

PV Energy Community Case Study:

Warthausen Primary School Warthausen, Germany



The municipality of Warthausen is located in South West Germany in the federal state of Baden Württemberg, close to the Switzerland and Austria borders.

In 2013, a grid-connected photovoltaic system was installed on several roofs of the local primary school. The PV system is owned and run by the local energy cooperative called Energiegenossenschaft Riss. In order to have the system installed on the local school the energy cooperative is leasing the roof off the municipality.

Energiegenossenschaft Riss currently has around 260 members who have all invested in various renewable energy projects in the area. The energy cooperative is open to everyone and operates as a grassroots democracy. This means that each person who owns shares in the cooperative has got a voting right.

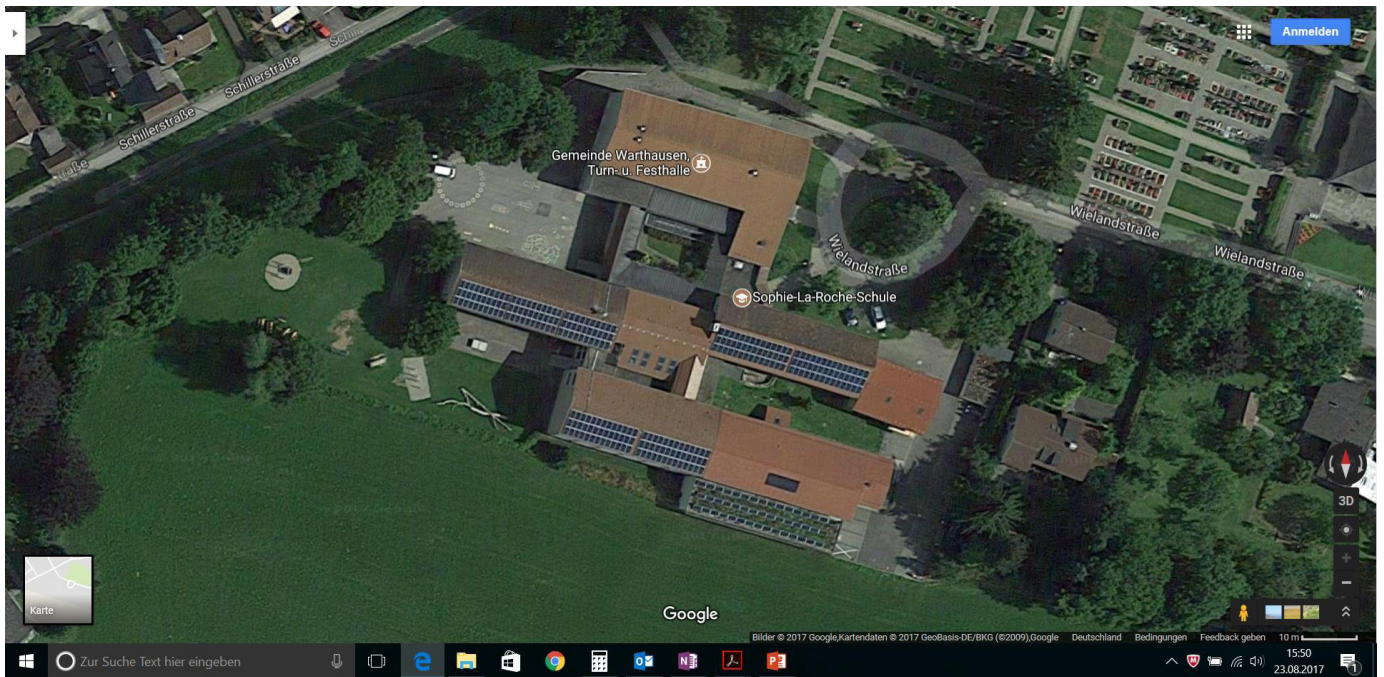
People join the cooperative to actively support their local energy transition and earn money through renewable energy projects, allowing them to contribute to climate change reduction. Since some of the cooperatives members are also representatives of the municipality their cooperation with the municipality is very close.

The grid connected PV system is set up so some of the electricity that is being generated is consumed directly by the school itself and the surplus energy gets fed into the grid, receiving a feed-in tariff.

The ratio of self-consumption and feeding into the grid is between 25-35% and 65-75%. In 2016, 37.27% of the annual electricity consumption of the school was covered by the PV system, whilst the annual electricity consumption of the school was 59.790 kWh.

The size of the PV system is 76kWp (DC) and 68 kVA (AC) and it is installed on several roofs of the local primary school. When planning the system Energiegenossenschaft Riss went for the biggest possible capacity. Two of the roofs could not be used due to issues with static.

In the school there are two electricity meters; one is installed at the PV system to monitor how much electricity is being produced by the system and the other can monitor in both directions. This allows how much electricity is being fed into the grid and how much is being consumed from the public grid to be easily monitored.



Google earth view of Primary school of Warthausen Grid Connected

Energiegenossenschaft Riss has got an electricity contract with the school where the kWh from the PV system for self-consumption are charged at a pre-agreed price (ct/kWh) plus the current EEG levy per kWh.

In the event of abnormal utility conditions, the distribution network operator has the right to stop the PV system from feeding electricity into the grid. However, this has not happened since the PV installation has been up and running.

This case study is a representative example of a grid-connected community photovoltaic system. This system shows how energy can be successfully generated for both self consumption and feeding into the grid and can help to inform models for future community scale grid connected PV systems.