

Residential System Sizing Calculation

Summary

Project Title:
Calverly Residence

, FL

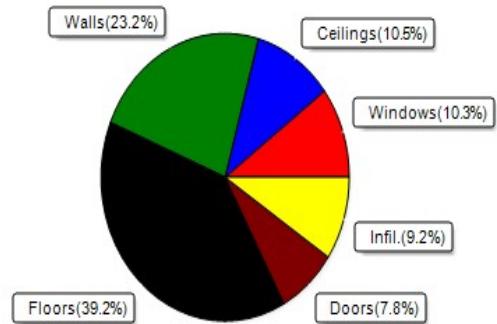
12/23/2020

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(51gr.)					
Winter design temperature(TMY3 99%)	30	F	Summer design temperature(TMY3 99%)	94	F
Winter setpoint	70	F	Summer setpoint	75	F
Winter temperature difference	40	F	Summer temperature difference	19	F
Total heating load calculation	33816	Btuh	Total cooling load calculation	23407	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	124.2	42000	Sensible (SHR = 0.85)	178.8	35700
Heat Pump + Auxiliary(0.0kW)	124.2	42000	Latent	183.3	6300
			Total (Electric Heat Pump)	179.4	42000

WINTER CALCULATIONS

Winter Heating Load (for 2731 sqft)

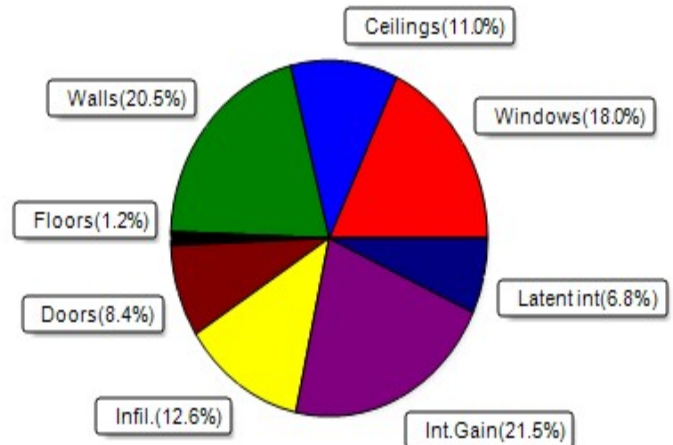
Load component	Load
Window total 263 sqft	3472 Btuh
Wall total 2271 sqft	7830 Btuh
Door total 164 sqft	2624 Btuh
Ceiling total 2731 sqft	3535 Btuh
Floor total See detail report	13248 Btuh
Infiltration 71 cfm	3107 Btuh
Duct loss	0 Btuh
Subtotal	33816 Btuh
Ventilation 0 cfm	0 Btuh
TOTAL HEAT LOSS	33816 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2731 sqft)

Load component	Load
Window total 263 sqft	4209 Btuh
Wall total 2271 sqft	4791 Btuh
Door total 164 sqft	1968 Btuh
Ceiling total 2731 sqft	2563 Btuh
Floor total	292 Btuh
Infiltration 53 cfm	1107 Btuh
Internal gain	5040 Btuh
Duct gain	0 Btuh
Sens. Ventilation 0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	19970 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	1836 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1600 Btuh
Total latent gain	3436 Btuh
TOTAL HEAT GAIN	23407 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

12-22-20

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Calverly Residence

, FL

12/23/2020

Reference City: Gainesville, FL

Temperature Difference: 19.0F(TMY3 99%)

Humidity difference: 51gr.

