

Project Name: 146 Co Rd 944

Address: 146 County Road 944, Cullman, AL

OUTDOOR DESIGN CONDITIONS

Weather station: Decatur (Athens DD)

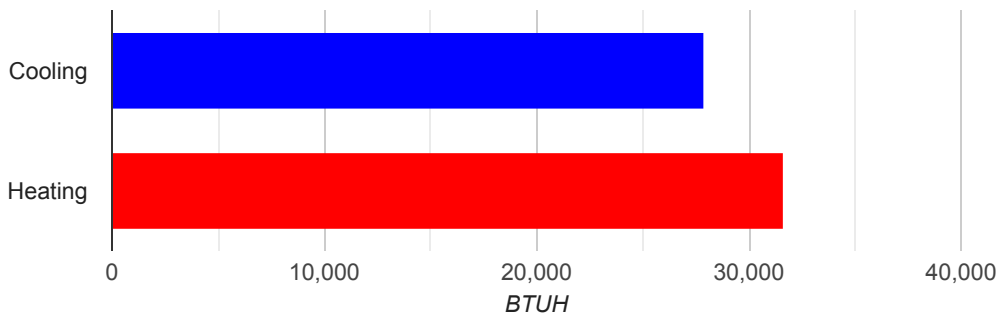
Summer Outdoor F:	93	Summer Indoor F:	75	Design Grains:	32	Daily Range:	Medium
Winter Outdoor F:	16	Winter Indoor F:	70	Cooling RH:	50	Elevation (Ft):	592

LOAD CALCULATION TOTALS

HVAC System: ducted mini split

Heated square footage:	1,476	Heating BTUH:	31,627
Cooled square footage:	1,476	Cooling BTUH:	27,891
Heated volume (above grade CF):	11,808	CFM:	1,235
Cooled volume (above grade CF):	11,808	Sensible cooling:	24,456
Exposed wall area (SF):	1,424	Latent cooling:	3,435
		SHR:	0.877

Load Calculation



Approved ACCA MJ8 Calculations

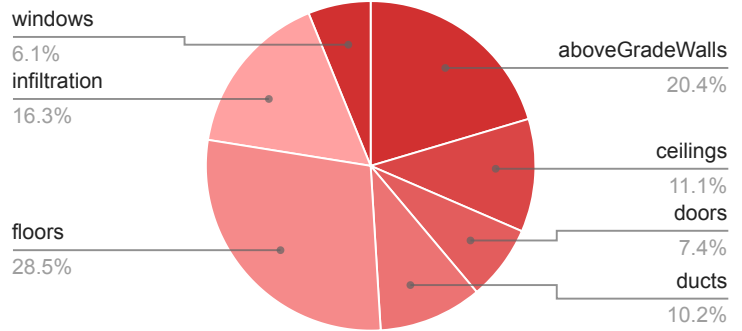
Calculations are based on the ACCA Manual J 8th Edition and are approved by ACCA. All computed calculations are estimates on building use, weather data, and inputted values such as R-Values, window types, duct loss, etc. Equipment selections should meet both the latent and sensible gain as well as building heat loss.



HEATING AND COOLING LOADS

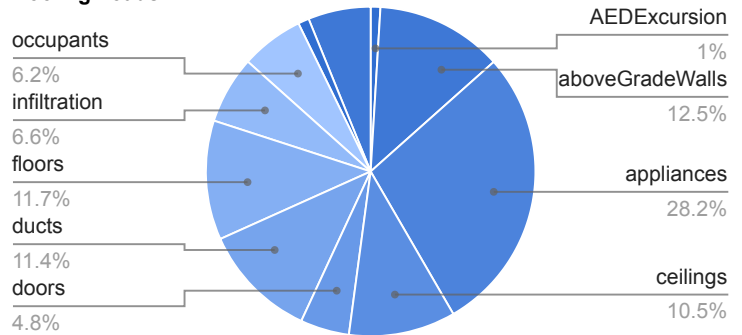
HEATING LOADS		
SECTION	AREA	HEAT LOSS
aboveGradeWalls	1,232	6,453
ceilings	1,476	3,507
doors	72	2,333
ducts	0	3,212
floors	1,476	9,013
infiltration	0	5,165
skylights	0	0
windows	120	1,944
Totals		31,627

