

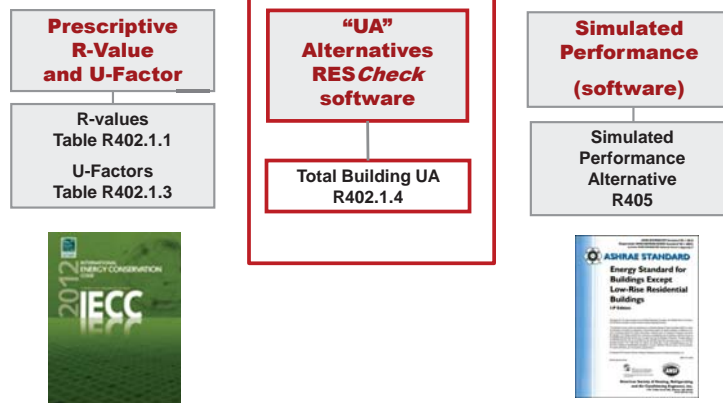
UNDERSTANDING RESCheck / COMCheck

DESIGN TRADES CONFERENCE

Gengras Center
University of Hartford

Don Vigneau, AIA - Presenter

IECC Compliance - Four Options



Hides the Math: $UA = \frac{(UcAc) + (UsAs) + (UwAw) + (UgAg) + (UdAd) + (UbAb) + (UsAs) + \dots}{Ao}$


RESCHECK COMCHECK
WHAT CODE DO I USE?
USE THE LATEST VERSION



• Version 4.5.0.5
www.energycodes.gov/rescheck

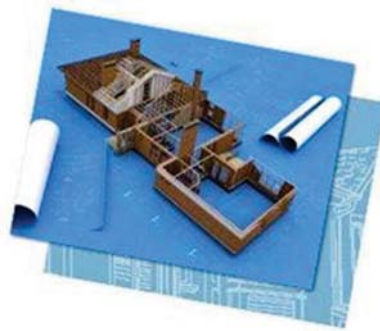
• Version 3.9.3.2
www.energycodes.gov/comcheck



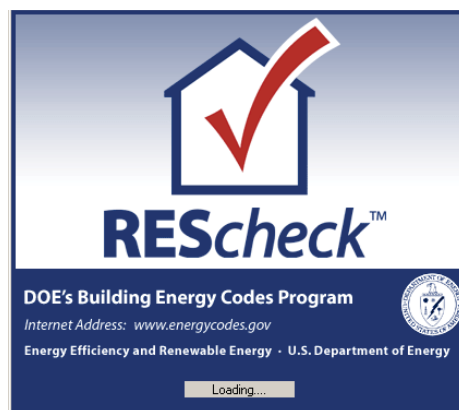
**DOE SOFTWARE:
WHAT IS IT? 
WHY SHOULD I USE IT?**

**WHY CONSIDER
RESCheck or COMCheck?**

- HAS ALL THE ESSENTIAL INFORMATION IN IECC
- COMCheck includes ASHRAE 90.1 editions
- Ease of use
- Simplifies takeoffs
- Keeps running scorecard
- Menus show alternatives
- ALLOWS TRADEOFFS



RESCheck Version 4.5.0.5



www.energycodes.gov/rescheck



RESCheck: WHAT'S IN IT?

COMPONENTS/SYSTEMS

- Building ceilings/walls/floors/basements/slabs
- Doors and Glazing
- Skylights/crawl spaces
- HVAC equipment
- Service hot water*
- Inside/outside Lighting*
- Pools & Spas*

USEFUL FEATURES/TOOLS

- Building orientation
- Dropdown menu choices
- Mandatory requirements
- User-created Libraries
- Area calculator tool
- Shape calculator
- *(even without any conditioned spaces)



AND WHAT'S NOT...

- Sunrooms/greenhouses
- Farm buildings
- Buildings covered under the COMCheck program
- Underslab insulation
- Exemptions/exceptions
 - One window/one door
 - Unlimited glazing area
 - Cathedral ceiling < 500sf
 - Floor cavity insulation
- Performance items R405
 - Air exchange rate
 - Distribution systems
 - Multiple thermostats



2012 ENVELOPE IMPROVEMENTS

PRESCRIPTIVE

- Higher insulation values
- Lower glazing/door factors



MANDATORY

- Reduced air leakage (& mandated testing)
- U-factor maximums - restored in IRC



MANDATORY ITEMS

- Air leakage & testing
- Fireplace dampers
- Glazing performance
- HVAC controls/sizing
- Pool heaters/covers

 World's Best Window Co. Millennium 2000+ Vinyl-Clad Wood Frame Double Glazing • Argon Fill • Low E Product Type: Vertical Slider	
ENERGY PERFORMANCE RATINGS	
U-Factor (U.S./I-P) 0.30	Solar Heat Gain Coefficient 0.30
ADDITIONAL PERFORMANCE RATINGS	
Visible Transmittance 0.51	Air Leakage (U.S./I-P) 0.2
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for any specific use. Consult manufacturer's literature for other product performance information. www.nfrc.org</small>	




Envelope Improvements Summary

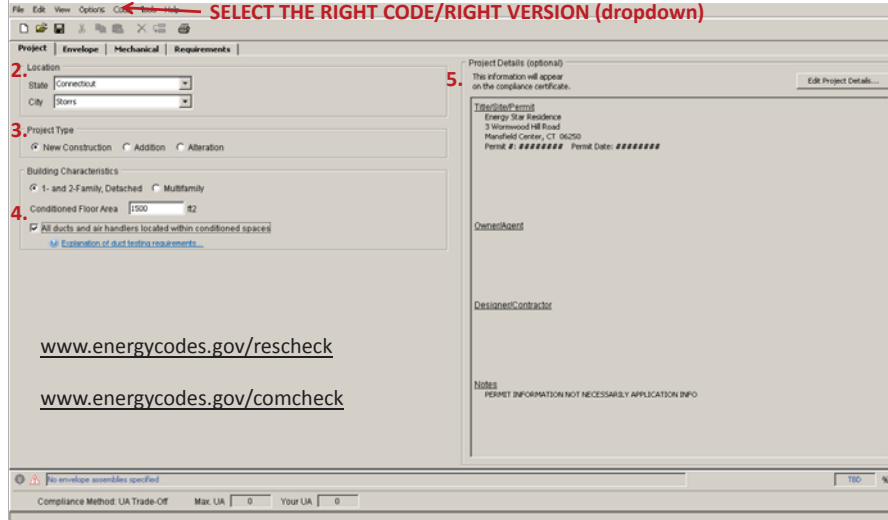
CHANGES	2009	2012	ZONE	COMMENTS
Main Envelope	Table R402.1.1		Zone 5 - CT/MA/RI/Hudson Valley	
- Glazing	0.35	0.32	4,5,6,7	Table R 402.1.1
SHGC	N/R	0.40	N/R	"
- Skylights	0.60	0.55	4,5,6,7	"
- Ceilings	R 38	R 49	4,5	CT adds eave baffles R 402.2.3
- Walls	R 20	R 20	5	" 13 + 5 option
- Basmt/Crawl	R 10/13	R 15/19	5	" outside/inside numbers
Sunrooms	Sections R402.2.12/R402.3.5		(not in RESCheck)	
- Glazing	0.50	0.45	(all)	
- Skylights	0.75	0.70	(all)	
- Ceilings	R 24	R 24	5,6,7,8	" CT amends to R 19
- Walls	R 13	R 13	(all)	" CT amends to R 11

