

# LEED for Homes v4



## Module #1: Overview & LT



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**EDUCATION  
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# USGBC Education Provider



Formerly



- Founded 2000
- Midwest LEED for Homes Provider
- 501(c)3 non-profit; mission:

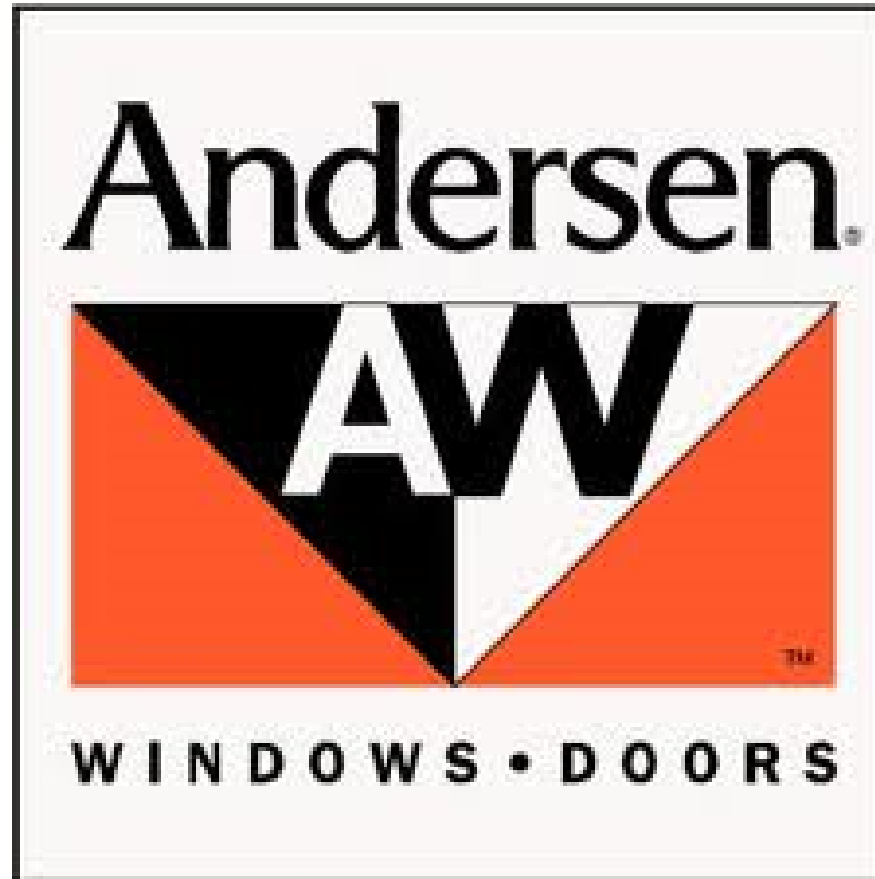


Providing professionals and homeowner's with education, resources and programing to ensure greener & healthier home new construction, existing home remodeling across single and multi family residential projects and developments.



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# Moderator

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Grand Rapids, MI

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# About the Presenter

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Annapolis, MD

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# Target Audience





# Agenda

## for Whole Workshop

### **Module 1**

- Overview- Summary of Changes
- IP / LT
- Tools

### **Module 2**

- SS

### **Module 3**

- WE

### **Module 4**

- EA – Prescriptive

### **Module 5**

- EA - Performance

### **Module 6**

- MR

### **Module 7**

- EQ

### **Module 8**

- IN / RP / AE / Process

### **Module 9**

- Activity - Low Rise
- Activity - Mid-Rise
- Summary / Next Steps

# Learning Objectives for the Whole Workshop

- Changes in v4 Rating System
- Changes in v4 Process
- Impact on Projects
- Use of New Tools
- Identify Requirements of LT Prereqs and Credits

# Agenda for Module 1

- Introduction
- Overview- Summary of Changes
- Tools
- IP Prereqs and Credits
- LT Prereqs and Credits
- Activity
- Review / Next Module



# Program Scope

## Applicable Building Types



# Rating System Selection

## For Residential Projects (Dominantly)

1 to 3 Stories	LEED for Homes
4 to 8 Stories	LEED Multifamily Mid-Rise
9 to 12 Stories	Midrise or LEED NC
> 12 Stories	LEED NC

*Story: an occupied floor above grade (below grade floors don't count)*

# v4 Roll-Out

- Start Date for Registering LEED v4
  - Now / open for registration
- Last date to register for LEED v2008
  - June 2015
- Sunset Date for v2008
  - Approx. 6 years after start date of v4

# v4 Development Priorities

- **New Market Sectors**
  - Mid-rise residential projects. (Required for 4-8 Story Projects)
- **New Impact Categories (used for credit weightings)**
  - Climate change, human health, water resources, biodiversity, green economy, community and natural resources.
- **Improved Tools and Resources**
  - Step-by-step reference guide materials with videos and tutorials,
  - Improved technology platform.
- **Raise the Bar**
  - Rapidly changing codes
- **Align Requirements**
  - Between single family and multifamily
  - Homes and NC

# v4 Development Priorities (cont'd)

- **Eliminate paperwork heavy credits**
  - Removed Durability Evaluation and New Durability Checklist
  - Removed Accountability Forms
  - Removed MR 1.1 Prereq: Framing Order Waste Factor
- **Focus on Performance Based Credits w/ Consumption Metrics**
  - Water Budget, Metering
  - Energy Budget, Metering, Utility Tracking



# Changes in Scoring Overall Rating System

## **Prereqs**

Decreased from 22 to 16

3 New Prereqs

## **Points**

Decrease from 136 to 110 points



**LEED v4 for Building Design and Construction: Homes and Multifamily Lowrise**

Project Checklist

Project Name:

Date:

Y ? N

**Credit** Integrative Process

2

**0 0 0 Location and Transportation 15**

**Prereq** Floodplain Avoidance Required

**PERFORMANCE PATH**

**Credit** LEED for Neighborhood Development Location 15

**PRESCRIPTIVE PATH**

**Credit** Site Selection 8

**Credit** Compact Development 3

**Credit** Community Resources 2

**Credit** Access to Transit 2

**0 0 0 Sustainable Sites 7**

**Prereq** Construction Activity Pollution Prevention Required

**Prereq** No Invasive Plants Required

**Credit** Heat Island Reduction 2

**Credit** Rainwater Management 3

**Credit** Non-Toxic Pest Control 2

**0 0 0 Water Efficiency 12**

**Prereq** Water Metering Required

**PERFORMANCE PATH**

**Credit** Total Water Use 12

**PRESCRIPTIVE PATH**

**Credit** Indoor Water Use 6

**Credit** Outdoor Water Use 4

**0 0 0 Energy and Atmosphere 38**

**Prereq** Minimum Energy Performance Required

**Prereq** Energy Metering Required

**Prereq** Education of the Homeowner, Tenant or Building Manager Required

**PERFORMANCE PATH**

**Credit** Annual Energy Use 29

**BOTH PATHS**

**Credit** Efficient Hot Water Distribution System 5

**Credit** Advanced Utility Tracking 2

**Credit** Active Solar Ready Design 1

**Credit** HVAC Start-Up Credentialing 1

**PRESCRIPTIVE PATH**

**Prereq** Home Size Required

**Credit** Building Orientation for Passive Solar 3

**Credit** Air Infiltration 2

**Credit** Envelope Insulation 2

**Credit** Windows 3

**Credit** Space Heating & Cooling Equipment 4

**EA PRESCRIPTIVE PATH (continued)**

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Credit</b>	Heating & Cooling Distribution Systems	3
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Credit</b>	Efficient Domestic Hot Water Equipment	3
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Credit</b>	Lighting	2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Credit</b>	High Efficiency Appliances	2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Credit</b>	Renewable Energy	4

