

Residential System Sizing Calculation

Summary

Chris & Weidus Shouse

Project Title:
220443 Shouse

Lake City, FL

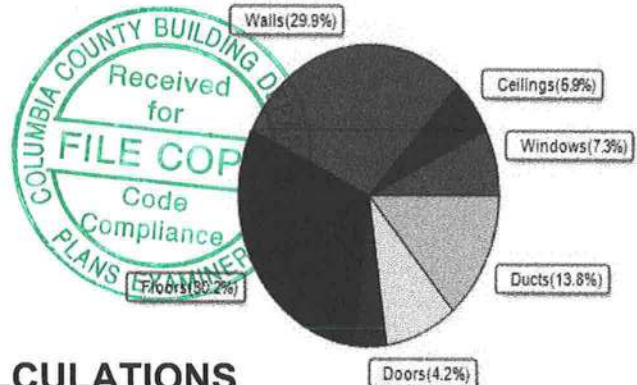
2022-04-27

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 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	23120 Btuh	Total cooling load calculation	20486 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	108.1 25000	Sensible (SHR = 0.75)	106.2 18750
Heat Pump + Auxiliary(0.0kW)	108.1 25000	Latent	221.3 6250
		Total (Electric Heat Pump)	122.0 25000

WINTER CALCULATIONS

Winter Heating Load (for 1344 sqft)

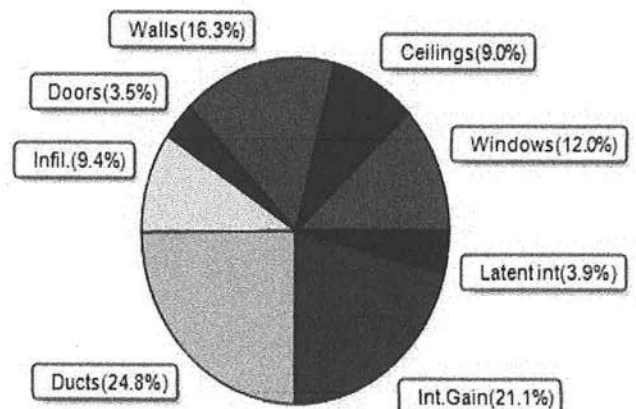
Load component		Load	
Window total	131 sqft	1677 Btuh	
Wall total	1141 sqft	6914 Btuh	
Door total	60 sqft	960 Btuh	
Ceiling total	1344 sqft	1364 Btuh	
Floor total	1344 sqft	6986 Btuh	
Infiltration	46 cfm	2031 Btuh	
Duct loss		3188 Btuh	
Subtotal		23120 Btuh	
Ventilation	0 cfm	0 Btuh	
TOTAL HEAT LOSS		23120 Btuh	



SUMMER CALCULATIONS

Summer Cooling Load (for 1344 sqft)

Load component		Load	
Window total	131 sqft	2459 Btuh	
Wall total	1141 sqft	3336 Btuh	
Door total	60 sqft	720 Btuh	
Ceiling total	1344 sqft	1842 Btuh	
Floor total		0 Btuh	
Infiltration	35 cfm	724 Btuh	
Internal gain		4320 Btuh	
Duct gain		4260 Btuh	
Sens. Ventilation	0 cfm	0 Btuh	
Blower Load		0 Btuh	
Total sensible gain		17661 Btuh	
Latent gain(ducts)		824 Btuh	
Latent gain(infiltration)		1201 Btuh	
Latent gain(ventilation)		0 Btuh	
Latent gain(internal/occupants/other)		800 Btuh	
Total latent gain		2825 Btuh	
TOTAL HEAT GAIN		20486 Btuh	



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2022-04-27

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Chris & Weidus Shouse

Lake City, FL

Project Title:
220443 Shouse
Building Type: User

2022-04-27

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 F (TMY3 99%)

