

Joint Legislative Budget Hearing on Housing

March 1, 2023

Written Testimony from Betsy Parrington, VP of Taitem Engineering, Ithaca

My name is Betsy Parrington, and I am the Vice President of Taitem Engineering PC. I am a licensed engineer with more than 20 years of experience working to improve the energy efficiency of buildings in New York State. Taitem Engineering is one of the largest engineering firms in Upstate New York, and we specialize in designing buildings that use no fossil fuel, including for space heat and domestic hot water. We have not designed a new construction building heated with fossil fuels in more than 6 years. I am a firm believer that we must electrify our building heating systems, and that the technology to do so exists and can work in all types of buildings and in all the climates found in New York State.

Heat pumps work in many different kinds of buildings

The words “heat pumps” cover a wide variety of systems, from mini-splits that heat a home or apartment to large variable refrigerant flow systems that can heat giant commercial buildings with complicated heating and cooling loads. There are even window ASHP units just coming on to the market that are a heat pump packaged into a single box, much like a window air conditioner. They are installed in window and can heat or cool a room without anything more needing to be installed, truly “plug and play”. In this case, plug in and heat and cool a space!

Tompkins county is a showcase of buildings heated entirely with heat pumps: there are affordable and supportive housing projects of 23 – 120 units, a supermarket, Cornell’s graduate housing Maplewood Apartments (over 400 units), a high-rise mixed use building with 143 low to moderate income housing units and a convention center, market rate housing, and on and on, all heated with heat pumps, not fossil fuels. Heat pumps are a proven technology across many building types.

Heat pumps work in cold climates

Tompkins County is again a showcase of the ability of heat pumps to work in cold climates. There are only 13 counties (out of more than 60) in NYS that have colder design temperatures than Tompkins County, and the coldest is only a handful of degrees colder. The compressor technology required to work at cold climates has progressed hugely in the last 5-10 years, and there are thousands of heat pump models listed on the cold climate heat pump list maintained by NEEP (Northeast Energy Efficiency Partnerships). Heat pumps can heat buildings in Tompkins County; they can heat buildings anywhere in the state.

New buildings should all be heated with heat pumps

In order to avoid climate catastrophe, we must electrify all our buildings while concurrently decarbonizing the electric grid; no other viable path forward has been found. It therefore doesn't make any sense to install fossil fuel heating systems in new buildings – they will just need to be converted to all-electric heat in a few years.

Heat pumps make more sense for building owners:

- Construction costs for air source heat pumps are already competitive with fossil fuel systems and are inevitably lower when compared to fossil fuel systems plus air conditioning.
- Operating costs are lower for heat pumps; heat pumps are more efficient than fossil fuel systems.
- Maintenance costs are lower for heat pumps. The filters need to be replaced, but burners do not need to be cleaned and tuned every year, there is no mandatory boiler inspection.
- No future costs of carbon penalties, such as NYC's LL97.
- No future costs of stranded assets and conversion to electrification.

Heat pumps make more sense for residents:

- Indoor air quality is better. Carbon monoxide is no longer a risk, and particulate levels are lower with no combustion inside the building.
- Energy costs are lower. We worried that converting to heat pumps in apartment buildings might increase cooling energy use and costs because more rooms in each apartment would have cooling. Preliminary results from a handful of buildings show that the cooling energy decreased, likely because heat pumps are more efficient than the older window AC units previously installed.
- More cooling will protect vulnerable tenants during heat waves.
- There is a lower risk of loss of heat due to boiler room flooding during hurricanes and other storms.
- Heat pumps provide more comfortable heat levels than fossil fuel based systems like steam radiators, which are hard to control and often have wide swings in temperature through the day.

Heat pumps make more sense for the community:

- No carried costs for gas infrastructure.
- Reduced pollution and improved air quality.
- More resiliency protects people from adverse weather events.

We must act with urgency to meet the state's aggressive climate targets. I urge you to pass the All-Electric Building Act and the NY HEAT Act, and to provide Green Affordable Pre-electrification funding to prepare older homes for electrification.