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	0.22, 0.33	No	No	N		11.5f	1.3ft	30.0	0.0	30.0	11	11	327	Btuh
2	2 NFRC	0.22, 0.33	No	No	N		11.5f	1.3ft	16.0	0.0	16.0	11	11	174	Btuh
3	2 NFRC	0.22, 0.33	No	No	W		1.5ft	1.3ft	30.0	0.0	30.0	11	27	824	Btuh
4	2 NFRC	0.22, 0.33	No	No	N		1.5ft	1.3ft	30.0	0.0	30.0	11	11	327	Btuh
5	2 NFRC	0.22, 0.33	No	No	E		1.5ft	1.3ft	8.0	0.0	8.0	11	27	220	Btuh
6	2 NFRC	0.22, 0.33	No	No	E		1.5ft	1.3ft	3.0	0.0	3.0	11	27	82	Btuh
7	2 NFRC	0.22, 0.33	No	No	E		1.5ft	1.3ft	8.0	0.0	8.0	11	27	220	Btuh
8	2 NFRC	0.22, 0.33	No	No	S		1.5ft	1.3ft	8.0	8.0	0.0	11	13	87	Btuh
9	2 NFRC	0.22, 0.33	No	No	S		7.5ft	1.3ft	72.0	72.0	0.0	11	13	785	Btuh
10	2 NFRC	0.22, 0.33	No	No	S		1.5ft	1.3ft	8.0	8.0	0.0	11	13	87	Btuh
11	2 NFRC	0.22, 0.33	No	No	W		1.5ft	1.3ft	8.0	0.0	8.0	11	27	220	Btuh
12	2 NFRC	0.22, 0.33	No	No	N		1.5ft	1.3ft	8.0	0.0	8.0	11	11	87	Btuh
13	2 NFRC	0.22, 0.33	No	No	E		1.5ft	1.3ft	24.0	0.0	24.0	11	27	660	Btuh
14	2 NFRC	0.22, 0.33	No	No	S		1.5ft	1.3ft	10.0	10.0	0.0	11	13	109	Btuh
	Window Total								263 (sqft)					4209 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load					
					Cav/Sheath										
1	Frame - Wood - Ext		0.09		13.0/0.6		319.0		2.2		701 Btuh				
2	Frame - Wood - Ext		0.09		13.0/0.6		143.3		2.2		315 Btuh				
3	Frame - Wood - Ext		0.09		13.0/0.6		222.0		2.2		488 Btuh				
4	Frame - Wood - Ext		0.09		13.0/0.6		239.0		2.2		525 Btuh				
5	Frame - Wood - Ext		0.09		13.0/0.6		97.0		2.2		213 Btuh				
6	Frame - Wood - Ext		0.09		13.0/0.6		50.0		2.2		110 Btuh				
7	Frame - Wood - Ext		0.09		13.0/0.6		219.7		2.2		483 Btuh				
8	Frame - Wood - Ext		0.09		13.0/0.6		45.0		2.2		99 Btuh				
9	Frame - Wood - Ext		0.09		13.0/0.6		46.0		2.2		101 Btuh				
10	Frame - Wood - Ext		0.09		13.0/0.6		175.0		2.2		385 Btuh				
11	Frame - Wood - Ext		0.09		13.0/0.6		46.0		2.2		101 Btuh				
12	Frame - Wood - Ext		0.09		13.0/0.6		54.0		2.2		119 Btuh				
13	Frame - Wood - Ext		0.09		13.0/0.6		62.7		2.2		138 Btuh				
14	Frame - Wood - Ext		0.09		13.0/0.6		45.3		2.2		100 Btuh				
15	Frame - Wood - Ext		0.09		13.0/0.6		62.7		2.2		138 Btuh				
16	Frame - Wood - Ext		0.09		13.0/0.6		86.0		2.2		189 Btuh				
17	Frame - Wood - Adj		0.09		13.0/0.6		358.0		1.6		586 Btuh				
	Wall Total								2271 (sqft)			4791 Btuh			
Doors	Type	Area (sqft)		HTM		Load									
1	Insulated - Exterior		40.0		12.0	480 Btuh									
2	Insulated - Exterior		40.0		12.0	480 Btuh									
3	Insulated - Exterior		24.0		12.0	288 Btuh									
4	Insulated - Exterior		40.0		12.0	480 Btuh									
5	Insulated - Garage		20.0		12.0	240 Btuh									
	Door Total								164 (sqft)			1968 Btuh			
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load					
1	Cath/Sngl Assem/DarkShingle		0.032		30.0/0.0		2315.0		0.94		2173 Btuh				
2	Cath/Sngl Assem/DarkShingle		0.032		30.0/0.0		416.0		0.94		390 Btuh				
	Ceiling Total								2731 (sqft)			2563 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Calverly Residence

, FL

12/23/2020

Floors	Type	R-Value	Size	HTM	Load	
1	Slab On Grade	0.0	2315 (ft-perimeter)	0.0	0 Btuh	
2	Raised Wood - Adj	19.0	416 (sqft)	0.7	292 Btuh	
	Floor Total		2731.0 (sqft)		292 Btuh	
	Envelope Subtotal:				13823 Btuh	
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.13	24163	1	53.2	1107 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		8	X 230	+	3200	5040 Btuh
	Sensible Envelope Load:					19970 Btuh
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi)			(DGM of 0.000)		0 Btuh
	Sensible Load All Zones					19970 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Calverly Residence

, FL

12/23/2020

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	19970 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	19970 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	19970 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1836 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3436 Btuh
	TOTAL GAIN	23407 Btuh

EQUIPMENT

1. Central Unit	#	42000 Btuh
-----------------	---	------------

*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

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Project Title:
Calverly Residence
Building Type: User

