



SOLAR THERMAL EXPLAINED

Monitoring solar thermal systems, a renewable resource.

Understanding Thermal Energy in Solar Hot Water Systems

SolarWave measures and reports energy in five different ways:

1. Load: Hot water demanded

This is the amount of thermal energy used by the hot water systems of the building. We measure the percent of the load met by solar energy.

2. Solar Resource: Available solar thermal energy

This is the maximum amount of thermal energy available to the collectors, given the intensity of sunlight and the ambient temperature. This is used to evaluate the efficiency of the system and optimize its production.

3. Solar Production: Thermal energy generated

When the sun hits solar collectors, they generate heat. This thermal energy is generally used to heat the water in a storage tank, where it is stored until needed. Solar Production is the thermal energy actually generated by solar hot water collectors and delivered to the tank.

4. Solar Contribution: Thermal energy delivered

When a hot water tap is turned on, hot water flows from the storage tank to meet the load. The water loses heat while it is being stored, so solar contribution is generally lower than solar production. If there is little or no load in a given period, it can be significantly lower.

5. Fossil Fuel Displacement: Fossil fuel that would be required to replace solar contribution

Solar hot water systems are paired with a conventional gas, oil or electrical system which supplements delivery of hot water when solar cannot meet the load. Fossil Fuel Displacement measures the fossil fuel that would be required by the conventional hot-water system to meet the load that is instead being met by solar energy.

Ultimately, the value of the solar contribution is the fossil fuel displaced.

