

### OUTDOOR DESIGN CONDITIONS

Weather station: Phillipsburg (Allentown, PA, DD)

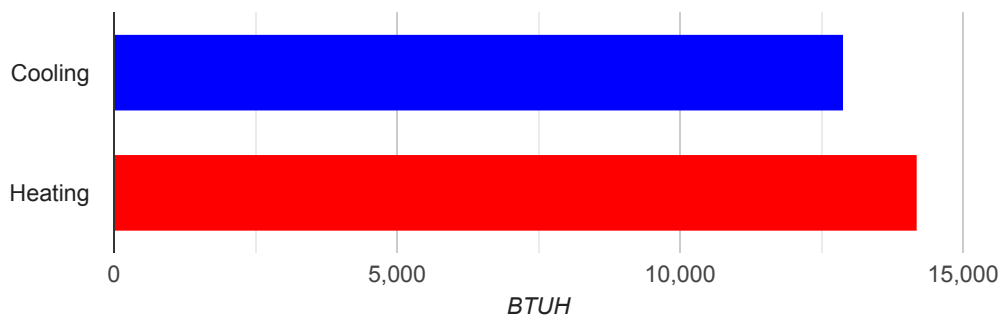
Summer Outdoor F:	<b>89</b>	Summer Indoor F:	<b>72</b>	Design Grains:	<b>27</b>	Daily Range:	<b>Medium</b>
Winter Outdoor F:	<b>6</b>	Winter Indoor F:	<b>70</b>	Cooling RH:	<b>50</b>	Elevation (Ft):	<b>314</b>

### LOAD CALCULATION TOTALS

HVAC System: 2nd floor heat pump

Heated square footage:	<b>867</b>	Heating BTUH:	<b>14,184</b>
Cooled square footage:	<b>867</b>	Cooling BTUH:	<b>12,878</b>
Heated volume (above grade CF):	<b>6,936</b>	CFM:	<b>568</b>
Cooled volume (above grade CF):	<b>6,936</b>	Sensible cooling:	<b>11,257</b>
Exposed wall area (SF):	<b>920</b>	Latent cooling:	<b>1,621</b>
		SHR:	<b>0.874</b>

Load Calculation



### Approved ACCA MJ8 Calculations

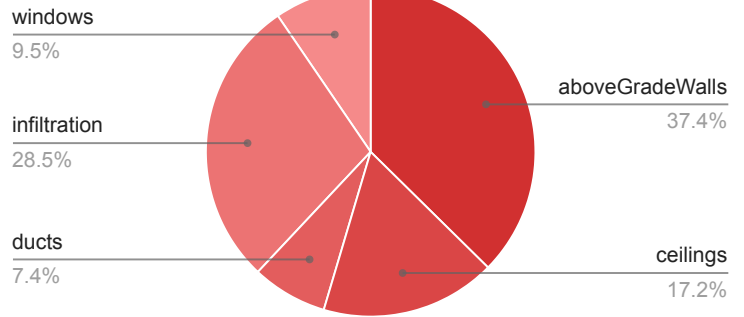
Calculations are based on the ACCA Manual J 8th Edition and are approved by ACCA. All computed calculations are estimates on building use, weather data, and inputted values such as R-Values, window types, duct loss, etc. Equipment selections should meet both the latent and sensible gain as well as building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



## HEATING AND COOLING LOADS

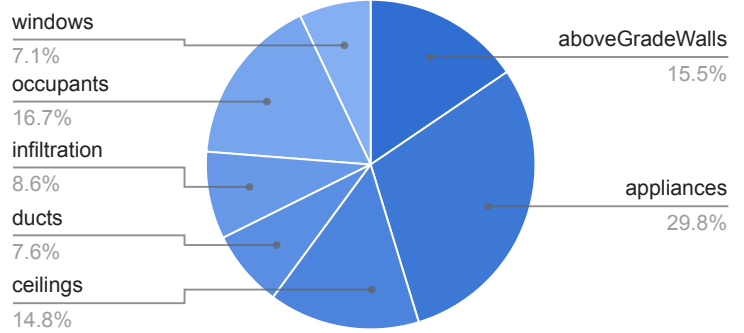
HEATING LOADS		
SECTION	AREA	HEAT LOSS
aboveGradeWalls	854	5,302
ceilings	867	2,441
ducts	0	1,051
infiltration	0	4,038
skylights	0	0
windows	66	1,352
Totals		14,184

