

# Understanding LEED for Homes v4

## A Nine Part Series



### Module #6: Materials and Resources (MR)





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



Empowering people to make more informed and sustainable choices building and remodeling of the places we live.

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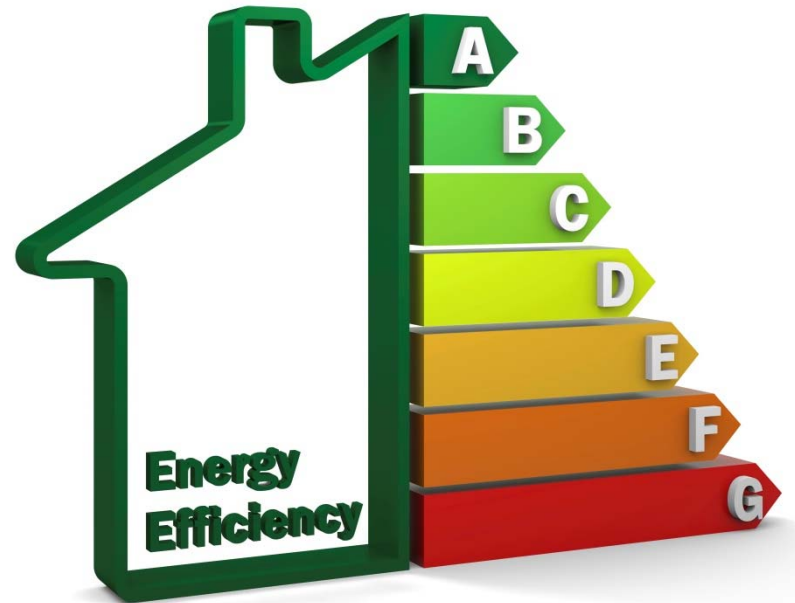
# Agenda Module 6



- Review of EA Performance
- Material and Resources (MR)
- Project Examples
- Review / Next Module

# Review

## EA - Performance





# Review of Module #4

## EA - Performance

### New Prereqs

EA P1 ENERGY STAR for Homes v 3.0

EA P2 Energy Metering

### Point Floor

8 points in LT and EA combined.

### Moved In

EA P3 Education of Occupant

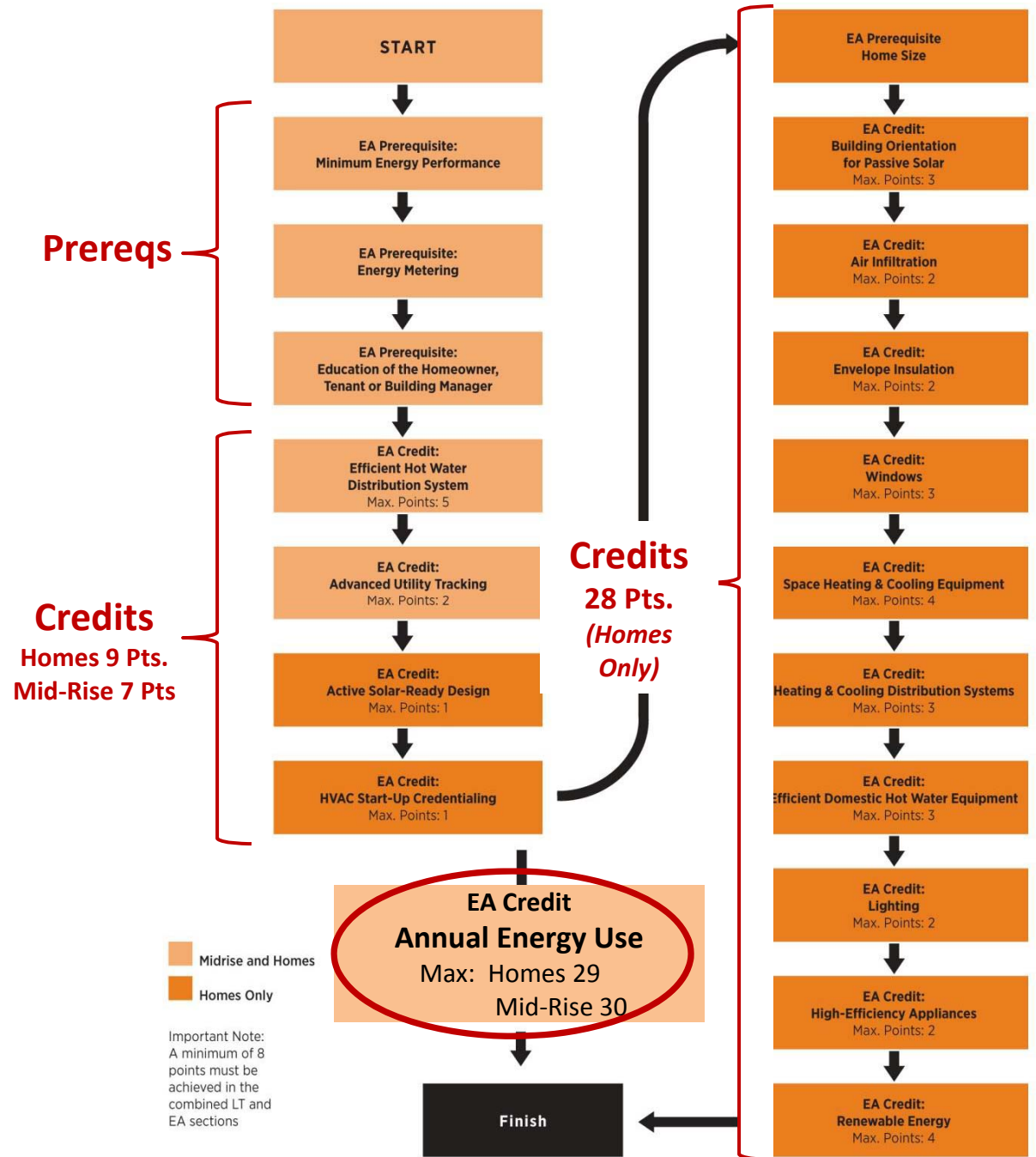
### Point Change

None (38 pts.)



