

## Making Things Visible

# What's in your electric bill?



INTRODUCING /

EXEL WATER HEATER SYSTEM



- Equitable & Affordable: Save 20-30% on energy bills, see ROI in a year
- Decarbonize: Demand & Carbon footprint reduction of 1,200 lbs/yr
- Cleantech Energy: DC Powered, Inverterless, Patented EXEL Heating Element

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## What is the difference between solar thermal water heaters and Apparent's EXEL Water Heating System?

Apparent's EXEL water heater is a solar water heater that uses sunlight to produce electricity through photovoltaic (PV) panels. The electricity produced is used to heat the heating element in the water tank to produce hot water. Solar thermal water heaters use the sun's heat (thermal radiation) and transfers the heat to water (or other fluid) circulating through piping in a collector system. Both use the sun to generate energy to heat the water in the tank, but solar resources - light or thermal - used are different.

#### What is unique about Apparent's EXEL Water Heating System?

The Apparent EXEL water heating system has a streamlined design using DC power from solar panels to heat a proprietary, low power, heating element to heat the water. This design offers a more advanced, inverterless, and efficient solution that complements conventional AC powered water tanks providing 24/7 hot water without the cost of batteries compared to traditional solar thermal and other PV-only solar water heating systems.

#### What are the benefits of using a solar water heater?

Using a solar water heater can help reduce your energy bills, lower your carbon footprint, and may in some instances, increase the value of your home. It is also a sustainable and environmentally friendly way to heat water for a low initial cost. Once you have paid for the installation, you will be able to heat water with solar, reducing water heating bills over the life of the system.

#### What does it take to install Apparent's EXEL Water Heating System?

Apparent's EXEL Water Heating System includes solar PV panels, a hot water tank, data controller card and our patented heating element. Most water heaters will require at least one control card and a heating element. These components are easy to install by a qualified professional and designed with safety features and an online interface for easy setup. The control card uses low voltage circuitry (below 60V), reduces the need for additional plumbing and pumps, and conforms to industry PV installation standards.

#### What are the savings from Apparent's EXEL Water Heating System?

For a typical residential, single-family household, this system can result in daily savings of 4.2 kWh/day. In Hawaii, this translates to approximately \$2.10/day or over \$700/year, with demand reduction, and 1,200 lbs/yr reduction in carbon footprint.

### Can Apparent's EXEL Water Heating System be used in cold climates?

Yes, Apparent's EXEL Water Heater is uniquely designed to be energy efficient (75% less voltage than standard heaters) and can power up to start making hot water even with minimal amount of sunlight in cold climates. As long as the solar panels remain unobstructed (by snow or leaves), the solar panels can produce power and hot water using Apparent's EXEL Water Heating System, saving money even when it's cold and cloudy outside. Since the energy to heat the water comes from the sun, grid-connected heating as backup is typically recommended.

#### What is the environmental impact of a solar water heater?

Solar water heaters can significantly reduce the carbon footprint of a home by reducing the need for electricity or gas to heat water. This can help reduce greenhouse gas emissions and combat climate change by lowering fossil-fueled energy use. For a typical household using Apparent's EXEL Water Heating System, changing and increasing the water temperature by 30°F, can reduce the carbon emissions by 1,200 lbs/yr.

#### How does Apparent's EXEL Water Heating System Work?

The EXEL water heating system uses solar energy (sunlight) to produce hot water in the water tank. The solar photovoltaic (PV) panels convert sunlight into electricity which is then used to power up the ExElement to transfer heat to the water. The ExElement is a uniquely designed DC heating element that more efficiently heats up at lower voltages, thus helping you save energy every time you use hot water.