Heating Loads



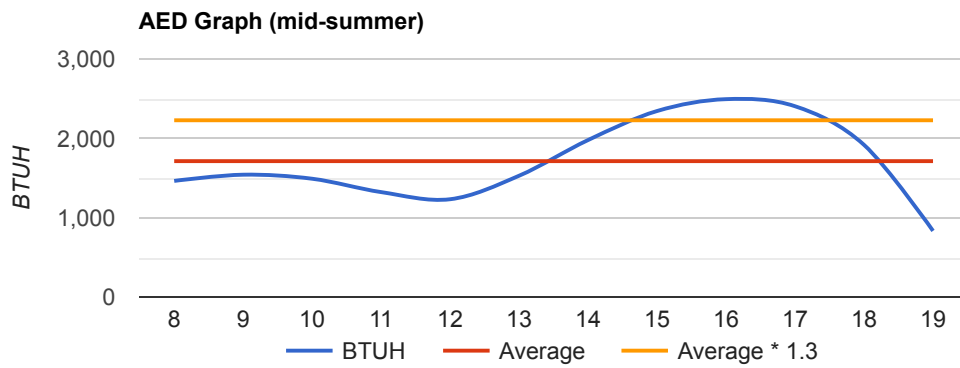
COOLING LOADS			
SECTION	AREA	SENSIBLE	LATENT
AEDExcursion	0	266	0
aboveGradeWalls	1,232	3,478	0
appliances	0	6,794	1,075
ceilings	1,476	2,922	0
doors	72	1,339	0
ducts	0	2,878	293
floors	1,476	3,266	0
infiltration	0	880	967
occupants	0	920	800
plants	0	0	300
skylights	0	0	0
windows	120	1,714	0
Totals		24,456	3,435

Cooling Loads

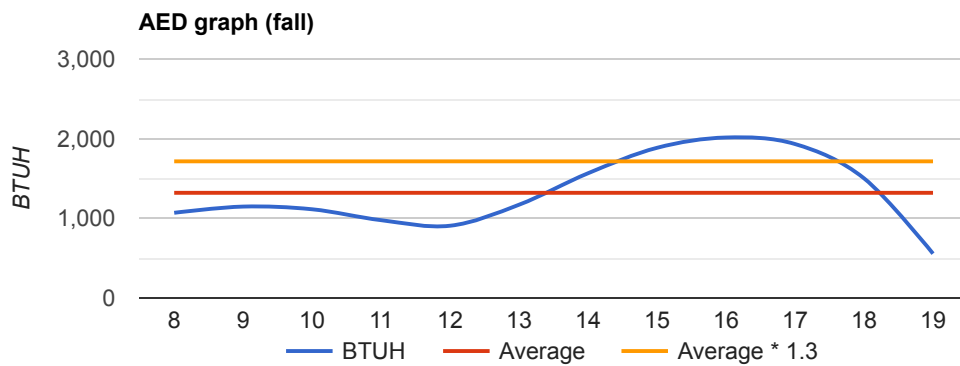


FENESTRATION LOADS

Warning (0): This application has glass areas that produced relatively large cooling loads for part of the day. Zoning may be required to overcome spikes in solar load for one or more rooms. A zoned system may be required, or some rooms may require zone control (provided by individual, motorized, thermostatically controlled dampers).



This graph represents hourly aggregate fenestration loads in mid-summer.



This graph represents hourly aggregate fenestration loads in October.

COMPONENT LOADS

ABOVE GRADE WALLS						
System generated wall - E Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	E 132	Heating BTUH: Cooling BTUH:	691 373
System generated wall - W Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	W 42	Heating BTUH: Cooling BTUH:	220 119
System generated wall - E Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	E 54	Heating BTUH: Cooling BTUH:	283 152
System generated wall - W Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	W 54	Heating BTUH: Cooling BTUH:	283 152
System generated wall - E Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	E 106	Heating BTUH: Cooling BTUH:	555 299
System generated wall - S Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	S 184	Heating BTUH: Cooling BTUH:	964 519
System generated wall - W Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	W 106	Heating BTUH: Cooling BTUH:	555 299
System generated wall - N Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	N 148	Heating BTUH: Cooling BTUH:	775 418
System generated wall - E Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	E 170	Heating BTUH: Cooling BTUH:	890 480
System generated wall - W Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	W 146	Heating BTUH: Cooling BTUH:	765 412
System generated wall - W Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	W 90	Heating BTUH: Cooling BTUH:	471 254

BELOW GRADE WALLS						
There are no components for this section.						