, FL

12/23/2020

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 F (TMY3 99%)

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.22	Vinyl	0.33	N	30.0		13.2	396 Btuh
2	2, NFRC 0.22	Vinyl	0.33	N	16.0		13.2	211 Btuh
3	2, NFRC 0.22	Vinyl	0.33	W	30.0		13.2	396 Btuh
4	2, NFRC 0.22	Vinyl	0.33	N	30.0		13.2	396 Btuh
5	2, NFRC 0.22	Vinyl	0.33	E	8.0		13.2	106 Btuh
6	2, NFRC 0.22	Vinyl	0.33	E	3.0		13.2	40 Btuh
7	2, NFRC 0.22	Vinyl	0.33	E	8.0		13.2	106 Btuh
8	2, NFRC 0.22	Vinyl	0.33	S	8.0		13.2	106 Btuh
9	2, NFRC 0.22	Vinyl	0.33	S	72.0		13.2	950 Btuh
10	2, NFRC 0.22	Vinyl	0.33	S	8.0		13.2	106 Btuh
11	2, NFRC 0.22	Vinyl	0.33	W	8.0		13.2	106 Btuh
12	2, NFRC 0.22	Vinyl	0.33	N	8.0		13.2	106 Btuh
13	2, NFRC 0.22	Vinyl	0.33	E	24.0		13.2	317 Btuh
14	2, NFRC 0.22	Vinyl	0.33	S	10.0		13.2	132 Btuh
Window Total					263.0(sqft)			3472 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.086)	13.0/0.6	319		3.45	1100 Btuh
2	Frame - Wood	- Ext	(0.086)	13.0/0.6	143		3.45	494 Btuh
3	Frame - Wood	- Ext	(0.086)	13.0/0.6	222		3.45	766 Btuh
4	Frame - Wood	- Ext	(0.086)	13.0/0.6	239		3.45	824 Btuh
5	Frame - Wood	- Ext	(0.086)	13.0/0.6	97		3.45	335 Btuh
6	Frame - Wood	- Ext	(0.086)	13.0/0.6	50		3.45	172 Btuh
7	Frame - Wood	- Ext	(0.086)	13.0/0.6	220		3.45	758 Btuh
8	Frame - Wood	- Ext	(0.086)	13.0/0.6	45		3.45	155 Btuh
9	Frame - Wood	- Ext	(0.086)	13.0/0.6	46		3.45	159 Btuh
10	Frame - Wood	- Ext	(0.086)	13.0/0.6	175		3.45	603 Btuh
11	Frame - Wood	- Ext	(0.086)	13.0/0.6	46		3.45	159 Btuh
12	Frame - Wood	- Ext	(0.086)	13.0/0.6	54		3.45	186 Btuh
13	Frame - Wood	- Ext	(0.086)	13.0/0.6	63		3.45	216 Btuh
14	Frame - Wood	- Ext	(0.086)	13.0/0.6	45		3.45	156 Btuh
15	Frame - Wood	- Ext	(0.086)	13.0/0.6	63		3.45	216 Btuh
16	Frame - Wood	- Ext	(0.086)	13.0/0.6	86		3.45	297 Btuh
17	Frame - Wood	- Adj	(0.086)	13.0/0.6	358		3.45	1235 Btuh
Wall Total					2271(sqft)			7830 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		40		16.0	640 Btuh
2	Insulated - Exterior, n		(0.400)		40		16.0	640 Btuh
3	Insulated - Exterior, n		(0.400)		24		16.0	384 Btuh
4	Insulated - Exterior, n		(0.400)		40		16.0	640 Btuh
5	Insulated - Garage, n		(0.400)		20		16.0	320 Btuh
Door Total					164(sqft)			2624Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Calverly Residence
Building Type: User

12/23/2020

Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Cathedral/D/Shing	(0.032)	30.0/0.0	2315	1.3	2997 Btuh
2	Cathedral/D/Shing	(0.032)	30.0/0.0	416	1.3	539 Btuh
	Ceiling Total			2731(sqft)		3535Btuh
Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	263.0 ft(perim.)	47.2	12414 Btuh
2	Raised Wood - Adj	(0.050)	19.0	416.0 sqft	2.0	834 Btuh
	Floor Total			2731 sqft		13248 Btuh
	Envelope Subtotal:					30709 Btuh
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural	0.18	24163	1.00	70.9	3107 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)					0 Btuh
All Zones	Sensible Subtotal All Zones					33816 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	33816 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	33816 Btuh

EQUIPMENT

1. Electric Heat Pump	#	42000 Btuh
-----------------------	---	------------

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