

**Project Name:** Massachusetts

**Address:**

### OUTDOOR DESIGN CONDITIONS

Weather station: Lawrence Municipal AP

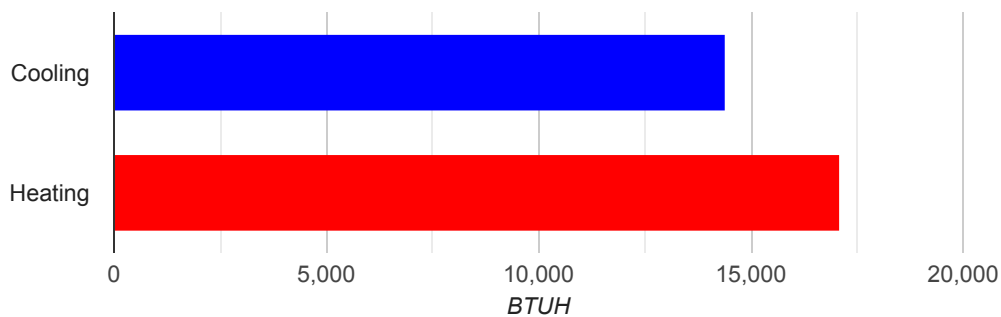
Summer Outdoor F:	88	Summer Indoor F:	75	Design Grains:	31	Daily Range:	Medium
Winter Outdoor F:	9	Winter Indoor F:	70	Cooling RH:	50	Elevation (Ft):	151

### LOAD CALCULATION TOTALS

HVAC System: Zone 1 - Master Bedroom

Heated square footage:	765	Heating BTUH:	17,091
Cooled square footage:	765	Cooling BTUH:	14,386
Heated volume (above grade CF):	8,415	CFM:	627
Cooled volume (above grade CF):	8,415	Sensible cooling:	12,430
Exposed wall area (SF):	970	Latent cooling:	1,956
		SHR:	0.864

**Load Calculation**



### Approved ACCA MJ8 Calculations

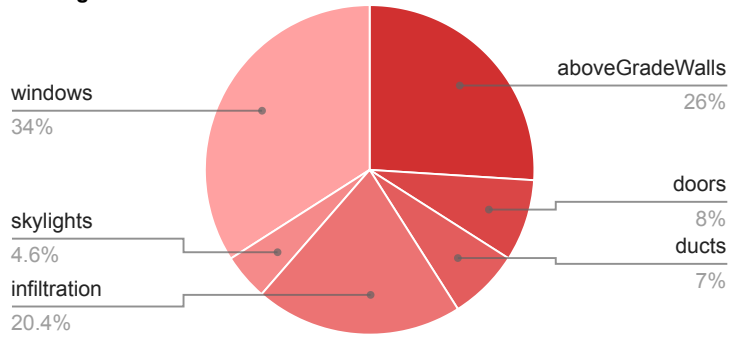
Calculations are based on the ACCA Manual J 8th Edition and are approved by ACCA. All computed calculations are estimates on building use, weather data, and inputted values such as R-Values, window types, duct loss, etc. Equipment selections should meet both the latent and sensible gain as well as building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



## HEATING AND COOLING LOADS

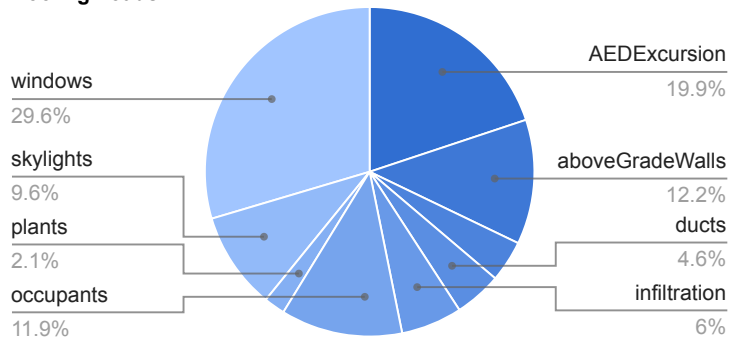
HEATING LOADS		
SECTION	AREA	HEAT LOSS
aboveGradeWalls	754	4,461
ceilings	-12	-65
doors	48	1,376
ducts	0	1,197
infiltration	0	3,497
skylights	12	783
windows	168	5,841
Totals		17,091