Component Loads for Whole House								
Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.22	Vinyl	0.32	N	53.3		12.8	683 Btuh
2	2, NFRC 0.22	Vinyl	0.32	N	27.0		12.8	346 Btuh
3	2, NFRC 0.22	Vinyl	0.32	E	6.7		12.8	85 Btuh
4	2, NFRC 0.22	Vinyl	0.32	E	4.0		12.8	51 Btuh
5	2, NFRC 0.22	Vinyl	0.32	S	30.0		12.8	384 Btuh
6	2, NFRC 0.22	Vinyl	0.32	S	6.0		12.8	77 Btuh
7	2, NFRC 0.22	Vinyl	0.32	W	4.0		12.8	51 Btuh
	Window Total				131.0(sqft)			1677 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Conc Blk,Hollow - Ext		(0.151)	4.0/0.0	271		6.06	1642 Btuh
2	Conc Blk,Hollow - Ext		(0.151)	4.0/0.0	264		6.06	1600 Btuh
3	Conc Blk,Hollow - Ext		(0.151)	4.0/0.0	322		6.06	1951 Btuh
4	Conc Blk,Hollow - Ext		(0.151)	4.0/0.0	284		6.06	1721 Btuh
	Wall Total				1141(sqft)			6914 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		27		16.0	427 Btuh
2	Insulated - Exterior, n		(0.400)		13		16.0	213 Btuh
3	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
	Door Total				60(sqft)			960Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/D/Metal		(0.025)	38.0/0.0	1344		1.0	1364 Btuh
	Ceiling Total				1344(sqft)			1364Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	148.0 ft(perim.)		47.2	6986 Btuh
	Floor Total				1344 sqft			6986 Btuh
	Envelope Subtotal:							17901 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.23	12096	1.00	46.4		2031 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)					(DLM of 0.160)		3188 Btuh
All Zones	Sensible Subtotal All Zones							23120 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Chris & Weidus Shouse

Lake City, FL

Project Title:
220443 Shouse
Building Type: User

2022-04-27

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	23120 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	23120 Btuh

EQUIPMENT

1. Electric Heat Pump	#	25000 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

Chris & Weidus Shouse

Project Title:
220443 Shouse

Lake City, FL

2022-04-27

Reference City: Gainesville, FL

Temperature Difference: 19.0F(TMY3 99%)

Humidity difference: 51gr.

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, 0.32	No	No	N		13.5f	1.3ft	53.3	53.3	0.0	11	27	571	Btuh
2	2 NFRC	0.22, 0.32	No	No	N		13.5f	1.3ft	27.0	27.0	0.0	11	27	289	Btuh
3	2 NFRC	0.22, 0.32	No	No	E		1.5ft	9.0ft	6.7	0.0	6.7	11	11	71	Btuh
4	2 NFRC	0.22, 0.32	No	No	E		1.5ft	6.0ft	4.0	0.0	4.0	11	11	43	Btuh
5	2 NFRC	0.22, 0.32	No	No	S		7.5ft	1.3ft	30.0	29.3	0.7	11	27	332	Btuh
6	2 NFRC	0.22, 0.32	No	No	S		7.5ft	1.3ft	6.0	6.0	0.0	11	27	64	Btuh
7	2 NFRC	0.22, 0.32	No	No	W		1.5ft	6.0ft	4.0	4.0	0.0	11	12	43	Btuh
Excursion														1045	Btuh
Window Total									131 (sqft)					2459	Btuh
Walls	Type		U-Value		R-Value		Area(sqft)		HTM		Load				
					Cav/Sheath										
1	Concrete Blk,Hollow - Ext		0.15		4.0/0.0		271.0		2.9		792		Btuh		
2	Concrete Blk,Hollow - Ext		0.15		4.0/0.0		264.0		2.9		772		Btuh		
3	Concrete Blk,Hollow - Ext		0.15		4.0/0.0		322.0		2.9		941		Btuh		
4	Concrete Blk,Hollow - Ext		0.15		4.0/0.0		284.0		2.9		830		Btuh		
Wall Total							1141 (sqft)				3336		Btuh		
Doors	Type		Area (sqft)		HTM		Load								
1	Insulated - Exterior		26.7		12.0		320		Btuh						
2	Insulated - Exterior		13.3		12.0		160		Btuh						
3	Insulated - Exterior		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/DarkMetal		0.025		38.0/0.0		1344.0		1.37		1842		Btuh		
Ceiling Total							1344 (sqft)				1842		Btuh		
Floors	Type		R-Value		Size		HTM		Load						
1	Slab On Grade		0.0		1344 (ft-perimeter)		0.0		0		Btuh				
Floor Total							1344.0 (sqft)				0		Btuh		
Envelope Subtotal:														8357	Btuh
Infiltration	Type		Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load				
	Natural		0.17		12096		1		34.8		724 <td>Btuh</td>		Btuh		
Internal gain	Occupants		Btuh/occupant		Appliance		Load								
	4		X 230		+		3400 <td colspan="2">4320</td> <td colspan="2">Btuh</td>		4320		Btuh				
Sensible Envelope Load:														13401	Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)										(DGM of 0.318)		4260	Btuh	
Sensible Load All Zones														17661	Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Chris & Weidus Shouse

Project Title:
220443 Shouse

Climate:FL_GAINESVILLE_REGIONAL_A

Lake City, FL

2022-04-27

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	13401 Btuh
	Sensible Duct Load	4260 Btuh
	Total Sensible Zone Loads	17661 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	17661 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1201 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	824 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2825 Btuh
	TOTAL GAIN	20486 Btuh

EQUIPMENT

1. Central Unit	#	25000 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