

Residential Efficiency Scorecard Report



The Customer
16 Street St
Someplace, VIC

14 September, 2024

Dear Customer,

Re: Victorian Residential Efficiency Scorecard assessment.

Thank you for the opportunity to provide you with a Scorecard assessment. Your Scorecard certificate is attached to this report and reflects an adjusted, final rating based on further research and verification of your unique features. I have included a link to a fact sheet on how to read your Scorecard certificate in the email with your result. However, feel free to contact me if you have any questions about the assessment, certificate, or report.

You indicated that you are interested in upgrading your home's cold and hot weather comfort as well as building fabric improvements and replacement or inclusion of new fixed appliances. This report includes several solutions that will help to achieve your goals.

Thank you again for engaging my service. Please don't hesitate to contact me on 0457-492-320 or at ScoreHomeEnergy@gmail.com if you have any questions or would like any further assistance.

Yours sincerely,

A handwritten signature in black ink, appearing to read "J. Townsend", is written over a large, light grey watermark that says "EXAMPLE - Content not approved".

Jason Townsend

Assessor

Residential Efficiency Scorecard Report



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Overview

Property Address:	X
Assessment Number:	ARNxxxxx
Date of Assessment:	05/09/2024
Scorecard Star Rating:	x.x/10 (x.x with solar PV)

Some of the features of this home that contribute in a positive way to the star rating include:

- Calculated approx R2.0 ceiling insulation above your Lounge and Kitchen.
- Up to R1.5 insulation everywhere else.
- Efficient RCAC used for heating/cooling in major use areas.
- Small footprint conditioning space (69m²) - a BIG influence on your high star rating.
- Double glazed windows in your newer extension.
- Wall insulation assumed in your extension (due to the construction date).

Priority upgrades

Some of the opportunities to improve the comfort and efficiency of your home are listed below in order of priority:

1. Seal your wall vents!
2. Additional ceiling insulation.

Longer term upgrades

Once you have completed your priority upgrades, you can start planning for the longer term upgrades you would like to implement. These opportunities are listed below:

- Replace gas heater with efficient reverse-cycle air conditioner in KITCHEN.
- Install heavy drapes with pelmets OR close-fitting cellular blinds in high-occupancy areas (kitchen, dining/lounge).
- Replace your gas hot water with an Electric Heat Pump
- Install Solar PV.

Home Assessment Results

BUILDING SHELL

In the tables below we refer to the shell of the building. This means all the materials and means of construction of your roof, walls, floors, and windows. Roughly, the amount of energy transfer each of these contribute to is represented below:

Source: Sustainability Victoria

My job is to help you reduce the amount of losses/gains so that you achieve a higher level of comfort for less energy!

Air Leakage

Even small gaps in the shell of a house can have a huge impact on comfort and can result in warm air either leaving or entering a home in an uncontrolled way. Sealing gaps and cracks is the cheapest thing you can do to drastically improve your comfort and thermal performance.

Typical areas of a home where draughts are commonly experienced are:

The impacts of these various draughts can be seen in the figure below:

Source: Sustainability Victoria

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In your home I found:

An example of the MANY wall vents which are letting warmth escape from your home!	Leaky pet doors.
Bathroom exhaust fan with no draught stopper.	
Gaps between panes of sliding windows in the Sunroom.	

- Pet Doors – Front and back.
- Exhaust fans – Unsealed exhaust fans in inner bathroom - allowing any warm air to escape outside.
- Windows – Timber framed windows with single glazed glass through most of the house. No weather seals by default for these older, original windows. Double glazed, weather-sealed windows in your newer extension.
- Walls – Original air vents in most rooms venting hot air to outside!

I recommend:

- Install a self-sealing exhaust fan mechanism, like a “DraftStoppa”, to all exhaust fans. These are available under the VEU program, more details on the last page. IXL heat lamp exhaust fans, typically in bathrooms, will require replacement to a self-sealing all-in-one assembly like this one.
- Your original timber sash windows are leaky and gappy. If you plan to overhaul them in the future, then you could consider sealing them up using gap filler (which comes off later). At the very least some door snakes sitting on top (of the overlap between panes) will help with leaks.
- Install a sliding window draught stopping brush strip on the windows in the back sunroom.
- Cover any original wall vents - these are no longer necessary (from back in the kerosene lamp days). Temporarily, some double-sided tape and cut-out plastic bag will do the job. Long term, plaster them over or install 3mm MDF sheet cut-to-size and paint.
- Practice zoning as much as possible - closing doors to areas that do not require heating/cooling. I think you do this anyway, but worth the reminder!

