# Wifi HaLow for vZEV

Starting with 2025, virtual communities to maximize self consumptions (vZEV[1]) of locally produced photovoltaic (PV) energy are legally allowed within Switzerland.

The energy consumptions and injections measured by smart meters into the energy network of all participating sites are made available by the DSO[2] in ¼ hour slices only on the next day for settling and billing by the vZEV coordinator.

To maximize the local consumption of the available PV energy within a vZEV, we need to be able:

1. to know the instant PV power production available
2. to know the instant consumption of participating sites
3. to control the loads at all sites, that are shiftable in time



color = vZEV

To control this dynamic situation, an IoT-adapter[3] for each smart meter's local interface, a coordinator and actors for loads, as well as a local communication network is needed. Such a private network could be built with a VPN over the Internet among all participating sites.
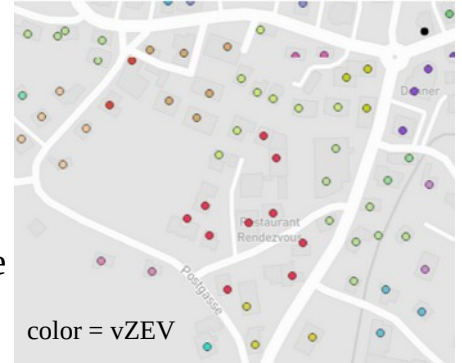
**Wifi HaLow** (IEEE 802.11ah) as a network alternative:

With a suburban range (~50-100m) and bandwidth (~1 Mbps) of Wifi HaLow in Europe, we can build a purely local and private network <u>without the need of any Internet or Cloud dependency</u> to transmit 1 kB/s per site and remain below the max. duty-cycle of 2.8%[4].



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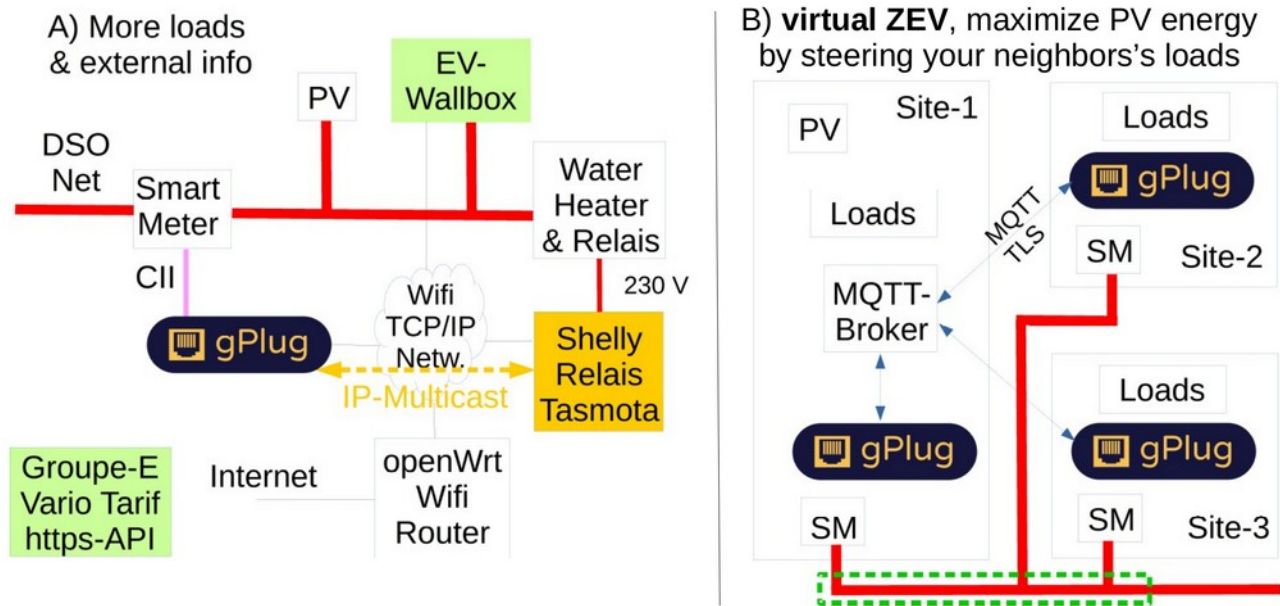
1   vZEV = «virtueller Zusammenschluss zum Eigenverbrauch»
2   DSO = Distribution Service Operator (= VNB = Verteilnetz Betreiber)
3   IoT-adapter for smart meter's Customer Information Interface (for example from gPlug.ch)
4   Max duty cycle of 2.8% / hour is permitted for Wifi HaLow STA: [2.8% * 1000 kbps / 8 b/B = 3.5 kB/s > 1kB/s]