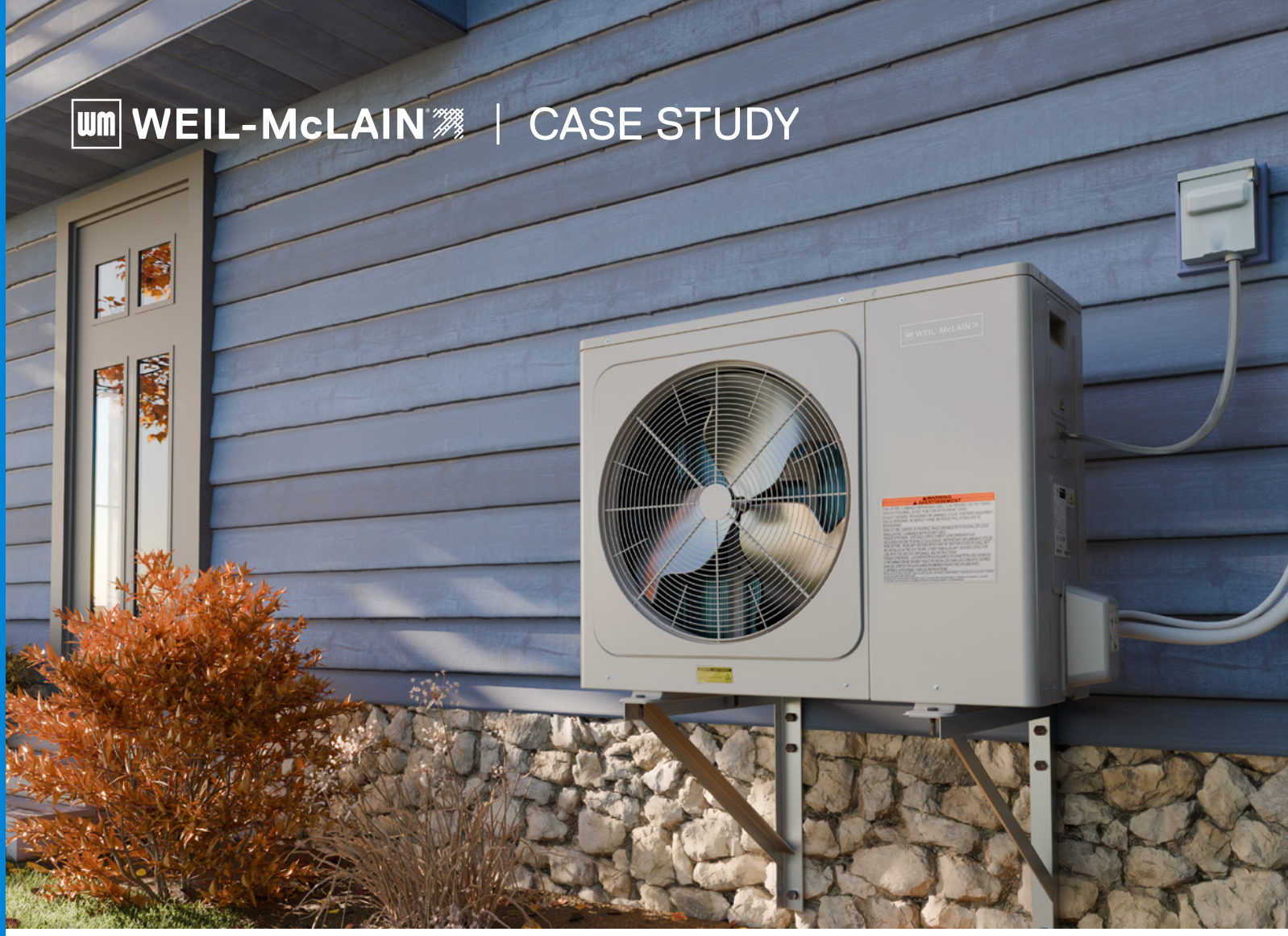
WEIL-McLAIN | CASE STUDY



October 2025

Hybrid Hydronic Heat + DHW for Residential Homes

The ECO™ Hybrid System with Integrated Heat Pump

Heating Need Summary:
This residence required an energy-efficient, sustainable solution to support radiant floor heating, snow melt, and domestic hot water using propane. The homeowner aimed to reduce propane usage and environmental impact without sacrificing comfort in a cold-climate region. A hybrid system was selected to leverage electric heat pump performance during most of the season while retaining the reliability of a high-efficiency boiler in extreme conditions.

