

Residential System Sizing Calculation

Summary

Roger Elliott

Project Title:
Elliott Residence

Lake City, FL 32055-

Lot 21 - Country Lake at Woodborough

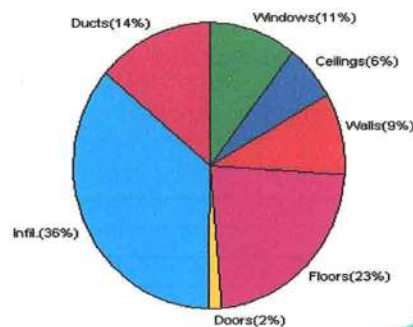
7/18/2012

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M)			
Humidity data: Interior RH (50%) Outdoor wet bulb (77F) Humidity difference(54gr.)			
Winter design temperature(MJ8 99%)	33 F	Summer design temperature(MJ8 99%)	92 F
Winter setpoint	70 F	Summer setpoint	75 F
Winter temperature difference	37 F	Summer temperature difference	17 F
Total heating load calculation	62200 Btuh	Total cooling load calculation	59460 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	119.0 74000	Sensible (SHR = 0.75)	135.0 55500
Heat Pump + Auxiliary(0.0kW)	119.0 74000	Latent	100.8 18500
		Total (Electric Heat Pump)	124.5 74000

WINTER CALCULATIONS

Winter Heating Load (for 3437 sqft)

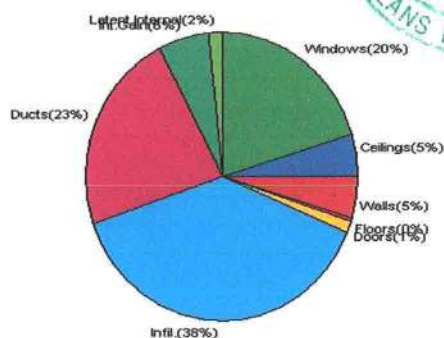
Load component		Load	
Window total	312 sqft	6601	Btuh
Wall total	2303 sqft	5867	Btuh
Door total	60 sqft	1021	Btuh
Ceiling total	3015 sqft	3963	Btuh
Floor total	See detail report	14034	Btuh
Infiltration	547 cfm	22172	Btuh
Duct loss		8541	Btuh
Subtotal		62200	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		62200	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 3437 sqft)

Load component		Load	
Window total	312 sqft	12050	Btuh
Wall total	2303 sqft	2740	Btuh
Door total	60 sqft	773	Btuh
Ceiling total	3015 sqft	2892	Btuh
Floor total		253	Btuh
Infiltration	411 cfm	7640	Btuh
Internal gain		3550	Btuh
Duct gain		11213	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		41112	Btuh
Latent gain(ducts)		2346	Btuh
Latent gain(infiltration)		15003	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1000	Btuh
Total latent gain		18349	Btuh
TOTAL HEAT GAIN		59460	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

EnergyGauge® / USRFZB v3.0

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Roger Elliott

Lake City, FL 32055-

Project Title:

Elliott Residence

Building Type: User

Lot 21 - Country Lake at Woodborough

7/18/2012

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 37.0 F (MJ8 99%)