**Overall Impact: Beneficial for small homes**

# Energy and Atmosphere (EA)



# Credit Example (cont'd)

## EA Credit 1 Annual Energy Use (HERS Path)

	Small (1,200 Sq. Ft., 3 Bedroom)	
	V2008	v4
HERS	65	65
EA C1 Pts	16	10
Home Size	10	11
<b>Total</b>	<b>28</b>	<b>21</b>

# Project Example

(Midrise, 2 bedroom; 10% > Std 90.1-2010)

		Performance Approach		
		Very Small 800 SF	Small 1200 SF	Average 1600 SF
EA	Home Size Adj.	12.5	6.5	0
EA C1	Energy Performance			5/30
EA C2	DHW Distribution			2/5
EA C3	Adv. Utility Tracking			0/2
EA C4	Solar Ready			N/A
EA C5	HVAC Credential			N/A
Total		19.5/37	13.5/37	7/37

**Note:** Min. point floor is 8 pts in EA and LT combined



# Review of Module #5

## EA - Performance

### Same / Similar

- EA P3 Education of Homeowner / Tenant
- EA P4 Home Size (Prescriptive Only)
- EA C2 Efficient Hot Water Distribution System

### New / Substantial Change

- EA P1 Performance of ENERGY STAR Homes
- EA P2 Energy Metering
- EA C1 Annual Energy Use
- EA C3 Advanced Utility Tracking
- EA C4 Solar-Ready Design
- EA C5 HVAC Start-Up Credentialing

# Review of Module #5

## EA - Performance

**Q #1. Are electric cars considered a “major energy end-user” per the requirement to use the LEED ENERGY Budget pathway (versus the HERS pathway)?**

**Answer: No**

**Q #2. Do you know if REM/Design includes the LEED for Homes Report (i.e, results of the LEED Energy Budget calc’n)?**

**Answer: Yes**

**Q #3. Can you please confirm that CA will not have a unique CA pathway thru v4?**

**Answer: California will have a unique path in v4. We are still waiting to develop it - [pending] how the state’s above code programs are looking at energy, which is currently in flux.**

# Review of Module #5

## EA - Performance

**Q #4. Can you please confirm, that a v4 project with a HERS score > 70, but ESH v3 compliant qualifies for:**

- i) EA Prereq Minimum Energy Performance,
- ii) And, 5 points in EA Credit Annual Energy Use?

**Answer: No, but:**

- Can use LEED Energy Budget Path
- Can grant special exemptions (case by case)

- **Q #4. Can you please confirm, that** such a project qualifies for more than 5 points, if it performs better than the ESH v3 target (i.e., 1 EA point per 1 HERS point lower than the ESH v3 target)?

**Answer: Yes (if granted exemption?)**





# Learning Objectives

## Materials and Resources (MR)



### **Student participants will be able to:**

- Describe changes in v4 Rating System from v2008.
- Identify prereqs and credits in the MR category.
- Apply MR prereqs and credits to a project.
- Fill-out the v4 workbook

# Overview of MR

## Removed

- Prereq MR 1.1 Framing Order Water
- Prereq MR 3.1 Construction Waste Plan
- Credit MR 1.3 Cut List & Lumber Order
- Credit MR 1.5 Off-Site Manufacturing

## Changed (moved in)

- Prereq ID 2.2 Durability Management
- Credit ID 2.3 3<sup>rd</sup> Party Verification (1 pt.)