Location:	Chicagoland Area
Home Profile:	Main Level: 1,900 sq. ft. Lower Level Living Space: 1,100 sq. ft. Additional Hydronic Heat Areas: Garage and driveway snow melt system
Installation Date:	September 2024
Solution:	ECO™ HP Indoor Heat Interface Unit ECO™ HP Outdoor Heat Pump Unit Evergreen® High-Efficiency Boiler Aqua Plus® Indirect-Fired Water Heater

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A Contractor's Perspective on Delivering Comfort, Savings with Hybrid Heat Pump System

When a homeowner in the Chicagoland area wanted to improve energy efficiency and lower propane heating costs, contractor James Downs of JMD Associates recommended an innovative solution: the ECO™ Hybrid Dual Fuel Hydronic System from Weil-McLain. Installed in a 20-year-old home near Lake Michigan, the system combines an air-to-water heat pump with a high-efficiency gas boiler to deliver optimal performance and flexibility across a wide range of temperatures.

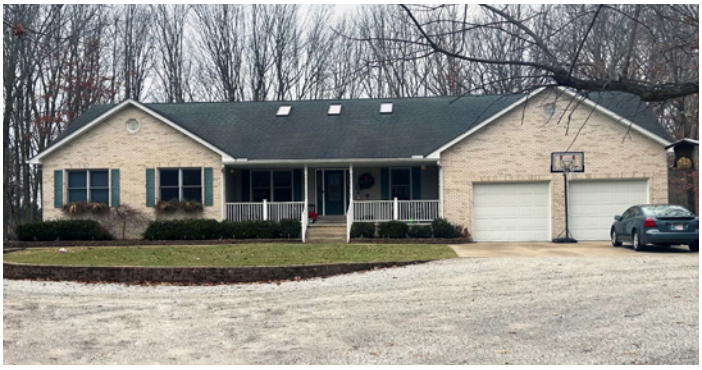
A Home Ready for Hybrid

The home featured an existing hydronic radiant floor heating system, as well as a snow melt system for the driveway and sidewalk, which were powered by a propane-fired high-efficiency Weil-McLain boiler.

Downs described the property as an ideal candidate for a hybrid installation due to its low-temperature heating setup and the homeowner's desire for greater sustainability and cost control. The homeowner was motivated not only by rising fuel costs, but by a desire to make more climate-conscious decisions and maximize efficiency with their existing radiant system.

"The boiler only kicks in when needed – striking a smart balance between performance and comfort"

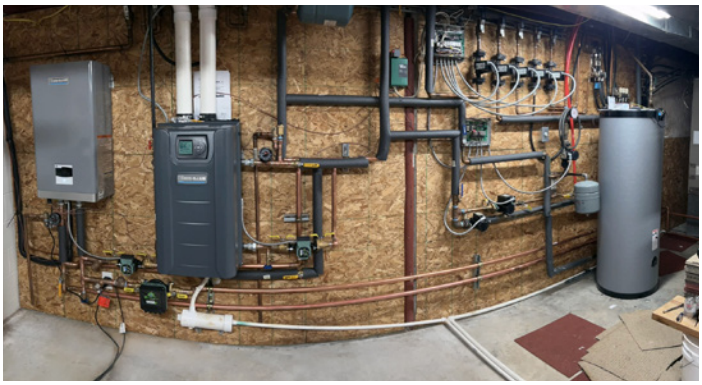
"With radiant floor heating already in place in the home and the climate conditions in the Chicagoland area, this was a great opportunity for a hybrid setup," said Downs. "The heat pump is designed to handle most of the heating season efficiently, and the boiler only kicks in when needed – striking a smart balance between performance and comfort."



