

Manual J Project Report



Larkin Home

123 Main Street
Village of Goshen, NY 10924

Sensible Cooling
30,960 Btuh

Sensible Heating
55,744 Btuh

Latent Cooling
4,292 Btuh

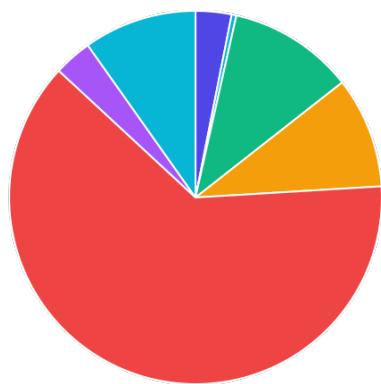
Total Cooling
35,252 Btuh



Notes

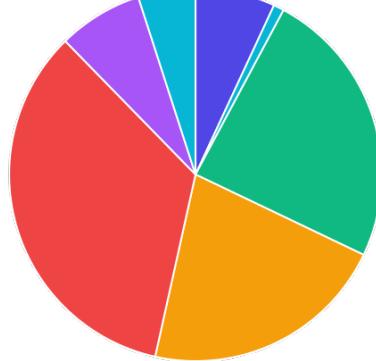
This report follows the formulas from ACCA's Manual J (8th edition) and references the official CLTD/CLF tables for every envelope assembly. The floor, ceiling, and wall listings throughout the report show the exact CLTD codes and U-values used so you can verify Manual J compliance at a glance.

Cooling breakdown



- Walls
- Doors
- Floors
- Ceilings
- Windows
- Skylights
- Infiltration
- Ventilation
- Internal

Heating breakdown



- Walls
- Doors
- Floors
- Ceilings
- Windows
- Skylights
- Infiltration
- Ventilation
- Internal

Design Conditions & Inputs



Design month	Ducts
July	No duct data provided.
Outdoor design	Building
Cooling DB: 88°F – Cooling WB: 75°F	5 occupants
Heating DB: 13°F	1 stories
Indoor setpoints	135 ft above sea level
Cooling: 75°F @ 50% RH	Density: 0.076 lb/ft³
Heating: 70°F	HDD ₆₅ : 9,058 • CDD ₅₀ : 7,906
	HDD/CDD Ratio: 1.15
Infiltration & ventilation	
Measured/Estimated CFM: 70 cfm	
Continuous ventilation: 0 cfm	
Tightness: semi-tight	

Manual S Compliance



COOLING NEED

31,750 Btuh - 40,550 Btuh

variable speed recommended

HEATING NEED

55,750 Btuh - 111,500 Btuh

Auxiliary heat needed

AIRFLOW RANGE

1,100 cfm - 1,210 cfm

Target: 1,160 cfm

VERIFIED SYSTEM SELECTION

MEETS REQUIREMENTS

DAIKIN RZQ30TBVJU* + Trane / Mitsubishi Electric NTXSPF18A112A*

heat pump • variable speed • Source: EXPANDED

PERFORMANCE

Total Cooling

47,000 Btuh

SIZING FACTORS

Cooling %

VERIFICATION

133% Airflow

Sensible

33,840 Btuh

109% Emergency

Heating

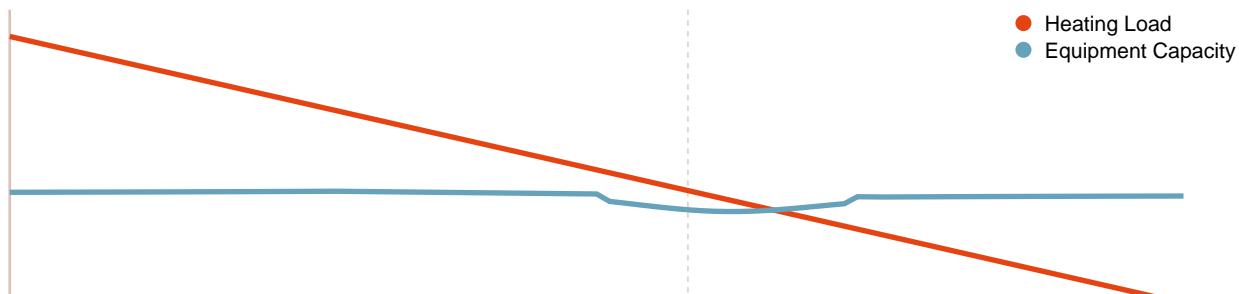
56,564 Btuh

101%

PASS

HEAT PUMP BALANCE POINT DIAGRAM (§N2-6/§N2-7, §N3-3)

* Capacity curve includes §N3-3 defrost knee heuristic where explicit OEM data points are missing.