## Changed (moved out)

- Credit MR 2.2 Low Emission Products

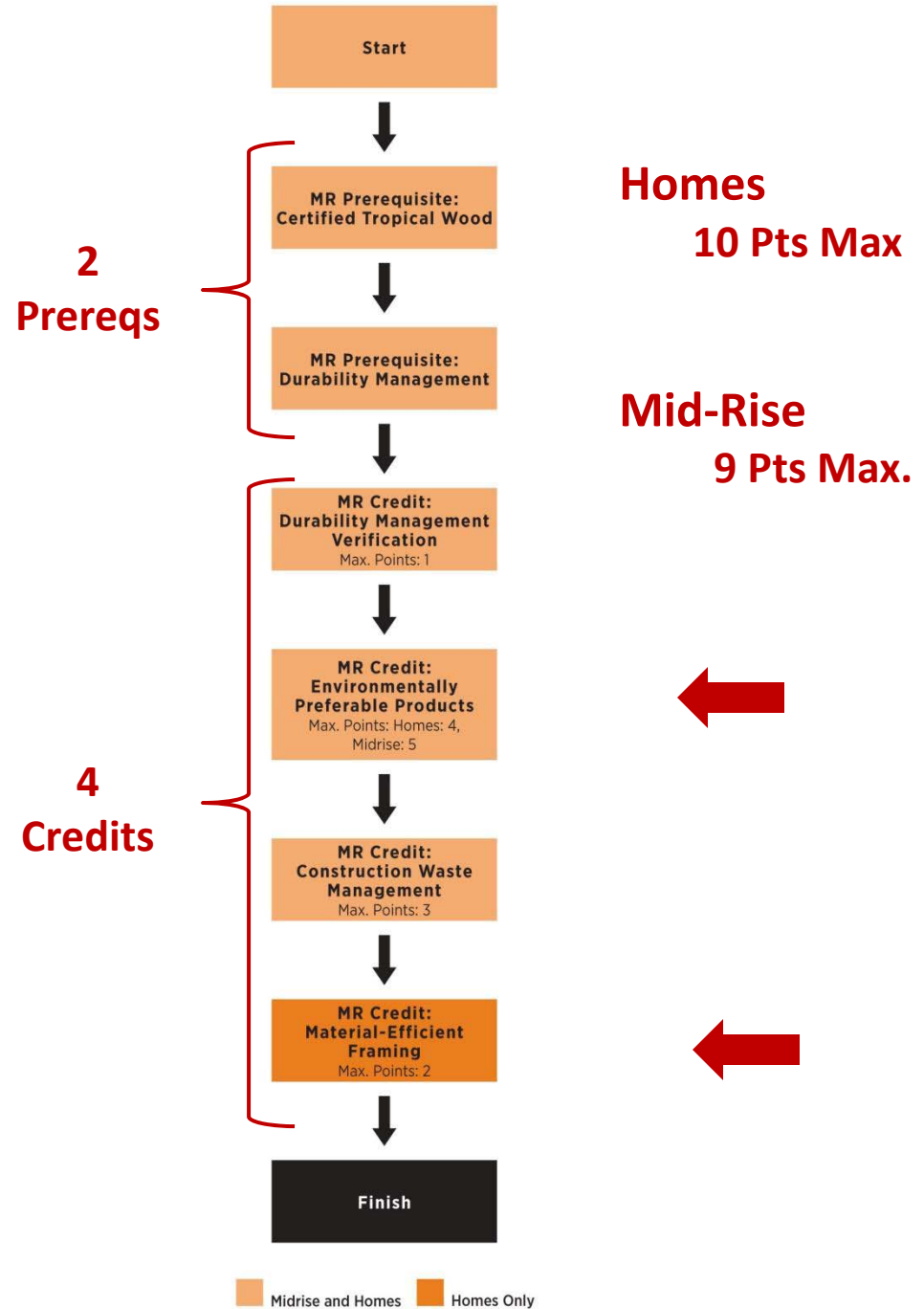
## Total Points

From 16 pts. to 10 pts. (9 for Mid-Rise)



Overall Impact: Beneficial for ...

# Materials and Resources (MR)



# Materials and Resources (MR)

MR P1 Certified Tropical Wood

MR P2 Durability Management

MR C1 Durability Management Verification

MR C2 Environmentally Preferable Products

MR C3 Construction Waste Management

MR C4 Material-Efficient Framing



# MR P1 Certified Tropical Wood

Prerequisite Applies to

- Homes & Midrise

## Intent

- To encourage environmentally responsible forest management.

## Requirements

- All wood in the building must be **nontropical, reused or reclaimed**,  
**Or**  
certified by the **Forest Stewardship Council**, or USGBC-approved equivalent.
- For the purposes of this prerequisite, a tree species is considered *tropical* if it is grown in a location that lies between the Tropic of Cancer and the Tropic of Capricorn.

# Think About It ....



**Which of the following  
are not tropical woods?**

- a) Lauan.
- b) Mahogany.
- c) Teak.
- d) Bamboo.
- e) All are tropical woods.

# MR P2 Durability Management

## Prerequisite Applies to

- Homes & Midrise



## Intent

- To promote durability and performance of the building enclosure and its components and systems through appropriate design, materials selection, and construction practices.

## Requirements

- Meet the requirements of the ENERGY STAR for Homes, version 3, **water management system builder checklist** (with the exceptions for existing homes listed in EA Prerequisite ENERGY STAR for Homes Performance). Midrise projects are exempt from this requirement.
- Install all the applicable indoor moisture control measures listed in **Table 1**.

# MR P2 Durability Management (cont'd)

**Table 1. Required interior moisture control measures for homes**

<i>Location or equipment</i>	<i>Required measure</i>
Area directly above bathtub, spa, or shower (extending to ceiling), exposed wall or area behind fiberglass enclosure if wallboard is installed	Use nonpaper-faced backer board or paper-faced product or coating over wallboard that meets standard ASTM D 3273 standard
Kitchen, bathroom, laundry room, spa area	Use water-resistant flooring; do not install carpet
Entryway within 3 feet (900 mm) of exterior door accessible from ground	Use water-resistant flooring; do not install carpet (carpet tiles are permitted)
Tank water heater in or over living space	Install drain and drain pan, drain pan and automatic water shut-off or flowrestrictor, or floor drain with floor sloped to drain
Clothes washer (or condensing clothes dryer) in or over living space	Install drain and drain pan, drain pan and automatic water shut-off or flowrestrictor, or floor drain with floor sloped to drain
Conventional clothes dryer	Exhaust directly to outdoors



# MR C1 Durability Management Verification

## Points

- Homes & Midrise (1 point)



## Intent

- To promote enhanced durability and high performance of the building enclosure and its components and systems through appropriate design, materials selection, and construction practices.

