

Installed capacity, demand and generation data

Red Eléctrica now includes photovoltaic self-consumption data across all its data platforms

According to these figures, which combine information from the Electricity Measurement System (SIMEL) and estimates by the System Operator, Spain's installed photovoltaic self-consumption capacity currently amounts to 8.7 GW.

Estimated net generation from photovoltaic self-consumption in Spain so far this year exceeds 10,000 GWh, based on meter readings and estimates by Red Eléctrica.

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Today Red Eléctrica, Redeia's subsidiary responsible for electricity transmission and the operation of the Spanish electricity system, is publishing information on the capacity and energy from photovoltaic self-consumption across all its data platforms. The source for the installed capacity figures is the Electricity Measurement System (SIMEL), as reported by distribution companies in compliance with current regulations, supplemented by system operator (SO) estimates. Energy generation data are derived from SIMEL meter readings, again complemented by SO estimates.

At present, total installed photovoltaic self-consumption capacity in Spain is about 8,700 MW. Calculations show that this capacity has resulted in an estimated net generation of over 10,000 GWh so far this year. Based on SO estimates, the impact of this volume of energy on national electricity demand between January and November is approximately 4%.

In addition to photovoltaic self-consumption, data are also published for other self-consumption technologies, such as cogeneration, hydropower and wind power. In total, all self-consumption technologies represent more than 10,800 MW of installed capacity.

Given the growing relevance of self-consumption within the energy mix, Red Eléctrica has now made these data publicly available on its platforms, having previously used them in its internal operational systems. The information can now be viewed in the Data section and in the demand curve area of Red Eléctrica's website (www.ree.es), as well as on the [redOS app](#) and the [eSIOS portal](#).

Demand curve and other new features

Specifically, the various platforms now include the following data on demand, installed capacity and generation metrics:

- **Demand curve.** Starting today, Red Eléctrica is publishing a new demand curve (shown in orange and labelled 'Total Scheduled') alongside the existing curves: 'Forecast' (green), 'Scheduled' (red) and 'Actual Demand' (yellow). The new curve, which has been in use internally for several years within the SO's internal systems, reflects the impact of self-consumption by adding the estimated energy generated by self-consumption installations (not scheduled in the markets) to the red 'Scheduled' curve. In addition, the 'Forecast' (green) and 'Actual Demand' (yellow) curves have been updated to account for this self-consumed energy. These curves can be viewed on the website and on the redOS app.
- **Installed capacity.** Installed capacity data are sourced from information submitted by distribution companies to the Electricity Measurement System managed by the SO, supplemented by estimates for installations without SIMEL data. The installed capacity indicator, which is updated monthly on Red Eléctrica's data platforms, is broken down by technology and by autonomous community.
- **Generation.** The data include the energy generated by self-consumption installations based on SIMEL meter readings for installations that are required by regulation to report net generation. SO estimates are included for installations that are currently exempt from this reporting obligation. In addition, users can see how the generated energy is allocated, specifically what portion is self-consumed ('self-consumed energy') and what portion is fed into the grid ('surplus energy'). Self-consumed energy is not measured directly but calculated as the difference between generated energy (measured or estimated) and surplus energy (for which meter readings are always available). This information is published on a monthly and annual basis in the Data section of www.ree.es, on eSIOS, and in the redOS app.

Further details on these new features, as well as the methodology used and the information published on each of Red Eléctrica's platforms, can be viewed on [this link](#).

The importance of observability

Spain's energy transition is progressing thanks to the development of the transmission grid and the deployment of renewable energies. Complementary vectors also play a key role, particularly self-consumption, which empowers consumers and promotes electrification. For the system



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operator, maximum observability of this transformation and real-time behaviour of the electricity system is essential.

This is particularly challenging for self-consumption, which involves thousands of small-scale installations. That is why the SO continues to enhance its measurement and estimation tools, as well as its forecasting models, to better anticipate the behaviour of this vector, with the expectation that estimates will eventually be replaced by actual records.

Among other initiatives, Red Eléctrica has developed an IoT platform to receive information from a panel of small and medium-sized self-consumers, using aggregated and anonymised data from measurement devices integrated into inverters. In this regard, the Ministry for the Ecological Transition and the Demographic Challenge has recently completed a public consultation process on a draft royal decree that includes a mandate for the SO to create a nationally representative panel of self-consumers. This will make it possible to monitor self-consumption and further complete the information currently available.