

Residential System Sizing Calculation

Summary

Dustin & Laurie Lane
Mission Ridge Drive
Lake City, FL

Project Title:
Lane Residence

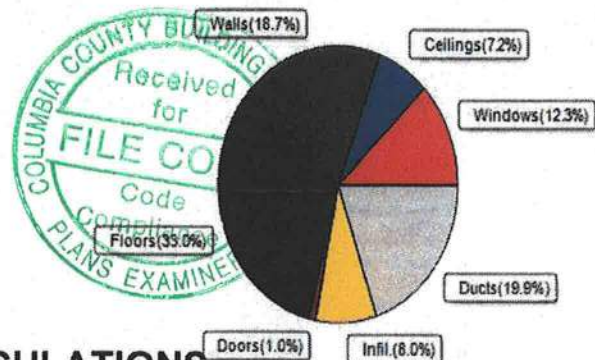
5/13/2020

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	37126 Btuh	Total cooling load calculation	27090 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	100.0 37126	Sensible (SHR = 0.70)	86.7 18963
Heat Pump + Auxiliary(0.0kW)	100.0 37126	Latent	156.1 8127
		Total (Electric Heat Pump)	100.0 27090

WINTER CALCULATIONS

Winter Heating Load (for 2498 sqft)

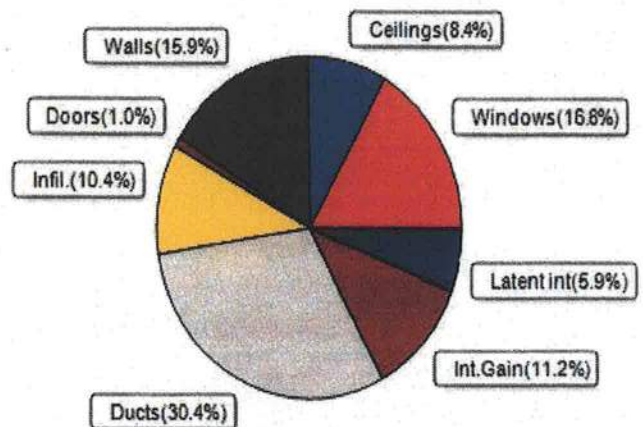
Load component		Load	
Window total	316 sqft	4550	Btuh
Wall total	1956 sqft	6944	Btuh
Door total	20 sqft	368	Btuh
Ceiling total	2623 sqft	2663	Btuh
Floor total	2498 sqft	12256	Btuh
Infiltration	68 cfm	2960	Btuh
Duct loss		7384	Btuh
Subtotal		37126	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		37126	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2498 sqft)

Load component		Load	
Window total	316 sqft	4554	Btuh
Wall total	1956 sqft	4314	Btuh
Door total	20 sqft	276	Btuh
Ceiling total	2623 sqft	2264	Btuh
Floor total		0	Btuh
Infiltration	51 cfm	1055	Btuh
Internal gain		3040	Btuh
Duct gain		6380	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		21883	Btuh
Latent gain(ducts)		1857	Btuh
Latent gain(infiltration)		1750	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1600	Btuh
Total latent gain		5207	Btuh
TOTAL HEAT GAIN		27090	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY:

DATE:

5/13/2020

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Dustin & Laurie Lane
Mission Ridge Drive
Lake City, FL

Project Title:
Lane Residence
Building Type: User

5/13/2020

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 0.25	Vinyl	0.36	S	72.0		14.4	1037 Btuh	
2	2, NFRC 0.25	TIM	0.36	S	24.0		14.4	346 Btuh	
3	2, NFRC 0.25	Vinyl	0.36	S	9.0		14.4	130 Btuh	
4	2, NFRC 0.25	Vinyl	0.36	S	45.0		14.4	648 Btuh	
5	2, NFRC 0.25	Vinyl	0.36	E	16.0		14.4	230 Btuh	
6	2, NFRC 0.25	Vinyl	0.36	E	6.0		14.4	86 Btuh	
7	2, NFRC 0.25	Vinyl	0.36	N	30.0		14.4	432 Btuh	
8	2, NFRC 0.25	Metal	0.36	N	80.0		14.4	1152 Btuh	
9	2, NFRC 0.25	Vinyl	0.36	N	15.0		14.4	216 Btuh	
10	2, NFRC 0.25	Vinyl	0.36	W	4.0		14.4	58 Btuh	
11	2, NFRC 0.25	Vinyl	0.36	W	15.0		14.4	216 Btuh	
	Window Total					316.0(sqft)			4550 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load	
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	246		3.55	873 Btuh	
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	50		3.55	176 Btuh	
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	54		3.55	192 Btuh	
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	50		3.55	176 Btuh	
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	171		3.55	607 Btuh	
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	293		3.55	1040 Btuh	
7	Frame - Wood	- Adj	(0.089)	13.0/0.0	196		3.55	696 Btuh	
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	183		3.55	648 Btuh	
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	108		3.55	383 Btuh	
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	98		3.55	346 Btuh	
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	71		3.55	250 Btuh	
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	57		3.55	202 Btuh	
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	112		3.55	396 Btuh	
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	57		3.55	202 Btuh	
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	213		3.55	756 Btuh	
	Wall Total					1956(sqft)			6944 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load	
1	Insulated - Garage, n		(0.460)		20		18.4	368 Btuh	
	Door Total					20(sqft)			368Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load	
1	Vented Attic/L/Shing		(0.025)	38.0/0.0	2623		1.0	2663 Btuh	
	Ceiling Total					2623(sqft)			2663Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load	
1	Slab On Grade		(1.180)	0.0	259.7 ft(perim.)		47.2	12256 Btuh	
	Floor Total					2498 sqft			12256 Btuh
Envelope Subtotal:								26782 Btuh	

