

Project Name: durham

Address: , Durham, NC

OUTDOOR DESIGN CONDITIONS

Weather station: Durham

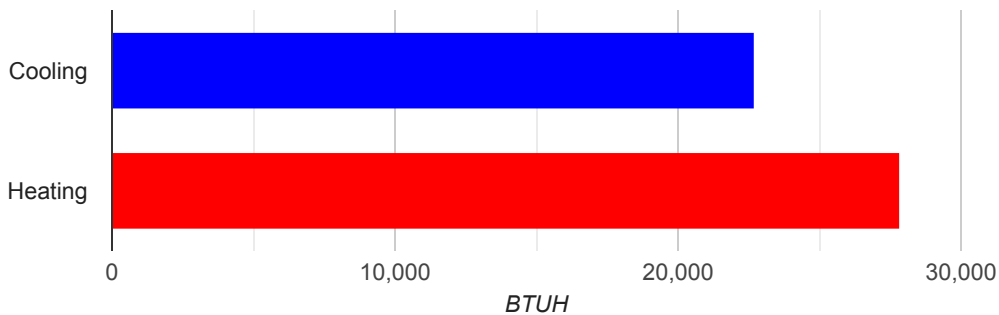
Summer Outdoor F:	92	Summer Indoor F:	72	Design Grains:	40	Daily Range:	Medium
Winter Outdoor F:	20	Winter Indoor F:	70	Cooling RH:	50	Elevation (Ft):	427

LOAD CALCULATION TOTALS

HVAC System: Hvac

Heated square footage:	1,291	Heating BTUH:	27,801
Cooled square footage:	1,291	Cooling BTUH:	22,668
Heated volume (above grade CF):	10,328	CFM:	987
Cooled volume (above grade CF):	10,328	Sensible cooling:	19,547
Exposed wall area (SF):	1,208	Latent cooling:	3,122
		SHR:	0.862

Load Calculation



Approved ACCA MJ8 Calculations

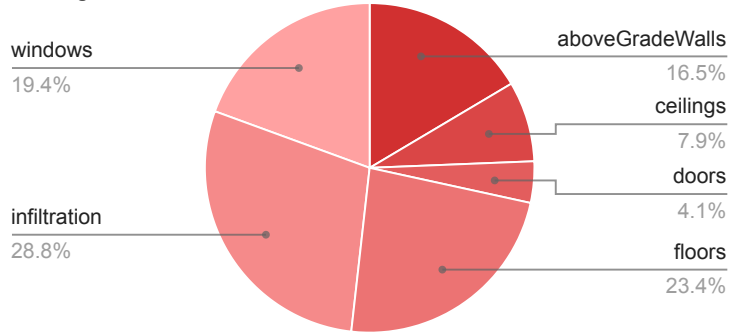
Calculations are based on the ACCA Manual J 8th Edition and are approved by ACCA. All computed calculations are estimates on building use, weather data, and inputted values such as R-Values, window types, duct loss, etc. Equipment selections should meet both the latent and sensible gain as well as building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



HEATING AND COOLING LOADS

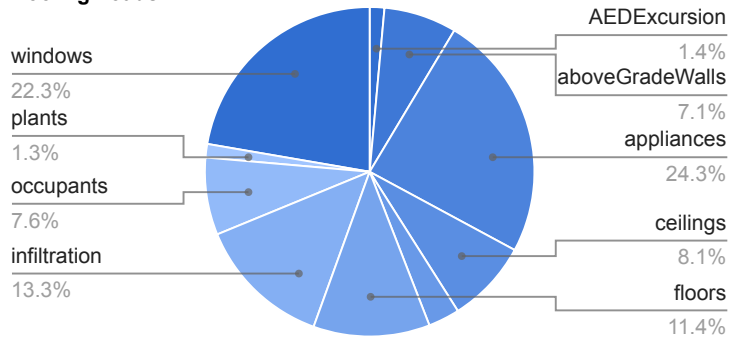
HEATING LOADS		
SECTION	AREA	HEAT LOSS
aboveGradeWalls	944	4,578
ceilings	1,291	2,195
doors	48	1,128
floors	1,171	6,494
infiltration	0	8,005
skylights	0	0
windows	216	5,400
Totals		27,801

Heating Loads



COOLING LOADS			
SECTION	AREA	SENSIBLE	LATENT
AEDExcursion	0	327	0
aboveGradeWalls	944	1,621	0
appliances	0	5,146	358
ceilings	1,291	1,844	0
doors	48	699	0
floors	1,171	2,591	0
infiltration	0	1,345	1,663
occupants	0	920	800
plants	0	0	300
skylights	0	0	0
windows	216	5,054	0
Totals		19,547	3,122