### Heating Loads

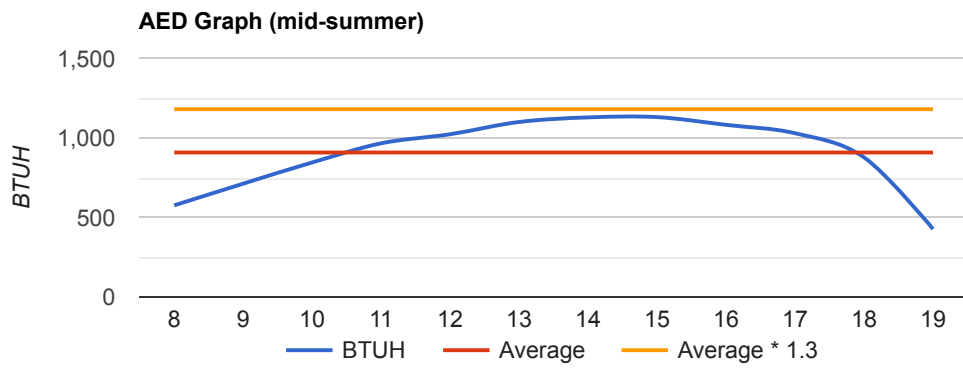


COOLING LOADS			
SECTION	AREA	SENSIBLE	LATENT
AEDExcursion	0	0	0
aboveGradeWalls	854	1,996	0
appliances	0	3,835	0
ceilings	867	1,907	0
ducts	0	902	74
infiltration	0	558	548
occupants	0	1,150	1,000
skylights	0	0	0
windows	66	908	0
Totals		11,257	1,621

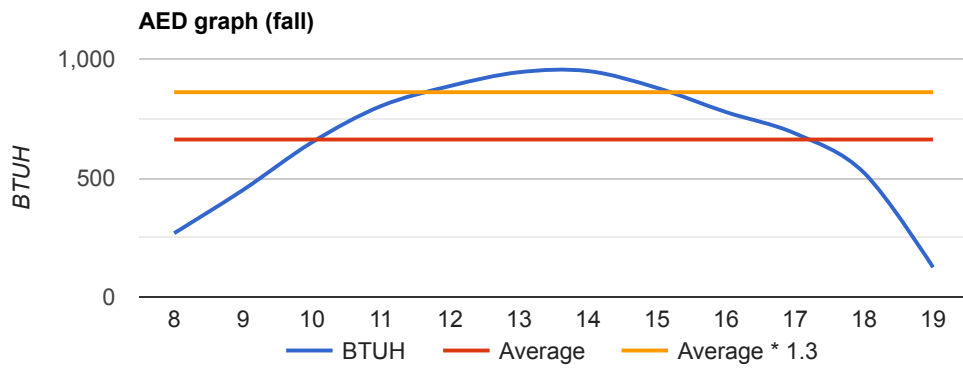
### Cooling Loads



## FENESTRATION LOADS



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



This graph represents hourly aggregate fenestration loads in October.

## COMPONENT LOADS

ABOVE GRADE WALLS						
<b>System generated wall - S</b> Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	S 82	Heating BTUH: Cooling BTUH:	509 192
<b>System generated wall - S</b> Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	S 82	Heating BTUH: Cooling BTUH:	509 192
<b>System generated wall - W</b> 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:	658 248
<b>System generated wall - N</b> Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	N 116	Heating BTUH: Cooling BTUH:	720 271
<b>System generated wall - W</b> Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	W 74	Heating BTUH: Cooling BTUH:	459 173
<b>System generated wall - N</b> Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	N 52	Heating BTUH: Cooling BTUH:	323 122
<b>System generated wall - E</b> Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	E 114	Heating BTUH: Cooling BTUH:	708 266
<b>System generated wall - S</b> Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	S 114	Heating BTUH: Cooling BTUH:	708 266
<b>System generated wall - N</b> Frame Wall, Wood framing, R-11 cavity insulation, Stucco or Siding.	Construction nr: U Value:	12B-0s w 0.097	Exposure: Area:	N 114	Heating BTUH: Cooling BTUH:	708 266

BELOW GRADE WALLS						
There are no components for this section.						