11



WHAT CODE DO I USE? Project Screen - Details

1.  **SELECT THE RIGHT CODE/RIGHT VERSION (dropdown)**



2. Location: State: Connecticut, City: Storrs

3. Project Type: New Construction Addition Alteration

4. Building Characteristics: 1- and 2-Family, Detached Multifamily
Conditioned Floor Area: 1500 sq ft
 All ducts and air handlers located within conditioned spaces

5. Project Details (optional): Title/Date/Permit: Energy Site Residence, 3 Warnwood Hill Road, Mansfield Center, CT, 06250, Permit #: 00000000, Permit Date: 00000000

www.energycodes.gov/rescheck
www.energycodes.gov/comcheck

www.energycodes.gov/adoption/status

Select a state

Commercial - Current Residential - Current Commercial - Proposed Residential - Proposed

Current Commercial Building Energy Code Adoption Status

ADHRAE 96.1-2010/2012 IECC equivalent or more energy efficient
 ADHRAE 96.1-2007/2009 IECC equivalent or more energy efficient
 ADHRAE 96.1-2006 IECC equivalent or more energy efficient
 ADHRAE 96.1-2003/2003 IECC equivalent or less energy efficient
 No Statewide Code

* Adopted new Code to be effective at a later date

To save a map for use in a presentation, right-click on the image and choose "Save Picture As..." or "Save Image As..."

Looking for further information?
Additional information and resources on state initiatives to increase energy efficiency through the adoption of building energy codes are available at www.energycodes.gov

Energy Code Setting

The 'Code' is currently set to **2012 IECC**

The selected code will appear in the title bar and can be changed using the 'Code' menu.

Click the "Lookup Your Code..." button to determine what code applies to your location.

Do not display this message again.

"1. Look Up Your Code"

The Envelope Screen - Information

File Edit View Options Code **Tools** Help

Project: Envelope Mechanical Requirements Doors Basement Floor Crawl Wall

Component	Assembly	Gross Area	Center Insulation R-Value	Continuous Insulation R-Value	U-Factor	UA
Building						

USER INFORMATION: GO DIRECTLY TO TOOLS – DO NOT OPEN ANY OF THE COMPONENT TABS!

Use the building assembly buttons above the column headers to create a description of your building.

Compliance Method: UA Trade-Off Max UA: 0 Your UA: 0

Select the building assembly buttons above the column headers to create a list of envelope components for the building.

Tool Box: AREA CALC Take-Off

Component Tabs

Untitled - AreaCalc 2.3.2

File Edit Tools Help

Windows Skylights Doors Ceilings Walls Basements Floors Crawl Walls

Click a window name to add it to the window list on the right.

	Add to Library	Window Name	Assembly Type	Quantity	Width	Height	Unit Area	Total Area	U-Factor	SHGC	Comments/Description
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											

Window Library

- BR.#2 0005
- BR.#3 0006
- Foyer 0010
- Kitchen/MB 0002
- LR slider 00045
- MR 0003
- MR slider 0004
- Skylight

Add New...

Gross Roof/Ceiling Area total: 0.00 It2
Window Area Total: 0.00 It2

Enter a Window directly into the grid or click in the Library Name column to select a Window.



AREA CALC – Window Tab

Add to Library	Window Name	Assembly Type	Quantity	Width	Height	Unit Area	Total Area	U-Factor	SHGC	Comments/Description
1	Entry Casement	Vinyl Frame, Dou	1	1'-8"	3'-6"	5.83	5.83 ft2	0.350	0.400	
2	MBR Casement	Vinyl Frame, Dou	1	2'-4"	4'-0"	9.33	9.33 ft2	0.350	0.400	
3	K Casement	Vinyl Frame, Dou	2	2'-4"	3'-6"	8.17	16.34 ft2	0.350	0.400	
4	MB Casement	Vinyl Frame, Dou	1	2'-4"	3'-6"	8.17	8.17 ft2	0.350	0.400	
5	ERVE Casement	Vinyl Frame, Dou	2	2'-4"	3'-6"	8.17	16.34 ft2	0.350	0.400	
6	ERW Casement	Vinyl Frame, Dou	1	2'-4"	4'-0"	9.33	9.33 ft2	0.350	0.400	
7	LR Slider	Vinyl Frame, Dou	1	8'-0"	6'-8"	53.33	53.33 ft2	0.350	0.400	No low-E
8	MBR Slider	Vinyl Frame, Dou	1	6'-0"	6'-10"	41.00	41.00 ft2	0.350	0.400	No low-E
9	Basement slider	Metal Frame, Singl	1	2'-7"	1'-4"	3.44	3.44 ft2	1.100	0.700	Standard builder sash

Gross Roof/Ceiling Area total: [] ft2 Window Area Total: 163.11 ft2



SKIP THE MATH – Shape Calculator

Add to Library	Skylight Name	Assembly Type	Quantity	Width	Height	Unit Area	Total Area	U-Factor	SHGC	Comments/Description
1	Bath2	Vinyl Frame, Dou	1	1'-8"	3'-4"	5.56	5.56 ft2	0.400	0.400	VELUX operable

Gross Roof/Ceiling Area total: [] ft2 Skylight Area Total: 5.56 ft2



THE SHAPE CALCULATOR TOOL

Width Top: 10'-11" ft-in

Height: 3'-0" ft-in

Width Base: 17'-0" ft-in

Area: 41.88 ft2

OK Cancel

Calculates areas for common shapes of walls, fancy windows:

- Click the cell where you need the info
- Enter the dimensions into the boxes
- Click OK to transfer to your component data



AREA CALC - Doors Tab

Untitled - AreaCalc 2.3.2

File Edit Tools Help

Windows Skylights Doors Ceilings Walls Basements Floors Crawl Walls

Click a door name to add it to the door list on the right.

Door Library
Add New...

Add to Library	Door Name	Assembly Type	Quantity	Width	Height	Unit Area	Total Area	U-Factor	SHGC	Comments/Description
1	Front Entry	Solid	1	3'-0"	6'-8"	20.00	20.00	R2	0.350	Exterior insulated
2	Kitchen to Garage	Solid	1	2'-6"	6'-8"	16.67	16.67	R2	0.350	Exterior insulated
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										

Gross Roof/Ceiling Area total: ft2 Door Area Total: 36.67 ft2

Enter a Door directly into the grid or click in the Library Name column to select a Door.



Table R402.1.1

TABLE R402.1.1 INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT*

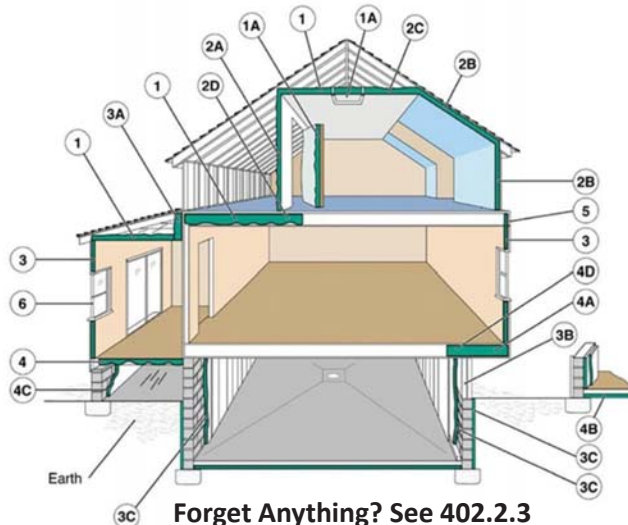
CLIMATE ZONE	FENESTRATION U-FACTOR ^a	SKYLIGHT ^b U-FACTOR	GLAZED FENESTRATION SHGC ^{c,d}	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE	FLOOR R-VALUE	BASEMENT WALL R-VALUE	SLAB ^e R-VALUE & DEPTH	CRAWL SPACE ^f WALL R-VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.35	0.55	0.25	38	20 or 13+5 ^h	8/13	19	5/13 ⁱ	0	5/13
4 except Marine	0.35	0.55	0.40	49	20 or 13+5 ^h	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.32	0.55	NR	49	20 or 13+5 ^h	13/17	30 ^g	15/19	10, 2 ft	15/19
6	0.32	0.55	NR	49	20+5 or 13+10 ^h	15/20	30 ^g	15/19	10, 4 ft	15/19
7 and 8	0.32	0.55	NR	49	20+5 or 13+10 ^h	19/21	38 ^g	15/19	10, 4 ft	15/19

For SF: 1 foot = 304.8 mm.

