

Residential System Sizing Calculation

Summary

Terry Canter

Project Title:
Canter Residence

Lake City, FL

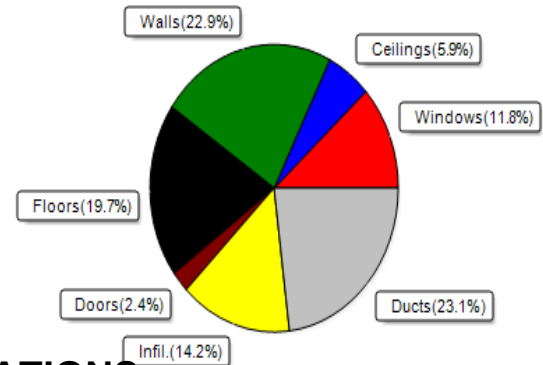
11/6/2024

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M)			
Humidity data: Interior RH (50%) Outdoor wet bulb (79F) Humidity difference(54gr.)			
Winter design temperature(MJ8 99%/Cu)33 F		Summer design temperature(MJ8 99%/Cu)99 F	
Winter setpoint 70 F		Summer setpoint 75 F	
Winter temperature difference 37 F		Summer temperature difference 24 F	
Total heating load calculation	34131 Btuh	Total cooling load calculation	37783 Btuh
Submitted heating capacity % of calc Btuh		Submitted cooling capacity % of calc Btuh	
Total (Electric Heat Pump) 160.0 54600		Sensible (SHR = 0.70) 214.5 65940	
Heat Pump + Auxiliary(0.0kW) 160.0 54600		Latent 400.9 28260	
		Total (Electric Heat Pump) 249.3 94200	

WINTER CALCULATIONS

Winter Heating Load (for 2844 sqft)

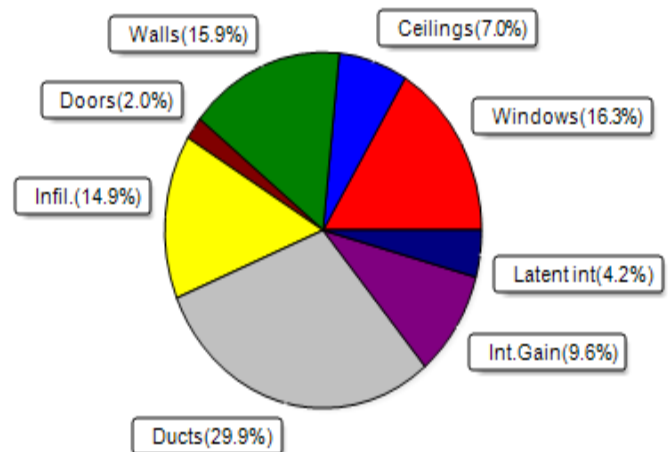
Load component		Load	
Window total	302 sqft	4023	Btuh
Wall total	2546 sqft	7829	Btuh
Door total	48 sqft	817	Btuh
Ceiling total	2135 sqft	2005	Btuh
Floor total	See detail report	6724	Btuh
Infiltration	120 cfm	4848	Btuh
Duct loss		7886	Btuh
Subtotal		34131	Btuh
Ventilation Ex:0 cfm; Sup:0 cfm		0	Btuh
TOTAL HEAT LOSS		34131	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2844 sqft)

Load component		Load	
Window total	302 sqft	6176	Btuh
Wall total	2546 sqft	5998	Btuh
Door total	48 sqft	773	Btuh
Ceiling total	2135 sqft	2655	Btuh
Floor total		0	Btuh
Infiltration	90 cfm	2358	Btuh
Internal gain		3640	Btuh
Duct gain		9134	Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm		0	Btuh
Blower Load		0	Btuh
Total sensible gain		30734	Btuh
Latent gain(ducts)		2169	Btuh
Latent gain(infiltration)		3280	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1600	Btuh
Total latent gain		7049	Btuh
TOTAL HEAT GAIN		37783	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: 11 / 06 / 2024

