

Residential System Sizing Calculation

Summary

Murchinson
130 SW Hunter Leigh Pl
Lake City, FL

Project Title:
250919 Murchinson Barndamium

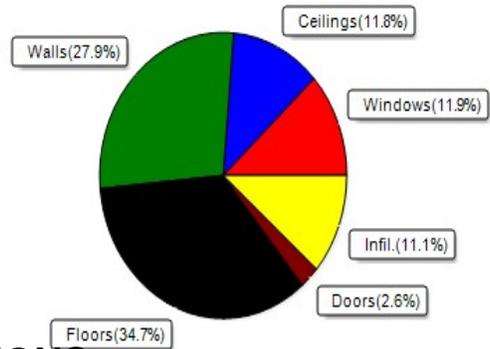
10/10/2025

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	17411	Btuh	Total cooling load calculation	13489	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Window/Wall Heat Pump)	114.9	20000	Sensible (SHR = 0.75)	127.7	15000
Heat Pump + Auxiliary(0.0kW)	114.9	20000	Latent	286.4	5000
			Total (Window/Wall Heat Pump)	148.3	20000

WINTER CALCULATIONS

Winter Heating Load (for 960 sqft)

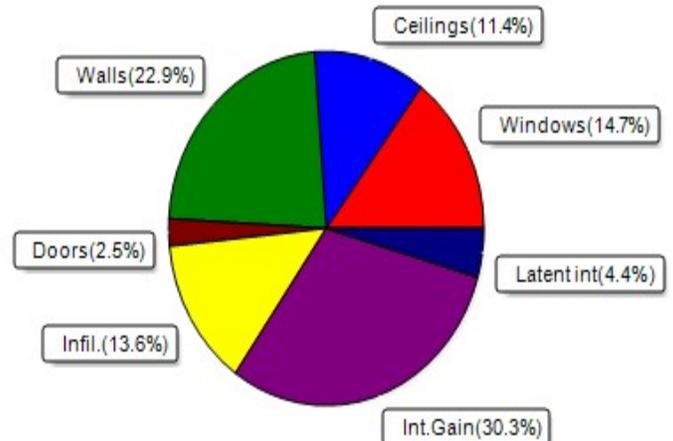
Load component	Load	
Window total	148 sqft	2072 Btuh
Wall total	1081 sqft	4853 Btuh
Door total	28 sqft	448 Btuh
Ceiling total	1009 sqft	2058 Btuh
Floor total	See detail report	6042 Btuh
Infiltration	44 cfm	1938 Btuh
Duct loss		0 Btuh
Subtotal		17411 Btuh
Ventilation	Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS		17411 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 960 sqft)

Load component	Load	
Window total	148 sqft	1989 Btuh
Wall total	1081 sqft	3094 Btuh
Door total	28 sqft	336 Btuh
Ceiling total	1009 sqft	1544 Btuh
Floor total		0 Btuh
Infiltration	33 cfm	691 Btuh
Internal gain		4090 Btuh
Duct gain		0 Btuh
Sens.Ventilation	Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load		0 Btuh
Total sensible gain		11743 Btuh
Latent gain(ducts)		0 Btuh
Latent gain(infiltration)		1146 Btuh
Latent gain(ventilation)		0 Btuh
Latent gain(internal/occupants/other)		600 Btuh
Total latent gain		1746 Btuh
TOTAL HEAT GAIN		13489 Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2025-10-10