## Requirements

- Have the verification team inspect and verify each measure listed in the ENERGY STAR for Homes, version 3, **water management system builder checklist**.

# MR C1 Durability Management Verification (cont'd)



## ENERGY STAR Certified Homes, Version 3 (Rev. 07) Water Management System Builder Checklist <sup>1,2</sup>

Home Address: <input type="text"/>					City: <input type="text"/>					State: <input type="text"/>					Zip Code: <input type="text"/>				
1. Water-Managed Site and Foundation										Must Correct	Builder Verified	Rater Verified	N/A						
1.1 Patio slabs, porch slabs, walks, and driveways sloped $\geq 0.25$ in. per ft. away from home to edge of surface or 10 ft., whichever is less. <sup>3</sup>										<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
1.2 Back-fill has been tamped and final grade sloped $\geq 0.5$ in. per ft. away from home for $\geq 10$ ft. See Footnote for alternatives. <sup>3</sup>										<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
1.3 Capillary break beneath all slabs (e.g., slab on grade, basement slab) except crawlspace slabs using either: $\geq 6$ mil polyethylene sheeting, lapped 6-12 in., or $\geq 1$ in. extruded polystyrene insulation with taped joints. <sup>4,5,6</sup>										<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
2. Water-Managed Wall Assembly																			
3. Water-Managed Roof Assembly																			
4. Water-Managed Building Materials																			

[http://www.energystar.gov/ia/partners/bldrs\\_lenders\\_raters/downloads/Inspection\\_Checklists.pdf?bb64-d539](http://www.energystar.gov/ia/partners/bldrs_lenders_raters/downloads/Inspection_Checklists.pdf?bb64-d539)

# Think About It ....



**MR C1 Durability Management  
is focussed on which type of  
Durability Risk?**

- a) Exterior Water
- b) Interior Moisture
- c) Interstitial Condensation
- d) All of the Above.

# MR C2 Environmentally Preferable Products (EPPs)

## Points

- Homes & Midrise (0.5–4 points)

## Intent

- To increase demand for products or building components that minimize material consumption through recycled and recyclable content, reclamation, or overall reduced life-cycle impacts.

## Requirements

- Use building component materials that meet one or more of the criteria below.

### Option 1. Local Production

### Option 2. Environmentally Preferable Products

- A material must make up 90% of the component by weight or volume, except as noted.
- A single component that meets Option 1 and Option 2 can earn points for each (**0.5 point per item**).

# MR C2 Environmentally Preferable Products (cont'd)

## Option 1. Local Production

- Use products that were extracted, processed, and manufactured locally for the following components. Meet the thresholds in **Table 1**:
  - Framing (0.5 point);
  - Aggregate for concrete and foundation (0.5 point);
  - Drywall or interior sheathing (0.5 point).

**Table 1: Percentage of component to meet local credit**

Maximum distance from extraction, processing and manufacturing to project site:	% of building component required to meet criteria (0.5 points per component)
Locally: 100 miles (160 km)	50%



- *For renovation projects, existing components meet the requirement for local production.*

# MR C2 Environmentally Preferable Products (cont'd)

## AND/OR Option 2. Environmentally Preferable Products

- Use products that meet one or more of the following criteria (0.5 points each).
  - The product contains at least **25% reclaimed material**, including salvaged, refurbished, or reused materials. For renovation projects, existing components are considered reclaimed. Wood by-products can be counted as reclaimed material. These include items from secondary manufacturers; felled, diseased, or dead trees from urban or suburban areas; orchard trees that are unproductive and cut for replacement; and wood recovered from landfills or water bodies.
  - The product contains at least **25% postconsumer** or 50% *preconsumer* content.
  - Wood products **must be** Forest Stewardship Council (FSC) Certified, or USGBC-approved equivalent.

# MR C2 Environmentally Preferable Products (cont'd)

## AND/OR Option 2. Environmentally Preferable Products (cont'd)

- **Bio-based materials.** Bio-based products must meet the Sustainable Agriculture Network's Sustainable Agriculture Standard. Bio-based raw materials must be tested using ASTM Test Method D6866 and be legally harvested, as defined by the exporting and receiving country. Exclude hide products, such as leather and other animal skin material.
  - **Concrete** that consists of at least 30% fly ash or slag used as a cement substitute and 50% recycled content or reclaimed aggregate OR 90% recycled content or reclaimed aggregate.
  - **Extended producer responsibility.** Products purchased from a manufacturer (producer) that participates in an extended producer responsibility program or is directly responsible for extended producer responsibility.
- At least 90% of each compliant building component (listed in Table 2), by weight or volume, must meet one of the requirements below.
  - A single component that meets more than one criterion does not earn additional credit.

# MR C2 Environmentally Preferable Products (cont'd)

**Table 2. Maximum points for compliant building components**

Component	Maximum points
Flooring - Base floor only (i.e., sealed concrete, no floor covering)	2
Floor covering	1
Insulation*	1
Sheathing	1
Framing	1
Drywall, interior finish	1
Concrete: cement and / or aggregate	1
Roofing	1
Siding	1
Additional components (install at least 3 of the following): <ul style="list-style-type: none"> <li>• Doors (not including insulated doors or garage door)</li> <li>• Cabinets</li> <li>• Counters (kitchens and bathrooms)</li> <li>• Interior trim</li> <li>• Decking or patio material</li> <li>• Windows</li> </ul>	1

**Local  
and  
EPP**

**11 pts available  
4 pts max.**



# Think About It ....



**The Minimum of “50% of Building Component” Applies to... ?**

- a) Local.
- b) EPPs
- c) Both.
- d) Neither.