**0 0 0 Materials and Resources 10**

**Prereq** Certified Tropical Wood Required

**Prereq** Durability Management Required

**Credit** Durability Management Verification 1

**Credit** Environmentally Preferable Products 4

**Credit** Construction Waste Management 3

**Credit** Material Efficient Framing 2

**0 0 0 Indoor Environmental Quality 16**

**Prereq** Ventilation Required

**Prereq** Combustion Venting Required

**Prereq** Garage Pollutant Protection Required

**Prereq** Radon-Resistant Construction Required

**Prereq** Air Filtering Required

**Prereq** Environmental Tobacco Smoke Required

**Prereq** Compartmentalization Required

**Credit** Enhanced Ventilation 3

**Credit** Contaminant Control 2

**Credit** Balancing of Heating and Cooling Distribution Systems 3

**Credit** Enhanced Compartmentalization 1

**Credit** Enhanced Combustion Venting 2

**Credit** Enhanced Garage Pollutant Protection 2

**Credit** Low Emitting Products 3

**0 0 0 Innovation 6**

**Prereq** Preliminary Rating Required

**Credit** Innovation 5

**Credit** LEED AP Homes 1

**0 0 0 Regional Priority 4**

**Credit** Regional Priority: Specific Credit 1

**Credit** Regional Priority: Specific Credit 1

**Credit** Regional Priority: Specific Credit 1

**Credit** Regional Priority: Specific Credit 1

**0 0 0 TOTALS Possible Points: 110**

**Certified:** 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

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## Single Family

- 110 Points
- Prereq: ENERGY STAR for Homes v3.0  
*Meet Requirements*
- New RP Category
- Lots of changes

## Low Rise Multi-Family & Attached Homes

- Same as above
- New Compartmentalization  
*Prereq and Credit*



## LEED v4 for Building Design and Construction: Multifamily Midrise

### Project Checklist

Project Name:  
Date:

Y ? N

Cred: Integrative Process **2**

#### **0 0 0 Location and Transportation 15**

Y    Floodplain Avoidance **Required**

#### **PERFORMANCE PATH**

Cred: LEED for Neighborhood Development Location **15**

#### **PRESCRIPTIVE PATH**

Cred: Site Selection **8**

Cred: Compact Development **3**

Cred: Community Resources **2**

Cred: Access to Transit **2**

#### **0 0 0 Sustainable Sites 7**

Y     Construction Activity Pollution Prevention **Required**

Y     No Invasive Plants **Required**

Cred: Heat Island Reduction **2**

Cred: Rainwater Management **3**

Cred: Non-Toxic Pest Control **2**

#### **0 0 0 Water Efficiency 12**

Y     Water Metering **Required**

#### **PERFORMANCE PATH**

Cred: Total Water Use **12**

#### **PRESCRIPTIVE PATH**

Cred: Indoor Water Use **6**

Cred: Outdoor Water Use **4**

#### **0 0 0 Energy and Atmosphere 37**

Y     Minimum Energy Performance **Required**

Y     Energy Metering **Required**

Y     Education of the Homeowner, Tenant or Building Manager **Required**

Cred: Annual Energy Use **30**

Cred: Efficient Hot Water Distribution **5**

Cred: Advanced Utility Tracking **2**

#### **0 0 0 Materials and Resources 9**

Y     Certified Tropical Wood **Required**

Y     Durability Management **Required**

Cred: Durability Management Verification **1**

Cred: Environmentally Preferable Products **5**

Cred: Construction Waste Management **3**

#### **0 0 0 Indoor Environmental Quality 18**

Y     Ventilation **Required**

Y     Combustion Venting **Required**

Y     Garage Pollutant Protection **Required**

Y     Radon-Resistant Construction **Required**

Y     Air Filtering **Required**

Y     Environmental Tobacco Smoke **Required**

Y     Compartmentalization **Required**

Cred: Enhanced Ventilation **3**

Cred: Contaminant Control **2**

Cred: Balancing of Heating and Cooling Distribution Systems **3**

Cred: Enhanced Compartmentalization **3**

Cred: Enhanced Combustion Venting **2**

Cred: Enhanced Garage Pollutant Protection **1**

Cred: Low Emitting Products **3**

Cred: No Environmental Tobacco Smoke **1**

#### **0 0 0 Innovation 6**

Y     Preliminary Rating **Required**

Cred: Innovation **5**

Cred: LEED AP Homes **1**

#### **0 0 0 Regional Priority 4**

Cred: Regional Priority: Specific Credit **1**


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**Mid-Rise Multi-Family**

- Same as Single Family / Low Rise
- Required** for 4-8 Story Projects
- Energy Performance:  
Relative to ASHRAE Standard 90.1-2010

**0 0 0 TOTALS Possible Points: 110**  
 Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110

# Guide to Color Coding

Black

Generally applies

Gray

Parallel Pathway (e.g., Prescriptive vs Performance)

Red

Removed in v4

Purple

Changed in v4

Green

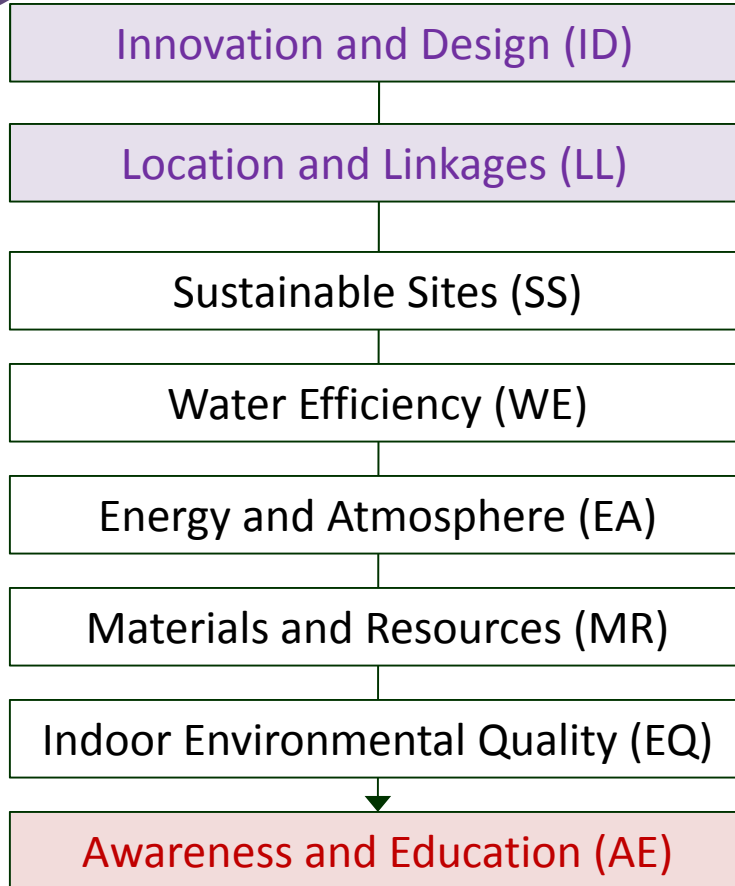
New in v4



**Major change**

# Credit Categories

v2008



v4





New Icons



# Certification Thresholds

## Average Sized Homes



40-49



50-59



60-69



80+

Points

1,600 Sq. Ft., with 2 bedrooms

# Think about it ...

## Thresholds for Homes 40% Smaller than Average?



40-49



50-59



60-69



80+

Points

960 Sq. Ft., with 2 bedrooms

# New Prereqs



## Three (3) New Prereqs

LT P1 Floodplain Avoidance

WE P1 Water Metering

EA P2 Energy Metering



# New Credits

## Five (5) New Credits

WE C1	Total Water Use
EA C3	Active Solar-Ready Design
EA C4	HVAC Start-Up Credential
EA C5	Advanced Utility Tracking
RP C1-4	Regional Priority



# Overview of IP / LT

## **New Category**

Integrative Process - IP

## **New Name**

Location and Transportation - LT

*(formerly Location and Linkages - LL)*

## **Point Floor**

Earn at least 8 points in the combined LT and EA sections.