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.60	Vinyl	0.55	N	37.3		20.4	760 Btuh
2	2, NFRC 0.70	Vinyl	0.55	N	8.9		20.4	181 Btuh
3	2, NFRC 0.70	Vinyl	0.55	E	60.4		20.4	1230 Btuh
4	2, NFRC 0.70	Vinyl	0.80	E	3.4		29.6	99 Btuh
5	2, NFRC 0.70	Vinyl	0.55	S	24.9		20.4	506 Btuh
6	2, NFRC 0.70	Vinyl	0.80	S	4.4		29.6	132 Btuh
7	2, NFRC 0.70	Vinyl	0.80	S	3.1		29.6	90 Btuh
8	2, NFRC 0.70	Vinyl	0.80	W	17.1		29.6	506 Btuh
9	2, NFRC 0.70	Vinyl	0.55	W	4.4		20.4	90 Btuh
10	2, NFRC 0.70	Vinyl	0.55	W	12.4		20.4	253 Btuh
11	2, NFRC 0.70	Vinyl	0.55	N	12.4		20.4	253 Btuh
12	2, NFRC 0.70	Vinyl	0.55	N	10.1		20.4	206 Btuh
13	2, NFRC 0.70	Vinyl	0.55	W	21.8		20.4	443 Btuh
14	2, NFRC 0.70	Vinyl	0.55	W	30.2		20.4	615 Btuh
15	2, NFRC 0.70	Vinyl	0.55	W	24.9		20.4	506 Btuh
16	2, NFRC 0.70	Vinyl	0.55	S	10.9		20.4	222 Btuh
17	2, NFRC 0.70	Vinyl	0.55	S	24.9		20.4	506 Btuh
Window Total					311.6(sqft)			6601 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.070)	26.4/0.0	447		2.58	1153 Btuh
2	Frame - Wood	- Ext	(0.070)	26.4/0.0	341		2.58	879 Btuh
3	Frame - Wood	- Ext	(0.070)	26.4/0.0	427		2.58	1100 Btuh
4	Frame - Wood	- Ext	(0.070)	26.4/0.0	334		2.58	860 Btuh
5	Frame - Wood	- Ext	(0.070)	26.4/0.0	150		2.58	387 Btuh
6	Frame - Wood	- Ext	(0.070)	26.4/0.0	199		2.58	513 Btuh
7	Frame - Wood	- Ext	(0.070)	26.4/0.0	230		2.58	592 Btuh
8	Frame - Wood	- Adj	(0.059)	13.0/26.4	176		2.18	383 Btuh
Wall Total					2303(sqft)			5867 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		20		17.0	340 Btuh
2	Insulated - Garage, n		(0.460)		20		17.0	340 Btuh
3	Insulated - Garage, n		(0.460)		20		17.0	340 Btuh
Door Total					60(sqft)			1021 Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/D/Shing		(0.036)	0.3/26.4	3015		1.3	3963 Btuh
Ceiling Total					3015(sqft)			3963 Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	303.6 ft(perim.)		43.7	13255 Btuh
2	Raised Wood - Adj		(0.050)	19.0	420.0 sqft		1.9	779 Btuh
Floor Total					3435 sqft			14034 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Roger Elliott

Lake City, FL 32055-

Project Title:
Elliott Residence
Building Type: User
Lot 21 - Country Lake at Woodborough

7/18/2012

	Envelope Subtotal:						31486 Btuh
Infiltration	Type Natural	Wholehouse	ACH 1.06	Volume(cuft) 30933	Wall Ratio 1.00	CFM= 547.4	22172 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.159)						8541 Btuh
All Zones	Sensible Subtotal All Zones						62200 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	62200 Btuh 0 Btuh 62200 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	74000 Btuh
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Key: Window types - NFRC (Requires U-Factor and Shading coefficient(SHGC) of glass as numerical values)
or - Glass as 'Clear' or 'Tint' (Uses U-Factor and SHGC defaults)
U - (Window U-Factor)
HTM - (ManualJ Heat Transfer Multiplier)



Version 8

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Roger Elliott

Project Title:
Elliott Residence

Lake City, FL 32055-

Lot 21 - Country Lake at Woodborough

7/18/2012

Reference City: Gainesville, FL

Temperature Difference: 17.0F(MJ8 99%)

Humidity difference: 54gr.

