

Residential System Sizing Calculation

Summary

Project Title:
Brent & Amanda Handy

, FL

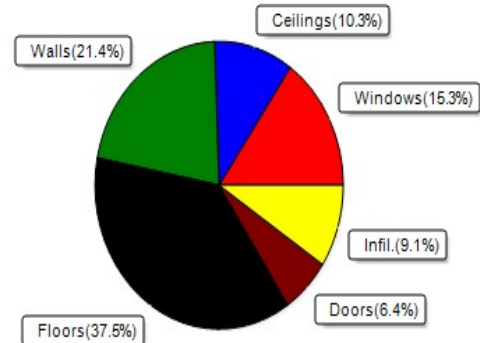
11/24/2020

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	34136 Btuh	Total cooling load calculation	23603 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	140.6 48000	Sensible (SHR = 0.85)	198.4 40800
Heat Pump + Auxiliary(0.0kW)	140.6 48000	Latent	237.0 7200
		Total (Electric Heat Pump)	203.4 48000

WINTER CALCULATIONS

Winter Heating Load (for 2709 sqft)

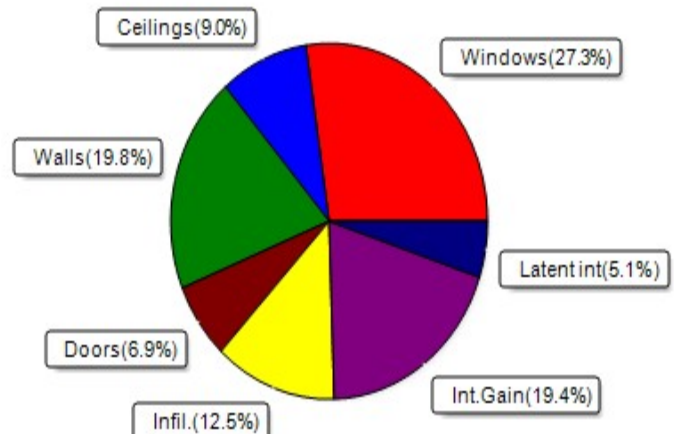
Load component	Load
Window total 396 sqft	5227 Btuh
Wall total 2121 sqft	7313 Btuh
Door total 136 sqft	2176 Btuh
Ceiling total 2719 sqft	3520 Btuh
Floor total See detail report	12791 Btuh
Infiltration 71 cfm	3109 Btuh
Duct loss	0 Btuh
Subtotal	34136 Btuh
Ventilation 0 cfm	0 Btuh
TOTAL HEAT LOSS	34136 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2709 sqft)

Load component	Load
Window total 396 sqft	6455 Btuh
Wall total 2121 sqft	4662 Btuh
Door total 136 sqft	1632 Btuh
Ceiling total 2719 sqft	2129 Btuh
Floor total	0 Btuh
Infiltration 53 cfm	1107 Btuh
Internal gain	4580 Btuh
Duct gain	0 Btuh
Sens. Ventilation 0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	20566 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	1838 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	3038 Btuh
TOTAL HEAT GAIN	23603 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

