

Residential System Sizing Calculation

Summary

Snipes Res
, FL

Project Title:
211091 Snipes Res

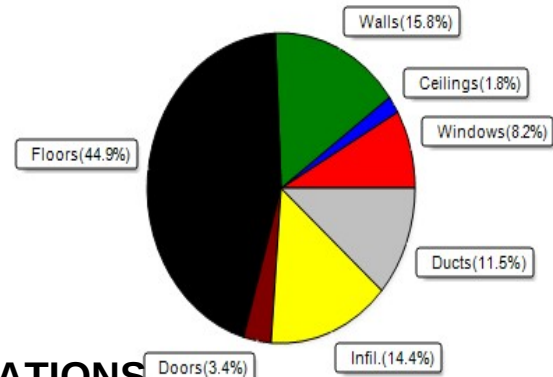
2021-08-03

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	40119 Btuh	Total cooling load calculation	29790 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	109.7 44000	Sensible (SHR = 0.75)	143.2 33000
Heat Pump + Auxiliary(0.0kW)	109.7 44000	Latent	163.0 11000
		Total (Electric Heat Pump)	147.7 44000

WINTER CALCULATIONS

Winter Heating Load (for 2976 sqft)

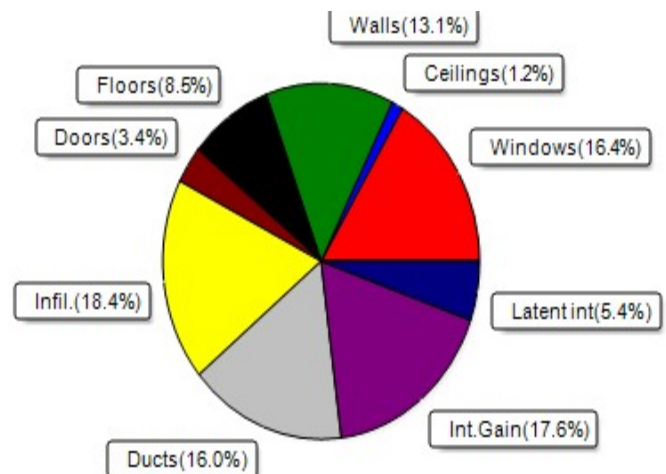
Load component	Load
Window total 275 sqft	3296 Btuh
Wall total 1782 sqft	6326 Btuh
Door total 84 sqft	1344 Btuh
Ceiling total 3524 sqft	722 Btuh
Floor total See detail report	18024 Btuh
Infiltration 132 cfm	5797 Btuh
Duct loss	4611 Btuh
Subtotal	40119 Btuh
Ventilation 0 cfm	0 Btuh
TOTAL HEAT LOSS	40119 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2976 sqft)

Load component	Load
Window total 275 sqft	4891 Btuh
Wall total 1782 sqft	3890 Btuh
Door total 84 sqft	1008 Btuh
Ceiling total 3524 sqft	348 Btuh
Floor total	2542 Btuh
Infiltration 99 cfm	2065 Btuh
Internal gain	5240 Btuh
Duct gain	3058 Btuh
Sens. Ventilation 0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	23042 Btuh
Latent gain(ducts)	1721 Btuh
Latent gain(infiltration)	3427 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1600 Btuh
Total latent gain	6748 Btuh
TOTAL HEAT GAIN	29790 Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2021-08-03

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Snipes Res
, FL

Project Title:
211091 Snipes Res
Building Type: User

2021-08-03

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 F (TMY3 99%)
This calculation is for Worst Case. The house has been rotated 45 degrees.