WINDOWS						
<b>Default small windows for wall id 3741031</b> Window, NFRC rated, Low-e glass.	Construction nr: Area: Exposure:	4C 6 S	U Value: SHGC:	0.32 0.28	Heating BTUH: Cooling BTUH:	123 100
<b>Default small windows for wall id 3741034</b> Window, NFRC rated, Low-e glass.	Construction nr: Area: Exposure:	4C 6 S	U Value: SHGC:	0.32 0.28	Heating BTUH: Cooling BTUH:	123 100
<b>Default small windows for wall id 3741035</b> Window, NFRC rated, Low-e glass.	Construction nr: Area: Exposure:	4C 6 W	U Value: SHGC:	0.32 0.28	Heating BTUH: Cooling BTUH:	123 119
<b>Default small windows for wall id 3741038</b> Window, NFRC rated, Low-e glass.	Construction nr: Area: Exposure:	4C 12 N	U Value: SHGC:	0.32 0.28	Heating BTUH: Cooling BTUH:	246 106
<b>Default small windows for wall id 3741037</b> Window, NFRC rated, Low-e glass.	Construction nr: Area: Exposure:	4C 6 W	U Value: SHGC:	0.32 0.28	Heating BTUH: Cooling BTUH:	123 119

## WINDOWS

<b>Default small windows for wall id 3803415</b> Window, NFRC rated, Low-e glass.	Construction nr: 4C Area: 12 Exposure: N	U Value: 0.32 SHGC: 0.28	Heating BTUH: 246 Cooling BTUH: 106
<b>Default small windows for wall id 3741022</b> Window, NFRC rated, Low-e glass.	Construction nr: 4C Area: 6 Exposure: E	U Value: 0.32 SHGC: 0.28	Heating BTUH: 123 Cooling BTUH: 105
<b>Default small windows for wall id 3741021</b> Window, NFRC rated, Low-e glass.	Construction nr: 4C Area: 6 Exposure: S	U Value: 0.32 SHGC: 0.28	Heating BTUH: 123 Cooling BTUH: 100
<b>Default small windows for wall id 3741023</b> Window, NFRC rated, Low-e glass.	Construction nr: 4C Area: 6 Exposure: N	U Value: 0.32 SHGC: 0.28	Heating BTUH: 123 Cooling BTUH: 53

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

## CEILINGS

<b>System generated ceiling.</b> Ceiling under attic or attic knee wall, Asphalt shingles, Dark, R-21.	Construction nr: 16B-21 ad U Value: 0.044	Area: 121	Heating BTUH: 341 Cooling BTUH: 266
<b>System generated ceiling.</b> Ceiling under attic or attic knee wall, Asphalt shingles, Dark, R-21.	Construction nr: 16B-21 ad U Value: 0.044	Area: 154	Heating BTUH: 434 Cooling BTUH: 339
<b>System generated ceiling.</b> Ceiling under attic or attic knee wall, Asphalt shingles, Dark, R-21.	Construction nr: 16B-21 ad U Value: 0.044	Area: 160	Heating BTUH: 451 Cooling BTUH: 352
<b>System generated ceiling.</b> Ceiling under attic or attic knee wall, Asphalt shingles, Dark, R-21.	Construction nr: 16B-21 ad U Value: 0.044	Area: 72	Heating BTUH: 203 Cooling BTUH: 158
<b>System generated ceiling.</b> Ceiling under attic or attic knee wall, Asphalt shingles, Dark, R-21.	Construction nr: 16B-21 ad U Value: 0.044	Area: 225	Heating BTUH: 634 Cooling BTUH: 495
<b>System generated ceiling.</b> Ceiling under attic or attic knee wall, Asphalt shingles, Dark, R-21.	Construction nr: 16B-21 ad U Value: 0.044	Area: 135	Heating BTUH: 380 Cooling BTUH: 297

## 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

There are no components for this section.

## FLOORS

There are no components for this section.

## VENTILATION

There are no components for this section.

## HOT WATER PIPING

There are no components for this section.

## DUCTS

**DUCTS**

<b>System generated ducts (above conditioned space)</b>	EHLF:	0.08	Heating BTUH:	1,051
Attic - Radial	ESGF:	0.087	Sensible BTUH:	902
	ELG:	74	Latent BTUH:	74

**INFILTRATION**

Leakage Category:	Average	NCFM Heating:	123	Heating BTUH:	4,038
		NCFM Cooling:	64	Sensible BTUH:	558
				Latent BTUH:	548

**BLOWER MOTOR**

There are no components for this section.

**WINTER HUMIDIFICATION**

There are no components for this section.

