Alternative Heating: Mini-split Systems
Questions and Answers

1. **Is the Association requiring unit owners to install these systems?**
   A: No. This is simply an option that the Association is offering to unit owners who want to improve their properties.
2. **Is the Association paying for the installation or maintenance of these systems?**
   A: No. All costs associated with the installation and maintenance of these systems will be paid for by the unit owner installing the system.
3. **I've read that Mini-split systems are 250% efficient. How is it possible to be more than 100% efficient?**
   A: Technically, it's not possible. The 250% number is used more for comparison than anything else. With a fireplace, for example, the wood contains a certain amount of energy that is released as heat when burned. If all of that heat went into the building, then the fireplace would be 100% efficient. As it is, only about half of the heat makes it into the building and the rest is lost up the chimney making wood only 50% efficient.
   With heat pumps, the unit uses a certain amount of electricity to run. If that electricity were converted directly to heat, you would get 1 unit of heat from 1 unit of electricity. That is how baseboard electric works and why it is listed as 100% efficient. With a heat pump however, that electricity is instead being used to MOVE heat that already exists. Because moving heat is easier than generating it, the heat pump can deliver 2.5 units of heat for every 1 unit of electricity. Thus it appears to be 250% efficient.
4. **How much can I expect to save on my electric bill?**
   A: It depends on several factors
   a. You will not save anything on the first $30 of your bill as that is the meter fee charged by NHEC for simply having service. Additionally you will not save anything on electricity used for hot water, cooking, and other appliances. Your savings will be strictly limited to the reduction in use of your baseboard electric heat.
   b. Heat pump efficiency begins to drop off at a certain low outdoor temperature. High quality heat pumps can still deliver heat efficiently at 5 degrees below zero but from there down to around 18 below the pump will use more electricity to deliver the same amount of heat. At around 18 below the compressor shuts off and you must rely on baseboard electric to maintain the temperature in your unit until the outdoor temperature rises to around 13 below.
   c. Consider a winter electric bill of $350 per month with $30 of meter charge and $60 of hot water and other appliances, which leaves $260 of electric heat being used. The rule of thumb for heat pumps is 40% of the cost of baseboard (250% efficiency). That means you will spend $104 on heat with the heat pump reducing your $350 electric bill to $194 for a savings of $156 per month. Over the 5 winter heating months that adds up to about $750 per year putting the payback time somewhere between 10 and 15 years assuming a system cost of around $9,000.
   d. Air conditioning your unit in the summer will likely eat into your winter savings. Unit owners should consider the impact of air conditioning on their budgets. That said, you

can always choose not to run the air conditioner whereas there are minimum winter heat levels required by the Association.

5. **Do I need to upgrade the electric service in my condo to handle the load from the compressor?**
   A: No. However an electrician will need to wire a new dedicated circuit.
6. **Can I repurpose an existing baseboard heat circuit instead of creating a new circuit?**
   A: No. No modifications to the primary heating system will be allowed as the unit must be heated whenever the heat pump is offline.
7. **How many zones can I have?**
   A: It depends on the size of the compressor which depends on your budget and physical space available for the enclosure. We generally expect to see one zone per floor but it is possible to have one zone per room if desired.
8. **Will the management company keep the compressor clear from snow?**
   A: Not necessarily however to the extent that the compressor aligns with a walkway, that walkway will be kept clear. The management company will not pile snow in front of the compressor and the compressors will be raised 12" off the ground inside of roofed enclosures. Most of the time this should suffice to keep the compressor clear however there will likely be times when you need to clear snow or arrange to have snow cleared in your absence.
9. **Will vibration and noise from the compressor be noticeable from inside the building?**
   A: No compressors will be allowed to be attached to any building in any way. Without direct attachment, no vibration can transmit to the building wall. As far as noise is concerned, the loudest allowable compressor is 58 dBA (in cooling mode) which is about the same noise level as a kitchen dishwasher. By contrast, a typical box window fan runs at between 70 and 80 dBA.
10. **Why do I have to sign a license agreement to install one of these systems?**
    A: The compressor and enclosure will be installed on Association property and not your property. Because of this, the Association needs to maintain control over the property to ensure that your use of it continues to conform to the originally agreed to terms. The license agreement preserves the Association's rights with respect to the location of the installation.
11. **Do I have to remove the system if I sell my unit?**
    A: No. In fact, the system will likely increase your property value as well as your pool of prospective buyers by removing the stigma of electric baseboard heat and adding air-conditioning.
12. **Can I continue to use my wood stove / pellet stove / fireplace?**
    A: Yes. Any heat delivered by these means will simply reduce the load on the heat pump.
13. **Can I use this system to satisfy the requirement for maintaining kitchens and baths at 50 degrees in the winter?**
    A: Yes – but you must also set the primary heating system to meet this requirement as well. The most economical way to do this is to keep your kitchen and bath thermostats set at 50 degrees and set your heat pump to 55 or 60 in those zones. With the heat pump maintaining the slightly higher temperature, the baseboard should never turn on.
14. **Can I monitor and control the system remotely?**
    A: Yes. These systems support wifi connected thermostats which allow you to monitor the temperature in each zone and adjust it using an app on your computer or smartphone. With this capability you can ensure that your unit temperature will always be exactly where you want it when you arrive.

15. **So I can use NEST Thermostats?**
    A: You may be able to… but it's usually not a good idea. These systems gain energy efficiencies by running the compressor at variable speeds – this tailors the energy usage to the exact amount of heat (or cold) required. The thermostats they use **are designed specifically for these types of systems**. Ordinary "central system" thermostats such as NEST work on an On/Off basis with no variation in between. As such, they will power the system down completely when the set indoor temperature is reached and then they will run it at full output when the indoor temp deviates from the set temperature. Operating this way eliminates most of the efficiencies that make these systems economical.
16. **What are the maintenance requirements for these systems?**
    A: Light annual maintenance on the compressor to ensure airflow and refrigerant levels performed by a qualified contractor. Interior units require occasional filter cleaning which can be done by the homeowner.
17. **Can the piping and wiring be run outside the building inside of a conduit box? Most of the systems I've seen look like this and my contractor says it is a lot cheaper to do it this way.**
    A: No. All of the exterior components must be contained within the shed enclosure. All piping and wiring must enter the unit from inside the shed enclosure. The only visible exterior component will be the electric shutoff box because it is required to be outside of the enclosure. These boxes will be installed on the side of the enclosures.
18. **Are there any rebates available?**
    A: Yes. NHEC has a generous rebate program with payouts based on the size and efficiency of your system. A 2.5 Ton system (sufficient for a G/G+ unit) can receive up to $1,200 in compressor rebates plus $100 per zone for every wifi thermostat installed.
19. **What about financing?**
    A: NHEC also offers financing through local banks for qualifying buyers. The bank writes the loan at whatever the current interest rate is and NHEC then buys down the interest rate for you to 2%.