

Solar WH

ROI scenarios for Solar Water Heater

Year	Scenario #1	Scenario #2 – loan	Scenario #2 – investment	Scenario #2 – balance	S. #2 – Asset + investment
1	\$4,083	-\$3,701	\$4,289	\$588	\$4,388
2	\$4,169	-\$3,856	\$4,487	\$631	\$4,241
3	\$4,253	-\$4,013	\$4,693	\$680	\$4,109
4	\$4,333	-\$4,174	\$4,909	\$735	\$3,993
5	\$4,408	-\$4,337	\$5,135	\$798	\$3,893
6	\$4,478	-\$4,503	\$5,371	\$869	\$3,809
7	\$4,542	-\$4,669	\$5,618	\$949	\$3,742
8	\$4,600	-\$4,837	\$5,877	\$1,040	\$3,694
9	\$4,649	-\$5,005	\$6,148	\$1,142	\$3,663
10	\$4,689	-\$5,173	\$6,431	\$1,258	\$3,653
11	\$4,718	-\$5,338	\$6,726	\$1,388	\$3,663
12	\$4,736	-\$5,502	\$7,036	\$1,534	\$3,696
13	\$4,741	-\$5,661	\$7,360	\$1,699	\$3,752
14	\$4,731	-\$5,815	\$7,699	\$1,883	\$3,834
15	\$4,705	-\$5,963	\$8,053	\$2,090	\$3,944
16	\$4,660	-\$6,101	\$8,424	\$2,322	\$4,083
17	\$4,595	-\$6,230	\$8,811	\$2,581	\$4,254
18	\$4,508	-\$6,346	\$9,217	\$2,871	\$4,460
19	\$4,395	-\$6,446	\$9,641	\$3,195	\$4,704
20	\$4,255	-\$6,529	\$10,085	\$3,556	\$4,990

Scenarios

Scenario #1 – capital invested at 4%, ongoing hot water bills

Scenario #2 – take out a loan to buy a SWH, invest capital. (incl.\$450 govt. grant)

Scenario #3 – use cash in bank to buy SWH

Hot water savings

% energy provided by SWH	50%
Kwh/month	100.46
\$/kwh	\$0.06
Savings / month	\$6
Annual increase in power	1.07
Int. rate (after tax)	0.05
Loan rate	0.07
Starting capital	\$4,000
% depreciation / yr	0.05
Loan period	10

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Monthly payments \$46

Assumptions:

1. Solar water system costs \$4000
1. 20 year design life for SWH.
2. Depreciation over 20 years.

Calculations

Litres Used / day	120	
Base temp. (deg. C)	12	
Target temp. (deg. C)	60	
Specific heat of water	4.19	4.186 kJ/kg °C
Total KJ / month	723340.8	
Total kwh / month	200.93	

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Scenario #3	S. #3 – Asset + investment	S. #3 – RRI	Asset value	Power cost (\$/kwh)
\$105	\$3,905	-2.40%	\$3,800	0.084
\$222	\$3,832	-2.14%	\$3,610	0.090
\$353	\$3,782	-1.87%	\$3,430	0.096
\$498	\$3,756	-1.58%	\$3,258	0.103
\$658	\$3,753	-1.27%	\$3,095	0.110
\$836	\$3,776	-0.96%	\$2,940	0.118
\$1,032	\$3,825	-0.64%	\$2,793	0.126
\$1,248	\$3,902	-0.31%	\$2,654	0.135
\$1,486	\$4,007	0.02%	\$2,521	0.144
\$1,747	\$4,142	0.35%	\$2,395	0.154
\$2,034	\$4,309	0.68%	\$2,275	0.165
\$2,349	\$4,510	1.00%	\$2,161	0.177
\$2,693	\$4,747	1.32%	\$2,053	0.189
\$3,070	\$5,021	1.63%	\$1,951	0.202
\$3,483	\$5,336	1.92%	\$1,853	0.217
\$3,933	\$5,693	2.21%	\$1,761	0.232
\$4,424	\$6,096	2.48%	\$1,672	0.248
\$4,959	\$6,548	2.74%	\$1,589	0.265
\$5,542	\$7,051	2.99%	\$1,509	0.284
\$6,177	\$7,611	3.22%	\$1,434	0.304

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