

Residential System Sizing Calculation

Summary

Kaushikkumar & Anitaben Patel
SW Greenwood Terrace
Lake City, FL

Project Title:
240072 Patel

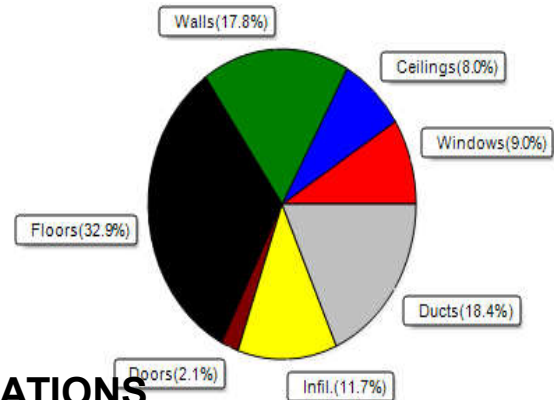
2024-01-19

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	35139	Btuh	Total cooling load calculation	31096	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	108.1	38000	Sensible (SHR = 0.75)	109.4	28500
Heat Pump + Auxiliary(0.0kW)	108.1	38000	Latent	188.7	9500
			Total (Electric Heat Pump)	122.2	38000

WINTER CALCULATIONS

Winter Heating Load (for 2645 sqft)

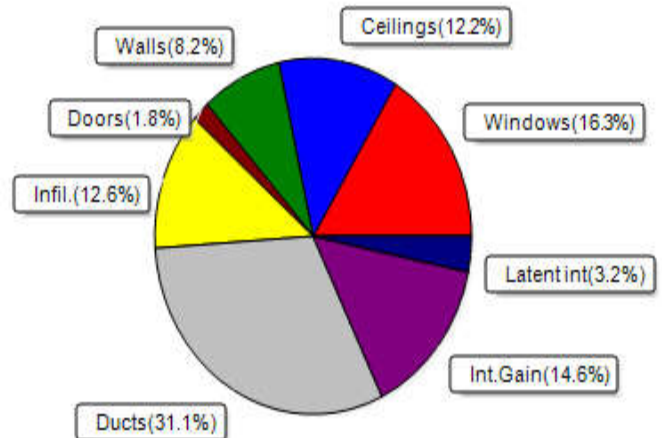
Load component	Load
Window total 226 sqft	3158 Btuh
Wall total 1944 sqft	6266 Btuh
Door total 53 sqft	747 Btuh
Ceiling total 2765 sqft	2807 Btuh
Floor total 2645 sqft	11564 Btuh
Infiltration 94 cfm	4128 Btuh
Duct loss	6469 Btuh
Subtotal	35139 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	35139 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2645 sqft)

Load component	Load
Window total 226 sqft	5068 Btuh
Wall total 1944 sqft	2554 Btuh
Door total 53 sqft	560 Btuh
Ceiling total 2765 sqft	3790 Btuh
Floor total	0 Btuh
Infiltration 71 cfm	1471 Btuh
Internal gain	4550 Btuh
Duct gain	8069 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	26061 Btuh
Latent gain(ducts)	1595 Btuh
Latent gain(infiltration)	2440 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1000 Btuh
Total latent gain	5035 Btuh
TOTAL HEAT GAIN	31096 Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2024-01-19

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Kaushikkumar & Anitaben Patel
SW Greenwood Terrace
Lake City, FL

