

Residential System Sizing Calculation

Summary

Project Title:
Steve & Theresa Young

, FL

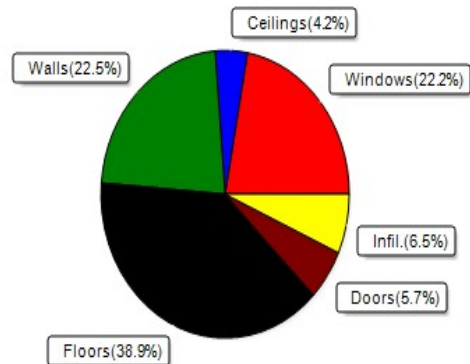
3/31/2023

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(100 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	31401 Btuh	Total cooling load calculation	20627 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	152.9 48000	Sensible (SHR = 0.85)	229.1 40800
Heat Pump + Auxiliary(0.0kW)	152.9 48000	Latent	255.8 7200
		Total (Electric Heat Pump)	232.7 48000

WINTER CALCULATIONS

Winter Heating Load (for 2370 sqft)

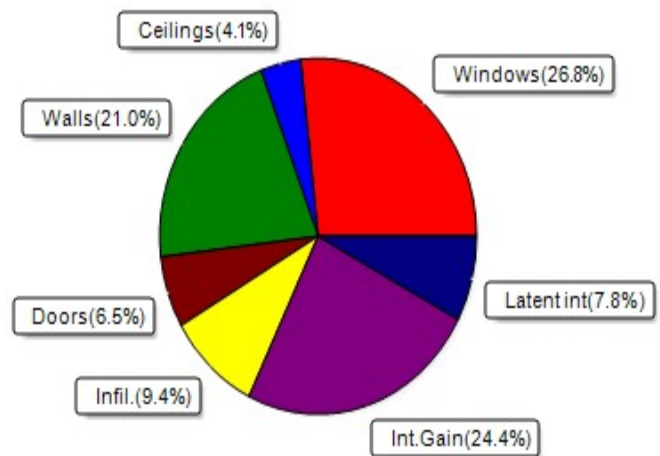
Load component	Load
Window total 290 sqft	6956 Btuh
Wall total 1990 sqft	7067 Btuh
Door total 97 sqft	1791 Btuh
Ceiling total 2370 sqft	1308 Btuh
Floor total 2370 sqft	12225 Btuh
Infiltration 47 cfm	2055 Btuh
Duct loss	0 Btuh
Subtotal	31401 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	31401 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2370 sqft)

Load component	Load
Window total 290 sqft	5520 Btuh
Wall total 1990 sqft	4327 Btuh
Door total 97 sqft	1343 Btuh
Ceiling total 2370 sqft	850 Btuh
Floor total	0 Btuh
Infiltration 35 cfm	732 Btuh
Internal gain	5040 Btuh
Duct gain	0 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	17812 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	1215 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1600 Btuh
Total latent gain	2815 Btuh
TOTAL HEAT GAIN	20627 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

3-31-23

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Steve & Theresa Young

, FL

3/31/2023

Reference City: Gainesville, FL (Defaults)
Humidity difference: 51gr.

Temperature Difference: 19.0F(TMY3 99%)
Summer Setpoint: 75 °F (Required Manual J default)