**Heating Loads**



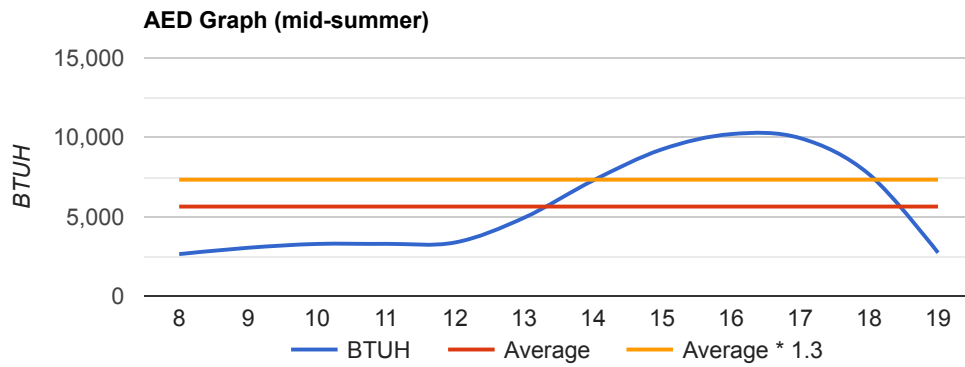
COOLING LOADS			
SECTION	AREA	SENSIBLE	LATENT
AEDExcursion	0	2,867	0
aboveGradeWalls	754	1,763	0
ceilings	-12	-22	0
doors	48	587	0
ducts	0	326	341
infiltration	0	349	515
occupants	0	920	800
plants	0	0	300
skylights	12	1,376	0
windows	168	4,264	0
Totals		12,430	1,956

**Cooling Loads**

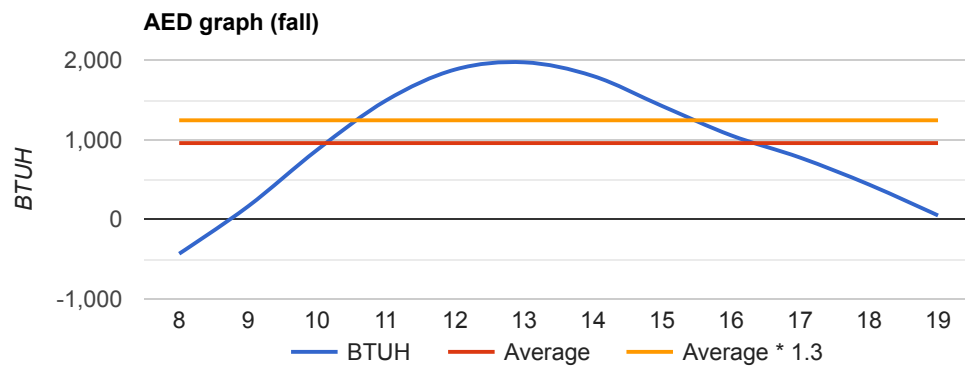


## FENESTRATION LOADS

**Warning (0):** This application has glass areas that produced large cooling loads for part of the day. Zoning may be required to overcome solar load spikes for one or more rooms. Consider a zoned system, or provide zone control (individual, motorized, thermostatically controlled dampers) for problem rooms. Single speed equipment may not be suitable for the application.



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 - 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 426	Heating BTUH: Cooling BTUH:	2,521 996
<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 116	Heating BTUH: Cooling BTUH:	686 271
<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 212	Heating BTUH: Cooling BTUH:	1,254 496

### BELOW GRADE WALLS

There are no components for this section.

### WINDOWS

<b>Default small windows for wall id 2499491</b> Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 12 E	U Value: SHGC:	0.57 0.56	Heating BTUH: Cooling BTUH:	417 321
<b>Default medium windows for wall id 2499491</b> Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 12 E	U Value: SHGC:	0.57 0.56	Heating BTUH: Cooling BTUH:	417 321
<b>Default small windows for wall id 2499492</b> Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 6 S	U Value: SHGC:	0.57 0.56	Heating BTUH: Cooling BTUH:	209 27
<b>Default medium windows for wall id 2499492</b> Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 24 S	U Value: SHGC:	0.57 0.56	Heating BTUH: Cooling BTUH:	834 110
<b>Default small windows for wall id 2499493</b> Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 6 W	U Value: SHGC:	0.57 0.56	Heating BTUH: Cooling BTUH:	209 183
<b>Default medium windows for wall id 2499493</b> Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 36 W	U Value: SHGC:	0.57 0.56	Heating BTUH: Cooling BTUH:	1,252 1,100
<b>Default large windows for wall id 2499493</b> Window, NFRC rated, Clear glass.	Construction nr: Area: Exposure:	1G 72 W	U Value: SHGC:	0.57 0.56	Heating BTUH: Cooling BTUH:	2,503 2,200

