

Residential System Sizing Calculation

Summary

Terry Wayne
SW Kimberly Lane
Lake City, FL

Project Title:
241103 Wayne Res

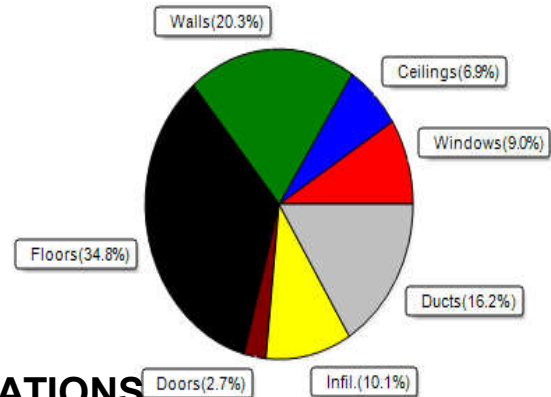
2024-10-17

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	27968	Btuh	Total cooling load calculation	25407	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	107.3	30000	Sensible (SHR = 0.75)	103.0	22500
Heat Pump + Auxiliary(0.0kW)	107.3	30000	Latent	210.0	7500
			Total (Electric Heat Pump)	118.1	30000

WINTER CALCULATIONS

Winter Heating Load (for 1854 sqft)

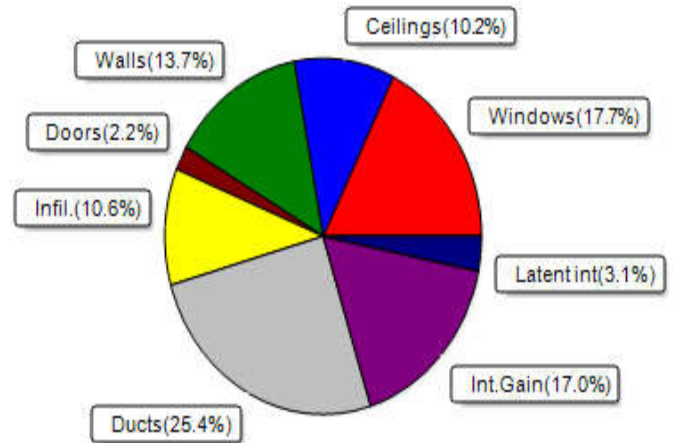
Load component	Load	
Window total	209 sqft	2512 Btuh
Wall total	1599 sqft	5676 Btuh
Door total	47 sqft	747 Btuh
Ceiling total	1900 sqft	1929 Btuh
Floor total	1854 sqft	9723 Btuh
Infiltration	65 cfm	2837 Btuh
Duct loss		4544 Btuh
Subtotal		27968 Btuh
Ventilation	Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS		27968 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1854 sqft)

Load component	Load	
Window total	209 sqft	4495 Btuh
Wall total	1599 sqft	3483 Btuh
Door total	47 sqft	560 Btuh
Ceiling total	1900 sqft	2604 Btuh
Floor total		0 Btuh
Infiltration	49 cfm	1011 Btuh
Internal gain		4320 Btuh
Duct gain		5362 Btuh
Sens.Ventilation	Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load		0 Btuh
Total sensible gain		21835 Btuh
Latent gain(ducts)		1095 Btuh
Latent gain(infiltration)		1677 Btuh
Latent gain(ventilation)		0 Btuh
Latent gain(internal/occupants/other)		800 Btuh
Total latent gain		3572 Btuh
TOTAL HEAT GAIN		25407 Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2024-10-17

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Terry Wayne
SW Kimberly Lane
Lake City, FL

Project Title:
241103 Wayne Res
Building Type: User

2024-10-17

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 0.22	Metal	0.30	N	108.0		12.0	1296 Btuh
2	2, NFRC 0.22	Metal	0.30	E	13.3		12.0	160 Btuh
3	2, NFRC 0.22	Metal	0.30	N	30.0		12.0	360 Btuh
4	2, NFRC 0.22	Metal	0.30	E	4.0		12.0	48 Btuh
5	2, NFRC 0.22	Metal	0.30	S	24.0		12.0	288 Btuh
6	2, NFRC 0.22	Metal	0.30	S	24.0		12.0	288 Btuh
7	2, NFRC 0.22	Metal	0.30	W	6.0		12.0	72 Btuh
	Window Total				209.3(sqft)			2512 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	180		3.55	639 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	16		3.55	57 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	150		3.55	533 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	173		3.55	612 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	27		3.55	96 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	55		3.55	196 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	27		3.55	96 Btuh
8	Frame - Wood	- Adj	(0.089)	13.0/0.0	216		3.55	767 Btuh
9	Frame - Wood	- Adj	(0.089)	13.0/0.0	19		3.55	67 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	34		3.55	121 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	72		3.55	256 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	66		3.55	234 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	54		3.55	192 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	84		3.55	298 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	426		3.55	1512 Btuh
	Wall Total				1599(sqft)			5676 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		7		16.0	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				47(sqft)			747Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/D/Shing		(0.025)	38.0/0.0	1854		1.0	1882 Btuh
2	Knee wall/D/Shing		(0.025)	38.0/0.0	46		1.0	47 Btuh
	Ceiling Total				1900(sqft)			1929Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	206.0 ft(perim.)		47.2	9723 Btuh
	Floor Total				1854 sqft			9723 Btuh
Envelope Subtotal:								20587 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Terry Wayne
SW Kimberly Lane
Lake City, FL

