



## CHAPTER FOUR: Hot Water Systems

### INTRODUCTION

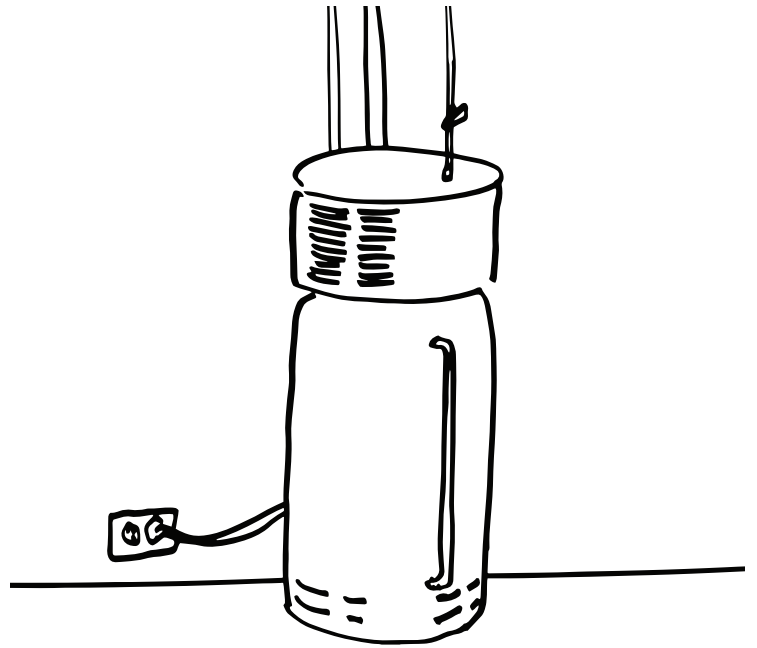
Hot water is an essential part of daily life, and it is also one of the biggest energy users in households. Traditionally, hot water systems have relied on fossil fuels such as gas or electricity generated from coal. However, with the increasing availability of renewable energy sources, households can now electrify their hot water systems using solar hot water systems, heat pumps, and electric hot water systems. This chapter will provide information on how to electrify hot water systems, the estimated costs and savings, and the benefits of using renewable energy sources.

## SOLAR HOT WATER SYSTEMS

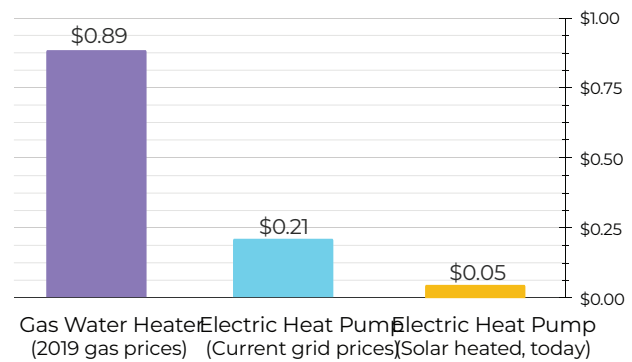
Solar hot water systems use the sun's energy to heat water. They consist of solar collectors that are installed on the roof, a storage tank, and a pump or controller. The solar collectors absorb the sun's energy and transfer it to the water, which is then stored in the tank for later use.

The estimated cost of installing a solar hot water system in Noosa Shire is between \$3,000 and \$7,000, depending on the size of the system and the complexity of the installation. The cost includes the solar collectors, storage tank, pump or controller, and installation. However, rebates and incentives are available to reduce the cost of installation.

The estimated savings from using a solar hot water system are significant. According to the Clean Energy Council, a solar hot water system can reduce hot water energy consumption by up to 90%. This can result in savings of up to \$700 per year on energy bills, depending on the size of the system and the household's hot water usage.



QLD water heating cost for one luxurious shower



Heating the water for a shower with a gas water heater costs about 89 cents with standard gas prices (2019). An electric heat pump water heater costs just 21 cents to provide the same hot shower using grid electricity. Using rooftop solar, that shower is costs just 5 cents, over 10 times less than a gas shower. Heat pumps for room heating provide the same cost benefits compared with gas heaters. An electric induction stovetop is cheaper than a gas stove and also provides health benefits inside the home, as the invisible pollutants from gas stoves cause significant negative health impacts.