WINDOWS						
Default small windows for wall id 697028 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 12 E	U Value: SHGC:	0.3 0.25	Heating BTUH: Cooling BTUH:	194 167
Default small windows for wall id 696943 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 6 W	U Value: SHGC:	0.3 0.25	Heating BTUH: Cooling BTUH:	97 94
Default small windows for wall id 695055 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 18 E	U Value: SHGC:	0.3 0.25	Heating BTUH: Cooling BTUH:	292 251

WINDOWS

Default small windows for wall id 695054 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 18 W	U Value: SHGC:	0.3 0.25	Heating BTUH: Cooling BTUH:	292 282
Default small windows for wall id 697169 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 6 E	U Value: SHGC:	0.3 0.25	Heating BTUH: Cooling BTUH:	97 84
Default small windows for wall id 697170 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 6 W	U Value: SHGC:	0.3 0.25	Heating BTUH: Cooling BTUH:	97 94
Default small windows for wall id 694818 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 12 N	U Value: SHGC:	0.3 0.25	Heating BTUH: Cooling BTUH:	194 93
Default small windows for wall id 694817 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 6 E	U Value: SHGC:	0.3 0.25	Heating BTUH: Cooling BTUH:	97 84
Default medium windows for wall id 694816 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 24 W	U Value: SHGC:	0.3 0.25	Heating BTUH: Cooling BTUH:	389 376
Default small windows for wall id 694816 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 6 W	U Value: SHGC:	0.3 0.25	Heating BTUH: Cooling BTUH:	97 94
Default small windows for wall id 697092 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 6 W	U Value: SHGC:	0.3 0.25	Heating BTUH: Cooling BTUH:	97 94

Window cooling BTUHs shown here are daily average values. See AED graphs for details of fenestration loads during the day.

CEILINGS

System generated ceiling. Ceiling under attic or attic knee wall, Metal, Dark, R-21.	Construction nr: U Value:	16CR-21 md 0.044	Area:	324	Heating BTUH: Cooling BTUH:	770 642
System generated ceiling. Ceiling under attic or attic knee wall, Metal, Dark, R-21.	Construction nr: U Value:	16CR-21 md 0.044	Area:	36	Heating BTUH: Cooling BTUH:	86 71
System generated ceiling. Ceiling under attic or attic knee wall, Metal, Dark, R-21.	Construction nr: U Value:	16CR-21 md 0.044	Area:	144	Heating BTUH: Cooling BTUH:	342 285
System generated ceiling. Ceiling under attic or attic knee wall, Metal, Dark, R-21.	Construction nr: U Value:	16CR-21 md 0.044	Area:	322	Heating BTUH: Cooling BTUH:	765 638
System generated ceiling. Ceiling under attic or attic knee wall, Metal, Dark, R-21.	Construction nr: U Value:	16CR-21 md 0.044	Area:	506	Heating BTUH: Cooling BTUH:	1,202 1,002
System generated ceiling. Ceiling under attic or attic knee wall, Metal, Dark, R-21.	Construction nr: U Value:	16CR-21 md 0.044	Area:	144	Heating BTUH: Cooling BTUH:	342 285

SKYLIGHTS

There are no components for this section.

Skylight cooling BTUHs shown here are daily average values. See AED graphs for details of fenestration loads during the day.

DOORS

Default doors for wall id 695055 Metal Door, Fiberglass Core.	Construction nr: U Value:	11 0.6	Area: Exposure:	24 E	Heating BTUH: Cooling BTUH:	778 446
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DOORS

Default doors for wall id 695054 Metal Door, Fiberglass Core.	Construction nr: 11 U Value: 0.6	Area: 24 Exposure: W	Heating BTUH: 778 Cooling BTUH: 446
Default doors for wall id 694818 Metal Door, Fiberglass Core.	Construction nr: 11 U Value: 0.6	Area: 24 Exposure: N	Heating BTUH: 778 Cooling BTUH: 446

FLOORS

System generated floor. Floor over enclosed unconditioned crawl space or basement, no floor insulation, Carpet or hardwood.	Construction nr: 19A-0cp Area: 324	Heating U Value:0.295 Cooling U Value:0.295	Heating BTUH: 1,979 Cooling BTUH: 717 F Value: N/A
System generated floor. Floor over enclosed unconditioned crawl space or basement, no floor insulation, Carpet or hardwood.	Construction nr: 19A-0cp Area: 36	Heating U Value:0.295 Cooling U Value:0.295	Heating BTUH: 220 Cooling BTUH: 80 F Value: N/A
System generated floor. Floor over enclosed unconditioned crawl space or basement, no floor insulation, Carpet or hardwood.	Construction nr: 19A-0cp Area: 144	Heating U Value:0.295 Cooling U Value:0.295	Heating BTUH: 879 Cooling BTUH: 319 F Value: N/A
System generated floor. Floor over enclosed unconditioned crawl space or basement, no floor insulation, Carpet or hardwood.	Construction nr: 19A-0cp Area: 322	Heating U Value:0.295 Cooling U Value:0.295	Heating BTUH: 1,966 Cooling BTUH: 712 F Value: N/A
System generated floor. Floor over enclosed unconditioned crawl space or basement, no floor insulation, Carpet or hardwood.	Construction nr: 19A-0cp Area: 506	Heating U Value:0.295 Cooling U Value:0.295	Heating BTUH: 3,090 Cooling BTUH: 1,120 F Value: N/A
System generated floor. Floor over enclosed unconditioned crawl space or basement, no floor insulation, Carpet or hardwood.	Construction nr: 19A-0cp Area: 144	Heating U Value:0.295 Cooling U Value:0.295	Heating BTUH: 879 Cooling BTUH: 319 F Value: N/A

VENTILATION

There are no components for this section.