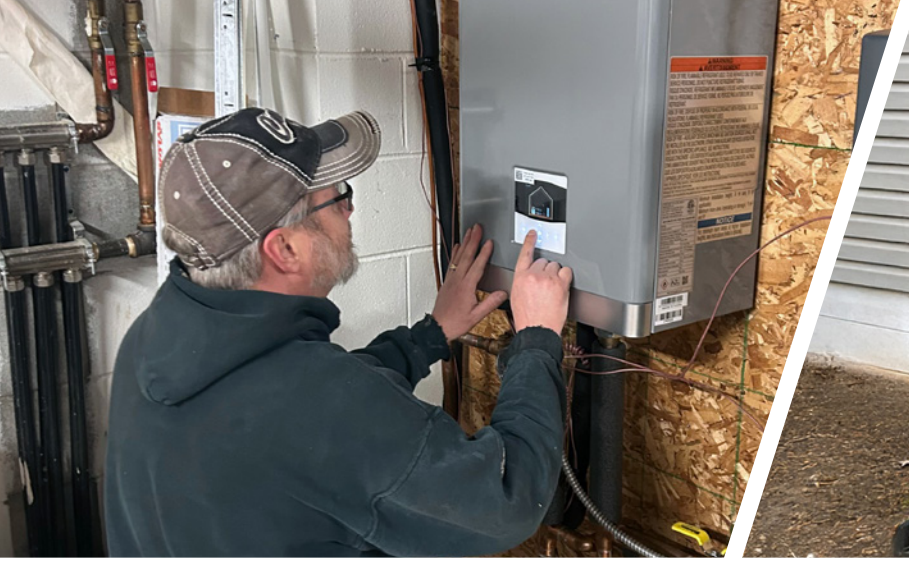
Single family home, approx. 3,000 sq. ft.

The chosen solution featured a Weil-McLain ECO Hybrid System, which included an outdoor air-to-water heat pump and a compact indoor wall-mounted unit, both designed to work with the existing high-efficiency modulating propane boiler.

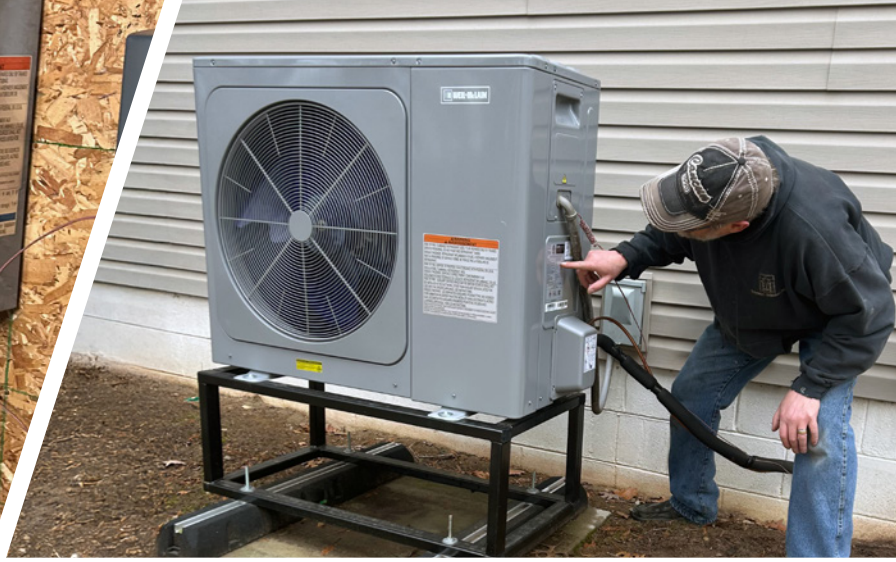
The ECO HP is designed to integrate seamlessly with Weil-McLain's high-efficiency condensing boilers. By combining a durable, inverter-driven outdoor heat pump with a compact indoor unit, the system intelligently shares the heating load – maximizing energy efficiency and minimizing fuel consumption. It features intuitive user interface, integrated staging control capabilities and



