

# INTRO

## LEED Homes V4 ... A Providers Perspective



# INTRO

- Thank you
- Good Morning
- Can you hear me
- Phones off or silent
- Questions at the end , write them down send 'em up

# INTRO

LEED V4 for Homes Design and Construction

**Is here November 1<sup>st</sup> 2016**



# COURSE DESCRIPTION

All LEED for Homes projects registered after October 31<sup>st</sup> 2016 must certify under LEED v4. Come and learn...

- Overview of V4 Program requirements
- Understand the basic differences from the original version and how it compares / relates to 2015 IECC and Energy Star V3 .
- Also, hear about challenges and lessons learnt for both Single Family and Multi Family pathways.

# OBJECTIVES

Understand the differences between LEED for Homes 2008/LEED Mid Rise 2010 and LEED for Homes v4.

- Identify common obstacles and pathways to certification.
- Is Homes V4 right for you, if so/ if not..... what to do next ?

# INTRO

Get a sense of who is in the room

- Builders ?
- Developers ?
- Architects ?
- Designers ?
- Trades ?
- Others ?

# INTRO

How familiar are you with LEED for Homes ?

- Who has worked on a LEED project before?
- Single Family , custom/production ?
- Multi Family, 1-3 stories, 4 or more?
- Any one worked on Energy Star Homes V3?

# BACKGROUND CONTEXT

Background context if needed



# BACKGROUND CONTEXT

## Background context

- LEED Homes V4 is part of the USGBC's Building Design and Construction or BD&C group of rating systems
- BD&C is one of the 4 main rating systems developed by the USGBC

# BACKGROUND CONTEXT

Other 3 are

- Interior Design and Construction
- Building Operation and Maintenance ... for Existing buildings
- And Neighborhood Development... which is the performance path in the LT category and if followed can earn you 15 points in Homes. (up from 10 points in 2008/2010)

# BACKGROUND CONTEXT

All these are also being upgraded to V4 after Halloween, October 31<sup>st</sup>

- This is part of the reason for changes. The USGBCs goal is to bring all their protocols into alignment
- But for the purpose of this talk, when I mention “V4”, I'm referring to LEED for Homes

# WHO'S WHO

## Project Team

- Builders, Designers, Owners, Developers, Trades
- LEED Homes Associated Professional ( LEED AP)

## Verification Team

- Green Rater
- Provider
- Quality Assurance Designee (QAD)
- Green Business Certification Inc. (GBCI)
- United States Green Building Council (USGBC)

# BACKGROUND CONTEXT

## Who's Who and the key players

- First up is the **PROJECT TEAM**, the designers, builders, trades and a **LEED Accredited professional** aka **LEED AP Homes**
- The **LEED AP Homes**, is someone who has the **AP Homes** credential and knows the **Homes** program and is part of the project team (possibly can get discount on fees)



# BACKGROUND CONTEXT

- The Project team selects and teams up with a Green Rater
- The Green Rater holds a separate credential than the LEED AP
- The Green Rater is squarely on the Verification Team



# BACKGROUND CONTEXT

The Green Raters responsibilities are

- Perform onsite inspections
- Help guide the project team but won't make any design decisions
- They will also generally complete the work book and organize and pass the certification package onto the Quality Assurance Design aka "QAD" for review

# BACKGROUND CONTEXT

The QAD is

- Employed by a “Provider Company”
- Oversees the Green Rater, and is available to answer questions
- After the QAD has reviewed and is satisfied the certification package is complete and in order, they submit it to Green Business Certification Inc., aka “GBCI” for their final review and approval



# BACKGROUND CONTEXT

Providers - There are several different types of provider companies

- Some only work with 3<sup>rd</sup> party independent Green Raters
- Some only have on staff Green Raters
- And others may have a combination of on staff and independent Green Raters

# BACKGROUND CONTEXT

The GBCI is the entity that oversees the certification and also training, credentials, exams and fees.

The United States Green Building Council aka “USGBC” oversees and maintains the actual rating system.

- GBCI and the USGBC are very closely connected, some people refer to them interchangeably but basically USGBC maintains the LEED Rating system and GBCI enforces the rules related to LEED

# BACKGROUND CONTEXT

- So it's important to know who's who and their specific roles and responsibilities and the relationships between them.
- Especially when it comes to Project teams and Verification teams, basically with very few exceptions a project team cannot verify its own work, design or installation!

# AGENDA



# AGENDA

What this presentation is NOT

- NOT here to sell you on LEED
- NOT a deep dive into each credit

# AGENDA

What this presentation IS

- a high level look and overview of the new USGBC  
“LEED V4 for Homes Design and Construction” Rating system

...aka ... LEED Homes V4

# AGENDA

- **Who's, Who and Background**
- CHANGE ..why change?
- Point System
- Tools
- Prerequisite
- Credits
- Testing
- Energy ....pathways and challenges
- Impact .... challenging credits
- Next steps
- Fees
- Resources
- Q & A

# AGENDA

- A lot to go over, Power point will be available



# CHANGE



# CHANGE

- Currently 2 versions, 2008 / 2010 aka V3 and V4
- V4 has been available for over a year and a few projects have already achieved it.

