



19-year journey in monitoring and reducing a home's energy consumption by more than 50%



Overview

Age/Period:	1960
Type:	4 bed extended semi-detached
Fabric:	Bath stone faced cavity wall insulated masonry, double glazing
Area:	Fairfield Park
Type:	Extended semi-detached
Years in residence:	21

Key Features

- Ⓢ Solar PV and home battery
- Ⓢ Time of use electricity tariffs
- Ⓢ EV charger
- 💡 Energy efficient appliances and lighting
- 🔧 Cavity wall insulation
- 🔧 New double-glazed windows
- 💡 Behavioural change

Introduction

Ron and Kate moved into their Fairfield Park home in 2003. Initially, they weren't overly concerned with energy efficiency due to low fuel costs and the demands of raising a young family. However, over time, they became more aware of their environmental impact and decided to take steps to reduce their carbon emissions and contribute to climate action.

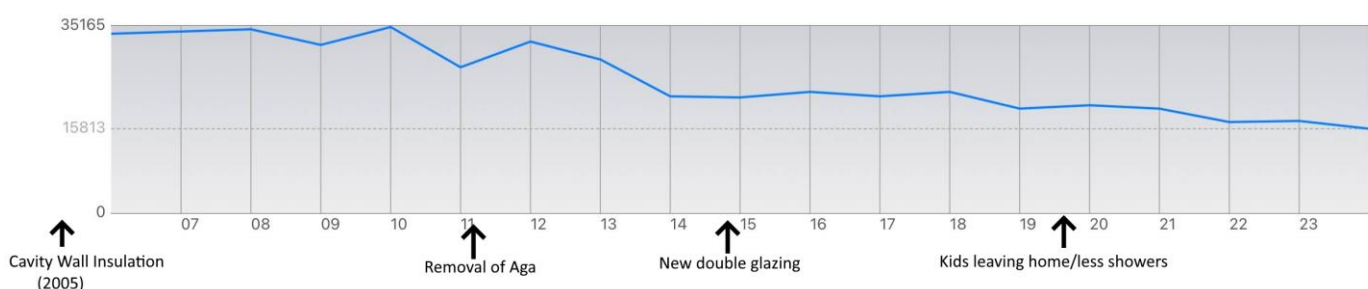
Over the past 21 years, Ron and Kate have gradually made their home more energy efficient. They've implemented several upgrades, including cavity wall insulation, upgraded windows, an electric vehicle charger, removal of the Aga stove, upgraded double glazing, solar panels, and a battery storage system.

We wanted to bring our home into the 21st century without losing its charm and character. To make it as sustainable as possible and financially viable, the aim was to use first and foremost low-tech solutions (like insulation, smart LED lighting and double glazing), with the ecotechnologies as additional features. It's also proven a good investment decision, as the changes pay themselves back over time.

Features

Ron has been tracking the home's gas and electricity consumption using an app for the past 17 years. This has helped the family understand the impact of their energy-saving upgrades:

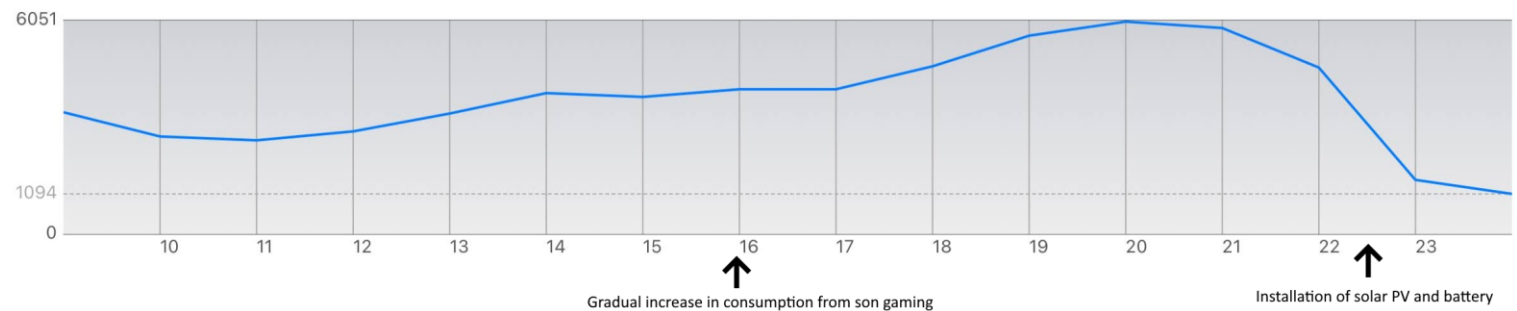
Annual Gas Consumption since 2007





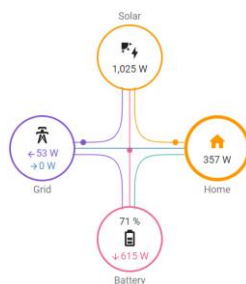
Over this time, Ron and Kate have reduced their gas consumption by half. They've implemented several energy-saving measures, including cavity wall insulation in 2005 (saving approximately 20% of annual heating costs) and loft insulation in 2007. The Aga stove, which came with the home, was removed as it consumed a significant amount of energy, especially during the summer. New double glazing installed in 2014 seems to have had the most significant impact on reducing energy consumption. Additionally, with their children leaving home, shower usage has decreased, further lowering energy bills.

Annual Electricity Consumption since 2009



Before 2020, electricity consumption was increasing due to lifestyle habits, in particular during Covid lockdowns. They've always prioritized energy-efficient appliances, including an A++ rated fridge freezer. Recently, they've also switched to LED lighting, replacing halogen bulbs, which has reduced lighting consumption by more than 80%.

In March 2023 they had 12 solar PV panels (4.4 kWp) installed along with a Solax inverter and 5.6 kWh battery system by a local Corsham based installer. This and reduced energy use (e.g. installing LED lighting in kitchen and bathrooms) has delivered a significant 80% reduction in mains electricity consumption since 2023. Daytime solar electricity is stored in the battery for later use in the evening. They use the Octopus Agile Time of Use electricity tariff to further charge the battery at cheap rates overnight. Home Assistant is used to manage battery charging and to keep an eye on where electricity is being distributed within the home:



When they generate excess electricity, they receive 15p/kWh income from Octopus Energy. They also have a solar diverter which is used when

electricity is really cheap to heat the hot water tank rather than using gas.

They have also installed an EV charger to support the parking space, which is occasionally rented out to visitors to Bath.

Lifestyle Changes

They have made other behavioural changes to their lives including:

- Cycling into town
- Recycling plastic bags to Morrisons
- Avoiding flying
- Using trains rather than their car
- Taking cycling holidays
- Water butts for recycling rainwater
- Making their garden more bio-diverse including a pond full of newts

Recommended Installers

Beazer Electrical Services, Corsham
Darrington Electrical Services, Bath