

Residential System Sizing Calculation

Rachel Rice
SW Coyote Circle
Lake City, FL

Summary

Project Title:
221291 Rice



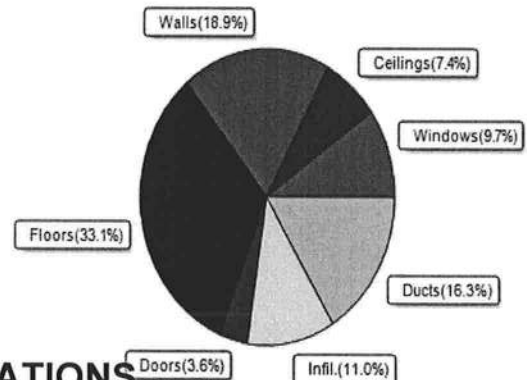
2022-11-08

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	24525 Btuh	Total cooling load calculation	20060 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	110.1 27000	Sensible (SHR = 0.75)	120.5 20250
Heat Pump + Auxiliary(0.0kW)	110.1 27000	Latent	207.7 6750
		Total (Electric Heat Pump)	134.6 27000

WINTER CALCULATIONS

Winter Heating Load (for 1784 sqft)

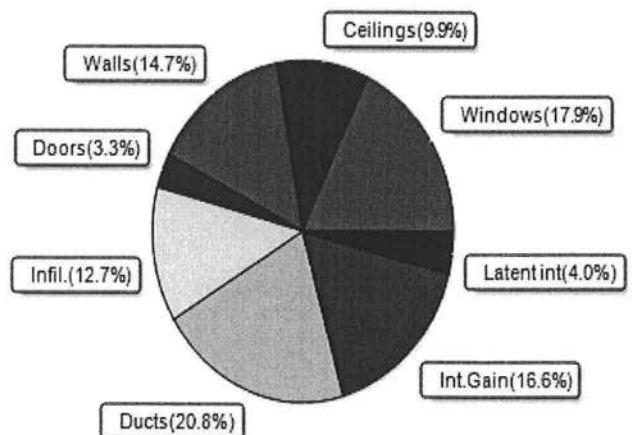
Load component		Load	
Window total	187 sqft	2387 Btuh	
Wall total	1306 sqft	4637 Btuh	
Door total	56 sqft	889 Btuh	
Ceiling total	1784 sqft	1811 Btuh	
Floor total	1784 sqft	8118 Btuh	
Infiltration	62 cfm	2696 Btuh	
Duct loss		3987 Btuh	
Subtotal		24525 Btuh	
Ventilation	0 cfm	0 Btuh	
TOTAL HEAT LOSS		24525 Btuh	



SUMMER CALCULATIONS

Summer Cooling Load (for 1784 sqft)

Load component		Load	
Window total	187 sqft	3591 Btuh	
Wall total	1306 sqft	2956 Btuh	
Door total	56 sqft	667 Btuh	
Ceiling total	1784 sqft	1992 Btuh	
Floor total		0 Btuh	
Infiltration	46 cfm	960 Btuh	
Internal gain		3320 Btuh	
Duct gain		3325 Btuh	
Sens. Ventilation	0 cfm	0 Btuh	
Blower Load		0 Btuh	
Total sensible gain		16811 Btuh	
Latent gain(ducts)		856 Btuh	
Latent gain(infiltration)		1594 Btuh	
Latent gain(ventilation)		0 Btuh	
Latent gain(internal/occupants/other)		800 Btuh	
Total latent gain		3249 Btuh	
TOTAL HEAT GAIN		20060 Btuh	



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2022-11-08

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Rachel Rice
SW Coyote Circle
Lake City, FL