**OCCUPANTS**

Nr. Occupants:	1	Sensible BTUH:	230	Latent BTUH:	200
Nr. Occupants:	1	Sensible BTUH:	230	Latent BTUH:	200
Nr. Occupants:	1	Sensible BTUH:	230	Latent BTUH:	200
Nr. Occupants:	2	Sensible BTUH:	460	Latent BTUH:	400

**APPLIANCES**

Lights	Quantity:	1	Sensible BTUH:	69	Latent BTUH:	0
Computer	Quantity:	1	Sensible BTUH:	342	Latent BTUH:	0
Ceiling fan	Quantity:	1	Sensible BTUH:	250	Latent BTUH:	0
Computer/TV	Quantity:	1	Sensible BTUH:	342	Latent BTUH:	0
Lights	Quantity:	1	Sensible BTUH:	69	Latent BTUH:	0
Ceiling fan	Quantity:	1	Sensible BTUH:	250	Latent BTUH:	0
Lights	Quantity:	1	Sensible BTUH:	69	Latent BTUH:	0
TV/Computer	Quantity:	1	Sensible BTUH:	342	Latent BTUH:	0
Ceiling fan	Quantity:	1	Sensible BTUH:	250	Latent BTUH:	0
Computer	Quantity:	1	Sensible BTUH:	683	Latent BTUH:	0
Lights	Quantity:	1	Sensible BTUH:	239	Latent BTUH:	0
Ceiling fan	Quantity:	1	Sensible BTUH:	250	Latent BTUH:	0
Color television	Quantity:	1	Sensible BTUH:	683	Latent BTUH:	0

**PLANTS**

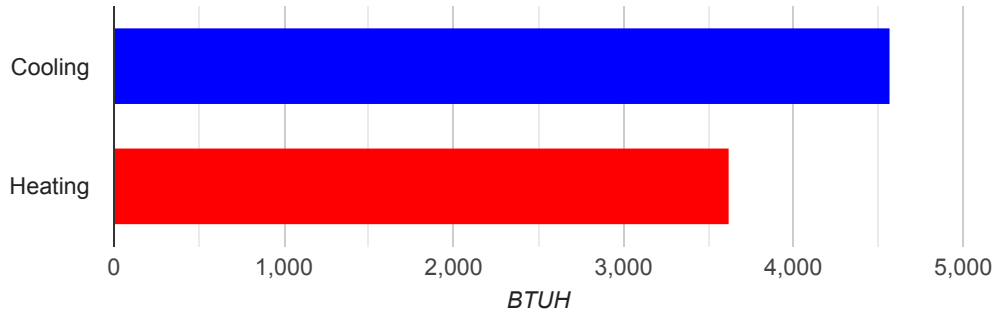
There are no components for this section.

# ROOM DETAIL

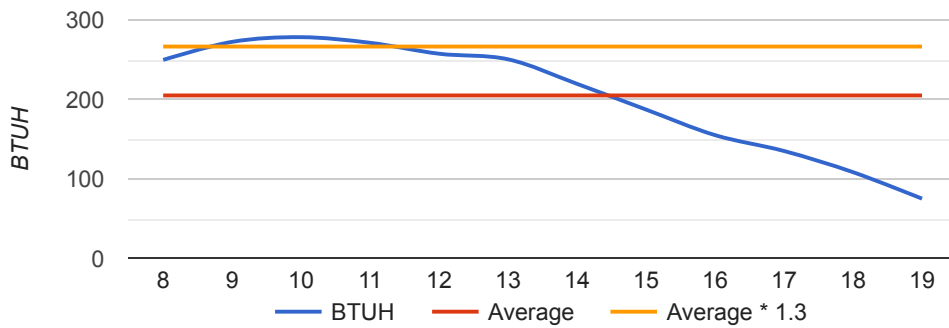
Room name: Master

Heated square footage:	225	Total Cooling BTUH:	4,570
Cooled square footage:	225	Total Heating BTUH:	3,616
Heated volume (above grade CF):	1,800	CFM:	203
Cooled volume (above grade CF):	1,800		
Exposed wall area (SF):	240		