ENTERING AIR ASSUMPTIONS

Mixed Air: 77.1°F DB / 77.1°F WB

Fresh Air: 186 cfm (16.0%)

SUPPLEMENTAL HEATING

Primary system capacity is insufficient for worst-case heating load. Auxiliary heat (strips or furnace) required to cover deficit.

ANCILLARY EQUIPMENT

Dehumidifier: FAIL (Target: 83.1 pts/day)

Living Room/Kitchen

Area: 18 x 30 = 540 ft² • Ceiling: 8 ft



Sensible Cooling: 12,346 Btuh

Sensible Heating: 15,317 Btuh

Latent: 1,843 Btuh

Manual J Assembly References

Floor	Over Enclosed Unconditioned Crawl Space or Basement, R-19 Insulation on Exposed Walls, Passive, R-5 to R-10 board insulation 19D-5sp • U-Value: 0.125 • Area: 30 ft x 18 ft = 540 ft ²
Ceiling	Below Roof Joists, Dark or Bold-Color Asphalt Shingle; Dark Metal; Dark Membrane; Dark Tar and Gravel, R-10 board insulation 18A-10 • U-Value: 0.076 • Area: 30 ft x 18 ft = 540 ft ²
North-facing wall	Above-ground - Frame - Wood Studs - R-19 Cavity Insulation in 2x6s - Continuous R-5 Board Insulation U-Value: 0.052 • Area: 18 ft x 8 ft = 144 ft ²
South-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
West-facing wall	Above-ground - Frame - Wood Studs - R-19 Cavity Insulation in 2x6s - Continuous R-5 Board Insulation U-Value: 0.052 • Area: 30 ft x 8 ft = 240 ft ²
East-facing wall	Above-ground - Frame - Wood Studs - R-19 Cavity Insulation in 2x6s - Continuous R-5 Board Insulation U-Value: 0.052 • Area: 17 ft x 8 ft = 136 ft ²
East-facing window	Sliding Glass Door to Porch U-Value: 0.840 • Area: 9 ft x 7 ft = 63 ft ² • SHGC: 0.610 Interior shade factor: 0.40 • Exterior shade factor: 1.00 Overhang Depth: 0 ft • Overhang distance above top: 0 ft
West-facing window	Window by TV U-Value: 0.840 • Area: 5 ft x 3 ft = 15 ft ² • SHGC: 0.610 Interior shade factor: 0.60 • Exterior shade factor: 1.00 Overhang Depth: 0 ft • Overhang distance above top: 0 ft
West-facing window	Window Over Sink U-Value: 0.840 • Area: 5 ft x 3 ft = 15 ft ² • SHGC: 0.610 Interior shade factor: 0.60 • Exterior shade factor: 1.00 Overhang Depth: 0 ft • Overhang distance above top: 0 ft Big Living Room Window

North-facing window

U-Value: 0.840 • Area: 5 ft x 10 ft = 50 ft² • SHGC: 0.610
Interior shade factor: 0.40 • Exterior shade factor: 1.00
Overhang Depth: 0 ft • Overhang distance above top: 0 ft

Fixtures & Appliances

- One Electric Kettle – 1,000 watts used for 0.05 hours per day adds 7 btu
- One Fridge-Freezer – 200 watts used for 24 hours per day adds 682 btu
- One Electric Oven – 2,150 watts used for 1 hour per day adds 306 btu
- Four LED Lightbulbs – 10 watts used for 12 hours per day adds 68 btu
- One Microwave – 1,000 watts used for 0.05 hours per day adds 7 btu
- One Dishwasher – 1,400 watts used for 1 hour per day adds 199 btu
- One Television – 100 watts used for 5 hours per day adds 71 btu
- One Internet Router – 10 watts used for 24 hours per day adds 34 btu
- One Coffee Maker – 800 watts used for 0.3 hours per day adds 34 btu

