

Residential System Sizing Calculation

Summary

Project Title:
Dryden Residence

, FL

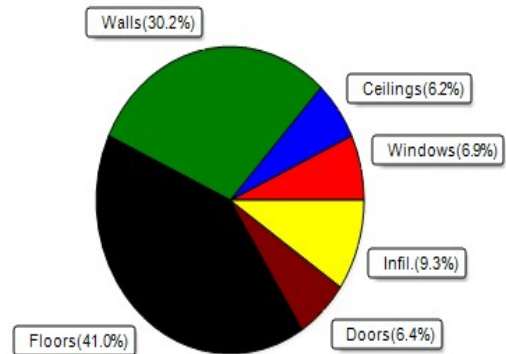
2/1/2023

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(100 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	20019 Btuh	Total cooling load calculation	14995 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	149.9 30000	Sensible (SHR = 0.85)	200.9 25500
Heat Pump + Auxiliary(0.0kW)	149.9 30000	Latent	195.5 4500
		Total (Electric Heat Pump)	200.1 30000

WINTER CALCULATIONS

Winter Heating Load (for 1760 sqft)

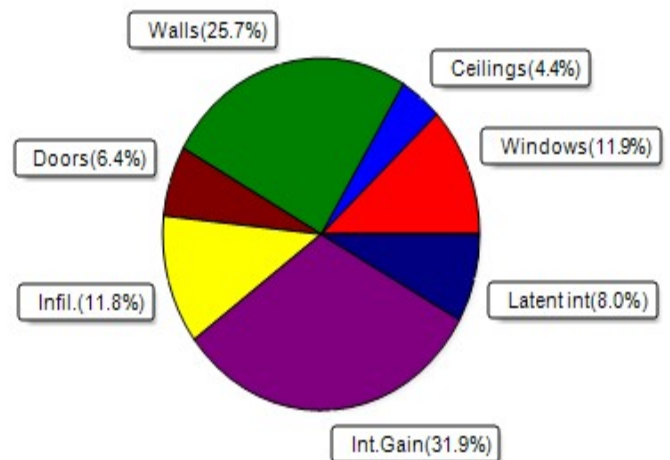
Load component	Load
Window total 132 sqft	1373 Btuh
Wall total 1702 sqft	6043 Btuh
Door total 80 sqft	1280 Btuh
Ceiling total 1760 sqft	1246 Btuh
Floor total 1760 sqft	8213 Btuh
Infiltration 43 cfm	1865 Btuh
Duct loss	0 Btuh
Subtotal	20019 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	20019 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1760 sqft)

Load component	Load
Window total 132 sqft	1783 Btuh
Wall total 1702 sqft	3852 Btuh
Door total 80 sqft	960 Btuh
Ceiling total 1760 sqft	653 Btuh
Floor total	0 Btuh
Infiltration 32 cfm	664 Btuh
Internal gain	4780 Btuh
Duct gain	0 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	12693 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	1102 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	2302 Btuh
TOTAL HEAT GAIN	14995 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

2-1-23

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Dryden Residence

, FL

2/1/2023

Reference City: Gainesville, FL (Defaults)
Humidity difference: 51gr.

Temperature Difference: 19.0F(TMY3 99%)
Summer Setpoint: 75 °F (Required Manual J default)

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	24.0	0.0	24.0	9	9	220 Btuh
2	2 NFRC	0.20, 0.26	No	No	E	1.5ft	2.3ft	30.0	0.0	30.0	9	24	727 Btuh
3	2 NFRC	0.20, 0.26	No	No	E	1.5ft	2.3ft	3.0	0.0	3.0	9	24	73 Btuh
4	2 NFRC	0.20, 0.26	No	No	S	9.5ft	2.3ft	75.0	75.0	0.0	9	11	686 Btuh
	Excursion												78 Btuh
	Window Total							132 (sqft)					1783 Btuh
Walls	Type					U-Value	R-Value	Area(sqft)		HTM		Load	
							Cav/Sheath						
1	Frame - Wood - Ext					0.09	13.0/0.0	541.0		2.3		1224 Btuh	
2	Frame - Wood - Ext					0.09	13.0/0.0	319.0		2.3		722 Btuh	
3	Frame - Wood - Ext					0.09	13.0/0.0	510.0		2.3		1154 Btuh	
4	Frame - Wood - Ext					0.09	13.0/0.0	332.0		2.3		751 Btuh	
	Wall Total						1702 (sqft)				3852 Btuh		
Doors	Type							Area (sqft)		HTM		Load	
1	Insulated - Exterior							20.0		12.0		240 Btuh	
2	Insulated - Exterior							20.0		12.0		240 Btuh	
3	Insulated - Exterior							20.0		12.0		240 Btuh	
4	Insulated - Exterior							20.0		12.0		240 Btuh	
	Door Total						80 (sqft)				960 Btuh		
Ceilings	Type/Color/Surface					U-Value	R-Value	Area(sqft)		HTM		Load	
1	SnglAsmb no airsp/Light/Metal					0.018	30.0/30.0	1760.0		0.37		653 Btuh	
	Ceiling Total						1760 (sqft)				653 Btuh		
Floors	Type						R-Value	Size		HTM		Load	
1	Slab On Grade						0.0	1760 (ft-perimeter)		0.0		0 Btuh	
	Floor Total						1760.0 (sqft)				0 Btuh		
	Envelope Subtotal:											7248 Btuh	
Infiltration	Type					Average ACH		Volume(cuft)		Wall Ratio		CFM=	Load
	Natural					0.12		15840		1		31.9	664 Btuh
Internal gain						Occupants		Btuh/occupant		Appliance		Load	
						6		X 230	+	3400		4780 Btuh	
	Sensible Envelope Load:											12693 Btuh	
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)											0 Btuh	
	Sensible Load All Zones											12693 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Dryden Residence

, FL

2/1/2023

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	12693 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	12693 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	12693 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1102 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2302 Btuh
	TOTAL GAIN	14995 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

, FL

Project Title:
Dryden Residence
Building Type: User

2/1/2023

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 °F (TMY3 99%)
Winter Setpoint: 70 °F (Required Manual J default)

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	24.0		10.4	250 Btuh
2	2, NFRC 0.20	Vinyl	0.26	E	30.0		10.4	312 Btuh
3	2, NFRC 0.20	Vinyl	0.26	E	3.0		10.4	31 Btuh
4	2, NFRC 0.20	Vinyl	0.26	S	75.0		10.4	780 Btuh
	Window Total				132.0(sqft)			1373 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	541		3.55	1921 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	319		3.55	1133 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	510		3.55	1811 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	332		3.55	1179 Btuh
	Wall Total				1702(sqft)			6043 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		20		16.0	320 Btuh
2	Insulated - Exterior,	n	(0.400)		20		16.0	320 Btuh
3	Insulated - Exterior,	n	(0.400)		20		16.0	320 Btuh
4	Insulated - Exterior,	n	(0.400)		20		16.0	320 Btuh
	Door Total				80(sqft)			1280Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Single as/L/Metal		(0.018)	30.0/30.0	1760		0.71	1246 Btuh
	Ceiling Total				1760(sqft)			1246Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	174.0 ft(perim.)		47.2	8213 Btuh
	Floor Total				1760 sqft			8213 Btuh
	Envelope Subtotal:							18154 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.16	15840	1.00	42.5		1865 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con)						(DLM of 0.000)	0 Btuh
All Zones	Sensible Subtotal All Zones							20019 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Dryden Residence
Building Type: User

2/1/2023

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	20019 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	20019 Btuh

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