Component Loads for Whole House								
Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.20	Vinyl	0.30	NE	48.0		12.0	576 Btuh
2	2, NFRC 0.20	Vinyl	0.30	NW	32.0		12.0	384 Btuh
3	2, NFRC 0.20	Vinyl	0.30	NE	45.0		12.0	540 Btuh
4	2, NFRC 0.20	Vinyl	0.30	NE	4.7		12.0	56 Btuh
5	2, NFRC 0.20	Vinyl	0.30	SE	30.0		12.0	360 Btuh
6	2, NFRC 0.20	Vinyl	0.30	SW	60.0		12.0	720 Btuh
7	2, NFRC 0.20	Vinyl	0.30	SW	32.0		12.0	384 Btuh
8	2, NFRC 0.20	Vinyl	0.30	NW	15.0		12.0	180 Btuh
9	2, NFRC 0.20	Vinyl	0.30	SW	8.0		12.0	96 Btuh
	Window Total				274.7(sqft)			3296 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	196		3.55	696 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	42		3.55	149 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	244		3.55	867 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	426		3.55	1512 Btuh
5	Frame - Wood	- Adj	(0.089)	13.0/0.0	156		3.55	554 Btuh
6	Frame - Wood	- Adj	(0.089)	13.0/0.0	19		3.55	67 Btuh
7	Frame - Wood	- Adj	(0.089)	13.0/0.0	72		3.55	256 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	234		3.55	831 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	273		3.55	969 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	33		3.55	117 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	87		3.55	307 Btuh
	Wall Total				1782(sqft)			6326 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		32		16.0	512 Btuh
2	Insulated - Exterior, n		(0.400)		16		16.0	256 Btuh
3	Insulated - Garage, n		(0.400)		20		16.0	320 Btuh
4	Insulated - Exterior, n		(0.400)		16		16.0	256 Btuh
	Door Total				84(sqft)			1344Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Unvent Attic/L/Shing		(0.025)	38.0/22.0	2632		0.1	334 Btuh
2	Unvent Attic/L/Shing		(0.025)	38.0/22.0	472		0.1	60 Btuh
3	Knee Wall/L/Shing		(0.020)	30.0/22.0	420		0.8	328 Btuh
	Ceiling Total				3524(sqft)			722Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	228.0 ft(perim.)		47.2	10762 Btuh
2	Raised Wood - Adj		(0.385)	0.0	472.0 sqft		15.4	7262 Btuh
	Floor Total				2976 sqft			18024 Btuh
	Envelope Subtotal:							29712 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Snipes Res
, FL

Project Title:
211091 Snipes Res
Building Type: User

2021-08-03

Infiltration	Type Natural	Wholehouse ACH 0.30	Volume(cuft) 26341	Wall Ratio 1.00	CFM= 132.4	5797 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.130)					4611 Btuh
All Zones	Sensible Subtotal All Zones					40119 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	40119 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	40119 Btuh

EQUIPMENT

1. Electric Heat Pump	#	44000 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

Snipes Res

Project Title:
211091 Snipes Res

, FL

2021-08-03

Reference City: Gainesville, FL

Temperature Difference: 19.0F(TMY3 99%)

Humidity difference: 51gr.

This calculation is for Worst Case. The house has been rotated 45 degrees.

