

BEYOND
SMART CITIES

**MATERIALS & RESOURCES - GREEN BUILDING
TECHNOLOGY TRAINING PROGRAM**
FOR GREEN BUILDING AND SUSTAINABILITY SPECIALISTS
KRISHNAJI PAWAR, LEED AP BD+C, GSAS CGP, ISO 14001:2015, GCP
GREEN BUILDING SPECIALIST CURRICULUM





BEYOND
SMART CITIES

**STORAGE AND COLLECTION OF
RECYCLABLES - PREREQUISITE**
FOR GREEN BUILDING AND SUSTAINABILITY SPECIALIST
KRISHNAJI PAWAR, LEED AP BD+C, GSAS CGP, ISO 14001:2015, GCP
GREEN BUILDING SPECIALIST CURRICULUM





LEARNING OBJECTIVES



Intent of Storage and Collection of
Recyclables - Prerequisite

Behind the Intent

Step by Step Guidance

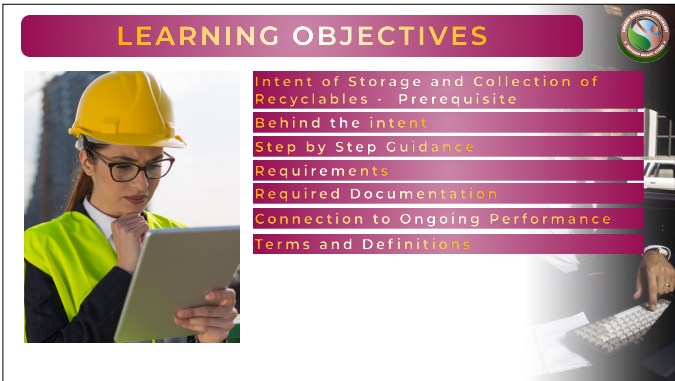
Requirements

Required Documentation

Connection to Ongoing Performance

Terms and Definitions





MR - PR- DESIGN

INTENT

To reduce the disproportionate burden of landfills and incinerators that is generated by building occupants' waste hauled to and disposed of in landfills and incinerators through reduction, reuse and recycling service and education, and to conserve natural resources.

POTENTIAL TECHNOLOGIES & STRATEGIES

Waste disposal continues to be a significant environmental burden on communities and ecosystems. In the U.S., paper, food, glass, metals, and plastics- all recyclable--make up approximately 69% of total municipal solid waste (Figure 1). By diverting such recyclable waste from landfills, building owners can not only reduce hauling costs but also help convert recyclables into new products, reducing demand for virgin materials.

STORAGE AND COLLECTION OF RECYCLABLES

REQUIREMENTS

Provide dedicated areas accessible to waste haulers and building occupants for the collection and storage of recyclable materials for the entire building. Collection and storage areas may be separate locations. Recyclable materials must include mixed paper, corrugated cardboard, glass, plastics, and metals. Take appropriate measures for the safe collection, storage, and disposal of two of the following: batteries, mercury-containing lamps, and electronic waste.

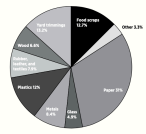
IMPLEMENTATION

REQUIRED DOCUMENTATION

Documentation	All projects	Retail only
Verification of recyclable material types	X	
Narrative describing recycling storage and collection strategies	X	
Floor plans indicating recycling storage and collection areas	X	
Methodology and results of waste stream study		X

BEHIND THE INTENT

Waste disposal continues to be a significant environmental burden on communities and ecosystems. In the U.S., paper, food, glass, metals, and plastics--all recyclable--make up approximately 69% of total municipal solid waste (Figure 1). By diverting such recyclable waste from landfills, building owners can not only reduce hauling costs but also help convert recyclables into new products, reducing demand for virgin materials.



Material Type	Percentage
Paper	26%
Food	10%
Plastics	12%
Metals	4.5%
Textiles	3.5%
Other	3.5%
Landfill	12%

A factor that commonly thwarts recycling efforts within buildings is a lack of convenient, physical spaces for doing so. Incorporating recycling infrastructure early in the design process encourages successful recycling once operations begin. Well-designed and accessible waste management infrastructure that anticipates how and where waste will be discarded helps occupants make recycling their default behavior.