System Sizing Calculations - Winter

Residential Load - Room by Room Component Details

Murchinson
130 SW Hunter Leigh Pl
Lake City, FL

Project Title:
250919 Murchinson Barndaminium
Building Type: User

10/10/2025

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

Component Loads for Room #1: Living								
Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
2	2, NFRC 0.25	Vinyl	0.35	N	9.0		14.0	126 Btuh
3	2, NFRC 0.25	Vinyl	0.35	N	15.0		14.0	210 Btuh
4	2, NFRC 0.25	Vinyl	0.35	E	28.0		14.0	392 Btuh
5	2, NFRC 0.25	Vinyl	0.35	S	30.0		14.0	420 Btuh
6	2, NFRC 0.25	Vinyl	0.35	S	28.0		14.0	392 Btuh
	Window Total					110.0(sqft)		1540 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
3	Frame - Steel	- Ext	(0.112)	13.0/0.0	192		4.49	862 Btuh
4	Frame - Steel	- Ext	(0.112)	13.0/0.0	222		4.49	997 Btuh
5	Frame - Steel	- Ext	(0.112)	13.0/0.0	78		4.49	350 Btuh
6	Frame - Steel	- Ext	(0.112)	13.0/0.0	66		4.49	296 Btuh
	Wall Total					558(sqft)		2505 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		14		16.0	224 Btuh
2	Insulated - Exterior,	n	(0.400)		14		16.0	224 Btuh
	Door Total					28(sqft)		448Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Single as/D/Shing		(0.051)	19.0/0.0	605		2.0	1234 Btuh
	Ceiling Total					605(sqft)		1234Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	72.0 ft(perim.)		47.2	3398 Btuh
	Floor Total					576 sqft		3398 Btuh
Room Envelope Subtotal:								9126 Btuh
Infiltration	Type	Wholehouse	ACH	Room Volume	Wall Ratio	CFM=		Load
	Natural		0.25	6336	0.52	22.8		1001 Btuh
Duct load	No ducts assigned to this zone. (DLM of 0.000)							0 Btuh
Room #1	Sensible Room Subtotal							10126 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

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Component Loads for Room #2: Bedroom

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
7	2, NFRC 0.25	Vinyl	0.35	S	30.0		14.0	420 Btuh
	Window Total				30.0(sqft)			420 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Steel	- Ext	(0.112)	13.0/0.0	60		4.49	269 Btuh
7	Frame - Steel	- Ext	(0.112)	13.0/0.0	123		4.49	552 Btuh
	Wall Total				183(sqft)			822 Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area	X	HTM=	Load	
2	Single as/D/Shing	(0.051)	19.0/0.0	299		2.0	610 Btuh	
	Ceiling Total			299(sqft)			610Btuh	
Floors	Type	Ueff.	R-Value	Size	X	HTM=	Load	
2	Slab On Grade	(1.180)	0.0	47.0 ft(perim.)		47.2	2218 Btuh	
	Floor Total			284 sqft			2218 Btuh	
Room Envelope Subtotal:								4070 Btuh
Infiltration	Type	Wholehouse ACH	Room Volume	Wall Ratio	CFM=	Load		
	Natural	0.25	3209	0.17	7.5	328 Btuh		
Duct load	No ducts assigned to this zone. (DLM of 0.000)						0 Btuh	
Room #2	Sensible Room Subtotal						4398 Btuh	

Component Loads for Room #3: Bath Utility

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.25	Vinyl	0.35	N	8.0		14.0	112 Btuh
	Window Total				8.0(sqft)			112 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
2	Frame - Steel	- Ext	(0.112)	13.0/0.0	76		4.49	341 Btuh
8	Frame - Steel	- Ext	(0.112)	13.0/0.0	264		4.49	1185 Btuh
	Wall Total				340(sqft)			1526 Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area	X	HTM=	Load	
3	Single as/D/Shing	(0.051)	19.0/0.0	105		2.0	214 Btuh	
	Ceiling Total			105(sqft)			214Btuh	
Floors	Type	Ueff.	R-Value	Size	X	HTM=	Load	
3	Slab On Grade	(1.180)	0.0	9.0 ft(perim.)		47.2	425 Btuh	
	Floor Total			100 sqft			425 Btuh	

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Residential Load - Component Details (continued)

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	Room Envelope Subtotal:						2277 Btuh
Infiltration	Type	Wholehouse	ACH	Room Volume	Wall Ratio	CFM=	
	Natural		0.25	1070	0.31	13.9	610 Btuh
Duct load	No ducts assigned to this zone.					(DLM of 0.000)	0 Btuh
Room #3	Sensible Room Subtotal						2887 Btuh

SYSTEM GROUPS (BLOCK LOADS)

Heating Loads For System(s):1 Block #1:Handler 1.1 Serving Rooms: 1	Block load	10126 Btuh
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Heating Loads For System(s):2 Block #2:Handler 1.2 Serving Rooms: 2	Block load	4398 Btuh
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Heating Loads For System(s):3 Block #3:Handler 1.3 Serving Rooms: 3	Block load	2887 Btuh
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Manual J Winter Calculations

Residential Load - Component Details (continued)

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Building Type: User

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WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	17411 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	17411 Btuh

EQUIPMENT

1. Window/Wall Heat Pump	#	11000 Btuh
2. Window/Wall Heat Pump	#	5000 Btuh
3. Window/Wall Heat Pump	#	4000 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 - Room by Room Component Details