W. C. M.

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Terry Canter
Lake City, FL

Project Title:
Canter Residence
Building Type: User

11/6/2024

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 37.0 °F (MJ8 99%/Cu)
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	Vinyl	0.36	N	20.0		13.3	266 Btuh
2	2, NFRC 0.25	Vinyl	0.36	N	15.0		13.3	200 Btuh
3	2, NFRC 0.25	Vinyl	0.36	W	45.0		13.3	599 Btuh
4	2, NFRC 0.25	Vinyl	0.36	S	36.0		13.3	480 Btuh
5	2, NFRC 0.25	Metal	0.36	S	96.0		13.3	1279 Btuh
6	2, NFRC 0.25	Vinyl	0.36	N	30.0		13.3	400 Btuh
7	2, NFRC 0.25	Vinyl	0.36	W	30.0		13.3	400 Btuh
8	2, NFRC 0.25	Vinyl	0.36	E	30.0		13.3	400 Btuh
Window Total					302.0(sqft)			4023 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.077)	19.0/0.0	203		2.86	579 Btuh
2	Frame - Wood	- Ext	(0.077)	19.0/0.0	120		2.86	343 Btuh
3	Frame - Wood	- Ext	(0.077)	19.0/0.0	295		2.86	843 Btuh
4	Frame - Wood	- Ext	(0.077)	19.0/0.0	99		2.86	283 Btuh
5	Frame - Wood	- Ext	(0.077)	19.0/0.0	20		2.86	57 Btuh
6	Frame - Wood	- Ext	(0.077)	19.0/0.0	151		2.86	431 Btuh
7	Frame - Wood	- Ext	(0.077)	19.0/0.0	20		2.86	57 Btuh
8	Frame - Wood	- Ext	(0.077)	19.0/0.0	30		2.86	86 Btuh
9	Frame - Wood	- Adj	(0.077)	19.0/0.0	316		2.86	903 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	111		3.28	366 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	123		3.28	403 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	108		3.28	355 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	130		3.28	427 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	109		3.28	359 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	216		3.28	709 Btuh
16	Frame - Wood	- Ext	(0.089)	13.0/0.0	130		3.28	427 Btuh
17	Frame - Wood	- Ext	(0.089)	13.0/0.0	243		3.28	797 Btuh
18	Frame - Wood	- Ext	(0.089)	13.0/0.0	123		3.28	403 Btuh
Wall Total					2546(sqft)			7829 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		24		17.0	408 Btuh
2	Insulated - Garage, n		(0.460)		24		17.0	408 Btuh
Door Total					48(sqft)			817Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/D/Metal		(0.025)	38.0/0.0	594		0.94	558 Btuh
2	Flat ceil/D/Metal		(0.025)	38.0/0.0	1541		0.94	1447 Btuh
Ceiling Total					2135(sqft)			2005Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	154.0 ft(perim.)		43.7	6724 Btuh
2	Interior		(1.180)	19.0	1401.0 sqft		0.0	0 Btuh
Floor Total					2844 sqft			6724 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Terry Canter
Lake City, FL

Project Title:
Canter Residence
Building Type: User

11/6/2024

	Envelope Subtotal:	21397 Btuh
Infiltration	Type Wholehouse ACH Volume(cuft) Wall Ratio CFM= Natural 0.30 24195 1.00 119.7	4848 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.300)	7886 Btuh
All Zones	Sensible Subtotal All Zones	34131 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm) Total Heat Loss	34131 Btuh 0 Btuh 34131 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	54600 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 Canter

Project Title:
Canter Residence

Lake City, FL

11/6/2024

Reference City: Gainesville, FL (Defaults)
Humidity difference: 54gr.