- R-values are minimums. U-factors and SHGC are maximums. When insulation is installed in a cavity which is less than the label or design thickness of the insulation, the installed R-value of the insulation shall not be less than the R-value specified in the table.
- The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration. Exception: Skylights may be excluded from glazed fenestration SHGC requirements in Climate Zones 1 through 3 where the SHGC for such skylights does not exceed 0.30.
- "15/19" means R-15 continuous insulation on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall plus R-3 continuous insulation on the interior or exterior of the home. "10/13" means R-10 continuous insulation on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.
- R-5 shall be added to the required slab edge R-values for heated slabs. Insulation depth shall be the depth of the footing or 2 feet, whichever is less in Climate Zones 1 through 3 for heated slabs.
- There are no SHGC requirements in the Marine Zone.
- Basement wall insulation is not required in warm-humid locations as defined by Figure R301.1 and Table R301.1.
- Or insulation sufficient to fill the framing cavity, R-19 minimum.
- First value is cavity insulation, second is continuous insulation or insulated siding, so "13+5" means R-13 cavity insulation plus R-5 continuous insulation or insulated siding. If structural sheathing covers 40 percent or less of the exterior, continuous insulation R-value shall be permitted to be reduced by no more than R-3 in the locations where structural sheathing is used - to maintain a consistent total sheathing thickness.
- The second R-value applies when more than half the insulation is on the interior of the mass wall.



INSULATING THE ENVELOPE





AREA CALC – Ceiling Tab

Untitled - AreaCalc 2.3.2

File Edit Tools Help

MISSING REQUIRED INFO? IS IT HIDING HERE?

Windows Skylights Doors Ceilings Walls Basements Floors Crawl Walls

	Assembly Type	Width	Length	Gross Area	Comments/Description
1	Structural Insulated Panels (SIPs)	W= 30'-0"	H= 12'-6"	187.50	Rt2
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					

Shape Calculator: Triangle

Height: 12'-6" ft-in

Width Base: 30'-0" ft-in

Area: 187.5 ft2

OK Cancel

Gross Ceiling Area Total: 187.50 ft2

Select the Assembly Type and enter its dimensions directly into the grid.



AREA CALC – Walls Tab

Untitled - AreaCalc 2.3.2

File Edit Tools Help

Windows Skylights Doors Ceilings Walls Basements Floors Crawl Walls

	Assembly Type	Length	Height	Gross Area	Comments/Description
1	Wood Frame, 24" o. c.	34'-0"	9'-0"	306.00	Rt2 North Wall
2	Wood Frame, 24" o. c.	30'-0"	9'-0"	270.00	Rt2 Garage Wall First Floor / East
3	Wood Frame, 24" o. c.	30'-0"	12'-6"	375.00	Rt2 Sable Ends (both)
4	Wood Frame, 24" o. c.	34'-0"	9'-0"	306.00	Rt2 South Wall
5	Wood Frame, 24" o. c.	30'-0"	12'-6"	375.00	Rt2 West Wall
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					

Shape Calculator: Triangle

Height: 12'-6" ft-in

Width Base: 30'-0" ft-in

Area: 187.5 ft2

OK Cancel

Gross Wall Area Total: 1632.00 ft2

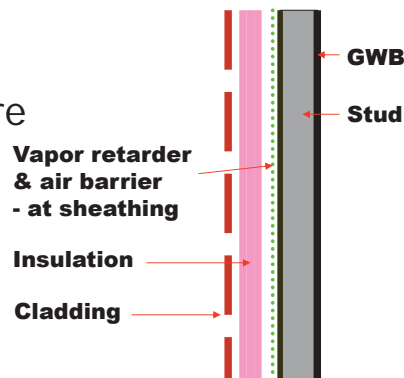
Select the Assembly Type and enter its dimensions directly into the grid.



WHAT DOES A PERFECT WALL LOOK LIKE?

“OUT-SULATION”

- Insulates the structure
- Provides/protects:
 - Drainage plane
 - Air barrier
 - Vapor retarder





AREA CALC – Basements (Wall)

Untitled - AreaCalc 2.3.2

File Edit Tools Help

Windows Skylights Doors Ceilings Walls Basements Floors Crawl Walls

	Assembly Type	Length x	Height =	Gross Area	Comments/Description
1	Solid Concrete or Masonry	128'-0"	7'-7"	970.67 ft ²	Insulated Rim Joists
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					

Basement Walls

Enter the specified dimensions in feet (not inches) in the boxes provided. A basement wall less than 50% below grade is considered an above-grade wall and must be entered using the Wall button.

Wall Height (ft)
Measured from the top of the wall to the basement floor. 7.0

Depth Below Grade (ft)
Measured from the finished outside grade to the basement floor. 0.0

Depth of Insulation (ft)
Measured from the top of the wall to where the insulation stops. 0.0

OK Cancel

Basement Wall Area Total 970.67 ft²

Select the Assembly Type and enter its dimensions directly into the grid.



RESCheck Doesn't do SUNROOMS

Less stringent insulation
R-value and glazing
U-factor requirements

Sunroom definition:

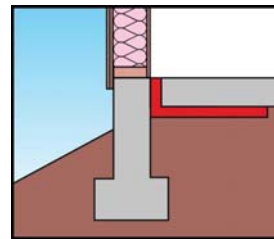
- Glazing area >40% glazing of gross exterior wall and roof area
- Separate heating or cooling system or zone
- Must be thermally isolated (closeable doors or windows to the rest of the house)



THE DEVIL IS IN THE DETAILS

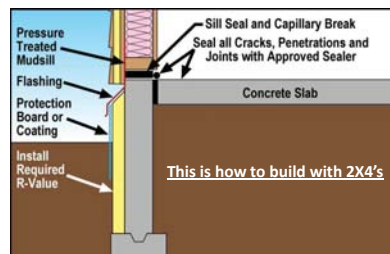
CURRENT METHOD

- requires air sealing & vapor retarder to be located on opposite faces of the wall



OPTIONAL METHOD

- Places air sealing & vapor retarder both at midpoint of the wall
 - Note: structure is INSIDE conditioned envelope





Basement Wall Tab

Untitled.rck - REScheck 4.5.0 Code: 2012 IECC

File Edit View Options Code Tools Help

Project Envelope Mechanical Requirements

Ceiling Skylight Wall Window Door Basement Floor Crawl Wall

Component	Assembly	Gross Area	Cavity Insulation R-Value	Continuous Insulation R-Value	U-Factor	UA	Wall Height (ft)	Depth Below Grade (ft)	Depth of Insulation (ft)
Building									
1 Basement Wall 1	Solid Concrete or Masonry	971 ft2	0.0	20.0	0.043	42	8.5	6.0	8.0

Passes 14.3 % Better Than Code

Compliance Method: UA Trade-Off Max. UA 49 Your UA 42

Click the Assembly fields to display a list of assembly choices.