Element	Cooling (Btuh)	Heating (Btuh)
Walls	255	1,117
Doors	0	0
Floors	878	3,848
Ceilings	534	2,339
Windows (Conduction)	1,562	6,847
Windows (Solar)	6,156	—
Skylights (Cond)	0	0
Skylights (Solar)	0	—
Infiltration (Sensible)	266	1,166
Ventilation (Sensible)	0	0
Internal (Occ.)	88	88
Internal (Fixtures)	1,409	1,409

Powder Room

Area: $3.5 \times 7 = 24.5 \text{ ft}^2$ • Ceiling: 8 ft



Sensible Cooling: 197 Btuh



Sensible Heating: 399 Btuh



Latent: 103 Btuh



Manual J Assembly References

Floor	Over Enclosed Unconditioned Crawl Space or Basement, R-19 Insulation on Exposed Walls, Passive, R-5 to R-10 board insulation 19D-5sp • U-Value: 0.125 • Area: $3.5 \text{ ft} \times 7 \text{ ft} = 24.5 \text{ ft}^2$
Ceiling	Below Roof Joists, Dark or Bold-Color Asphalt Shingle; Dark Metal; Dark Membrane; Dark Tar and Gravel, R-5 board insulation 18A-5 • U-Value: 0.123 • Area: $3.5 \text{ ft} \times 7 \text{ ft} = 24.5 \text{ ft}^2$
North-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
East-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
West-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
South-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.

Fixtures & Appliances

- One LED Lightbulb – 10 watts used for 12 hours per day adds 17 btu

Element	Cooling (Btuh)	Heating (Btuh)
Walls	0	0
Doors	0	0
Floors	40	175
Ceilings	39	172
Windows (Conduction)	0	0
Windows (Solar)	0	–
Skylights (Cond)	0	0

Skylights (Solar)	0	—
Infiltration (Sensible)	12	53
Ventilation (Sensible)	0	0
Internal (Occ.)	88	88
Internal (Fixtures)	17	17

Bedroom

Area: 12 x 13 = 156 ft² • Ceiling: 8 ft



Sensible Cooling: 1,800 Btuh



Sensible Heating: 4,510 Btuh



Latent: 240 Btuh



Manual J Assembly References

Floor	Over Enclosed Unconditioned Crawl Space or Basement, R-19 Insulation on Exposed Walls, Passive, R-5 to R-10 board insulation 19D-5sp • U-Value: 0.125 • Area: 13 ft x 12 ft = 156 ft ²
Ceiling	Below Roof Joists, Dark or Bold-Color Asphalt Shingle; Dark Metal; Dark Membrane; Dark Tar and Gravel, R-5 board insulation 18A-5 • U-Value: 0.123 • Area: 13 ft x 12 ft = 156 ft ²
South-facing wall	Above-ground - Frame - Wood Studs - R-19 Cavity Insulation in 2x6s - Continuous R-5 Board Insulation U-Value: 0.052 • Area: 11 ft x 9 ft = 99 ft ²
West-facing wall	Above-ground - Frame - Wood Studs - R-19 Cavity Insulation in 2x6s - Continuous R-5 Board Insulation U-Value: 0.052 • Area: 10 ft x 10 ft = 100 ft ²
North-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
East-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
South-facing window	Clear Glass - Metal without break - Double Pane - Operable window or sliding glass door U-Value: 0.840 • Area: 6 ft x 5 ft = 30 ft ² • SHGC: 0.610 Interior shade factor: 0.40 • Exterior shade factor: 1.00 Overhang Depth: 0 ft • Overhang distance above top: 0 ft

Fixtures & Appliances

- One LED Lightbulb – 10 watts used for 12 hours per day adds 17 btu

Element	Cooling (Btuh)	Heating (Btuh)
Walls	121	531
Doors	0	0
Floors	254	1,112
Ceilings	249	1,094