# MR C3 Construction Waste Management

## Points

- Homes & Midrise (0.5–3 points)



## Intent

- To reduce construction waste generation and to reuse and recycle debris.

## Requirements

- Reduce total construction waste or divert from landfills and incinerators a large proportion of the waste generated from new construction. Use the tables below to calculate the percentage of waste avoided or *recycled*.
- Excavated soil, land-clearing debris, and alternative daily cover (ADC) do not qualify for this credit.
- Any waste-to-energy is not considered recycling for this credit.

# MR C3 Construction Waste Management (cont'd)

**Table 1. Baseline waste for LEED reference home**

<i>Bedrooms</i>	<i>Conditioned floor area (sf)</i>	<i>Waste (lbs)</i>
1	1,000	4,200
2	1,600	6,720
3	2,200	9,240
4	2,800	11,760
5	3,400	14,280
6	4,000	16,800
7	4,600	19,320
8 or more	—	Area (sf) * 4.2

**IP  
Units**

**Table 1a. Baseline waste for LEED reference home**

<i>Bedrooms</i>	<i>Conditioned floor area (sq. m)</i>	<i>Waste (kg)</i>
1	93	1 905
2	148	3 048
3	204	4 191
4	260	5 334
5	315	6 477
6	371	7 620
7	427	8 763
8 or more	—	Area (sq. m) * 20.5

**SI  
Units**

# MR C3 Construction Waste Management (cont'd)

**Table 3. Points for reducing construction waste below baseline**

<i>Percentage reduction</i>	<i>Points</i>
10%	0.5
20%	1.0
30%	1.5
40%	2.0
50%	2.5
60%	3.0

# MR C3 Construction Waste Management (cont'd)

Calculate the waste generated by the project according to the following equation:

$$\text{Project construction waste} = \text{Total waste} - (\text{Recycled waste} * 0.25)$$



# Project Example

## MR C3 Construction Waste Management

	Construction Waste (lbs.)
	High
Baseline (lbs)	9,240

**3 bedroom**

# Project Example

## MR C3 Construction Waste Management

	Construction Waste (lbs.)			
	High	Moderate	Low	
Baseline (lbs)	4,200	4,200	4,200	<b>1 bedroom</b>
As-Built Waste				
Total Waste (lbs)	3,240	2,240	1,240	
Diversion (%)	30%	30%	30%	
Recycled (lbs)	810	672	372	 <b>x 25%</b>
Net Recycled (lbs)	202	168	93	
Net Waste (lbs)	3,038	2,072	1,147	
Difference				
Lbs	1,162	2,128	3,053	
%	28%	51%	72%	
v4 Points	1.0 / 3	2.5 / 3	3.0 / 3	
<b>v2008 Points</b>	<b>0.5 / 3</b>	<b>0.5 / 3</b>	<b>0.5 / 3</b>	

## MR C3 Construction Waste Management (cont'd)

To convert **volume to weight**, assume 500 pounds per cubic yard (296 kg per cubic meter) of mixed construction waste,

**or**

use **Table 2** to calculate the weights of specific waste products.



# MR C3 Construction Waste Management (cont'd)

**Table 2. Volume-to-weight conversion for construction and demolition debris**

<b>Material</b>	<b>LB/CY</b>	<b>TONS/CY</b>	<b>CY/TON</b>	<b>KG/cubic meter</b>
Aluminum (scrap, whole)	175	0.09	11.1	103.8
Asphalt	1,380	0.69	1.4	818.7
Brass (scrap)	906	0.45	2.2	537.5
Brick (common hard)	3,024	1.5	0.67	1794
Cardboard (uncompacted)	100	0.05	20	59.3
Carpet & P adding (loose)	84	0.04	25	50
Concrete	1,855	0.92	1.4	1100.5
Copper (scrap)	1,094	0.56	1.8	649
Dirt (loose, dry)	1,890	0.94	1.1	1121.2
Drywall	500	0.25	4	296.6
Glass (broken)	2,160	1.1	0.91	1281.4
Metal (scrap)	906	0.45	2.2	537.5
Mixed C&D Debris	900	0.45	2.2	533.9
Mixed Waste/Trash	350	0.17	5.9	207.6
Rock (loose)	2,570	1.28	0.78	1631.5
Roofing (wood shake, shingle)	435	0.22	4.5	258
Tree Limbs & Stumps	1,080	0.54	1.9	640.7
Wood (scrap, loose)	330	0.17	5.9	195.7
Yard Trimmings (mixed)	108	0.05	20	64