Temperature Difference: 24.0F(MJ8 99%/Cu)
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, 0.36	No	No	N		9.5ft.	1.0ft.	20.0	0.0	20.0	14	14	278 Btuh	
2	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	1.0ft.	15.0	0.0	15.0	14	14	208 Btuh	
3	2 NFRC	0.25, 0.36	No	No	W		1.0ft.	5.0ft.	45.0	0.0	45.0	14	33	1473 Btuh	
4	2 NFRC	0.25, 0.36	No	No	S		1.5ft.	1.0ft.	36.0	36.0	0.0	14	16	500 Btuh	
5	2 NFRC	0.25, 0.36	No	No	S		11.5ft.	1.0ft.	96.0	96.0	0.0	14	16	1334 Btuh	
6	2 NFRC	0.25, 0.36	No	No	N		1.0ft.	3.0ft.	30.0	0.0	30.0	14	14	417 Btuh	
7	2 NFRC	0.25, 0.36	No	No	W		1.0ft.	4.0ft.	30.0	0.0	30.0	14	33	982 Btuh	
8	2 NFRC	0.25, 0.36	No	No	E		1.0ft.	4.0ft.	30.0	0.0	30.0	14	33	982 Btuh	
	Window Total									302 (sqft)					6176 Btuh
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load		
								Cav/Sheath							
1	Frame - Wood - Ext						0.08	19.0/0.0	202.7		2.0		413 Btuh		
2	Frame - Wood - Ext						0.08	19.0/0.0	120.0		2.0		245 Btuh		
3	Frame - Wood - Ext						0.08	19.0/0.0	295.0		2.0		602 Btuh		
4	Frame - Wood - Ext						0.08	19.0/0.0	99.0		2.0		202 Btuh		
5	Frame - Wood - Ext						0.08	19.0/0.0	20.0		2.0		41 Btuh		
6	Frame - Wood - Ext						0.08	19.0/0.0	150.7		2.0		307 Btuh		
7	Frame - Wood - Ext						0.08	19.0/0.0	20.0		2.0		41 Btuh		
8	Frame - Wood - Ext						0.08	19.0/0.0	30.0		2.0		61 Btuh		
9	Frame - Wood - Adj						0.08	19.0/0.0	316.0		1.9		586 Btuh		
10	Frame - Wood - Ext						0.09	13.0/0.0	111.3		2.7		301 Btuh		
11	Frame - Wood - Ext						0.09	13.0/0.0	122.7		2.7		332 Btuh		
12	Frame - Wood - Ext						0.09	13.0/0.0	108.0		2.7		292 Btuh		
13	Frame - Wood - Ext						0.09	13.0/0.0	130.0		2.7		352 Btuh		
14	Frame - Wood - Ext						0.09	13.0/0.0	109.3		2.7		296 Btuh		
15	Frame - Wood - Ext						0.09	13.0/0.0	216.0		2.7		585 Btuh		
16	Frame - Wood - Ext						0.09	13.0/0.0	130.0		2.7		352 Btuh		
17	Frame - Wood - Ext						0.09	13.0/0.0	242.7		2.7		657 Btuh		
18	Frame - Wood - Ext						0.09	13.0/0.0	122.7		2.7		332 Btuh		
	Wall Total									2546 (sqft)					5998 Btuh
Doors	Type								Area (sqft)		HTM		Load		
1	Insulated - Exterior								24.0		16.1		386 Btuh		
2	Insulated - Garage								24.0		16.1		386 Btuh		
	Door Total									48 (sqft)					773 Btuh
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)		HTM		Load		
1	Vented Attic/DarkMetal/RB						0.025	38.0/0.0	594.0		1.24		739 Btuh		
2	Vented Attic/DarkMetal/RB						0.025	38.0/0.0	1541.0		1.24		1916 Btuh		
	Ceiling Total									2135 (sqft)					2655 Btuh
Floors	Type						R-Value		Size		HTM		Load		
1	Slab On Grade						0.0		1443 (ft-perimeter)		0.0		0 Btuh		
2	Interior						19.0		1401 (sqft)		0.0		0 Btuh		
	Floor Total									2844.0 (sqft)					0 Btuh
	Envelope Subtotal:													15602 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Terry Canter

Project Title:
Canter Residence

Climate:FL_GAINESVILLE_REGIONAL_A

Lake City, FL

11/6/2024

Infiltration	Type Natural	Average ACH 0.22	Volume(cuft) 24195	Wall Ratio 1	CFM= 89.8	Load 2358 Btuh
Internal gain		Occupants 8	Btuh/occupant X 230	Appliance +	1800	Load 3640 Btuh
	Sensible Envelope Load:					21600 Btuh
Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.423)					9134 Btuh
	Sensible Load All Zones					30734 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Terry Canter
Lake City, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Canter Residence

11/6/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	21600 Btuh
	Sensible Duct Load	9134 Btuh
	Total Sensible Zone Loads	30734 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	30734 Btuh
	Latent infiltration gain (for 54 gr. humidity difference)	3280 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	2169 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	7049 Btuh
	TOTAL GAIN	37783 Btuh

EQUIPMENT

1. Central Unit	#	94200 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