

Residential System Sizing Calculation

Summary

Project Title:
Slaymaker Residence

, FL

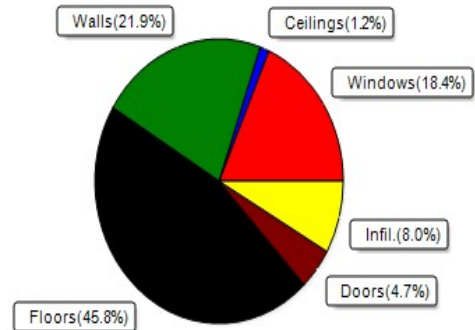
7/6/2021

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	31146	Btuh	Total cooling load calculation	20038	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	96.3	30000	Sensible (SHR = 0.85)	150.3	25500
Heat Pump + Auxiliary(0.0kW)	96.3	30000	Latent	146.5	4500
			Total (Electric Heat Pump)	149.7	30000

WINTER CALCULATIONS

Winter Heating Load (for 2306 sqft)

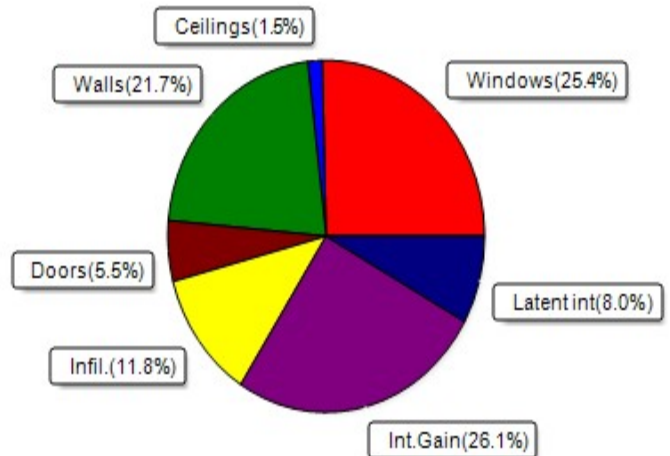
Load component			Load	
Window total	239	sqft	5736	Btuh
Wall total	1978	sqft	6821	Btuh
Door total	92	sqft	1472	Btuh
Ceiling total	2306	sqft	373	Btuh
Floor total	2306	sqft	14254	Btuh
Infiltration	57	cfm	2489	Btuh
Duct loss			0	Btuh
Subtotal			31146	Btuh
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			31146	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2306 sqft)

Load component			Load	
Window total	239	sqft	5089	Btuh
Wall total	1978	sqft	4348	Btuh
Door total	92	sqft	1104	Btuh
Ceiling total	2306	sqft	299	Btuh
Floor total			0	Btuh
Infiltration	43	cfm	887	Btuh
Internal gain			5240	Btuh
Duct gain			0	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Blower Load			0	Btuh
Total sensible gain			16967	Btuh
Latent gain(ducts)			0	Btuh
Latent gain(infiltration)			1471	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			1600	Btuh
Total latent gain			3071	Btuh
TOTAL HEAT GAIN			20038	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

