QUESTIONS AND ANSWERS FOR JAN 18, 2024 BUILDING ELECTRIFICATION WEBINAR

**HOMEOWNER ELECTRIFICATION PLANNING PROCESS
(not shown and under review)**

**RECOMMENDED CONTRACTORS**

Q: **I live in Monmouth County NJ. Did you pick a contractor**?

A: Scott Nelson, Oceanside Services, in Allenhurst, NJ is recommended by many. Oceanside Services, 531 Main St. Allenhurst, NJ 07711, oceandoc@air-doctors.com Scott (with his crew and fleet of 30+ trucks) specializes in Daikin (a top-rated manufacturer), and will install other manufacturers’ heat pumps.

Here are ways to select HVAC contractors: [Possible Referrals](https://climate.smiller.org/50x30/building-electrification/recommendations.docx) and [Locating a knowledgeable Contractor and Identifying Best Heat Pump Manufacturers](https://climate.smiller.org/50x30/building-electrification/vendor-recommendations.html) . A good source: “[Get & Evaluate Heat Pump Contractor Quotes”,](https://a-us.storyblok.com/f/1014573/x/a2935fa088/hvac_contractor_guide.pdf) by Rewiring America

Trade journals evaluate and identify the best heat pump manufacturers. Each manufacturer has a web site which rank-orders their contractors. [How to use the manufacturer’s web sites to choose a contractor](https://climate.smiller.org/50x30/building-electrification/vendor-recommendations.html),

 **SOME HEAT PUMP DETAILS**

Q&A (combined): You will save money during heating season, but will save a lot more money in summer because a modern heat pump is more efficient than a traditional AC system. It is important to use “Manual J” calculations because many/most homes are unique. It is important to invite the contractor to do a thorough evaluation of your home. Examples: one floor corner apartment with very large windows, extremely high ceilings, with all exterior walls. Another example: a 2500 sq ft, 2 floor residence with Coleman gas heater currently heating the floors as two separate zones (very difficult to balance the two).

Q: Was a Manual J heat load calculation completed? How was the decision made about system size? Was reuse of the ducts evaluated (with Manual S, based upon the Manual J loading)?

A: In the recording. Chris states he used his own company’s software to do the manual J calculation and also did a duct analysis.

Q: Is this central heat pump replacing central a/c using Ken’s existing ducts?

A: Yes, Ken’s project reuses the existing house ducts

**ELECTRICAL WIRING:**

QUESTIONS: is the amp draw similar to existing HVAC? or is it greater amp requirement?

ANSWER: When replacing the existing AC and substituting a heat pump, the lowest cost/effort is when the selected replacement heat pump is able to use the existing circuit/wire. This is often the case since the newest heat pumps are more efficient (LOWER current) than the older A/C they are replacing (assuming the original AC and the heat pump replacement have the same rated heat output). HOWEVER, Chris observed that electrical wiring upgrades may be required for a cold climate heatpump, which requires higher input power (amperage), while the heat pump continues to produce high heat output, even as the heat pump efficiency droops at cold temperatures. This is observed in the heat pump specs (recorded in <https://NEEP.org> ) which show a declining COP (Coefficient of Performance) at low temperatures.

Q: **HEAT STRIPS** Can you speak about heat strips? How easy are they to install? How do you choose the proper size based on size of a home and weather in its location?

A: See [Steve’s Slides](https://climate.smiller.org/50x30/building-electrification/2024-1-18/2024-1-18%20steve.pptx) #11. This Mitsubishi heat pump balance point graph shows a heat strip of 4KW would be satisfactory at 10 degrees F. The air plenum (sheet steel housing) can reserve a special location for insertion of the heat strip, which likely comes in standardized physical & electrical sizes. NEEP.org states some people elect NOT to initially install heat strips, and to wait until cold weather to find if actually needed – this saves initial $ on the plug-in heat strip and possibly high capacity electrical circuit, AND providing the power panel can handle that heat strip load without expensive change-out.

**Q: WHY ARE GAS FURNACES SO OFTEN USED?**

A: CHRIS also sells gas backup. Some customers like the heat pumps and have received bad info about low temperature performance and therefore request gas. Gas could be required in houses with very high heat loss, or the heat pump may be very poor at low temperatures. See [Steve’s Slides](2024-1-18%20steve.pptx) #11 at the 10 degree design temperature and associated slide notes. A design using the Mitsubishi hyperheat heat pump meets the 10 degree design point with addition of a small wattage electric strip. On the other hand, selection of Amana or Bosch heat pumps with poor performance, at low temperatures, forces a gas backup to economically meet the 10 degree design point. With these poorly performing heat pumps, choosing the electric strip auxiliary heat would require a high cost electrical circuit plus on-going high operating cost.

