

Residential System Sizing Calculation

Summary

Project Title:
Caleb Bundy

, FL

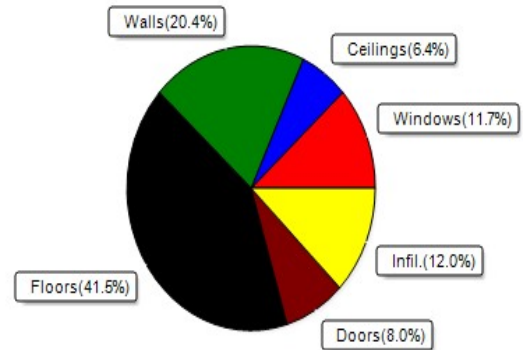
2/27/2024

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	22865 Btuh	Total cooling load calculation	18365 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	209.9 48000	Sensible (SHR = 0.75)	237.8 36000
Heat Pump + Auxiliary(0.0kW)	209.9 48000	Latent	372.3 12000
		Total (Electric Heat Pump)	261.4 48000

WINTER CALCULATIONS

Winter Heating Load (for 2423 sqft)

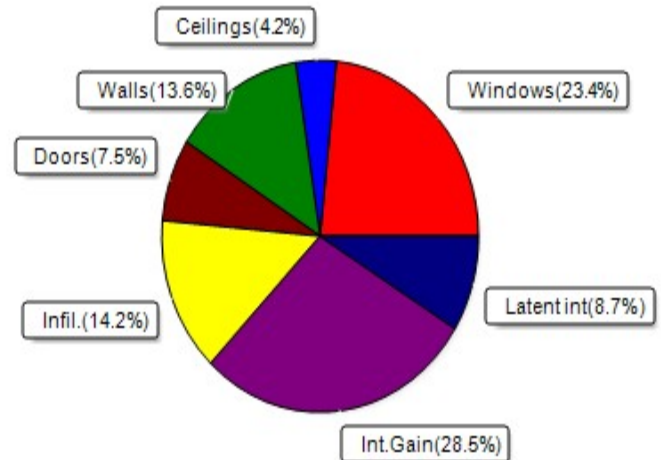
Load component	Load
Window total 203 sqft	2680 Btuh
Wall total 1506 sqft	4655 Btuh
Door total 100 sqft	1840 Btuh
Ceiling total 2423 sqft	1457 Btuh
Floor total 2423 sqft	9487 Btuh
Infiltration 63 cfm	2746 Btuh
Duct loss	0 Btuh
Subtotal	22865 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	22865 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2423 sqft)

Load component	Load
Window total 203 sqft	4290 Btuh
Wall total 1506 sqft	2490 Btuh
Door total 100 sqft	1380 Btuh
Ceiling total 2423 sqft	764 Btuh
Floor total	0 Btuh
Infiltration 47 cfm	978 Btuh
Internal gain	5240 Btuh
Duct gain	0 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	15142 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	1623 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1600 Btuh
Total latent gain	3223 Btuh
TOTAL HEAT GAIN	18365 Btuh