HOT WATER PIPING

There are no components for this section.

DUCTS

System generated ducts (above conditioned space) Attic - Radial	EHLF: 0.113 ESGF: 0.135 ELG: 293	Heating BTUH: 3,212 Sensible BTUH: 2,878 Latent BTUH: 293
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INFILTRATION

Leakage Category: Average	NCFM Heating: 89 NCFM Cooling: 45	Heating BTUH: 5,165 Sensible BTUH: 880 Latent BTUH: 967
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BLOWER MOTOR

There are no components for this section.

WINTER HUMIDIFICATION

WINTER HUMIDIFICATION

There are no components for this section.

OCCUPANTS

Nr. Occupants:	4	Sensible BTUH:	920	Latent BTUH:	800
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APPLIANCES

Color television	Quantity:	1	Sensible BTUH:	683	Latent BTUH:	0
Computer and monitor	Quantity:	1	Sensible BTUH:	538	Latent BTUH:	0
Light Fixture - 100W	Quantity:	3	Sensible BTUH:	1,023	Latent BTUH:	0
Range with hood and exhaust to outdoors	Quantity:	1	Sensible BTUH:	0	Latent BTUH:	0
Dishwasher	Quantity:	1	Sensible BTUH:	1,024	Latent BTUH:	358
Refrigerator or Freezer - 16CuFt	Quantity:	1	Sensible BTUH:	1,000	Latent BTUH:	0
Vented clothes dryer	Quantity:	1	Sensible BTUH:	427	Latent BTUH:	0
Clothes washing machine	Quantity:	1	Sensible BTUH:	51	Latent BTUH:	0
Dishwasher	Quantity:	1	Sensible BTUH:	1,024	Latent BTUH:	358
Range with hood and exhaust to outdoors	Quantity:	1	Sensible BTUH:	0	Latent BTUH:	0
Dishwasher	Quantity:	1	Sensible BTUH:	1,024	Latent BTUH:	358

PLANTS

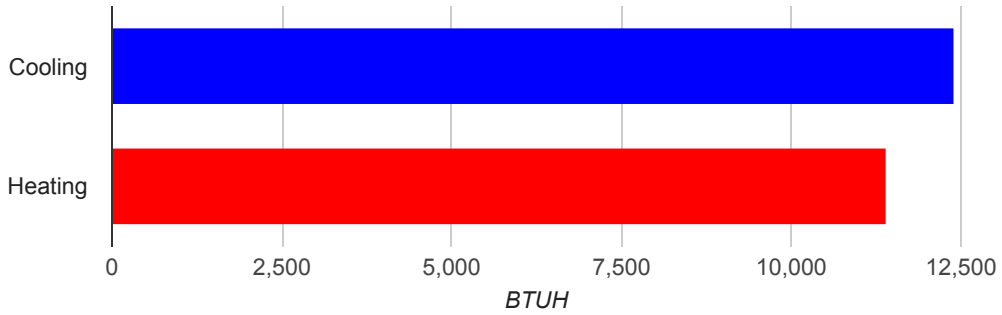
Plant Size:	medium	Quantity:	5	Latent BTUH:	100
Plant Size:	large	Quantity:	5	Latent BTUH:	150
Plant Size:	small	Quantity:	5	Latent BTUH:	50

ROOM DETAIL

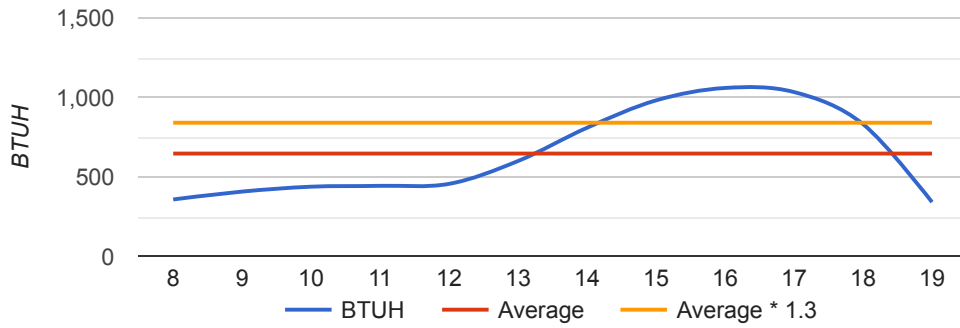
Room name: new kitchen

Heated square footage:	506	Total Cooling BTUH:	12,383
Cooled square footage:	506	Total Heating BTUH:	11,377
Heated volume (above grade CF):	4,048	CFM:	550
Cooled volume (above grade CF):	4,048		
Exposed wall area (SF):	536		