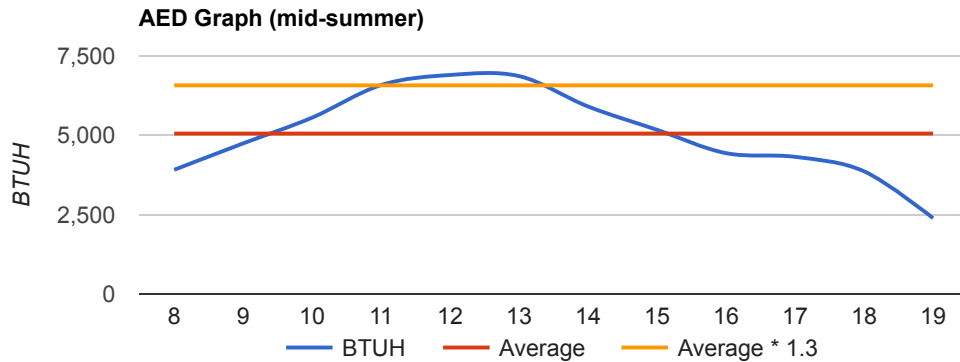
Cooling Loads



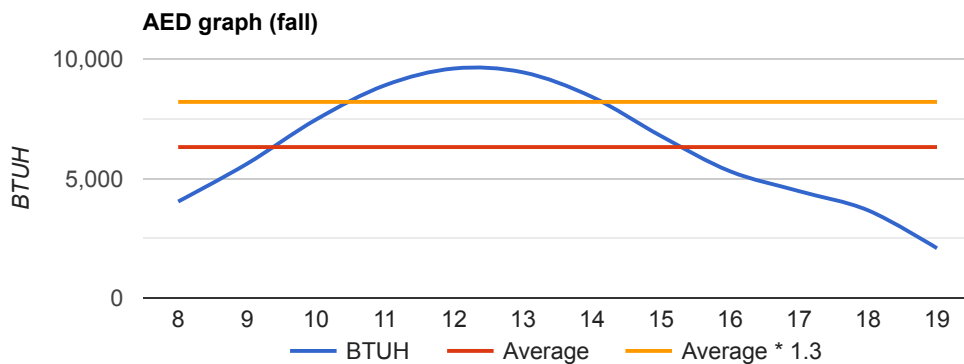
FENESTRATION LOADS

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).

Warning (1): The sensible load for this application peaks during late fall or early winter. This behavior is caused by glass that faces SouthEast, South or SouthWest. Some rooms may be noticeably cooler or warmer than the temperature set point if zoning is not provided. Simultaneous heating and cooling may be required.



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 - N Frame Wall, Wood framing, R-11 cavity insulation, Brick Veneer.	Construction nr:	12B-0b w	Exposure:	N	Heating BTUH:	243
	U Value:	0.097	Area:	50	Cooling BTUH:	86
System generated wall - E Frame Wall, Wood framing, R-11 cavity insulation, Brick Veneer.	Construction nr:	12B-0b w	Exposure:	E	Heating BTUH:	553
	U Value:	0.097	Area:	114	Cooling BTUH:	196
System generated wall - S Frame Wall, Wood framing, R-11 cavity insulation, Brick Veneer.	Construction nr:	12B-0b w	Exposure:	S	Heating BTUH:	340
	U Value:	0.097	Area:	70	Cooling BTUH:	120
System generated wall - N Frame Wall, Wood framing, R-11 cavity insulation, Brick Veneer.	Construction nr:	12B-0b w	Exposure:	N	Heating BTUH:	340
	U Value:	0.097	Area:	70	Cooling BTUH:	120
System generated wall - S Frame Wall, Wood framing, R-11 cavity insulation, Brick Veneer.	Construction nr:	12B-0b w	Exposure:	S	Heating BTUH:	534
	U Value:	0.097	Area:	110	Cooling BTUH:	189
System generated wall - W Frame Wall, Wood framing, R-11 cavity insulation, Brick Veneer.	Construction nr:	12B-0b w	Exposure:	W	Heating BTUH:	582
	U Value:	0.097	Area:	120	Cooling BTUH:	206
System generated wall - N Frame Wall, Wood framing, R-11 cavity insulation, Brick Veneer.	Construction nr:	12B-0b w	Exposure:	N	Heating BTUH:	243
	U Value:	0.097	Area:	50	Cooling BTUH:	86
System generated wall - W Frame Wall, Wood framing, R-11 cavity insulation, Brick Veneer.	Construction nr:	12B-0b w	Exposure:	W	Heating BTUH:	466
	U Value:	0.097	Area:	96	Cooling BTUH:	165
System generated wall - N Frame Wall, Wood framing, R-11 cavity insulation, Brick Veneer.	Construction nr:	12B-0b w	Exposure:	N	Heating BTUH:	320
	U Value:	0.097	Area:	66	Cooling BTUH:	113
System generated wall - E Frame Wall, Wood framing, R-11 cavity insulation, Brick Veneer.	Construction nr:	12B-0b w	Exposure:	E	Heating BTUH:	340
	U Value:	0.097	Area:	70	Cooling BTUH:	120
System generated wall - S Frame Wall, Wood framing, R-11 cavity insulation, Brick Veneer.	Construction nr:	12B-0b w	Exposure:	S	Heating BTUH:	427
	U Value:	0.097	Area:	88	Cooling BTUH:	151
System generated wall - N Frame Wall, Wood framing, R-11 cavity insulation, Brick Veneer.	Construction nr:	12B-0b w	Exposure:	N	Heating BTUH:	194
	U Value:	0.097	Area:	40	Cooling BTUH:	69

BELOW GRADE WALLS

There are no components for this section.

WINDOWS

Default small windows for wall id 2733472 Window, NFRC rated, Clear glass.	Construction nr:	1G	U Value:	0.5	Heating BTUH:	150
	Area:	6	SHGC:	0.67	Cooling BTUH:	107
	Exposure:	N				