Insulation

Insulation slows the movement of warm air through the shell of a house and is one of the best value upgrades you can install - especially if your insulation is not right for your area.

But there is a point at which the amount of additional insulation becomes unnecessary - referred to as the **diminishing return of additional insulation**. See the chart below:

Another common problem is uneven coverage of insulation. People don't realise that the overall effectiveness (read: The ability to trap heat inside your house.) of insulation decreases dramatically with exposed areas of ceiling. In fact, as little as **5% uninsulated ceiling area can lead to a reduction in effectiveness of 43%**! See the chart below:

This is a very big problem that can be easily fixed with proper installation.

Ceiling Insulation

In your home I found:

Loose fill wool over your bedroom and the main entrance.	Newer glass wool batts over the lounge and kitchen.
----------------------------------------------------------	-----------------------------------------------------

- Full insulation coverage. Thickness (and effectiveness) varies.
- For MASTER BED and ENTRANCE: A calculated resistance of up to R1.5 in the ceiling - loose fill glass wool.
- For LOUNGE, KITCHEN: Approx R2.0 with these newer batts.

I recommend:

- Aiming for R3.0 level of ceiling insulation would be ideal for your location, and a cost effective investment. This would be best achieved by topping up the older ceiling insulation (above MASTER BED and ENTRANCE) with R2.5 glass wool batts. You can simply lay these on top of your existing insulation to boost it.

Wall Insulation

In your home I found:

- Rendered Brick Veneer construction throughout.
- Due to the year of construction and regulations at that time, no wall insulation is assumed in the original areas of your home.
- Due to the year of construction and regulations at that time, R1.5 wall insulation is assumed in the newer extension.

I recommend:

- Do nothing. It won't be worth the money.
- If the comfort level is low after making other changes, consider adding R2.0 wall insulation. The options you have are:
 - Blow in insulation. Installers will fill the holes that were made during the install, but it is up to you to complete sanding and finishing to match the interior or exterior paintwork.

Underfloor Insulation

Adding or upgrading underfloor insulation is generally lowest on my priority list. This is because:

- It's often really difficult to access most underfloors.
- Hot air rises, so it's less necessary than your ceiling (#1) and walls (#2).
- You can do a good job with ceiling gaps, using rugs, and carpeting / floor coverings.

In your home I found:

- Enclosed timber flooring throughout.
- No evidence of underfloor insulation.

I recommend:

- Do nothing. It will not be feasible to add underfloor insulation to your home.

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Windows

Windows can be the weakest point in the shell of a house and they allow a lot of heat transfer - both in and out of the house. There are a number of options to improve the performance of your windows with varying levels of effectiveness. The figure below shows the most common options and their ability to transfer heat:

Source: Sustainability Victoria

As you can see, while double-glazing is often talked about, it is NOT an option I recommend due to the cost (unless you were planning on doing renovations or additions to your home). Heavy, lined drapes with a pelmet are actually more effective at keeping warmth in - at a fraction of the cost!

Another means of energy transmission by your windows is the frame itself. But to a lesser extent, since the frame has such a small surface area compared to the panes themselves.

Source: Sustainability Victoria

Winter

The objective in winter is to keep hot air (generated by your appliances) from escaping your home. In windows, this happens via conduction through the glass and your window frames.

In your home I found:

- Timber framed, single glazing in original areas of the home.
- Double-glazed in the newer extension and for the EAST attic window.

In order of cost efficiency, I recommend:

- Where applicable, upgrade the window coverings to heavy lined curtains with a pelmet; or Roman or close fitting honeycomb/cellular blinds (mounted inside the window frames). This will help to prevent the warmer air inside the room from meeting the cooler air behind the curtain which creates draughts throughout the room. Prioritise high-occupancy areas of your home (Kitchen/Living/Lounge).
- Consider a low-e window film to improve their thermal performance. I've used Alpine Tint in the past but you're likely to have someone local who you can use. I would trial this in high-occupancy areas of your home.

Remember:

- In winter, keep blinds and curtains closed at night to help keep the heat inside. Open them when the sun is out, especially if the sun shines directly on the window and can help heat your room for free.

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- Ensure you use your windows to manually ventilate during the cooler months. Condensation can cause health issues and will usually appear when there is a 10 degree differential from inside to outside.
- If you experience significant condensation accumulation in the mornings, consider getting a window vacuum to efficiently remove it and reduce overall moisture content indoors.

Summer

In summer, the best way to keep heat from moving through windows is to shade them from the outside. Advanced windows such as double glazing will not do much to help keep heat out of a room if the sun directly hits the glass.