As of August 2016

- 175 SF homes and 2459 MF units registered V4
- 33 SF homes and 55 MF units certified V4

# CHANGE

However,

- Halloween ..October 31<sup>st</sup> is the last day to registration for 2008 and 2010,
- Registration is closed November 1st, they are off the table, They are not gone.... you are given until June 30<sup>th</sup> 2021 to achieve certification for 2008/2010 projects

# CHANGE

We will look at some of the changes from the current 2008/2010 protocols

- 2008 covers Single Family homes and Low Rise Multi Family buildings 1-3 stories
- 2010 covers Mid Rise Multi Family Buildings 4 or more stories

# CHANGE

As you can tell by the names 2008 and 2010 have been around for a while.

- The protocols they reference e.g. Energy Star and ASHRAE and competing above code protocols have all been updated...

.....so time for a change

# CHANGE

The official name for the new protocol

**“LEED V4 for Homes Design and Construction”**

- Combines Single Family, Multi Family Low Rise

and

- Multi Family Mid Rise Buildings into one rating system



# CHANGE

- 1 rating system with 2 different pathways
- Pathway 1 is called “**HOMES**” and includes Single Family Homes and Low Rise Multi Family buildings ...typically\* 1 – 3 stories



# CHANGE

- Pathway 2 is called “MID RISE”, which typically consists of buildings 4 or more stories





# CHANGE

- Some credits and prerequisite apply just to Homes,
- Some only to Mid Rise
- Some to Multi Family (Low Rise and Mid Rise)
- Some to all.

# CHANGE

## Why Change?

USGBCs goal is to bring the Homes protocol in line with their other protocols and rating systems.

- The commercial protocols (especially BD &C aka LEED NC) are much more well known and established, nationally and internationally.

# CHANGE

V4 has been streamlined, so now there are less forms for the project team to sign.

- The Accountability Forms are gone, instead there is new language in the LEED online registration process, stating the project team agrees to abide by the program requirements.

Green Business Certification Inc.™

**CERTIFICATION AGREEMENT**

**BY ACCEPTING THIS AGREEMENT YOU ACKNOWLEDGE THAT YOU ARE FULLY AWARE OF AND AGREE TO ALL OF THE FOLLOWING TERMS, CONDITIONS, AND PROVISIONS, YOU REPRESENT THAT YOU HAVE CONSULTED WITH AN ATTORNEY ABOUT YOUR RIGHTS AND OBLIGATIONS HEREUNDER, AND YOU ARE HEREBY ENTERING INTO A LEGALLY BINDING AGREEMENT.**

# CHANGE

- Durability Inspection Checklist (DIC) and Site Evaluation forms are gone and replaced with
  - 1) shorter list in the rating system
  - 2) the ESH V3 Water Management Checklist (WMC), must be completed by the Builder.
- \*The WMC is required for “Homes” path but not for “Mid Rise”. Credit for both if WMC is also completed by the Green Rater

#### Builder Responsibilities:

- It is the exclusive responsibility of builders to ensure that each certified home meets these requirements.
- While builders are not required to maintain documentation demonstrating compliance for each individual certified home, builders are required to develop a process to ensure compliance for each certified home (e.g., incorporate these requirements into the Scope of Work for relevant sub-contractors, require the site supervisor to inspect each home for these requirements, and / or sub-contract the verification of these requirements to a Rater).
- In the event that the EPA determines that a certified home was constructed without meeting these requirements, the home may be decertified.

#### 1. Water-Managed Site and Foundation

- 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>2</sup>
- 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>2</sup>
- 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>3,4,5</sup>
- 1.4 Capillary break at all crawlspace floors using  $\geq 6$  mil polyethylene sheeting, lapped 6-12 in., & installed using one of the following:<sup>3,4,5</sup>
  - 1.4.1 Placed beneath a concrete slab; OR

# CHANGE

There are New forms to upload to LEED Online, such as

- Site map
- Plant list
- Total Water Use calculations
- ESHV3 checklists
- Building elevation and floor plans
- Photos of the building

# CHANGE

Also required for Multi Family (Low Rise and Mid Rise)

- An ASHRAE 62.1 calculation detailing the fresh air amounts required for common/residential associated spaces

\*This has to be reviewed and approved by GBCI

<http://www.usgbc.org/resources/minimum-indoor-air-quality-performance-calculator>

# CHANGE

## Why Change?

- Also an opportunity to update, strengthen and clarify credits / prerequisite

# POINT SYSTEM





# POINT SYSTEM

V4 is trimmed down with **110** points available.