WINDOWS

Default medium windows for wall id 2733472 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 24 N	U Value: SHGC:	0.5 0.67	Heating BTUH: Cooling BTUH:	600 426
Default small windows for wall id 2733471 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 6 E	U Value: SHGC:	0.5 0.67	Heating BTUH: Cooling BTUH:	150 207
Default small windows for wall id 2733458 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 6 S	U Value: SHGC:	0.5 0.67	Heating BTUH: Cooling BTUH:	150 136
Default medium windows for wall id 2733458 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 12 S	U Value: SHGC:	0.5 0.67	Heating BTUH: Cooling BTUH:	300 308
Default small windows for wall id 2733449 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 18 N	U Value: SHGC:	0.5 0.67	Heating BTUH: Cooling BTUH:	450 320
Default small windows for wall id 2733437 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 6 S	U Value: SHGC:	0.5 0.67	Heating BTUH: Cooling BTUH:	150 136
Default medium windows for wall id 2733437 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 24 S	U Value: SHGC:	0.5 0.67	Heating BTUH: Cooling BTUH:	600 615
Default large windows for wall id 2733437 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 36 S	U Value: SHGC:	0.5 0.67	Heating BTUH: Cooling BTUH:	900 958
Default small windows for wall id 2733440 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 6 N	U Value: SHGC:	0.5 0.67	Heating BTUH: Cooling BTUH:	150 107
Default medium windows for wall id 2733440 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 24 N	U Value: SHGC:	0.5 0.67	Heating BTUH: Cooling BTUH:	600 426
Default small windows for wall id 2733477 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 6 N	U Value: SHGC:	0.5 0.67	Heating BTUH: Cooling BTUH:	150 107
Default small windows for wall id 2733463 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 6 E	U Value: SHGC:	0.5 0.67	Heating BTUH: Cooling BTUH:	150 207
Default medium windows for wall id 2733463 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 12 E	U Value: SHGC:	0.5 0.67	Heating BTUH: Cooling BTUH:	300 414
Default small windows for wall id 2733462 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 12 S	U Value: SHGC:	0.5 0.67	Heating BTUH: Cooling BTUH:	300 273
Default medium windows for wall id 2733462 Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 12 S	U Value: SHGC:	0.5 0.67	Heating BTUH: Cooling BTUH:	300 308

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 below roof joists, Asphalt shingles, Light, R-30.	Construction nr: U Value:	18B-30 al 0.034	Area:	160	Heating BTUH: Cooling BTUH:	272 228
System generated ceiling. Ceiling below roof joists, Asphalt shingles, Light, R-30.	Construction nr: U Value:	18B-30 al 0.034	Area:	131	Heating BTUH: Cooling BTUH:	223 187
System generated ceiling. Ceiling below roof joists, Asphalt shingles, Light, R-30.	Construction nr: U Value:	18B-30 al 0.034	Area:	130	Heating BTUH: Cooling BTUH:	221 186

CEILINGS

System generated ceiling. Ceiling below roof joists, Asphalt shingles, Light, R-30.	Construction nr: U Value:	18B-30 al 0.034	Area:	40	Heating BTUH: 68 Cooling BTUH: 57
System generated ceiling. Ceiling below roof joists, Asphalt shingles, Light, R-30.	Construction nr: U Value:	18B-30 al 0.034	Area:	340	Heating BTUH: 578 Cooling BTUH: 486
System generated ceiling. Ceiling below roof joists, Asphalt shingles, Light, R-30.	Construction nr: U Value:	18B-30 al 0.034	Area:	120	Heating BTUH: 204 Cooling BTUH: 171
System generated ceiling. Ceiling below roof joists, Asphalt shingles, Light, R-30.	Construction nr: U Value:	18B-30 al 0.034	Area:	45	Heating BTUH: 77 Cooling BTUH: 64
System generated ceiling. Ceiling below roof joists, Asphalt shingles, Light, R-30.	Construction nr: U Value:	18B-30 al 0.034	Area:	40	Heating BTUH: 68 Cooling BTUH: 57
System generated ceiling. Ceiling below roof joists, Asphalt shingles, Light, R-30.	Construction nr: U Value:	18B-30 al 0.034	Area:	164	Heating BTUH: 279 Cooling BTUH: 234
System generated ceiling. Ceiling below roof joists, Asphalt shingles, Light, R-30.	Construction nr: U Value:	18B-30 al 0.034	Area:	121	Heating BTUH: 206 Cooling BTUH: 173

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 3385698 Wood Door, Hollow Core.	Construction nr: U Value:	11 0.47	Area: Exposure:	48 N	Heating BTUH: 1,128 Cooling BTUH: 699
---	------------------------------	------------	--------------------	---------	--

FLOORS

System generated floor. Floor over enclosed unconditioned crawl space or basement, no floor insulation, Carpet or hardwood.	Construction nr: Area:	19A-0cp 160	Heating U Value:0.295 Cooling U Value:0.295	Heating BTUH: 887 Cooling BTUH: 354 F Value: N/A
System generated floor. Floor over enclosed unconditioned crawl space or basement, no floor insulation, Carpet or hardwood.	Construction nr: Area:	19A-0cp 131	Heating U Value:0.295 Cooling U Value:0.295	Heating BTUH: 727 Cooling BTUH: 290 F Value: N/A
System generated floor. Floor over enclosed unconditioned crawl space or basement, no floor insulation, Carpet or hardwood.	Construction nr: Area:	19A-0cp 130	Heating U Value:0.295 Cooling U Value:0.295	Heating BTUH: 721 Cooling BTUH: 288 F Value: N/A

FLOORS

System generated floor. Floor over enclosed unconditioned crawl space or basement, no floor insulation, Carpet or hardwood.	Construction nr: 19A-0cp Area: 40	Heating U Value:0.295 Cooling U Value:0.295	Heating BTUH: 222 Cooling BTUH: 89 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: 340	Heating U Value:0.295 Cooling U Value:0.295	Heating BTUH: 1,886 Cooling BTUH: 752 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: 45	Heating U Value:0.295 Cooling U Value:0.295	Heating BTUH: 250 Cooling BTUH: 100 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: 40	Heating U Value:0.295 Cooling U Value:0.295	Heating BTUH: 222 Cooling BTUH: 89 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: 164	Heating U Value:0.295 Cooling U Value:0.295	Heating BTUH: 910 Cooling BTUH: 363 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: 121	Heating U Value:0.295 Cooling U Value:0.295	Heating BTUH: 671 Cooling BTUH: 268 F Value: N/A

VENTILATION

There are no components for this section.

HOT WATER PIPING

There are no components for this section.

DUCTS

There are no components for this section.

