This guide is intended to help you navigate the process of switching from heating your home with coal, oil or gas to heating with forms of renewable heat, specifically wood, wood pellets or heat pumps. It does not cover all types of systems or home configurations, but focuses mostly on the process so you can gather the information you need to make the decision that is right for you. This information will help you find contractors, get quotes from them, sign a contract, and deal with a variety of issues that may come up along the way:

Being prepared can help avoid many headaches or delays for you and for the contractor you work with. Take the time to do your homework to achieve:

- On Schedule vs. Schedule disruption
- Good quality vs. Poor quality work
- Within budget vs. Major changes in cost
- Good contractor relationship vs. Disputes with contractors

At any point in time along the way if you have a question don’t hesitate to contact our Energy Advising program. We’re here to help.

I. Reduce Energy Use First

Before changing your heating system, we strongly recommend reducing the amount of energy you need to heat your home through energy efficiency work—air sealing gaps and insulating walls and ceilings. By reducing the amount of heat your home loses through its basement, attic, ceilings and walls, you can reduce the size and cost of your heating equipment, which means less money up front, and less consumption of fuel, resulting in lower monthly bills. Do you have a cold room which you think may require a supplemental form of heat? By thoroughly sealing air leaks and insulating the surfaces well, you may find that the problem room is now comfortable.
enough that you don’t need to tweak your heating system at all (though you still may want to switch over to one that runs on renewable energy).

Find a list of local energy contractors who can perform no-cost energy audits at http://www.getyourgreenback.org/energy-efficient-home.

II. Get a Heat Loss/Heat Load Analysis

Another benefit of starting with energy efficiency and getting an audit, is that you can ask your auditor to include a “heat loss” or “heat load” analysis with the audit, which will help you determine the appropriate capacity or “size” of a heating system for your home. This is most often done using what is called a “Manual J” calculation, a fairly sophisticated procedure which takes into account house size, insulation quality and thickness, windows, and air leakage rates. The calculation will give you the amount of heat (in BTUs per hour) needed to keep your home warm on the coldest day of the year.

Note that many stove vendors and HVAC professionals are accustomed to “eyeballing” or using back-of-the-envelope calculations based on home square footage to determine heating system sizes. This often leads to over-sizing equipment, which means higher purchase and installation costs, higher operating costs, reduced comfort, and in some cases, increased pollutants. If you are considering a system that will heat your whole home and the contractor you are working with does not know how to calculate a heat-load analysis or plays down its importance, you may want to look elsewhere.

III. Choosing a Heating System

Now that you’ve reduced the amount of heat you need to heat your home, and determined the appropriate size of a heating system through a heat load analysis, you are ready to choose the right system for you. Here are some questions that may help you think through your heating options and choose a solution that is best for your home. The list is not exhaustive but highlights many major questions.

- Are you looking for a whole home heating system or something to heat particular spaces, such as a living space that is heavily used, or a room that gets occasional use?
- Do you have existing infrastructure you can use, such as a system of ducts to distribute hot air, or radiators for hydronic (water-based) systems? (Pellet boilers can pair better with hydronic systems, for example, and heat pumps with ducted hot air systems)
- How long do you plan on living in the home? Will the new system meet the needs of future residents?
- Would you also like to cool your home? (Heat pumps can run “backwards” and provide cooling in summers, as well as heat in winter.)

1 More considerations on choosing heating system types and resources can be found at www.getyourgreenback.org/renewable-heat
How much physical effort are you able and willing to put in to your heating system? (Wood stoves require considerable work; pellet stoves less, but some; heat pumps require only minimal maintenance.)

What is your budget? (We put this last, since even high cost systems can be financed and require little if any additional upfront or ongoing costs.)

Are there any regulations that would prevent you from using a certain type of system? (e.g. wood stoves may not be allowed in some neighborhoods and trailer parks)

When considering these questions of course you will want to do this with all the members of the household, as this is something everyone will have to live with for a long time.

IV. Choosing a Contractor & Getting Quotes

a. Narrowing the Pool

You may be choosing a contractor at the same time you are exploring different heating solutions, but we separated out the steps for convenience. We encourage you to get at least two or three quotes for each type of heating system you are considering. Here are some tips to help you decide which contractors to request quotes from. Make sure you take time to find someone you like and can trust.