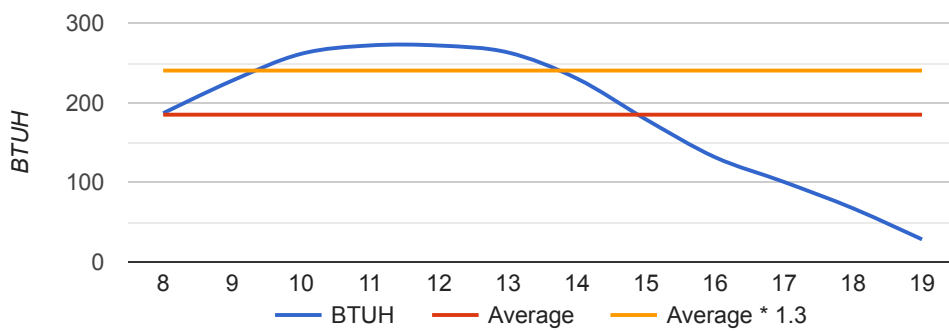
## Load Calculation



## AED Graph (mid-summer)



## AED graph (fall)

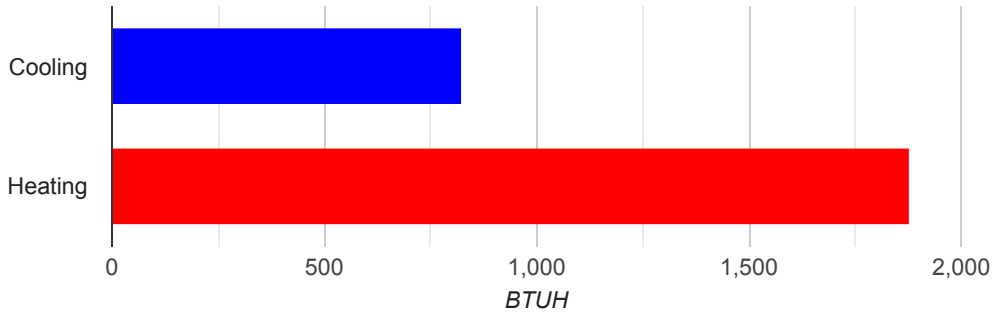


# ROOM DETAIL

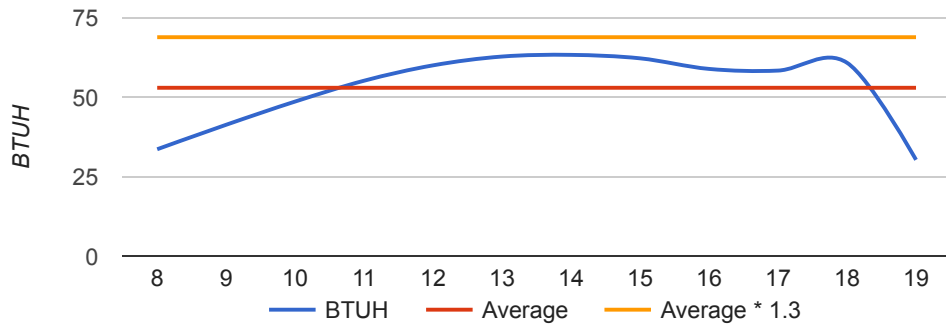
Room name: Master Bath

Heated square footage:	135	Total Cooling BTUH:	821
Cooled square footage:	135	Total Heating BTUH:	1,876
Heated volume (above grade CF):	1,080	CFM:	37
Cooled volume (above grade CF):	1,080		
Exposed wall area (SF):	120		

