

Residential System Sizing Calculation

Summary

John Hadley
NW ASH DRIVE
Lake City, FL

Project Title:
Hadley Residence

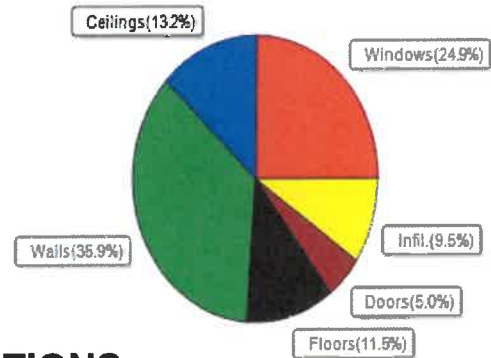
4/20/2021

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	7395 Btuh	Total cooling load calculation	8852 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	100.0 7395	Sensible (SHR = 0.70)	79.1 6196
Heat Pump + Auxiliary(0.0kW)	100.0 7395	Latent	261.5 2656
		Total (Electric Heat Pump)	100.0 8852

WINTER CALCULATIONS

Winter Heating Load (for 768 sqft)

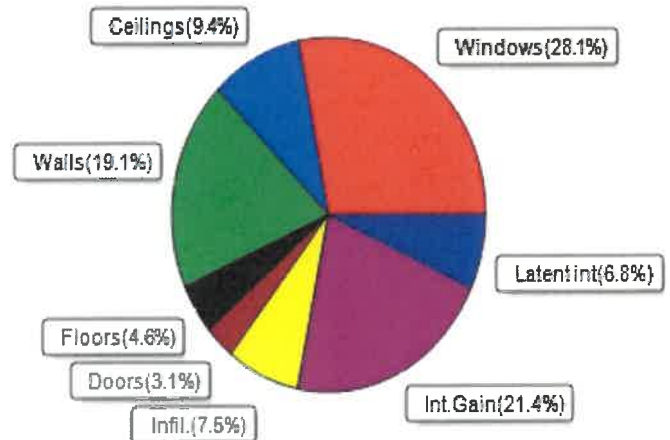
Load component		Load	
Window total	128 sqft	1843 Btuh	
Wall total	748 sqft	2656 Btuh	
Door total	20 sqft	368 Btuh	
Ceiling total	960 sqft	975 Btuh	
Floor total	768 sqft	851 Btuh	
Infiltration	16 cfm	703 Btuh	
Duct loss		0 Btuh	
Subtotal		7395 Btuh	
Ventilation	0 cfm	0 Btuh	
TOTAL HEAT LOSS		7395 Btuh	



SUMMER CALCULATIONS

Summer Cooling Load (for 768 sqft)

Load component		Load	
Window total	128 sqft	2491 Btuh	
Wall total	748 sqft	1693 Btuh	
Door total	20 sqft	276 Btuh	
Ceiling total	960 sqft	828 Btuh	
Floor total		408 Btuh	
Infiltration	12 cfm	250 Btuh	
Internal gain		1890 Btuh	
Duct gain		0 Btuh	
Sens. Ventilation	0 cfm	0 Btuh	
Blower Load		0 Btuh	
Total sensible gain		7836 Btuh	
Latent gain(ducts)		0 Btuh	
Latent gain(infiltration)		416 Btuh	
Latent gain(ventilation)		0 Btuh	
Latent gain(internal/occupants/other)		600 Btuh	
Total latent gain		1016 Btuh	
TOTAL HEAT GAIN		8852 Btuh	



8th Edition

EnergyGauge® System Sizing

PREPARED BY:

DATE:

