

Residential System Sizing Calculation

Summary

Tyler & Amy Nash
2625 NW Nash Rd.
Lake City, FL 32055

Project Title:
240289 Nash Res

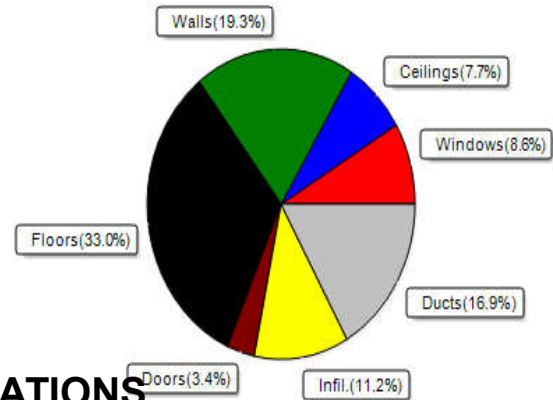
2024-04-02

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	25433	Btuh	Total cooling load calculation	24297	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	110.1	28000	Sensible (SHR = 0.75)	101.1	21000
Heat Pump + Auxiliary(0.0kW)	110.1	28000	Latent	198.0	7000
			Total (Electric Heat Pump)	115.2	28000

WINTER CALCULATIONS

Winter Heating Load (for 1794 sqft)

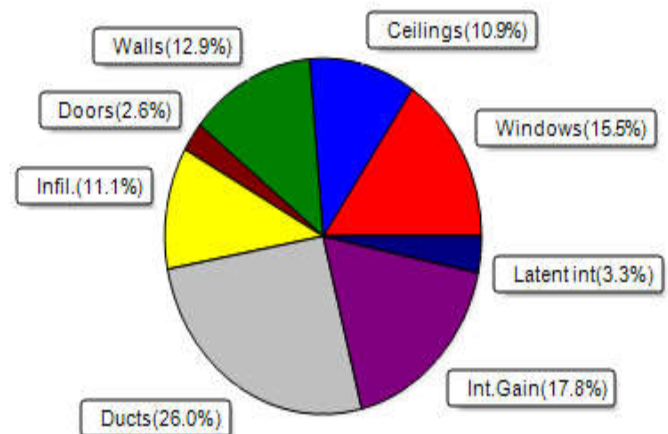
Load component	Load
Window total 165 sqft	2178 Btuh
Wall total 1384 sqft	4912 Btuh
Door total 53 sqft	853 Btuh
Ceiling total 1927 sqft	1956 Btuh
Floor total 1794 sqft	8402 Btuh
Infiltration 65 cfm	2843 Btuh
Duct loss	4288 Btuh
Subtotal	25433 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	25433 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1794 sqft)

Load component	Load
Window total 165 sqft	3765 Btuh
Wall total 1384 sqft	3132 Btuh
Door total 53 sqft	640 Btuh
Ceiling total 1927 sqft	2641 Btuh
Floor total	0 Btuh
Infiltration 49 cfm	1013 Btuh
Internal gain	4320 Btuh
Duct gain	5250 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	20761 Btuh
Latent gain(ducts)	1055 Btuh
Latent gain(infiltration)	1681 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	800 Btuh
Total latent gain	3536 Btuh
TOTAL HEAT GAIN	24297 Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2024-04-02



System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Tyler & Amy Nash
2625 NW Nash Rd.
Lake City, FL 32055

Project Title:
240289 Nash Res
Building Type: User

2024-04-02

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 °F (TMY3 99%)
Winter Setpoint: 70 °F (Required Manual J default)

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 0.23	Vinyl	0.33	NE	26.7		13.2	352 Btuh
2	2, NFRC 0.23	Vinyl	0.33	NE	15.0		13.2	198 Btuh
3	2, NFRC 0.23	Vinyl	0.33	NE	6.7		13.2	88 Btuh
4	2, NFRC 0.23	Vinyl	0.33	SE	4.0		13.2	53 Btuh
5	2, NFRC 0.23	Vinyl	0.33	SW	18.0		13.2	238 Btuh
6	2, NFRC 0.23	Vinyl	0.33	SW	36.0		13.2	475 Btuh
7	2, NFRC 0.23	Vinyl	0.33	SW	6.7		13.2	88 Btuh
8	2, NFRC 0.23	Vinyl	0.33	SW	18.0		13.2	238 Btuh
9	2, NFRC 0.23	Vinyl	0.33	NW	30.0		13.2	396 Btuh
10	2, NFRC 0.23	Vinyl	0.33	NW	4.0		13.2	53 Btuh
Window Total					165.0(sqft)			2178 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	251		3.55	891 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	32		3.55	112 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	156		3.55	553 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	271		3.55	960 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	90		3.55	320 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	223		3.55	792 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	90		3.55	320 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	272		3.55	966 Btuh
Wall Total					1384(sqft)			4912 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		7		16.0	107 Btuh
2	Insulated - Exterior, n		(0.400)		13		16.0	213 Btuh
3	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
4	Insulated - Exterior, n		(0.400)		13		16.0	213 Btuh
Door Total					53(sqft)			853Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/D/Shing		(0.025)	38.0/0.0	1417		1.0	1439 Btuh
2	Sloped ce/D/Shing		(0.025)	38.0/0.0	400		1.0	406 Btuh
3	Knee wall/D/Shing		(0.025)	38.0/0.0	110		1.0	112 Btuh
Ceiling Total					1927(sqft)			1956Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	178.0 ft(perim.)		47.2	8402 Btuh
Floor Total					1794 sqft			8402 Btuh
Envelope Subtotal:								18302 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.23	16684	1.00	64.8		2843 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Tyler & Amy Nash
2625 NW Nash Rd.
Lake City, FL 32055

Project Title:
240289 Nash Res
Building Type: User

2024-04-02

Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.203)	4288 Btuh
All Zones	Sensible Subtotal All Zones	25433 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm) Total Heat Loss	25433 Btuh 0 Btuh 25433 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	28000 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

Tyler & Amy Nash
2625 NW Nash Rd.
Lake City, FL 32055

Project Title:
240289 Nash Res

2024-04-02

Reference City: Gainesville, FL (Defaults)

Temperature Difference: 19.0F(TMY3 99%)

Humidity difference: 51gr.