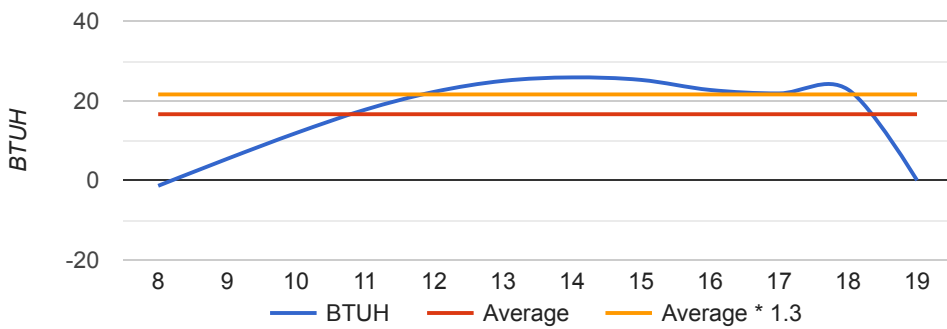
## Load Calculation



## AED Graph (mid-summer)



## AED graph (fall)



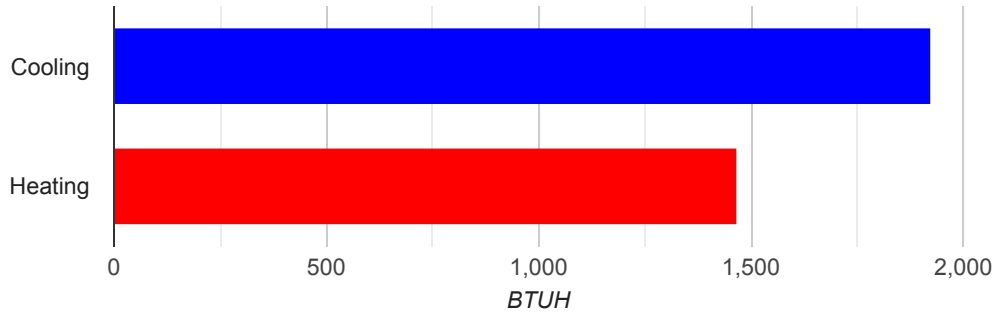


# ROOM DETAIL

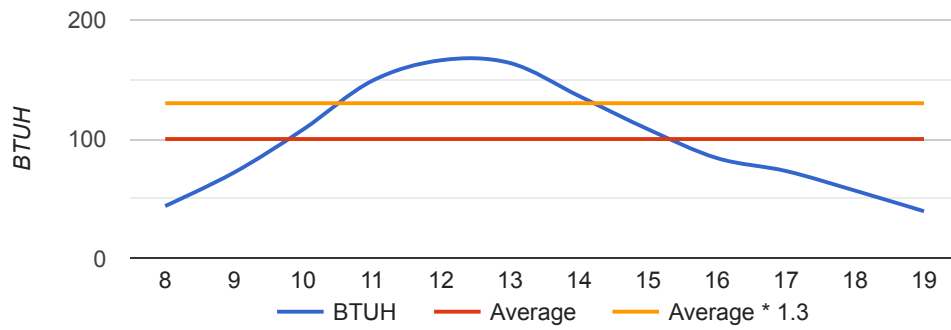
Room name: BR 1

Heated square footage:	121	Total Cooling BTUH:	1,921
Cooled square footage:	121	Total Heating BTUH:	1,468
Heated volume (above grade CF):	968	CFM:	84
Cooled volume (above grade CF):	968		
Exposed wall area (SF):	88		