AREA CALC – Basement Floor

Untitled - AreaCalc 2.3.2

File Edit Tools Help

Windows Skylights Doors Ceilings Walls Basements Floors Crawl Walls

Assembly Type	Width	Length	Gross Area	Comments/Description
1 Other, Over Unconditioned Space	31'-4"	29'-4"	919.11 ft2	insulated basement slab
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Floor Area Total 919.11 ft2

Select the Assembly Type and enter its dimensions directly into the grid.



AREA CALC – Transfers to RESCheck

MBOIAtesthome.rck - REScheck 4.3.1 Code: 2009 IECC

File Edit View Options Code Tools Help

Project Envelope Mechanical

Ceiling Skylight Wall Window Door Basement Floor Crawl Wall

Component	Assembly	Orientation	Gross Area	Cavity Insulation R-Value	Continuous Insulation R-Value	U-Factor	UA	SHGC
1 Ceiling 1	Cathedral Ceiling (no attic)		317 ft2	0.0	0.0	0.599	187	
2 Skylight: 2 Bay	Wood Frame, Double Pane...		5 ft2			0.35	2	0.47
3 Ceiling 2	Flat Ceiling or Scissor Truss		368 ft2	0.0	0.0	0.568	209	
4 Ceiling 3	Flat Ceiling or Scissor Truss		442 ft2	0.0	0.0	0.568	251	
5 Ceiling 4	Other		50 ft2			0.599	30	
6 Wall 1	Wood Frame, 24" o.c.	Front	240 ft2	0.0	0.0	0.241	69	
7 Window: Kitchen	Wood Frame, Double Pane...	Front	13 ft2			0.29	4	0.40
8 Window: Bath	Wood Frame, Double Pane...	Front	13 ft2			0.29	4	0.40
9 Window: Entry	Wood Frame, Double Pane...	Front	6 ft2			0.29	2	0.40
10 Door: Entry	Solid	Front	20 ft2			0.35	7	
11 Wall 2	Wood Frame, 24" o.c.	Left Side	300 ft2	0.0	0.0	0.241	64	
12 Window: Back	Wood Frame, Double Pane...	Left Side	15 ft2			0.29	5	0.40
13 Door: Kitchen	Solid	Left Side	16 ft2			0.35	6	
14 Wall 3	Wood Frame, 24" o.c.	Left Side	85 ft2	0.0	0.0	0.241	20	
15 Wall 4	Wood Frame, 24" o.c.	Left Side	41 ft2	0.0	0.0	0.241	10	
16 Wall 5	Wood Frame, 24" o.c.	Back	340 ft2	0.0	0.0	0.241	63	
17 Window: M Bed	Wood Frame, Double Pane...	Back	40 ft2			0.29	12	0.47
18 Window: Living	Wood Frame, Double Pane...	Back	40 ft2			0.29	12	0.47
19 Wall 6	Wood Frame, 24" o.c.	Right Side	300 ft2	0.0	0.0	0.241	70	
20 Window: M Bed	Wood Frame, Double Pane...	Right Side	8 ft2			0.29	2	0.40
21 Wall 7	Wood Frame, 24" o.c.	Right Side	41 ft2	0.0	0.0	0.241	10	
22 Wall 8	Wood Frame, 15" o.c.	Right Side	96 ft2	0.0	0.0	0.238	18	
23 Window: Back	Wood Frame, Double Pane...	Right Side	19 ft2			0.29	5	0.40
24 Floor 1	All-Wood Joist/Truss, Ch...		975 ft2	0.0	0.0	0.249	243	

Wall orientation not specified

Compliance Method: Performance Alternative

Note that there are no knee walls listed

MANDATORY REQUIREMENTS



Mandatory Requirements AIR SEAL & TEST



VENTED ATTIC

- Conventional construction
- Typical Locations
- Lots of places to seal

CONDITIONED ATTIC

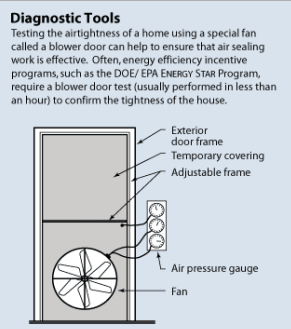
- Unconventional
- Reduce penetrations
- Less places to seal



Mandatory Requirements WHOLE-HOUSE LEAKAGE TEST

Required:

- Zones 3-8





DESIGN LOADS/EQUIPMENT SIZING

403.6

503.2.1

ACCA Standards

- J - Load Calculations
 - S - Equipment Selection:
 - D - Duct Design
-
- ASHRAE/ACCA 183



<http://www.acca.org/store/product.php?pid=97>

341



INDIVIDUAL LIGHTING OPTIONS

- 75% SOCKETS
- OR
- 75% FIXTURES

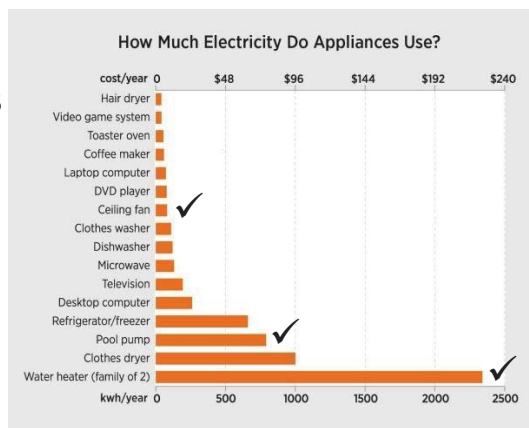


EXCEPTIONS: Low-voltage lighting; no fuel gas pilots



WHERE DO I FIND THESE IN RESCHECK?

- You don't find plug loads (not in the codes), just these 3
- Plug loads are only allowed in other programs with renewables, HVAC, lighting tradeoffs against envelope





WHAT'S NEXT?

Project Screen - Reports

File View Options Code Tools Help

Project | Envelope | Mechanical | Requirements

Location:
State: Connecticut
City: [dropdown]
Project Type:
 New Construction Addition Alteration

Building Characteristics:
 1- and 2-Family, Detached Multifamily
Conditioned Floor Area: 1700 sq ft
 All ducts and air handlers located within conditioned spaces
[Expansion of duct system requirements...](#)

Project Details (optional)
This information will appear on the compliance certificate.
Title/Title/Permit:
Energy Star Residence
3 Wornwood Hill Road
Hartford, CT 06105
Permit #: ***** Permit Date: *****

Owner/Agent
Designer/Contractor

Notes
PERMIT INFORMATION NOT NECESSARILY APPLICATION INFO

www.energycodes.gov/rescheck
www.energycodes.gov/comcheck

Compliance Method: UA Trade-Off Max. UA: 0 Your UA: 0

SELECT VIEW/PRINT REPORT FROM DROPDOWN



View Report – INSPECTION CHECKLIST

NEW FORMAT:

- Data Entry Selections
 - Entry Fields
- Mandatory Provisions
 - Gray; no info entry
- Checked Compliance
- Priority Scaled
 - High Impact
 - Medium Impact
 - Low Impact

REScheck Software Version 4.5.0
Inspection Checklist
Energy Code 2012 IECC

Requirements: 0.0% were addressed directly in the REScheck software. Items in the View envelope report were corrected by the user or the title is in compliance with code. Not each item in the View envelope report was corrected by the user or the title is in compliance with code. An item is being tracked when a compliance is tracked in a search table, a reference to that table is provided.