# Integrative Process - IP



**Credit 1. Integrative Process**  
(formerly ID 1.2)

# IP C1: Integrative Process

## Points

- Homes & [Midrise](#) (1-2 points)

## Intent

- To maximize opportunities for cost-effective adoption of integrative green design and construction strategies.

## Requirements

- Option 1. Integrative Project Team (1 point)
- AND/OR Option 2. Design Charrette (1 point)
- AND/OR Option 3. Trades Training (1 point)

# IP C1: Integrative Process (cont'd)

## Option 1. Integrative Project Team (1 point)

Assemble and involve a project team to meet the *three criteria* below:

See a, b, **AND** c below:

- a) Include team members, in addition to the builder and verification team, whose capabilities include *at least three* of the following skill sets:
1. architecture or residential building design;
  2. mechanical or energy engineering;
  3. building science or performance testing;
  4. green building or sustainable design; and
  5. civil engineering, landscape architecture, habitat restoration, or land-use planning.



# IP C1: Integrative Process (cont'd)

## Option 1. Integrative Project Team (cont'd)

- b) Involve **all team members** referenced above in at least three of the following phases of the home design and construction process:
1. conceptual or schematic design;
  2. LEED planning;
  3. preliminary design;
  4. energy and envelope systems analysis or design;
  5. design development;
  6. final design, working drawings or specifications; and
  7. construction.

# IP C1: Integrative Process (cont'd)

## Option 1. Integrative Project Team (cont'd)

- c) Conduct meetings with the project team at least monthly to review project status, introduce new team members to project goals, discuss problems, formulate solutions, review responsibilities, and identify next steps.

# IP C1: Integrative Process (cont'd)

## **AND/OR Option 2. Design Charrette (1 point)**

No later than the design development phase and preferably during schematic design, conduct at least one full-day workshop (or two half-day workshops) **with the project team**, as defined in Option 1.

Use the workshop to integrate green strategies across all aspects of the building design, drawing on the expertise of all participants.

# IP C1: Integrative Process (cont'd)

## AND/OR Option 3. Trades Training (1 point)

- **Before construction** but after trades have been hired for the project, conduct at least eight hours of training (extending a full day or over several days) on the green aspects of the project and how the trades can contribute to achieving each LEED for Homes prerequisite and attempted credit.
- Focus on areas where trades have traditionally struggled to meet green building standards.
- Include at least the following trades in the training:
  - plumbing;
  - mechanical systems;
  - insulation;
  - framing; and
  - air sealing.

Each trade may be present only for the relevant segment. but the builder's site supervisor must be present throughout

# Integrative Process

Filter Credits

Verified (initials)	Date Verified	Verification Details
---------------------	---------------	----------------------

Attempted Y 0 M 0 Verified 0

## IP Credit Integrative Process

Up to 2 points

Exemplary Performance: Achieve all three options

Attempted Y  M  Verified

### Option 1. Integrative Project Team (1 point)

Y  M  V

(Select one) Team members, in addition to the builder and verification team, include capabilities in at least three of the following skill sets: architecture or residential building design; mechanical or energy engineering; building science or performance testing; green building or sustainable design; and civil engineering, landscape architecture, habitat restoration, or land-use planning.

(Select one) All team members referenced above were involved in at least three of the following phases of the design and construction process: conceptual or schematic design; LEED planning; preliminary design; energy and envelope systems analysis or design; design development; final design, working drawings or specifications; and construction.

(Select one) Meetings were conducted with the project team at least monthly to review project status, introduce new team members to project goals, discuss problems, formulate solutions, review responsibilities, and identify next steps.

AND/OR

### Option 2. Design Charrette (1 point)

Y  M  V

(Select one) A full-day workshop (or two half-day workshops) was conducted with the project team, as defined in Option 1, no later than the design development phase.

Date(s)  
 Duration

AND/OR

### Option 3. Trades Training (1 point)

Y  M  V

(Select one) At least eight hours of training on the green aspects of the project and how the trades can contribute to achieving each LEED for Homes prerequisite and attempted credit was conducted before construction but after trades have been hired for the project.

Date(s)  
 Duration  
 Trainer

## IP Credit Integrative Process

Responsible Party

### Option 1. Integrative Project Team (1 point)

### Option 2. Design Charrette (1 point)

### Option 3. Trades Training (1 point)

# Integrative Process

Filter Credits

Verified  
(Initials)

Date  
Verified

Verification Details

Attempted Y 0 M 0 Verified 0

## IP Credit Integrative Process

Up to 2 points

Exemplary Performance: Achieve all three options

Attempted Y 0 M 0 Verified 0

Responsible Party

### Option 1. Integrative Project Team (1 point)

Y M V

### Option 1. Integrative Project Team (1 point)

(Select one) Team members, in addition to the builder and verification team, include capabilities in at least three of the following skill sets: architecture or residential building design:

AND/OR

### Option 3. Trades Training (1 point)

Attempted

Verified

Yes

Maybe

Y

M

V

(Select one)

At least eight hours of training on the green aspects of the project and how the trades can contribute to achieving each LEED for Homes prerequisite and attempted credit was conducted before construction but after trades have been hired for the project.

Date(s)

Duration

Trainer

AND/OR

### Option 3. Trades Training (1 point)

Y M V

### Option 3. Trades Training (1 point)

(Select one) At least eight hours of training on the green aspects of the project and how the trades can contribute to achieving each LEED for Homes prerequisite and attempted credit was conducted before construction but after trades have been hired for the project.

Date(s)

Duration

Trainer

# Integrative Process

Filter Credits

Verified (Initials)

Date Verified

Verification Details

Attempted Y 0 M 0 Verified 0



## IP Credit Integrative Process

Up to 2 points

Exemplary Performance: Achieve all three options

Attempted Y 0 M 0 Verified 0

Responsible Party

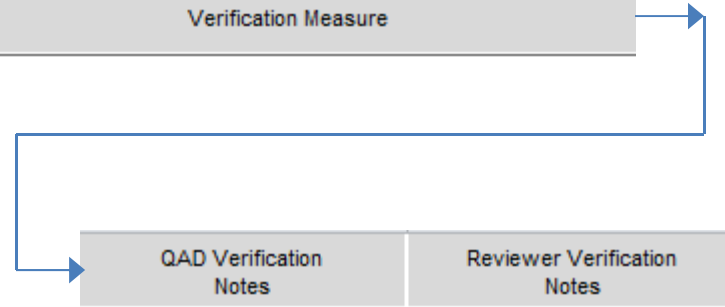
### Option 1. Integrative Project Team (1 point)

Y 0 M 0 V 0

### Option 1. Integrative Project Team (1 point)

(Select one) Team members, in addition to the builder and verification team, include capabilities in at least three of the following skill sets:

Verified (initials)	Date Verified	Verification Details	Verification Measure
---------------------	---------------	----------------------	----------------------



AND/OR  
Option

(Select one)

AND/OR

### Option 3. Trades Training (1 point)

Y 0 M 0 V 0

### Option 3. Trades Training (1 point)

(Select one) At least eight hours of training on the green aspects of the project and how the trades can contribute to achieving each LEED for Homes prerequisite and attempted credit was conducted before construction but after trades have been hired for the project.

