

Residential System Sizing Calculation

Summary

Project Title:
Edenfield Residence

, FL

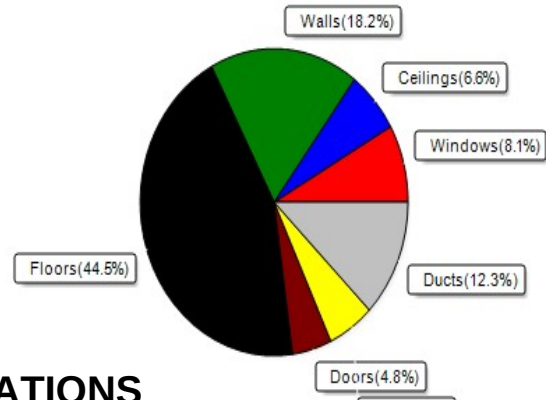
8/5/2022

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	37540 Btuh	Total cooling load calculation	28886 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	111.9 42000	Sensible (SHR = 0.85)	143.5 35700
Heat Pump + Auxiliary(0.0kW)	111.9 42000	Latent	157.5 6300
		Total (Electric Heat Pump)	145.4 42000

WINTER CALCULATIONS

Winter Heating Load (for 1927 sqft)

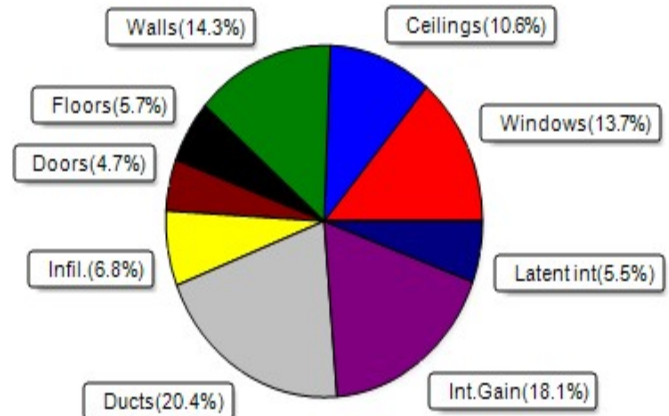
Load component		Load	
Window total	294 sqft	3058	Btuh
Wall total	1919 sqft	6815	Btuh
Door total	113 sqft	1803	Btuh
Ceiling total	1927 sqft	2461	Btuh
Floor total	See detail report	16697	Btuh
Infiltration	47 cfm	2080	Btuh
Duct loss		4627	Btuh
Subtotal		37540	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		37540	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1927 sqft)

Load component		Load	
Window total	294 sqft	3965	Btuh
Wall total	1919 sqft	4133	Btuh
Door total	113 sqft	1352	Btuh
Ceiling total	1927 sqft	3075	Btuh
Floor total		1648	Btuh
Infiltration	36 cfm	741	Btuh
Internal gain		5240	Btuh
Duct gain		4732	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		24885	Btuh
Latent gain(ducts)		1171	Btuh
Latent gain(infiltration)		1230	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1600	Btuh
Total latent gain		4000	Btuh
TOTAL HEAT GAIN		28886	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