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	0.27	0.60	No	No	N	1.5ft	2.3ft	30.0	0.0	30.0	17	17	512 Btuh
2	2 NFRC	0.27	0.60	No	No	N	1.5ft	2.3ft	60.0	0.0	60.0	17	17	1025 Btuh
3	2 NFRC	0.27	0.60	No	No	N	1.5ft	2.3ft	18.3	0.0	18.3	17	17	313 Btuh
4	2 NFRC	0.27	0.60	No	No	N	1.5ft	2.3ft	30.0	0.0	30.0	17	17	512 Btuh
5	2 NFRC	0.27	0.60	No	No	N	1.5ft	2.3ft	30.0	0.0	30.0	17	17	512 Btuh
6	2 NFRC	0.27	0.60	No	No	N	1.5ft	2.3ft	12.5	0.0	12.5	17	17	213 Btuh
7	2 NFRC	0.27	0.60	No	No	E	1.5ft	2.3ft	6.0	0.0	6.0	17	37	225 Btuh
8	2 NFRC	0.27	0.60	No	No	E	1.5ft	2.3ft	4.0	0.0	4.0	17	37	150 Btuh
9	2 NFRC	0.27	0.60	No	No	E	1.5ft	2.3ft	12.0	0.0	12.0	17	37	449 Btuh
10	2 NFRC	0.27	0.60	No	No	S	9.5ft	2.3ft	25.0	25.0	0.0	17	19	427 Btuh
11	2 NFRC	0.27	0.60	No	No	S	9.5ft	2.3ft	16.0	16.0	0.0	17	19	273 Btuh
12	2 NFRC	0.27	0.60	No	No	N	1.5ft	2.3ft	25.0	0.0	25.0	17	17	427 Btuh
13	2 NFRC	0.27	0.60	No	No	S	1.5ft	2.3ft	15.0	15.0	0.0	17	19	256 Btuh
14	2 NFRC	0.27	0.60	No	No	W	1.5ft	2.3ft	6.0	0.0	6.0	17	37	225 Btuh
	Window Total							290 (sqft)					5520 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load				
1	Frame - Wood - Ext		0.09		13.0/0.0		87.0		2.3		197 Btuh			
2	Frame - Wood - Ext		0.09		13.0/0.0		72.0		2.3		163 Btuh			
3	Frame - Wood - Ext		0.09		13.0/0.0		140.0		2.3		317 Btuh			
4	Frame - Wood - Ext		0.09		13.0/0.0		40.0		2.3		91 Btuh			
5	Frame - Wood - Ext		0.09		13.0/0.0		90.0		2.3		204 Btuh			
6	Frame - Wood - Ext		0.09		13.0/0.0		87.8		2.3		199 Btuh			
7	Frame - Wood - Ext		0.09		13.0/0.0		182.5		2.3		413 Btuh			
8	Frame - Wood - Ext		0.09		13.0/0.0		257.0		2.3		582 Btuh			
9	Frame - Wood - Adj		0.09		13.0/0.0		308.7		1.7		521 Btuh			
10	Frame - Wood - Ext		0.09		13.0/0.0		155.0		2.3		351 Btuh			
11	Frame - Wood - Ext		0.09		13.0/0.0		18.0		2.3		41 Btuh			
12	Frame - Wood - Ext		0.09		13.0/0.0		78.5		2.3		178 Btuh			
13	Frame - Wood - Ext		0.09		13.0/0.0		18.0		2.3		41 Btuh			
14	Frame - Wood - Ext		0.09		13.0/0.0		102.0		2.3		231 Btuh			
15	Frame - Wood - Ext		0.09		13.0/0.0		354.0		2.3		801 Btuh			
	Wall Total							1990 (sqft)			4327 Btuh			
Doors	Type	Area (sqft)		HTM		Load								
1	Insulated - Exterior		40.0		13.8	552 Btuh								
2	Insulated - Garage		20.0		13.8	276 Btuh								
3	Insulated - Garage		13.3		13.8	184 Btuh								
4	Insulated - Exterior		24.0		13.8	331 Btuh								
	Door Total							97 (sqft)			1343 Btuh			
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load				
1	SnglAsmb no airsp/DarkShingle		0.014		38.0/38.0		2370.0		0.36		850 Btuh			
	Ceiling Total							2370 (sqft)			850 Btuh			
Floors	Type	R-Value		Size		HTM		Load						
1	Slab On Grade		0.0		2370 (ft-perimeter)		0.0		0 Btuh					
	Floor Total							2370.0 (sqft)			0 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Steve & Theresa Young

