

Residential System Sizing Calculation

Summary

Project Title:
Nowrey Residence

, FL

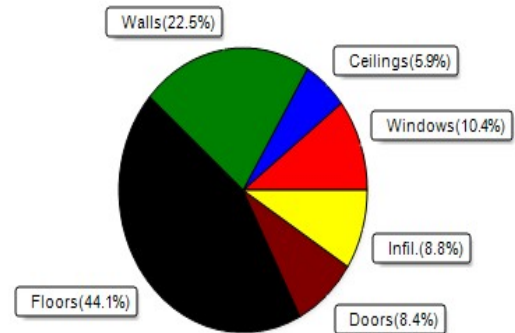
12/12/2023

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	25072 Btuh	Total cooling load calculation	17167 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	167.5 42000	Sensible (SHR = 0.85)	243.4 35700
Heat Pump + Auxiliary(0.0kW)	167.5 42000	Latent	252.1 6300
		Total (Electric Heat Pump)	244.7 42000

WINTER CALCULATIONS

Winter Heating Load (for 2078 sqft)

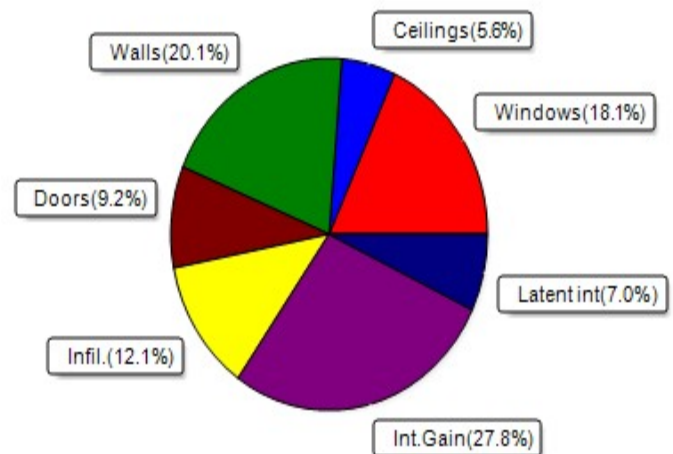
Load component	Load
Window total 251 sqft	2610 Btuh
Wall total 1587 sqft	5636 Btuh
Door total 132 sqft	2112 Btuh
Ceiling total 2078 sqft	1471 Btuh
Floor total 2078 sqft	11045 Btuh
Infiltration 50 cfm	2197 Btuh
Duct loss	0 Btuh
Subtotal	25072 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	25072 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2078 sqft)

Load component	Load
Window total 251 sqft	3116 Btuh
Wall total 1587 sqft	3450 Btuh
Door total 132 sqft	1584 Btuh
Ceiling total 2078 sqft	956 Btuh
Floor total	0 Btuh
Infiltration 38 cfm	783 Btuh
Internal gain	4780 Btuh
Duct gain	0 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	14668 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	1299 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	2499 Btuh
TOTAL HEAT GAIN	17167 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