- Choose from the local contractors listed by Get Your GreenBack, who have agreed to a set of standards and good practices. Find a list at www.getyourgreenback.org/renewable-heat.
- Ask people you know who have had similar work done for recommendations.
- Ask potential contractors for a set of references and follow up with them all and ask if they were satisfied with the work.
- Ask contractors questions, such as:
  - How many [of your type of heating system]—furnaces, hydronic systems, pellet stoves, heat pumps—have you installed?
  - How long has your company been in business?
  - What experience do you have working with [your type] of home? (e.g. mobile home, 200-year-old farmhouse, brick walls, etc.)
  - Can you share with me examples of installations you have done?
  - What certifications do you have?
  - Do you offer other services? (some contractors may also offer air sealing and insulation work, or solar, etc.)
  - What procedures do you use to ensure high quality work? Do you have a process for quality control?
  - How soon could you schedule a site visit and the work?

b. Site Visit & Proposals

Most contractors will want to do a site visit in order to generate a proposal, and if some want to give you quote over the phone you may want hang up right away. If you don’t have a up-to-date heat load/heat loss analysis for a room can also be done, and may end up giving you a different picture of the size of equipment needed than from what you’d get just by knowing the size of the room.

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2 If you are purchasing a wood or pellet stove to heat a particular room, a site visit may not be necessary. Heat load/heat loss analysis for a room can also be done, and may end up giving you a different picture of the size of equipment needed than from what you’d get just by knowing the size of the room.
heat load analysis, make sure they do one to determine the right size for your heating system. You should receive your quote within two weeks of the site visit, and have someone go over the quote with you either on the phone or in person.

The quote or proposal should include at least the following:

- Type (brand and model) and size of system (in BTUs)\(^3\), efficiency rating and other information (e.g. Energy Star certified?)
- The location where the installation will take place
- Cost of system and installation, including pricing details for any expected electrical, mechanical, or structural considerations that are beyond the basic scope
- Estimate of cost of heating your home over a typical year
- Warranties for each piece of equipment

In addition, it should include

- A statement of available incentives and/or tax credits that you may be eligible for to reduce the overall cost of your project
- At least one financing option for your project\(^4\)

c. Review & Compare Proposals

As you compare the proposals, here are some things to ask yourself and keep in mind:

- Who is responsible for obtaining and paying for any and all permits, inspections and approvals?
- Which system seems to best meet my home’s current and future needs?
- Which contractor do I feel most comfortable working with?
- Are all the numbers used in the energy analysis and proposal accurate? (Make sure the proposed systems match those specified by the heat load analysis.)
- Are there incentives available for the different heating options? Contractors should be able to explain these to you. A good overview is found at http://www.getyourgreenback.org/renewable-heat.
- Am I eligible for any relevant tax credits available for different heating systems? Check with an accountant or tax professional.

We encourage you to ask questions and make sure you understand the answers before you sign the contract. Don’t be afraid to ask again if something is unclear.

d. Does the work seem expensive?

It almost always does! Don’t panic, and don’t necessarily go for the cheapest option or contractor. But of course, do take spending your money seriously. Here are some things that may help you with your financial concerns:

\(^3\) Here is where you will need a copy of the “Manual J” calculation with a result of the heat loss/heat load for your home, to compare with the size of the proposed system. In general, a system should be sized to exact need to heat your home on the coldest day of the year and no more than 25% above it.

\(^4\) In addition, find a list of local financing options at www.getyourgreenback.org/financing
✓ First off, it may be helpful to know that these contractors—at least those that are Get Your GreenBack Tompkins Contractor Partners—are not scam artists. Doing a good job and providing good customer service takes time, care, equipment and expertise, and there is a lot of work that occurs offsite to make your job happen. All the GreenBack Contractor Partners are paying living wages to their employees. Know that your money will be supporting local jobs, and strengthening our local economy (in contrast to our fuel bills, where most profits go to large, wealthy companies and investors far-far away).

✓ That said, you can compare some of the prices on heat pumps in your contractor’s quote against the lower-than-market pricing offered in the HeatSmart Tompkins program in 2016-2017 (see www.solartompkins.org).

✓ Try financing. Sometimes your energy savings can cover your monthly loan payments so you end up paying no additional cash. Find a list of local low-interest financing options at www.getyourgreenback.org/financing.

✓ DIY? If you are handy or have handy friends or family members, you may be able to do some of the work yourself, such as installing a stove, and save some money there. But if you can afford it, we recommend using the professional, insured contractors, whose work is under warrantee.

