

# Retrofitting homes to improve energy ratings and reduce emissions

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University of Melbourne researchers have discovered how to retrofit homes to be more energy efficient, reducing greenhouse gas emissions and cutting electricity bills significantly.

In Melbourne, 95 percent of homes were built before 2005, making them noncompliant with current [energy](#) efficient standards and responsible for emitting 80 to 90 percent of the city's greenhouse gas emissions.

University of Melbourne Department of Infrastructure Engineering Professor Greg Foliente examined the composition of Melbourne's housing stock over 31 government areas to determine what it would take to bring the homes up to a six-star energy rating.

"Bringing the city's housing stock to a six-star energy rating would lead to a 73 percent reduction in [greenhouse gas emissions](#) and significant cuts to [electricity bills](#)," Professor Foliente said.

"This would save the city about 2.35 terawatt hours per year in heating and cooling, equating to around \$3,784 million."

In order to retrofit a [house](#) to six star standard – the minimum standard for new houses – the homeowner would need to implement a range of energy saving solutions, including draught sealing of windows, doors and chimneys, improved air vents, ceiling and wall insulation, secondary glazing and external thermal curtains.

While the cost of a full energy retrofit could be in the range of \$42,000-\$63,000 for a typical detached house, and \$9000-\$18,000 for a semi-detached house depending on its age, Professor Foliente said it would be worth it over time.

"If homeowners don't consider retrofitting their home to improve its energy rating, they're missing an opportunity to save money in the long run," Professor Foliente said.

"Our research looked the amount of time it takes for a household energy retrofit to start to be paid off in operating energy savings, so that the homeowner is 'financially neutral'," he said.

"We found that in some Melbourne suburbs it could take just nine years to recoup the costs of lifting a [home](#)'s energy rating from 1.5 stars to four stars. And it's better to aim for an energy rating of four rather than three, or six rather than five, because the cost difference is minimal and the payback time around the same."

Provided by University of Melbourne

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