

Residential System Sizing Calculation

Summary

Project Title:
Chandler & Yates

, FL

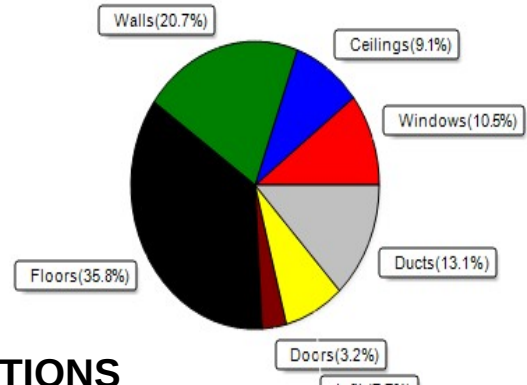
4/29/2021

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	21101 Btuh	Total cooling load calculation	18365 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	170.6 36000	Sensible (SHR = 0.85)	188.6 30600
Heat Pump + Auxiliary(0.0kW)	170.6 36000	Latent	252.0 5400
		Total (Electric Heat Pump)	196.0 36000

WINTER CALCULATIONS

Winter Heating Load (for 1500 sqft)

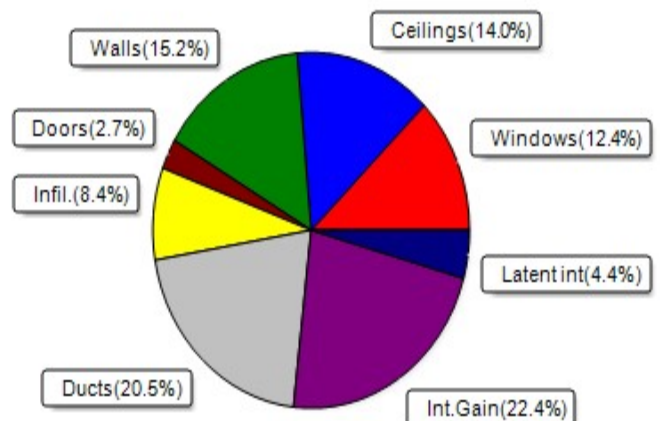
Load component		Load	
Window total	92 sqft	2208	Btuh
Wall total	1268 sqft	4373	Btuh
Door total	80 sqft	672	Btuh
Ceiling total	1500 sqft	1911	Btuh
Floor total	1500 sqft	7552	Btuh
Infiltration	37 cfm	1619	Btuh
Duct loss		2766	Btuh
Subtotal		21101	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		21101	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1500 sqft)

Load component		Load	
Window total	92 sqft	2271	Btuh
Wall total	1268 sqft	2788	Btuh
Door total	80 sqft	504	Btuh
Ceiling total	1500 sqft	2580	Btuh
Floor total		0	Btuh
Infiltration	28 cfm	577	Btuh
Internal gain		4120	Btuh
Duct gain		3384	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		16223	Btuh
Latent gain(ducts)		385	Btuh
Latent gain(infiltration)		957	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		800	Btuh
Total latent gain		2143	Btuh
TOTAL HEAT GAIN		18365	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

4-29-21

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Chandler & Yates

, FL

4/29/2021

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	3.0	0.0	3.0	17	17	51	Btuh	
2	2 NFRC	0.27, 0.60	No	No	N		1.5ft	2.3ft	12.0	0.0	12.0	17	17	205	Btuh	
3	2 NFRC	0.27, 0.60	No	No	E		1.5ft	2.3ft	12.0	0.0	12.0	17	37	449	Btuh	
4	2 NFRC	0.27, 0.60	No	No	E		1.5ft	2.3ft	20.0	0.0	20.0	17	37	749	Btuh	
5	2 NFRC	0.27, 0.60	No	No	S		8.5ft	2.3ft	45.0	45.0	0.0	17	19	769	Btuh	
	Excursion													48	Btuh	
	Window Total								92 (sqft)					2271 Btuh		
Walls	Type						U-Value		R-Value		Area(sqft)		HTM		Load	
									Cav/Sheath							
1	Frame - Wood - Ext						0.09		13.0/0.6		395.0		2.2		868 Btuh	
2	Frame - Wood - Ext						0.09		13.0/0.6		238.0		2.2		523 Btuh	
3	Frame - Wood - Ext						0.09		13.0/0.6		385.0		2.2		846 Btuh	
4	Frame - Wood - Ext						0.09		13.0/0.6		250.0		2.2		550 Btuh	
	Wall Total										1268 (sqft)				2788 Btuh	
Doors	Type										Area (sqft)		HTM		Load	
1	Insulated - Exterior										40.0		6.3		252 Btuh	
2	Insulated - Exterior										20.0		6.3		126 Btuh	
3	Insulated - Exterior										20.0		6.3		126 Btuh	
	Door Total										80 (sqft)				504 Btuh	
Ceilings	Type/Color/Surface						U-Value		R-Value		Area(sqft)		HTM		Load	
1	Vented Attic/DarkShingle						0.032		30.0/0.0		1500.0		1.72		2580 Btuh	
	Ceiling Total										1500 (sqft)				2580 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:													8142 Btuh		
Infiltration	Type						Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load	
	Natural						0.12		13500		1		27.7		577 Btuh	
Internal gain							Occupants		Btuh/occupant		Appliance		Load			
							4		X 230		+		3200		4120 Btuh	
	Sensible Envelope Load:													12839 Btuh		
Duct load	Extremely sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.264)													3384 Btuh		
	Sensible Load All Zones													16223 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Chandler & Yates

, FL

4/29/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	12839 Btuh
	Sensible Duct Load	3384 Btuh
	Total Sensible Zone Loads	16223 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	16223 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	957 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	385 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2143 Btuh
	TOTAL GAIN	18365 Btuh

EQUIPMENT

1. Central Unit	#	36000 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:
Chandler & Yates
Building Type: User

, FL

4/29/2021

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	3.0		24.0	72 Btuh
2	2, NFRC 0.27	Vinyl	0.60	N	12.0		24.0	288 Btuh
3	2, NFRC 0.27	Vinyl	0.60	E	12.0		24.0	288 Btuh
4	2, NFRC 0.27	Vinyl	0.60	E	20.0		24.0	480 Btuh
5	2, NFRC 0.27	Vinyl	0.60	S	45.0		24.0	1080 Btuh
	Window Total				92.0(sqft)			2208 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.086)	13.0/0.6	395		3.45	1362 Btuh
2	Frame - Wood	- Ext	(0.086)	13.0/0.6	238		3.45	821 Btuh
3	Frame - Wood	- Ext	(0.086)	13.0/0.6	385		3.45	1328 Btuh
4	Frame - Wood	- Ext	(0.086)	13.0/0.6	250		3.45	862 Btuh
	Wall Total				1268(sqft)			4373 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.210)		40		8.4	336 Btuh
2	Insulated - Exterior, n		(0.210)		20		8.4	168 Btuh
3	Insulated - Exterior, n		(0.210)		20		8.4	168 Btuh
	Door Total				80(sqft)			672Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/D/Shing		(0.032)	30.0/0.0	1500		1.3	1911 Btuh
	Ceiling Total				1500(sqft)			1911Btuh
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:							16716 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio		CFM=	
	Natural		0.16	13500	1.00		37.0	1619 Btuh
Duct load	Extremely sealed, R6.0, Supply(Att), Return(Att)						(DLM of 0.151)	2766 Btuh
All Zones	Sensible Subtotal All Zones							21101 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Chandler & Yates
Building Type: User

4/29/2021

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	21101 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	21101 Btuh

EQUIPMENT

1. Electric Heat Pump	#	36000 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