The increasing volume of electronic waste (e-waste)--computers, cameras, printers, keyboards--has become a growing environmental concern. Therefore, identifying storage areas, recycling facilities, and haulers that can process e-waste is important. The disposal procedure for batteries, fluorescent lamps, and other e-waste is more hazardous than for cardboard, glass, plastic, metals, and paper. Because safety in handling and disposition of these materials is often overlooked by many recycling programs, this prerequisite requires developing waste management infrastructure for at least two hazardous waste streams.



STEP-BY-STEP GUIDANCE

STEP 1. IDENTIFY WASTE DISPOSAL NEEDS FOR PROJECT

Identify the possible waste types and quantities that may be generated by different occupants and spaces. For example, an office may need a large area devoted to paper recycling, whereas a café may require more space for plastics, glass, and metals.

- Core and Shell projects may need to estimate requirements (see *Further Explanation, Rating System Variations*). ➔
- Even if a recycling service is not available, all required recyclable waste streams must have dedicated storage in anticipation of future service (see *Further Explanation, Projects without Available Recycling Infrastructure*). ➔
- Retail projects only: Conduct a waste stream audit for the project in an existing location, or make projections based on historical data for similar establishments. Identify the top-five recyclable waste streams. List the top-four waste streams for which collection and storage space will be provided. See *Further Explanation, Rating System Variations*. ➔

STEP 2. DESIGN APPROPRIATELY SIZED STORAGE AREAS

Provide sufficient collection and storage space for all required recyclables. Indicate recycling storage and collection areas on a floor plan, and be prepared to describe the dedicated recycling storage areas, their accessibility, and how these spaces will serve their functional needs (see *Further Explanation, Infrastructure Considerations*). ➔

- Storage areas should be easily accessible to building occupants, including visitors, full-time occupants, operations staff, and waste haulers.
- For hazardous waste streams (batteries, mercury-containing lamps, e-waste), take appropriate measures for safe collection, storage, and disposal.
- Locate and highlight central collection and storage areas for recyclables, including paper, cardboard, glass, plastic, metal, and e-waste, on submitted floor plans.



REQUIREMENTS

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

Provide dedicated areas accessible to waste haulers and building occupants for the collection and storage of recyclable materials for the entire building. Collection and storage areas may be separate locations. Recyclable materials must include mixed paper, corrugated cardboard, glass, plastics, and metals. Take appropriate measures for the safe collection, storage, and disposal of two of the following: batteries, mercury-containing lamps, and electronic waste.



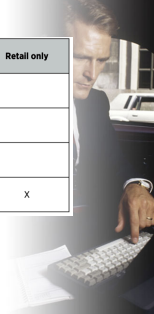
CONNECTION TO ONGOING PERFORMANCE

LEED O+M MR prerequisite Waste Performance: This prerequisite is a strategy that can help achieve the MR prerequisite: waste performance in the v4.1 O+M rating system.



REQUIRED DOCUMENTATION

Documentation	All projects	Retail only
Verification of recycled material types	X	
Narrative describing recycling storage and collection strategies	X	
Floor plans indicating recycling storage and collection areas	X	
Methodology and results of waste stream study		X



REFERENCED STANDARDS

NONE

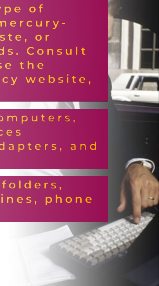


TERMS AND DEFINITIONS

Dedicated storage is a designated area in a building space or a central facility that is sized and allocated for a specific task, such as the collection of recyclable waste. Signage often indicates the type of recyclable waste stored there. Some waste streams, such as mercury-based light bulbs, sensitive paper documents, biomedical waste, or batteries, may require particular handling or disposal methods. Consult the municipality's safe storage and disposal procedures or use the guidelines posted on the U.S. Environmental Protection Agency website, at www.epa.gov.

Electronic waste includes discarded electronic equipment (computers, monitors, copiers, printers, scanners, fax machines), appliances (refrigerators, dishwashers, water coolers), external power adapters, and televisions and other audiovisual equipment.

Mixed paper: white and colored paper, envelopes, forms, file folders, tablets, lyers, cereal boxes, wrapping paper, catalogs, magazines, phone books, and photos



BEYOND
SMART CITIES



THANK YOU

THE WORLD'S 1ST GREEN TECHNOLOGY
MARKETPLACE