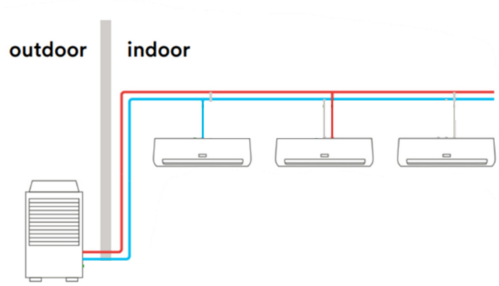
What is a heat pump?

Air Source Heat Pump's (ASHPs) are high-efficiency electric appliances that provide heating and air conditioning. The components are modular, allowing multiple indoor units (in a single or in multiple apartments) to be connected to a single outdoor unit via refrigerant lines. Occupants can adjust the temperature using controls in each room.



What are the different types of Heat Pumps that the Pilot supports?

- Mini-split systems consist of two components: one outdoor unit connected to a single or multiple indoor units in a single apartment. Mini-split systems can be placed on an apartment's electrical service and the heating and cooling can be paid as part of the resident's utility account. Alternatively, it is possible to wire these systems to the house meter and bill tenants for cooling. In some cases, a mini-split could serve several small apartments (e.g. studio units) so long as it is on the house meter.
- "Large VRF" (variable refrigerant flow) is a type of centralized commercial ASHP system where a large outdoor unit is connected to indoor units in multiple apartments. Each apartment has its own controls. For VRF, heating is paid for by the owner and cooling can be owner-paid or is sub-metered and billed to the residents.

What are benefits of heat pumps?

Heat pumps do not consume fossil fuels, so they are better for the environment. They are better for building heating and cooling because:

- They do not emit combustion gases and particles into the air, which means less pollution and fewer greenhouse gas emissions, which help buildings meet NYC's ambitious climate goals.
- They do not require equipment in the basement, so they are not subject to flooding.
- With a thermostat in each room, occupants can adjust comfort in occupied spaces.
- They provide cooling, which is increasingly important to protect residents from increasing heat and heat waves, and eliminate the use of leaky, low efficiency window units.
- They are three times as efficient as electric resistance systems.

Where/how are outdoor units located?

Outdoor units typically go on the roof but can also be mounted on exterior walls or in yards where zoning allows. When located on the roof, units are set on the roof or mounted on parapets, and can be ganged to take up less space. When located on walls, they need to be accessible for maintenance.

Where/how are indoor units located?

Indoor units are usually mounted high on the wall, with one in each habitable room. Floor mounted units are also possible but take up more floor space. Ducted units are available to allow more than one room to be served with a single indoor unit and temperature control, using ductwork. For gut rehabs, it is possible to have a concealed unit in the ceiling that is ducted to each room.

What type of maintenance is needed?

Indoor units have washable filters that should be washed periodically. The outdoor units should be checked periodically to ensure they are free from leaves and other debris. Every few years it is important to have a service person check the coils and condensate lines in each apartment.

How long do they last?

These systems typically last at least 15 years. If properly maintained they can last more than 20 years.

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Will I need to update my electrical service to the building to install heat pumps?

If an existing electrical service is barely big enough, and/or if the building is fully electrified (space heating, hot water heating, cook stoves), the chances are good that the service to the building will need to be upgraded. In other cases, where the electrical service is already more than adequate, no upgrade is needed. This question is typically answered in discussions with Con Ed.

Will I need to update electric panels in apartments to install heat pumps?

It depends on the size of the existing electric panels, existing electric loads, and proposed new electrification loads. It also depends on how the heat pumps are proposed to be wired: If wired to the electric panel in each apartment, panel upgrades are more possibly needed. If wired to house panels that are typically in the basement, no apartment panel upgrade is needed.

How much money will a building save in energy costs?

Although heat pumps consume less energy than systems that use natural gas, fuel oil, or electric resistance heat, utility costs can be high due to the current cost of electricity in NYC. This is why the pilot is prioritizing systems currently using oil, and ensuring that building envelope upgrades are part of the project scope. The pilot also requires building staff and tenant education – to ensure that systems are run as efficiently as possible and to ensure that tenants are aware of programs like HEAP and Con Ed's Level Billing Plan.

Do I need backup heat for the heat pump?

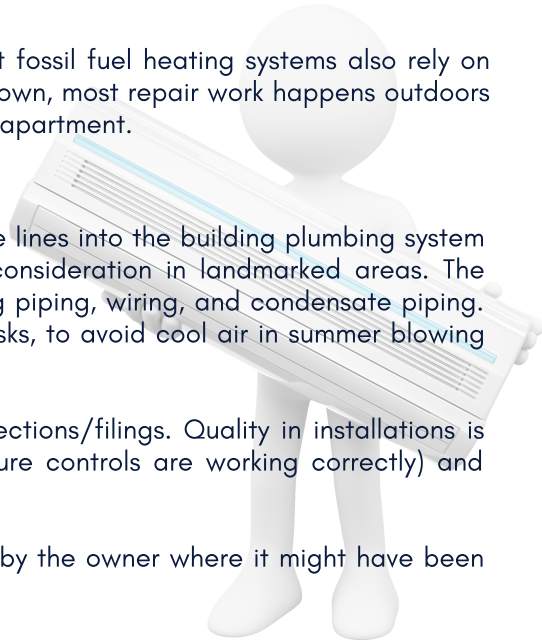
Some people choose to keep the fossil fuel system as a backup. This is a building-by-building choice. Many people choose not to use a backup. The heat pumps provide adequate heat if correctly chosen and sized, even in cold climates.

Is tenant-paid heating allowed for HPD projects?

The answer is yes - under certain circumstances. Tenants can pay for heating if rent is reduced to account for heating costs. HPD has developed a utility allowance for this situation, but currently we can only implement tenant-paid heating where rents are being restructured and on projects not serving highly vulnerable populations. In addition, HPD requires the owner to take additional steps to ensure tenants are protected from high heating costs or utility shut-offs for non-payment of bills.

If there is a power outage, will the heat pumps stop working?

Yes. There will be no heat if there is a power outage. However, note that most fossil fuel heating systems also rely on electric power and will not operate during an outage. If the equipment breaks down, most repair work happens outdoors on the outdoor unit. Mini-splits are easy to service or replace and only affect one apartment.



What are other considerations?

Indoor units require condensate to be removed, either by connecting condensate lines into the building plumbing system or outdoors, either by gravity or with pumps. Visibility can be an important consideration in landmarked areas. The aesthetics of indoor units are important, in locating the units, and also in routing piping, wiring, and condensate piping. Indoor units should preferably not be located on walls above beds, sofas, or desks, to avoid cool air in summer blowing over residents.

Licensed design professionals should be chosen for design and necessary inspections/filings. Quality in installations is important, with attention directed to details such as commissioning (making sure controls are working correctly) and preventing refrigerant leaks through pressure testing and leak checking.

Finally, if the heating is paid for by the owner, now the cooling is also paid for by the owner where it might have been paid for by the tenant previously, so an associated adjustment may be necessary.

If you want to learn more, contact electrificationpilot@hpd.nyc.gov

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