INFILTRATION

Leakage Category: Semi-Loose	NCFM Heating: 147 NCFM Cooling: 62	Heating BTUH: 8,005 Sensible BTUH: 1,345 Latent BTUH: 1,663
------------------------------	---------------------------------------	---

BLOWER MOTOR

There are no components for this section.

WINTER HUMIDIFICATION

There are no components for this section.

OCCUPANTS

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

APPLIANCES

APPLIANCES

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
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
Computer and monitor	Quantity:	1	Sensible BTUH:	538
			Latent BTUH:	0
Light Fixture - 100W	Quantity:	1	Sensible BTUH:	341
			Latent BTUH:	0

PLANTS

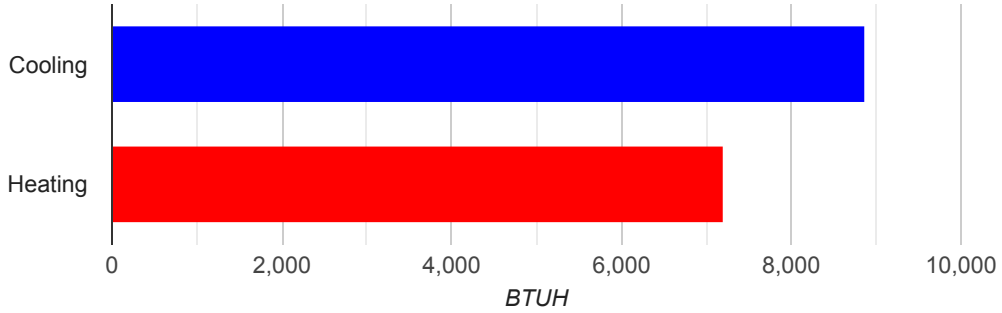
Plant Size:	small	Quantity:	5	Latent BTUH:	50
Plant Size:	medium	Quantity:	5	Latent BTUH:	100
Plant Size:	large	Quantity:	5	Latent BTUH:	150

ROOM DETAIL

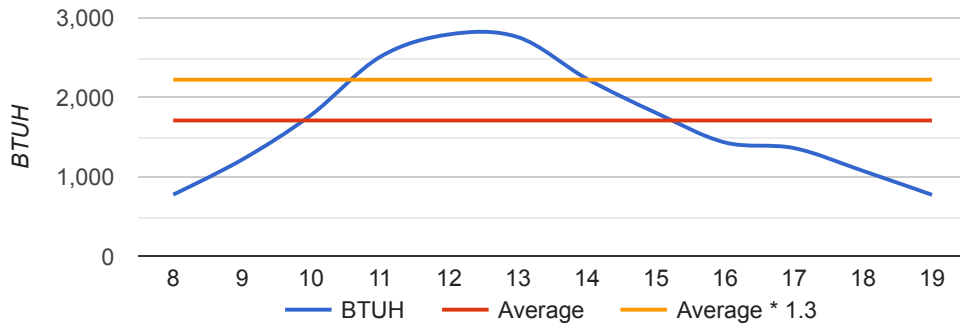
Room name: Living room

Heated square footage:	340	Total Cooling BTUH:	8,864
Cooled square footage:	340	Total Heating BTUH:	7,191
Heated volume (above grade CF):	2,720	CFM:	336
Cooled volume (above grade CF):	2,720		
Exposed wall area (SF):	296		

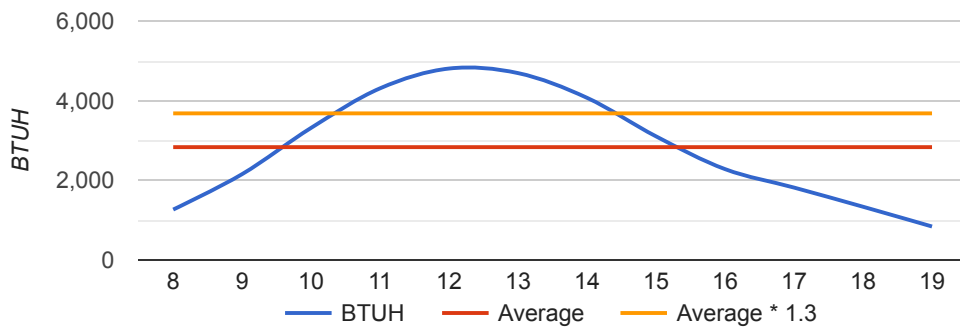
Load Calculation



AED Graph (mid-summer)



AED graph (fall)

