

Residential System Sizing Calculation

Summary

Ellis
935 NW Huntsville Church Dr
Lake City, FL

Project Title:
Ellis Residence

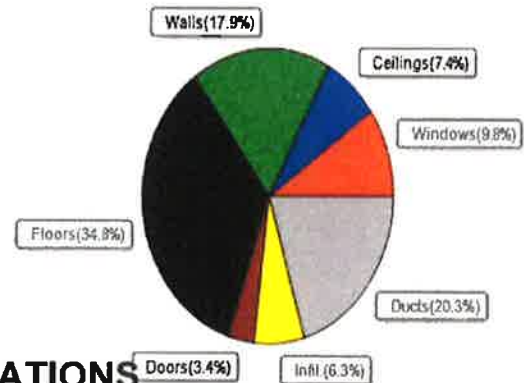
7/22/2021

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	21677 Btuh	Total cooling load calculation	18391 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	100.0 21677	Sensible (SHR = 0.70)	83.5 12736
Heat Pump + Auxiliary(0.0kW)	100.0 21677	Latent	173.6 5458
		Total (Electric Heat Pump)	98.9 18195

WINTER CALCULATIONS

Winter Heating Load (for 1500 sqft)

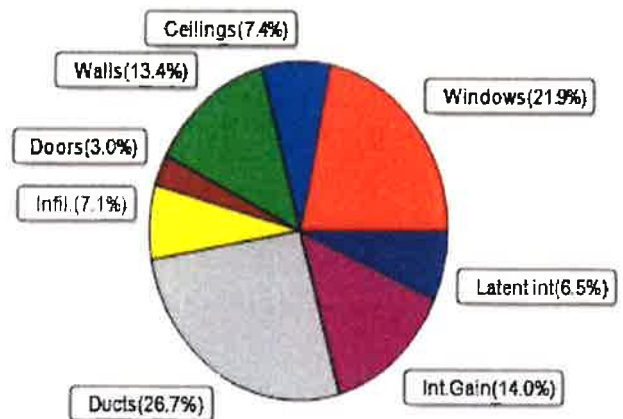
Load component		Load
Window total	148 sqft	2131 Btuh
Wall total	1092 sqft	3877 Btuh
Door total	40 sqft	736 Btuh
Ceiling total	1575 sqft	1599 Btuh
Floor total	1500 sqft	7552 Btuh
Infiltration	31 cfm	1373 Btuh
Duct loss		4409 Btuh
Subtotal		21677 Btuh
Ventilation	0 cfm	0 Btuh
TOTAL HEAT LOSS		21677 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1500 sqft)

Load component		Load
Window total	148 sqft	4022 Btuh
Wall total	1092 sqft	2472 Btuh
Door total	40 sqft	552 Btuh
Ceiling total	1575 sqft	1359 Btuh
Floor total		0 Btuh
Infiltration	24 cfm	489 Btuh
Internal gain		2580 Btuh
Duct gain		3773 Btuh
Sens. Ventilation	0 cfm	0 Btuh
Blower Load		0 Btuh
Total sensible gain		15247 Btuh
Latent gain(ducts)		1133 Btuh
Latent gain(infiltration)		812 Btuh
Latent gain(ventilation)		0 Btuh
Latent gain(internal/occupants/other)		1200 Btuh
Total latent gain		3145 Btuh
TOTAL HEAT GAIN		18391 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

7/22/2021

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Ellis
935 NW Huntsville Church Dr
Lake City, FL

