The chaos of Trump 2.0 is making it difficult to think about affirmative environmental action these days. At the policy level and in the courts, environmentalists are going to be playing defense for the next few years. Much of what is going on these days feels beyond the average person's control and that can be cause for feelings of hopelessness or despair. If you are committed to improving our environment though, there are still many actions one can take at a personal level. Our family has, for example, slowly been attempting to decarbonize the house we purchased near UCLA some ten years ago.

Overall, we have found the experience to be relatively smooth. California and Los Angeles have many programs to ease the process. We recently had a bit of an experience with switching to a heat pump water heater that I will describe below. We are the happy owners of a new unit now, but the process was more difficult than it should have been.

When I started this process I found that even very few of my friends in the environmental community had any experience in taking these nuts-and-bolts measures at home. Thus, I thought this post might be useful for others.

Step-by-Step Home Decarbonization

A variety of steps to decarbonize our house were rather easy to make. We first took advantage of LADWP's Home Energy Improvement Program. LADWP inspected our house and provided free LED lightbulbs. They offered to put in new insulation for free but determined that our house was already well-insulated. We purchased a solar array from LA Solar Group. The system covered 100 percent of our home energy use until we traded in our gas-powered cars for two EVs. We have not taken out our gas cooktop, but we purchased a stand-alone induction cooktop that works extremely well for most things we do.

We just completed a heat pump water heater retrofit (as I will describe below). The final major upgrade we need to make is to replace our HVAC system (gas heating, electric AC) with a heat pump system.

We have made some water-related improvements as well – purchased low-flow shower heads, removed the grass from our backyard, installed low-water toilets (free from LADWP). We put in low-water native grass in the front yard a few years ago, which is not optimal but we will consider a more complete xeriscaping project down the road.

Some Things Should Be Easier

Our recent experience in installing a heat pump water heater (HPWH) is a good example of *both* how substantial incentives are available *and* that the entire process of making the switch is *much more difficult than it should be*. I have a personal and professional interest in making retrofits and testing out the incentive processes, but I suspect that many other people would not tolerate the friction we faced in switching from a traditional gas-powered water heater to a highly efficient HPWH.

Why Heat Pump Water Heaters

Lawyers are not known for their facility with technology. It took me some time to get a handle on what technology should replace our 50-gallon gas-powered water heater. Many contractors we contacted suggested a tankless water heater (which can be gas or electric powered). These units are slightly more efficient than the old-school tanked water heater because it is hot water on demand, rather than a standing reservoir of hot water that is continually maintained at the desired temperature. But electric heating of water on demand is energy intensive and a gas-powered unit still uses fossil fuel.

My slow-moving lawyer's brain then learned that heat pump water heaters are the most efficient technology. This post from a staffer at NRDC explains why:

> Replacing old-fashioned, inefficient water heaters with heat pumps slashes energy consumption. That in turn drives emissions down; according to the New Buildings Institute switching to a HPWH saves more than 2,000 pounds of CO_2 annually. It also drives utility bills down – according to ENERGY STAR a family of four would save $550 a year using a HPWH!

Contractors

A major barrier to taking the most environmental step in water heating was the attitude and knowledge level of most contractors we contacted. I was stunned at how difficult it was to find a contractor willing and able to install a heat pump water heater. More contractors than I can count attempted to convince me that a heat

pump water heater was a bad idea. I suspect that most of them were simply selling the old technologies that they had always sold and understood the best.

I was finally able to obtain quotes from two contractors who were willing to install a heat pump water heater and were familiar with available incentives. As I was about to sign the contract with one of them, he said they could no longer do the job because their water heater guy just retired. The other company told me they were no longer installing heat pump water heaters, with no further explanation.

I finally found a company. They understood the technology, could explain it to a Luddite like me, and were willing to work through the logistics of obtaining available incentives. [Edit: The contractor, it turns out, made a mistake on rebate and we are unable to obtain it. Do not use this company!]

Available Incentives

It turns out there are extensive incentives for making a switch from a fossil fuel-powered water heater to a heat pump water heater. For us, there were three major incentives:

- Federal tax incentives (30%), from the Inflation Reduction Act;
- California state TECHClean incentives ($3,800 for a 65-gallon unit); and
- An LADWP rebate ($1,500).

For a project that cost slightly more than $7,000, this would mean the final project cost after incentives would be a mere $1,600. Not bad.

I subsequently found this Switch is On website, which provides good information (but also many of the contractors I contacted through the site were slow to respond or did not respond at all).

Other Barriers

We had a few other snafus along the way. Our old hot water heater broke in June 2024, but the California TECHClean incentive fund had been exhausted for the year just the month before. TECHClean staff did not have a clear sense of when the incentives would return, so we spent several months in limbo. We finally got notice on December 5, 2024 (six months later!) that the TECHClean incentives had returned. Eli and his team installed the new HPWH on December 17th.

We opted for a non-hybrid heat pump water heater that does not have a backup electric heating element (which uses 10x the electricity of the heat pump). The potential downside of a non-hybrid unit is that recovery times are longer if we run out of hot water (say from a certain teenage family member taking typically long showers). So far this has not been a problem, except in two instances: once when we accidentally set the unit to vacation mode (dropping the water temperature to 50 degrees F) and another time when a family member who shall remain unnamed accidentally left the water running in the utility room all night. But these were both human errors, not the fault of the technology.

Conclusion

If I want to be honest, it took much more work than we had expected to put in the most climate-friendly water heater option. I worry that people won't make the switch because of the various friction points I have identified here. This entire process should get easier for others with accumulated experience – but for now contractors, homeowners, and the agencies running the incentive programs will need to put in additional effort to make it easier to do the climate-friendly thing.