Windows (Conduction)	328	1,436
Windows (Solar)	666	—
Skylights (Cond)	0	0
Skylights (Solar)	0	—
Infiltration (Sensible)	77	337
Ventilation (Sensible)	0	0
Internal (Occ.)	88	88
Internal (Fixtures)	17	17

Dining Room

Area: 14 x 14 = 196 ft² • Ceiling: 8 ft



Sensible Cooling: 2,447 Btuh



Sensible Heating: 6,349 Btuh



Latent: 282 Btuh



Manual J Assembly References

Floor	Over Enclosed Unconditioned Crawl Space or Basement, R-19 Insulation on Exposed Walls, Passive, R-5 to R-10 board insulation 19D-5sp • U-Value: 0.125 • Area: 14 ft x 14 ft = 196 ft ²
Ceiling	Below Roof Joists, Dark or Bold-Color Asphalt Shingle; Dark Metal; Dark Membrane; Dark Tar and Gravel, R-5 board insulation 18A-5 • U-Value: 0.123 • Area: 14 ft x 14 ft = 196 ft ²
East-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
South-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
North-facing wall	Above-ground - Frame - Wood Studs - R-19 Cavity Insulation in 2x6s - Continuous R-5 Board Insulation U-Value: 0.052 • Area: 11 ft x 10 ft = 110 ft ²
North-facing window	Sliding Glass Door to Porch U-Value: 0.840 • Area: 9 ft x 7 ft = 63 ft ² • SHGC: 0.610 Interior shade factor: 0.60 • Exterior shade factor: 1.00 Overhang Depth: 0 ft • Overhang distance above top: 0 ft

Fixtures & Appliances

- Two LED Lightbulbs – 10 watts used for 12 hours per day adds 34 btu

Element	Cooling (Btuh)	Heating (Btuh)
Walls	32	139
Doors	0	0
Floors	319	1,397
Ceilings	313	1,374
Windows (Conduction)	688	3,016

Windows (Solar)	876	—
Skylights (Cond)	0	0
Skylights (Solar)	0	—
Infiltration (Sensible)	96	423
Ventilation (Sensible)	0	0
Internal (Occ.)	88	88
Internal (Fixtures)	34	34

Master Bedroom

Area: 15 x 15 = 225 ft² • Ceiling: 8 ft



Sensible Cooling: 5,532 Btuh



Sensible Heating: 8,237 Btuh



Latent: 313 Btuh



Manual J Assembly References

Floor	Over Enclosed Unconditioned Crawl Space or Basement, R-19 Insulation on Exposed Walls, Passive, R-5 to R-10 board insulation 19D-5sp • U-Value: 0.125 • Area: 15 ft x 15 ft = 225 ft ²
Ceiling	Below Roof Joists, Dark or Bold-Color Asphalt Shingle; Dark Metal; Dark Membrane; Dark Tar and Gravel, R-5 board insulation 18A-5 • U-Value: 0.123 • Area: 15 ft x 15 ft = 225 ft ²
North-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
East-facing wall	Above-ground - Frame - Wood Studs - R-19 Cavity Insulation in 2x6s - Continuous R-5 Board Insulation U-Value: 0.052 • Area: 12 ft x 10 ft = 120 ft ²
North-facing wall	Above-ground - Frame - Wood Studs - R-19 Cavity Insulation in 2x6s - Continuous R-5 Board Insulation U-Value: 0.052 • Area: 12 ft x 10 ft = 120 ft ²
West-facing wall	Above-ground - Frame - Wood Studs - R-19 Cavity Insulation in 2x6s - Continuous R-5 Board Insulation U-Value: 0.052 • Area: 12 ft x 10 ft = 120 ft ²
East-facing window	Bedroom Window U-Value: 0.840 • Area: 5 ft x 3 ft = 15 ft ² • SHGC: 0.610 Interior shade factor: 0.40 • Exterior shade factor: 1.00 Overhang Depth: 0 ft • Overhang distance above top: 0 ft
North-facing window	Bedroom Window U-Value: 0.840 • Area: 5 ft x 3 ft = 15 ft ² • SHGC: 0.610 Interior shade factor: 0.40 • Exterior shade factor: 1.00 Overhang Depth: 0 ft • Overhang distance above top: 0 ft
West-facing window	Sliding Glass Door to Patio U-Value: 0.840 • Area: 8 ft x 6 ft = 48 ft ² • SHGC: 0.610 Interior shade factor: 0.40 • Exterior shade factor: 1.00 Overhang Depth: 0 ft • Overhang distance above top: 0 ft

