

Transitioning an Old House to All Electric

Susan Millar, September 2021

Are you wondering how to convert an older single-family home with a forced hot-air heating system, a gas water heater, and a gas stovetop from gas & electric to **electric only**? I have done that with a 90-year old house on the near west side of Madison. And because it took a fair amount of time, I am sharing the process I used. Before describing this process, I provide important context.

Context for Transitioning to All-Electric

- “Natural” gas is fossil gas. It must, and will, be phased out over time as our society gets more serious about reducing climate-warming emissions. In some states, it already is illegal for new buildings to use fossil gas.
- Air source heat pumps (ASHPs) are the energy-efficient electric-powered alternative to gas heating systems. ASHPs both heat and cool your house (no separate AC device needed). They have a high coefficient of performance, so while they use electricity, the amount is much less than, say, what an electric space heater or traditional AC unit uses. See, for example, [this video description](#) of ASHPs.
- Air source water heaters (also called “hybrid” water heaters) work the same way as ASHPs except they exchange air with your basement instead of the air outside. They are far more efficient than traditional electric water heaters.
- Our state’s Focus on Energy program provides rebates for air source air and water handling systems. The installers handle this process. (I am not yet sure of the size of these rebates.)
- MG&E’s monthly service charge is \$22. If you stop your gas service and start it again, they will bill you for monthly service charges for up to 12 months prior to the time you start again. That is, you cannot stop your gas service except for, say, the month of January without paying for up to 12 months of service.
- If you have not yet, or cannot install, solar panels on your roof, you can arrange with MG&E to receive their 100% renewable (wind- and solar-generated) electricity. This is a good way to help them transition from coal and gas. To do this, go to their website, or give them a call.
- If you have an EV, and are willing to charge it and also run your dishwasher, etc during MG&E’s low-rate period (from 9pm to 10am on weekdays, and during weekends and holidays), you can substantially reduce your electricity bill. To do this, call MG&E and ask them to add you to their Time Of Use program.
- Yes, you have to lay out money ahead of time to transition from gas, and I am aware that many people cannot do this. The financial payoff comes over time. For example, while paying both gas and electric service charges, and charging my EV at home, my MG&E bill this summer was between \$20 -30/month. This is largely due to having rooftop solar and Time Of Use. While my utility bills will be higher this winter, they will be reduced by the \$22 monthly gas service charge, and will be substantially less than prior winters. For me, a major other advantage is that I am emitting essentially no carbon dioxide to run my home and car.

Steps for Transitioning to All Electric (used by an early adopter)

1. Get an energy efficiency analysis. This is very important, because if you switch from a furnace powered by an unlimited amount of gas to an ASHP, it's important that your house holds its temperature (in winter or summer) as effectively as possible. I used a local energy efficiency consultant. He did a superb job.
2. Improve your insulation. If your energy efficiency analysis indicates that your house needs insulation, then arrange to get it. I used a small local company that treated my home as if it was their own. I felt the difference immediately, even in summer.
3. Replace your gas stovetop (both to get off of gas and because much new research indicates respiratory health problems caused by gas stovetops). As I have a unit with an electric oven and gas stove, I purchased two Cuisinart's Double Induction Cooktops (not expensive), which I placed over the gas burner area on my stove and just plugged in. (Induction stovetops work great, and are *much* easier to keep clean.)
4. While doing steps 1 & 2, get contracts with the HVAC and plumbing company you will use. I started with the local HVAC company that I was used to. They proposed an ASHP system that would heat my house to +14F degrees, and required that I retain my gas furnace for back-up in the winter. As I want to eliminate the year-round monthly gas service charge, I turned them down. I tried 3 other local companies. Same response. I looked wider, and found a company located near Milwaukee, Midwest Heating. In light of the energy efficiency and size of my house, they proposed to **replace** my gas furnace and AC units with a Mitsubishi P system that will efficiently heat my house to -14F, and then shift to an electric element (low efficiency) back-up system for super cold snaps. Their price? Same as the local HVAC folks who proposed installing a +14F system with gas back-up. I accepted Midwest's proposal. Moreover, they agreed to install my (still effective and efficient) gas and AC units in the home of a friend who has very inefficient HVAC systems - so the embedded carbon in those devices is not immediately trashed. (FYI, I informed the local HVAC companies of my decision - they lost my business to a more cutting edge, non-local competitor.)
5. Meanwhile, after checking different local plumbers, most of whom do not install hybrid water heaters, I found a small local plumbing company that proposed to install one of these at a very decent price. I happily accepted his bid.
6. Both the HVAC and plumbing companies I signed with encountered installation delays because ASAP and hybrid water heater manufacturers are having sourcing issues. These problems are either due to Covid shipping issues or because the manufacturers are sending their stock to states that are ahead of us on installing these systems. Demand pushes the market.
7. The ASHP and hybrid water systems are now installed. I happily told MG&E to turn off my gas service. (They were surprised.) The water heater has easy controls and works superbly. I haven't tried the ASHP yet because the weather has not required it, especially now that my house is so well insulated.
8. If you want cost information or contact information for the energy efficiency, insulation, and plumbing companies I used, just email me at sbmillar@gmail.com.