ECO HP integrated into homeowner's existing hydronic system



ECO HP Indoor Unit – Heat Interface Unit Integrating the heat pump into the overall system



ECO HP Outdoor Unit – Air-to-Water heat pump with split design (no freeze protection required)

compatibility with indirect water heaters. Ideal for residential applications using radiant floor heating or low-temperature hydronic systems, the ECO HP delivers quiet operation, long-term reliability and measurable reductions in energy costs. In this case, the outdoor unit was mounted on a stand to prevent snow accumulation and ensure proper drainage – an important consideration in Lake Michigan's lake-effect climate.

As a bonus for the home's domestic hot water needs, an indirect tank was integrated into the system, while a dedicated heat exchanger handled the snow melt functionality for exterior surfaces. Heating throughout the residence was divided into six zones, each managed through a centralized zone control panel for efficient distribution.

Smooth Installation and Reliable Performance

According to Downs, the installation was straightforward and similar to setting up a conventional central air system. "The indoor unit was lightweight and compact – easy to mount with standard tools," he said. "The outdoor unit connected via flare fittings, and the line set was within the range for the unit's pre-charge, so everything aligned perfectly."

"If you're already doing mini-splits and hydronics, this is very manageable"

The 120V indoor unit and 240V outdoor unit required standard connections. Controls were intuitive, and the system relied on Weil-McLain's guidelines to set compressor runtime limits and optimize switchover from the heat pump to the boiler. Downs noted that while the system was new, the manual was easy to follow. "If you're already doing mini-splits and hydronics, this is very manageable," he said. The installer also credited Weil-McLain's ECO Calc Application Sizing Tool, which guided setup of system parameters and switchover logic.

For this application, the hybrid system is designed to allow the heat pump to meet demand down to approximately 15°F. In colder conditions or during long domestic hot water calls, the boiler supplements the heat pump without shutting it down, maintaining comfort while maximizing efficiency. In this installation, a 30-minute runtime threshold on the compressor triggers the boiler, ensuring fast response without sacrificing energy savings.

Downs reported approximately $600 in propane savings in the first season alone. "The propane deliveries noticeably dropped," he noted. "That, combined with stable indoor temperatures and quieter operation, made it a win for the homeowner."

Comfort remained consistent with no cold spots. Domestic hot water is stored at 140°F and tempered with a mixing valve for safe delivery, providing reliable service even during peak use.

A Thoughtful Investment

While the upfront investment for hybrid systems can be higher than traditional replacements, the propane fuel source made the business case compelling. Downs believes additional savings will become evident over time, especially as rebates become more accessible.

"This was about reducing environmental impact and operating costs. With the heat pump carrying the load for much of the year, that's exactly what we achieved," he added.

Downs views the ECO Hybrid System as an ideal choice for this low-temperature hydronic application. "The ECO Hybrid is a really smart upgrade as long as you evaluate the heat emitters and understand your reset curves," he said. It's not a one-size-fits-all solution, but if you're working with radiant floors or low-temp baseboards and looking to cut fuel costs, especially with propane, it's a great fit."

"This installation is a prime example of how a well-matched hybrid system can deliver real value"

Zachary Golden, Product Manager with Weil-McLain, added: "This installation is a prime example of how a well-matched hybrid system can deliver real value. With contractors like James leading the way, we're seeing high-efficiency systems work smarter for homeowners."

The hybrid installation offers long-term benefits in efficiency, comfort and performance – making it a model for future heating system upgrades in cold climates.

To learn more about Weil-McLain's ECO Hybrid System or to speak with an expert about emerging residential heating technologies, visit www.weil-mclain.com