
The Right Size Heat Pump Changes Everything.

Understanding F280-12 Heat Loss - Heat Gain HVAC Sizing Calculation

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Don't need to guess!

Most HVAC systems in Canada are improperly sized because the industry too often relies on experience and approximate sizing instead of engineering. We bring certified, calculation based HVAC sizing to every project, using the **CSA F280-12 standard** heat loss and heat gain analysis.

COMFORT	EFFICIENCY	LONGEVITY
No hot or cold spots. Consistent temperature in every room, every season.	Right-sized equipment runs at peak efficiency - lower bills, smaller carbon footprint.	Equipment that isn't over- or under-worked lasts significantly longer.

What is CSA F280-12?

CSA F280-12, *Determining the Required Capacity of Residential Space Heating and Cooling Appliances*, is the Canadian Standards Association standard for calculating the precise heating and cooling loads of a home. It is referenced in the **BC Building Code** and is the only method recognized for compliance-based residential HVAC design in British Columbia. Unlike simplified "rule of thumb" estimates (e.g. BTU per square foot), F280-12 accounts for the actual thermal characteristics of the building envelope and local climate data.

What does the calculation account for?

Building Envelope Geometry	Floor area, ceiling heights, and volume of each conditioned space.
Insulation Values (RSI)	Actual R-values of walls, roofs, floors & slabs, not assumed values.
Window & Door (USI)	U-values, SHGC, area, and orientation of every glazed assembly.
Internal Heat Gains	Occupancy, lighting, and appliance loads that offset heating demand.
Air Infiltration & Ventilation	ACH rates, HRV/ERV specs, and intentional ventilation loads.
Solar Heat Gain	Passive solar contributions by orientation, matters in BC's climate.
Duct Losses	Heat loss through ducts in unconditioned spaces

Downsides of getting it wrong

Oversized System	Undersized System
Short-cycles on and off & never reaches steady-state efficiency. Poor humidity control & clammy summers. Excessive wear on compressor and heat exchanger. Uneven temperatures between zones. Higher upfront cost for unnecessary capacity.	Cannot maintain design temperatures on peak days. Runs continuously at full capacity - high energy bills. Premature equipment failure from constant overloading. Comfort complaints and callbacks for contractors.

Why Contractors Choose Alpine Home Energy

Running a tight operation means delivering installs that work first time, every time. A CSA F280-12 heat loss and heat gain calculation gives you the engineering foundation to do exactly that, before an equipment is ordered.

- **Take the guesswork out of equipment selection.** F280-12 gives you a defensible, code-referenced number to work from.
- **Protect yourself on complex jobs.** On high-performance builds, renovations with upgraded envelopes, or homes going all-electric, a proper load calculation documents that you specified the right equipment for the conditions. It's professional cover if questions come up later.
- **Satisfy permit requirements with confidence.** Many municipalities in BC are tightening mechanical permit requirements. Having an F280-12 report in your submittal package keeps inspections smooth and projects on schedule.
- **Offer your clients something most installers don't.** Pairing your install with a certified load calculation is a differentiator. It shows your clients you're thorough, professional, and invested in a result that actually performs.
- **Works around your timeline.** Send us the plans and specs — we handle the calculation and deliver a full report typically within 2–3 business days, so it fits your workflow without slowing down the project.

Our Process

1. Information Gathering We collect architectural drawings, envelope specifications, window schedules, mechanical systems, and blower door test results.

2. Load Calculation Using CSA F280-12 methodology, we calculate peak heating and cooling loads for the whole building and each zone.

3. Equipment Recommendations Based on calculated loads, we recommend appropriately sized equipment including heat pump models, furnaces, and air handlers.

4. Report Delivery A complete, stamped F280-12 report is delivered in PDF format ready for the mechanical contractor, authority having jurisdiction or homeowner.

5. Support & Follow-Up We're always available to answer questions from your mechanical contractor or AHJ throughout the project.

Reach out to us! Free Consultation, ofcourse!

Whether you're a homeowner planning a heating system upgrade or a contractor who needs accurate load calculations for your next project, Alpine Home Energy has you covered.



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