- Certification levels are now spread by **10** point increments, except Gold to Platinum, you need **20** points to make the jump
- Also the Home Size Adjustment (HSA) has been...adjusted
- The HSA doesn't alter certification thresholds, in V4 you are now awarded points ...or lose points based on a calculation in the EA section (more on that when we talk energy)

# POINT SYSTEM

## ■ V4= 110 points

- LEED Certified : Min 40 points earned
- LEED Silver : Min 50 points earned
- LEED Gold : Min 60 points earned
- LEED Platinum : Min 80 points earned

\*Point Thresholds not changed by H.SA

# POINT SYSTEM

In comparison 2008/2010 has 136 points available ,

- 15 point spread between each certification level
- The certification threshold adjusted by the building's HSA input

# POINT SYSTEM

- **2008/2010 = 136 Available Points (15 point spread)**
- LEED Certified : Min 45 points earned\*
- LEED Silver : Min 60 points earned\*
- LEED Gold : Min 75 points earned\*
- LEED Platinum : Min 90 points earned\*

\*Point Thresholds changed by HSA

# POINT SYSTEM

3 categories with minimum points thresholds

- Location and Transport (LT) and Energy and Atmosphere (EA,) you need a combined total of 8 points. \* can earn 0 points in LT
- You need to earn a minimum of 3 points in Water Efficiency (WE)
- You need to earn a minimum of 3 points in Indoor Environmental Quality (EQ)

# TOOLS

## Know Your Tools



Doojiggy



Hickeymabob



Redthingy



Jiggymadoo



Thingymajig



Doohickeys  
and Doodads



Squeezythingy



Gizmo



Whatchamacallit

# TOOLS

The checklist is now known as the “Workbook”.

- You download a “sample” of the workbook online to use as a guide, but you have to register your project in LEED Online to access the latest/most current version.

The image shows a screenshot of the LEED v4.1 LEED-NC: Homes and Multifamily v4 Workbook form. The form is titled "LEED v4.1 LEED-NC: Homes and Multifamily v4 Workbook" and is marked "FOR REFERENCE ONLY". It is divided into several sections: Step 1 (Project information), Step 2 (Project location), Step 3 (Project details), and Step 4 (Additional project information). Each section contains various fields for data entry, such as project name, location, and project details. The form is presented as a sample for reference.

# TOOLS

The workbook is

- Detailed
- Has a tab for each category and calculators
- Can choose Mid Rise or Homes
  - \* Potential future upgrades to make it more user friendly





# TOOLS

LEED Online is the USGBC/GBCI portal for registering your project and where project information and documents are uploaded.

- The commercial version has been around a while and the residential version is based on this, a set of specific instructions on how to upload residential buildings is available (see links and resources)



# TOOLS

A revamped water calculator, used for WE “Total Water Use” performance pathway.

- It's in 2 parts

# TOOLS

Part 1 For outdoor water use,

- Use the EPA “Water Sense Outdoor Water Budget Tool”.

[https://www3.epa.gov/watersense/water\\_budget/](https://www3.epa.gov/watersense/water_budget/)

- Input the data into the calculator found in the LEED Workbook.



# TOOLS

Part 2 For indoor water use,

- you enter info straight into the work book calculator .....

**Water Reduction Calculator**

Use this calculator to determine if your building uses less water than the requirements of WSC Cr.

Note: This calculator is a relative measure of water use based on how the products are designed versus/valued from the project specifications. Measurements from field testing should NOT be on malfunctioning products.

**Outdoor Water Use**

Provide the following values from the State/Local Water Budget Calculator:

Baseline for the site (gal/year/month)

Landscaping water requirement for site (gal/year/month)

Flameless or gas/water (gal/year/month)

**Unit Information**

List the number of each type of unit for the building. This information is used to double-check your entries for each fixture type. For single family homes, just "1" by the number of bathrooms.

Unit Type	Number of Units	Comments
Bathroom		0
1 Bedroom		0
2 Bedrooms		0
3 Bedrooms		0

- \* The calculations need to be sent to GBCI for review and approval preferably prior to final certification

# TOOLS

And as mentioned earlier, the new A 62.1 calculator for Common and Residential Associated Spaces e.g. leasing offices/gyms/conditioned corridors.



**Minimum Indoor Air Quality Performance Calculator**  
LEED 2009 and v4 EQ Prerequisite Minimum Indoor Air Quality Performance

**Step 1.**  
Enable macros.

Note: This calculator is for use with Excel for Mac 2011 and Excel 2007 or later.

\* Also needs to be reviewed and approved by GBCI

# PREREQUISITES



# PREREQUISITES

2008/2010 has 22 prerequisite

- V4 has trimmed it down to 16,
- some gone or merged into others

# PREREQUISITES

3 new ones are.....

- **LTP Floodplain Avoidance....** Don't build in a floodplain but if you do... you need to meet the “National Flood Insurance Program” requirements
- **WEp Water Metering ....**requires a water meter on the house, building or unit, and to encourage the tenant or householder to share their usage data...
- **EAp Energy Metering ....**requires an Electricity meter on the house, building or unit and also to encourage the tenant or householder to share their usage data...



