

How a 1910 Church Became a Beacon of Clean Comfort



The West Concord Union Church, which also serves as a music school and community center, has entirely replaced its oil heating and conventional AC systems with heat pumps. The result: Year-round, carbon-free comfort in one of the town's most complex public buildings.



The condensers can extract hundreds of tons of heat every hour, even from frigid winter air.

Photo Above: The Church's three-story, 115-year-old sanctuary.

A Real-World Challenge—and Solution

The West Concord Union Church (WCUC) presented just about every obstacle a building owner might face when considering a heat pump retrofit: a three-story, 115-year-old sanctuary with a vast expanse of uninsulated stained glass; multiple small classrooms used by the Concord Conservatory of Music; and a high-traffic foyer built in 2017.

“An industry change has occurred—away from fossil fuels,” says George Comatas, principal engineer at Norian/Siani Engineering, which designed the system. “WCUC shows that almost no building is too old or too complicated for this transition.”

The \$1.4 million project replaced the church's old oil boilers—once responsible for emitting the equivalent of 144,000 pounds of CO₂ annually—with four cold-climate Mitsubishi air source heat pumps, augmented by three earlier-installed units. A Variable Refrigerant Flow (VRF) system delivers precise comfort control to the smaller rooms, addressing the demands of each space.

Technology That Fits the Building

- In the sanctuary, aesthetics ruled out conventional minisplit units hanging high on the walls. The church installed a ducted heat pump system, with floor vents that provide quiet, unobtrusive heating and cooling.
- The music classrooms, too small for typical ductless indoor units, benefit from the VRF system's ability to modulate refrigerant flow, ensuring rooms are never over-conditioned.
- The modern foyer, with its fluctuating occupancy, is served by a zone-responsive system that adjusts in real-time to foot traffic and weather conditions.



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The Project at a Glance

Components: The WCUC heat pump system consists of seven heat pumps. These include

- three newly installed Mitsubishi variable refrigerant flow (VRF) condenser units. Model numbers PUHY-HP240TSNU-A, PUHY-EP264TSNU-A and PUHY-EP72TNU-A.
- a newly installed Mitsubishi non-VRF heat pump. Model # MUZ-FS06NA-UI.
- three Mitsubishi non-VRF units installed in 2017. Model numbers MUZ-GL24NA-UI, MUZ-GL18NA-UI, SUZ-KA12NA.TH.

Cost of the new heat pump system

\$1.4 million

Contractors

Norian/Siani Engineering designed the system.

Fraser Engineering installed the system.

Rebates and Incentives

\$50,000 rebate from CMLP

To learn more about heat pump technology and rebates available to Concord businesses and organizations, visit [Heat Pumps for Heating & Cooling](#).



Practical and Ethical

Thanks to Concord Municipal Light Plant (CMLP), which now supplies 100 percent decarbonized electricity, WCUC's new system runs on clean power—providing heating, cooling and dehumidification without emitting a single pound of climate-warming carbon. The church received a \$50,000 rebate from CMLP, one of several incentives available to local organizations.

For the church's pastor, Hannah C. Brown, the project was ethical as well as practical. "Our building isn't just a building—it's an expression of our values," she says. But even for secular enterprises—schools, nonprofits, businesses—the message is clear: Modern heat pump systems are not only viable but desirable, even in the most challenging retrofit scenarios.

Says David Sedlock, one of the church's stewards and project manager for the heat pump conversion, "If you can heat a large, complex building like this one with heat pumps, you can heat anything."



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