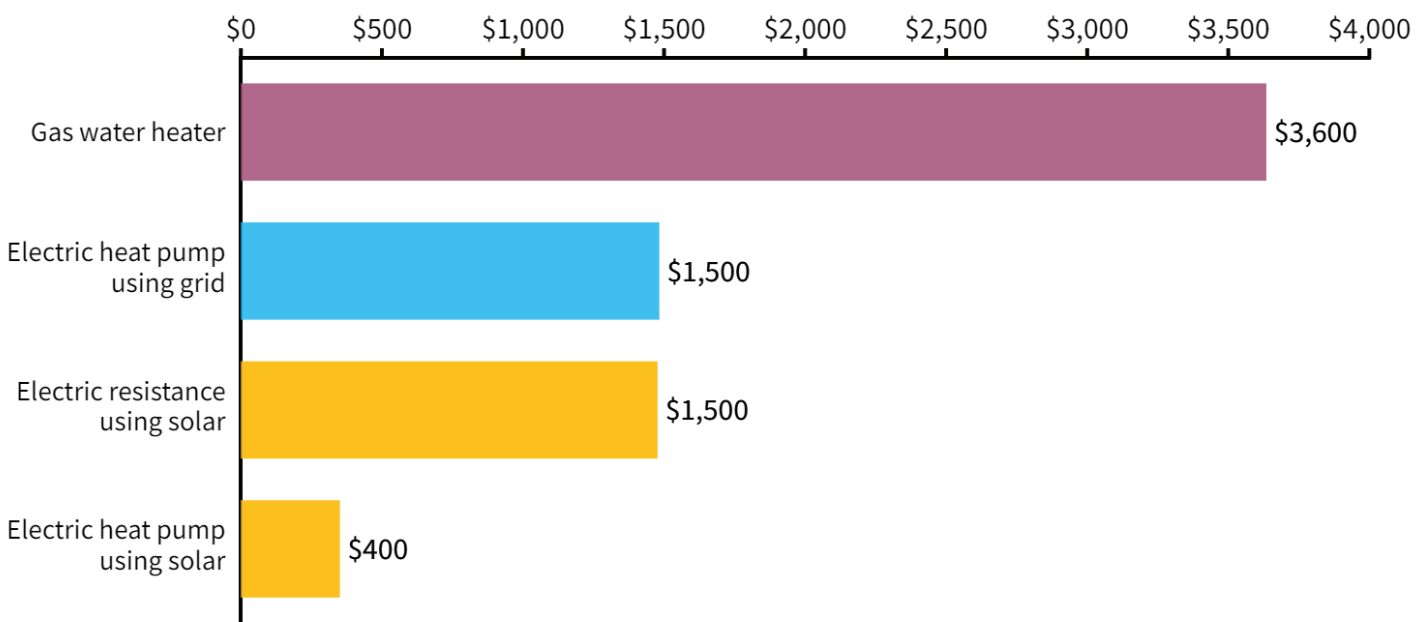
## HEAT PUMPS

Heat pumps are another option for electrifying hot water systems. They work by extracting heat from the air or ground and transferring it to the water. Heat pumps are highly efficient and can produce hot water at a fraction of the cost of traditional hot water systems.

The estimated cost of installing a heat pump hot water system in Noosa Shire is between \$3,000 and \$5,000, depending on the size of the system and the complexity of the installation. The cost includes the heat pump unit, storage tank, and installation. Rebates and incentives are also available to reduce the cost of installation.

The estimated savings from using a heat pump hot water system are significant. According to the Clean Energy Council, a heat pump hot water system can reduce hot water energy consumption by up to 65%. This can result in savings of up to \$500 per year on energy bills, depending on the size of the system and the household's hot water usage.

### Water heaters | Lifetime running costs



Based on average Australian water heating energy use of 2156 kWh per year. Solar capacity factor of 17.14%, \$838 /kW. Gas price \$0.15 /kWh. Grid price \$0.27 /kWh. Heat pump COP 4.0. Electric resistance COP 0.95. Gas COP 0.9. 10 year appliance lifetime.



## ELECTRIC HOT WATER SYSTEMS

Electric hot water systems are the most common type of hot water system in Australia. However, they are also the least efficient and most expensive to run. Electric hot water systems work by heating water using an electric element in the storage tank.

The estimated cost of installing an electric hot water system in Noosa Shire is between \$800 and \$1,500, depending on the size of the system and the complexity of the installation. The cost includes the storage tank and installation. However, rebates and incentives are available to reduce the cost of installation.

The estimated savings from using an electric hot water system are minimal. According to the Clean Energy Council, an electric hot water system can be up to three times more expensive to run than a solar or heat pump hot water system. This can result in higher energy bills, depending on the size of the system and the household's hot water usage.

## BENEFITS OF ELECTRIFYING HOT WATER SYSTEMS

There are several benefits to electrifying hot water systems using renewable energy sources. Firstly, it reduces greenhouse gas emissions and helps to mitigate the effects of climate change. According to the Clean Energy Council, a solar or heat pump hot water system can reduce greenhouse gas emissions by up to 75% compared to an electric hot water system.

Secondly, electrifying hot water systems can reduce energy costs and increase energy independence. By using renewable energy sources, households can generate their electricity, which can significantly reduce their reliance on grid power. Additionally, by using energy-efficient appliances and devices, households can further reduce their energy consumption and save money on their energy bills.

Thirdly, electrifying hot water systems can increase the value of a property. Studies have shown that homes with solar or heat pump hot water systems have a higher resale value than homes with traditional hot water systems.

## CONCLUSION

Electrifying hot water systems using renewable energy sources like solar hot water systems and heat pumps is a cost-effective and environmentally friendly way to reduce energy costs and greenhouse gas emissions. While electric hot water systems are the most common type of hot water system in Australia, they are also the least efficient and most expensive to run.

The estimated costs and savings for electrifying hot water systems vary depending on the type of system and the size of the household. However, rebates and incentives are available to reduce the cost of installation, making it a more accessible option for households.

By electrifying hot water systems, households in Noosa Shire can play their part in the transition to a low-carbon future. The estimated savings from using renewable energy sources can significantly reduce energy costs, increase energy independence, and increase the value of a property.