Item ID	Item Description	Priority	Impact	Compliance	Comments/Status
1.1	High Performance Fenestration	High	High	Compliant	Compliant
1.2	Performance Path: Fenestration shall meet or exceed ENERGY STAR requirements	High	High	Compliant	Compliant
1.3	Performance Path: Fenestration shall meet or exceed 2009 IECC requirements	High	High	Compliant	Compliant
2.1	Ceiling, wall, floor, and slab insulation levels shall meet or exceed 2009 IECC levels	High	High	Compliant	Compliant
2.2	All ceiling, wall, floor, and slab insulation shall achieve R-VALUE (define) Grade 1	High	High	Compliant	Compliant
2.3	Insulation shall meet or exceed 2009 IECC levels	High	High	Compliant	Compliant
3.1	Walls	High	High	Compliant	Compliant
3.2	Floors	High	High	Compliant	Compliant
3.3	Ceilings	High	High	Compliant	Compliant
4.1	Reduced thermal bridging at walls (rim / band joints are exempted) using one of the following options:	High	High	Compliant	Compliant



TOOLS

- Another example of what's available for project checklists
- Energy Star lists are more detailed and comprehensive than REScheck program

ENERGY STAR Qualified Homes, Version 3 (Rev. 03)
Thermal Enclosure System Rater Checklist

Home Address: _____ City: _____ State: _____

Inspection Guidelines	Must Comply	Builder Verified	Rater Verified	N/A
1. High Performance Fenestration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.1 Performance Path: Fenestration shall meet or exceed ENERGY STAR requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2 Performance Path: Fenestration shall meet or exceed 2009 IECC requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Conditioned Insulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.1 Ceiling, wall, floor, and slab insulation levels shall meet or exceed 2009 IECC levels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2 All ceiling, wall, floor, and slab insulation shall achieve R-VALUE (define) Grade 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.3 Insulation shall meet or exceed 2009 IECC levels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Fully-Insulated Air Barriers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At each insulated location noted below, a complete air barrier shall be provided that is fully aligned with the insulation as follows: * At interior surface of ceilings in all Climate Zones, also, at interior edge of attic truss in all Climate Zones using a wind baffle that extends to the full height of the insulation. Include a baffle in every bay or a tabbed baffle in each bay with a soffit vent that will also prevent wind washing of insulation in adjacent bays. * At exterior surface of walls in all Climate Zones, and also at interior surface of walls for Climate Zones 4-6. * At interior surface of floors in all Climate Zones, including supports to ensure permanent contact and blocking at exposed edges.				
3.1 Walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.1.1 Walls behind showers and tubs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.1.2 Walls behind freestaps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.1.3 Attic knee walls / Sloped attics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.1.4 Garage side walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.1.5 Wall adjoining porch roof	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.1.6 Staircase walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.1.7 Outside walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.1.8 Garage rim / band joint adjoining conditioned space	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.1.9 All other exterior walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2 Floors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2.1 Floor above garage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2.2 Cantilevered floor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2.3 Floor above unconditioned basement or vented crawlspace	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3 Ceilings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3.1 Dropped ceiling/floor below unconditioned attic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3.2 Sloped ceiling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3.3 All other ceilings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Reduced Thermal Bridging	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.1 For insulated ceilings with attic space above (i.e., non-cathedralized ceilings), unconditioned insulation extends to the inside face of the exterior wall below at the following levels: CE 1 to 5, R-21; CE 6 to 8, R-30	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.2 For walls on grade in CE 4 and higher, 100% of floor edge insulated to: R-5 at the depth specified by the 2009 IECC and aligned with thermal boundary of the walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.3 Insulation between attic platforms (e.g., HVAC platforms, walkways) R-21 in CE 1 to 5; R-30 in CE 6 to 8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.4 Reduced thermal bridging at walls (rim / band joints are exempted) using one of the following options:				
4.4.1 Continuous rigid insulation, insulator coating, or combination of the two: R-5 in Climate Zones 1 to 4, R-6 in Climate Zones 5 to 8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.4.2 Structural Insulated Panels (SIP) OR	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.4.3 Insulated Concrete Forms (ICF) OR	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.4.4 Double-wall framing OR	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.4.5 Advanced framing, including all of the items below:				
4.4.5a All corners insulated R-6 to edge AND	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.4.5b All headers above sillplates & sills insulated AND	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.4.5c Framing joints of all windows & doors AND	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.4.5d All interior / exterior wall intersections insulated to the same R-value as the rest of the exterior wall AND	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.4.5e Minimum stud spacing of 16" o.c. for 2 x 4 framing in all Climate Zones and, in Climate Zones 6 through 8, 24" o.c. for 2 x 6 framing unless construction documents specify other spacing to structurally required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Version 3 (Rev. 03) - Effective 4/1/2011 Revised 3/25/2011

THE CERTIFICATE



2012 IECC Energy Efficiency Certificate

Insulation Rating	R-Value
Wall	0.00
Floor	20.00
Ceiling / Roof	0.00
Ductwork (unconditioned spaces):	_____

Glass Door Rating	U-Factor	SHGC
Window	_____	_____
Door	_____	_____

Heating & Cooling Equipment	Efficiency:
Heating System: _____	_____
Cooling System: _____	_____
Water Heater: _____	_____

Name: _____ Date: _____
Comments _____

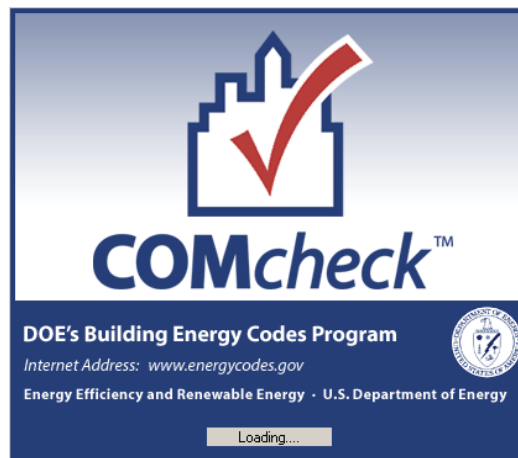
- Insulation values
- Door / window U-factors
- Equipment types/sizes



COMMERCIAL SOFTWARE COMCheck



COMCheck Version 3.9.3.2



www.energycodes.gov/comcheck



WHY USE COMCheck?