8-5-22

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Edenfield Residence

, FL

8/5/2022

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	0.20, 0.26	No	No	N		9.5ft.	2.3ft.	18.0	0.0	18.0	9	9	165	Btuh
2	2 NFRC	0.20, 0.26	No	No	N		6.5ft.	2.3ft.	24.0	0.0	24.0	9	9	220	Btuh
3	2 NFRC	0.20, 0.26	No	No	N		6.5ft.	2.3ft.	18.0	0.0	18.0	9	9	165	Btuh
4	2 NFRC	0.20, 0.26	No	No	W		1.5ft.	2.3ft.	30.0	0.0	30.0	9	24	727	Btuh
5	2 NFRC	0.20, 0.26	No	No	N		1.5ft.	2.3ft.	16.0	0.0	16.0	9	9	146	Btuh
6	2 NFRC	0.20, 0.26	No	No	N		1.5ft.	2.3ft.	6.0	0.0	6.0	9	9	55	Btuh
7	2 NFRC	0.20, 0.26	No	No	E		1.5ft.	2.3ft.	12.5	0.0	12.5	9	24	303	Btuh
8	2 NFRC	0.20, 0.26	No	No	S		1.5ft.	2.3ft.	15.0	15.0	0.0	9	11	137	Btuh
9	2 NFRC	0.20, 0.26	No	No	S		8.5ft.	2.3ft.	36.0	36.0	0.0	9	11	329	Btuh
10	2 NFRC	0.20, 0.26	No	No	S		8.5ft.	2.3ft.	36.0	36.0	0.0	9	11	329	Btuh
11	2 NFRC	0.20, 0.26	No	No	S		1.5ft.	2.3ft.	15.0	15.0	0.0	9	11	137	Btuh
12	2 NFRC	0.20, 0.26	No	No	SW		1.5ft.	2.3ft.	30.0	0.8	29.2	9	19	570	Btuh
13	2 NFRC	0.20, 0.26	No	No	E		1.5ft.	2.3ft.	22.5	0.0	22.5	9	24	545	Btuh
14	2 NFRC	0.20, 0.26	No	No	S		1.5ft.	2.3ft.	15.0	15.0	0.0	9	11	137	Btuh
	Window Total								294 (sqft)					3965 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load					
1	Frame - Wood - Ext		0.09		13.0/0.0		200.7		2.3		454 Btuh				
2	Frame - Wood - Ext		0.09		13.0/0.0		30.0		2.3		68 Btuh				
3	Frame - Wood - Ext		0.09		13.0/0.0		79.7		2.3		180 Btuh				
4	Frame - Wood - Ext		0.09		13.0/0.0		69.0		2.3		156 Btuh				
5	Frame - Wood - Ext		0.09		13.0/0.0		191.0		2.3		432 Btuh				
6	Frame - Wood - Ext		0.09		13.0/0.0		170.5		2.3		386 Btuh				
7	Frame - Wood - Adj		0.09		13.0/0.0		367.0		1.7		619 Btuh				
8	Frame - Wood - Ext		0.09		13.0/0.0		39.0		2.3		88 Btuh				
9	Frame - Wood - Ext		0.09		13.0/0.0		27.0		2.3		61 Btuh				
10	Frame - Wood - Ext		0.09		13.0/0.0		63.0		2.3		143 Btuh				
11	Frame - Wood - Ext		0.09		13.0/0.0		54.0		2.3		122 Btuh				
12	Frame - Wood - Ext		0.09		13.0/0.0		33.5		2.3		76 Btuh				
13	Frame - Wood - Ext		0.09		13.0/0.0		54.0		2.3		122 Btuh				
14	Frame - Wood - Ext		0.09		13.0/0.0		63.0		2.3		143 Btuh				
15	Frame - Wood - Ext		0.09		13.0/0.0		18.0		2.3		41 Btuh				
16	Frame - Wood - Ext		0.09		13.0/0.0		36.0		2.3		81 Btuh				
17	Frame - Wood - Ext		0.09		13.0/0.0		213.0		2.3		482 Btuh				
18	Frame - Wood - Ext		0.09		13.0/0.0		32.0		2.3		72 Btuh				
19	Frame - Wood - Ext		0.09		13.0/0.0		70.8		2.3		160 Btuh				
20	Frame - Wood - Ext		0.09		13.0/0.0		32.0		2.3		72 Btuh				
21	Frame - Wood - Ext		0.09		13.0/0.0		76.3		2.3		173 Btuh				
	Wall Total								1919 (sqft)			4133 Btuh			
Doors	Type	Area (sqft)		HTM		Load									
1	Insulated - Exterior		48.0		12.0		576 Btuh								
2	Insulated - Exterior		16.7		12.0		200 Btuh								
3	Insulated - Garage		20.0		12.0		240 Btuh								
4	Insulated - Exterior		28.0		12.0		336 Btuh								
	Door Total								113 (sqft)			1352 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Edenfield Residence

, FL

8/5/2022

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	Vented Attic/DarkShingle	0.032	30.0/0.0	1621.0	1.72	2788 Btuh
2	Cath/Sngl Assem/DarkShingle	0.032	30.0/0.0	306.0	0.94	287 Btuh
	Ceiling Total			1927 (sqft)		3075 Btuh
Floors	Type		R-Value	Size	HTM	Load
1	Slab On Grade		0.0	1621 (ft-perimeter)	0.0	0 Btuh
2	Raised Wood - Adj		0.0	306 (sqft)	5.4	1648 Btuh
	Floor Total			1927.0 (sqft)		1648 Btuh
	Envelope Subtotal:					14172 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.12	17343	1	35.6	741 Btuh
Internal gain		Occupants	Btuh/occupant	Appliance		Load
		8	X 230	+	3400	5240 Btuh
	Sensible Envelope Load:					20153 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)				(DGM of 0.235)	4732 Btuh
	Sensible Load All Zones					24885 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Edenfield Residence