Fixtures & Appliances

- Two LED Lightbulbs – 10 watts used for 12 hours per day adds 34 btu
- One Television – 100 watts used for 5 hours per day adds 71 btu

Element	Cooling (Btuh)	Heating (Btuh)
Walls	191	836
Doors	0	0
Floors	366	1,603
Ceilings	360	1,577
Windows (Conduction)	852	3,735
Windows (Solar)	3,459	—
Skylights (Cond)	0	0
Skylights (Solar)	0	—
Infiltration (Sensible)	111	486
Ventilation (Sensible)	0	0
Internal (Occ.)	88	88
Internal (Fixtures)	105	105

Master Bathroom

Area: 11 x 11 = 121 ft² • Ceiling: 8 ft



Sensible Cooling: 1,577 Btuh



Sensible Heating: 2,912 Btuh



Latent: 204 Btuh



Manual J Assembly References

Floor	Over Enclosed Unconditioned Crawl Space or Basement, R-19 Insulation on Exposed Walls, Passive, R-5 to R-10 board insulation 19D-5sp • U-Value: 0.125 • Area: 11 ft x 11 ft = 121 ft ²
Ceiling	Below Roof Joists, Dark or Bold-Color Asphalt Shingle; Dark Metal; Dark Membrane; Dark Tar and Gravel, R-5 board insulation 18A-5 • U-Value: 0.123 • Area: 11 ft x 11 ft = 121 ft ²
East-facing wall	Above-ground - Frame - Wood Studs - R-19 Cavity Insulation in 2x6s - Continuous R-5 Board Insulation U-Value: 0.052 • Area: 10 ft x 9 ft = 90 ft ²
West-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
South-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
North-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
East-facing window	Window Above Bathtub U-Value: 0.840 • Area: 5 ft x 3 ft = 15 ft ² • SHGC: 0.610 Interior shade factor: 0.40 • Exterior shade factor: 1.00 Overhang Depth: 0 ft • Overhang distance above top: 0 ft

Fixtures & Appliances

- Two LED Lightbulbs – 10 watts used for 12 hours per day adds 34 btu

Element	Cooling (Btuh)	Heating (Btuh)
Walls	51	222
Doors	0	0
Floors	197	862
Ceilings	193	848

Windows (Conduction)	164	718
Windows (Solar)	791	—
Skylights (Cond)	0	0
Skylights (Solar)	0	—
Infiltration (Sensible)	60	261
Ventilation (Sensible)	0	0
Internal (Occ.)	88	88
Internal (Fixtures)	34	34

Foyer

Area: 7 x 9 = 63 ft² • Ceiling: 8 ft



Sensible Cooling: 900 Btuh



Sensible Heating: 2,390 Btuh



Latent: 143 Btuh



Manual J Assembly References

Floor	Over Enclosed Unconditioned Crawl Space or Basement, R-19 Insulation on Exposed Walls, Passive, R-5 to R-10 board insulation 19D-5sp • U-Value: 0.125 • Area: 9 ft x 7 ft = 63 ft ²
Ceiling	Below Roof Joists, Dark or Bold-Color Asphalt Shingle; Dark Metal; Dark Membrane; Dark Tar and Gravel, R-5 board insulation 18A-5 • U-Value: 0.123 • Area: 9 ft x 7 ft = 63 ft ²
South-facing wall	Above-ground - Frame - Wood Studs - R-19 Cavity Insulation in 2x6s - Continuous R-5 Board Insulation U-Value: 0.052 • Area: 9 ft x 8 ft = 72 ft ²
South-facing window	Windows Around Porch Door U-Value: 0.840 • Area: 5 ft x 3 ft = 15 ft ² • SHGC: 0.610 Interior shade factor: 1.00 • Exterior shade factor: 0.30 Overhang Depth: 5 ft • Overhang distance above top: 1 ft
South-facing door	With no storm door, Hollow Wood Core 11A • U-Value: 0.470 • Area: 5 ft x 4 ft = 20 ft ²