Component Loads for Whole House

Window	Type*						Overhang		Window Area(sqft)			HTM		Load		
	Panes	SHGC	U	InSh	IS	Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded			
1	2 NFRC	0.60, 0.55	No	No	N		2.0ft.	0.5ft.	37.3	0.0	37.3	22	22	820	Btuh	
2	2 NFRC	0.70, 0.55	No	No	N		2.0ft.	0.5ft.	8.9	0.0	8.9	24	24	214	Btuh	
3	2 NFRC	0.70, 0.55	No	No	E		8.0ft.	0.5ft.	60.4	60.4	0.0	24	77	1455	Btuh	
4	2 NFRC	0.70, 0.80	No	No	E		2.0ft.	0.5ft.	3.4	2.1	1.2	28	81	160	Btuh	
5	2 NFRC	0.70, 0.55	No	No	S		2.0ft.	0.5ft.	24.9	24.9	0.0	24	30	599	Btuh	
6	2 NFRC	0.70, 0.80	No	No	S		2.0ft.	1.5ft.	4.4	4.4	0.0	28	34	126	Btuh	
7	2 NFRC	0.70, 0.80	No	No	S		2.0ft.	0.5ft.	3.1	3.1	0.0	28	34	87	Btuh	
8	2 NFRC	0.70, 0.80	No	No	W		2.0ft.	0.5ft.	17.1	4.3	12.9	28	81	1163	Btuh	
9	2 NFRC	0.70, 0.55	No	No	W		2.0ft.	1.5ft.	4.4	0.3	4.2	24	77	327	Btuh	
10	2 NFRC	0.70, 0.55	No	No	W		2.0ft.	0.5ft.	12.4	3.1	9.4	24	77	793	Btuh	
11	2 NFRC	0.70, 0.55	No	No	N		2.0ft.	0.5ft.	12.4	0.0	12.4	24	24	300	Btuh	
12	2 NFRC	0.70, 0.55	No	No	N		7.0ft.	0.7ft.	10.1	0.0	10.1	24	24	243	Btuh	
13	2 NFRC	0.70, 0.55	No	No	W		9.5ft.	0.7ft.	21.8	21.8	0.0	24	77	524	Btuh	
14	2 NFRC	0.70, 0.55	No	No	W		9.5ft.	0.5ft.	30.2	30.2	0.0	24	77	728	Btuh	
15	2 NFRC	0.70, 0.55	No	No	W		9.5ft.	0.5ft.	24.9	24.9	0.0	24	77	599	Btuh	
16	2 NFRC	0.70, 0.55	No	No	S		7.0ft.	0.7ft.	10.9	10.9	0.0	24	30	262	Btuh	
17	2 NFRC	0.70, 0.55	No	No	S		2.0ft.	0.5ft.	24.9	24.9	0.0	24	30	599	Btuh	
	Excursion														3050	Btuh
	Window Total								312 (sqft)							12050 Btuh
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load			
								Cav/Sheath								
1	Frame - Wood - Ext						0.07	26.4/0.0	447.3		1.2		539 Btuh			
2	Frame - Wood - Ext						0.07	26.4/0.0	340.7		1.2		411 Btuh			
3	Frame - Wood - Ext						0.07	26.4/0.0	426.6		1.2		514 Btuh			
4	Frame - Wood - Ext						0.07	26.4/0.0	333.5		1.2		402 Btuh			
5	Frame - Wood - Ext						0.07	26.4/0.0	149.9		1.2		181 Btuh			
6	Frame - Wood - Ext						0.07	26.4/0.0	199.1		1.2		240 Btuh			
7	Frame - Wood - Ext						0.07	26.4/0.0	229.7		1.2		277 Btuh			
8	Frame - Wood - Adj						0.06	13.0/26.4	176.0		1.0		176 Btuh			
	Wall Total								2303 (sqft)				2740 Btuh			
Doors	Type								Area (sqft)		HTM		Load			
1	Insulated - Exterior								20.0		12.9		258 Btuh			
2	Insulated - Garage								20.0		12.9		258 Btuh			
3	Insulated - Garage								20.0		12.9		258 Btuh			
	Door Total								60 (sqft)				773 Btuh			
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)		HTM		Load			
1	Vented Attic/DarkShingle						0.036	0.3/26.4	3015.0		0.96		2892 Btuh			
	Ceiling Total								3015 (sqft)				2892 Btuh			
Floors	Type							R-Value	Size		HTM		Load			
1	Slab On Grade							0.0	3015 (ft-perimeter)		0.0		0 Btuh			
2	Raised Wood - Adj							19.0	420 (sqft)		0.6		253 Btuh			
	Floor Total								3435.0 (sqft)				253 Btuh			
	Envelope Subtotal:													18708 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Roger Elliott