# PREREQUISITES

## Note

- 2008/2010 Prerequisites MR 1.1 Framing Order and MR3.1 Construction Waste Planning are gone.
- The former 2010 “Environmental Tobacco Smoke”(ETS) credit is now a prerequisite for both Low Rise and Mid Rise projects ... but not Single Family homes

# CREDITS

# CREDITS

## HOMES added

- Former pilot points, Bicycle Network and Trades Training as full credits.
- Also has "Solar Ready Design" which is earned if you meet the Energy Star "Renewable Energy Ready Home" checklist

[www.google.com/#q=energy+star++solar+ready+checklist](http://www.google.com/#q=energy+star++solar+ready+checklist)

[www.energystar.gov/ia/partners/bldrs\\_lenders\\_raters/rerh/docs/RERH\\_Guidance\\_PV\\_Checklist.pdf?cca4-dc2b](http://www.energystar.gov/ia/partners/bldrs_lenders_raters/rerh/docs/RERH_Guidance_PV_Checklist.pdf?cca4-dc2b)

# CREDITS

HOMES and MID RISE now have..

- WE “total water use” we touched on this earlier, it’s the performance option and earn points based on the % above the baseline...minimum of 10% to earn points
- Also new “Advanced Utility Tracking” for over and above the prerequisite
  - \* Highlights USGBC’s /GBCI’s drive for benchmarking data

# CREDITS

New Regional Priority category.

- Online data base where you enter the projects zip code and have a choice of 6 credits that have been deemed to have “Special Importance” for that particular region
- You can earn 4 points here

# CREDITS

Examples of Credits that have changed and become harder, more stringent to achieve.

# CREDITS

## BIG changes in WE

- Now requires you include the Kitchen faucet in the total calculation and that a psi and water leak test is performed.
- The prescriptive path calls out for all “ Water Sense” labeled fixtures (except Kitchen faucet)
- The prescriptive irrigation and water reuse credits are gone.. Replaced by a credit designed to Reduce Turf and encourage Natural Planting..... turf being water intensive/doesn't absorb storm water runoff very well and is often doused with chemicals ...is not looked at favorably by LEED

# CREDITS

Also big change to Construction Waste Management.

- In 2008/2010 it was based on how much waste was diverted from the landfill.
- Now based on reducing the amount of waste your building is compared to a baseline and points are awarded as such. However in the case of large project the baseline doesn't account for things like wrap garage or common/associated spaces.
- \* Possibly an alternative pathway in the works along the lines of the V4 BD and C approach which is similar to the 2008/2010 landfill diversion strategy.



# CREDITS

## Borate,

- Used to be 3ft requirement, is now ALL structural wood including sheathing (all the way up exterior wall)

## Heat Island

- Was an easy point for Multi Family with a large multi story garage but now that alternative pathway is gone.

## Local Production

- Used to be 500 miles and is now 100 miles,
  - \* although an alternative for 250 miles is in the works

# CREDITS

## Clothes Washers,

- Per the V4 rating system, are required to have a drain and pan,
- \* 2008/2010 allows single throw water shut offs and there is now an alternative pathway to allow the same in V4 and possible exemplary point if the pan and drain is installed

## Steep slope

- is now defined as 15% instead of 25%

# TESTING



# TESTING

## Blower Door Target (for Multi Family and Attached Single Family Projects only)

- Per the rating system EQp is at 0.23 cfm per square foot of enclosure but an alternative pathway is possibly available that brings it back to the 2010 requirement of 0.30cfm
- \* Effective Leakage Area is a different metric than ACH. But for LEED 0.30 enclosure leakage is considered equivalent to 7 ACH 50

# TESTING

## Duct Testing

- Homes now at ESHV3 target.
  - \* See ESH V3 Rater Field Checklist for requirements and exemptions but basically Rough TLO= 4cfm. Final LTO= 8 cfm
- Mid Rise now at ES MF HR targets or EA MR prescriptive targets (Listed in EA section)

# TESTING

Whole house ventilation and local ventilation rates will require testing.

- Mid Rise per ASHREA 62.2 2010 and Homes per ESH V3.

Also per ESH V3,

- static pressure
- room to room testing will be required,
  - \*these however can earn points as well

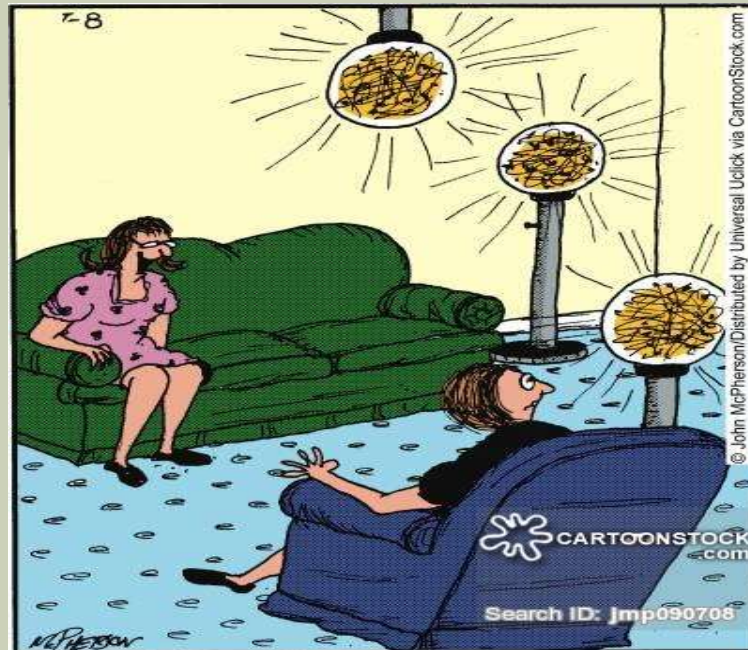
# TESTING

## Water Testing

- Water Pressure psi and Water Leaks also need to be tested
- This can be done and documented by the plumber and info passed on to the green rater.