Project Title:
241103 Wayne Res
Building Type: User

2024-10-17

Infiltration	Type Natural	Wholehouse ACH 0.23	Volume(cuft) 16816	Wall Ratio 1.00	CFM= 64.7	2837 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)				(DLM of 0.194)	4544 Btuh
All Zones	Sensible Subtotal All Zones					27968 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	27968 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	27968 Btuh

EQUIPMENT

1. Electric Heat Pump	#	30000 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

Terry Wayne
SW Kimberly Lane
Lake City, FL

Project Title:
241103 Wayne Res

2024-10-17

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	0.22, 0.30	No	No	N	1.5ft	1.0ft	108.0	26.4	81.6	10	21	2024	Btuh	
2	2 NFRC	0.22, 0.30	No	No	E	1.5ft	1.0ft	13.3	0.0	13.3	10	20	273	Btuh	
3	2 NFRC	0.22, 0.30	No	No	N	1.5ft	1.0ft	30.0	8.8	21.2	10	21	546	Btuh	
4	2 NFRC	0.22, 0.30	No	No	E	1.5ft	1.0ft	4.0	0.0	4.0	10	20	82	Btuh	
5	2 NFRC	0.22, 0.30	No	No	S	7.0ft	0.5ft	24.0	0.0	24.0	10	20	492	Btuh	
6	2 NFRC	0.22, 0.30	No	No	S	1.5ft	4.0ft	24.0	0.0	24.0	10	20	492	Btuh	
7	2 NFRC	0.22, 0.30	No	No	W	1.5ft	1.0ft	6.0	2.9	3.1	10	21	96	Btuh	
	Excursion													491	Btuh
	Window Total								209 (sqft)					4495 Btuh	
Walls	Type	U-Value	R-Value	Area(sqft)		HTM	Load								
			Cav/Sheath												
1	Frame - Wood - Ext	0.09	13.0/0.0	180.0	2.3	407	Btuh								
2	Frame - Wood - Ext	0.09	13.0/0.0	16.0	2.3	36	Btuh								
3	Frame - Wood - Ext	0.09	13.0/0.0	150.0	2.3	340	Btuh								
4	Frame - Wood - Ext	0.09	13.0/0.0	172.5	2.3	390	Btuh								
5	Frame - Wood - Ext	0.09	13.0/0.0	27.0	2.3	61	Btuh								
6	Frame - Wood - Ext	0.09	13.0/0.0	55.3	2.3	125	Btuh								
7	Frame - Wood - Ext	0.09	13.0/0.0	27.0	2.3	61	Btuh								
8	Frame - Wood - Adj	0.09	13.0/0.0	216.0	1.7	364	Btuh								
9	Frame - Wood - Adj	0.09	13.0/0.0	19.0	1.7	32	Btuh								
10	Frame - Wood - Ext	0.09	13.0/0.0	34.0	2.3	77	Btuh								
11	Frame - Wood - Ext	0.09	13.0/0.0	72.0	2.3	163	Btuh								
12	Frame - Wood - Ext	0.09	13.0/0.0	66.0	2.3	149	Btuh								
13	Frame - Wood - Ext	0.09	13.0/0.0	54.0	2.3	122	Btuh								
14	Frame - Wood - Ext	0.09	13.0/0.0	84.0	2.3	190	Btuh								
15	Frame - Wood - Ext	0.09	13.0/0.0	426.0	2.3	964	Btuh								
	Wall Total			1599 (sqft)			3483 Btuh								
Doors	Type	Area (sqft)	HTM	Load											
1	Insulated - Exterior	6.7	12.0	80	Btuh										
2	Insulated - Garage	20.0	12.0	240	Btuh										
3	Insulated - Exterior	20.0	12.0	240	Btuh										
	Door Total			560 Btuh											
				47 (sqft)											
Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load									
1	Vented Attic/DarkShingle	0.025	38.0/0.0	1854.0	1.37	2541	Btuh								
2	Knee wall to attic/DarkShingle	0.025	38.0/0.0	46.0	1.37	63	Btuh								
	Ceiling Total			1900 (sqft)		2604 Btuh									
Floors	Type	R-Value	Size	HTM	Load										
1	Slab On Grade	0.0	1854 (ft-perimeter)	0.0	0 Btuh										
	Floor Total		1854.0 (sqft)		0 Btuh										
Envelope Subtotal:						11142 Btuh									

Manual J Summer Calculations

Residential Load - Component Details (continued)

Terry Wayne
SW Kimberly Lane
Lake City, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
241103 Wayne Res

2024-10-17

Infiltration	Type Natural	Average ACH 0.17	Volume(cuft) 16816	Wall Ratio 1	CFM= 48.5	Load 1011 Btuh
Internal gain		Occupants 4	Btuh/occupant X 230	Appliance +	3400	Load 4320 Btuh
	Sensible Envelope Load:					16473 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.326)					5362 Btuh
	Sensible Load All Zones					21835 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Terry Wayne
SW Kimberly Lane
Lake City, FL

Project Title:
241103 Wayne Res

Climate:FL_GAINESVILLE_REGIONAL_A

2024-10-17

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	16473 Btuh
	Sensible Duct Load	5362 Btuh
	Total Sensible Zone Loads	21835 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	21835 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1677 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1095 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3572 Btuh
	TOTAL GAIN	25407 Btuh

EQUIPMENT

1. Central Unit	#	30000 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