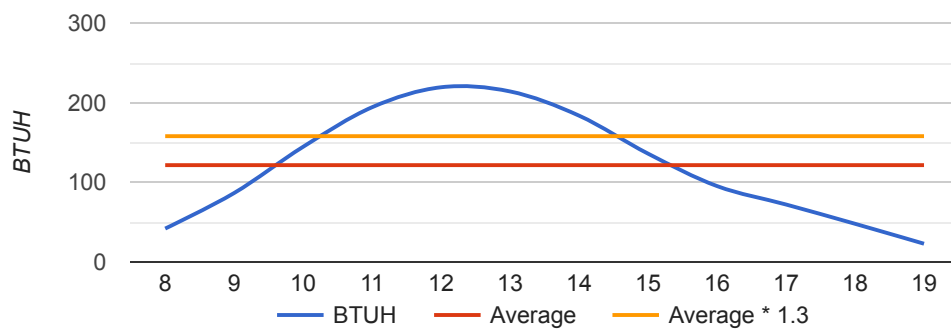
## Load Calculation



## AED Graph (mid-summer)



## AED graph (fall)

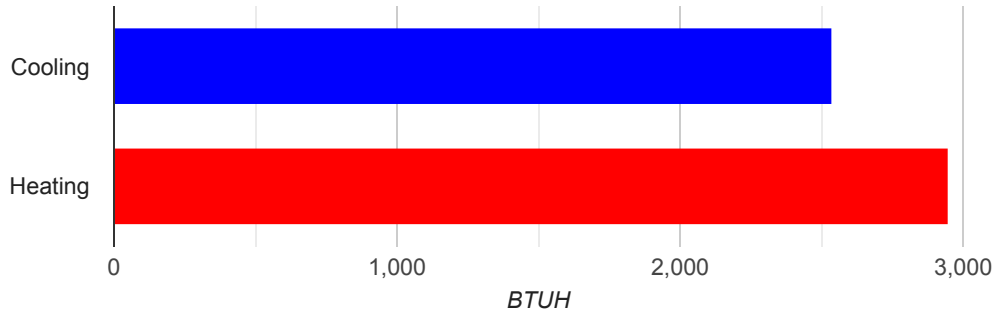


# ROOM DETAIL

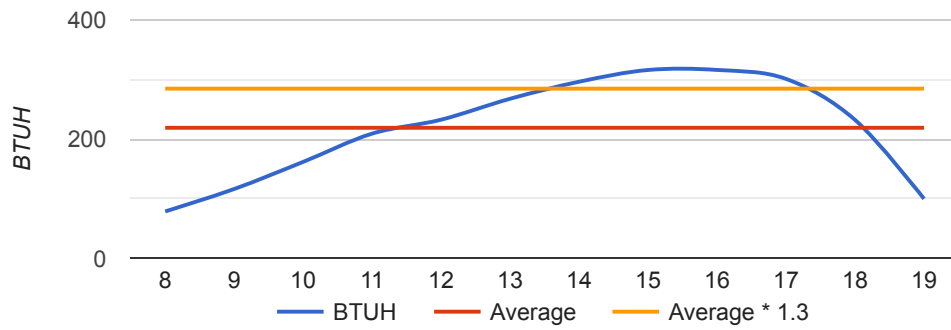
Room name: BR 2

Heated square footage:	154	Total Cooling BTUH:	2,534
Cooled square footage:	154	Total Heating BTUH:	2,942
Heated volume (above grade CF):	1,232	CFM:	111
Cooled volume (above grade CF):	1,232		
Exposed wall area (SF):	200		