**THE BEST HEAT PUMPS**

Q: Sounds like Mitsubishi is one of the better designs.

A: For best heat pumps, see <https://climate.smiller.org/50x30/building-electrification/vendor-recommendations.html> Jim Price (HVAC contractor) wrote: Mitsubishi is the best; Chris is exactly correct. Mitsubishi reliability is the most important thing. Cheaper brands, which break down, cost you more money and time. Like Chris said, I never get call backs after I install Mitsubishi.

**KENS SITUATION AND SOLUTION**

Q: I am unable to find a source that compares the heat pump manufacturers. Installers tend to only install one brand. NEEP doesn't really compare each heat pump. Sounds like Mitsubishi is one of the better ones.

A: Chris replied: you wont find [a comparison]. In my presentation, the units we plotted were all from our own data. You will need to compare bids by doing your own plots

Q: what was included in the $20K? Heat pump + heat pump water heater?

A: Ken’s total cost was $20K for Mitsubishi heat pump including a small heat strip for auxiliary backup at 10 degrees design temperature, plus the associated wiring changes/upgrades required for the heat strip. Ken also installed a $2K whole house HEPA air filter system. The water heater was not upgraded, and remains gas (for now)

Q: Does Ken have a power backup for his heat pump?

A: Yes, Ken has a Generac gas-powered generator. It is important to verify the heat pump can startup while the house is powered by the generator. Both heat pumps and fossil fuel furnaces have similar need for backup electricity for electronic control, and for a forced hot air fan or circulating pumps.

**CONTRACTOR RELATIONSHIP TO A PARTICULAR BRAND:**

There are contractors married to one or two products. Chris works with most manufacturers, as well as Daiken. Chris stated: “Mitsubishi is king of the hill!” Mitsubishi parts are well stocked- parts are warranted for 12 years and there is a strong parts supply network around the country. Some other manufacturers use parts manufactured by other HVAC manufacturers, which may jeopardize parts availability. HVAC contractors often sell/install/service other manufacturers products, and often such installations have failures and the repairs “come back and bite them”!

Q: How do I find a contractor who makes heat pumps a priority?

A: Each customer must be their own advocate. Our NJ 50x30 Building Electrification team encourages prospective “coaches” to attend a training/education course to learn how to help change the mindsets of consumers and contractors . Presently a lot of people don’t know about electric heat pumps, so there is a big training need.

**WHAT IS NEEP- WHAT ARE ITS RESOURCES?**

Q: NEEP doesn’t compare heat pumps. I am unable to find a source that compares the heat pump manufacturers. Contractors tend to only install one brand. NEEP doesn't really compare each heat pump. Is there a source to compare?

A: NEEP is a great source of specifications & graphs for individual heat pumps. However, individuals need to do their own comparisons between heat pumps. Chris uses Excel to obtain plots used for his own comparisons. Viewers would need to create comparisons plotted on their own charts, as discussed in the Jan 18 [recording](https://youtu.be/4aY6nrf4Zyw) and “[Steve’s Slides](https://climate.smiller.org/50x30/building-electrification/2024-1-18/2024-1-18%20steve.pptx)” # 8 through 12.

Q&A: “Sounds like Mitsubishi is one of the better ones.”

**GENERAL QUESTIONS**

Q: What is the lowest temperature the cold weather Mitsubishi is good for?

A: This line of Mitsubishi models operates down to -13 degrees F according to published articles (operates to -18 degrees F, per Chris,). HOWEVER, this info is NOT in NEEP. Rather the information is known to Mitsubishi dealers (see [Chris Slides](https://climate.smiller.org/50x30/building-electrification/2024-1-18/Chris-slides.pptx) #3 , and possibly available by a Google Search

Q: Do heat pumps cause the air to be extra drying?

A: A gas furnace or heat pump would have the same dryness. A drafty house will have lower humidity (be drier) in winter compared to a well-sealed house.

Q: Can a heat pump be used with a hot water baseboard system?

A: Low temperature water baseboard is handled by current heat pumps. However, heat pumps have difficulty reaching 170 or 180 degrees required by “steam radiators” (does this apply to your baseboard heat?). One solution is to run two different heat pumps in series (with an intervening water tank- which sometimes is used as the hot water supply). New high temp heat pumps are reportedly to be introduced in the US in next year or two. If you need high water temperatures, then delay boiler replacement if possible. If an emergency, then more complex solutions ($) can be designed and are successful, as described in several previous webinars.

**RECOMMENDED CONTRACTORS**

Q: Does Chris work in Morris County? Please provide contact info.