\*psi test is for “Homes” only

# ENERGY



**“Thanks to our new firefly lamps, we’ve lowered our power bill by 64 percent!”**



# ENERGY

2008 was originally based on a minimum 15% improvement over 2004 IECC i.e. Energy Star V2 HERs 85/80.

- 2008 was updated Oct 2014 .. With options
- HERs 70 minimum
- Meet or Beat the LEED Energy Budget
- 2008 projects achieving ESH V3 certification automatically receive HERs 70

<http://www.usgbc.org/leed-interpretations?keys=10398>

# ENERGY

- 2010 was originally based on a 15% improvement over ASHRAE 90.1 2007
- 2010 was recently revised to require a 17% improvement minimum.

# ENERGY

Homes and Mid Rise have different paths through both...

- EAp “Minimum Energy Performance”
- EAc “Annual Energy Use”

# ENERGY

To meet the EAp “Minimum Energy Performance” prerequisite Homes, (remember also includes Low Rise Multi Family projects) you have to...

- Meet all ESH V3 requirements (complete ALL checklists)
- Achieve an Energy Star HERs Index at or below the HERs Index target for that Home or Unit

\* Procedure found here

[https://www.energystar.gov/ia/partners/bldrs\\_lenders\\_raters/downloads/ES\\_HERS\\_Index\\_Target\\_Procedure.pdf?0544-2a1e](https://www.energystar.gov/ia/partners/bldrs_lenders_raters/downloads/ES_HERS_Index_Target_Procedure.pdf?0544-2a1e)

# ENERGY

Additionally they have to....

- Install at least one ES appliance, and all ducts must be fully ducted i.e. no wall cavities used.
- And the HVAC contractor has to be under an EPA recognized certification and the builder has to be an Energy Star partner
- Basically do everything needed to get ES certified... except get certified

# ENERGY

For Mid Rise to meet the EAp “Minimum Energy Performance” prerequisite, they have to be

- a minimum of 5% over the ASHRAE 90.1 2010 baseline, which is more stringent than 2007.....And, either
- Meet the T and V requirements from the Energy Star High Rise protocol....Or,
- Meet the four Option 2 Prescriptive path requirements

# ENERGY

## Requirement 1)

- Meet the duct testing requirements  
4 cfm LTO, or 6 cfm for units smaller than 1200 sqft  
or total duct leakage of 8cfm

## Requirement 2)

- Perform fundamental commissioning for central HVAC systems. This includes central heating/cooling/ventilation (e.g. AAON) and water heating equipment (e.g. TEAL system)

# ENERGY

## Requirement 3)

- Make sure air sealing and compartmentalization documents are in the plans

## Requirement 4)

- Complete the LEED version of the Thermal Enclosure Checklist (TEC)
  - \*ESH V3 rev 2/3 TEC ..doesn't include the thermal bridging/advanced framing section



# ENERGY

That's the prerequisite ...

To earn points Homes has 3 options and Mid rise 1 option

# ENERGY

**HOMES Option 1** is called the LEED Energy Budget (aka LEED Index). It is a current pathway in 2008 since October 2014, Highlights are...

- Its based on MMBTU usage and uses the Energy Star reference Home with modifications
- The MMBTU method reinforces the goal of reducing actual energy consumption ...not just being more efficient

# ENERGY

- If projects have a large energy user NOT included in the HERS Index, (e.g. heated driveway, pools, spa, heated garages) they must use LEED Energy Budget option.
- The Home Size calculation is already figured into this calculation, so no extra points are available
- The info can be entered into REM RATE or Energy Gauge and a LEED Energy Budget report can be produced

# ENERGY

**HOMES Option 2** is the more familiar “HERS Index”

- 70 is the minimum in the prerequisite
- You earn points based on improvement over the baseline,

# ENERGY

Additionally you can earn or lose points based on the homes size.

- It's a 1 point gain or loss for every 4% increase or decrease in size when compared to the Energy Star reference Home
- No cap except the credit cap for the Home size points.
- V3 HSA was capped at 10 points

**Multifamily Home Size Adjuster**

The adjuster can be used to determine an additional adjustment for building energy performance based on the home's total floor area compared to the Energy Star reference home. It is a percentage value based on the home's total floor area compared to the Energy Star reference home. The adjuster is based on the home's total floor area compared to the Energy Star reference home.

Example: A building with a total floor area of 100,000 sq ft compared to the Energy Star reference home of 100,000 sq ft would result in a 0% adjustment. A building with a total floor area of 104,000 sq ft would result in a 1% adjustment. A building with a total floor area of 96,000 sq ft would result in a -1% adjustment.