In your home I found:

Unprotected NORTH facing windows in your attic.	External shading for WEST facing bedroom window.
Shade cloth roller blinds for WEST facing front door and lounge.	No window coverings for EAST facing sunroom windows and door.

- Good external shading of WEST windows by your verandah and the presence of temporary shade cloth screening.
- No external shading for NORTH windows.

I recommend:

- Use your existing external shade awnings. Retract them in winter to let sunshine in.
- Consider external shading for your NORTH windows. A shade cloth blind like the one for your entrance verandah will do. OR check out the horizontal awnings I was talking about that create shading that won't affect winter time sun.
- If you're out for the day, remember to cover your windows before you leave so you don't come home to a hot house.
- Consider window tinting (as indicated earlier).

APPLIANCES

Once you've optimised keeping heat in (winter) and out (summer), then it's time to address adding efficient conditioning capacity to your home to boost comfort levels.

I will talk mainly about the heating of your home because, in terms of energy use, heating is BY FAR the largest energy use for your home, followed closely by water heating:

Source: Sustainability Victoria

Since the Scorecard process ignores removable appliances, refrigeration is not covered. A dishwasher is also a removable appliance. Cooking uses a fraction of your home's energy (and it is difficult to standardise the way people use their stove) so it is omitted as well.

Therefore, we look at the two biggest users of energy: Your heaters and water heater!

Space Heating

Heating is usually a large part of our energy cost in Victoria as we tend to heat our homes for about six months of the year. Improving the shell of your house will help to keep the heat inside, and efficient heating appliances will keep costs down.

In this home I found:

- 3.5kW reverse-cycle air conditioner in your LOUNGE.
- 3.5kW reverse-cycle air conditioner in your RUMPUS (new extension).
- Flued gas heater in LOUNGE
- Flued gas heater in KITCHEN
- Flued gas heater in RUMPUS

I recommend:

- If you use the RCAC units then you have the most efficient type of heating appliance in your home. Congratulations!
- If you were going to go all electric, you could consider installing another 3.5kW unit in your KITCHEN that would also help to heat the ENTRANCE area of your home.
- To reduce your gas heating bill, install a temporary curtain door (Noren) using a telescopic curtain rail. This will stop your warm air exiting and heating the rest of the house (unnecessary).
- Clean air con filters regularly (at least twice each year) to ensure your heater isn't working harder than necessary. Consider getting a professional "deep clean" every couple of years by a professional - Joel from Air Precision (trusted supplier) can help with that.
- Heat only the rooms you are using will reduce costs. Close the doors to rooms you don't need to heat.
- Consider installing ceiling fans to promote mixing of hot and cold air layers. Otherwise cold air will settle at floor level so you will likely feel warm while standing

and cool when seated! Use fan WINTER MODE (fans operate in reverse). OR you can buy pedestal fans and have them pointing at the ceiling which also works well.

- Use a smart device (Sensibo) to control your heaters with advanced timers, conditions, geofencing, and remotely while you're away from home!
- Set the thermostat at 18-20 degrees. Every degree higher than 20 will increase the cost of heating by about 10%.
- Consider contact heating devices, like an electric throw, to heat the person, rather than a space. These plug in appliances only use around 10% of the electricity of a RCAC space heater (and 5% of a plug-in resistive floor heater) and have in-built timers.
- Make sure you are dressed for winter.

Space Cooling

Cooling is usually a smaller part of our energy cost in Victoria as we only have a few really hot days each year. Improving the shell of your house will help to keep the heat out, but having efficient cooling will also keep costs down.

In this home I found:

- Reverse-cycle air conditioner in LOUNGE.
- Reverse-cycle air conditioner in RUMPUS.

I recommend:

- Practice zoning by cooling only the rooms you are using, you will reduce costs. Close doors to rooms you don't need to cool.
- Set the thermostat at 23-26 degrees. Every degree lower than 23 will increase the cost of cooling by about 10%.
- Clean air con filters regularly (at least twice each year) to ensure your heater isn't working harder than necessary. Consider getting a professional "deep clean" every couple of years by a professional - Joel from Air Precision (trusted supplier) can help with that.
- Use fans to promote cross-ventilation with opened windows, especially when the outside temperature has cooled in the evening.
- Make sure you dress in loose natural fibre clothing.

Hot Water

Hot water is usually a large part of your energy bill, especially over winter. If you have a storage unit, some heat escapes from the tank, but the amount of water used for things like baths and showers is an important factor in how much energy is used to heat the water. It is also important the accessible hot water pipes and the relief valve are insulated where possible.