, FL

8/5/2022

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	20153 Btuh
	Sensible Duct Load	4732 Btuh
	Total Sensible Zone Loads	24885 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	24885 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1230 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1171 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	4000 Btuh
	TOTAL GAIN	28886 Btuh

EQUIPMENT

1. Central Unit	#	42000 Btuh
-----------------	---	------------

*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(1/2))
(Ornt - compass orientation)



Version 8

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Project Title:
Edenfield Residence
Building Type: User

, FL

8/5/2022

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 0.20	Vinyl	0.26	N	18.0		10.4	187 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	24.0		10.4	250 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	18.0		10.4	187 Btuh
4	2, NFRC 0.20	Vinyl	0.26	W	30.0		10.4	312 Btuh
5	2, NFRC 0.20	Vinyl	0.26	N	16.0		10.4	166 Btuh
6	2, NFRC 0.20	Vinyl	0.26	N	6.0		10.4	62 Btuh
7	2, NFRC 0.20	Vinyl	0.26	E	12.5		10.4	130 Btuh
8	2, NFRC 0.20	Vinyl	0.26	S	15.0		10.4	156 Btuh
9	2, NFRC 0.20	Vinyl	0.26	S	36.0		10.4	374 Btuh
10	2, NFRC 0.20	Vinyl	0.26	S	36.0		10.4	374 Btuh
11	2, NFRC 0.20	Vinyl	0.26	S	15.0		10.4	156 Btuh
12	2, NFRC 0.20	Vinyl	0.26	SW	30.0		10.4	312 Btuh
13	2, NFRC 0.20	Vinyl	0.26	E	22.5		10.4	234 Btuh
14	2, NFRC 0.20	Vinyl	0.26	S	15.0		10.4	156 Btuh
Window Total					294.0(sqft)			3058 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	201		3.55	712 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	30		3.55	107 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	80		3.55	283 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	69		3.55	245 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	191		3.55	678 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	171		3.55	605 Btuh
7	Frame - Wood	- Adj	(0.089)	13.0/0.0	367		3.55	1303 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	39		3.55	138 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	27		3.55	96 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	63		3.55	224 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	54		3.55	192 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	34		3.55	119 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	54		3.55	192 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	63		3.55	224 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	18		3.55	64 Btuh
16	Frame - Wood	- Ext	(0.089)	13.0/0.0	36		3.55	128 Btuh
17	Frame - Wood	- Ext	(0.089)	13.0/0.0	213		3.55	756 Btuh
18	Frame - Wood	- Ext	(0.089)	13.0/0.0	32		3.55	114 Btuh
19	Frame - Wood	- Ext	(0.089)	13.0/0.0	71		3.55	251 Btuh
20	Frame - Wood	- Ext	(0.089)	13.0/0.0	32		3.55	114 Btuh
21	Frame - Wood	- Ext	(0.089)	13.0/0.0	76		3.55	271 Btuh
Wall Total					1920(saft)			6815 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Edenfield Residence
Building Type: User

8/5/2022

Doors	Type	Storm Ueff.		Area X	HTM=	Load
1	Insulated - Exterior, n	(0.400)		48	16.0	768 Btuh
2	Insulated - Exterior, n	(0.400)		17	16.0	267 Btuh
3	Insulated - Garage, n	(0.400)		20	16.0	320 Btuh
4	Insulated - Exterior, n	(0.400)		28	16.0	448 Btuh
	Door Total				113(sqft)	1803Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Vented Attic/D/Shing	(0.032)	30.0/0.0	1621	1.3	2065 Btuh
2	Cathedral/D/Shing	(0.032)	30.0/0.0	306	1.3	396 Btuh
	Ceiling Total				1927(sqft)	2461Btuh
Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	254.0 ft(perim.)	47.2	11989 Btuh
2	Raised Wood - Adj	(0.385)	0.0	306.0 sqft	15.4	4708 Btuh
	Floor Total				1927 sqft	16697 Btuh
	Envelope Subtotal:					30833 Btuh
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural	0.16	17343	1.00	47.5	2080 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.141)					4627 Btuh
All Zones	Sensible Subtotal All Zones					37540 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	37540 Btuh 0 Btuh 37540 Btuh
--------------------	--	------------------------------------

EQUIPMENT

1. Electric Heat Pump	#	42000 Btuh
-----------------------	---	------------

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Edenfield Residence
Building Type: User

, FL

8/5/2022

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