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

### CEILINGS

<b>MBR Ceiling</b> Ceiling under encapsulated attic.	Construction nr: U Value:	tbl4E 0.6	Area:	-12	Heating BTUH: Cooling BTUH:	-65 -22
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### SKYLIGHTS

<b>Default skylight(s) for ceiling id 674222.</b> Flat, Clear glass, Double pane.	Construction nr:	8Bc-3"	Exposure: Area:	W 12	Heating BTUH: Cooling BTUH:	783 1,376
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Skylight cooling BTUHs shown here are daily average values. See AED graphs for details of fenestration loads during the day.

### DOORS

<b>Default doors for wall id 2499492</b> Wood Door, Hollow Core.	Construction nr: U Value:	11 0.47	Area: Exposure:	24 S	Heating BTUH: Cooling BTUH:	688 293
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## DOORS

### Default doors for wall id 2499493

Wood Door, Hollow Core.

Construction nr:	11	Area:	24	Heating BTUH:	688
U Value:	0.47	Exposure:	W	Cooling BTUH:	293

## 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

### System generated ducts (below conditioned space)

Unconditioned Basement - Radial

EHLF:	0.075	Heating BTUH:	1,197
ESGF:	0.035	Sensible BTUH:	326
ELG:	341	Latent BTUH:	341

## INFILTRATION

Leakage Category: Average

NCFM Heating:	230	Heating BTUH:	3,497
NCFM Cooling:	108	Sensible BTUH:	349
		Latent BTUH:	515

## 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
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## APPLIANCES

There are no components for this section.

## PLANTS

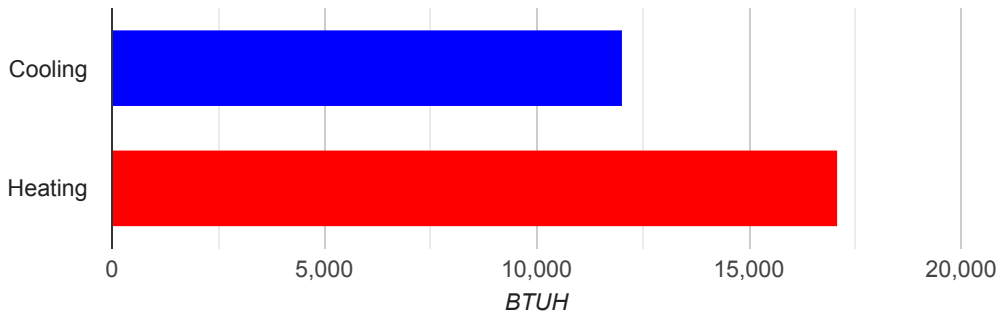
Plant Size:	small	Quantity:	5	Latent BTUH:	50
Plant Size:	medium	Quantity:	5	Latent BTUH:	100
Plant Size:	large	Quantity:	5	Latent BTUH:	150

# ROOM DETAIL

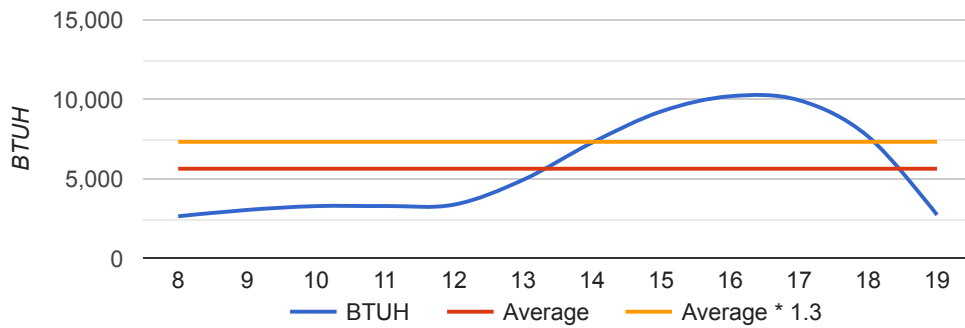
Room name: Master Bedroom & Bath

Heated square footage:	765	Total Cooling BTUH:	11,992
Cooled square footage:	765	Total Heating BTUH:	17,091
Heated volume (above grade CF):	8,415	CFM:	579
Cooled volume (above grade CF):	8,415		
Exposed wall area (SF):	970		

## Load Calculation



## AED Graph (mid-summer)



## AED graph (fall)

