

HVAC LOAD CALCULATION

Simplified Manual J - Residential Heating & Cooling Load

PROPERTY INFORMATION:

Address: 6714 Grand Boulevard, New Port Richey, FL
Square Footage: 1,800 sq ft
Year Built: 1985
Ceiling Height: 8 ft

LOAD CALCULATION RESULTS:

Calculated Load: 50,736 BTU/hr
Recommended Tonnage: 4.2 tons
Acceptable Range: 3.8 - 4.9 tons

Equipment Match: 3.5 tons - UNDERSIZED

CALCULATION BREAKDOWN:

Walls (conduction): 2,206 BTU/hr
Windows (conduction + solar): 25,474 BTU/hr
Ceiling/Roof: 2,232 BTU/hr
Doors: 450 BTU/hr
Infiltration (air leakage): 2,851 BTU/hr
Internal Gains (people, appliances, lights): 5,750 BTU/hr
Duct Gain (unconditioned space): 5,454 BTU/hr

+ Latent (humidity) gains:
Infiltration: 519 BTU/hr
Occupants: 1,000 BTU/hr
Appliances: 1,200 BTU/hr

IMPORTANT NOTES:

- Equipment may be undersized (3.5 ton). Unit may struggle during peak heat days.
- High air leakage detected. Air sealing improvements could reduce load by 15-20%.

RECOMMENDATIONS:

- Attic insulation to R-38 could reduce cooling load by 875 BTU/hr.
- Low-E window upgrades could reduce cooling load by 10-15% and improve comfort.
- Air sealing (weatherstripping, caulking) typical ROI: 1-2 years in Florida.
- Proper duct sealing and insulation saves 20-30% on energy bills.
- Programmable thermostat can reduce runtime by 10-15% with no comfort loss.

Methodology:

ACCA Manual J 8th Edition - Residential Load Calculation
Confidence Level: HIGH

DISCLAIMER: This is a preliminary load calculation based on building characteristics and industry standards. It is intended to verify appropriate equipment sizing for typical residential HVAC replacements. For new construction, significant renovations, or complex systems, a detailed room-by-room Manual J calculation by a licensed HVAC contractor or professional engineer may be required. Actual cooling/heating requirements may vary based on occupancy, fenestration, and other site-specific factors.