Fixtures & Appliances

- One LED Lightbulb – 10 watts used for 12 hours per day adds 17 btu

Element	Cooling (Btuh)	Heating (Btuh)
Walls	25	110
Doors	122	536
Floors	102	449
Ceilings	101	442
Windows (Conduction)	164	718
Windows (Solar)	250	–
Skylights (Cond)	0	0

Skylights (Solar)	0	—
Infiltration (Sensible)	31	136
Ventilation (Sensible)	0	0
Internal (Occ.)	88	88
Internal (Fixtures)	17	17

Bathroom

Area: 9 x 6 = 54 ft² • Ceiling: 8 ft



Sensible Cooling: 1,294 Btuh



Sensible Heating: 1,743 Btuh



Latent: 134 Btuh



Manual J Assembly References

Floor	Over Enclosed Unconditioned Crawl Space or Basement, R-19 Insulation on Exposed Walls, Passive, R-5 to R-10 board insulation 19D-5sp • U-Value: 0.125 • Area: 6 ft x 9 ft = 54 ft ²
Ceiling	Below Roof Joists, Dark or Bold-Color Asphalt Shingle; Dark Metal; Dark Membrane; Dark Tar and Gravel, R-5 board insulation 18A-5 • U-Value: 0.123 • Area: 6 ft x 9 ft = 54 ft ²
North-facing wall	Above-ground - Frame - Wood Studs - R-19 Cavity Insulation in 2x6s - Continuous R-5 Board Insulation U-Value: 0.052 • Area: 4 ft x 4 ft = 16 ft ²
North-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
West-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
East-facing wall	Above-ground - Frame - Wood Studs - R-19 Cavity Insulation in 2x6s - Continuous R-5 Board Insulation U-Value: 0.052 • Area: 8 ft x 6 ft = 48 ft ²
East-facing window	Window Over Bathtub U-Value: 0.840 • Area: 5 ft x 3 ft = 15 ft ² • SHGC: 0.610 Interior shade factor: 0.40 • Exterior shade factor: 1.00 Overhang Depth: 0 ft • Overhang distance above top: 0 ft

Fixtures & Appliances

- One LED Lightbulb – 10 watts used for 12 hours per day adds 17 btu

Element	Cooling (Btuh)	Heating (Btuh)
Walls	33	145
Doors	0	0
Floors	88	385
Ceilings	86	379

Windows (Conduction)	164	718
Windows (Solar)	791	—
Skylights (Cond)	0	0
Skylights (Solar)	0	—
Infiltration (Sensible)	27	117
Ventilation (Sensible)	0	0
Internal (Occ.)	88	88
Internal (Fixtures)	17	17

Master Closet

Area: 11 x 7 = 77 ft² • Ceiling: 8 ft



Sensible Cooling: 430 Btuh



Sensible Heating: 1,421 Btuh



Latent: 158 Btuh



Manual J Assembly References

Floor	Over Enclosed Unconditioned Crawl Space or Basement, R-19 Insulation on Exposed Walls, Passive, R-5 to R-10 board insulation 19D-5sp • U-Value: 0.125 • Area: 7 ft x 11 ft = 77 ft ²
Ceiling	Below Roof Joists, Dark or Bold-Color Asphalt Shingle; Dark Metal; Dark Membrane; Dark Tar and Gravel, R-5 board insulation 18A-5 • U-Value: 0.123 • Area: 7 ft x 11 ft = 77 ft ²
East-facing wall	Above-ground - Frame - Wood Studs - R-19 Cavity Insulation in 2x6s - Continuous R-5 Board Insulation U-Value: 0.052 • Area: 8 ft x 7 ft = 56 ft ²
West-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
North-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
South-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.