Date(s)  
Duration  
Trainer

# Summary of Changes

## Comparison of LEED for Homes Versions

Credit #		Credit Name	Single Family (Max. Points)	
v2008	v4		v2008	v4
ID 1.1			Prereq	Prereq
ID 1.2	IP C1 (1)	Integrative Project Team*	1	1
ID 1.3	IN C2	LEED AP Homes	1	1
ID 1.4	IP C1 (2)	Design Charrette	1	1
ID 1.5	EA C5	Bldg Orientation for Solar**	1	3
ID 1.6	IP C1 (3)	Trade Training	N/A	1
Total (IP)			4	3

Changed

Notes \* Mid-rise 2008 Prereq: Energy Expertise for Midrise  
 \*\* Prescriptive Path thru EA only



# Location and Transportation - LT

## **LT P1 Floodplain Avoidance**

LT C1 LEED for Neighborhood Development

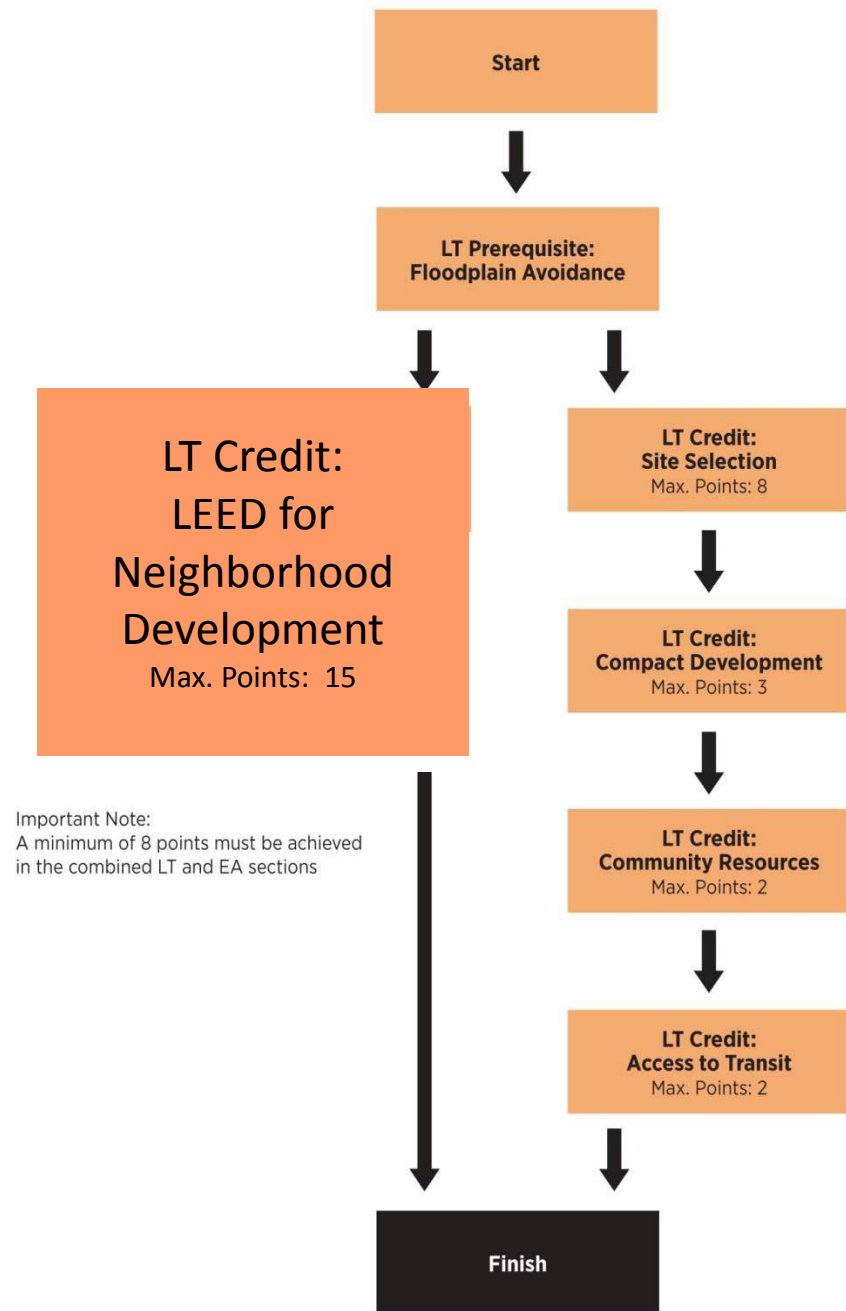
LT C2 Site Selection

LT C3 Compact Development

LT C4 Community Resources

LT C5 Access to Transit

# Location and Transportation LT



Optional Pathways through the LT Category

# Overview of LT

## New Prereq

LT P1 Floodplain Avoidance

## Point Floor

8 points in LT and EA combined

## Point Change

Increased from 10 to 15 points



Overall Impact: Beneficial for urban projects

# LT P1 Floodplain Avoidance



# LT P1 Floodplain Avoidance



## **Prerequisite Applies to**

- Homes & [Midrise](#)

## **Intent**

- To reduce the environmental impact of the development footprint.

# LT P1 Floodplain Avoidance



## Prerequisite Applies to

- Homes & Midrise

## Intent

- To reduce the environmental impact of the development footprint.

## Requirements

- Do not develop buildings on land that lies within a flood hazard area shown on a legally adopted flood hazard map (such as the Federal Emergency Management Agency (FEMA) 100 year flood plain) or otherwise legally designated by the local jurisdiction or the state, **unless** the building is designed and built in accordance with the flood provisions of applicable building code, the local floodplain management regulations, or, at a minimum, the National Flood Insurance Program Requirements. Projects outside of the United States may use a local equivalent program to NFIP if the program is equal to or more stringent.
- Previously developed buildings and *hardscapes* are **exempt** from the above requirements

# LT P1 Floodplain Avoidance



## Prerequisite Applies to

- Homes & Midrise

## Intent

- To reduce the environmental impact of the development footprint.

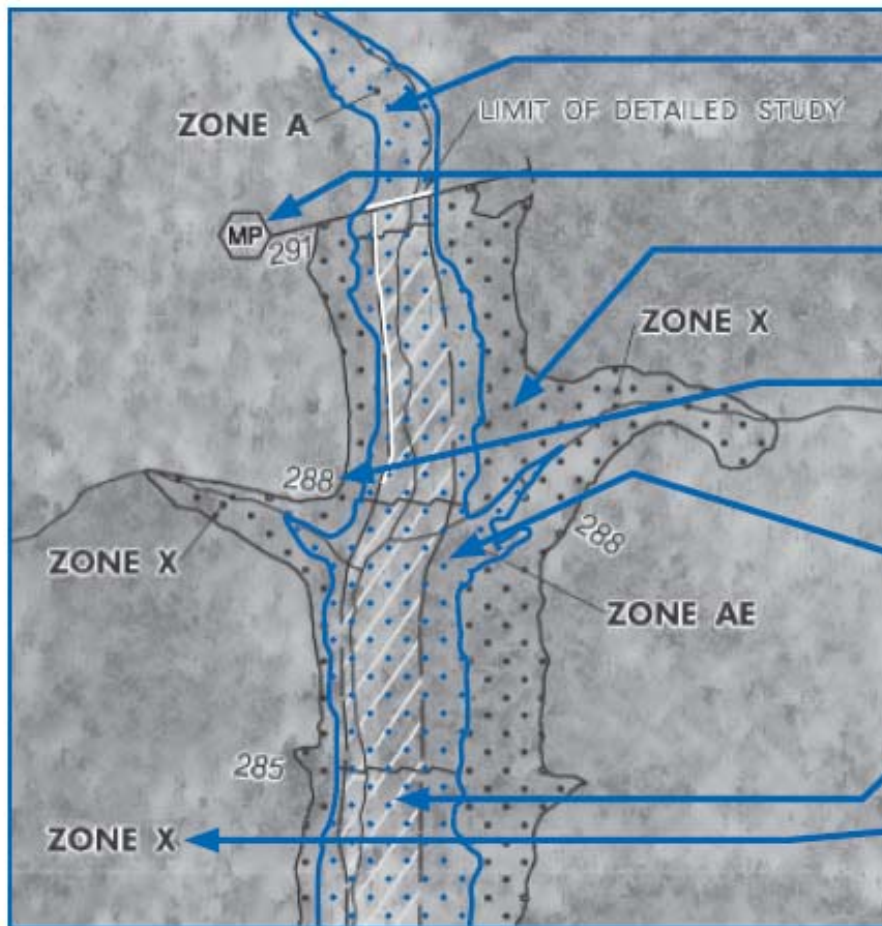
## Requirements

- Do not develop buildings on land that lies within a flood hazard area shown on a legally adopted 100 year flood plain map, the building Flood Equivalency map, or any other map. **Do not** develop buildings on land that lies within a flood hazard area (i.e., **FEMA 100 year flood plain**).
- Previously developed buildings and landscapes are exempt from the above requirements.

