

Residential System Sizing Calculation

Summary

Project Title:
Scott & Kim Morris

, FL

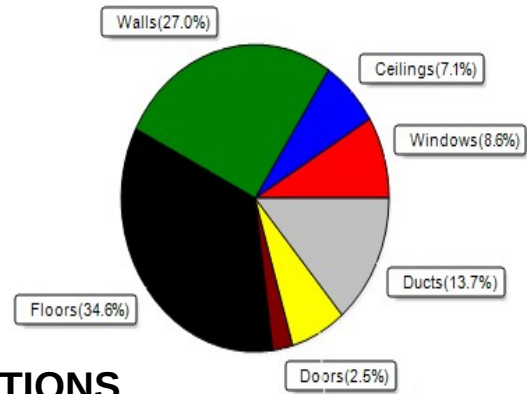
2/22/2023

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	39182 Btuh	Total cooling load calculation	31714 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	122.5 48000	Sensible (SHR = 0.85)	149.9 40800
Heat Pump + Auxiliary(0.0kW)	122.5 48000	Latent	159.9 7200
		Total (Electric Heat Pump)	151.4 48000

WINTER CALCULATIONS

Winter Heating Load (for 2189 sqft)

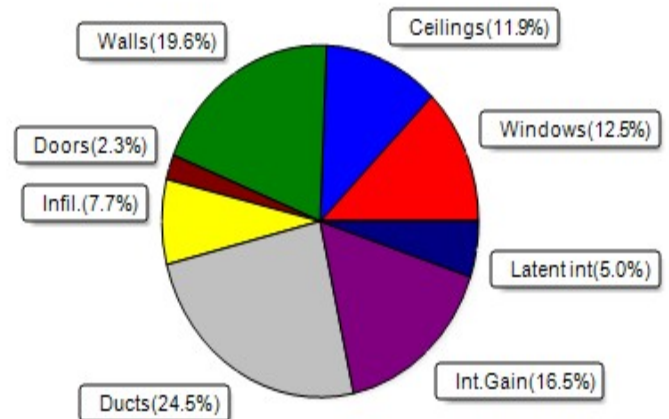
Load component	Load
Window total 324 sqft	3370 Btuh
Wall total 2976 sqft	10566 Btuh
Door total 60 sqft	960 Btuh
Ceiling total 2189 sqft	2789 Btuh
Floor total 2189 sqft	13546 Btuh
Infiltration 59 cfm	2587 Btuh
Duct loss	5364 Btuh
Subtotal	39182 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	39182 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2189 sqft)

Load component	Load
Window total 324 sqft	3959 Btuh
Wall total 2976 sqft	6209 Btuh
Door total 60 sqft	720 Btuh
Ceiling total 2189 sqft	3765 Btuh
Floor total	0 Btuh
Infiltration 44 cfm	922 Btuh
Internal gain	5240 Btuh
Duct gain	6399 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	27212 Btuh
Latent gain(ducts)	1373 Btuh
Latent gain(infiltration)	1529 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1600 Btuh
Total latent gain	4502 Btuh
TOTAL HEAT GAIN	31714 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

2-22-23

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Scott & Kim Morris

, FL

2/22/2023

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	0.20, 0.26	No	No	N	1.5ft	2.3ft	36.0	0.0	36.0	9	9	329	Btuh	
2	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	36.0	0.0	36.0	9	9	329	Btuh	
3	2 NFRC	0.20, 0.26	No	No	E	1.5ft	2.3ft	36.0	0.0	36.0	9	24	872	Btuh	
4	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	18.0	0.0	18.0	9	9	165	Btuh	
5	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	96.0	0.0	96.0	9	9	878	Btuh	
6	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	18.0	0.0	18.0	9	9	165	Btuh	
7	2 NFRC	0.20, 0.26	No	No	E	1.5ft	2.3ft	18.0	0.0	18.0	9	24	436	Btuh	
8	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	18.0	18.0	0.0	9	11	165	Btuh	
9	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	36.0	36.0	0.0	9	11	329	Btuh	
10	2 NFRC	0.20, 0.26	No	No	W	1.5ft	2.3ft	12.0	0.0	12.0	9	24	291	Btuh	
	Window Total								324 (sqft)					3959	Btuh
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load		
							Cav/Sheath								
1	Frame - Wood - Ext					0.09	13.0/0.0	217.3		2.3		492		Btuh	
2	Frame - Wood - Ext					0.09	13.0/0.0	131.7		2.3		298		Btuh	
3	Frame - Wood - Ext					0.09	13.0/0.0	84.0		2.3		190		Btuh	
4	Frame - Wood - Ext					0.09	13.0/0.0	84.0		2.3		190		Btuh	
5	Frame - Wood - Ext					0.09	13.0/0.0	129.3		2.3		293		Btuh	
6	Frame - Wood - Ext					0.09	13.0/0.0	120.0		2.3		272		Btuh	
7	Frame - Wood - Ext					0.09	13.0/0.0	108.7		2.3		246		Btuh	
8	Frame - Wood - Ext					0.09	13.0/0.0	143.3		2.3		324		Btuh	
9	Frame - Wood - Ext					0.09	13.0/0.0	41.7		2.3		94		Btuh	
10	Frame - Wood - Ext					0.09	13.0/0.0	97.0		2.3		220		Btuh	
11	Frame - Wood - Ext					0.09	13.0/0.0	41.7		2.3		94		Btuh	
12	Frame - Wood - Ext					0.09	13.0/0.0	140.0		2.3		317		Btuh	
13	Frame - Wood - Ext					0.09	13.0/0.0	132.0		2.3		299		Btuh	
14	Frame - Wood - Ext					0.09	13.0/0.0	70.0		2.3		158		Btuh	
15	Frame - Wood - Ext					0.09	13.0/0.0	30.0		2.3		68		Btuh	
16	Frame - Wood - Ext					0.09	13.0/0.0	10.0		2.3		23		Btuh	
17	Frame - Wood - Ext					0.09	13.0/0.0	204.0		2.3		462		Btuh	
18	Frame - Wood - Ext					0.09	13.0/0.0	10.0		2.3		23		Btuh	
19	Frame - Wood - Ext					0.09	13.0/0.0	30.0		2.3		68		Btuh	
20	Frame - Wood - Adj					0.09	13.0/0.0	913.3		1.7		1540		Btuh	
21	Frame - Wood - Ext					0.09	13.0/0.0	238.0		2.3		539		Btuh	
	Wall Total								2976 (sqft)					6209	Btuh
Doors	Type						Area (sqft)			HTM		Load			
1	Insulated - Exterior					40.0			12.0		480		Btuh		
2	Insulated - Garage					20.0			12.0		240		Btuh		
	Door Total								60 (sqft)					720	Btuh
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)		HTM		Load		
1	Vented Attic/DarkShingle					0.032	30.0/0.0	2189.0		1.72		3765		Btuh	
	Ceiling Total								2189 (sqft)					3765	Btuh
Floors	Type						R-Value		Size		HTM		Load		
1	Slab On Grade					0.0		2189 (ft-perimeter)		0.0		0		Btuh	
	Floor Total								2189.0 (sqft)					0	Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
 Scott & Kim Morris