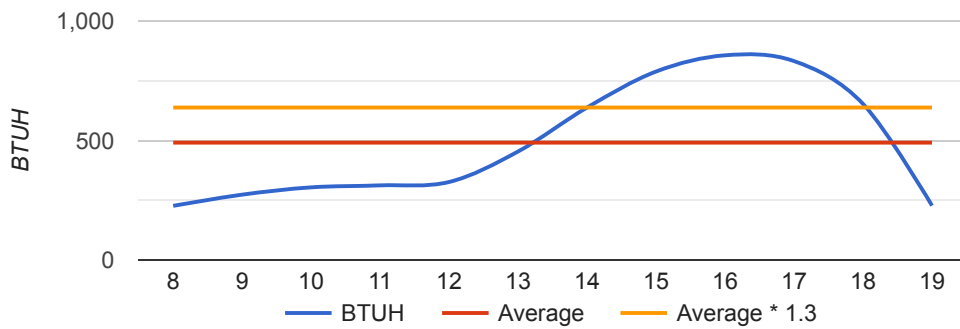
Load Calculation



AED Graph (mid-summer)



AED graph (fall)

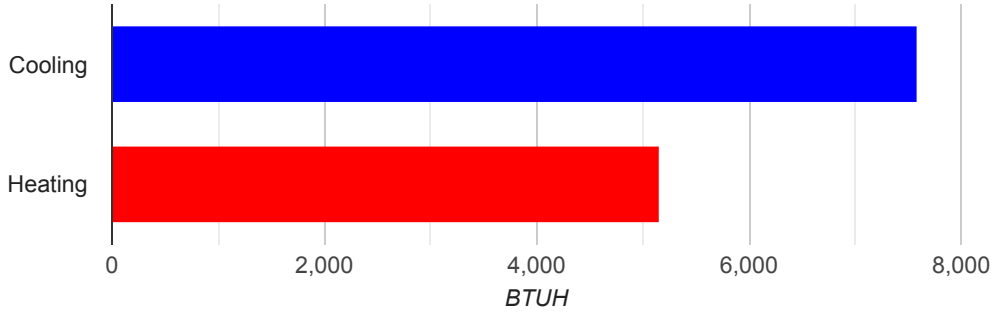


ROOM DETAIL

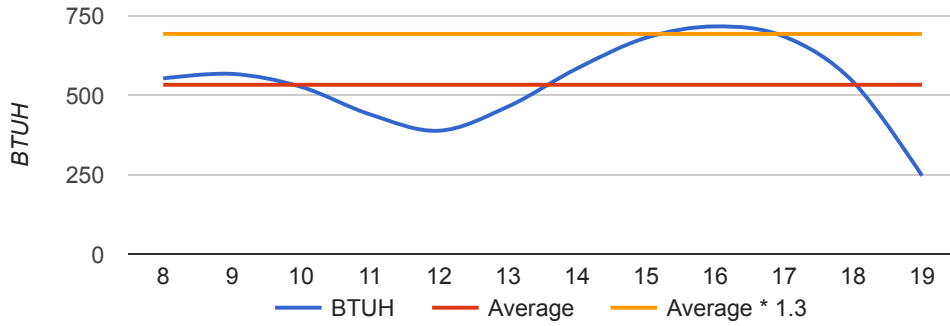
Room name: living room

Heated square footage:	144	Total Cooling BTUH:	7,580
Cooled square footage:	144	Total Heating BTUH:	5,144
Heated volume (above grade CF):	1,152	CFM:	290
Cooled volume (above grade CF):	1,152		
Exposed wall area (SF):	192		