Murchinson
130 SW Hunter Leigh Pl
Lake City, FL

Project Title:
250919 Murchinson Barndaminiu

10/10/2025

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 Room #1: Living

Window	Type*					Overhang		Window Area(sqft)			HTM		Load	
	Panes	SHGC	U	InSh	IS Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded		
2	2 NFRC	0.25, 0.35	No	No	N	1.0ft	2.0ft	9.0	9.0	0.0	12	14	107	Btuh
3	2 NFRC	0.25, 0.35	No	No	N	1.0ft	2.0ft	15.0	11.0	4.0	12	14	186	Btuh
4	2 NFRC	0.25, 0.35	No	No	E	26.0f	6.0ft	28.0	28.0	0.0	12	31	333	Btuh
5	2 NFRC	0.25, 0.35	No	No	S	1.0ft	2.0ft	30.0	0.0	30.0	12	12	357	Btuh
6	2 NFRC	0.25, 0.35	No	No	S	13.0f	6.0ft	28.0	0.0	28.0	12	12	333	Btuh
Window Total									110 (sqft)			1318		Btuh
Walls	Type	U-Value	R-Value	Area(sqft)		HTM		Load						
			Cav/Sheath											
3	Frame - Steel - Ext	0.11	13.0/0.0	192.0	2.9	549	Btuh							
4	Frame - Steel - Ext	0.11	13.0/0.0	222.0	2.9	635	Btuh							
5	Frame - Steel - Ext	0.11	13.0/0.0	78.0	2.9	223	Btuh							
6	Frame - Steel - Ext	0.11	13.0/0.0	66.0	2.9	189	Btuh							
Wall Total				558 (sqft)	1597		Btuh							
Doors	Type	Area (sqft)	HTM		Load									
1	Insulated - Exterior	14.0	12.0	168	Btuh									
2	Insulated - Exterior	14.0	12.0	168	Btuh									
Door Total		28 (sqft)	336		Btuh									
Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load								
1	SnglAsmb w airsp/DarkShingle	0.051	19.0/0.0	605.0	1.53	926								
Ceiling Total				605 (sqft)	926		Btuh							
Floors	Type	R-Value	Size	HTM	Load									
1	Slab On Grade	0.0	576 (ft-perimeter)	0.0	0									
Floor Total				576.0 (sqft)	0		Btuh							
Zone Envelope Subtotal:											4176		Btuh	
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=	Load								
	Natural	0.19	6336	0.52	17.1	356								
Internal gain		Occupants	Btuh/occupant	Appliance	Load									
		2	X 230	+ 2000	2460									
Sensible Envelope Load:					6993		Btuh							
Duct load	No duct systemNo ducts assigned to this zone.				(DGM of 0.000)	0	Btuh							
Sensible Zone Load					6993		Btuh							

Manual J Summer Calculations

Residential Load - Component Details (continued)

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Component Loads for Room #2: Bedroom

Window	Type*						Overhang		Window Area(sqft)			HTM		Load
	Panes	SHGC	U	InSh	IS	Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded	
7	2 NFRC	0.25, 0.35	No	No	S	1.0ft	2.0ft	30.0	0.0	30.0	12	12	357 Btuh	
Window Total									30 (sqft)					357 Btuh
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load				
				Cav/Sheath										
1	Frame - Steel - Ext	0.11		13.0/0.0		60.0		2.9		172 Btuh				
7	Frame - Steel - Ext	0.11		13.0/0.0		123.0		2.9		352 Btuh				
Wall Total									183 (sqft)			524 Btuh		
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load				
2	SnglAsmb w airsp/DarkShingle	0.051		19.0/0.0		299.0		1.53		457 Btuh				
Ceiling Total									299 (sqft)			457 Btuh		
Floors	Type	R-Value		Size		HTM		Load						
2	Slab On Grade	0.0		284 (ft-perimeter)		0.0		0 Btuh						
Floor Total									284.0 (sqft)			0 Btuh		
Zone Envelope Subtotal:												1338 Btuh		
Infiltration	Type	Wholehouse ACH		Volume(cuft)		Wall Ratio		CFM=		Load				
Natural		0.19		3209		0.17		5.6		117 Btuh				
Internal gain	Occupants	Btuh/occupant		Appliance		Load								
	1	X 230		+ 900		1130 Btuh								
Sensible Envelope Load:												2585 Btuh		
Duct load	No duct systemNo ducts assigned to this zone. (DGM of 0.000)										0 Btuh			
Sensible Zone Load												2585 Btuh		