Project Title:
Elliott Residence

Climate: FL_GAINESVILLE_REGIONAL_A

Lake City, FL 32055-

Lot 21 - Country Lake at Woodborough

7/18/2012

Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural(Adjusted for ventilation)	0.80	30933	1	410.5	7640 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		5	X 230	+	2400	3550 Btuh
					Sensible Envelope Load:	29898 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)			(DGM of 0.375)		11213 Btuh
					Sensible Load All Zones	41112 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Roger Elliott

Project Title:
Elliott Residence

Climate: FL_GAINESVILLE_REGIONAL_A

Lake City, FL 32055-

Lot 21 - Country Lake at Woodborough

7/18/2012

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	29898 Btuh
	Sensible Duct Load	11213 Btuh
	Total Sensible Zone Loads	41112 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	41112 Btuh
	Latent infiltration gain (for 54 gr. humidity difference)	15003 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	2346 Btuh
	Latent occupant gain (5.0 people @ 200 Btuh per person)	1000 Btuh
	Latent other gain	0 Btuh
	Latent total gain	18349 Btuh
	TOTAL GAIN	59460 Btuh

EQUIPMENT

1. Central Unit	#	74000 Btuh
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*Key: Window types (Panels - Number and type of panes of glass)

(SHGC - Shading coefficient of glass as SHGC numerical value)

(U - Window U-Factor)

(InSh - Interior shading device: none(No), Blinds(B), Draperies(D) or Roller Shades(R))

- For Blinds: Assume medium color, half closed

For Draperies: Assume medium weave, half closed

For Roller shades: Assume translucent, half closed

(IS - Insect screen: none(N), Full(F) or Half(½))

(Ornt - compass orientation)



Version 8

FORMS

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FORM 402-2010		FLORIDA BUILDING CODE, ENERGY CONSERVATION Residential Building Thermal Envelope Approach		ALL CLIMATE ZONES
<p>Scope: Compliance with Section 402 of the Florida Building Code, Energy Conservation, shall be demonstrated by the use of Form 402 for single- and multiple-family residences of three stories or less in height, additions to existing residential buildings, renovations to existing residential buildings, new heating, cooling, and water heating systems in existing buildings, as applicable. To comply, a building must meet or exceed all of the energy efficiency requirements on Table 402A and all applicable mandatory requirements summarized in Table 402B of this form. If a building does not comply with this method or Alternate Form 402, it may still comply under Section 405 of the Florida Building Code, Energy Conservation.</p>				
PROJECT NAME: AND ADDRESS:	ELLIOTT RESID. NW COUNTRY LK. DR. LAKE CITY, FL	BUILDER:	BLAKE CONSTRUCTION	
		PERMITTING OFFICE:	COLUMBIA CO.	
OWNER:	ROGER ELLIOTT	PERMIT NO.:		JURISDICTION NO.: 221 000

General Instructions:

1. New construction which incorporates any of the following features cannot comply using this method: glass areas in excess of 20 percent of conditioned floor area, electric resistance heat and air handlers located in attics. Additions ≤ 600 sq. ft., renovations and equipment changeouts may comply by this method with exceptions given.
2. Fill in all the applicable spaces of the "To Be Installed" column on Table 402A with the information requested. All "To Be Installed" values must be equal to or more efficient than the required levels.
3. Complete page 1 based on the "To Be Installed" column information.
4. Read the requirements of Table 402B and check each box to indicate your intent to comply with all applicable items.
5. Read, sign and date the "Prepared By" certification statement at the bottom of page 1. The owner or owner's agent must also sign and date the form.