, FL

2/22/2023

	Envelope Subtotal:					14652 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.12	21890	1	44.2	922 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		8	X 230	+	3400	5240 Btuh
	Sensible Envelope Load:					20814 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.307)					6399 Btuh
	Sensible Load All Zones					27212 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Scott & Kim Morris

, FL

2/22/2023

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	20814 Btuh
	Sensible Duct Load	6399 Btuh
	Total Sensible Zone Loads	27212 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	27212 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1529 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1373 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	4502 Btuh
	TOTAL GAIN	31714 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:
Scott & Kim Morris
Building Type: User

, FL

2/22/2023

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 0.20	Vinyl	0.26	N	36.0		10.4	374 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	36.0		10.4	374 Btuh
3	2, NFRC 0.20	Vinyl	0.26	E	36.0		10.4	374 Btuh
4	2, NFRC 0.20	Vinyl	0.26	N	18.0		10.4	187 Btuh
5	2, NFRC 0.20	Vinyl	0.26	N	96.0		10.4	998 Btuh
6	2, NFRC 0.20	Vinyl	0.26	N	18.0		10.4	187 Btuh
7	2, NFRC 0.20	Vinyl	0.26	E	18.0		10.4	187 Btuh
8	2, NFRC 0.20	Vinyl	0.26	S	18.0		10.4	187 Btuh
9	2, NFRC 0.20	Vinyl	0.26	S	36.0		10.4	374 Btuh
10	2, NFRC 0.20	Vinyl	0.26	W	12.0		10.4	125 Btuh
	Window Total				324.0(sqft)			3370 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	217		3.55	772 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	132		3.55	467 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	84		3.55	298 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	84		3.55	298 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	129		3.55	459 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	120		3.55	426 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	109		3.55	386 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	143		3.55	509 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	42		3.55	148 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	97		3.55	344 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	42		3.55	148 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	140		3.55	497 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	132		3.55	469 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	70		3.55	249 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	30		3.55	107 Btuh
16	Frame - Wood	- Ext	(0.089)	13.0/0.0	10		3.55	36 Btuh
17	Frame - Wood	- Ext	(0.089)	13.0/0.0	204		3.55	724 Btuh
18	Frame - Wood	- Ext	(0.089)	13.0/0.0	10		3.55	36 Btuh
19	Frame - Wood	- Ext	(0.089)	13.0/0.0	30		3.55	107 Btuh
20	Frame - Wood	- Adj	(0.089)	13.0/0.0	913		3.55	3243 Btuh
21	Frame - Wood	- Ext	(0.089)	13.0/0.0	238		3.55	845 Btuh
	Wall Total				2976(sqft)			10566 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		40		16.0	640 Btuh
2	Insulated - Garage, n		(0.400)		20		16.0	320 Btuh
	Door Total				60(sqft)			960Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Scott & Kim Morris
Building Type: User

2/22/2023

Ceilings 1	Type/Color/Surface Flat ceil/D/Shing Ceiling Total	Ueff. (0.032)	R-Value 30.0/0.0	Area X 2189 2189(sqft)	HTM= 1.3	Load 2789 Btuh 2789Btuh
Floors 1	Type Slab On Grade Floor Total	Ueff. (1.180)	R-Value 0.0	Size X 287.0 ft(perim.) 2189 sqft	HTM= 47.2	Load 13546 Btuh 13546 Btuh
Envelope Subtotal:						31230 Btuh
Infiltration	Type Natural	Wholehouse ACH 0.16	Volume(cuft) 21890	Wall Ratio 1.00	CFM= 59.0	2587 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.159)					5364 Btuh
All Zones	Sensible Subtotal All Zones					39182 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss Total Heat Loss	(Ex:0 cfm; Sup:0 cfm)	39182 Btuh 0 Btuh 39182 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