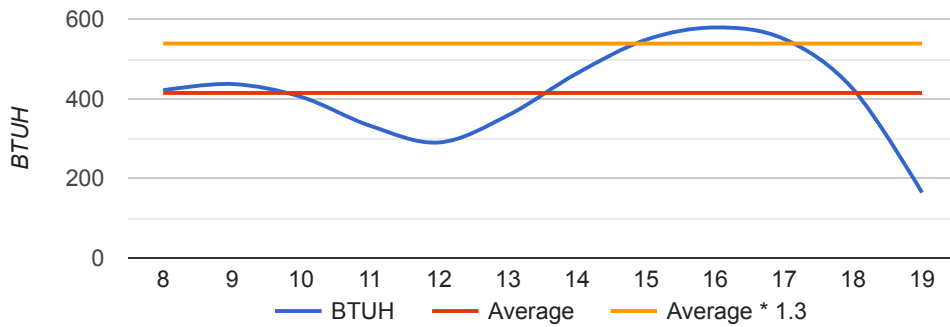
Load Calculation



AED Graph (mid-summer)



AED graph (fall)

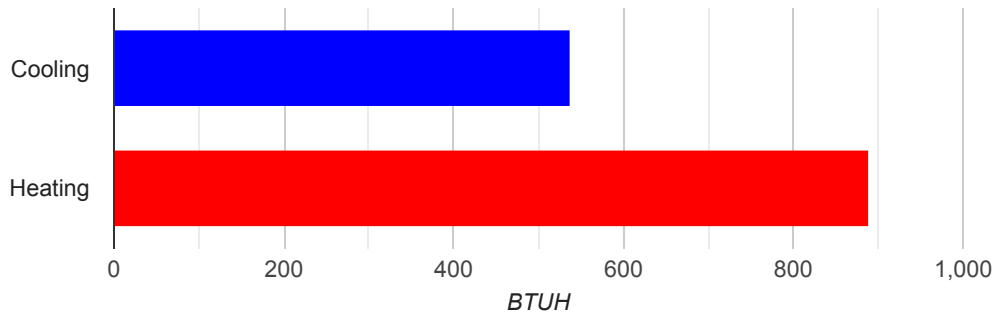


ROOM DETAIL

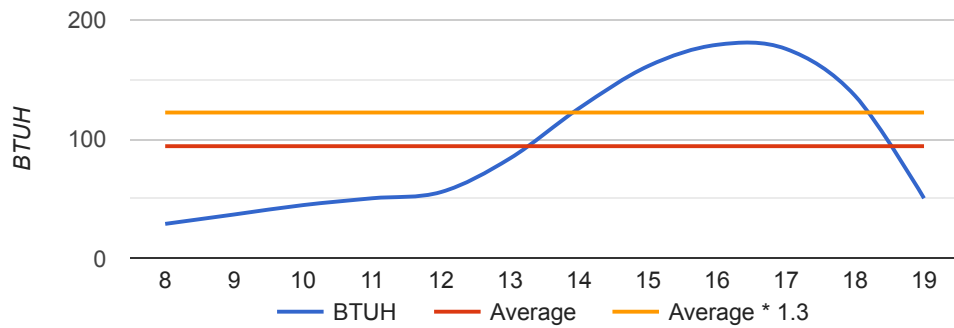
Room name: hall bath

Heated square footage:	36	Total Cooling BTUH:	536
Cooled square footage:	36	Total Heating BTUH:	887
Heated volume (above grade CF):	288	CFM:	25
Cooled volume (above grade CF):	288		
Exposed wall area (SF):	48		

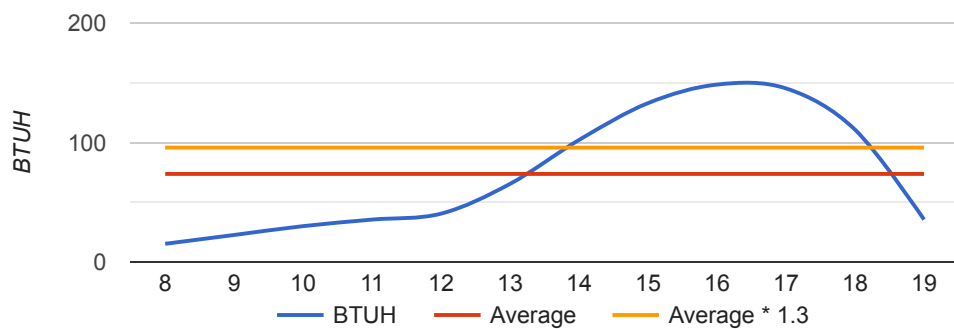
Load Calculation



AED Graph (mid-summer)



AED graph (fall)