7-6-21

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Slaymaker Residence

, FL

7/6/2021

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	0.27, 0.60	No	No	N		1.5ft.	2.3ft.	15.0	0.0	15.0	17	17	256	Btuh		
2	2 NFRC	0.27, 0.60	No	No	N		11.5f	2.3ft.	36.0	0.0	36.0	17	17	615	Btuh		
3	2 NFRC	0.27, 0.60	No	No	N		11.5f	2.3ft.	16.0	0.0	16.0	17	17	273	Btuh		
4	2 NFRC	0.27, 0.60	No	No	E		1.5ft.	2.3ft.	4.5	0.0	4.5	17	37	168	Btuh		
5	2 NFRC	0.27, 0.60	No	No	E		1.5ft.	2.3ft.	6.0	0.0	6.0	17	37	225	Btuh		
6	2 NFRC	0.27, 0.60	No	No	E		1.5ft.	2.3ft.	20.0	0.0	20.0	17	37	749	Btuh		
7	2 NFRC	0.27, 0.60	No	No	S		1.5ft.	2.3ft.	12.5	12.5	0.0	17	19	213	Btuh		
8	2 NFRC	0.27, 0.60	No	No	S		1.5ft.	2.3ft.	30.0	30.0	0.0	17	19	512	Btuh		
9	2 NFRC	0.27, 0.60	No	No	S		1.5ft.	2.3ft.	10.0	10.0	0.0	17	19	171	Btuh		
10	2 NFRC	0.27, 0.60	No	No	S		7.5ft.	2.3ft.	60.0	60.0	0.0	17	19	1025	Btuh		
11	2 NFRC	0.27, 0.60	No	No	S		1.5ft.	2.3ft.	10.0	10.0	0.0	17	19	171	Btuh		
12	2 NFRC	0.27, 0.60	No	No	W		1.5ft.	2.3ft.	4.0	0.0	4.0	17	37	150	Btuh		
13	2 NFRC	0.27, 0.60	No	No	W		1.5ft.	2.3ft.	15.0	0.0	15.0	17	37	561	Btuh		
	Window Total								239 (sqft)					5089 Btuh			
Walls	Type	U-Value						R-Value			Area(sqft)			HTM		Load	
								Cav/Sheath									
1	Frame - Wood - Ext						0.09		13.0/0.6		153.0		2.2		336		Btuh
2	Frame - Wood - Ext						0.09		13.0/0.6		139.5		2.2		307		Btuh
3	Frame - Wood - Ext						0.09		13.0/0.6		199.0		2.2		437		Btuh
4	Frame - Wood - Ext						0.09		13.0/0.6		58.5		2.2		129		Btuh
5	Frame - Wood - Ext						0.09		13.0/0.6		187.0		2.2		411		Btuh
6	Frame - Wood - Ext						0.09		13.0/0.6		284.5		2.2		625		Btuh
7	Frame - Wood - Ext						0.09		13.0/0.6		86.5		2.2		190		Btuh
8	Frame - Wood - Ext						0.09		13.0/0.6		18.0		2.2		40		Btuh
9	Frame - Wood - Ext						0.09		13.0/0.6		78.0		2.2		171		Btuh
10	Frame - Wood - Ext						0.09		13.0/0.6		18.0		2.2		40		Btuh
11	Frame - Wood - Ext						0.09		13.0/0.6		62.0		2.2		136		Btuh
12	Frame - Wood - Ext						0.09		13.0/0.6		50.0		2.2		110		Btuh
13	Frame - Wood - Ext						0.09		13.0/0.6		217.0		2.2		477		Btuh
14	Frame - Wood - Ext						0.09		13.0/0.6		58.5		2.2		129		Btuh
15	Frame - Wood - Ext						0.09		13.0/0.6		41.0		2.2		90		Btuh
16	Frame - Wood - Ext						0.09		13.0/0.6		327.5		2.2		720		Btuh
	Wall Total								1978 (sqft)					4348 Btuh			
Doors	Type	U-Value						R-Value			Area (sqft)			HTM		Load	
1	Insulated - Exterior										24.0		12.0		288		Btuh
2	Insulated - Exterior										20.0		12.0		240		Btuh
3	Insulated - Exterior										48.0		12.0		576		Btuh
	Door Total								92 (sqft)					1104 Btuh			
Ceilings	Type/Color/Surface	U-Value						R-Value			Area(sqft)			HTM		Load	
1	Unvented Attic/Light/Shingle						0.032		30.0/44.0		2306.0		0.13		299		Btuh
	Ceiling Total								2306 (sqft)					299 Btuh			
Floors	Type	U-Value						R-Value			Size			HTM		Load	
1	Slab On Grade						0.0				2306 (ft-perimeter)		0.0		0		Btuh
	Floor Total								2306.0 (sqft)					0 Btuh			
	Envelope Subtotal:													10840 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Slaymaker Residence

, FL

7/6/2021

Infiltration	Type Natural	Average ACH 0.12	Volume(cuft) 20754	Wall Ratio 1	CFM= 42.6	Load 887 Btuh
Internal gain		Occupants 8	Btuh/occupant X 230	Appliance +	3400	Load 5240 Btuh
	Sensible Envelope Load:					16967 Btuh
Duct load	Extremelysealed, Supply(R6.0-Cond), Return(R6.0-Cond) (DGM of 0.000)					0 Btuh
	Sensible Load All Zones					16967 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Slaymaker Residence