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# LT P1 Floodplain Avoidance



- 1 Zone A** (approximate) is the flood hazard area without BFEs.
- 2 Cross Section** location ([see page 12](#)).
- 3 Shaded Zone X** is the 0.2% annual chance (500-year) floodplain (formerly Zone B).
- 4 Base Flood Elevation (BFE)** is the water surface elevation of the base flood rounded to the nearest whole foot (consult FIS profiles and tables for more accurate elevations).
- 5 Zone AE** is the 1% annual chance (100-year) floodplain with BFEs (formerly Zones A1- A20).
- 6** The **Floodway** is the cross-hatched area ([see page 11](#)).
- 7 Unshaded Zone X** is all other areas considered low risk (formerly Zone C).



# LT P1 Floodplain Avoidance



## Prerequisite Applies to

- Homes & Midrise

## Intent

- To reduce the environmental impact of the development footprint.

## Requirements

- Do not develop buildings on land that lies within a flood hazard area shown on a legally

### Exceptions:

1. Building is designed and built in accordance with the flood provisions of applicable **building code**.
2. **Previously developed** buildings and *hardscapes*.

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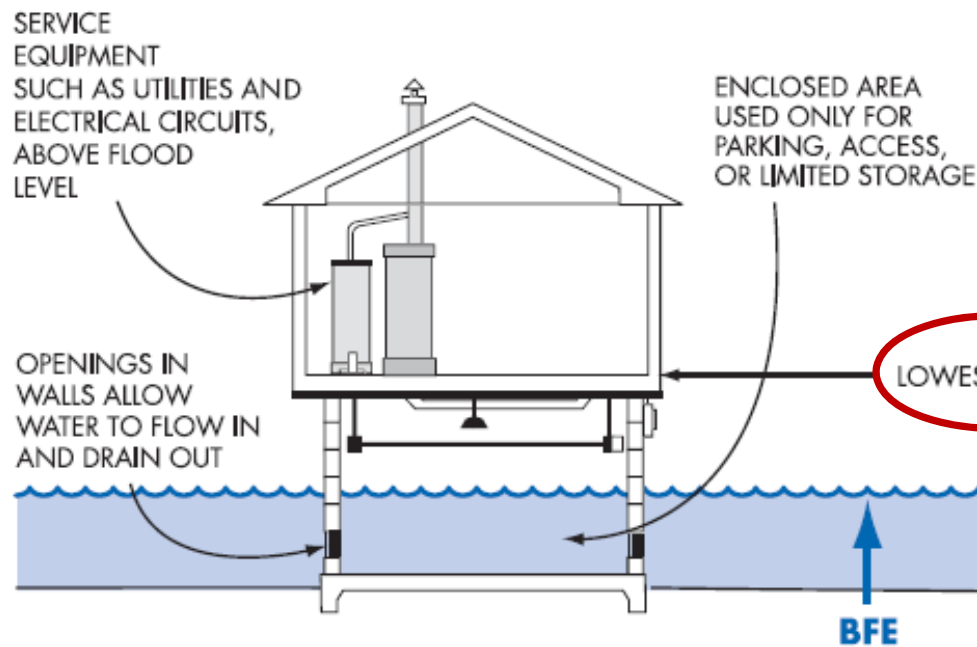
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# LT P1 Floodplain Avoidance

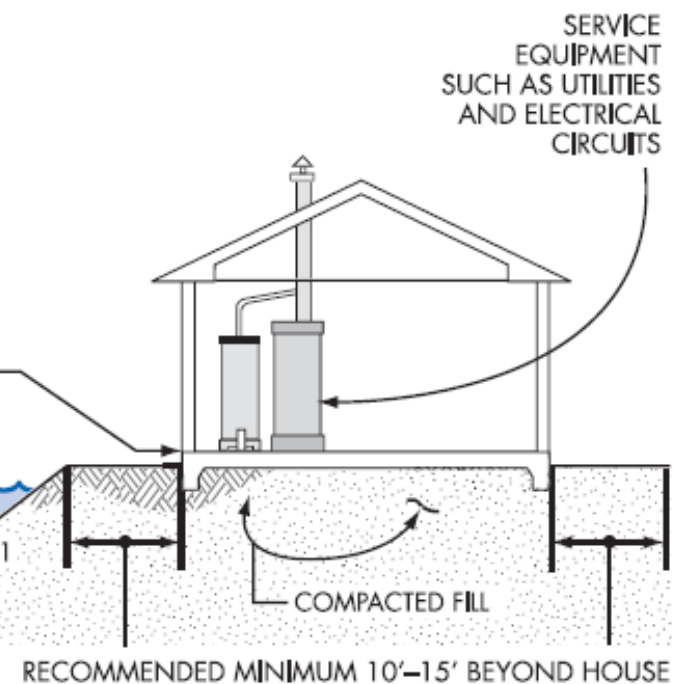


## How to Elevate Your Floodplain Building (Zone A)

### ELEVATE ON FOUNDATION WALLS



### ELEVATE ON FILL



# LT C1 LEED for Neighborhood Development

## Points

- Homes & Midrise (15 points)

## Intent

- To minimize the environmental damage of land development practices by building homes in LEED for Neighborhood Development–certified communities.

## Requirements

- Locate the project within the boundary of a development certified under LEED for Neighborhood Development (Stage 2 or Stage 3 under the Pilot or 2009 rating systems,
- Certified Plan or Certified Project under the v4 rating system).

Projects attempting this credit are not eligible to earn points under other Location and Transportation credits.

# LT C2 Site Selection

## Points

- Homes & [Midrise](#) (1-8 points)

## Intent

- To encourage construction in environmentally preferable locations and avoid development of sensitive lands.

## Requirements

Option 1. Sensitive Land Protection (3-4 points)

Path 1. Previously Developed (4 points)

OR Path 2. Avoidance of Sensitive Land (3 points)

AND/OR Option 2. Infill Development (2 points)

AND/OR Option 3. Open Space (1 point)

AND/OR Option 4. Street Network (1 point)

AND/OR Option 5. Bicycle Network and Storage (1 point)

# LT C2 Site Selection (cont'd)

## Option 1. Sensitive Land Protection (3-4 points)

### Path 1. Previously Developed (4 points)

- Select a lot such that **at least 75%** of the total *buildable land* is *previously developed*.

### OR Path 2. Avoidance of Sensitive Land (3 points)

Do not develop new buildings, *hardscapes*, roads or parking areas on portions of sites that meet any of the following criteria:

- *Prime farmland*.
- *Parkland*.
- *Floodplain*.
- *Habitat* . Land that *is* specifically identified as habitat for threatened or endangered species
- *Wetlands*.
- *Water bodies*. Land that is within 100 feet (30 meters) of a water body

## LT C2 Site Selection (cont'd)

### AND/OR Option 2. Infill Development (2 points)

- Select a lot such that at least 75% of the land within ½ mile (300 meters) from the project boundary is *previously developed* land. Water bodies and publicly owned parks are excluded from the calculation.
- For projects within city limits or towns with populations of less than 20,000,
  - Select a lot where at least 75% of the land immediately adjacent to the project boundary is *previously developed* land.
  - A bordering street itself does not constitute previously developed land; instead, it is the status of the property on the other side of the segment of the street that matters.
  - Any fraction of the boundary that borders a water body is excluded from the calculation.