# MR C3 Construction Waste Management (cont'd)

**Construction & Demolition Debris  
Weight Conversion Table**

MATERIAL	LBS/CY	TONS/CY	CY/TON
Aluminum (scrap, whole)	175 lbs/cy	0.09 tons/cy	11.1 cy/ton
Asphalt	1,380 lbs/cy	0.69 tons/cy	1.4 cy/ton
Brass (scrap)	906 lbs/cy	0.45 tons/cy	2.2 cy/ton
Brick (common hard)	3,024 lbs/cy	1.50 tons/cy	0.67 cy/ton
Cardboard (uncompacted)	100 lbs/cy	0.05 tons/cy	20 cy/ton
Carpet & Padding (loose)	84.4 lbs/cy	0.04 tons/cy	25 cy/ton
Concrete	1,855 lbs/cy	0.92 tons/cy	1.4 cy/ton
Copper (scrap)	1,094 lbs/cy	0.56 tons/cy	1.8 cy/ton
Dirt (loose, dry)	1,890 lbs/cy	0.94 tons/cy	1.1 cy/ton
Drywall	500 lbs/cy	0.25 tons/cy	4 cy/ton
Glass (broken)	2,160 lbs/cy	1.10 tons/cy	0.91 cy/ton
Metal (scrap)	906 lbs/cy	0.45 tons/cy	2.2 cy/ton
Mixed C&D Debris	900 lbs/cy	0.45 tons/cy	2.2 cy/ton
Mixed Waste/Trash	350 lbs/cy	0.17 tons/cy	5.9 cy/ton
Rock (loose)	2,570 lbs/cy	1.28 tons/cy	0.78 cy/ton
Roofing (wood shake, shingle)	435 lbs/cy	0.22 tons/cy	4.5 cy/ton
Tree Limbs & Stumps	1,080 lbs/cy	0.54 tons/cy	1.9 cy/ton
Wood (scrap, loose)	330 lbs/cy	0.17 tons/cy	5.9 cy/ton
Yard Trimmings (mixed)	108 lbs/cy	0.05 tons/cy	20 cy/ton

# MR C3 Construction Waste Management (cont'd)

- **For multifamily buildings**, use the project's floor area for any *non-unit spaces*, and add it to the floor area of the LEED reference home calculated for each unit.



# Think About It ....



**What factor is most important for MR C3 Construction Waste?**

- a) **Number of Bedrooms**
- b) **Diversion Rate**
- c) **Total Quantity of Waste**
- d) **Total Quantity of Recycled Waste**

# MR C4 Material-Efficient Framing

## Points

- Homes (0.5–2 points)

**Not for Midrise Projects**

## Intent

- To conserve resources by reducing the use of unnecessary framing materials.

## Requirements

- Implement any of the following advanced framing techniques
  - for at least 90% of each component.
- For renovation projects, existing components may be excluded from the calculation.
- Modular, panelized, or other prefabricated wall or structural systems must comply with the requirements.

# MR C4 Material-Efficient Framing (cont'd)

- Implement **one of the following** optimum value engineering measures in exterior walls and common walls (**1 point**):
  - Install no more than one horizontal 2x top plate on walls by aligning studs with joists and roof rafters.
  - Place window and door headers in the rim joist.
  - Install raised (directly beneath the top plate), single-ply headers not more than 2 inches nominal thickness in a 2x4 wall or 4 inches nominal thickness in a 2x6 wall, in accordance with International Residential Code 2012.
  - Install structural insulated panels (SIPs) for walls.
- Implement **any two of the following** for all interior and exterior walls (**0.5 point**):
  - Size headers for actual loads.
  - Use ladder blocking or drywall clips.
  - Use two-stud corners or California corners.
- Space interior wall studs greater than 16 inches o.c. (400 mm o.c.) (**0.5 point**).
- Space floor joists greater than 16 inches o.c. (400 mm o.c.) or SIPs (**0.5 point**).
- Space roof rafters greater than 16 inches o.c. (400 mm o.c.) or SIPs (**0.5 point**).

# Think About It ....



**Off-Site Fabrication is not rewarded in MR C4 Material Efficient Framing.**

- a) True?
- b) False?

# Summary of Changes



## **What happened to:**

*Framing Waste Factor?*

*Framing Docs?*

*Cut List / Lumber Order?*

*Low Emission Products ?*



Credit #		Credit Name	Single Family (Max. Points)		Midrise (Max. Points)	
V 2008	V 4.0		V 2008	V 4.0	V 2008	V 4.0
MR 1.1	NA	Framing Order Waste	Prereq	N/A		
MR 1.2	N/A	Detailed Framing Docs.	1	N/A		
MR 1.3	N/A	Cut List / Lumber Order	1	N/A		
MR 1.4	MR C4	Framing Efficiencies	3	2		N/A??
MR 1.5	N/A	Off-Site Fabrication	4	N/A		
MR 2.1	MR P1	Certified Tropical Wood	Prereq	Prereq		
MR 2.2a	MR C2	Env. Pref. Prod. (EPP)	5	4	5	5
MR 2.2c		Env Pref. Prod. (Local)				
MR 2.2b	EQ C7	Env. Pref. Prod. (Low Emission)	3	3		
MR 3.1	N/A	Constr. Waste Planning	Prereq	N/A		
MR 3.2	MR C3	Constr. Waste Reduction	3	3		
ID 2.2	MR P2	Durability Management		Prereq		
ID 2.3	MR C1	Durability Verification		1		
Total (MR)			16	10	Same	Same

Removed

Changed

# Think About It ....



## Which MR Credit is different for Mid-Rise Projects?

- a) Durability Verification
- b) EPPs
- c) Construction Waste
- d) Efficient Framing
- e) b) and d)

# Project Examples

## Materials and Resources (MR)

Apply MR prereqs and credits to projects

- Single family home
- Low-rise multi-family building
- Mid-rise multi-family building