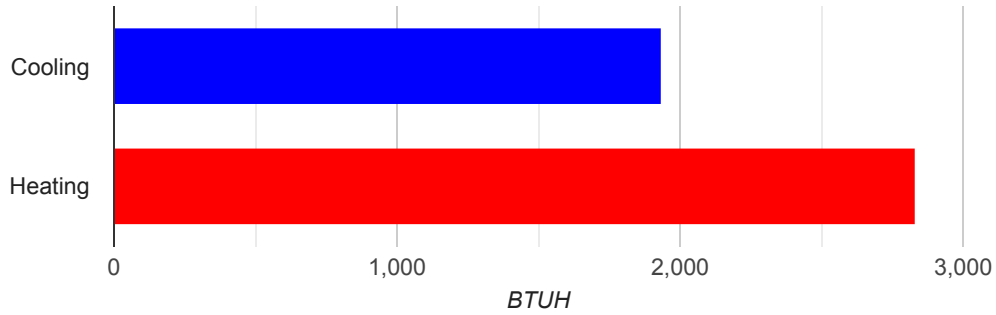


ROOM DETAIL

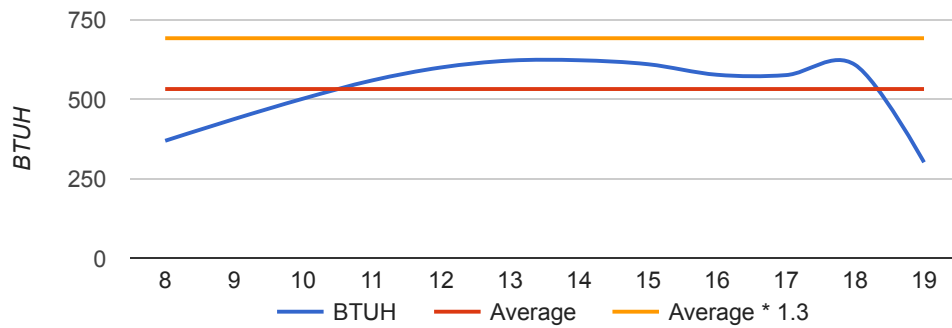
Room name: Study

Heated square footage:	120	Total Cooling BTUH:	1,931
Cooled square footage:	120	Total Heating BTUH:	2,828
Heated volume (above grade CF):	960	CFM:	85
Cooled volume (above grade CF):	960		
Exposed wall area (SF):	176		

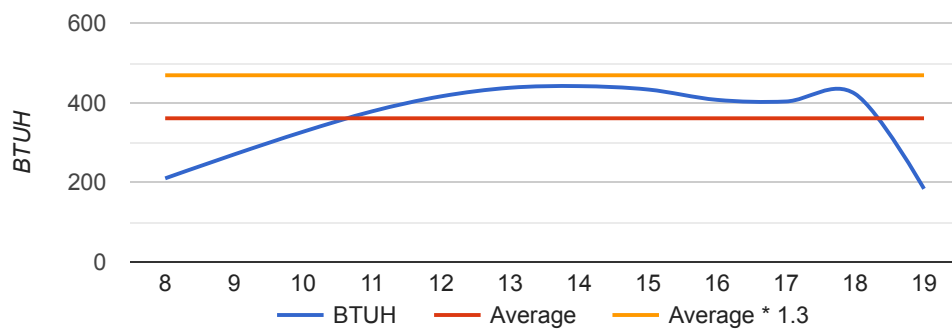
Load Calculation



AED Graph (mid-summer)



AED graph (fall)

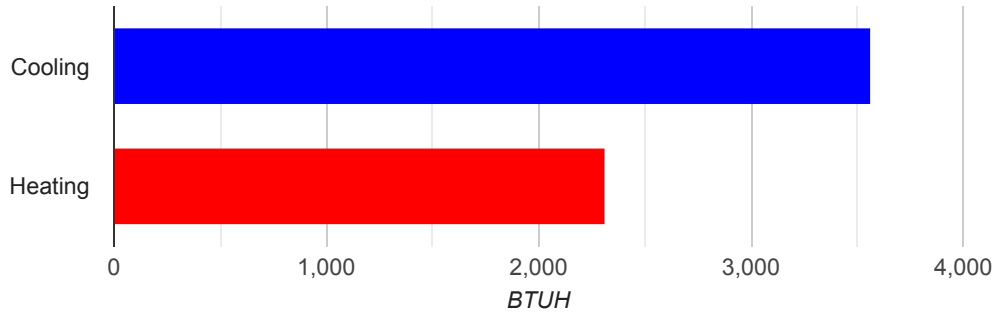


ROOM DETAIL

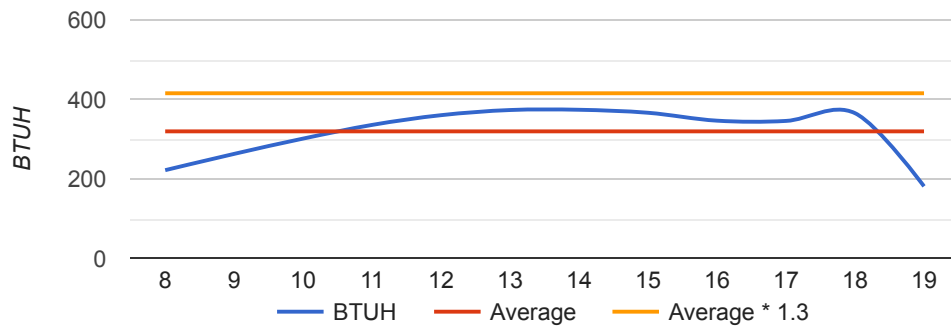
Room name: Kitchen

Heated square footage:	130	Total Cooling BTUH:	3,564
Cooled square footage:	130	Total Heating BTUH:	2,315
Heated volume (above grade CF):	1,040	CFM:	153
Cooled volume (above grade CF):	1,040		
Exposed wall area (SF):	88		

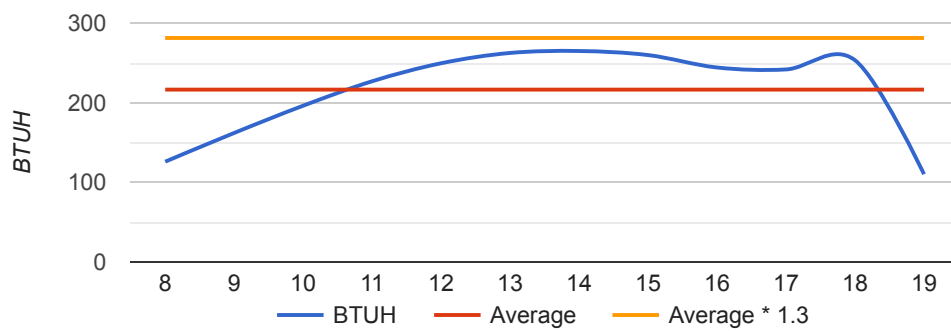
Load Calculation



AED Graph (mid-summer)



AED graph (fall)