Building	100,000 sq ft		104,000 sq ft		108,000 sq ft		112,000 sq ft		116,000 sq ft		120,000 sq ft	
	Area	Adjuster	Area	Adjuster	Area	Adjuster	Area	Adjuster	Area	Adjuster	Area	Adjuster
100,000 sq ft	100,000	0%	100,000	0%	100,000	0%	100,000	0%	100,000	0%	100,000	0%
104,000 sq ft	104,000	1%	104,000	1%	104,000	1%	104,000	1%	104,000	1%	104,000	1%
108,000 sq ft	108,000	2%	108,000	2%	108,000	2%	108,000	2%	108,000	2%	108,000	2%
112,000 sq ft	112,000	3%	112,000	3%	112,000	3%	112,000	3%	112,000	3%	112,000	3%
116,000 sq ft	116,000	4%	116,000	4%	116,000	4%	116,000	4%	116,000	4%	116,000	4%
120,000 sq ft	120,000	5%	120,000	5%	120,000	5%	120,000	5%	120,000	5%	120,000	5%

Example: A building with a total floor area of 100,000 sq ft compared to the Energy Star reference home of 100,000 sq ft would result in a 0% adjustment. A building with a total floor area of 104,000 sq ft would result in a 1% adjustment. A building with a total floor area of 96,000 sq ft would result in a -1% adjustment.

\* Home Size points aren't available for LEED Energy Budget

# ENERGY

**HOMES Option 3** is the prescriptive path

- this isn't followed often and would require a very credit intensive look that we don't have time for right now.
- Get with your Green Rater or Provider to discuss your options here.

# ENERGY

## MIDRISE OPTION 1

- Similar to Homes Option 2 HERS Index option but points are based on % improvement over ASHRAE 90.1 2010
- The Home Size process is also available.

# ENERGY

Jumping back to Homes, couple of things to note regarding ESH V3

- Some 2008 credits are now prerequisite e.g. ventilation testing and Local exhaust testing.
- Some ESH V3 requirements also earn V4 points e.g. HVAC credential, 3<sup>rd</sup> party water management checklist, room to room pressure testing.



# ENERGY

Low Rise Multi Family falling under the Homes energy pathway brings some additional challenges such as.....

- The HERs pathway has shown (at least in our experience) to be hard to achieve a Hers 70 average,
  - \*we consider LEED Energy Budget an easier option
- Unit by unit modeling adds additional cost

# ENERGY

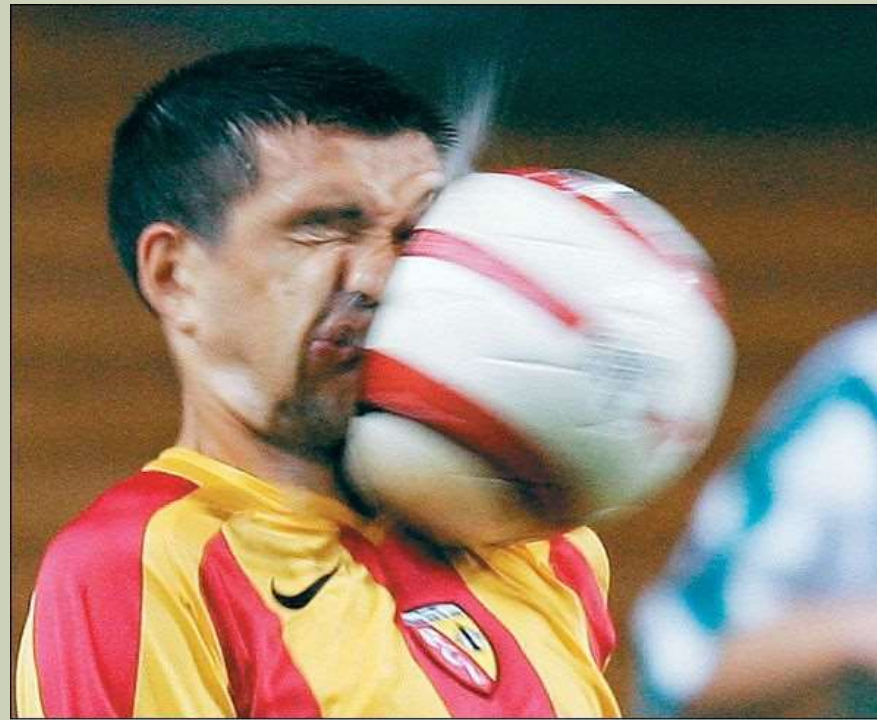
- Grade 1 insulation maybe a challenge for some as can the alternative of grade 2 with continuous insulation
- Incorporating Advanced Framing strategies can be a challenge,
  - \* although a pathway exists and exemptions are available

# ENERGY

## To touch on the code implications

- The 2015 IECC res , ERI thresholds of between 51 - 55 (depending on CZ) equal about 19-17 points
- The Texas requirement of 65 ERI = 10 points
- Additionally with 2015 IECC there is now better alignment between commercial and ASHRAE but note, since 2009 IECC you can't cherry pick options from between the two like you once could
- 2015 IRC requires whole house ventilation and air seal improvements that align with V4

