Will It Feel Warm? Heat Pumps and Comfort

All Saints Bedworth — a Net Zero Demonstrator Church

Heat pumps are controversial in church circles, and I think I understand why. The worry isn't just about cost—it's more instinctive than that. That people will sit in their coats feeling miserable, and quietly blame whoever made the decision to change the heating—even if they were cold before.

It's a legitimate concern. And it deserves a serious answer rather than being brushed off.

What is ‘warm’?

Here's something I've observed over five years of managing the heating at All Saints, and which our winter experiment in 2025-26 confirmed. For a given air temperature — say 16°C — people's experience of warmth varies considerably depending on conditions that have little to do with the thermometer reading.

On a Sunday morning when the radiators have been warming up for several hours, the congregation arrives from the cold and feels comfortable. The temperature might be only 16° but the radiators are warming the space. On a Monday morning when the heating may or may not have come back on after falling back from Sunday’s 18° or more, and a cool night, the thermometer might read the same 16°C, but the radiators are not yet warm and people feel cold. Same temperature, different experience.

The reason is radiant heat. Roughly half of our subjective experience of warmth comes from the temperature of the surfaces surrounding us—walls, floor, ceiling, pillars. When radiators and stone surfaces are warm and radiating heat outward, the body receives that warmth directly. As the saying goes, we’re warming the people not the air. When the surfaces are cold — even if the air is technically the same temperature—those same surfaces are drawing heat away from the body rather than adding to it. The air warms up in hours. The walls take days.

Our 2025-26 experiment

Starting in October and through the winter of 2025–26, we ran the Sanctuary heating at 16°C continuously (24/7) rather than in the usual pattern of heating up for services and cooling down between them. The services were then being heated to 18° from that 16° base, instead of from 12° or 14° which it used to fall back to. The effect on comfort was striking.

I asked our Rector, Dave, if he had any comment on the heating experiment. He said:

> *“Traditionally we have tried to heat the church for the services and activities that happen in it. It would take a long time to warm up and often wouldn’t reach a suitable temperature. For prayer meetings, visitors, small groups and staff in the church outside of these times it was cold and uncomfortable. What we discovered, following our experiment keeping [the Sanctuary] at a constant temperature through last winter, was that it cost about the same and was a lot more comfortable for everybody — a revelation. We will never be going back to our old heating patterns. I am so grateful for our journey to Net Zero and these small wins we keep discovering along our way.”*

The stone pillars, which in a conventionally-heated church act effectively as cold radiators drawing heat away from the body, were now radiating warmth back to the people. It wasn't warm in the way a centrally heated house is warm—people might still keep their coats on if they wore them to church—but never *really* cold. That's the distinction—not hot, but comfortably warm.

There was no temperature stratification to speak of. In conventional church heating wisdom, warm air rises and the congregation sits in the cold while the heat accumulates uselessly near the apex. Our measurements found the temperature at the apex was virtually the same as at pulpit level—within a degree or so. The sandstone pillars and walls were doing the work, holding heat steady throughout the volume of the space.

When Remembrance Sunday came—doors open for extended periods as the town gathered—the building maintained its temperature far better than we expected. The warmed stone handled the disruption. People were comfortable, and the gas use not hugely different.

A patchwork of conditions

All Saints has two distinct heating zones. There's the Sanctuary, which is the two-thirds of the footprint which people imagine when they think 'historic church'. That's used at least three days a week, often more. This air space includes the Nave, the Vestry and the Side Chapel. There are no external doors, as the entrances are via draught lobbies in the Parish Centre, but it still behaves thermodynamically as a historic church. The old cast iron radiators will be supplemented with modern fan convectors and floor trench heaters, which can be run warm or boosted if needed.



We will keep our unusual historic cast iron radiators

But the West end has been 'reordered' as the Parish Centre, back in 2000, with offices and meeting rooms on two floors. Divided by stud partition walls and glazed dividers, it behaves and is heated much more like modern offices. The fan convectors here will maintain a higher background temperature during the day (18° in offices, 16° in hallways) but rooms can be individually boosted if occupants require.