A: Yes, Chris said he handles Morris County. Chris contact info: Chris Wisniewski, chris@icshvac.com ,  ICS (Integrate Comfort Systems); 267 Cortlandt Street, Belleville, NJ 07109 HVAC Service/ Design/ Installation + Solar; 866-749-6331 ext. 701

**LOCATE A HIGHLY QUALIFIED HVAC DEALER**

Q: How do you find a contractor that makes the heat pump the priority? I’ve found it very hard to find someone who recommends a heat pump that works below 30-ish degrees. They all want to also install a gas heater.

A: yes it is frustrating. The answer is to define and provide your requirements ahead of time, and only select vendors that say they will meet your requirements.

**Q: WHAT IS BEST BATTERY-POWERED GARDEN EQUIPMENT?**

**A: 1.**Lowes and Home Depot carry common batteries that can be used across various types of lawn care equipment.
2. See manufacturer’s product descriptions:

* STIHL. (2019) “AP Series” <https://www.stihlusa.com/products/battery-products/ap-series/>
* Husqvarna. (2019). “Battery Series” <https://www.husqvarna.com/us/products/battery/>
* RYOBI. (2019). “Lawn and Garden” <https://www.ryobitools.com/outdoor>

**HEAT PUMP WATER HEATER**

Q: What are some names of hot water heaters that are sustainable. A friend in Texas just lost his hot water heater and I want to recommend a good one. I too want to know more about replacement hot water heaters, perhaps the heat pump hot water heater

A: Heat pump water heaters are WAY more efficient (lower operating cost) than electric or gas water heaters. “Plug-in” 120 volt water heaters are in early introduction (do not require a high current electrical circuit). Rheem is carried by Home Depot and AO Smith is carried by Lowes.

Q: It appears that Lowes sells hybrid hot water heater heat pumps. What's up with the "hybrid"?

A: “ hybrid” is the label for heat pump water tanks ALSO equipped with electric heating rods like old-fashioned electric water tanks: The water tank heat pump has a COP (Coefficient of Performance) of 4.. A COP of 4 means the heat pump has 4X the efficiency of an electric resistance heating rod, which has a COP of 1. The “hybrid” heat pump water tank has at least two primary (selectable) modes (in both Rheem and AO Smith tanks)

1. “Hybrid” mode: Under heavy hot water usage, the electric heating rods are energized to supplement the heat pump, and provide faster water heating recovery.
2. “Heat Pump” mode: Prioritizes heat pump during most of the time; it uses electric rods very sparingly, and uses less electricity from the grid compared to “hybrid”mode.

**FOR MORE INFORMATION ON HEAT PUMP WATER HEATERS:**

* 2024-1 [Heat Pump Water Heaters and Recommendations](https://climate.smiller.org/REF/HPWaterHeaters/2024-1%20recommendations%20for-heat-pump-water-heaters.docx) by Steve Miller
* 2023-7-12 "[Plug-In Heat Pump Water Heater Field Study Findings & Market Commercialization Recommendations](https://newbuildings.org/resource/plug-in-heat-pump-water-heater-field-study-findings-market-commercialization-recommendations)", NBI, 120volt water heaters lessons learned.
* 2022-11-10-[Heat pump water heaters can replace gas water heaters](https://nj.pseg.com/worryfree/learnaboutyourheating/waterheaters)
* **2022-7-12 HEAT PUMP WATER HEATER REVIEWS** by electrifynow.net; [video clip](https://youtu.be/4O77e8fgJX8) (beginning ~22min- installations to avoid; last 3 minutes: heat pump water heater has small effect on overall building heating/cooling performance; [slides](https://climate.smiller.org/50x30/building-electrification/2022-7-12-heat-pump-water-heater/july12-slides.docx)
* Pete Marsh: For HPWH brands etc, a great source is this FB group, by the well respected HVAC contractor Nate Adams (aka “Nate the House Whisperer”). <https://www.facebook.com/groups/1854210748209867/?ref=share> (NOTE- this is mostly discussion of heat pump space heating, with occasional water heater discussion)

**ELECTRIFICATION COACH TRAINING PROGRAM**

FOR THOSE INTERESTED IN LEARNING ABOUT ELECTRIFICATION COACH

Contact an Electrification Coach, or attend a webinar by one of our Electrification coaches:

Rewiring America is offering an electrification coach training program. Next cohort starts Feb.1 Marty Levin and Steve Miller registered for the waiting list. Use this link to [sign yourself up](https://homes.rewiringamerica.org/learning/electric-coaches) Our February 15 Building Electrification goal is to create a large trained group and rapidly expand heat pump installations in NJ. Training is organized by Rewiring America.

**Feb 15, at 7PM
AMERICA’S ELECTRIFICATION STORY
our nation’s bright future**

Betsy Longendorfer, trained “Electrification Coach”
sparks **your** transition to home electrification

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