Manual J Winter Calculations

Residential Load - Component Details (continued)

Dustin & Laurie Lane
Mission Ridge Drive
Lake City, FL

Project Title:
Lane Residence
Building Type: User

5/13/2020

Infiltration	Type Natural	Wholehouse ACH 0.18	Volume(cuft) 22482	Wall Ratio 1.00	CFM= 67.6	2960 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)				(DLM of 0.248)	7384 Btuh
All Zones	Sensible Subtotal All Zones					37126 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	37126 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	37126 Btuh

EQUIPMENT

1. Electric Heat Pump	#	37126 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

Dustin & Laurie Lane
Mission Ridge Drive
Lake City, FL

Project Title:
Lane Residence

5/13/2020

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	0.25, 0.36	No	No	S	9.5ft.	1.5ft.	72.0	72.0	0.0	12	14	871	Btuh
2	2 NFRC	0.25, 0.36	No	No	S	9.5ft.	1.5ft.	24.0	24.0	0.0	12	14	290	Btuh
3	2 NFRC	0.25, 0.36	No	No	S	1.5ft.	1.0ft.	9.0	9.0	0.0	12	14	109	Btuh
4	2 NFRC	0.25, 0.36	No	No	S	1.5ft.	1.0ft.	45.0	45.0	0.0	12	14	544	Btuh
5	2 NFRC	0.25, 0.36	No	No	E	1.5ft.	1.0ft.	16.0	1.0	15.0	12	31	477	Btuh
6	2 NFRC	0.25, 0.36	No	No	E	1.5ft.	1.0ft.	6.0	0.5	5.5	12	31	176	Btuh
7	2 NFRC	0.25, 0.36	No	No	N	13.5f	1.0ft.	30.0	0.0	30.0	12	12	363	Btuh
8	2 NFRC	0.25, 0.36	No	No	N	13.5f	1.0ft.	80.0	0.0	80.0	12	12	968	Btuh
9	2 NFRC	0.25, 0.36	No	No	N	1.5ft.	1.0ft.	15.0	0.0	15.0	12	12	181	Btuh
10	2 NFRC	0.25, 0.36	No	No	W	1.0ft.	2.0ft.	4.0	0.0	4.0	12	31	124	Btuh
11	2 NFRC	0.25, 0.36	No	No	W	1.5ft.	1.0ft.	15.0	0.7	14.3	12	31	450	Btuh
Window Total								316 (sqft)					4554 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load				
				Cav/Sheath										
1	Frame - Wood - Ext	0.09		13.0/0.0		246.0		2.3		557 Btuh				
2	Frame - Wood - Ext	0.09		13.0/0.0		49.5		2.3		112 Btuh				
3	Frame - Wood - Ext	0.09		13.0/0.0		54.0		2.3		122 Btuh				
4	Frame - Wood - Ext	0.09		13.0/0.0		49.5		2.3		112 Btuh				
5	Frame - Wood - Ext	0.09		13.0/0.0		171.0		2.3		387 Btuh				
6	Frame - Wood - Ext	0.09		13.0/0.0		293.0		2.3		663 Btuh				
7	Frame - Wood - Adj	0.09		13.0/0.0		196.0		1.7		331 Btuh				
8	Frame - Wood - Ext	0.09		13.0/0.0		182.5		2.3		413 Btuh				
9	Frame - Wood - Ext	0.09		13.0/0.0		108.0		2.3		244 Btuh				
10	Frame - Wood - Ext	0.09		13.0/0.0		97.5		2.3		221 Btuh				
11	Frame - Wood - Ext	0.09		13.0/0.0		70.5		2.3		160 Btuh				
12	Frame - Wood - Ext	0.09		13.0/0.0		57.0		2.3		129 Btuh				
13	Frame - Wood - Ext	0.09		13.0/0.0		111.5		2.3		252 Btuh				
14	Frame - Wood - Ext	0.09		13.0/0.0		57.0		2.3		129 Btuh				
15	Frame - Wood - Ext	0.09		13.0/0.0		213.0		2.3		482 Btuh				
Wall Total						1956 (sqft)					4314 Btuh			
Doors	Type	Area (sqft)		HTM		Load								
1	Insulated - Garage	20.0		13.8		276 Btuh								
Door Total						20 (sqft)					276 Btuh			
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load				
1	Vented Attic/Light/Shingle/RB	0.025		38.0/0.0		2623.0		0.86		2264 Btuh				
Ceiling Total						2623 (sqft)					2264 Btuh			
Floors	Type	R-Value		Size		HTM		Load						
1	Slab On Grade	0.0		2498 (ft-perimeter)		0.0		0 Btuh						
Floor Total						2498.0 (sqft)					0 Btuh			
Envelope Subtotal:											11408 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Dustin & Laurie Lane
Mission Ridge Drive
Lake City, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Lane Residence

5/13/2020

Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.14	22482	1	50.7	1055 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		8	X 230	+	1200	3040 Btuh
					Sensible Envelope Load:	15502 Btuh
Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic)				(DGM of 0.412)	6380 Btuh
					Sensible Load All Zones	21883 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Dustin & Laurie Lane
Mission Ridge Drive
Lake City, FL

Project Title:
Lane Residence

Climate:FL_GAINESVILLE_REGIONAL_A

5/13/2020

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	15502 Btuh
	Sensible Duct Load	6380 Btuh
	Total Sensible Zone Loads	21883 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	21883 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1750 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1857 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	5207 Btuh
	TOTAL GAIN	27090 Btuh

EQUIPMENT

1. Central Unit	#	27090 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