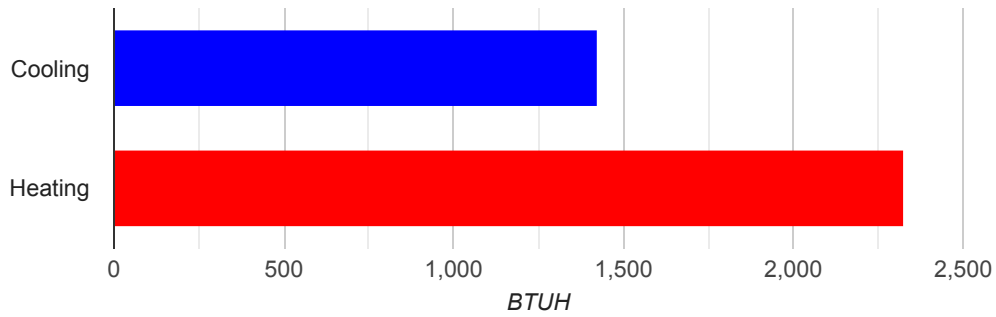


ROOM DETAIL

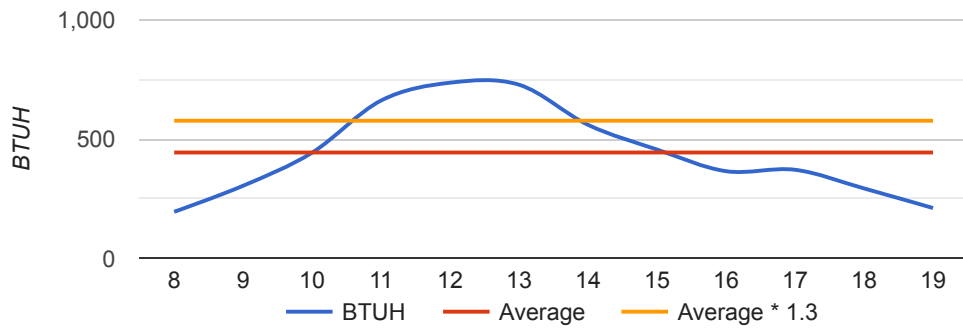
Room name: Br3

Heated square footage:	131	Total Cooling BTUH:	1,420
Cooled square footage:	131	Total Heating BTUH:	2,322
Heated volume (above grade CF):	1,048	CFM:	65
Cooled volume (above grade CF):	1,048		
Exposed wall area (SF):	88		

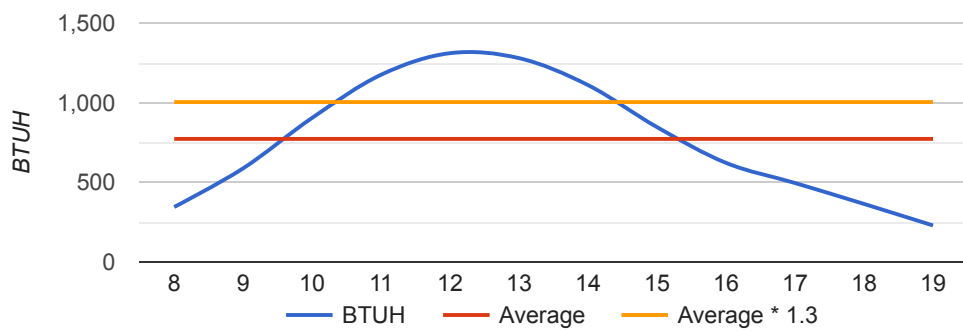
Load Calculation



AED Graph (mid-summer)



AED graph (fall)



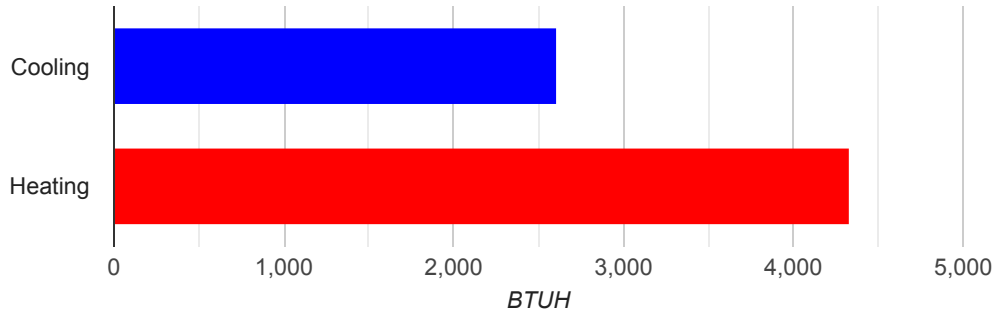
ROOM DETAIL

Room name: Br2

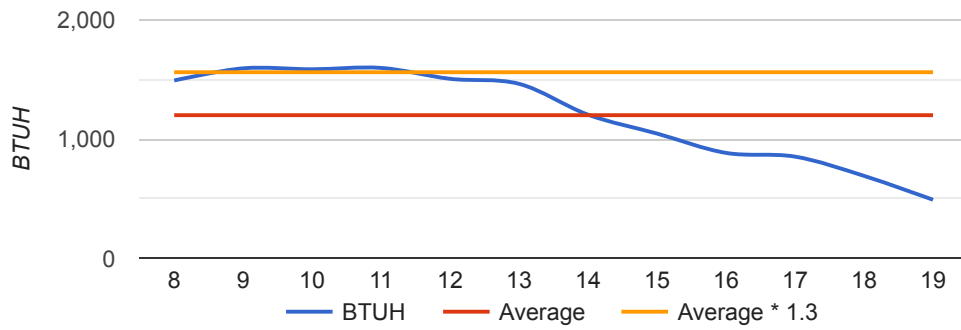
Heated square footage: 164
Cooled square footage: 164
Heated volume (above grade CF): 1,312
Cooled volume (above grade CF): 1,312
Exposed wall area (SF): 200