- 80% of commercial construction smaller than 20Ksf
- Small commercial has many similar systems and techniques



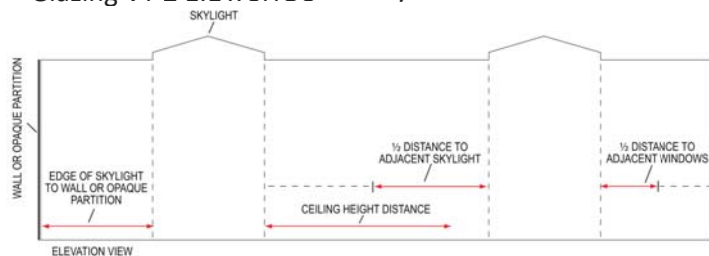
2012 COMMERCIAL CHANGES

- Vertical glazing now 30% except w/daylighting
- Sloped glazing 15% > 30%
- Lighting Power reduced – many categories
- Revised lighting controls for better daylighting



2012 ENVELOPE CHANGES

- Glazing – 40% → 30%
- Exceptions:
 - Daylighting controls
 - 50% minimum floor area
 - Glazing VT $\geq 1.1 \times$ SHGC
- Skylights $\geq 50\%$ by use where ceiling > 15 ft:
 - 15 specific uses
- Controls under skylights /roof monitors CZ 1-5





2012 ENVELOPE CHANGES

- Air barrier requirements for Climate Zones 4-8
 - Construction
 - Materials
 - Tested assemblies
 - Penetrations
 - Fenestration testing
 - Other openings
 - Intakes, exhausts, stairs and shafts
- Vestibules in Zones 3-8



The Project Screen - Details

9. 1. GET THE CODE EDITION

2. Location
State: Massachusetts
City: Hyannis

3. Project Type
 New Construction Addition Alterations

4. Compliance Options
Efficiency Options: High Performance HVAC
Air Barrier Options: Air leakage test

5. Space Conditioning
Select all that apply:
 Nonresidential Residential

6. Project Details (optional)
Edit Project Details... This information will appear on the compliance certificate.
Title/Site/Permit

7. Building Use
Building Area Method: Building Area Method
Area Category (Space-By-Space) Method

Building Type	Area Description	Area	W/R2
1 Retail		10000	1.4

8. Exterior Lighting Areas
Exterior Lighting Zone: Neighborhood business district

Exterior Lighting Area	Area Description	Quantity	Units	W/Unit	Traddble
1 Entry canopy	Covered promen...	1200	ft2	0.35	Yes
2 Other door (not main entry)	Rear exit	30	ft of door ...	20	Yes
3 Parking area	Under building	6200	ft2	0.06	Yes
4 Stairway		800	ft2	1.0	Yes



2. Get the Details

User to fill out:

- Project title
- Address
- Owner/Agent
- Designer
- Contractor (if known)
- General description...

Project Details (optional)

Title/Site/Permit | Owner/Agent | Designer/Contractor

Enter the project title, construction site, and permit information. This information will appear on the compliance certificate.

Title: _____

Construction Site

Address 1: _____

Address 2: _____

City: _____

State: Massachusetts

Zip Code: _____

Permit

Permit #: _____

Permit Date: _____

Notes:

Help OK Cancel



Envelope Compilation

Untitled.cck - CDMcheck 3.9.3 Code: 2012 IECC

File Edit View Options Code Help

Project Envelope Interior Lighting Exterior Lighting Mechanical Requirements

Roof Skylight Ext. Wall Window Door Basement Floor

Component	Assembly	Fenestration Details	Construction Details	Gross Area	Cavity Insulation R-Value	Continuous Insulation R-Value	U-Factor	SHGC	Projection Factor
1 Building									
1 Roof 1	Attic Roof with Wood Joists			10000 ft2	38.0	0.0	0.027		
2 Skylight 1	Wood Frame:Glass, No C...	Non-NFRC:NA		50 ft2			0.550	0.40	
3 Exterior Wall 1	Wood-Frame, 16" o.c...			3000 ft2	20.0	0.0	0.064		
4 Window 1	Metal Frame with Thermo...	Non-NFRC:NA		900 ft2			0.300	0.40	0.00
5 Door 1	Glass (> 50% glazing):M...	Non-NFRC:NA		480 ft2			0.770	0.40	0.00
6 Door 2	Insulated Metal		Swinging	210 ft2			0.370		
7 Floor 1	Concrete Floor (over unc...			10000 ft2		10.0	0.076		

CDMcheck

The window and glazed door area of your building exceeds 30% of the gross area of above-grade walls. This limit can be increased to 40% provided daylighting requirements are met. For requirement details visit the Options page in the help file. To apply this allowance, select Options->Daylighting Allowances->Vertical Fenestration Area.

Alternatively, the 2012 IECC allows you to demonstrate compliance using ASHRAE/IES Standard 90.1-2010, which does not impose this limitation. Select '90.1 (2010) Standard' from the Code menu to proceed with this alternative.

Don't show again.

Envelope FAILS: Glazing area of building exceeds 30% of gross area of above-grade walls. Envelope -4% Interior Lighting +21% Exterior Lighting +24%

Use the 'Options' menu to add or remove orientation and daylighting control factor.



Tool Box: AREA CALC Take-Off

Component Tabs

Untitled - AreaCalc 2.3.2

File Edit Tools Help

Windows Skylights Doors Ceilings Walls Basements Floors Crawl Walls

Click a window name to add it to the window list on the right.

Add to Library	Window Name	Assembly Type	Quantity	Width	Height	Unit Area	Total Area	U-Factor	SHGC	Comments/Description
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										

Gross Roof/Ceiling Area total Window Area Total

Enter a Window directly into the grid or click in the Library Name column to select a Window.



AREA CALC - WINDOWS AND DOORS

MBOIAtest - AreaCalc 2.3.2

File Edit Tools Help

Windows Skylights Doors Ceilings Walls Basements Floors Crawl Walls

Click a window name to add it to the window list on the right.

Add to Library	Window Name	Assembly Type	Quantity	Width	Height	Unit Area	Total Area	U-Factor	SHGC	Comments/Description
1	Kitchen	Vinyl Frame, Dou	1	4'-0"	3'-5"	13.67	13.67 ft2	0.290	0.400	
2	Bath	Vinyl Frame, Dou	1	4'-0"	3'-5"	13.67	13.67 ft2	0.290	0.400	
3	M Bedroom	Vinyl Frame, Dou	1	2'-0"	4'-0"	8.00	8.00 ft2	0.290	0.400	
4	Entry	Vinyl Frame, Dou	1	1'-8"	4'-0"	6.67	6.67 ft2	0.290	0.400	
5	M Bedroom	Vinyl Frame, Dou	1	9'-0"	9'-0"	40.00	40.00 ft2	0.290	0.470	
6	Living Room	Vinyl Frame, Dou	1	8'-0"	8'-8"	40.00	40.00 ft2	0.290	0.470	
7	Bedroom 2	Vinyl Frame, Dou	1	4'-8"	4'-0"	18.67	18.67 ft2	0.290	0.400	
8	Bedroom 3	Vinyl Frame, Dou	1	4'-0"	3'-5"	15.94	15.94 ft2	0.290	0.400	
9	Basement E	Metal Frame, Dou	1	2'-8"	1'-6"	4.00	4.00 ft2	0.450	0.400	
10	Basement W	Metal Frame, Dou	1	2'-8"	1'-6"	4.00	4.00 ft2	0.450	0.400	
11	Entry									

Gross Roof/Ceiling Area total Window Area Total

Enter a Window directly into the grid or click in the Library Name column to select a Window.

MBOIAtest - AreaCalc 2.3.2

File Edit Tools Help

Windows Skylights Doors Ceilings Walls Basements Floors Crawl Walls

Click a door name to add it to the door list on the right.

Add to Library	Door Name	Assembly Type	Quantity	Width	Height	Unit Area	Total Area	U-Factor	SHGC	Comments/Description
1	Entry	Solid	1	3'-0"	8'-8"	20.00	20.00 ft2	0.350		
2	Kitchen	Solid	1	2'-6"	6'-8"	16.67	16.67 ft2	0.350		
3										
4										
5										

Gross Roof/Ceiling Area total Door Area Total

Enter a Door directly into the grid or click in the Library Name column to select a Door.