11-24-20

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Brent & Amanda Handy

, FL

11/24/2020

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		1.5ft	1.3ft	54.0	0.0	54.0	11	11	588	Btuh
2	2 NFRC	0.22, 0.33	No	No	N		8.2ft	1.3ft	72.0	0.0	72.0	11	11	785	Btuh
3	2 NFRC	0.22, 0.33	No	No	N		1.5ft	1.3ft	36.0	0.0	36.0	11	11	392	Btuh
4	2 NFRC	0.22, 0.33	No	No	E		1.5ft	1.3ft	24.0	0.0	24.0	11	27	660	Btuh
5	2 NFRC	0.22, 0.33	No	No	E		1.5ft	1.3ft	10.0	0.0	10.0	11	27	275	Btuh
6	2 NFRC	0.22, 0.33	No	No	E		1.5ft	1.3ft	8.0	0.0	8.0	11	27	220	Btuh
7	2 NFRC	0.22, 0.33	No	No	E		1.5ft	1.3ft	18.0	0.0	18.0	11	27	495	Btuh
8	2 NFRC	0.22, 0.33	No	No	E		1.5ft	1.3ft	15.0	0.0	15.0	11	27	412	Btuh
9	2 NFRC	0.22, 0.33	No	No	E		1.5ft	1.3ft	6.0	0.0	6.0	11	27	165	Btuh
10	2 NFRC	0.22, 0.33	No	No	S		1.5ft	1.3ft	30.0	30.0	0.0	11	13	327	Btuh
11	2 NFRC	0.22, 0.33	No	No	S		9.2ft	1.3ft	36.0	36.0	0.0	11	13	392	Btuh
12	2 NFRC	0.22, 0.33	No	No	S		6.5ft	1.3ft	27.0	27.0	0.0	11	13	294	Btuh
13	2 NFRC	0.22, 0.33	No	No	S		1.5ft	1.3ft	12.0	12.0	0.0	11	13	131	Btuh
14	2 NFRC	0.22, 0.33	No	No	W		1.5ft	1.3ft	15.0	0.0	15.0	11	27	412	Btuh
15	2 NFRC	0.22, 0.33	No	No	W		1.5ft	1.3ft	8.0	0.0	8.0	11	27	220	Btuh
16	2 NFRC	0.22, 0.33	No	No	W		1.5ft	1.3ft	25.0	0.0	25.0	11	27	687	Btuh
	Window Total								396 (sqft)					6455 Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)			HTM		Load	
								Cav/Sheath							
1	Frame - Wood - Ext						0.09	13.0/0.6	174.0			2.2		383 Btuh	
2	Frame - Wood - Ext						0.09	13.0/0.6	26.7			2.2		59 Btuh	
3	Frame - Wood - Ext						0.09	13.0/0.6	124.7			2.2		274 Btuh	
4	Frame - Wood - Ext						0.09	13.0/0.6	168.0			2.2		369 Btuh	
5	Frame - Wood - Ext						0.09	13.0/0.6	117.0			2.2		257 Btuh	
6	Frame - Wood - Ext						0.09	13.0/0.6	270.0			2.2		594 Btuh	
7	Frame - Wood - Ext						0.09	13.0/0.6	60.0			2.2		132 Btuh	
8	Frame - Wood - Ext						0.09	13.0/0.6	115.5			2.2		254 Btuh	
9	Frame - Wood - Ext						0.09	13.0/0.6	60.0			2.2		132 Btuh	
10	Frame - Wood - Ext						0.09	13.0/0.6	55.5			2.2		122 Btuh	
11	Frame - Wood - Ext						0.09	13.0/0.6	123.0			2.2		270 Btuh	
12	Frame - Wood - Ext						0.09	13.0/0.6	90.0			2.2		198 Btuh	
13	Frame - Wood - Ext						0.09	13.0/0.6	32.0			2.2		70 Btuh	
14	Frame - Wood - Ext						0.09	13.0/0.6	23.3			2.2		51 Btuh	
15	Frame - Wood - Ext						0.09	13.0/0.6	84.0			2.2		185 Btuh	
16	Frame - Wood - Ext						0.09	13.0/0.6	72.7			2.2		160 Btuh	
17	Frame - Wood - Ext						0.09	13.0/0.6	113.0			2.2		248 Btuh	
18	Frame - Wood - Ext						0.09	13.0/0.6	33.3			2.2		73 Btuh	
19	Frame - Wood - Ext						0.09	13.0/0.6	87.0			2.2		191 Btuh	
20	Frame - Wood - Ext						0.09	13.0/0.6	181.0			2.2		398 Btuh	
21	Frame - Wood - Ext						0.09	13.0/0.6	110.0			2.2		242 Btuh	
	Wall Total								2121 (sqft)					4662 Btuh	
Doors	Type						Area (sqft)			HTM		Load			
1	Insulated - Exterior						40.0			12.0		480 Btuh			
2	Insulated - Exterior						48.0			12.0		576 Btuh			
3	Insulated - Exterior						24.0			12.0		288 Btuh			
4	Insulated - Exterior						24.0			12.0		288 Btuh			
	Door Total								136 (sqft)					1632 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Brent & Amanda Handy

, FL

11/24/2020

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	Cath/Sngl Assem/Light/Shingle	0.032	30.0/0.0	2384.0	0.78	1867 Btuh
2	Cath/Sngl Assem/Light/Shingle	0.032	30.0/0.0	335.0	0.78	262 Btuh
	Ceiling Total			2719 (sqft)		2129 Btuh
Floors	Type		R-Value	Size	HTM	Load
1	Slab On Grade		0.0	2384 (ft-perimeter)	0.0	0 Btuh
2	Interior		30.0	335 (sqft)	0.0	0 Btuh
	Floor Total			2719.0 (sqft)		0 Btuh
	Envelope Subtotal:					14878 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.13	24056	1	53.2	1107 Btuh
Internal gain		Occupants	Btuh/occupant	Appliance		Load
		6	X 230	+	3200	4580 Btuh
	Sensible Envelope Load:					20566 Btuh
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi)				(DGM of 0.000)	0 Btuh
	Sensible Load All Zones					20566 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Brent & Amanda Handy

, FL

11/24/2020

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	20566 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	20566 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	20566 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1838 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3038 Btuh
	TOTAL GAIN	23603 Btuh

EQUIPMENT

1. Central Unit	#	48000 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

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Project Title:
Brent & Amanda Handy
Building Type: User