Fixtures & Appliances

- One LED Lightbulb – 10 watts used for 12 hours per day adds 17 btu

Element	Cooling (Btuh)	Heating (Btuh)
Walls	38	166
Doors	0	0
Floors	125	549
Ceilings	123	540
Windows (Conduction)	0	0
Windows (Solar)	0	–

Skylights (Cond)	0	0
Skylights (Solar)	0	—
Infiltration (Sensible)	38	166
Ventilation (Sensible)	0	0
Internal (Occ.)	88	88
Internal (Fixtures)	17	17

Laundry Room - Mudroom

Area: 16 x 6 = 96 ft² • Ceiling: 8 ft



Sensible Cooling: 986 Btuh



Sensible Heating: 2,327 Btuh



Latent: 178 Btuh



Manual J Assembly References

Floor	Over Enclosed Unconditioned Crawl Space or Basement, R-19 Insulation on Exposed Walls, Passive, R-5 to R-10 board insulation 19D-5sp • U-Value: 0.125 • Area: 6 ft x 16 ft = 96 ft ²
Ceiling	Below Roof Joists, Dark or Bold-Color Asphalt Shingle; Dark Metal; Dark Membrane; Dark Tar and Gravel, R-5 board insulation 18A-5 • U-Value: 0.123 • Area: 6 ft x 16 ft = 96 ft ²
South-facing wall	Above-ground - Frame - Wood Studs - R-19 Cavity Insulation in 2x6s - Continuous R-5 Board Insulation U-Value: 0.052 • Area: 6 ft x 5 ft = 30 ft ²
South-facing window	Clear Glass - Metal without break - Double Pane - Operable window or sliding glass door U-Value: 0.840 • Area: 5 ft x 3 ft = 15 ft ² • SHGC: 0.610 Interior shade factor: 0.40 • Exterior shade factor: 1.00 Overhang Depth: 0 ft • Overhang distance above top: 0 ft

Fixtures & Appliances

- Two LED Lightbulbs – 10 watts used for 12 hours per day adds 34 btu

Element	Cooling (Btuh)	Heating (Btuh)
Walls	10	44
Doors	0	0
Floors	156	684
Ceilings	154	673
Windows (Conduction)	164	718
Windows (Solar)	333	—
Skylights (Cond)	0	0
Skylights (Solar)	0	—

Infiltration (Sensible)	47	207
Ventilation (Sensible)	0	0
Internal (Occ.)	88	88
Internal (Fixtures)	34	34

Bedroom

Area: 12 x 13 = 156 ft² • Ceiling: 8 ft



Sensible Cooling: 1,793 Btuh



Sensible Heating: 4,479 Btuh



Latent: 240 Btuh



Manual J Assembly References

Floor	Over Enclosed Unconditioned Crawl Space or Basement, R-19 Insulation on Exposed Walls, Passive, R-5 to R-10 board insulation 19D-5sp • U-Value: 0.125 • Area: 13 ft x 12 ft = 156 ft ²
Ceiling	Below Roof Joists, Dark or Bold-Color Asphalt Shingle; Dark Metal; Dark Membrane; Dark Tar and Gravel, R-5 board insulation 18A-5 • U-Value: 0.123 • Area: 13 ft x 12 ft = 156 ft ²
South-facing wall	Above-ground - Frame - Wood Studs - R-19 Cavity Insulation in 2x6s - Continuous R-5 Board Insulation U-Value: 0.052 • Area: 11 ft x 9 ft = 99 ft ²
West-facing wall	Above-ground - Frame - Wood Studs - R-19 Cavity Insulation in 2x6s - Continuous R-5 Board Insulation U-Value: 0.052 • Area: 10 ft x 10 ft = 100 ft ²
North-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
East-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
South-facing window	Clear Glass - Metal without break - Double Pane - Operable window or sliding glass door U-Value: 0.840 • Area: 6 ft x 5 ft = 30 ft ² • SHGC: 0.610 Interior shade factor: 0.40 • Exterior shade factor: 1.00 Overhang Depth: 0 ft • Overhang distance above top: 0 ft