## LT C2 Site Selection (cont'd)

### AND/OR Option 3. Open Space (1 point)

- Select a location within  $\frac{1}{2}$  mile (800 meters) of a publicly accessible or community-based *open space* that is at least  $\frac{3}{4}$  acre (0.3 hectare), or create publicly available open space on the project site.
- The open space requirement can be met with either one large open space or two smaller spaces totaling  $\frac{3}{4}$  acre (0.3 hectare).

# LT C2 Site Selection (cont'd)

## **AND/OR Option 4. Street Network (1 point)**

Locate the project in an area of high intersection density, defined as an area whose existing streets and sidewalks create at least 90 intersections per square mile (35 intersections per square kilometers).

When determining the number of intersections, include the following:

- intersections within a  $\frac{1}{4}$  mile (400 meters) radius of project boundary;
- streets and sidewalks that are available for general public use and not gated;
- sidewalk intersections provided they are a unique right of way (i.e., a sidewalk through a city park); and
- publicly accessible *alleys*.

Exclude the following:

- intersections in gated areas, which are not considered available for public use, with the exception of education and health care campuses and military bases where gates are used for security purposes;
- water bodies and public parks; and
- intersections leading only to a dead end or cul-de-sac.



# # of Intersections / Square Mile?

Walk Score®

Find Apartments

Get Scores

My Favorites

Log in ▾

🔍 Type an address, neighborhood or city

Go

🍏 iOS 🤖 Android ➦ Share

Street Smart <sup>Beta</sup>  
**99**  
Out of 100

**Walker's Paradise**

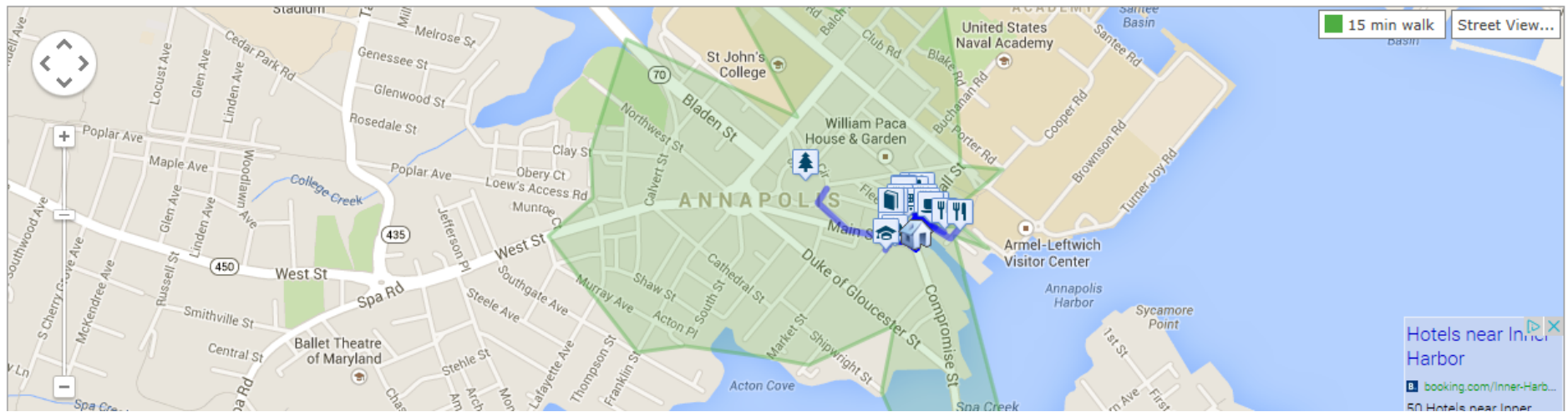
1 Main Street Annapolis

▾ Share

Overview

More Amenities

Your Commute



<http://www.walkscore.com/professional/street-smart.php>

# # of Intersections / Square Mile?

Walk Score®

Find Apartments

Get Scores

My Favorites

Log in ▾

🔍 Type an address, neighborhood or city

Go

🍏 iOS 🤖 Android ↻ Share

Street Smart

99

Out of 100

Walker's Paradise

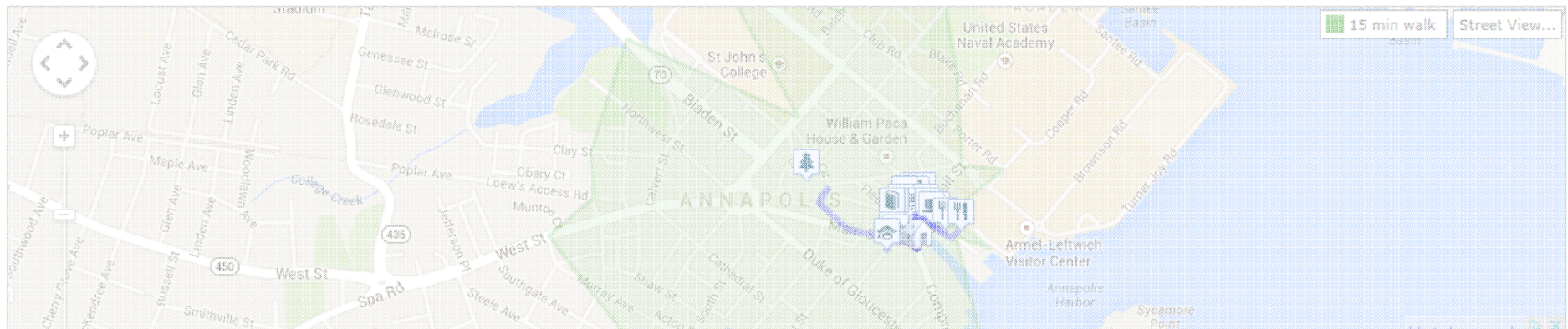
1 Main Street Annapolis

Share

Overview

More Amenities

Your Commute



## Pedestrian Friendliness

Short blocks and lots of intersections are better for walkers.

📏 Average Block Length: 361 feet  
**Good**

📍 Number of Intersections: 131 per sq mi  
**Fair: -1% penalty**

<http://www.walkscore.com/professional/street-smart.php>

# LT C2 Site Selection (cont'd)

## And/Or Option 5. Bicycle Network and Storage (1 point)

Meet **BOTH** of the following requirements:

### a) BICYCLE NETWORK

- Design or locate the *project* such that a *primary entry* and/or bicycle storage is within a 200-yard (180 meters) walking distance or bicycling distance from a *bicycle network* that connects to at least one of the following.
  - a. At least 10 uses (see LT Community Resources)
  - b. A school or *employment center*
  - c. *Bus rapid transit* stops, light or heavy rail stations, commuter rail stations and/or ferry terminals

All choices must be within 3 miles (4 800 meters) bicycling distance of the project boundary.

- If the network borders the project boundary, a *safe, all-weather route* must exist between the bicycle network and the project's bicycle storage and/or main entrance.
- Planned bicycle trails or lanes may be counted if they are fully funded at the certificate of occupancy date and are scheduled for completion within one year of that date.

# LT C2 Site Selection (cont'd)

## And/Or Option 5. Bicycle Network and Storage (1 point)

### AND

#### b) BICYCLE STORAGE

- Provide *short-term bicycle storage* capacity equal to 2.5% or more of all building occupants but no fewer than four storage spaces per building.
- *Short-term bicycle storage* must be within 100 feet (30 meters) of a *primary entry*.