2012 - SIGNS OF CHANGE

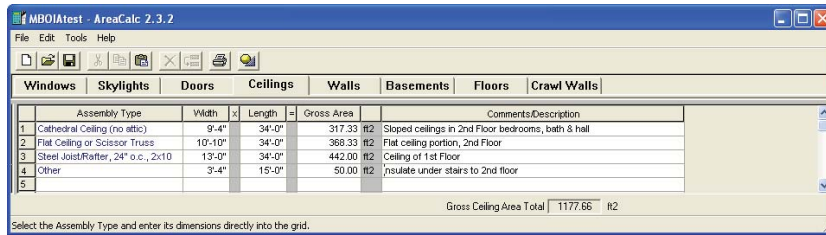
NFRC LISTINGS

- U-factors
- Solar Heat Gain
 - PF Table C402.3.3.1*
- Visible transmittance*
- Dynamic Glazing

 National Fenestration Rating Council® CERTIFIED	World's Best Window Co. Millennium 2000+ Vinyl-Clad Wood Frame Double Glazing • Argon Fill • Low E Product Type: Vertical Slider	
	ENERGY PERFORMANCE RATINGS U-Factor (U.S./I-P) Solar Heat Gain Coefficient 0.30 0.30	
ADDITIONAL PERFORMANCE RATINGS Visible Transmittance Air Leakage (U.S./I-P) 0.51 0.2		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for any specific use. Consult manufacturer's literature for other product performance information. www.nfrc.org</small>		

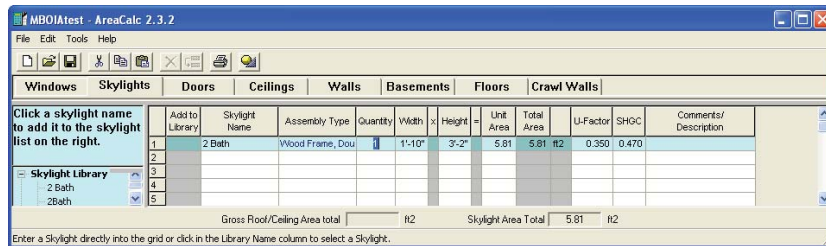


AREA CALC – CEILINGS & SKYLIGHTS



Assembly Type	Width	Length	Gross Area	Comments/Description
1 Cathedral Ceiling (no attic)	9'-4"	34'-0"	317.33 ft2	Sloped ceilings in 2nd Floor bedrooms, bath & hall
2 Flat Ceiling or Scissor Truss	10'-10"	34'-0"	368.33 ft2	Flat ceiling portion, 2nd Floor
3 Steel Joist/Rafter, 24" o.c., 2x10	13'-0"	34'-0"	442.00 ft2	Ceiling of 1st Floor
4 Other	3'-4"	15'-0"	50.00 ft2	insulate under stairs to 2nd floor
5				

Gross Ceiling Area Total | 1177.66 | ft2

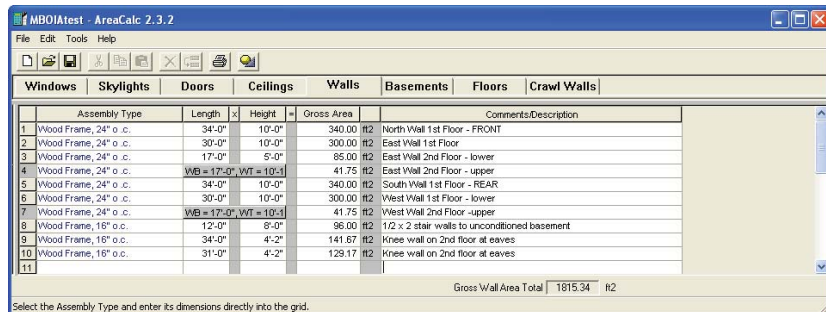


Add to Library	Skylight Name	Assembly Type	Quantity	Width	Height	Unit Area	Total Area	U-Factor	SHGC	Comments/Description
	2 Bath	Wood Frame, Dou	1	1'-10"	3'-2"	5.81	5.81 ft2	0.350	0.470	

Gross Roof/Ceiling Area total | ft2 Skylight Area Total | 5.81 | ft2

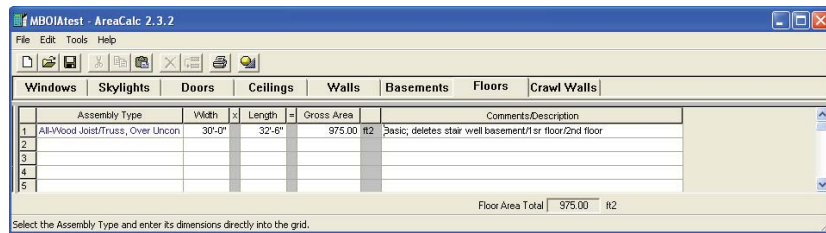


AREA CALC – WALLS AND FLOORS



Assembly Type	Length	Height	Gross Area	Comments/Description
1 Wood Frame, 24" o.c.	34'-0"	10'-0"	340.00 ft2	North Wall 1st Floor - FRONT
2 Wood Frame, 24" o.c.	30'-0"	10'-0"	300.00 ft2	East Wall 1st Floor
3 Wood Frame, 24" o.c.	17'-0"	9'-0"	95.00 ft2	East Wall 2nd Floor - lower
4 Wood Frame, 24" o.c.	WB = 12'-0" WT = 10'-1"		41.75 ft2	East Wall 2nd Floor - upper
5 Wood Frame, 24" o.c.	34'-0"	10'-0"	340.00 ft2	South Wall 1st Floor - REAR
6 Wood Frame, 24" o.c.	30'-0"	10'-0"	300.00 ft2	West Wall 1st Floor - lower
7 Wood Frame, 24" o.c.	WB = 12'-0" WT = 10'-1"		41.75 ft2	West Wall 2nd Floor - upper
8 Wood Frame, 16" o.c.	12'-0"	8'-0"	96.00 ft2	1 1/2 x 2 stair walls to unconditioned basement
9 Wood Frame, 16" o.c.	34'-0"	4'-2"	141.67 ft2	Knee wall on 2nd floor at eaves
10 Wood Frame, 16" o.c.	31'-0"	4'-2"	129.17 ft2	Knee wall on 2nd floor at eaves
11				

Gross Wall Area Total | 1815.34 | ft2



Assembly Type	Width	Length	Gross Area	Comments/Description
1 All-Wood Joist/Truss, Over Uncon	30'-0"	32'-6"	975.00 ft2	Basic, deletes stair well basement/1st floor/2nd floor
2				
3				
4				
5				

Floor Area Total | 975.00 | ft2



LIGHTING CHANGES

Control Strategies

- Occupancy sensors:
 - ≥ 300sf, plus
 - 8 specific areas
- Daylight zone control limitations/exceptions
- ILPA space-by-space option returns



Lighting Compilation

Component	Fixture ID	Fixture Description	Lamp Description/ Wattage Per Lamp	Ballast	Lamps Per Fixture	Number of Fixtures	Fixture Wattage	Track Lighting Wattage
Building		Allowed wattage = 14000 Proposed wattage = 11120						
Retail (10000 sq.ft.)		Allowed wattage = 14000 Proposed wattage = 11120						
2	Linear Fluorescent 1		48" T8 28W (Super ...	Electronic	4	160	56.0	
3	LED 1		LED PAR 15W		1	60	15	
4	LED 2		LED Other Fixture U...		1	20	13	
5	Track lighting 1							1000.0

Track Lighting Proposed Method

Wattage for track lighting systems can be based on any of the four criteria below. Select the criteria and associated inputs to apply to this track system.