4/20/2021

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

John Hadley
NW ASH DRIVE
Lake City, FL

Project Title:
Hadley Residence
Building Type: User

4/20/2021

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	S	60.0		14.4	864 Btuh
2	2, NFRC 0.25	Vinyl	0.36	E	30.0		14.4	432 Btuh
3	2, NFRC 0.25	Vinyl	0.36	N	9.0		14.4	130 Btuh
4	2, NFRC 0.25	TIM	0.36	N	9.0		14.4	130 Btuh
5	2, NFRC 0.25	Vinyl	0.36	W	20.0		14.4	288 Btuh
Window Total					128.0(sqft)			1843 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	176		3.55	625 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	162		3.55	575 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	238		3.55	845 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	172		3.55	611 Btuh
Wall Total					748(sqft)			2656 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, 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/Metal	(0.025)	38.0/0.0		960		1.0	975 Btuh
Ceiling Total					960(sqft)			975Btuh
Floors	Type	Ueff.	R-Value		Size	X	HTM=	Load
1	Stem/Crawlsp(Carpet)(v)	(0.049)	19.0/5.0		768.0 sqft		1.1	851 Btuh
Floor Total					768 sqft			851 Btuh
Envelope Subtotal:								6692 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.16	6144	1.00	16.1		703 Btuh
Duct load	NA, R0.0, Supply(), Return() (DLM of 0.000)							0 Btuh
All Zones	Sensible Subtotal All Zones							7395 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

John Hadley
NW ASH DRIVE
Lake City, FL

Project Title:
Hadley Residence
Building Type: User

4/20/2021

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	7395 Btuh 0 Btuh 7395 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	7395 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

John Hadley
NW ASH DRIVE
Lake City, FL

Project Title:
Hadley Residence

4/20/2021

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	S		9.5ft.	0.5ft.	60.0	60.0	0.0	12	14	726	Btuh		
2	2 NFRC	0.25, 0.36	No	No	E		1.0ft.	6.0ft.	30.0	0.0	30.0	12	31	928	Btuh		
3	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	2.0ft.	9.0	0.0	9.0	12	12	109	Btuh		
4	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	2.0ft.	9.0	0.0	9.0	12	12	109	Btuh		
5	2 NFRC	0.25, 0.36	No	No	W		1.0ft.	6.0ft.	20.0	0.0	20.0	12	31	619	Btuh		
	Window Total								128 (sqft)						2491	Btuh	
Walls	Type	U-Value						R-Value		Area(sqft)		HTM		Load			
								Cav/Sheath									
1	Frame - Wood - Ext	0.09						13.0/0.0		176.0		2.3		398 Btuh			
2	Frame - Wood - Ext	0.09						13.0/0.0		162.0		2.3		367 Btuh			
3	Frame - Wood - Ext	0.09						13.0/0.0		238.0		2.3		539 Btuh			
4	Frame - Wood - Ext	0.09						13.0/0.0		172.0		2.3		389 Btuh			
	Wall Total								748 (sqft)						1693	Btuh	
Doors	Type									Area (sqft)		HTM		Load			
1	Insulated - Exterior									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/Metal/RB	0.025						38.0/0.0		960.0		0.86		828 Btuh			
	Ceiling Total								960 (sqft)						828	Btuh	
Floors	Type							R-Value		Size		HTM		Load			
1	Stem/Crawlsp(Carpet)(v)							19.0		768 (sqft)		0.5		408 Btuh			
	Floor Total								768.0 (sqft)						408	Btuh	
	Envelope Subtotal:													5696 Btuh			
Infiltration	Type	Average ACH						Volume(cuft)		Wall Ratio		CFM=		Load			
	Natural	0.12						6144		1		12.0		250 Btuh			
Internal gain	Occupants						Btuh/occupant		Appliance		Load						
	3						X 230		+		1200		1890 Btuh				
	Sensible Envelope Load:													7836 Btuh			
Duct load	NA, Supply(R0.0-None), Return(R0.0-None)													(DGM of 0.000)		0 Btuh	
	Sensible Load All Zones													7836 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

John Hadley
NW ASH DRIVE
Lake City, FL

Project Title: Hadley Residence

Climate:FL_GAINESVILLE_REGIONAL_A

4/20/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	7836 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	7836 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	7836 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	416 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (3.0 people @ 200 Btuh per person)	600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	1016 Btuh
	TOTAL GAIN	8852 Btuh

EQUIPMENT

1. Central Unit	#	8852 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