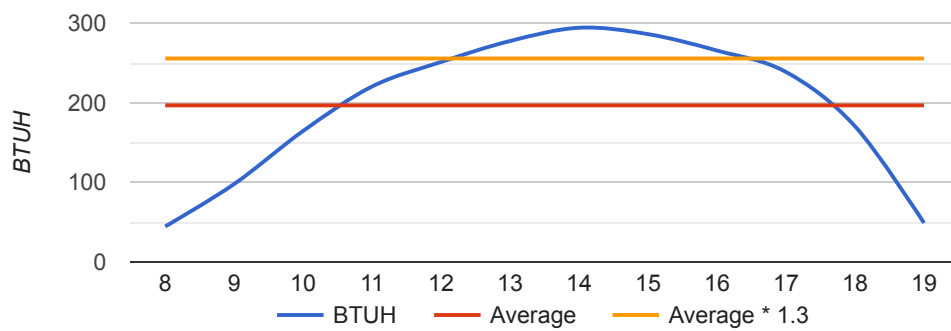
## Load Calculation



## AED Graph (mid-summer)



## AED graph (fall)

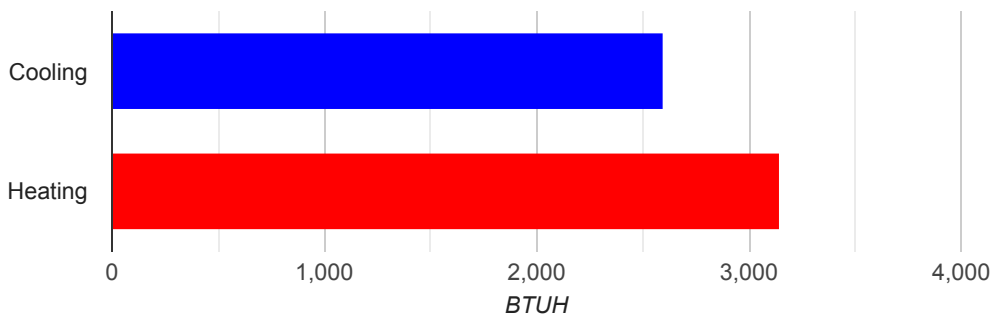


# ROOM DETAIL

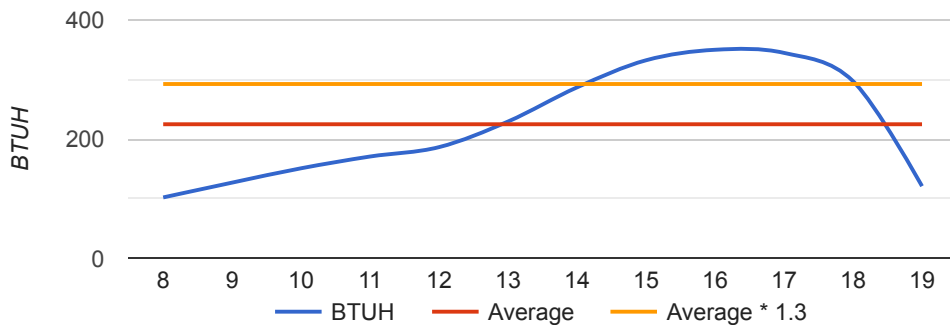
Room name: BR 3

Heated square footage:	160	Total Cooling BTUH:	2,596
Cooled square footage:	160	Total Heating BTUH:	3,145
Heated volume (above grade CF):	1,280	CFM:	114
Cooled volume (above grade CF):	1,280		
Exposed wall area (SF):	208		

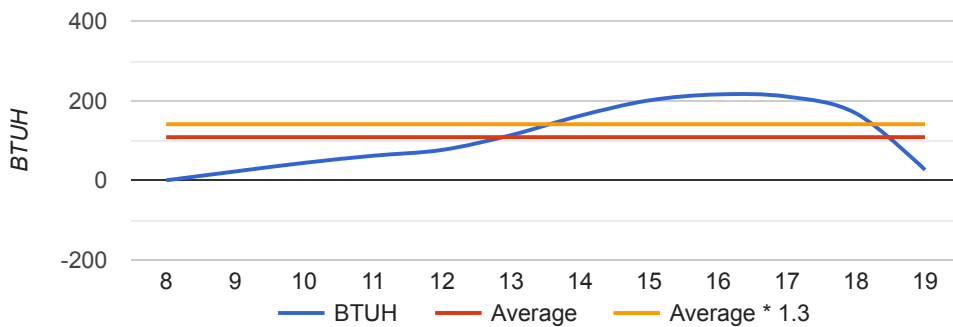
## Load Calculation



## AED Graph (mid-summer)



## AED graph (fall)



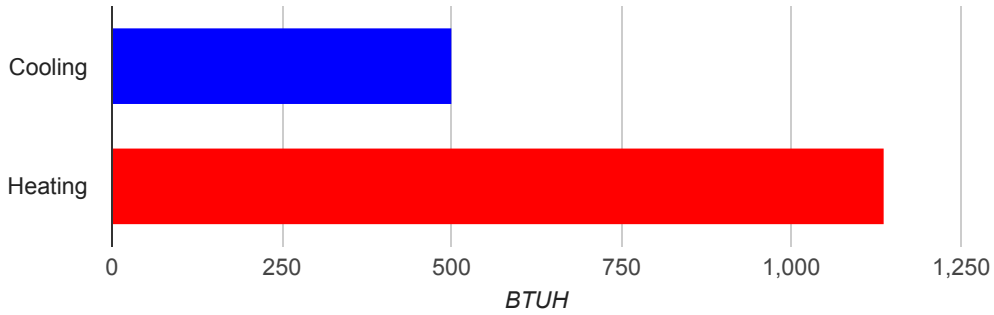
# ROOM DETAIL

Room name: Hall Bath

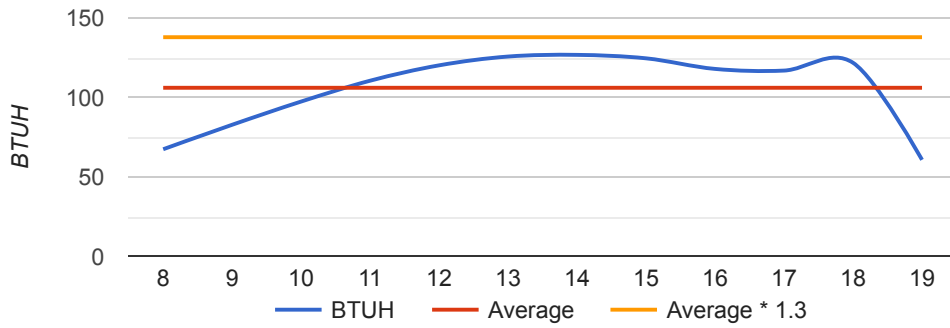
Heated square footage: 72  
Cooled square footage: 72  
Heated volume (above grade CF): 576  
Cooled volume (above grade CF): 576  
Exposed wall area (SF): 64

Total Cooling BTUH: 500  
Total Heating BTUH: 1,136  
CFM: 23

## Load Calculation



## AED Graph (mid-summer)



## AED graph (fall)

