## **The solar water heater market**

Solar-powered water heaters and furnaces become increasingly popular due to their energy efficiency and environmental friendliness. According to a report by Forbes,"Solar water heaters can pay for themselves in as little as three to six years after the upfront investment."  
A report by Market Research Future states that,"The solar water heater market size was valued at USD 3.7 billion in 2022. The market industry is projected to grow from USD 4.01 billion in 2023 to USD 7.71 billion by 2032, exhibiting a compound annual growth rate (CAGR) of 8.50% during the forecast period (2023–2032)."

The primary market for solar powered heating is home or apartment owners and commercial businesses. You can summarise the market problem or opportunity as follows:

* There is a growing demand for energy efficient water heaters and furnaces. Energy costs continue to rise. According to a Forbes article, the average monthly utility bill for Americans is $430. However, the cost of heating a home and water can vary depending on factors such as the size of the home, age of appliances, climate, and energy costs in your state. The US Department of Energy predicts that installation of a solar water heater will save you 50-80% off your heating bill.
* Extreme climate conditions are driving the need for more energy efficient and functional heating systems around the world.
* Government mandates restricting greenhouse emissions are forcing more and more individual and commercial consumers to seek immediate water heating and furnace upgrades that comply with new regulations and reduce the carbon footprint of the consumer.
* Renewable energy solutions are popular. In many cases, local, state, and federal governments provide incentives such as low interest loans, tax credits, and reduced insurance costs to enhance early payback. The primary drawback of pursuing a solar solution is the high investment cost.
* Conventional water and heating systems are becoming less and less supportable as the industry moves toward more environmentally friendly solutions.

Solar-R-Us (SRU) LLC produces multiple solar-powered water heating systems. They are upgrading their current product mix. A new solar water heating system was proposed which will provide several advanced features and functions that will address the market problem.

Sarah Madison is assigned as the product manager for this effort. Sarah will need to work closely with an internal team consisting of product developers, manufacturing, marketing, operations, customer support, and sales. She will drive the completion of an internal assessment.

Sarah must also work with external partners to include distribution channels, suppliers, and interface with prospective customers. Sarah will lead the way to ensure the product management lifecycle is used to SRU's advantage. She will drive the completion of an external assessment.

There will be intensive collaboration required under tight deadlines to ensure the new product concept meets the needs of the organisation and market. In addition, Sarah will need to drive all market development efforts for the new product offerings.

SRU has a website that customers can access to view product offerings, purchase systems, and schedule installations. The primary distribution channels are online sales through Amazon, Home Depot, Lowes, Walmart, and Costco to name a few.

## **The product proposal**

The proposed new product design initially shares the following features, functions, and options.

* Solar collector options: Evacuated tube or flat plate solar collectors.
  + Evacuated tube solar collectors are a type of solar thermal collector that use a series of vacuum-sealed tubes to collect and store heat from the sun. They are highly efficient at capturing solar energy and are ideal for use in solar hot water and heating systems. SRU believes their new technology improves efficiency and reliability compared to competitor systems.
  + A flat plate solar collector is a device that uses solar energy to generate thermal energy. It is a type of solar panel that converts solar power into thermal energy, which can be used for various purposes such as space heating and water heating. The device consists of a flat, rectangular box with a dark-coloured absorber plate inside. Sunlight passes through the glass cover and is absorbed by the absorber plate, converting solar energy into heat energy. Flat plate collectors tend to be cheaper than evacuated tubes because they are a simpler design and easier to manufacture.
* Water tank and storage options: The new product line will offer three potential water storage solutions.
  + Only solar: The system produces up to 150 litres of hot water each day. Water flows directly from the solar collector to your tap. There is no need for a tank.
  + Conventional water heater: The solar collector is connected with a conventional water heater. The hot water is circulated to the heater for later use.
  + Instant water heater: The solar collector is connected with a smaller, more compact instant water heater. Instant water heaters never run out of hot water, last five to 10 years longer than tank heaters, are more efficient with no standby heat loss, take up less space and can even be installed on walls or outdoors with an anti-freeze kit, and eliminate the extra cost of keeping 40 to 50 gallons of water hot in a storage tank, so you waste less energy.

## **Competitive landscape**

There are a number of viable competitors in the solar water heating market. They include General Electric, Rheem Manufacturing, Racold, Sun Pad, Bosch, and more. Substitute product risks are high. Rivalry among competitors is also high. SRU wants their pricing to be competitive. However, they are leaning toward positioning their product based on features and functions.

Materials and equipment required include solar collector panels, storage tanks, heat exchangers, copper tubing, insulation material, and plumbing fittings. SRU will need to manage a complex supply chain to ensure all required materials and equipment are available at a reasonable price. Other competitors are vying for materials and equipment which gives suppliers the upper hand.

An advantage for SRU is that they are established. Establishing a new solar heating company is expensive. Fixed costs required to start up are high. There will likely be few new competitors in the short-term. A key goal is to increase the current SRU market share by 20%.

More and more buyers are entering the solar water heating market. Continual government regulatory changes and incentives to use a solar solution will continue to drive the market upward. Commercial buyers are looking to reduce their cost of goods sold (COGS) and increase profit margins. SRU performed a preliminary cost analysis and estimated a 40% return on investment (ROI) in Year 1.

The time it takes to schedule a solar heating installation depends on several factors, including local permitting and inspection processes, the size and type of solar panel system, and the utility company and interconnection. The time period for a solar panel system to be up and running can range from a few weeks to as long as half a year. This is an advantage for SRU. Demand is currently outpacing supply. Buyers who want installation earlier than later will have to pay a premium. Another key goal is to reduce customer installation waiting time by at least 50%.

## **SRU LLC differentiators**

* Most solar hot water systems have required professional installation with a price tag of USD 4,000 to USD 8,000. SRU believes they can provide a quality product with at least 10% savings over the competition.
* SRU believes its system is more user friendly, innovative, and aesthetically pleasing. SRU offers an easy to install application that provides for easy customer management of the system to include flow, storage, temperature, and low energy use options.
* SRU prides itself on possessing ground breaking technology that exceeds anything the competition can offer. In particular, their solar panel technology. This includes high-efficiency solar cells that can convert more sunlight into electricity, bifacial solar panels that can capture sunlight from both sides and increase energy output, flexible solar panels that can be installed on curved surfaces and integrated into various applications, and transparent solar panels that can be used as windows or skylights and generate power without blocking light.
* SRU's system can reduce carbon dioxide emissions. SRU estimates annual reduction corresponds to 100 planted trees.
* SRU's system has fewer components than the competition's systems and is virtually maintenance free.
* SRU's insulation design allows the tank to maintain high water temperatures longer than most competitive products. An initial engineering goal is to improve efficiency by 25%.