1. New construction, addition, or existing building
2. Single-family detached or multiple-family attached
3. If multiple-family—No. of units covered by this submission
4. Is this a worst case? (yes/no)
5. Conditioned floor area (sq. ft.)
6. Glass type and area:
 - a. U-factor
 - b. SHGC
 - c. Glass area
7. Percentage of glass to floor area
8. Floor type, area or perimeter, and insulation:
 - a. Slab-on-grade (R-value)
 - b. Wood, raised (R-value)
 - c. Wood, common (R-value)
 - d. Concrete, raised (R-value)
 - e. Concrete, common (R-value)
9. Wall type, area and insulation:
 - a. Exterior:
 1. Masonry (Insulation R-value)
 2. Wood frame (Insulation R-value)
 - b. Adjacent:
 1. Masonry (Insulation R-value)
 2. Wood frame (Insulation R-value)
10. Ceiling type, area and insulation:
 - a. Under attic (Insulation R-value)
 - b. Single assembly (Insulation R-value)
11. Air distribution system: Duct insulation, location, Qn
 - a. Duct location, insulation
 - b. AHU location
 - c. Qn, Test report attached (< 0.03 ; yes/no)
12. Cooling system:
 - a. Type
 - b. Efficiency
13. Heating system:
 - a. Type
 - b. Efficiency
14. HVAC sizing calculation: attached
15. Hot water system:
 - a. Type
 - b. Efficiency



Please Print

CK

1. NEW

2. 8F

3. —

4. NO

5. 3437

6a. 0.55

6b. 0.7

6c. 311.6 sq. ft.

7. 9.1 %

8a. R = 0 303.6 lin. ft.

8b. R = 19 420 sq. ft.

8c. R = — — sq. ft.

8d. R = — — sq. ft.

8e. R = — — sq. ft.

9a-1. R = — — sq. ft.

9a-2. R = 26.4 2126.9 sq. ft.

9b-1. R = — — sq. ft.

9b-2. R = 13 176 sq. ft.

10a. R = — — sq. ft.

10b. R = 30 362.4 sq. ft.

11a. R = COND. R=6

11b. INTERIOR

11c. Test report attached? Yes No

12a. Type: CENTRAL-SPLIT

12b. SEER/EER: 14

13a. Type: HEAT PUMP

13b. HSPF/COP/AFUE: 7.7

14. Yes No

15a. Type: TANKLESS

15b. EF: 0.8

I hereby certify that the plans and specifications covered by the calculation are in compliance with the Florida Energy Code.

PREPARED BY: T. G. Oelhere DATE: 7/17/12

I hereby certify that this building is in compliance with the Florida Energy Code:

OWNER AGENT: _____ DATE: _____

Review of plans and specifications covered by this calculation indicates compliance with the Florida Energy Code. Before construction is completed, this building will be inspected for compliance in accordance with Section 553.908, F.S.

CODE OFFICIAL: _____

DATE: _____

TABLE 402A

BUILDING COMPONENT	PERFORMANCE CRITERIA ¹	INSTALLED VALUES:	
Windows (see Note 2):	U-Factor < 0.65 SHGC = 0.30 % of CFA < = 20%	U-Factor = 0.55 SHGC = 0.7 % of CFA = 9.1	
Skylights	U-Factor < 0.75		
Doors: Exterior door U-Factor	U-Factor < 0.65	U-Factor = 0.46	
Floors: Slab-on-grade Over unconditioned spaces (see Note 3)	No requirement R-13	R-Value = 0	
Walls – Ext. and Adj. (see Note 3): Frame Mass (see Note 3) Interior of wall: Exterior of wall:	R-13 R-7.8 R-6	R-Value = 26.4 R-Value = R-Value =	
Ceilings (see Notes 3 & 4) Reflectance	R=30 0.25	R-Value = 30 Reflectance = 0.25	Test report Attached? Yes/No
Air distribution system (see Note 4) Ductwork & air handling unit: Unconditioned space Conditioned space Duct R-value Air leakage Qn	Not allowed R-value ≥ 6 Qn ≤ 0.03	Location: CONDITIONED R-Value = 6 Qn = 0.03	Test report Attached? Yes/No
Air conditioning systems (see Note 5) Heating system Heat pump (see Note 5) Cooling: Heating:	SEER = 13.0 SEER = 13.0 HSPF = 7.7	SEER = 14 HSPF = 7.7	
Gas furnace Oil furnace Electric resistance: Not allowed (see Note 5)	AFUE 78% AFUE 78%	AFUE = AFUE =	
Water heating system (storage type) Electric (see Note 6): Gas fired (see Note 7): Other (describe):	40 gal: EF = 0.92 50 gal: EF = 0.90 40 gal: EF = 0.59 50 gal: EF = 0.58	Gallons = EF = Gallons = 1- TANKLESS EF = 0.8	