# Project Examples

## Materials and Resources (MR)

	Single Family	Low Rise	Mid-Rise
Local (100 Miles; 50%) Cement / Aggregate Drywall Insulation	0.5	0.5	0.5
EPP Fly Ash (30% + 50% RC aggregate) Drywall (25% RC)	0.5 0.5	0.5 0.5	0.5 0.5
Construction Waste Waste Reduction (25%) Diversion Rate (80%)	1.0	1.0	1.0
Efficient Framing Roof Framing > 16" OC Ladder blocking / 2 stud corners	0.5 0.5	0.5 0.5	N/A

# Project Example

		Performance Approach		
		Single Family	Low Rise	Mid-Rise
MR P1	Certified Tropical Wood	Prereq	Prereq	Prereq
MR P2	Durability Management	Prereq	Prereq	Prereq
MR C1	Durability Verification	1 / 1	1 / 1	1 / 1
MR C2	EPPs / Local	1.5 / 4	1.5 / 4	1.5 / 5
MR C3	Construction Waste Management	1 / 3	1 / 3	1 / 3
MR C4	Material Efficient Framing	1 / 2	1 / 2	N/A
Total		4.5 / 10	4.5 / 10	3.5 / 9



**Note:** No Minimum Point Floor (2 pts. in v2008)

# Think About it .....

**Total MR Points Available: 10 (9 Mid-Rise)**

<b>Level</b>	<b>% of Max.</b>	<b>Goal</b>	<b>Achieved</b>
			3.5 Pts - Mid-Rise
Certified	40%	4 pts.	4.5 Pts - Homes
Silver	50%	5 pts	
Gold	60%	6 pts.	
Platinum	80%	8 pts	

## Think About It ....



**For Mid-Rise projects, there are only nine (9) MR Points available. How many of these points are in MR C3 EPPs?**

- a) 3
- b) 4
- c) 5
- d) 6

# MR Pilot Credits



Design for Adaptability

Clean Construction

Design for Active Occupants

Local Food Production

Verified Construction and Demolition  
Rates

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

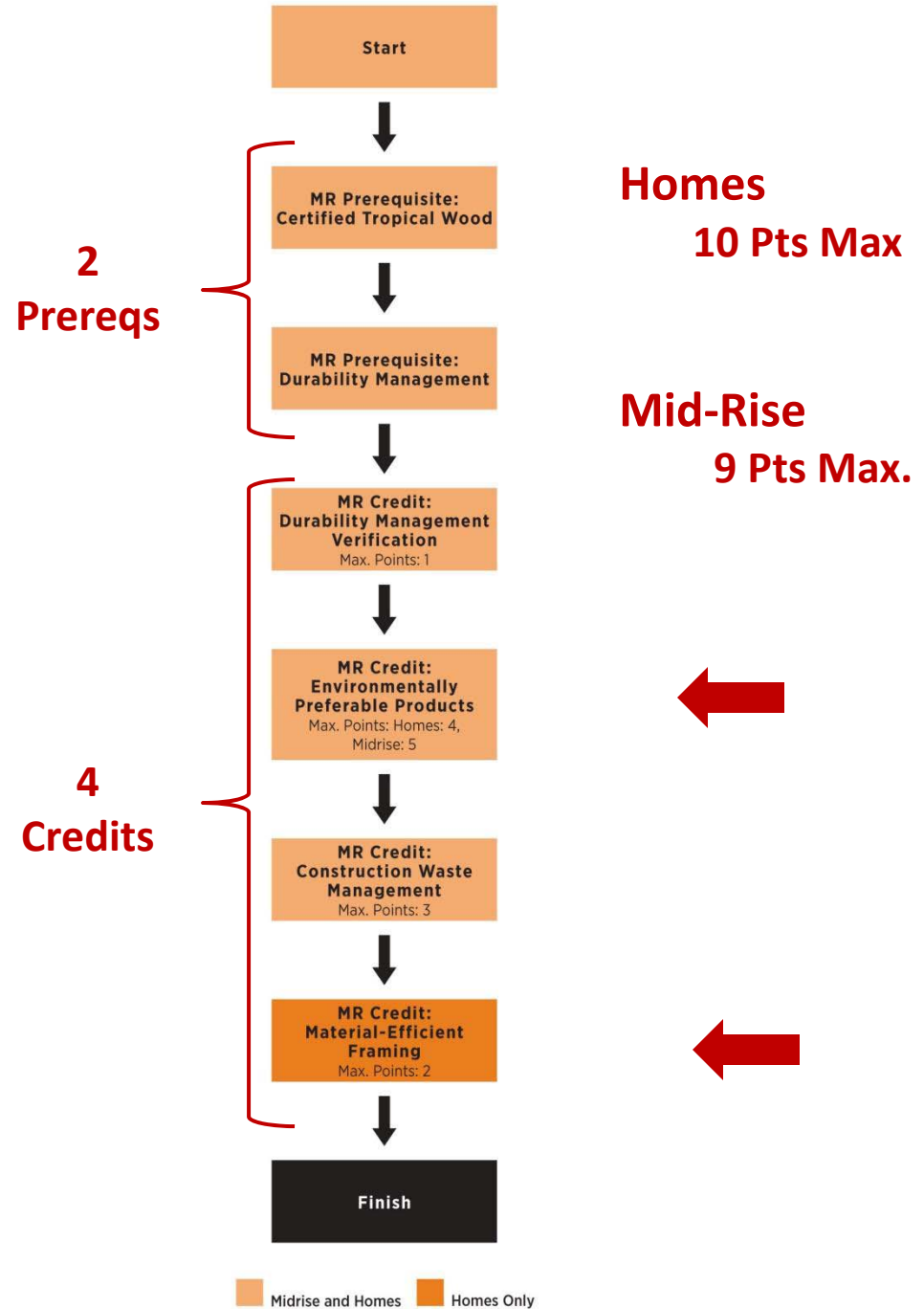


# Review

## Materials and Resources (MR)



# Materials and Resources (MR)



# Learning Objectives

## Materials and Resources (MR)



### **Student participants will be able to:**

- Describe changes in v4 Rating System from v2008.
- Identify prereqs and credits in the MR category.
- Apply MR prereqs and credits to a project.
- Fill-out the v4 workbook