High-flow showerheads use a lot of water (up to 30 litres per minute) which means that you have to heat more water than if you had low-flow showerheads (6-9 litres per minute).

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In this home I found:

- A gas storage hot water system.
- 2 x 8L/min shower heads.

I recommend:

- Use water wisely! The assessment process required me to measure water flow with both taps on max, which most people don't do.
- When the time comes to upgrade, consider a heat pump hot water system which is the gold standard of efficient hot water generation.

Renewable Energy (Solar PV)

Rooftop solar systems can help to reduce your energy costs immediately once installed.

In this home I found:

- No Solar PV system

I recommend:

- Since you are thinking about going all-electric, then Solar will be beneficial for your home. You'll want to make sure installers take particular note of your shading situation. Install the biggest size system that will work on your roof to account for an EV in future.

Current incentives:

There are rebates available through Solar Victoria to have a PV system installed. The current offer is \$1,400 off the cost of a new PV system with the option of an interest-free loan.

Upgrade Modelling

In the tables below we have modelled “variations” using the Scorecard software to see what impact various improvements will make on your energy star rating. Changes are cumulative - meaning that changes are added on (and rating scores updated sequentially) in the order listed below.

Your Current Rating

Hot weather comfort	Cold weather comfort	Energy star rating	Energy cost/year
1/5	3/5	5.5 stars	approx. \$1,064

1. Initial Upgrades

Upgrade or change	New Hot weather comfort	New Cold weather comfort	New star rating
<ol style="list-style-type: none"> 1. Seal all areas of air leakage (wall vents!). 2. Draught stoppers for bathroom exhaust fans. 3. Upgrade all door seals to ensure gapless close. 4. Weather strip your timber sash windows. 	1/5	3/5	5.7 stars

Interestingly, ceiling your wall vents is not making a massive difference. I dispute this, and I back this up by saying that the positioning of all your wall vents and the fact that there are vents internally means there may be more leakage that is actually recorded.

2. Insulation Upgrade

Upgrade or change	New Hot weather comfort	New Cold weather comfort	New star rating
Redo ceiling insulation to R4.	2/5	3/5	5.8 stars
Add underfloor insulation batts.	2/5	4/5	6.2 stars

Since you are starting off with insulation, that's a good start. According to the tool, additional insulation will improve your summer comfort by about 20%, which I would agree with. Underfloor would help in winter - BUT it's not easy for you to do.

I would invest in additional ceiling insulation for your home.

3. Heating/Cooling Upgrades

Upgrade or change	New Hot weather comfort	New Cold weather comfort	New star rating
Replace current RCAC's with newer model.	2/5	4/5	6.3 stars
Remove all gas heaters.	2/5	4/5	7.6 stars
Add RCAC to Kitchen.	2/5	4/5	7.2 stars
Add ceiling fans to Lounge, Rumpus, Bedrooms.	2/5	4/5	7.2 stars

Removing your gas heaters makes a big difference to your star rating here. That is because of the reduction in overall energy use. And there are losses associated with the chimney flues. You can see it takes a dive a little with the addition of an RCAC in the KITCHEN.

Replacing of gas heating with RCAC makes sense, and is a logical step forward for your home.

4. Window Upgrades

Upgrade or change	New Hot weather comfort	New Cold weather comfort	New star rating
Add new close-fitting cellular blinds throughout.	2/5	4/5	7.2 stars

The only addition you could make here would be to do full heavy drapes and pelmets. Close-fitting cellular blinds are second from the top.

But as you can see, you likely won't lower your bills a huge amount doing this. It's not something I would rush into and do.

5. Hot Water Upgrade

Upgrade or change	New Hot weather comfort	New Cold weather comfort	New star rating
Upgrade to a Heat Pump HWS.	2/5	4/5	7.2 stars

Your current gas HWS is quite efficient. Until it's time to replace, or if you decided to get Solar PV, I wouldn't do anything..

If, however, you decided to get Solar PV, then I'd say you could look at replacing this, as you will have excess electricity that you could use with an electric HWS. Anything electric is a good step, but heat pumps use 1/3 of the electricity compared to standard electric.

By now you've just about reached the maximum efficiency according to the tool. In fact, eight stars is the highest a house can rate without solar panels!

Forecast Improvement in Energy Cost

Upgrade or change	Original energy cost per annum	Upgraded energy costs per annum	Energy star rating improvement
All suggested changes to building shell and fixed appliances. See Variation Modelling above.	~\$1,064	~\$480	+ 1.7 stars

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Resources

REQUEST YOUR ASSESSMENT FOR THESE JUICY DETAILS!

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