- (1) Each component present in the As Proposed home must meet or exceed each of the applicable performance criteria in order to comply with this code using this method; otherwise Section 405 compliance must be used.
- (2) Windows and doors qualifying as glazed fenestration areas must comply with both the maximum U-Factor and the maximum SHGC (solar Heat Gain Coefficient) criteria and have a maximum total window area equal to or less than 20% of the conditioned floor area (CFA); otherwise Section 405 must be used for compliance.
Exception: Additions of 600 square feet (56 m²) or less may have a maximum glass to CFA of 50 percent.
- (3) R-values are for insulation material only as applied in accordance with manufacturers' installation instructions. For mass walls, the "interior of wall" requirement must be met except if at least 50% of the R-6 insulation required for the "exterior of wall" is installed exterior of, or integral to, the wall.
- (4) Ducts & AHU installed substantially leak free per Section 403.2.2.1. Test by Class 1 BERS rater required.
Exception: Ducts installed onto an existing air distribution system as part of an addition or renovation; duct must be R-6 installed per Sec. 503.2.7.2.
- (5) For all conventional units with capacities greater than 30,000 Btu/hr. For other types of equipment, see Tables 503.2.3(1-8).
Exception: The prohibition on electric resistance heat does not apply to additions, renovations and new heating systems installed in existing buildings.
- (6) For other electric storage volumes, minimum EF = 0.97-(0.00132 x volume).
- (7) For other natural gas storage volumes, minimum EF = 0.67-(0.0019 x volume).

TABLE 402B MANDATORY REQUIREMENTS

COMPONENTS	SECTION	REQUIREMENTS	CHECK
Air leakage	402.4	To be caulked, gasketed, weatherstripped or otherwise sealed. Recessed lighting IC-rated as meeting ASTM E 283. Windows and doors = 0.30 cfm/sq. ft. Testing or visual inspection required. Fireplaces: gasketed doors & outdoor combustion air.	✓
Ceilings/knee walls	405.2.1	R-19 space permitting.	✓
Programmable thermostat	403.1.1	Where forced-air furnace is primary system, programmable thermostat is required.	✓
Air distribution system	403.2	Ducts in attics or on roofs insulated to R-8; other ducts R-6. Ducts tested to Q _a = 0.03 by a Class 1 BERS rater.	✓
Water heaters	403.4	Heat trap required for vertical pipe risers. Comply with efficiencies in Table 403.4.3.2. Provide switch or clearly marked circuit breaker (electric) or shutoff (gas). Circulating system pipes insulated to = R-2 + accessible manual OFF switch.	✓
Swimming pool & spas	403.9	Spas and heated pools must have vapor-retardant covers or a liquid cover or other means proven to reduce heat loss except if 70% of heat from site-recovered energy. Oil/timer switch required. Gas heaters minimum thermal efficiency = 78% (82% after 4/16/13). Heat pump pool heaters minimum COP= 4.0.	N/A
Cooling/heating equipment	403.6	Sizing calculation performed & attached. Minimum efficiencies per Tables 503.2.3. Equipment efficiency verification required. Special occasion cooling or heating capacity requires separate system or variable capacity system. Electric heat >10kW must be divided into two or more stages.	✓
Lighting equipment	404.1	At least 50% of permanently installed lighting fixtures shall be high-efficacy lamps.	✓