8th Edition



EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

2-27-24

EnergyGauge® / USRCZB v8.0.00

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Caleb Bundy

, FL

2/27/2024

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	0.26, 0.33	No	No	N	11.5f	2.3ft	18.0	0.0	18.0	12	12	211	Btuh
2	2 NFRC	0.26, 0.33	No	No	E	1.5ft	2.3ft	30.0	0.0	30.0	12	31	940	Btuh
3	2 NFRC	0.26, 0.33	No	No	E	1.5ft	2.3ft	6.0	0.0	6.0	12	31	188	Btuh
4	2 NFRC	0.26, 0.33	No	No	S	1.5ft	2.3ft	15.0	15.0	0.0	12	14	176	Btuh
5	2 NFRC	0.26, 0.33	No	No	S	9.5ft	2.3ft	45.0	45.0	0.0	12	14	528	Btuh
6	2 NFRC	0.26, 0.33	No	No	S	1.5ft	2.3ft	30.0	30.0	0.0	12	14	352	Btuh
7	2 NFRC	0.26, 0.33	No	No	W	1.5ft	2.3ft	30.0	0.0	30.0	12	31	940	Btuh
8	2 NFRC	0.26, 0.33	No	No	W	1.5ft	2.3ft	25.0	0.0	25.0	12	31	783	Btuh
9	2 NFRC	0.26, 0.33	No	No	W	1.5ft	2.3ft	4.0	0.0	4.0	12	31	125	Btuh
	Excursion												45	Btuh
	Window Total							203 (sqft)					4290 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load				
1	Frame - Wood - Ext		0.08		19.0/0.0		485.0		1.7		802	Btuh		
2	Frame - Wood - Ext		0.08		19.0/0.0		325.5		1.7		538	Btuh		
3	Frame - Wood - Ext		0.08		19.0/0.0		111.0		1.7		184	Btuh		
4	Frame - Wood - Ext		0.08		19.0/0.0		206.0		1.7		341	Btuh		
5	Frame - Wood - Ext		0.08		19.0/0.0		96.0		1.7		159	Btuh		
6	Frame - Wood - Ext		0.08		19.0/0.0		282.5		1.7		467	Btuh		
	Wall Total						1506 (sqft)				2490 Btuh			
Doors	Type	U-Value		R-Value		Area (sqft)		HTM		Load				
1	Insulated - Exterior						40.0		13.8		552	Btuh		
2	Insulated - Exterior						40.0		13.8		552	Btuh		
3	Insulated - Exterior						20.0		13.8		276	Btuh		
	Door Total						100 (sqft)				1380 Btuh			
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load				
1	SnglAsmb w airsp/Light/Metal		0.015		30.0/40.0		2423.0		0.32		764	Btuh		
	Ceiling Total						2423 (sqft)				764 Btuh			
Floors	Type	U-Value		R-Value		Size		HTM		Load				
1	Slab On Grade				0.0		2423 (ft-perimeter)		0.0		0	Btuh		
	Floor Total						2423.0 (sqft)				0 Btuh			
	Envelope Subtotal:											8924 Btuh		
Infiltration	Type	Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load				
	Natural													
			0.13		21807		1		46.9		978	Btuh		
Internal gain		Occupants		Btuh/occupant		Appliance		Load						
			8		X 230		+		3400		5240	Btuh		
	Sensible Envelope Load:											15142 Btuh		
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)											0 Btuh		
	Sensible Load All Zones											15142 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title:
Caleb Bundy

Climate:FL_GAINESVILLE_REGIONAL_A

, FL

2/27/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	15142 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	15142 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	15142 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1623 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	3223 Btuh
	TOTAL GAIN	18365 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:
Caleb Bundy
Building Type: User

, FL

2/27/2024

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 0.26	Vinyl	0.33	N	18.0		13.2	238 Btuh
2	2, NFRC 0.26	Vinyl	0.33	E	30.0		13.2	396 Btuh
3	2, NFRC 0.26	Vinyl	0.33	E	6.0		13.2	79 Btuh
4	2, NFRC 0.26	Vinyl	0.33	S	15.0		13.2	198 Btuh
5	2, NFRC 0.26	Vinyl	0.33	S	45.0		13.2	594 Btuh
6	2, NFRC 0.26	Vinyl	0.33	S	30.0		13.2	396 Btuh
7	2, NFRC 0.26	Vinyl	0.33	W	30.0		13.2	396 Btuh
8	2, NFRC 0.26	Vinyl	0.33	W	25.0		13.2	330 Btuh
9	2, NFRC 0.26	Vinyl	0.33	W	4.0		13.2	53 Btuh
Window Total					203.0(sqft)			2680 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.077)	19.0/0.0	485		3.09	1499 Btuh
2	Frame - Wood	- Ext	(0.077)	19.0/0.0	326		3.09	1006 Btuh
3	Frame - Wood	- Ext	(0.077)	19.0/0.0	111		3.09	343 Btuh
4	Frame - Wood	- Ext	(0.077)	19.0/0.0	206		3.09	637 Btuh
5	Frame - Wood	- Ext	(0.077)	19.0/0.0	96		3.09	297 Btuh
6	Frame - Wood	- Ext	(0.077)	19.0/0.0	283		3.09	873 Btuh
Wall Total					1506(sqft)			4655 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		40		18.4	736 Btuh
2	Insulated - Exterior, n		(0.460)		40		18.4	736 Btuh
3	Insulated - Exterior, n		(0.460)		20		18.4	368 Btuh
Door Total					100(sqft)			1840Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Single as/L/Metal		(0.015)	30.0/40.0	2423		0.60	1457 Btuh
Ceiling Total					2423(sqft)			1457Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	201.0 ft(perim.)		47.2	9487 Btuh
Floor Total					2423 sqft			9487 Btuh
	Envelope Subtotal:							20119 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.17	21807	1.00	62.6		2746 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)							0 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Caleb Bundy
Building Type: User

2/27/2024

All Zones	Sensible Subtotal All Zones	22865 Btuh
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WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	22865 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	22865 Btuh

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