Project Title:
240072 Patel
Building Type: User

2024-01-19

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 0.25	Metal	0.35	N	30.0		14.0	420 Btuh
2	2, NFRC 0.25	Metal	0.35	N	30.0		14.0	420 Btuh
3	2, NFRC 0.25	Metal	0.35	N	26.7		14.0	373 Btuh
4	2, NFRC 0.25	Metal	0.35	W	3.9		14.0	55 Btuh
5	2, NFRC 0.25	Metal	0.35	N	15.0		14.0	210 Btuh
6	2, NFRC 0.25	Metal	0.35	N	15.0		14.0	210 Btuh
7	2, NFRC 0.25	Metal	0.35	E	4.0		14.0	56 Btuh
8	2, NFRC 0.25	Metal	0.35	E	15.0		14.0	210 Btuh
9	2, NFRC 0.25	Metal	0.35	S	30.0		14.0	420 Btuh
10	2, NFRC 0.25	Metal	0.35	S	15.0		14.0	210 Btuh
11	2, NFRC 0.25	Metal	0.35	W	6.0		14.0	84 Btuh
12	2, NFRC 0.25	Metal	0.35	W	20.0		14.0	280 Btuh
13	2, NFRC 0.25	Metal	0.35	W	15.0		14.0	210 Btuh
Window Total					225.6(sqft)			3158 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Face Br - Wood	- Ext	(0.080)	13.0/0.0	132		3.19	421 Btuh
2	Face Br - Wood	- Ext	(0.080)	13.0/0.0	99		3.19	316 Btuh
3	Face Br - Wood	- Ext	(0.080)	13.0/0.0	110		3.19	351 Btuh
4	Face Br - Wood	- Ext	(0.080)	13.0/0.0	32		3.19	102 Btuh
5	Face Br - Wood	- Ext	(0.080)	13.0/0.0	30		3.19	96 Btuh
6	Face Br - Wood	- Ext	(0.080)	13.0/0.0	48		3.19	153 Btuh
7	Face Br - Wood	- Ext	(0.080)	13.0/0.0	63		3.19	201 Btuh
8	Face Br - Wood	- Ext	(0.080)	13.0/0.0	117		3.19	373 Btuh
9	Face Br - Wood	- Ext	(0.080)	13.0/0.0	395		3.19	1260 Btuh
10	Frame - Wood	- Adj	(0.089)	13.0/0.0	178		3.55	632 Btuh
11	Face Br - Wood	- Ext	(0.080)	13.0/0.0	148		3.19	472 Btuh
12	Face Br - Wood	- Ext	(0.080)	13.0/0.0	36		3.19	115 Btuh
13	Face Br - Wood	- Ext	(0.080)	13.0/0.0	147		3.19	469 Btuh
14	Face Br - Wood	- Ext	(0.080)	13.0/0.0	409		3.19	1305 Btuh
Wall Total					1944(sqft)			6266 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.200)		13		8.0	107 Btuh
2	Insulated - Garage, n		(0.400)		20		16.0	320 Btuh
3	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
Door Total					53(sqft)			747Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/D/Shing		(0.025)	38.0/0.0	2645		1.0	2685 Btuh
2	Knee wall/D/Shing		(0.025)	38.0/0.0	120		1.0	122 Btuh
Ceiling Total					2765(sqft)			2807Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	245.0 ft(perim.)		47.2	11564 Btuh
Floor Total					245.0 sqft			11564 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Kaushikkumar & Anitaben Patel
SW Greenwood Terrace
Lake City, FL

Project Title:
240072 Patel
Building Type: User

2024-01-19

	Envelope Subtotal:	24542 Btuh
Infiltration	Type Wholehouse ACH Volume(cuft) Wall Ratio CFM= Natural 0.23 24334 1.00 94.1	4128 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.226)	6469 Btuh
All Zones	Sensible Subtotal All Zones	35139 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm) Total Heat Loss	35139 Btuh 0 Btuh 35139 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	38000 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