Component Loads for Room #3: Bath Utility

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, 0.35	No	No	N	1.0ft	2.0ft	8.0	7.4	0.6	12	14	97 Btuh	
Window Total									8 (sqft)			97 Btuh		
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load				
				Cav/Sheath										
2	Frame - Steel - Ext	0.11		13.0/0.0		76.0		2.9		218 Btuh				
8	Frame - Steel - Ext	0.11		13.0/0.0		264.0		2.9		756 Btuh				
Wall Total									340 (sqft)			973 Btuh		
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load				
3	SnglAsmb w airsp/DarkShingle	0.051		19.0/0.0		105.0		1.53		161 Btuh				
Ceiling Total									105 (sqft)			161 Btuh		
Floors	Type	R-Value		Size		HTM		Load						
3	Slab On Grade	0.0		100 (ft-perimeter)		0.0		0 Btuh						
Floor Total									100.0 (sqft)			0 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

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Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
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	Zone Envelope Subtotal:	1230 Btuh	
Infiltration	Type Natural	Wholehouse ACH 0.19	
	Volume(cuft)	Wall Ratio	
	1070	0.31	
	CFM=	10.4	
Internal gain	Occupants	Btuh/occupant	
	0	X 230	
	Appliance	+	
	500		
	Sensible Envelope Load:		1947 Btuh
Duct load	No duct systemNo ducts assigned to this zone.		(DGM of 0.000)
	Sensible Zone Load		1947 Btuh

The following window Excursion will be assigned to the system loads.

Windows	July excursion for System 1	210 Btuh
	July excursion for System 2	0 Btuh
	July excursion for System 3	8 Btuh
	Excursion Subtotal:	218 Btuh
Duct load		0 Btuh
	Sensible Excursion Load	218 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

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250919 Murchinson Barndaminium

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SYSTEM GROUPS (BLOCK LOADS)

<p>Cooling Loads</p> <p>For System(s): 1</p> <p>Block #1:Handler 1.1</p> <p>Serving Zones:</p> <p>1</p>	<p>Sensible Envelope Load</p> <p>Window Excursion</p>	<p>6993 Btuh</p> <p>210 Btuh</p>
	<p>Sensible Duct Load (duct gain multiplier of 0.000) (Includes 0 Btuh due to window excursion)</p>	0 Btuh
	<p>Sensible ventilation (Ex:0 cfm; Sup:0 cfm)</p>	0 Btuh
	<p>Zone Sensible gain</p>	<p>7203 Btuh</p>
	<p>Latent infiltration/ventilation gain</p>	591 Btuh
	<p>Latent duct gain</p>	0 Btuh
	<p>Latent occupant gain</p>	400 Btuh
	<p>Latent other gain</p>	0 Btuh
	<p>Total block load</p>	<p>8194 Btuh</p>

<p>Cooling Loads</p> <p>For System(s): 2</p> <p>Block #2:Handler 1.2</p> <p>Serving Zones:</p> <p>2</p>	<p>Sensible Envelope Load</p> <p>Window Excursion</p>	<p>2585 Btuh</p> <p>0 Btuh</p>
	<p>Sensible Duct Load (duct gain multiplier of 0.000)</p>	0 Btuh
	<p>Sensible ventilation (Ex:0 cfm; Sup:0 cfm)</p>	0 Btuh
	<p>Zone Sensible gain</p>	<p>2585 Btuh</p>
	<p>Latent infiltration/ventilation gain</p>	194 Btuh
	<p>Latent duct gain</p>	0 Btuh
	<p>Latent occupant gain</p>	200 Btuh
	<p>Latent other gain</p>	0 Btuh
	<p>Total block load</p>	<p>2979 Btuh</p>

Manual J Summer Calculations

Residential Load - Component Details (continued)

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SYSTEM GROUPS (BLOCK LOADS)

Cooling Loads For System(s): 3 Block #3:Handler 1.3 Serving Zones: 3	Sensible Envelope Load Window Excursion	1947 Btuh 8 Btuh
	Sensible Duct Load (duct gain multiplier of 0.000) (Includes 0 Btuh due to window excursion)	0 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Zone Sensible gain	1955 Btuh
	Latent infiltration/ventilation gain	360 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain	0 Btuh
	Latent other gain	0 Btuh
	Total block load	2316 Btuh

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	11743 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	11743 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	11743 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1146 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	1746 Btuh
TOTAL GAIN	13489 Btuh	

EQUIPMENT

1. PTAC and Room Unit	#	11000 Btuh
2. PTAC and Room Unit	#	5000 Btuh
3. PTAC and Room Unit	#	4000 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($\frac{1}{2}$))
(Ornt - compass orientation)



Version 8