

When planning a mini split installation in a cold northern climate, a common question arises:



*"My mini split is rated to -13°F – do I still need auxiliary heat backup?"*

The short answer is: **it depends**. In [e-architect](#) this post, we will break down the nuances behind cold-weather mini splits, explain what "true DIY" means in this context, and help you decide if you need backup heat for your home.

## Understanding Cold-Climate Mini Splits and Their Ratings

Brands like **Zone Air**, **MRCOOL**, and **Pioneer** have made great strides in producing mini splits designed specifically for cold climates. A lot of models now advertise operation down to **-13°F** or even lower. But what does this mean in real world terms?



## Why -13°F Rating is Important – And What It Doesn't Say

The rated operational temperature of -13°F means the unit can continue running and producing heat down to that outdoor temperature. This reminds me of something that happened wished they had known this beforehand.. However, there is a vital fine print many homeowners miss:

- **Capacity decreases as outdoor temperatures drop.** While it might produce full capacity at 17°F, by the time it hits -13°F, the available heating capacity may be 40-60% of rated BTUs.
- **System efficiency also decreases in severe cold.** This means your electric bill might rise if the system runs longer or needs auxiliary heat.
- **Auxiliary heat backup** is still recommended for temps **below -15°F** or in windchill conditions where full heat output is critical.

So, yes, a rating to -13°F is impressive, but your real need for backup heat hinges on your local weather extremes, house insulation, and heat load.

## Auxiliary Heat Backup: What is It and Why Consider It?

Auxiliary or backup heat is typically electric resistance heat strips or a gas furnace supplementary to your heat pump. It kicks in when the heat pump cannot keep up — commonly during extended periods of very low temperatures.

### When to Plan Auxiliary Heat Backup

- **Below -15°F Planning:** If your cold snaps regularly drop below the rated -13°F, auxiliary heat is a practical precaution.
- **High Heat Load Homes:** Large or poorly insulated homes can surpass the mini split's cold-weather capacity.
- **Comfort Priority:** If consistent indoor temps matter more than occasional higher energy bills.

Backing up your mini split with auxiliary heat also improves longevity, reduces wear, and prevents down-time during extreme cold spells.

## 3-Zone Mini Split Systems: Sizing and BTU Planning Per Room

Brands like **Zone Air** offer 3-zone wall-mount kits ideal for multiple rooms or zoned heating. These kits typically run **approximately \$4,100-\$5,600** depending on capacity and features.

Want to know something interesting? proper sizing is critical. Here's what to keep in mind:

1. **Calculate your total heat loss or gain for each room.** This tells you the BTUs required per zone.
2. **Select mini split indoor units with matching BTU outputs.** Avoid oversizing as it reduces efficiency and causes short-cycling.
3. **Confirm the outdoor unit can handle the combined BTU load** of all indoor zones operating simultaneously.

Example: If your living room needs 9000 BTUs and two bedrooms require 6000 BTUs each, a 21,000 BTU outdoor unit is standard. Zone Air and similar brands provide match charts to simplify this.

## Electrical Reality: 115V vs 230V and the Cost of an Electrician

Many DIYers are drawn to **MRCOOL** for their "true DIY" pre-charged quick-connect lineset models. These units allow you to avoid vacuum pumps and refrigerant handling. However, the electrical side is often overlooked.

## What “True DIY” Really Means

- **Pre-charged quick-connect linesets** allow snapping the indoor and outdoor units together without professional vacuuming or refrigerant charging.
- **Still requires drilling a hole** (using a drill with a hole saw or a 3-inch core bit) for the line set and wiring.
- **Must ensure level installation** of indoor units for proper condensate drainage.

Keep in mind that electrical work is often NOT DIY-friendly unless you have licensed experience:

- Mini splits typically require dedicated circuits.
- Smaller units might run on 115V circuits, but larger multi-zone systems almost always require 230V.
- Electricians charge anywhere from \$100-\$200+ per hour depending on location.
- Permits and inspections are often mandatory for electric work—something to report on resale documents later.

Skipping or underestimating the cost and complexity of electrical work can stall your project mid-weekend.

## Cold-Climate Heating Performance: Beyond the Numbers

When deciding on your heating setup, consider:

- **Capacity Decreases in Cold:** Even a unit rated to -13°F will produce less heat near that threshold.
- **Humidity and Defrost Cycles:** In cold, moist climates, defrost cycles reduce heating efficiency temporarily.
- **Wind Impact:** Wind chill lowers effective ambient temps, increasing load.

In northern climates with many days below zero, the presence of auxiliary heat backup can mean the difference between comfort and frustration—especially during extended cold snaps.

## Summary and Planning Checklist

Here’s a practical checklist to help you plan your cold-climate mini split installation:

1. **Assess climate extremes:** How often do temps fall below -13°F? If regularly, plan for backup heat.
2. **Calculate BTU requirements per room:** Use heat loss data to size each zone accurately.
3. **Choose a multi-zone kit wisely:** Zone Air 3-zone wall kits run about \$4,100-\$5,600.
4. **Prepare the install tools:** Drill with hole saw or 3-inch core bit for line and wiring holes, plus a level for mounting indoor units.
5. **Plan electrical work realistically:** Determine if 115V or 230V circuits are needed; budget for a licensed electrician and permits.
6. **Understand warranty fine print:** Check if your mini split’s warranty covers cold climate performance or if auxiliary heat is required.

## Closing Thoughts

While cold-rated mini splits from reputable manufacturers like **Zone Air**, **MRCOOL**, and **Pioneer** perform admirably down to -13°F, auxiliary heat backup remains a smart strategy for harsh northern climates. True DIY

options now exist but don't underestimate the electrical complexities and local permitting requirements.

Taking the time to plan zone sizing, understand capacity drops in extreme cold, and budget for backup heat will keep your home comfortable and your installation weekend stress-free.