Fixtures & Appliances

- One LED Lightbulb – 10 watts used for 12 hours per day adds 17 btu

Element	Cooling (Btuh)	Heating (Btuh)
Walls	114	501
Doors	0	0
Floors	254	1,112
Ceilings	249	1,094

Windows (Conduction)	328	1,436
Windows (Solar)	666	—
Skylights (Cond)	0	0
Skylights (Solar)	0	—
Infiltration (Sensible)	77	337
Ventilation (Sensible)	0	0
Internal (Occ.)	88	88
Internal (Fixtures)	17	17

Hallway Space

Area: 12 x 12 = 144 ft² • Ceiling: 8 ft



Sensible Cooling: 658 Btuh



Sensible Heating: 2,346 Btuh



Latent: 228 Btuh



Manual J Assembly References

Floor	Over Enclosed Unconditioned Crawl Space or Basement, R-19 Insulation on Exposed Walls, Passive, R-5 to R-10 board insulation 19D-5sp • U-Value: 0.125 • Area: 12 ft x 12 ft = 144 ft ²
Ceiling	Below Roof Joists, Dark or Bold-Color Asphalt Shingle; Dark Metal; Dark Membrane; Dark Tar and Gravel, R-5 board insulation 18A-5 • U-Value: 0.123 • Area: 12 ft x 12 ft = 144 ft ²

No wall assemblies listed.

Fixtures & Appliances

- Two LED Lightbulbs – 10 watts used for 12 hours per day adds 34 btu

Element	Cooling (Btuh)	Heating (Btuh)
Walls	0	0
Doors	0	0
Floors	234	1,026
Ceilings	230	1,010
Windows (Conduction)	0	0
Windows (Solar)	0	—
Skylights (Cond)	0	0
Skylights (Solar)	0	—
Infiltration (Sensible)	71	311
Ventilation (Sensible)	0	0
Internal (Occ.)	88	88
Internal (Fixtures)	34	34

Study

Area: $12 \times 12 = 144 \text{ ft}^2$ • Ceiling: 8 ft



Sensible Cooling: 1,000 Btuh



Sensible Heating: 3,314 Btuh



Latent: 228 Btuh



Manual J Assembly References

Floor	Over Enclosed Unconditioned Crawl Space or Basement, R-19 Insulation on Exposed Walls, Passive, R-5 to R-10 board insulation 19D-5sp • U-Value: 0.125 • Area: $12 \text{ ft} \times 12 \text{ ft} = 144 \text{ ft}^2$
Ceiling	Below Roof Joists, Dark or Bold-Color Asphalt Shingle; Dark Metal; Dark Membrane; Dark Tar and Gravel, R-5 board insulation 18A-5 • U-Value: 0.123 • Area: $12 \text{ ft} \times 12 \text{ ft} = 144 \text{ ft}^2$
North-facing wall	Above-ground - Frame - Wood Studs - R-19 Cavity Insulation in 2x6s - Continuous R-5 Board Insulation U-Value: 0.052 • Area: $11 \text{ ft} \times 9 \text{ ft} = 99 \text{ ft}^2$
West-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
East-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
South-facing wall	Interior Wall, Conditioned on Both Sides Interior walls between conditioned spaces don't add load.
North-facing window	Window to Patio U-Value: 0.840 • Area: $5 \text{ ft} \times 3 \text{ ft} = 15 \text{ ft}^2$ • SHGC: 0.610 Interior shade factor: 0.40 • Exterior shade factor: 1.00 Overhang Depth: 0 ft • Overhang distance above top: 0 ft

Fixtures & Appliances

- One LED Lightbulb – 10 watts used for 12 hours per day adds 17 btu

Element	Cooling (Btuh)	Heating (Btuh)
Walls	57	249
Doors	0	0
Floors	234	1,026
Ceilings	230	1,010

Windows (Conduction)	164	718
Windows (Solar)	139	—
Skylights (Cond)	0	0
Skylights (Solar)	0	—
Infiltration (Sensible)	71	311
Ventilation (Sensible)	0	0
Internal (Occ.)	88	88
Internal (Fixtures)	17	17