Total Cooling BTUH: 2,604
Total Heating BTUH: 4,330
CFM: 117

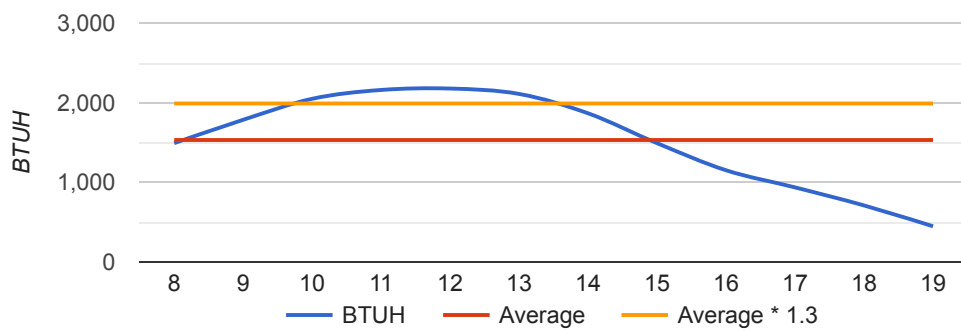
Load Calculation



AED Graph (mid-summer)



AED graph (fall)

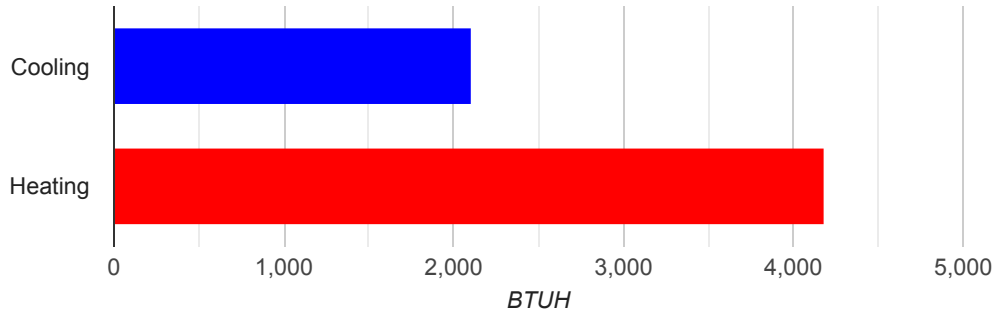


ROOM DETAIL

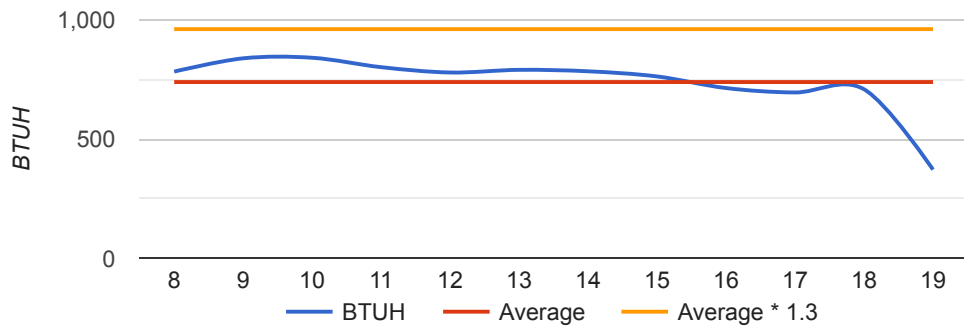
Room name: Br1

Heated square footage:	160	Total Cooling BTUH:	2,102
Cooled square footage:	160	Total Heating BTUH:	4,180
Heated volume (above grade CF):	1,280	CFM:	92
Cooled volume (above grade CF):	1,280		
Exposed wall area (SF):	200		

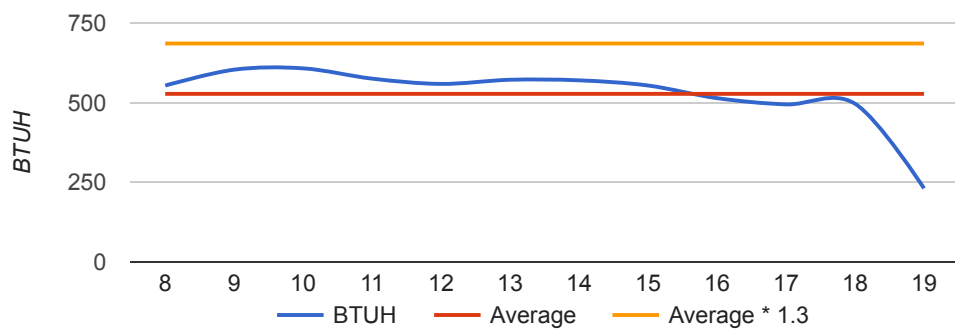
Load Calculation



AED Graph (mid-summer)



AED graph (fall)