V. Getting Work Done

a. Signing a Contract

In addition to the scope of work, equipment specifications, equipment testing protocols and other standard contract features, here are some additional considerations you may wish to include, or consider including, in your contract:

☐ You may want to ask for a work schedule, especially if you have scheduling constraints which limit your availability
☐ Clarify who is responsible for clean-up
☐ Clarify the process for dealing with changes, which are sometimes unavoidable.
☐ Establish a clear communication protocol – who is the lead person for you to communicate with?
☐ Do you need a building permit for the work? If so, who gets it and who pays for it?

Remember that if it is not written in the contract it is not part of the contract. Make sure any changes you discussed with the contractor get entered into a revised contract.

Aside from the contract, there may be other forms that you will have to fill out and sign in order to claim the various incentives available from the state or federal government. The contractor should guide you through this process.

b. Pre-Construction Meeting

It is useful for you to hold a pre-construction meeting with your contractor, in order to go over the work scope and contract to make sure you are on the same page. In addition, you may want to specify any additional concerns such as:
✓ Where to park and store materials
✓ Which bathrooms to use
✓ Any pet concerns. Contractors may be concerned with having them loose in the house; you may be concerned about them getting out when contractors come in and out of your house.
✓ You may want to review your main priorities in the project, scheduling, e.g., not destroying your lawn, cost, quality, etc., being aware that you probably can't have all of them

c. During Construction
✓ Set aside some time each day to inspect the work they are doing and ask questions. Let them know you will be doing this. This will enable you to address issues as they come up, which is best for both you and the contractor.
✓ If you are purchasing specialized equipment, such as a pellet boiler, or air-source heat pump, as part of this work, make sure you include time in your schedule for this equipment to arrive.
✓ A little hospitality may go a long way in helping make the communications and work go smoothly. Why not provide some drinks and snacks?

d. Closeout
☐ Generate a “punch list” — a list of things on the work scope that need to be completed for you to be able to pay the contractor. Assume that the last 10% of work is the hardest, with small tasks that may take longer than expected. Withholding payment until the work has been completed is common practice; 20% is a reasonable amount to withhold onto until all the items on the “punch list” are done.
☐ Test equipment – make sure all the equipment is tested, and is functioning well. In addition, make sure you understand how to operate the system, and do any required maintenance. If you have any questions, don’t hesitate to ask your contractor. They prefer explaining then, as opposed to having to do a troubleshooting visit a month down the road.

VI. After the Work is Done

After the work has been done, it’s time to enjoy and share your experience with others. Also, occasionally there are issues that come up.

Share the good news.
If you appreciate the work of the contractor, why not write up a positive review on their site, send them a note, and post something on your Facebook page? Let them know you will be happy to do this. Talk it up with your friends, family and neighbors. Hold a party and invite folks over to feel the heat! People are much more likely to consider making similar changes if they hear from you and your positive experience.

We would be happy to share positive stories that highlight this work on the Get Your GreenBack newsletter and media. Please let us know if you are open to this possibility.

Quality Control & Dispute Resolution
What to do if after the work is done you have concerns about the work?
✓ your first step is to call your contractor and discuss these with them. They should be able to address your concerns, returning if necessary to your home to do so.
✓ If you still feel unsatisfied with the work, you can call Get Your GreenBack and request a visit from our home energy advisor. He can provide a third-party opinion which may be useful to help allay or resolve your concerns, and may be able to speak with the contractor and help resolve the issue.
✓ If work was done under NYSERDA’s Renewable Heat NY program, or Ground Source Heat Pump rebate, you can request a NYSERDA quality control visit. Call 1-866-NYSERDA.
✓ In addition, if there are any concerns about Air Source Heat Pumps (that were installed using the NYSERDA rebate to installers), you can contact Kerry Hogan at NYSERDA, Kerry.Hogan@nyserda.ny.gov, (518) 862-1090 x3509.

Disclaimer
This guide is intended as a resource to help you gather useful information necessary to make good decisions with regards to making your home more energy efficient, and to encourage a positive interaction with local home performance contractors. However, no process is foolproof. While Get Your GreenBack Tompkins is happy to provide information to help with decision-making, we can’t accept liability for decisions made or contracts signed. Please proceed with the diligence and care required of any significant decision that will impact your finances and your home.

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