The Studio office (the old Choir Vestry) presents our toughest challenge. Reached down three steps from the Vestry, it adjoins an unheated cellar and a turret that creates a 'chimney effect'. Also, it is part of the Sanctuary heating circuit rather than the modern offices area, so it will have the Sanctuary heating strategy—16° overnight and 18° on Thursday and Sunday. We have added secondary glazing and ceiling insulation to mitigate the heat loss. Because work here is sedentary, we are installing an oversized convector and might later consider infrared panels to ensure a workable environment through the week.

Where heat pumps fit

Air-to-Water heat pumps are designed to run in exactly the mode that our experiment modelled. They work best at low flow temperatures—45–50°C rather than the 60–75°C of a conventional gas boiler—running steadily rather than in bursts. That steady, lower-temperature output is ideal for gradually saturating the thermal mass of a stone building and keeping it there.



Mock-up of the Parish Centre heat pump

This is sometimes presented as a disadvantage of heat pumps—they can't just blast out heat on demand. For many church settings, accustomed to conventional blast-and-cool heating patterns, that's a fair concern. But for a busy church used more than a couple days of the week, the 24/7 approach is not only possible—it's actually the most efficient and comfortable way to heat the building. The heat pump fits the physics of the building rather than fighting it.

In addition, these new fan convectors can be reversed to provide a measure of cooling during heatwaves. As the Sanctuary reached 29° on several days this summer, and offices were over 30°, this might be more valuable than we used to think.

Subjective vs objective warmth

Human comfort isn't just a number on a readout; a few distinct things influence how we actually feel the temperature, subjectively.

- **The radiant component** - is warmth being radiated towards you or being drawn away from you? If the outside temperature is over 16° it's highly unlikely that the church heating will even switch on and it will feel colder than it did during the winter.
- **Being active** - when the Youth Impact group occupy the Sanctuary, they are actively doing all kinds of things so 16° is perfectly comfortable. The daily morning prayer meeting in the Side Chapel is warmer than it used to be, but still feels chilly - the new secondary glazing there will help.
- **What we wear** - many older members come into the church and expect it to be cool, so when it's cold enough to be wearing a coat outside they will keep their coat on for the service. However, many who are younger move from a warm house (at summer temperatures) to a warm car with their summer clothes, and expect to be warm in church. We saw this after the May heat wave, when younger folk had got used to wearing their summer gear in 25° and found 20° in the church felt cold.

Managing expectations honestly before the system goes in is worth the effort. We've tried to be straightforward with our congregation: the building will feel different. The warmth will be steadier and more even, rather than going hot-and-cold. We'll see what people think over winter.

Still to learn

At the time of writing, the gas has been disconnected and the heat pumps are due to be installed in August 2026. Everything in this article about comfort is therefore based on what we learned from running the church continuously at 16°C through the winter of 2025–26, together with visits to churches already using heat pumps and our understanding of how these systems work.

We haven't yet experienced a winter with the new system in operation. I'll report back after we've lived with it through a full heating season to see how well those expectations match reality.

So, will it feel warm?

Based on everything we've learned so far, I think the answer is yes. Not because heat pumps produce more heat than boilers, but because they encourage a different way of heating the building.



The newly capped gas supply

Rather than repeatedly warming the air from cold, the aim is to keep the building itself gently warm, allowing the stone to become part of the heating system instead of working against it. The result isn't a church that feels like a centrally heated living room. It's something better suited to the building: a steadier, more even comfort that's available throughout the week, not just during services.

We'll know much more after our first winter with the heat pumps. But our experiment has already shown that the heating strategy matters at least as much as the heat source. That's what gives us confidence that a heat pump can make this church not just lower-carbon, but genuinely comfortable.

Christine Rigden
Sustainability Lead (volunteer)
All Saints Bedworth
eco@bedworthparish.org