# Learning Objectives

## Materials and Resources (MR)



### **Student participants will be able to:**

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# Review: Major Changes Materials and Resources (MR)

## Removed

- Prereq MR 1.1 Framing Order Water
- Prereq MR 3.1 Construction Waste Plan
- Credit MR 1.3 Cut List & Lumber Order
- Credit MR 1.5 Off-Site Manufacturing

## Changed (moved in)

- Prereq ID 2.2 Durability Management
- Credit ID 2.3 3<sup>rd</sup> Party Verification (1 pt.)

## Changed (moved out)

- Credit MR 2.2 Low Emission Products

## Total Points

From 16 pts. to 10 pts. (9 for Mid-Rise)



Overall Impact: Beneficial for ....

# Next Module

## What's Next?



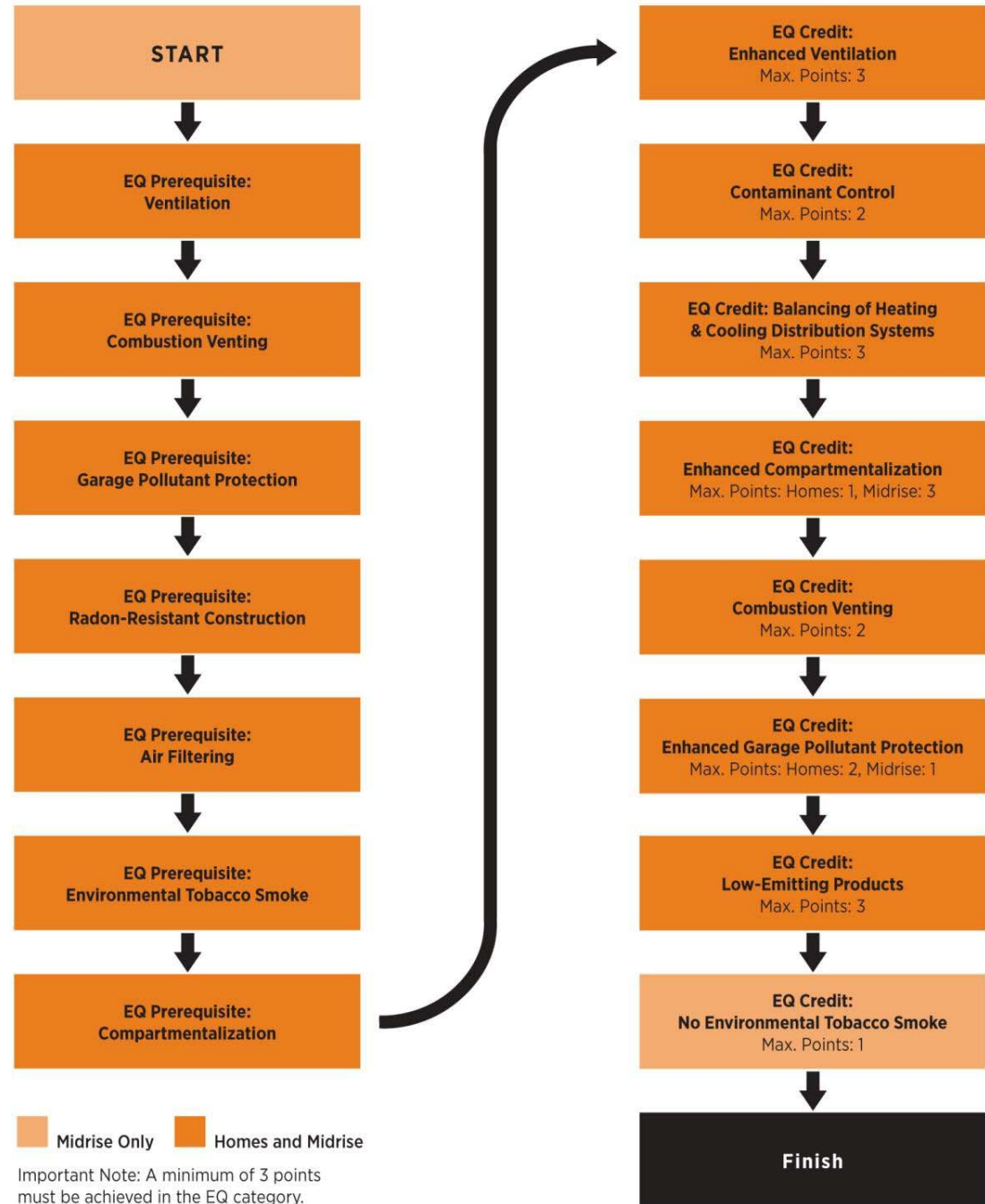
Module 7: EQ Prereqs and Credits

Module 8: IN / RP /AE / Tools /Process

Module 9: Scoring of Example Projects



# Indoor Environmental Quality (EQ)



**Questions**  
THANK YOU!