12-11-23

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Nowrey Residence

, FL

12/12/2023

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	0.20, 0.26	No	No	N	1.5ft	2.3ft	90.0	0.0	90.0	9	9	823	Btuh
2	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	12.0	0.0	12.0	9	9	110	Btuh
3	2 NFRC	0.20, 0.26	No	No	E	1.5ft	2.3ft	18.0	0.0	18.0	9	24	436	Btuh
4	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	54.0	54.0	0.0	9	11	494	Btuh
5	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	16.0	12.4	3.6	9	11	152	Btuh
6	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	25.0	25.0	0.0	9	11	229	Btuh
7	2 NFRC	0.20, 0.26	No	No	W	1.5ft	2.3ft	36.0	0.0	36.0	9	24	872	Btuh
Window Total								251 (sqft)					3116 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load				
					Cav/Sheath									
1	Frame - Wood - Ext		0.09		13.0/0.0		420.0		2.3		951	Btuh		
2	Frame - Wood - Ext		0.09		13.0/0.0		45.0		2.3		102	Btuh		
3	Frame - Wood - Ext		0.09		13.0/0.0		45.0		2.3		102	Btuh		
4	Frame - Wood - Ext		0.09		13.0/0.0		150.0		2.3		340	Btuh		
5	Frame - Wood - Adj		0.09		13.0/0.0		248.5		1.7		419	Btuh		
6	Frame - Wood - Ext		0.09		13.0/0.0		146.0		2.3		330	Btuh		
7	Frame - Wood - Ext		0.09		13.0/0.0		28.3		2.3		64	Btuh		
8	Frame - Wood - Ext		0.09		13.0/0.0		31.7		2.3		72	Btuh		
9	Frame - Wood - Ext		0.09		13.0/0.0		54.0		2.3		122	Btuh		
10	Frame - Wood - Ext		0.09		13.0/0.0		117.5		2.3		266	Btuh		
11	Frame - Wood - Ext		0.09		13.0/0.0		301.5		2.3		682	Btuh		
Wall Total							1587 (sqft)					3450 Btuh		
Doors	Type	Area (sqft)		HTM		Load								
1	Insulated - Exterior		40.0		12.0		480	Btuh						
2	Insulated - Exterior		48.0		12.0		576	Btuh						
3	Insulated - Garage		20.0		12.0		240	Btuh						
4	Insulated - Exterior		24.0		12.0		288	Btuh						
Door Total							132 (sqft)					1584 Btuh		
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load				
1	SnglAsmb no airsp/DarkShingle		0.018		30.0/30.0		2078.0		0.46		956	Btuh		
Ceiling Total							2078 (sqft)					956 Btuh		
Floors	Type	R-Value		Size		HTM		Load						
1	Slab On Grade		0.0		2078 (ft-perimeter)		0.0		0	Btuh				
Floor Total							2078.0 (sqft)					0 Btuh		
	Envelope Subtotal:											9106 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Nowrey Residence

, FL

12/12/2023

Infiltration	Type Natural	Average ACH 0.12	Volume(cuft) 18702	Wall Ratio 1	CFM= 37.6	Load 783 Btuh
Internal gain		Occupants 6	Btuh/occupant X 230	Appliance +	3400	Load 4780 Btuh
	Sensible Envelope Load:					14668 Btuh
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)					0 Btuh
	Sensible Load All Zones					14668 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Nowrey Residence

, FL

12/12/2023

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	14668 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	14668 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	14668 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1299 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2499 Btuh
	TOTAL GAIN	17167 Btuh

EQUIPMENT

1. Central Unit	#	42000 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:
Nowrey Residence
Building Type: User

, FL

12/12/2023

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 0.20	Vinyl	0.26	N	90.0		10.4	936 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	12.0		10.4	125 Btuh
3	2, NFRC 0.20	Vinyl	0.26	E	18.0		10.4	187 Btuh
4	2, NFRC 0.20	Vinyl	0.26	S	54.0		10.4	562 Btuh
5	2, NFRC 0.20	Vinyl	0.26	S	16.0		10.4	166 Btuh
6	2, NFRC 0.20	Vinyl	0.26	S	25.0		10.4	260 Btuh
7	2, NFRC 0.20	Vinyl	0.26	W	36.0		10.4	374 Btuh
	Window Total				251.0(sqft)			2610 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	420		3.55	1491 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	45		3.55	160 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	45		3.55	160 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	150		3.55	533 Btuh
5	Frame - Wood	- Adj	(0.089)	13.0/0.0	249		3.55	882 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	146		3.55	518 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	28		3.55	101 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	32		3.55	112 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	54		3.55	192 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	118		3.55	417 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	302		3.55	1070 Btuh
	Wall Total				1588(sqft)			5636 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		40		16.0	640 Btuh
2	Insulated - Exterior,	n	(0.400)		48		16.0	768 Btuh
3	Insulated - Garage,	n	(0.400)		20		16.0	320 Btuh
4	Insulated - Exterior,	n	(0.400)		24		16.0	384 Btuh
	Door Total				132(sqft)			2112Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Single as/D/Shing		(0.018)	30.0/30.0	2078		0.71	1471 Btuh
	Ceiling Total				2078(sqft)			1471Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	234.0 ft(perim.)		47.2	11045 Btuh
	Floor Total				2078 sqft			11045 Btuh
	Envelope Subtotal:							22875 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.16	18702	1.00	50.1		2197 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Nowrey Residence
Building Type: User

12/12/2023

Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)	0 Btuh
All Zones	Sensible Subtotal All Zones	25072 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm) Total Heat Loss	25072 Btuh 0 Btuh 25072 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	42000 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