Line-voltage track lighting and plug-in busway

Track wattage

Circuit breaker capacity

Current-limiting device capacity

Low-voltage track lighting

Transformer capacity

1000 Wattage of transformer supplying the system

Interior Lighting Passes: Design 21% better than Code

Envelope -4% Interior Lighting +21% Exterior Lighting +24%

Add/move fixtures to an appropriate building use category.



HVAC –THE MECHANICAL TABS

Multiple System Capabilities

Component	System Type	Quantity	Capacity	Cap. Units	Fuel Type/ Heat Source	Condenser Type	System Details	Multi-Zone System Details	Fan System Details	Proposed Efficiency	Eff. Units	Minimum Efficiency
Building												
1	HVAC System 1	Heat Pump: Split System	1									
2	Heating	Heating mode		0	MBtu/h					0.00	HSPF	7.70 HSPF
3	Cooling	Cooling mode		0	MBtu/h					0.00	SEER	13.00 SEER

HVAC Equipment Type

Heating Equipment Type

None

Central Furnace

Dual Furnace

Heatless or Steam Coil

Heat Pump

Radiant Heating

Unit Heater

Other

Cooling Equipment Type

Packaged Air Conditioning

Packaged Air Conditioner

Packaged Evaporative Cooler

Split System Air Conditioning

Split System Air Conditioner

Split System Evaporative Cooler

Other

Setting Category

Single Zone

Multiple Zone

Efficiency Option must be specified (see Project screen)

Envelope TBD Interior Lighting TBD Exterior Lighting TBD



Mandatory Requirements HVAC CHANGES

- Load calculations must account for ERV systems
- Equipment Sizing per loads
 - New NAECA regional – based minimums
- Chiller NPLV required performance
- Auto-start controls
- DCV for all systems w/ >25 occupants/100sf



Equipment Sizing*

UNIT	MAXIMUM OVERSIZING PERCENTAGE	MINIMUM EFFICIENCY AND TESTING PROCEDURE
Air Conditioners	15%	Table 503.2.3(1)
Multi-speed Air Source Heat pumps & GSHP	15%	Table 503.2.3(2)
Single-speed GSHP	25%	Tables 503.2.3(2) or (3)
All fuel-fired heating appliances	40%	Tables 503.2.3(4) or (5)



Requirements Reviews

Envelope FAILS: Glazing area of building exceeds 30% of gross area of above-grade walls. Envelope **4%** Interior Lighting **21%** Exterior Lighting **24%** Requirements **0%**

Use the 'Options' menu to add or remove orientation and daylighting control factor.



SCORE+STORE CHECKLISTS

Commercial Building Data Collection Checklist
ANSI/ASHRAE/IESNA Standard 90.1-2007

Building ID: _____ Climate Zone: _____
Date: _____ Name of Evaluator: _____
Building Contact: Name: _____ Phone: _____ Email: _____
Building Name & Address: _____ Conditioned Floor Area: _____ ft²
State: _____ County: _____

Commercial Checklist Data Gathering Stages

• Plan Review
• Footing and Foundation
• Framing/Rough-In
• Plumbing Rough-In
• Mechanical Rough-In
• Rough-In Electrical
• Insulation
• Final

Compliance Approach (check all that apply): Prescriptive Performance Green Building Above-Code Program? Yes No
Compliance Software Used: _____
Building Use: Office Retail/Mercantile Restaurant/Dining/Fast Food Public Assembly/Religious Health Care Lodging/Hotel/Motel High-Rise Residential Other
Building Ownership: State-owned Locally-owned Privately-owned Speculative Other
Project Type: New Building Existing Building Renovation (If Renovation): \$ _____

90.1-2007 Section #	Plan Review	Compliance	Comments/Assumptions ¹
4.2.2	Plans and/or specifications provide all information with which compliance can be determined for envelope and delineate and document where exceptions to the standard are claimed.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
4.2.2.6.4.2	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and delineate and document where exceptions to the standard are claimed.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
4.2.2.7.4.1	Plans, specifications, and/or calculations provide all	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	



Final Report

Checklists:

- Envelope
- Interior Lighting
- Exterior Lighting
- HVAC / SWH
- Add Options

2012 IECC	Plan Review	Compliance	Comments/Assumptions
C102.2 (P12.1)	Plans and/or specifications provide all information with which compliance can be determined for the building envelope and delineate and document where exceptions to the standard are claimed.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
C102.3 (P12.2)	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and delineate and document where exceptions to the standard are claimed.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
C102.2 (P12.4)	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided shall include interior lighting power calculations, coverage of bulbs and ballasts, transformers and control devices.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
C102.2 (P12.7)	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the exterior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided shall include exterior lighting power calculations, coverage of bulbs and ballasts, transformers and control devices.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
C409 (P12.9)	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Requirement will be met.
C402.3.1 (P12.10)	Vertical glazing area ≤ 25 percent of the gross above-grade wall area.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
C402.3.1 (P12.11)	Skylight area ≤ 3 percent of the gross roof area.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

High Impact Other 1) Medium Impact Other 2) Low Impact Other 3)

Project: _____ Report Date: 8/30/14
Data: Untitled.rvt Page 2 of 12

The Certificate



COMcheck Software Version 3.9.3 Envelope Compliance Certificate

2012 IECC

Section 1: Project Information

Project Type: New Construction

Project Title: _____

Construction Site: _____

Owner/Client: _____

Design/IC Consultant: _____

Additional Efficiency Package: High Efficiency HVAC. If demarcation between performance requirements is identified in the mechanical requirements checklist report.

Section 2: General Information

Building Location (for weather data): _____

Climate Zone: 6a

Building Type/Conditioning Type(s): Nonresidential

Vertical Glazing (WWR) Area Ratio: 48%

Skylight (Area) (Nonresidential): 1%

Building Type: _____

Year: _____

Section 3: Envelope Assemblies

Minimum U-Value (excluding thermal bridge) overall area

Climate-Specific Requirements:

Component Name/Description	Overall U-Value	Climate Zone	Climate Zone	Climate Zone	Climate Zone	Budget U-Value
Roof 1: ABC-Roof/Infinite Slope	0.02	0.0	0.0	0.02	0.02	0.02
Window 1: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 2: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 3: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 4: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 5: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 6: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 7: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 8: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 9: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 10: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 11: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 12: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 13: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 14: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 15: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 16: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 17: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 18: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 19: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 20: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 21: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 22: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 23: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 24: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 25: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 26: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 27: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 28: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 29: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 30: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 31: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 32: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 33: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 34: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 35: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 36: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 37: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 38: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 39: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 40: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 41: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 42: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 43: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 44: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 45: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 46: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 47: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 48: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 49: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0
Window 50: Wood Frame, 40-Cup, Part Type 10 per International Building Code, 2009	0.0	0.0	0.0	0.0	0.0	0.0

1) Budget products are used for climate specific calculations. U-Value and air leak code requirements. 2) U-Value component is required supporting documentation for proposed products. 3) Performance product performance must be certified in accordance with IFRC and requires supporting documentation.

QUESTIONS?



“Energy efficient vehicle
Runs on oats and grass”

CAUTION
DO NOT STEP IN EXHAUST