Summer Setpoint: 75 °F (Required Manual J default)

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	0.23, 0.33	No	No	NE		11.5f	1.3ft	26.7	0.0	26.7	11	22	579	Btuh	
2	2 NFRC	0.23, 0.33	No	No	NE		11.5f	1.3ft	15.0	0.0	15.0	11	22	326	Btuh	
3	2 NFRC	0.23, 0.33	No	No	NE		24.0f	1.3ft	6.7	0.0	6.7	11	22	145	Btuh	
4	2 NFRC	0.23, 0.33	No	No	SE		1.5ft	7.0ft	4.0	0.0	4.0	11	23	91	Btuh	
5	2 NFRC	0.23, 0.33	No	No	SW		1.5ft	1.5ft	18.0	2.9	15.1	11	23	376	Btuh	
6	2 NFRC	0.23, 0.33	No	No	SW		6.0ft	1.3ft	36.0	36.0	0.0	11	23	400	Btuh	
7	2 NFRC	0.23, 0.33	No	No	SW		7.5ft	1.3ft	6.7	6.7	0.0	11	23	74	Btuh	
8	2 NFRC	0.23, 0.33	No	No	SW		1.5ft	1.5ft	18.0	2.9	15.1	11	23	376	Btuh	
9	2 NFRC	0.23, 0.33	No	No	NW		1.5ft	8.0ft	30.0	0.0	30.0	11	22	652	Btuh	
10	2 NFRC	0.23, 0.33	No	No	NW		1.5ft	13.0f	4.0	0.0	4.0	11	22	87	Btuh	
	Excursion													660	Btuh	
	Window Total								165 (sqft)						3765	Btuh
Walls	Type						U-Value	R-Value	Area(sqft)			HTM		Load		
								Cav/Sheath								
1	Frame - Wood - Ext						0.09	13.0/0.0	250.9			2.3		568	Btuh	
2	Frame - Wood - Ext						0.09	13.0/0.0	31.5			2.3		71	Btuh	
3	Frame - Wood - Ext						0.09	13.0/0.0	155.8			2.3		353	Btuh	
4	Frame - Wood - Ext						0.09	13.0/0.0	270.5			2.3		612	Btuh	
5	Frame - Wood - Ext						0.09	13.0/0.0	90.0			2.3		204	Btuh	
6	Frame - Wood - Ext						0.09	13.0/0.0	223.0			2.3		505	Btuh	
7	Frame - Wood - Ext						0.09	13.0/0.0	90.0			2.3		204	Btuh	
8	Frame - Wood - Ext						0.09	13.0/0.0	272.0			2.3		616	Btuh	
	Wall Total								1384 (sqft)					3132	Btuh	
Doors	Type						Area (sqft)			HTM		Load				
1	Insulated - Exterior						6.7			12.0		80	Btuh			
2	Insulated - Exterior						13.3			12.0		160	Btuh			
3	Insulated - Exterior						20.0			12.0		240	Btuh			
4	Insulated - Exterior						13.3			12.0		160	Btuh			
	Door Total						53 (sqft)					640	Btuh			
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)			HTM		Load		
1	Vented Attic/DarkShingle						0.025	38.0/0.0	1417.0			1.37		1942	Btuh	
2	Vented Attic/DarkShingle						0.025	38.0/0.0	400.0			1.37		548	Btuh	
3	Knee wall to attic/DarkShingle						0.025	38.0/0.0	110.0			1.37		151	Btuh	
	Ceiling Total								1927 (sqft)					2641	Btuh	
Floors	Type						R-Value		Size			HTM		Load		
1	Slab On Grade						0.0		1794 (ft-perimeter)			0.0		0	Btuh	
	Floor Total								1794.0 (sqft)					0	Btuh	
	Envelope Subtotal:													10178 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Tyler & Amy Nash
2625 NW Nash Rd.
Lake City, FL 32055

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
240289 Nash Res

2024-04-02

Infiltration	Type Natural	Average ACH 0.17	Volume(cuft) 16684	Wall Ratio 1	CFM= 48.6	Load 1013 Btuh
Internal gain		Occupants 4	Btuh/occupant X 230	Appliance +	3400	Load 4320 Btuh
					Sensible Envelope Load:	15511 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.338)					5250 Btuh
					Sensible Load All Zones	20761 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Tyler & Amy Nash
2625 NW Nash Rd.
Lake City, FL 32055

Project Title:
240289 Nash Res

Climate:FL_GAINESVILLE_REGIONAL_A

2024-04-02

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	15511 Btuh
	Sensible Duct Load	5250 Btuh
	Total Sensible Zone Loads	20761 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	20761 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1681 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1055 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3536 Btuh
	TOTAL GAIN	24297 Btuh

EQUIPMENT

1. Central Unit	#	28000 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