Project Title:
Ellis Residence
Building Type: User

7/22/2021

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 0.25	Vinyl	0.36	N	30.0		14.4	432 Btuh
2	2, NFRC 0.25	Vinyl	0.36	N	7.0		14.4	101 Btuh
3	2, NFRC 0.25	Vinyl	0.36	N	3.0		14.4	43 Btuh
4	2, NFRC 0.25	Vinyl	0.36	W	108.0		14.4	1555 Btuh
	Window Total				148.0(sqft)			2131 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	200		3.55	710 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	292		3.55	1037 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	220		3.55	781 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	380		3.55	1349 Btuh
	Wall Total				1092(sqft)			3877 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		20		18.4	368 Btuh
2	Insulated - Exterior, n		(0.460)		20		18.4	368 Btuh
	Door Total				40(sqft)			736Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/L/Metal		(0.025)	38.0/0.0	1575		1.0	1599 Btuh
	Ceiling Total				1575(sqft)			1599Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	160.0 ft(perim.)		47.2	7552 Btuh
	Floor Total				1500 sqft			7552 Btuh
	Envelope Subtotal:							15895 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.16	12000	1.00	31.4		1373 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)					(DLM of 0.255)		4409 Btuh
All Zones	Sensible Subtotal All Zones							21677 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Ellis
935 NW Huntsville Church Dr
Lake City, FL

Project Title:
Ellis Residence
Building Type: User

7/22/2021

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	21677 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	21677 Btuh

EQUIPMENT

1. Electric Heat Pump	#	21677 Btuh
-----------------------	---	------------

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

Ellis
935 NW Huntsville Church Dr
Lake City, FL

Project Title:
Ellis Residence

7/22/2021

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	0.25, 0.36	No	No	N		1.0ft.	10.0f	30.0	0.0	30.0	12	12	363	Btuh		
2	2 NFRC	0.25, 0.36	No	No	N		1.0ft.	8.0ft.	7.0	0.0	7.0	12	12	85	Btuh		
3	2 NFRC	0.25, 0.36	No	No	N		1.0ft.	8.0ft.	3.0	0.0	3.0	12	12	36	Btuh		
4	2 NFRC	0.25, 0.36	No	No	W		1.0ft.	8.0ft.	108.0	0.0	108.0	12	31	3342	Btuh		
	Excursion													196	Btuh		
	Window Total								148 (sqft)					4022 Btuh			
Walls	Type						U-Value		R-Value		Area(sqft)		HTM		Load		
									Cav/Sheath								
	1	Frame - Wood - Ext						0.09		13.0/0.0		200.0	2.3		453	Btuh	
	2	Frame - Wood - Ext						0.09		13.0/0.0		292.0	2.3		661	Btuh	
	3	Frame - Wood - Ext						0.09		13.0/0.0		220.0	2.3		498	Btuh	
	4	Frame - Wood - Ext						0.09		13.0/0.0		380.0	2.3		860	Btuh	
		Wall Total										1092 (sqft)			2472 Btuh		
Doors	Type										Area (sqft)		HTM		Load		
	1	Insulated - Exterior										20.0	13.8		276	Btuh	
	2	Insulated - Exterior										20.0	13.8		276	Btuh	
		Door Total										40 (sqft)			552 Btuh		
Ceilings	Type/Color/Surface						U-Value		R-Value		Area(sqft)		HTM		Load		
	1	Vented Attic/Light/Meta/VRB						0.025		38.0/0.0		1575.0	0.86		1359	Btuh	
		Ceiling Total										1575 (sqft)			1359 Btuh		
Floors	Type								R-Value		Size		HTM		Load		
	1	Slab On Grade								0.0		1500 (ft-perimeter)	0.0		0	Btuh	
		Floor Total										1500.0 (sqft)			0 Btuh		
	Envelope Subtotal:													8405 Btuh			
Infiltration	Type						Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load		
	Natural						0.12		12000		1		23.5		489 Btuh		
Internal gain							Occupants		Btuh/occupant				Appliance		Load		
							6		X 230		+		1200		2580 Btuh		
	Sensible Envelope Load:													11474 Btuh			
Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic)													(DGM of 0.329)		3773 Btuh	
	Sensible Load All Zones													15247 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Ellis
935 NW Huntsville Church Dr
Lake City, FL

Project Title:
Ellis Residence

Climate:FL_GAINESVILLE_REGIONAL_A

7/22/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	11474 Btuh
	Sensible Duct Load	3773 Btuh
	Total Sensible Zone Loads	15247 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	15247 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	812 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1133 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3145 Btuh
	TOTAL GAIN	18391 Btuh

EQUIPMENT

1. Central Unit	#	18195 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(½))
 (Ornt - compass orientation)



Version 8