### AND

- Provide *long-term bicycle storage* capacity equal to 30% of all building occupants, but no less than one storage space per residential unit.
- *Long-term bicycle storage* must be within 100 feet (30 meters) of a *primary entry*.
- Bicycle storage capacity may not be double counted; storage that is fully allocated to the occupants of non-project facilities cannot also serve project occupants.

*A single family dwelling unit with enclosed garage meets the bicycle storage requirement.*

# LT C3 Compact Development

## Points

- Homes & Midrise (1–3 points)

## Intent

- To conserve land and promote livability, transportation efficiency, and walkability by creating compact communities.

## Requirements

- Construct or renovate a building that meets the dwelling unit per acre of *buildable land area density* defined in Table 1.

**Table 1. Points for housing density**

Single-family and low-rise multifamily projects	
DU/acre of buildable land	DU/hectare of buildable land
≥ 7	≥ 17
≥ 12	≥ 30
≥ 20	≥ 50

Points
1
2
3

**SAME  
as  
v2008**

# LT C3 Compact Development (cont'd)

## Points

- Homes & Midrise (1–3 points)

## Intent

- To conserve land and promote livability, transportation efficiency, and walkability by creating compact communities.

## Requirements

- Construct or renovate a building that meets the dwelling unit per acre of *buildable land area density* defined in Table 1.

**Table 1. Points for housing density**

**v2010**

40

60

80

Midrise multifamily projects		Points
DU/acre of buildable land	DU/hectare of buildable land	
≥ 30	≥ 74	1
≥ 55	≥ 136	2
≥ 80	≥ 198	3

# LT C4 Community Resources

## Points

- Homes & Midrise (1–2 points)

## Intent

- To encourage daily walking and bicycling and to reduce *vehicle miles traveled* (VMT) and automobile dependence.

## Requirements

- Construct or renovate a project such that the building's main entrance is within a 1/2-mile (800 meters) *walking distance* from the building entrance of the following number of uses, as listed below.

**Table 1. Points for proximity to uses**

**v 2008**

7  
11  
14

Uses	Points
4–7	1
8–11	1.5
≥ 12	2

## LT C4 Community Resources (cont'd)

The following restrictions apply:

- A single establishment counts as only one type of use (e.g., a retail store may be counted only once even if it sells products in several categories).
- No more than half of the minimum number of uses can be in a single building (e.g., a shopping mall).
- No more than two establishments in each use type may be counted (e.g., if five restaurants are within the required distance, only two may be counted).
- The uses must represent at least two categories, exclusive of the building's primary use.
- Uses outside the project boundary must be in place upon occupation of the project.



# LT C4 Community Resources (cont'd)

## Uses and Use Categories:

### Food Retail

- Supermarket
- **Other food store with produce**

### Community-Serving Retail

- **Clothing store or department store selling clothes**
- Convenience store
- **Farmers market**
- **Hardware store**
- Pharmacy
- Other retail

### Services

- Bank
- Gym, health club, exercise studio
- **Hair care**
- Laundry, dry cleaner
- Restaurant, café, diner (excluding establishments with only drive-throughs)

### Civic and Community Facilities

- **Adult or senior care (licensed)**
- Child care (licensed)
- Community or recreation center
- Cultural arts facility (museum, performing arts)
- Educational facility (including school, university, adult education center, vocational school, community college)
- **Family entertainment venue (theater, sports)**
- **Government office that serves public on-site**
- Place of worship
- Medical clinic or office that treats patients
- **Police or fire station**
- Post office
- Public library
- **Public park**
- **Social services center**

# LT C5 Access to Transit

## Points

- Homes & [Midrise](#) (1–2 points)

## Intent

- To reduce pollution and land development effects from automobile use.

## Requirements

- Locate the project within:
  - a ¼-mile (400 meter) *walking distance* of bus or streetcar stops, or
  - a ½-mile (800 meter) walking distance of *bus rapid transit* stops, light or heavy rail stations, or ferry terminals.
- The transit service at those stops in aggregate must meet the minimums listed in Table 1 or Table 2.

# LT C5 Access to Transit (cont'd)

**Table 1. Minimum daily transit service for projects with multiple transit types (bus, streetcar, rail, or ferry)**  
*(Within 1/4 Mile)*

Weekday trips	Weekend trips	Points
72	40	1
144	108	1.5
360	216	2

*(Within 1/2 Mile)*

**v 2008**  
*(1/2 mile)*  
30  
60  
125



# Location and Transportation

Filter Credits

Verified (initials)

Date Verified

Verification Details

Attempted Y 0 M 0 Verified 0

## LT Prerequisite Floodplain Avoidance

Required **Required** Verified

Select one of the following:

- The project is not built on land within a flood hazard area.
- The project is built on land within a flood hazard area and in accordance with flood provisions.
- The project is built on land within a flood hazard area and is a previously developed building and hardscape.

### Performance Path

## LT Credit LEED for Neighborhood Development

15 points **Attempted** Y  M  **Verified**

<input type="text"/>	Name of LEED for Neighborhood Development project
<input type="text"/>	LEED ND project ID number
<input type="text"/>	Rating system and version
<input type="text"/>	LEED ND certification date

### Prescriptive Path

## LT Credit Site Selection

Up to 8 points **Attempted** Y  M  **Verified**

*Exemplary Performance: Earn the maximum 8 points*

**Option 1. Sensitive Land Protection (3-4 points)** Y  M  V

**Path 1. Previously Developed (4 points)** Y  M  V

<input type="text"/>	Total buildable land area (acre or sq ft)
<input type="text"/>	Previously developed buildable land area (acre or sq ft)
0.00%	Percentage of lot previously developed (%)

OR

**Path 2. Avoidance of Sensitive Land (3 points)** Y  M  V

## LT Prerequisite Floodplain Avoidance

Responsible Party

<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>

### Performance Path

## LT Credit LEED for Neighborhood Development

Responsible Party

<input type="text"/>	<input type="text"/>	<input type="text"/>
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### Prescriptive Path

## LT Credit Site Selection

Responsible Party

**Option 1. Sensitive Land Protection (3-4 points)**

Path 1. Previously Developed (4 points)

<input type="text"/>	<input type="text"/>	<input type="text"/>
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Path 2. Avoidance of Sensitive Land (3 points)

# Summary of Changes

Credit #		Credit Name	Single Family (Max. Points)	
v 2008	v 4		v 2008	v 4
LL 1		LEED ND	10	15
LL 2	LT c1 (1)	Site Selection	2	4
LL 3	LT c1 (1)	Previously Developed	1	
	LT c1 (2)	Infill	2	2
LL 4		Infrastructure	1	N/A
LL 5	LT c3	Community Resources	3	2
LL 6	LT c1 (3)	Access to Open Space	1	1

Removed

Attempted Y  M  Verified

LT Prerequisite Floodplain Avoidance

LT Prerequisite Floodplain Avoidance

Required  Required  Verified

Responsible Party

Select one of the following:

**LT Credit Access to Transit**

Up to 2 points

**Attempted** Y  M  **Verified**

*Exemplary Performance: For multiple transit types, 420 weekday trips and 432 weekend trips; For commuter rail or ferry, 120 weekday trips.*

*For projects with multiple transit types*

Number of weekday trips  
 Number weekend day trips

*For projects with commuter rail or ferry service only*

Number of weekday trips

Option 1. Sensitive Land Protection (3-4 points) Y  M  V

Option 1. Sensitive Land Protection (3-4 points)

Path 1. Previously Developed (4 points) Y  M  V

Path 1. Previously Developed (4 points)

Total buildable land area (acre or sq ft)  
 Previously developed buildable land area (acre or sq ft)  
 Percentage of lot previously developed (%)

OR  
 Path 2. Avoidance of Sensitive Land (3 points) Y  M  V

Path 2. Avoidance of Sensitive Land (3 points)

# Resources

## Process

- Register
- Verify
- Review
- Certify

## Tools

- Checklist
- Rating System
- Reference Guide
- Interpretations



# Process


LEED CERTIFICATION CREDENTIALS EDUCATION JOIN

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Search the site



## Guide to Certification: Homes

[DOWNLOAD PDF](#)

### Overview

Register

Verify

Review

### Congratulations on your decision to pursue LEED certification!

You're on your way to increasing the value and environmental integrity of your project. This guide will lead you through the process.