, FL

3/31/2023

	Envelope Subtotal:					12040 Btuh
Infiltration	Type Natural	Average ACH 0.11	Volume(cuft) 18960	Wall Ratio 1	CFM= 35.1	Load 732 Btuh
Internal gain		Occupants 8	Btuh/occupant X 230	Appliance +	3200	Load 5040 Btuh
	Sensible Envelope Load:					17812 Btuh
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)					0 Btuh
	Sensible Load All Zones					17812 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Steve & Theresa Young

, FL

3/31/2023

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	17812 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	17812 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	17812 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1215 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	2815 Btuh
	TOTAL GAIN	20627 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:
Steve & Theresa Young
Building Type: User

, FL

3/31/2023

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 °F (TMY3 99%)
Winter Setpoint: 70 °F (Required Manual J default)

Component Loads for Whole House								
Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.27	Vinyl	0.60	N	30.0		24.0	720 Btuh
2	2, NFRC 0.27	Vinyl	0.60	N	60.0		24.0	1440 Btuh
3	2, NFRC 0.27	Vinyl	0.60	N	18.3		24.0	440 Btuh
4	2, NFRC 0.27	Vinyl	0.60	N	30.0		24.0	720 Btuh
5	2, NFRC 0.27	Vinyl	0.60	N	30.0		24.0	720 Btuh
6	2, NFRC 0.27	Vinyl	0.60	N	12.5		24.0	300 Btuh
7	2, NFRC 0.27	Vinyl	0.60	E	6.0		24.0	144 Btuh
8	2, NFRC 0.27	Vinyl	0.60	E	4.0		24.0	96 Btuh
9	2, NFRC 0.27	Vinyl	0.60	E	12.0		24.0	288 Btuh
10	2, NFRC 0.27	Vinyl	0.60	S	25.0		24.0	600 Btuh
11	2, NFRC 0.27	Vinyl	0.60	S	16.0		24.0	384 Btuh
12	2, NFRC 0.27	Vinyl	0.60	N	25.0		24.0	600 Btuh
13	2, NFRC 0.27	Vinyl	0.60	S	15.0		24.0	360 Btuh
14	2, NFRC 0.27	Vinyl	0.60	W	6.0		24.0	144 Btuh
Window Total					289.8(sqft)			6956 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	87		3.55	309 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	72		3.55	256 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	140		3.55	497 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	40		3.55	142 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	90		3.55	320 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	88		3.55	312 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	183		3.55	648 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	257		3.55	912 Btuh
9	Frame - Wood	- Adj	(0.089)	13.0/0.0	309		3.55	1096 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	155		3.55	550 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	18		3.55	64 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	79		3.55	279 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	18		3.55	64 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	102		3.55	362 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	354		3.55	1257 Btuh
Wall Total					1990(sqft)			7067 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)		40		18.4	736 Btuh
2	Insulated - Garage,	n	(0.460)		20		18.4	368 Btuh
3	Insulated - Garage,	n	(0.460)		13		18.4	245 Btuh
4	Insulated - Exterior,	n	(0.460)		24		18.4	442 Btuh
Door Total					97(sqft)			1791Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Steve & Theresa Young
Building Type: User

, FL

3/31/2023

Ceilings 1	Type/Color/Surface Single as/D/Shing Ceiling Total	Ueff. (0.014)	R-Value 38.0/38.0	Area X 2370 2370(sqft)	HTM= 0.55	Load 1308 Btuh 1308Btuh
Floors 1	Type Slab On Grade Floor Total	Ueff. (1.180)	R-Value 0.0	Size X 259.0 ft(perim.) 2370 sqft	HTM= 47.2	Load 12225 Btuh 12225 Btuh
Envelope Subtotal:						29346 Btuh
Infiltration	Type Natural	Wholehouse ACH 0.15	Volume(cuft) 18960	Wall Ratio 1.00	CFM= 46.9	2055 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)					0 Btuh
All Zones	Sensible Subtotal All Zones					31401 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss Total Heat Loss	(Ex:0 cfm; Sup:0 cfm)	31401 Btuh 0 Btuh 31401 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	48000 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