, FL

7/6/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	16967 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	16967 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	16967 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1471 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3071 Btuh
	TOTAL GAIN	20038 Btuh

EQUIPMENT

1. Central Unit	#	30000 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:
Slaymaker Residence
Building Type: User

, FL

7/6/2021

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 0.27	Vinyl	0.60	N	15.0		24.0	360 Btuh
2	2, NFRC 0.27	Vinyl	0.60	N	36.0		24.0	864 Btuh
3	2, NFRC 0.27	Vinyl	0.60	N	16.0		24.0	384 Btuh
4	2, NFRC 0.27	Vinyl	0.60	E	4.5		24.0	108 Btuh
5	2, NFRC 0.27	Vinyl	0.60	E	6.0		24.0	144 Btuh
6	2, NFRC 0.27	Vinyl	0.60	E	20.0		24.0	480 Btuh
7	2, NFRC 0.27	Vinyl	0.60	S	12.5		24.0	300 Btuh
8	2, NFRC 0.27	Vinyl	0.60	S	30.0		24.0	720 Btuh
9	2, NFRC 0.27	Vinyl	0.60	S	10.0		24.0	240 Btuh
10	2, NFRC 0.27	Vinyl	0.60	S	60.0		24.0	1440 Btuh
11	2, NFRC 0.27	Vinyl	0.60	S	10.0		24.0	240 Btuh
12	2, NFRC 0.27	Vinyl	0.60	W	4.0		24.0	96 Btuh
13	2, NFRC 0.27	Vinyl	0.60	W	15.0		24.0	360 Btuh
Window Total					239.0(sqft)			5736 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.086)	13.0/0.6	153		3.45	528 Btuh
2	Frame - Wood	- Ext	(0.086)	13.0/0.6	140		3.45	481 Btuh
3	Frame - Wood	- Ext	(0.086)	13.0/0.6	199		3.45	686 Btuh
4	Frame - Wood	- Ext	(0.086)	13.0/0.6	59		3.45	202 Btuh
5	Frame - Wood	- Ext	(0.086)	13.0/0.6	187		3.45	645 Btuh
6	Frame - Wood	- Ext	(0.086)	13.0/0.6	285		3.45	981 Btuh
7	Frame - Wood	- Ext	(0.086)	13.0/0.6	87		3.45	298 Btuh
8	Frame - Wood	- Ext	(0.086)	13.0/0.6	18		3.45	62 Btuh
9	Frame - Wood	- Ext	(0.086)	13.0/0.6	78		3.45	269 Btuh
10	Frame - Wood	- Ext	(0.086)	13.0/0.6	18		3.45	62 Btuh
11	Frame - Wood	- Ext	(0.086)	13.0/0.6	62		3.45	214 Btuh
12	Frame - Wood	- Ext	(0.086)	13.0/0.6	50		3.45	172 Btuh
13	Frame - Wood	- Ext	(0.086)	13.0/0.6	217		3.45	748 Btuh
14	Frame - Wood	- Ext	(0.086)	13.0/0.6	59		3.45	202 Btuh
15	Frame - Wood	- Ext	(0.086)	13.0/0.6	41		3.45	141 Btuh
16	Frame - Wood	- Ext	(0.086)	13.0/0.6	328		3.45	1129 Btuh
Wall Total					1978(sqft)			6821 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		24		16.0	384 Btuh
2	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
3	Insulated - Exterior, n		(0.400)		48		16.0	768 Btuh
Door Total					92(sqft)			1472Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Unvent Attic/L/Shing		(0.032)	30.0/44.0	2306		0.2	373 Btuh
Ceiling Total					2306(sqft)			373Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Slaymaker Residence
Building Type: User

7/6/2021

Floors 1	Type Slab On Grade Floor Total	Ueff. (1.180)	R-Value 0.0	Size X 302.0 ft(perim.) 2306 sqft	HTM= 47.2	Load 14254 Btuh 14254 Btuh
	Envelope Subtotal:					28657 Btuh
Infiltration	Type Natural	Wholehouse ACH 0.16	Volume(cuft) 20754	Wall Ratio 1.00	CFM= 56.8	2489 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)					0 Btuh
All Zones	Sensible Subtotal All Zones					31146 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	31146 Btuh 0 Btuh 31146 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	30000 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