Project Title:
221291 Rice
Building Type: User

2022-11-08

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	None	0.32	N	16.0		12.8	205 Btuh
2	2, NFRC 0.22	Metal	0.32	E	16.0		12.8	205 Btuh
3	2, NFRC 0.22	Metal	0.32	E	45.0		12.8	576 Btuh
4	2, NFRC 0.22	Metal	0.32	S	75.0		12.8	960 Btuh
5	2, NFRC 0.22	Metal	0.32	W	4.5		12.8	58 Btuh
6	2, NFRC 0.22	Metal	0.32	W	30.0		12.8	384 Btuh
	Window Total					186.5(sqft)		2387 Btuh
Walls	Type	Ormt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	290		3.55	1030 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	389		3.55	1381 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	229		3.55	813 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	398		3.55	1412 Btuh
	Wall Total					1306(sqft)		4637 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		18		16.0	284 Btuh
2	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
3	Insulated - Exterior, n		(0.400)		18		16.0	284 Btuh
	Door Total					56(sqft)		889Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area	X	HTM=	Load	
1	Vented Attic/L/Metal	(0.025)	38.0/0.0	1784		1.0	1811 Btuh	
	Ceiling Total					1784(sqft)		1811Btuh
Floors	Type	Ueff.	R-Value	Size	X	HTM=	Load	
1	Slab On Grade	(1.180)	0.0	172.0 ft(perim.)		47.2	8118 Btuh	
	Floor Total					1784 sqft		8118 Btuh
	Envelope Subtotal:							17842 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	Load	
	Natural		0.23	16056	1.00	61.6	2696 Btuh	
Duct load	Average sealed, R6.0, Supply(Att), Return(Con) (DLM of 0.194)						3987 Btuh	
All Zones	Sensible Subtotal All Zones							24525 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Rachel Rice
SW Coyote Circle
Lake City, FL

Project Title:
221291 Rice
Building Type: User

2022-11-08

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	24525 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	24525 Btuh

EQUIPMENT

1. Electric Heat Pump	#	27000 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

Rachel Rice
SW Coyote Circle
Lake City, FL

Project Title:
221291 Rice

2022-11-08

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		1.5ft	6.0ft	16.0	10.1	5.9	11	12	181	Btuh
2	2 NFRC	0.22, 0.32	No	No	E		1.5ft	1.5ft	16.0	0.0	16.0	11	27	437	Btuh
3	2 NFRC	0.22, 0.32	No	No	E		1.5ft	1.5ft	45.0	0.0	45.0	11	27	1228	Btuh
4	2 NFRC	0.22, 0.32	No	No	S		12.0f	1.5ft	75.0	0.0	75.0	11	11	803	Btuh
5	2 NFRC	0.22, 0.32	No	No	W		1.5ft	1.5ft	4.5	0.0	4.5	11	27	123	Btuh
6	2 NFRC	0.22, 0.32	No	No	W		1.5ft	1.5ft	30.0	0.0	30.0	11	27	819	Btuh
Window Total									187 (sqft)					3591 Btuh	
Walls	Type					U-Value		R-Value		Area(sqft)		HTM		Load	
								Cav/Sheath							
1	Frame - Wood - Ext					0.09		13.0/0.0		290.2		2.3		657 Btuh	
2	Frame - Wood - Ext					0.09		13.0/0.0		389.0		2.3		880 Btuh	
3	Frame - Wood - Ext					0.09		13.0/0.0		229.0		2.3		518 Btuh	
4	Frame - Wood - Ext					0.09		13.0/0.0		397.7		2.3		900 Btuh	
Wall Total									1306 (sqft)					2956 Btuh	
Doors	Type									Area (sqft)		HTM		Load	
1	Insulated - Exterior									17.8		12.0		213 Btuh	
2	Insulated - Exterior									20.0		12.0		240 Btuh	
3	Insulated - Exterior									17.8		12.0		213 Btuh	
Door Total									56 (sqft)					667 Btuh	
Ceilings	Type/Color/Surface					U-Value		R-Value		Area(sqft)		HTM		Load	
1	Vented Attic/Light/Metal					0.025		38.0/0.0		1784.0		1.12		1992 Btuh	
Ceiling Total									1784 (sqft)					1992 Btuh	
Floors	Type							R-Value		Size		HTM		Load	
1	Slab On Grade							0.0		1784 (ft-perimeter)		0.0		0 Btuh	
Floor Total									1784.0 (sqft)					0 Btuh	
	Envelope Subtotal:													9205 Btuh	
Infiltration	Type					Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load	
	Natural														
Internal gain						Occupants		Btuh/occupant		Appliance		Load			
						4		X 230 +		2400		3320 Btuh			
Sensible Envelope Load:													13486 Btuh		
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Condi)										(DGM of 0.247)		3325 Btuh		
	Sensible Load All Zones													16811 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Rachel Rice
SW Coyote Circle
Lake City, FL

Project Title:
221291 Rice

Climate:FL_GAINESVILLE_REGIONAL_A

2022-11-08

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	13486 Btuh
	Sensible Duct Load	3325 Btuh
	Total Sensible Zone Loads	16811 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	16811 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1594 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	856 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3249 Btuh
	TOTAL GAIN	20060 Btuh

EQUIPMENT

1. Central Unit	#	27000 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