

Case 06.

Occupants:
Three adults and two children



Table 01.

Key upgrades (beyond the minimum 6star NatHERS) and Costs

The following are the upgrades and outcomes of a 38 square double storey house recently built in Officer. Please refer to the SECCCA Toolkit for further details of the key upgrades and rating systems

NUMBER	KEY UPGRADES	TYPE OF ACTION	COST EXTRA	POINTS
1	Maximised orientation of living spaces north	Passive	\$0	1
2	An appropriate Shading Strategy (including eaves, awnings, pergolas, reducing window sizes, block out blinds etc)	Passive	\$0	1
3	Upgrade insulation in roof and walls	Building Fabric	\$1600	1
4	Double Glazing	Building Fabric	\$10,000	1
5	Good – Excellent Air Tightness	Building Fabric	\$0	1
6	Efficient Solar Hot Water or Heat Pump (ie. not a Water Tank)	Appliance	\$0	1
7	Fully Electric	Appliance	\$2500	1
8	Efficient electric reverse cycle heating and cooling system	Appliance	\$3400	1
9	Solar PV System	Generate Power	Included (around \$5000)	1
10	12.4 Battery Storage System	Store Power	Included (around \$10,000)	1
	Deleted gas install -\$500	N/A	-\$500	
TOTAL POINTS			\$32,000	10
PAYBACK: 9 YEARS*				
SAVINGS AFTER PAYBACK BETWEEN 9 AND 15 YEARS**			\$17,214	

*Notes: additional \$4000 to met minimum 6 star requirement = Total \$26,000. Assumes typical bill saving of \$1602 annual electricity and gas \$1267 annually. Total \$1602 + \$1267 saving = \$2869 annual electricity and gas saving.

**However note that these participants included the cost of these efficiency upgrades within their budget, foregoing other household upgrades. Therefore it can be argued that the payback returns are instant at \$2869 per annum and \$43,035 over the course of 15 years.

Additional upgrades:

- Dark tiles to absorb heat in the winter and light colours external – roof.
- Built with Hebel – however some foam in places.
Plus sarking = R2 (but didn't put extra batts in the walls due to the Hebel, though we should have to bump it up further).
- Screenaway blinds – channel on sides.
Just charged for panelling \$5k in total ie. no real extra cost.
- \$800 extra for the insulated panel garage door.
- Door in hall to zone top and bottom of the house – excellent at zoning the house.

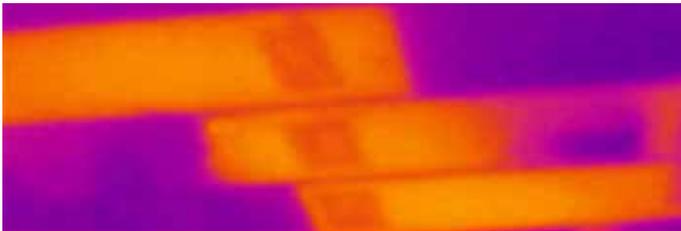
Table 02.

Energy Ratings and Power Bills

RATING / TEST / OUTCOMES	OUTCOME
NatHERS	6.9
Victorian Residential Efficiency Scorecard	9
Blower Door Test	4.1ACH50
Energy Bills	Electricity: \$50 - \$100 a quarter Gas: N/A



A number of areas were identified that were missing insulation. These will be rectified by the builder.



The thermal inspection shows up missing insulation in the roof space.



In many rooms window sizes were reduced and screen away blinds installed to block radiant heat from the sun.

Conclusion

This house achieved 10 out of the 10 key recommendations through the program at a cost of \$22,000 (excluding the battery system). As a result the house was highly rated 9 out of 10 under the Residential Efficiency Scorecard and with a NatHERS rating of 6.9.

The home was air tight within recommendations. As a result of the use of efficient appliances such as lights, hot water heating and heating and cooling coupled with solar this house uses zero net electricity.

No gas bills occur as the house is fully electric and when the power goes out due to the battery system they are able to keep basic lights and fridges on for quite some time. The occupants stated that they excluded other household features such as more expensive tiles and square set plaster corners to offset the costs of the energy efficiency upgrades. Therefore, by keeping it within budget the paybacks are instant.



Solar system facing north and eaves effectively shading windows.

Benefits

as reported by the homeowner:

- Moved in in June, in winter didn't need to put the heater on. Only a couple times when family were down from Queensland
- Love the cooktop - so easy to use, heat is instant and easy to clean. Would never go back (to gas).
- Electricity - generating more than using. Bills about \$50-100 a quarter. Most of that is the service fees. We use 14kw on average per day
- Was 24 - 28 degrees Celsius inside in winter while 14/18 degrees Celsius out. Just comfortable to live in all the time. Even when it's a bit hot, its not unbearable - not humid
- Don't hear any sounds outside from the double glazing - very quiet house

Barriers

as reported by the homeowner:

- Very disappointed with the builder, offer of the included battery and solar was a gimmick. Sales rep seemed to care, however at contract stage was very difficult to include energy efficiency aspirations. The actual delivery of the house was generally very poor and would never build with this builder again.



12.4kw Tesla Battery System with back up function to enable use during power outages.