ENERGY FOR EVERYONE®
propane

Hybrid Heating Technology Provides Comfort, Efficiency, and Savings

Hydronic heat pump solutions transform home heating across four pilot sites

Traditional electric heat pumps struggle to deliver comfort and efficiency in cold temperatures. When they fail to meet heating needs, resistance heating kicks in, increasing electric demand by three to four times without providing consistent warmth. Hydronic heat pump solutions enhance the performance of both new and existing electric heat pumps by integrating propane-powered water heaters. When activated by an existing thermostat, the system circulates hot water through a hydronic coil at the air handler — improving comfort, efficiency, and affordability, especially in colder weather.

In 2024, four pilot homes installed hydronic heat pump solutions to tackle specific challenges, optimize energy usage, and deliver consistent home-heating comfort. By using the preconfigured components to seamlessly integrate propane into their existing electric heat pump systems, these homes reduced energy consumption, eliminated the need for costly electric heat strips, and extended the life span of their HVAC systems. These installations demonstrated the versatility and advantages of propane, delivering improved comfort while helping homeowners manage energy usage and costs more effectively.

HYDRONIC HEAT PUMP SOLUTION PILOT SITES

MOUNT JACKSON, VIRGINIA
1,800 sq. ft.
Built in 2007
Challenge: Comfort

POWHATAN, VIRGINIA
3,700 sq. ft.
Built in 2022
Challenge: Resiliency & Comfort

AFTON, VIRGINIA
2,700 sq. ft.
Renovated in 2023
Challenge: Upgrade Costs

BOERNE, TEXAS
5,400 sq. ft.
Built in 2000
Challenge: Resiliency & Costs

Each pilot home demonstrates how easy hydronic heat pump solutions are to install, and how they provide a cost-effective, energy-efficient alternative to traditional electric heat pumps. From reducing dependency on electricity to enhancing comfort and resilience, the systems proved to be a valuable upgrade for homeowners.

IMPROVED COMFORT & EFFICIENCY

Mount Jackson, Virginia

After moving into an all-electric home, the homeowner experienced high electric bills and inconsistent comfort during cold weather. The existing HVAC electric system struggled to provide sufficient heat to meet the family's preference for a steady indoor temperature of 73 degrees. Rather than replacing the entire system, they sought a more efficient solution. By adding a 500-gallon propane tank, a propane-powered tankless water heater, and a hydronic heat pump solution that integrated with the existing ductwork, they significantly reduced their dependence on electricity. The upgrade helped stabilize comfort levels and offered a more economic pathway to install a generator in the future.

Comfort Improved

- The hybrid heat pump solution effectively addressed the family's comfort concerns, maintaining a consistent desired temperature of 73 degrees.

Energy Savings

- While cost savings was not an initial motivation, the homeowner was pleased to experience a 67% reduction in their January 2025 electric bill, saving approximately $200 while only consuming 123 gallons of propane.

MAXIMUM EFFICIENCY & CONTROL

Powhatan, Virginia

A homeowner with an electric heat pump and a portable generator faced the challenge of their generator being too small to power the electric heat pump during power outages, leaving them without heat. Additionally, their electrical service included peak demand rates, making their heating system more expensive during high-demand periods.

To solve this, the homeowner replaced their electric heat strips with a hydronic heat pump solution, enabling them to continue heating their home with the smaller portable generator during outages. The system also optimized energy use by adjusting heating needs based on utility rates, helping the homeowner navigate peak demand periods.

As a result, the homeowner saw a 14% reduction in electricity usage and a 48% decrease in their electric bill, saving $100 despite experiencing 22% more heating degree days in January 2025. With this efficient solution in place, the homeowner plans to further optimize utility costs by using off-peak electric rates of 10¢ per kWh and running the propane system only when it delivers real savings. The homeowner continues to fine-tune their system for additional energy savings by balancing propane usage with favorable utility rates.

Energy Efficiency

- Enabled the homeowner to heat their home with a smaller portable generator during power outages.

Cost Savings

- Achieved 48% savings YOY, supported by avoiding peak demand charges.

CAPITAL & OPERATIONAL COST SAVINGS

Afton, Virginia

A homeowner renovating their home faced a $6,000 electrical service upgrade to accommodate an expanded living area and future plans to finish a large unconditioned basement. The contractor suggested upgrading the electrical panel to handle the increased amperage for heating, but the homeowner was reluctant to invest in a costly upgrade that wouldn't improve comfort. Seeking a more cost-effective option, they chose to install a hydronic heat pump solution and replace their electric tank water heater with a propane-powered tankless model. This decision both avoided the expensive electrical upgrade and also reduced electricity usage, freeing up more than 50% of their electrical service. To accommodate additional propane upgrades — including a clothes dryer, range, and outdoor fire pit — the homeowner moved from a 120-gallon tank to a 500-gallon tank.

Cost Savings

- Avoided a $6,000 electrical upgrade by switching to propane-powered solutions.
- Freed up more than 50% of the electrical service capacity, reducing strain on the home's electrical system.
- Achieved nearly 200% savings YOY in February 2025, consuming less electricity.

COST-EFFECTIVE GRID RESILIENCE

Boerne, Texas

This homeowner sought a whole-home generator to improve grid resilience, but the high cost made it an unfeasible investment. The all-electric heating system's high energy demands required a larger, more expensive generator, along with an upgraded propane tank to accommodate the increased fuel consumption.

The homeowner achieved significant savings by installing a hydronic heat pump solution. This reduced the home's heating-related electric load, making it possible to purchase a smaller, more affordable generator. The smaller generator not only consumes less propane but also provides additional run time per tank fill. The homeowner further reduced costs by avoiding the need for a larger propane tank.

Cost Savings

- $17,000 net savings by downsizing the generator and $5,000 savings due to having the option to lease the tank.

Energy Independence

- Achieved goal of improving resiliency for the home.

FOR MORE INFORMATION

Several hydronic heat pump solutions are commercially available today, with more coming to market in 2025. Starting at a suggested retail price of around $2,800 (water heater not included), these kits offer a cost-effective option for homeowners and contractors alike.

Learn more at **propane.com/hybridheatpumpsolution**.

Propane Education & Research Council

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