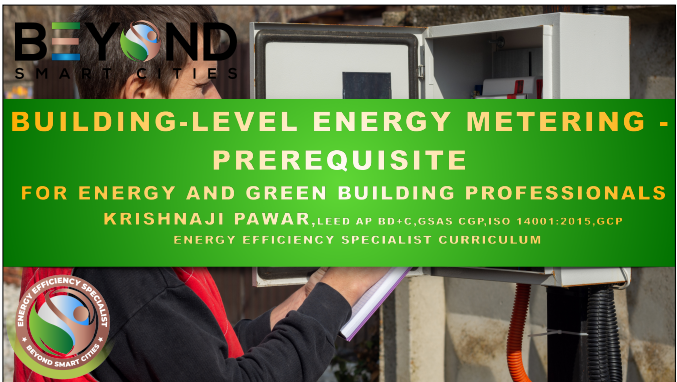
BUILDING-LEVEL ENERGY METERING -

PREREQUISITE

FOR ENERGY AND GREEN BUILDING PROFESSIONALS

KRISHNAJI PAWAR, LEED AP BD+C, GSAS CGP, ISO 14001:2015, GCP
ENERGY EFFICIENCY SPECIALIST CURRICULUM





LEARNING OBJECTIVES



- Intent of Building-Level Energy Metering - Prerequisite
- Behind the intent
- Step by Step Guidance
- Requirements
- Required Documentation
- Referenced Standards
- Connection to Ongoing Building Performance
- Terms and definitions

STEP-BY-STEP GUIDANCE +

- Areas within the project boundary that are served by separate utility feeds, such as parking garages, must also be metered.
- Some projects may elect to use multiple submeters to gain more insight into energy uses.
- Select locations with easy access for reading and maintenance.
- There are no requirements for the type of meters except that they be permanent (see *Further Explanation, Meter Selection*). ➔
- Additional meters and meter capabilities will be needed if the project team pursues EA Credit Advanced Energy Metering (see *Related Credit Tips*).
- Meters installed by the owner must be maintained and calibrated per the manufacturer's recommendations.

STEP 4. TRACK ENERGY CONSUMPTION DATA

Begin tracking energy use when the project achieves LEED certification or at occupancy, whichever occurs first.

- Measure and record energy consumption on at least a monthly basis (see *Further Explanation, Measurement Interval*). ➔
- Consider tracking building occupancy, use, and maintenance concurrently to help place energy use data in context and understand anomalies in usage patterns.

STEP 5. SHARE WHOLE-BUILDING ENERGY CONSUMPTION

Commit to sharing with USGBC the whole-project energy usage data acquired from permanent installed meters in accordance with the prerequisite requirements. The project owner must commit to sharing energy use data with USGBC for five years in one of two ways:

- USGBC-approved data template
- Third-party data source

To see the most recent list of data-sharing pathways, visit USGBC's credit library, at usgbc.org/credits.



REQUIREMENTS

NC, SCHOOLS, RETAIL, DATA CENTERS, WAREHOUSES & DISTRIBUTION CENTERS, HOSPITALITY, HEALTHCARE

Install new or use existing building-level energy meters, or submeters that can be aggregated to provide building-level data representing total building energy consumption (electricity, natural gas, chilled water, steam, fuel oil, propane, biomass, etc.). Utility-owned meters capable of aggregating building-level resource use are acceptable.

Commit to sharing with USGBC the resulting energy consumption data and electrical demand data (if metered) for a five-year period beginning on the date the project accepts LEED certification. At a minimum, energy consumption must be tracked at one-month intervals.

This commitment must carry forward for five years or until the building changes ownership or lessee.



REQUIREMENTS +

CS

Install new or use existing base building-level energy meters, or sub meters that can be aggregated to provide base building-level data representing total building energy consumption (electricity, natural gas, chilled water, steam, fuel oil, propane, etc.). Utility-owned meters capable of aggregating base building-level resource use are acceptable.

Commit to sharing with USGBC the resulting energy consumption data and electrical demand data (if metered) for a five-year period beginning on the date the project accepts LEED certification or typical occupancy, whichever comes first. At a minimum, energy consumption must be tracked at one-month intervals.

This commitment must carry forward for five years or until the building changes ownership or lessee.



REQUIRED DOCUMENTATION

Documentation	All projects
Confirmation of permanently installed meters	X
Letter of commitment	X
Confirmation of data sharing source	X

REFERENCED STANDARDS

✓Electricity. American National Standards Institute, ANSI C12.20, Class 0.2 (± 0.2):

✓ansi.org Natural gas. American National Standards Institute, ANSI B109: ansi.org

✓Thermal energy (Btu meter or heat meter). EN Standard, EN-1434: cen.eu

CONNECTION TO ONGOING BUILDING PERFORMANCE

LEED O+M EA credit. Energy Performance : Installing whole building energy meters is a simple yet critical strategy for understanding total energy use throughout the building life cycle. Tracking energy consumption on a regular basis supports effective energy management and provides data to help verify that building systems are operating as designed. Projects can submit data via the Arc platform to comply with the prerequisite requirement to share whole- project energy usage data with USGBC and get started on the path to recertification.

TERMS AND DEFINITIONS

✓District energy system (DES) a central energy conversion plant and transmission and distribution system that provides thermal energy to a group of buildings (e.g., a central cooling plant on a university campus). It does not include central energy systems that provide only electricity.

✓Revenue-grade meter a measurement tool designed to meet strict accuracy standards required by code or law. Utility meters are often called revenue grade because their measurement directly results in a charge to the customer.

✓Upstream equipment a heating or cooling system or control associated with the district energy system (DES) but not part of the thermal connection or interface with the DES. Upstream equipment includes the thermal energy conversion plant and all the transmission and distribution equipment associated with transporting the thermal energy to the project building or site.



BEYOND
SMART CITIES



THANK YOU

THE WORLD'S 1ST GREEN TECHNOLOGY
MARKETPLACE