, FL

11/24/2020

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	54.0		13.2	713 Btuh
2	2, NFRC 0.22	Vinyl	0.33	N	72.0		13.2	950 Btuh
3	2, NFRC 0.22	Vinyl	0.33	N	36.0		13.2	475 Btuh
4	2, NFRC 0.22	Vinyl	0.33	E	24.0		13.2	317 Btuh
5	2, NFRC 0.22	Vinyl	0.33	E	10.0		13.2	132 Btuh
6	2, NFRC 0.22	Vinyl	0.33	E	8.0		13.2	106 Btuh
7	2, NFRC 0.22	Vinyl	0.33	E	18.0		13.2	238 Btuh
8	2, NFRC 0.22	Vinyl	0.33	E	15.0		13.2	198 Btuh
9	2, NFRC 0.22	Vinyl	0.33	E	6.0		13.2	79 Btuh
10	2, NFRC 0.22	Vinyl	0.33	S	30.0		13.2	396 Btuh
11	2, NFRC 0.22	Vinyl	0.33	S	36.0		13.2	475 Btuh
12	2, NFRC 0.22	Vinyl	0.33	S	27.0		13.2	356 Btuh
13	2, NFRC 0.22	Vinyl	0.33	S	12.0		13.2	158 Btuh
14	2, NFRC 0.22	Vinyl	0.33	W	15.0		13.2	198 Btuh
15	2, NFRC 0.22	Vinyl	0.33	W	8.0		13.2	106 Btuh
16	2, NFRC 0.22	Vinyl	0.33	W	25.0		13.2	330 Btuh
Window Total					396.0(sqft)			5227 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.086)	13.0/0.6	174		3.45	600 Btuh
2	Frame - Wood	- Ext	(0.086)	13.0/0.6	27		3.45	92 Btuh
3	Frame - Wood	- Ext	(0.086)	13.0/0.6	125		3.45	430 Btuh
4	Frame - Wood	- Ext	(0.086)	13.0/0.6	168		3.45	579 Btuh
5	Frame - Wood	- Ext	(0.086)	13.0/0.6	117		3.45	403 Btuh
6	Frame - Wood	- Ext	(0.086)	13.0/0.6	270		3.45	931 Btuh
7	Frame - Wood	- Ext	(0.086)	13.0/0.6	60		3.45	207 Btuh
8	Frame - Wood	- Ext	(0.086)	13.0/0.6	116		3.45	398 Btuh
9	Frame - Wood	- Ext	(0.086)	13.0/0.6	60		3.45	207 Btuh
10	Frame - Wood	- Ext	(0.086)	13.0/0.6	56		3.45	191 Btuh
11	Frame - Wood	- Ext	(0.086)	13.0/0.6	123		3.45	424 Btuh
12	Frame - Wood	- Ext	(0.086)	13.0/0.6	90		3.45	310 Btuh
13	Frame - Wood	- Ext	(0.086)	13.0/0.6	32		3.45	110 Btuh
14	Frame - Wood	- Ext	(0.086)	13.0/0.6	23		3.45	80 Btuh
15	Frame - Wood	- Ext	(0.086)	13.0/0.6	84		3.45	290 Btuh
16	Frame - Wood	- Ext	(0.086)	13.0/0.6	73		3.45	251 Btuh
17	Frame - Wood	- Ext	(0.086)	13.0/0.6	113		3.45	390 Btuh
18	Frame - Wood	- Ext	(0.086)	13.0/0.6	33		3.45	115 Btuh
19	Frame - Wood	- Ext	(0.086)	13.0/0.6	87		3.45	300 Btuh
20	Frame - Wood	- Ext	(0.086)	13.0/0.6	181		3.45	624 Btuh
21	Frame - Wood	- Ext	(0.086)	13.0/0.6	110		3.45	379 Btuh
Wall Total					2121(sqft)			7313 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Brent & Amanda Handy
Building Type: User

, FL

11/24/2020

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)		48	16.0	768 Btuh
3	Insulated - Exterior, n	(0.400)		24	16.0	384 Btuh
4	Insulated - Exterior, n	(0.400)		24	16.0	384 Btuh
	Door Total				136(sqft)	2176Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Cathedral/L/Shing	(0.032)	30.0/0.0	2384	1.3	3086 Btuh
2	Cathedral/L/Shing	(0.032)	30.0/0.0	335	1.3	434 Btuh
	Ceiling Total				2719(sqft)	3520Btuh
Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	271.0 ft(perim.)	47.2	12791 Btuh
2	Interior	(1.180)	30.0	335.0 sqft	0.0	0 Btuh
	Floor Total				2719 sqft	12791 Btuh
	Envelope Subtotal:					31027 Btuh
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural	0.18	24056	1.00	71.0	3109 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)					0 Btuh
All Zones	Sensible Subtotal All Zones					34136 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	34136 Btuh 0 Btuh 34136 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	48000 Btuh
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Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Brent & Amanda Handy
Building Type: User

, FL

11/24/2020

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