Kaushikkumar & Anitaben Patel
SW Greenwood Terrace
Lake City, FL

Project Title:
240072 Patel

2024-01-19

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	0.25, 0.35	No	No	N		1.5ft	1.0ft	30.0	1.5	28.5	12	31	895	Btuh		
2	2 NFRC	0.25, 0.35	No	No	N		12.5f	0.5ft	30.0	30.0	0.0	12	31	357	Btuh		
3	2 NFRC	0.25, 0.35	No	No	N		12.5f	1.0ft	26.7	26.7	0.0	12	31	318	Btuh		
4	2 NFRC	0.25, 0.35	No	No	W		20.0f	0.0ft	3.9	3.9	0.0	12	14	47	Btuh		
5	2 NFRC	0.25, 0.35	No	No	N		6.2ft	0.5ft	15.0	13.9	1.1	12	31	200	Btuh		
6	2 NFRC	0.25, 0.35	No	No	N		1.5ft	1.0ft	15.0	0.7	14.3	12	31	447	Btuh		
7	2 NFRC	0.25, 0.35	No	No	E		1.5ft	1.0ft	4.0	0.0	4.0	12	12	48	Btuh		
8	2 NFRC	0.25, 0.35	No	No	E		1.5ft	1.0ft	15.0	0.0	15.0	12	12	179	Btuh		
9	2 NFRC	0.25, 0.35	No	No	S		5.5ft	0.5ft	30.0	24.4	5.6	12	31	463	Btuh		
10	2 NFRC	0.25, 0.35	No	No	S		1.5ft	1.0ft	15.0	0.7	14.3	12	31	447	Btuh		
11	2 NFRC	0.25, 0.35	No	No	W		1.5ft	1.0ft	6.0	6.0	0.0	12	14	71	Btuh		
12	2 NFRC	0.25, 0.35	No	No	W		1.5ft	1.0ft	20.0	20.0	0.0	12	14	238	Btuh		
13	2 NFRC	0.25, 0.35	No	No	W		1.5ft	1.0ft	15.0	15.0	0.0	12	14	179	Btuh		
	Excursion													1179	Btuh		
	Window Total								226 (sqft)					5068 Btuh			
Walls	Type						U-Value		R-Value		Area(sqft)		HTM		Load		
									Cav/Sheath								
1	Face Brick - Wood - Ext						0.08		13.0/0.0		132.0		1.3		168 Btuh		
2	Face Brick - Wood - Ext						0.08		13.0/0.0		99.0		1.3		126 Btuh		
3	Face Brick - Wood - Ext						0.08		13.0/0.0		110.0		1.3		140 Btuh		
4	Face Brick - Wood - Ext						0.08		13.0/0.0		32.1		1.3		41 Btuh		
5	Face Brick - Wood - Ext						0.08		13.0/0.0		30.0		1.3		38 Btuh		
6	Face Brick - Wood - Ext						0.08		13.0/0.0		48.0		1.3		61 Btuh		
7	Face Brick - Wood - Ext						0.08		13.0/0.0		63.0		1.3		80 Btuh		
8	Face Brick - Wood - Ext						0.08		13.0/0.0		117.0		1.3		149 Btuh		
9	Face Brick - Wood - Ext						0.08		13.0/0.0		395.0		1.3		504 Btuh		
10	Frame - Wood - Adj						0.09		13.0/0.0		178.0		1.7		300 Btuh		
11	Face Brick - Wood - Ext						0.08		13.0/0.0		148.0		1.3		189 Btuh		
12	Face Brick - Wood - Ext						0.08		13.0/0.0		36.0		1.3		46 Btuh		
13	Face Brick - Wood - Ext						0.08		13.0/0.0		147.0		1.3		188 Btuh		
14	Face Brick - Wood - Ext						0.08		13.0/0.0		409.0		1.3		522 Btuh		
	Wall Total								1944 (sqft)					2554 Btuh			
Doors	Type								Area (sqft)		HTM		Load				
1	Insulated - Exterior								13.3		6.0		80 Btuh				
2	Insulated - Garage								20.0		12.0		240 Btuh				
3	Insulated - Exterior								20.0		12.0		240 Btuh				
	Door Total								53 (sqft)					560 Btuh			
Ceilings	Type/Color/Surface						U-Value		R-Value		Area(sqft)		HTM		Load		
1	Vented Attic/DarkShingle						0.025		38.0/0.0		2645.0		1.37		3625 Btuh		
2	Knee wall to attic/DarkShingle						0.025		38.0/0.0		120.0		1.37		164 Btuh		
	Ceiling Total										2765 (sqft)					3790 Btuh	
Floors	Type								R-Value		Size		HTM		Load		
1	Slab On Grade								0.0		2645 (ft-perimeter)		0.0		0 Btuh		
	Floor Total										2645.0 (sqft)					0 Btuh	
	Envelope Subtotal:													11971 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Kaushikkumar & Anitaben Patel
SW Greenwood Terrace
Lake City, FL

Project Title: 240072 Patel

Climate:FL_GAINESVILLE_REGIONAL_A

2024-01-19

Infiltration	Type Natural	Average ACH 0.17	Volume(cuft) 24334	Wall Ratio 1	CFM= 70.6	Load 1471 Btuh
Internal gain		Occupants 5	Btuh/occupant X 230	Appliance +	3400	Load 4550 Btuh
					Sensible Envelope Load:	17992 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)				(DGM of 0.449)	8069 Btuh
					Sensible Load All Zones	26061 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Kaushikkumar & Anitaben Patel
SW Greenwood Terrace
Lake City, FL

Project Title:
240072 Patel

Climate:FL_GAINESVILLE_REGIONAL_A

2024-01-19

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	17992 Btuh
	Sensible Duct Load	8069 Btuh
	Total Sensible Zone Loads	26061 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	26061 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2440 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1595 Btuh
	Latent occupant gain (5.0 people @ 200 Btuh per person)	1000 Btuh
	Latent other gain	0 Btuh
	Latent total gain	5035 Btuh
	TOTAL GAIN	31096 Btuh

EQUIPMENT

1. Central Unit	#	38000 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