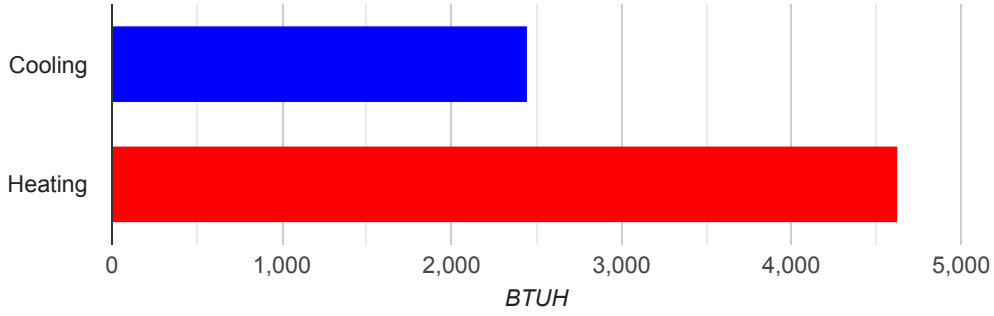


ROOM DETAIL

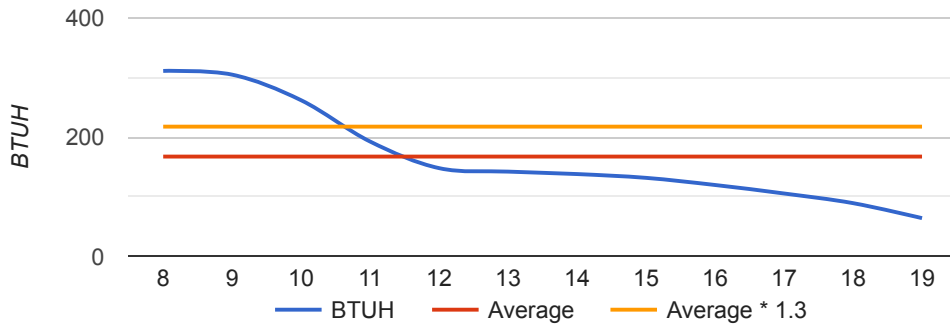
Room name: spare room

Heated square footage:	324	Total Cooling BTUH:	2,447
Cooled square footage:	324	Total Heating BTUH:	4,626
Heated volume (above grade CF):	2,592	CFM:	118
Cooled volume (above grade CF):	2,592		
Exposed wall area (SF):	144		

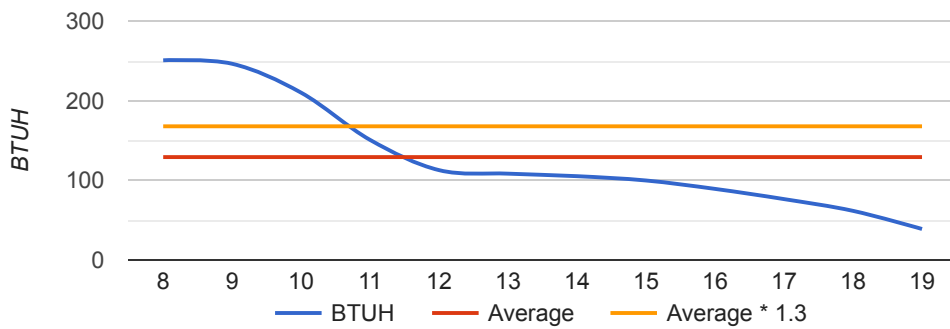
Load Calculation



AED Graph (mid-summer)



AED graph (fall)