# IMPACTS



LOLhome.com

# IMPACTS

Relatively easy credits are gone

- LL3.1 edge development (1pt)
- LL4 existing development(1pt)
- SS 2.1 Basic landscape design(2pts)
- MR 1.2 /1.3 detailed framing and cut list (1-2 pts)
- EQ 7.2/7.3 Better / best filtration (1-2 pts)
- EQ 8.1 indoor contaminant control (moved into EQ Contaminant Control as part of the preoccupancy flush requirement) (1pt)
- EQ 10.2 Garage Pollutants (2pts)
- AE 1.2/1.3 now prerequisite in EA (1-2pts)

# IMPACTS

This tightens / limits the points available

- There are some local points available (site selection, infill, open space, street network, bicycle network/storage, community resources, Transit and compact development) for urban projects that aren't probably available for rural ones.
- Admittedly they probably were not achieving those in 2008/2010 but there were enough easy points to make up for it, but in V4 most of those are gone
- With all things considered For both SF and MF projects it does seem likely a certification level drop from 2008/2010 to V4 is to be expected

# NEXT STEPS

# NEXT STEPS

So this leads us to a couple of questions.....

- What does this all mean? Specifically what does this mean to you and your projects?
- Also, what should you do next? Points are more expensive and harder to get, which path is the right path?



# NEXT STEPS

How do you decide if the V4 juice is worth the squeeze??

- How do you know which option between 2008/2010 and V4 gives the best value???

# NEXT STEPS

Well, until Nov 1<sup>st</sup> 2016 we still have 2 options to pick from...  
We can still look at and consider both V4 and/or 2008/2010

- My strong recommendation for your next step is to reach out and contact Providers and or Green Raters ASAP

# NEXT STEPS

Tell them your interested in V4 but want a detailed comparison done between V4 and 2008/2010

- Tell them you want to see the pros and cons for each
- Tell them that you want them to analyze your project in detail and help you understand which pathway makes the most...best sense for your project.

# NEXT STEPS

My next strong recommendation is to get your project registered ASAP.

- Remember Halloween.... October 31<sup>st</sup> is the last day to register for the 2008/2010 option
- You don't have to pay upfront to register, however you have to pay the fees within 90 days or that registration will be cancelled and closed!!!

# NEXT STEPS

## Meaning,

- If the registration is cancelled and closed any time after October 31<sup>st</sup> 2016, V4 will be your only option

# FEE\$

# FEE\$

## Single Family

- Registration cost start at = \$150 member/\$225 non member.
- Certification cost = \$225 Member /\$300 non member.
  - \* Price goes down with # of homes



# FEE\$

## Multi Family Low Rise ( 1-3 stories)

- Registration cost = \$750 member/\$900 non member
- Certification cost = \$0.035 Member /\$0.045 non member.
  - \* Price goes down with more than 50 units





# FEE\$

## Multi Family Mid Rise ( 4 or more stories)

- Registration cost = \$900 member/\$1050 non member.
- Certification cost = \$0.035 Member /\$0.045 non member.
  - \* Price goes down with more than 50 units



# RESOURCES AND LINKS

# RESOURCES AND LINKS

- [www.usgbc.org/articles/residential-projects-guide-new-lead-online](http://www.usgbc.org/articles/residential-projects-guide-new-lead-online)
- LEED online Instructions for Residential Building.

# RESOURCES AND LINKS

- <http://www.usgbc.org/organizations/members/homes-providers>
  - Provider directory
- <http://www.usgbc.org/people/green-raters>
  - Green Rater Directory
  - Links to find and contact Provider companies and Green Raters

# RESOURCES AND LINKS

- [www.usgbc.org/cert-guide/fees#homes](http://www.usgbc.org/cert-guide/fees#homes)
- Fee chart we just looked at

# RESOURCES AND LINKS

- [www.greenhomeinstitute.org/learn/classes/understanding-leed-v4-for-homes-series-full-access](http://www.greenhomeinstitute.org/learn/classes/understanding-leed-v4-for-homes-series-full-access)
  - [www.usgbc.org/education/sessions/understanding-leed-v4-homes-10124288](http://www.usgbc.org/education/sessions/understanding-leed-v4-homes-10124288)
- Jay Halls excellent LEED V4 overview webinar series
  - Cost is 45\$ each or \$345 for package of 9 webinars
  - Each about an hour to hour and half getting into credit and prerequisite specifics. Jay Hall is a LEED certification reviewer and has been heavily involved in the Homes process from the very beginning... well worth your time and Money !!!!

# RESOURCES AND LINKS

- <http://www.usgbc.org/cert-guide/homes>
- Links to pretty much all you need to get started. Provides most of the links mentioned and also registration and certification process, download workbook and rating system, access to credit library and pretty much everything else.