LEED for Homes certification involves four main steps:

1. **Register** your project by selecting your team, completing key forms and submitting payment.
2. **Verify** your project milestones and achievements through the on-site verification process.
3. **Review.** Submit the necessary information, calculations and documentation to your Green Rater. Your LEED application is then

<http://www.usgbc.org/cert-guide/homes>



# Tools

The screenshot shows the USGBC Resources page. The top navigation bar includes links for LEED, CERTIFICATION, CREDENTIALS, EDUCATION, and JOIN. On the right, there are links for Articles, Directory, Resources, Store, and a SIGN IN button. The main header features the USGBC logo and the word 'RESOURCES' in large letters. A search bar is located in the top right corner. Below the header, there is a 'SMART FILTERS' section on the left with a list of categories: All, Addenda, Advocacy briefs, Apps, Calculators, Case studies, Certificate resources, Certification resources, Checklists (circled in red), City market briefs, Committee documents, and Credentialing resources. The main content area has a search bar containing 'LEED for Homes Rating System v4'. Below the search bar, there are radio buttons for 'Match all results' (selected) and 'Match any results'. A filter bar shows 'Title' selected from a dropdown, followed by 'contains' and an empty input field. There is a 'Clear filters' link and an 'APPLY' button. Below the filter bar, there are 'Sort' and 'View' dropdown menus. The search results are displayed as two document icons. The first icon is titled 'LEED v4 Impact Category and Point Allocation Process...' and is categorized as 'Rating system resources'. The second icon is titled 'LEED v4 for Homes and Midrise - ballot version' and is also categorized as 'Rating system resources'.

<http://www.usgbc.org/resources>

# Tools Interpretations

LEED CERTIFICATION CREDENTIALS EDUCATION JOIN

Articles Directory Resources Store [SIGN IN](#)



USGBC

Search the site

[CREDIT LIBRARY](#)

SMART FILTERS

Project tools

**Addenda database**

Pilot credit library

Pilot credit registration

Regional priority credit lookup

Sample forms

Reference guide

Reference links

Rating systems with addenda

## Addenda database

Corrections + Interpretations

Solar PV

Match all results  Match any results

Applicable Rating System

is

LEED BD+C: Homes

Rating System Version

is

v4 - LEED v4

Credit Category

is

Energy & atmosphere

[Clear filters](#)

[APPLY](#)

4,895 results match

<http://www.usgbc.org/leed-interpretations>

# Think About It....

## What is Largest Overall Change in LT?

- a) New Prereq. Floodplain Avoidance
- b) Increase from 10 to 15 Points.
- c) SS 6 moved to LT C2
- d) Edge and Infrastructure Removed.

All of the above

# Think About it....

**Where do you find Resources for the LEED for Homes program?**

- a) [gbci.org/resources](http://gbci.org/resources)
- b) [leeduser.com/resources](http://leeduser.com/resources)
- c) [usgbc.org/cert-guide/homes](http://usgbc.org/cert-guide/homes)
- d) [usgbc.org/resources](http://usgbc.org/resources)
- e) [usgbc.org/leed-interpretations](http://usgbc.org/leed-interpretations)

**d) [usgbc.org/resources](http://usgbc.org/resources)**

# Application of IP / LT to a Project

1. Single family home
2. Multi-family building

# Consider the Project Goals .....

## Points Available:

IP            2 pts.

LT            15 pts.

---

Total        17 pts.

<b>Level</b>	<b>% of Max.</b>	<b>Achieved</b>
Certified	40%	7 pts.
Silver	50%	8.5 pts
Gold	60%	10 pts.
Platinum	80%	13.5 pts

*How do IP & LT Categories Affect  
Overall Project Performance?*

# Example #1 : Single Family Project

## (Sub-Urban, Edge, Greenfield)

Cat.	Credit #	Description	Points Available	Points Achieved
IP	C1 (1)	Project Team	1	
	C1 (2)	Design Charrette	1	
	C1 (3)	Trades Training	1	1
LL	P1	Floodplain Avoidance	Prereq	Y
	C1	LEED ND	15	
	C2 (1)	Site - Previously Developed	4	
	C2 (2)	Site - Infill	2	
	C2 (3)	Site – Open Space	1	1
	C2 (4)	Site – Street Network	1	
	C2 (5)	Site – Bicycle Network	1	
	C3	Compact Development	3	
	C4	Community Resources	2	1
	C5	Access to Transit	2	
Total (IP + LT)			17	3

# Example #2 : Multi-Family Project

## (Urban, Infill, Prev. Developed)

Cat.	Credit #	Description	Points Available	Points Achieved
IP	C1 (1)	Project Team	1	1
	C1 (2)	Design Charrette	1	
	C1 (3)	Trades Training	1	1
LL	P1	Floodplain Avoidance	Prereq	Y
	C1	LEED ND	15	
	C2 (1)	Site - Previously Developed	4	4
	C2 (2)	Site - Infill	2	2
	C2 (3)	Site – Open Space	1	1
	C2 (4)	Site – Street Network	1	1
	C2 (5)	Site – Bicycle Network	1	
	C3	Compact Development	3	3
	C4	Community Resources	2	2
	C5	Access to Transit	2	2
Total (IP + LT)			17	17



# Think about it....

## Where is the easiest place to find more IP / LT points?

- a) Integrative Project Team
- b) Design Charrette
- c) Trades Training
- d) LT Points



# Review: Prereqs and Credits

## New Prereq

LT P1 Floodplain Avoidance

## Point Floor

8 points in LT and EA combined

## Point Change

Increased from 10 to 15 points



Overall Impact: Beneficial for urban projects

# Review: Learning Objectives

- Changes in Rating System
- Changes in Process
- Impact on Projects
- Use of New Tools
- Identify requirements of LT Prereqs and Credits

# Next Module

## What's Next?

- Module 2: SS Prereqs and Credits
- Module 3: WE Prereqs and Credits
- Module 4: EA Prereqs and Credits
- Module 5: MR Prereqs and Credits
- Module 6: EQ Prereqs and Credits
- Module 7: IN / RP /AE / Tools /Process
- Module 8: Scoring of Example Projects



# Sustainable Sites (SS)

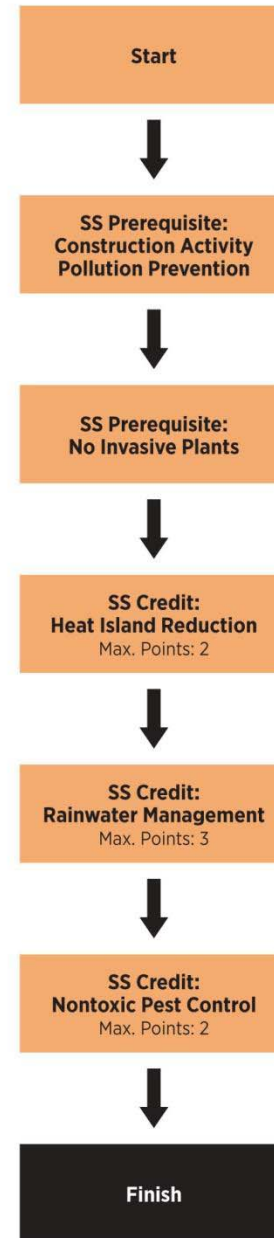


Figure 1. Pathway through the SS category

**Questions**  
THANK YOU!