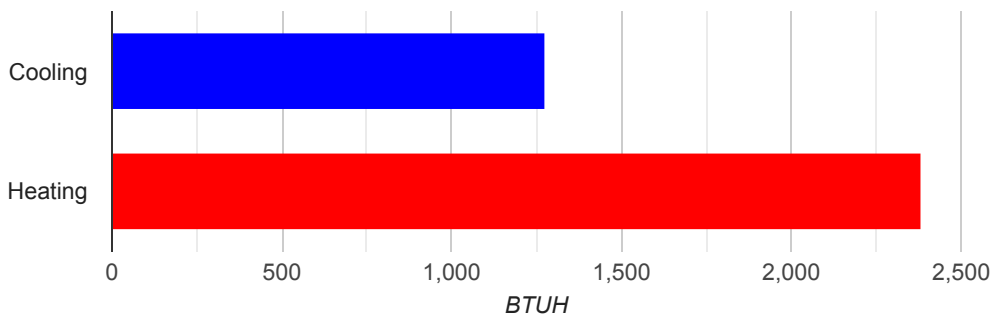
ROOM DETAIL

Room name: office

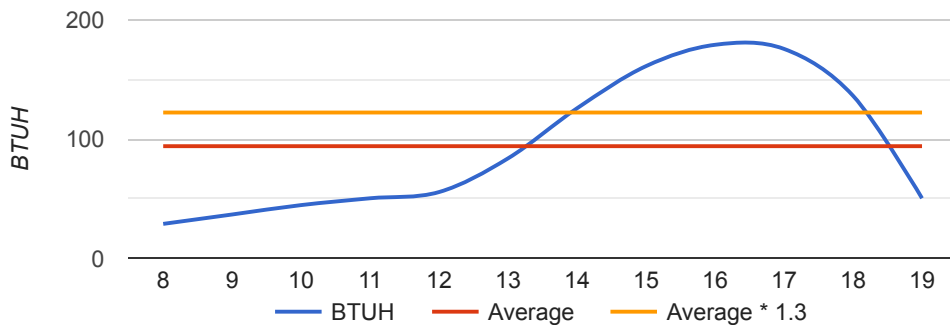
Heated square footage: 144
Cooled square footage: 144
Heated volume (above grade CF): 1,152
Cooled volume (above grade CF): 1,152
Exposed wall area (SF): 96

Total Cooling BTUH: 1,270
Total Heating BTUH: 2,380
CFM: 60

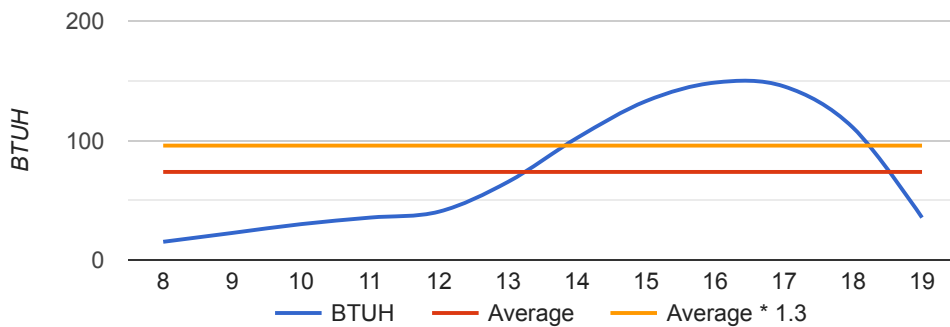
Load Calculation



AED Graph (mid-summer)



AED graph (fall)

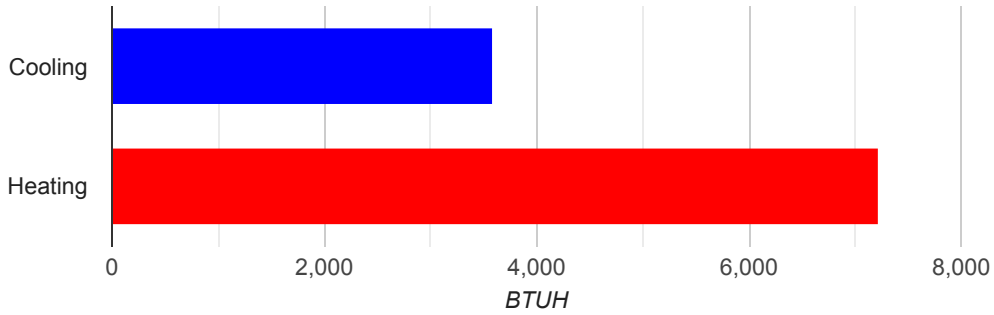


ROOM DETAIL

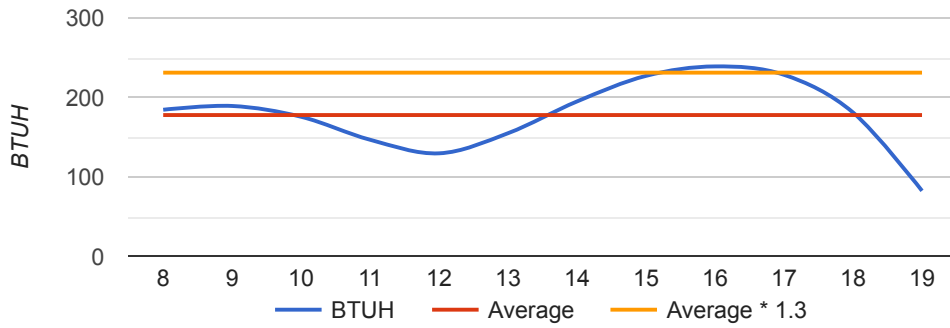
Room name: master bed

Heated square footage:	322	Total Cooling BTUH:	3,574
Cooled square footage:	322	Total Heating BTUH:	7,212
Heated volume (above grade CF):	2,576	CFM:	166
Cooled volume (above grade CF):	2,576		
Exposed wall area (SF):	408		

Load Calculation



AED Graph (mid-summer)



AED graph (fall)