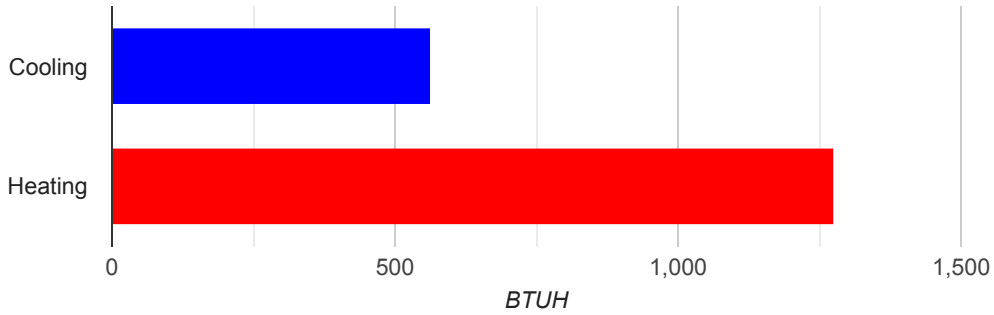


ROOM DETAIL

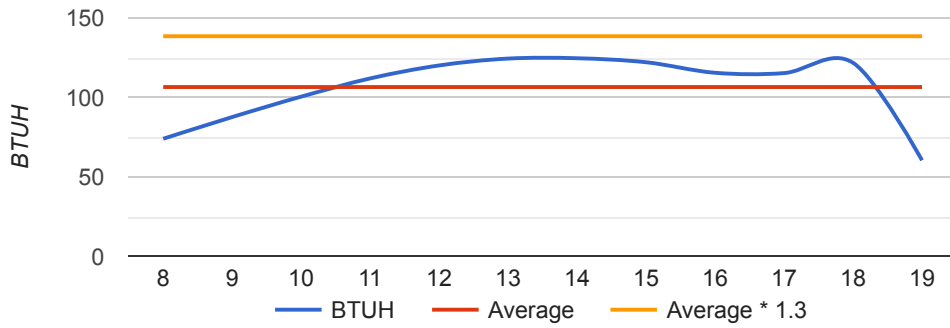
Room name: Bath1

Heated square footage:	45	Total Cooling BTUH:	563
Cooled square footage:	45	Total Heating BTUH:	1,273
Heated volume (above grade CF):	360	CFM:	21
Cooled volume (above grade CF):	360		
Exposed wall area (SF):	72		

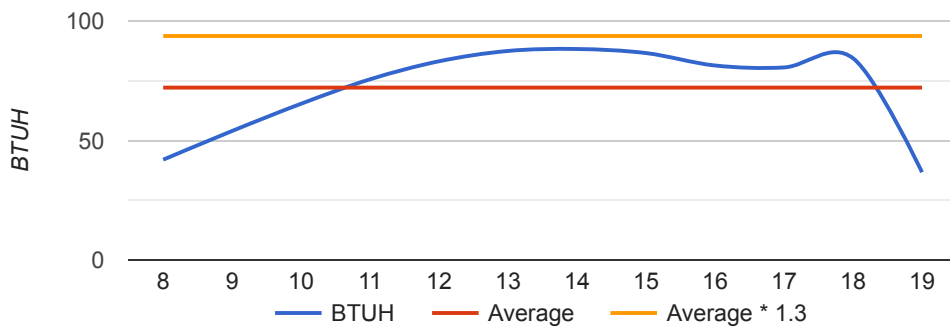
Load Calculation



AED Graph (mid-summer)



AED graph (fall)

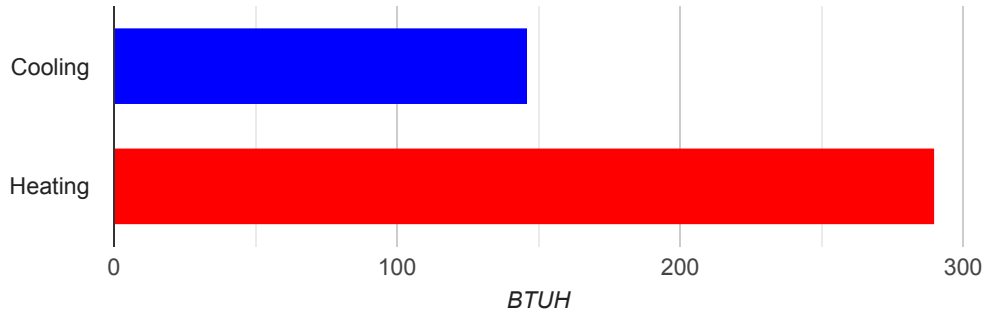


ROOM DETAIL

Room name: Bath2

Heated square footage:	40	Total Cooling BTUH:	146
Cooled square footage:	40	Total Heating BTUH:	290
Heated volume (above grade CF):	320	CFM:	7
Cooled volume (above grade CF):	320		
Exposed wall area (SF):	0		

Load Calculation

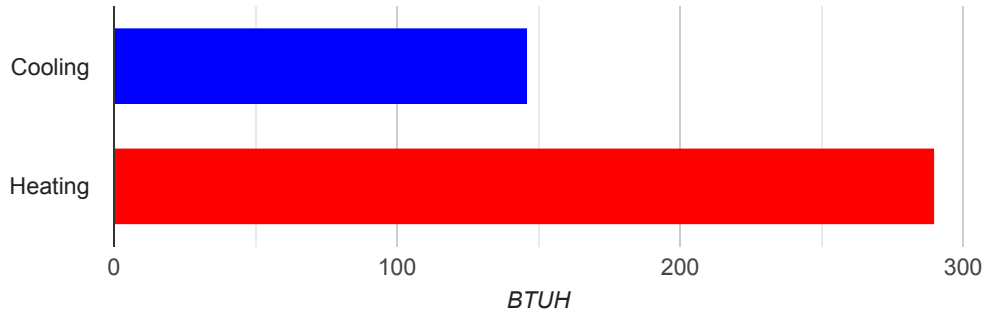


ROOM DETAIL

Room name: Hall

Heated square footage:	40	Total Cooling BTUH:	146
Cooled square footage:	40	Total Heating BTUH:	290
Heated volume (above grade CF):	320	CFM:	7
Cooled volume (above grade CF):	320		
Exposed wall area (SF):	0		

Load Calculation



ROOM DETAIL

Room name: Dining

Heated square footage:	121	Total Cooling BTUH:	1,769
Cooled square footage:	121	Total Heating BTUH:	2,782
Heated volume (above grade CF):	968	CFM:	83
Cooled volume (above grade CF):	968		
Exposed wall area (SF):	88		

Load Calculation