# RESOURCES AND LINKS

## TIP

- Experience shows its easier to do a Google search than to search the USGBC website



- That's about all I've prepared to say, if we are good on time we can open it up to questions



# CONTACT

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# CONTACT

- Kat Benner MF
  
- **Bill Syfan SF**

# ADDITIONAL STUFF

# ACH AND ENCLOSURE

- ACH, better for larger units
- Enclosure, better for smaller units
- ACH based on volume( how much air to fill the space)
- Enclosure base on holes

# ENERGY STAR HOMES V3 CHECKLISTS

- Rater Design Review checklist ( verified by Rater)
- Rater Field Checklist includes TEC ( verified by Rater)
- Water Management Checklist ( completed by Builder, points if verified by 3<sup>rd</sup> party)
- HVAC Design Report (completed by HVAC designer and given to builder and reviewed by rater)
- HVAC Commissioning Checklist ( completed by a EPA recognized credentialed contractor and provided to builder and rater)



# NEW SUBMITTAL DOCUMENTS TO BE UPLOADED

- Site map
- Plant List
- Water calc

# NEW SUBMITTAL DOCUMENTS TO BE UPLOADED

## EA Homes ES inspection checklists

- Conflict of interest form
- Energy Model report (eg REM file)
- ES report showing project meets ES requirements or BOP for prescriptive
- Elevation and floor plans
- Pic of each side of building
- MF only ASHRAE 62.1 calc and GBCI approval letter



# NEW SUBMITTAL DOCUMENTS TO BE UPLOADED

## EA Midrise

- Energy approval letter
- Conflict of interest form
- 62.1 approval letter
- ES MF HR certificate OR CX test results ( TEC and in unit HVAC test results)
- Building elevation and floor plans
- Pics of each side of building

# LEED ENERGY BUDGET

- Option 1. LEED Energy Budget

- Design and construct a building whose modeled annual energy usage is lower than the LEED energy budget. The LEED energy budget is based on the ENERGY STAR for Homes, HERS Index Target Procedure for National Program Requirements, version 3, with the following modifications:
  - The size adjustment factor is always 1.
  - The building is a slab-on-grade ranch whose floor area is equal to the ENERGY STAR reference home's conditioned floor area.
  - There are no floors over unconditioned spaces.
  - The gross exterior wall area is as shown in Table 1.
  - There are two exterior half-lite doors, unshaded, one on the south wall, one on the west wall.
  - Glazing is 15% of the floor area.
  - The ceiling is insulated, and its gross area equals the conditioned floor area.
  - The storage water heater has an energy factor of 0.59 for gas, 0.92 for electric.
  - The thermal distribution system is 100% in the attic, above insulation.
  - The LEED energy budget shall be displayed in MBtu/year, and is based on source energy.
  - Any major energy users not covered by the energy model, including heated driveways, pools, spas, and heated garages, must be added to the annual energy consumption of the Rated Home.
- Table 1. Exterior wall area of LEED reference home, by number of bedrooms

	1	2	3	4	5	6	7	8 or more
Area (square feet)	1,300	1,667	1,957	2,200	2,411	2,600	2,773	
+ 150 ft <sup>2</sup> per additional bedroom								
Area (square meters)	120	154	181	204	223	241	257	
+ 14 square meters per additional bedroom								

- Individual units in multifamily buildings are compared to the LEED Reference Homes.

- <http://www.usgbc.org/credits/reqheac1o1>

# 2008 UPDATED ENERGY PATHWAY OCT 2014

- Are there any ways to demonstrate equivalency to a HERS 70 for Homes v2008 projects?
- Yes, projects using Homes v2008 that earn the ENERGY STAR v3 New Home certificate can automatically receive a HERS 70.
- Alternatively, Homes v2008 projects may use the LEED v4 scoring pathway to demonstrate that they are using less annual energy than the LEED Energy Budget. Projects may only use this scoring approach if they meet the ENERGY STAR v3 Thermal Enclosure System Rater Checklist. Exception: In climate zones 1-3 only, 3-, 4-, and 5-story multifamily projects are exempted from meeting the requirements of Section 4.4.5 of the ENERGY STAR v3 Thermal Enclosure System Rater Checklist if the exterior wall surface can not accommodate the advanced framing measures listed due to structural integrity issues. [Exception requires a stamped letter to be completed by the Professional Engineer designing the structural detailing for the building explaining why].

Projects using the LEED Energy Budget scoring pathway should input a value of zero in the Home Size Adjuster, since the LEED Energy Budget fully covers the impact of home size in the metric

Blower Door Targets @ 7 ACH50, 5 ACH50. 3ACH50 = while the blower door is running, the air flow through the fan must be low enough to replace all the air less than 5,3 times per hour ( based on volume of air changes

Volume X ACH/60 = Target

Effective Leakage Area ( EfLA US)

Equivalent Leakage Area ( EqLA Canadian)

LEED ELA different??? Based on ES MF HR protocol ( 0.3CFM per square foot of the enclosure at a pressure difference of 50Pa)

Sum of Combined surface area ( walls/ floor/ceiling) X 0.3= Target

# POINT SYSTEM

- **2008/2010 = 136 Available Points (15 point spread)**
- LEED Certified : 45-59 points earned
- LEED Silver : 60-74 points earned
- LEED Gold : 75-89 points earned
- LEED Platinum : 90+ points earned

\*Point Thresholds changed by HSA

# POINT SYSTEM

## ■ V4= 110 points

- LEED Certified : 40-49 points earned
- LEED Silver : 50-59 points earned
- LEED Gold : 60-79 points earned
- LEED Platinum : 80+ points earned

\*Point Thresholds not changed by HSA