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	0.20, 0.30	No	No	NE	11.5f	1.0ft	48.0	0.0	48.0	10	19	919 Btuh
2	2 NFRC	0.20, 0.30	No	No	NW	40.2f	1.0ft	32.0	0.0	32.0	10	19	612 Btuh
3	2 NFRC	0.20, 0.30	No	No	NE	1.5ft	1.0ft	45.0	0.0	45.0	10	19	861 Btuh
4	2 NFRC	0.20, 0.30	No	No	NE	1.5ft	1.0ft	4.7	0.0	4.7	10	19	89 Btuh
5	2 NFRC	0.20, 0.30	No	No	SE	1.5ft	1.0ft	30.0	7.3	22.7	10	20	527 Btuh
6	2 NFRC	0.20, 0.30	No	No	SW	9.5ft	1.0ft	60.0	60.0	0.0	10	20	594 Btuh
7	2 NFRC	0.20, 0.30	No	No	SW	9.5ft	1.0ft	32.0	32.0	0.0	10	20	317 Btuh
8	2 NFRC	0.20, 0.30	No	No	NW	9.5ft	1.0ft	15.0	0.0	15.0	10	19	287 Btuh
9	2 NFRC	0.20, 0.30	No	No	SW	1.5ft	4.0ft	8.0	0.0	8.0	10	20	160 Btuh
	Excursion												524 Btuh
	Window Total							275 (sqft)					4891 Btuh
Walls	Type				U-Value	R-Value	Area(sqft)			HTM		Load	
						Cav/Sheath							
1	Frame - Wood - Ext				0.09	13.0/0.0	196.0			2.3		444 Btuh	
2	Frame - Wood - Ext				0.09	13.0/0.0	42.0			2.3		95 Btuh	
3	Frame - Wood - Ext				0.09	13.0/0.0	244.3			2.3		553 Btuh	
4	Frame - Wood - Ext				0.09	13.0/0.0	426.0			2.3		964 Btuh	
5	Frame - Wood - Adj				0.09	13.0/0.0	156.0			1.7		263 Btuh	
6	Frame - Wood - Adj				0.09	13.0/0.0	19.0			1.7		32 Btuh	
7	Frame - Wood - Adj				0.09	13.0/0.0	72.0			1.7		121 Btuh	
8	Frame - Wood - Ext				0.09	13.0/0.0	234.0			2.3		530 Btuh	
9	Frame - Wood - Ext				0.09	13.0/0.0	273.0			2.3		618 Btuh	
10	Frame - Wood - Ext				0.09	13.0/0.0	33.0			2.3		75 Btuh	
11	Frame - Wood - Ext				0.09	13.0/0.0	86.5			2.3		196 Btuh	
	Wall Total							1782 (sqft)					3890 Btuh
Doors	Type						Area (sqft)			HTM		Load	
1	Insulated - Exterior						32.0			12.0		384 Btuh	
2	Insulated - Exterior						16.0			12.0		192 Btuh	
3	Insulated - Garage						20.0			12.0		240 Btuh	
4	Insulated - Exterior						16.0			12.0		192 Btuh	
	Door Total							84 (sqft)					1008 Btuh
Ceilings	Type/Color/Surface				U-Value	R-Value	Area(sqft)			HTM		Load	
1	Unvented Attic/Light/Shingle				0.025	38.0/22.0	2632.0			0.10		267 Btuh	
2	Unvented Attic/Light/Shingle				0.025	38.0/22.0	472.0			0.10		48 Btuh	
3	Knee Wall/Light/Shingle				0.020	30.0/22.0	420.0			0.08		33 Btuh	
	Ceiling Total							3524 (sqft)					348 Btuh
Floors	Type					R-Value	Size			HTM		Load	
1	Slab On Grade					0.0	2504 (ft-perimeter)			0.0		0 Btuh	
2	Raised Wood - Adj					0.0	472 (sqft)			5.4		2542 Btuh	
	Floor Total							2976.0 (sqft)					2542 Btuh
	Envelope Subtotal:												12679 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Snipes Res

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
211091 Snipes Res

, FL

2021-08-03

Infiltration	Type Natural	Average ACH 0.23	Volume(cuft) 26341	Wall Ratio 1	CFM= 99.3	Load 2065 Btuh
Internal gain		Occupants 8	Btuh/occupant X 230	Appliance +	3400	Load 5240 Btuh
	Sensible Envelope Load:					19984 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.153)					3058 Btuh
	Sensible Load All Zones					23042 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Snipes Res
, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
211091 Snipes Res

2021-08-03

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	19984 Btuh
	Sensible Duct Load	3058 Btuh
	Total Sensible Zone Loads	23042 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	23042 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	3427 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1721 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	6748 Btuh
	TOTAL GAIN	29790 Btuh

EQUIPMENT

1. Central Unit	#	44000 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