

Covenant of Mayors for Climate & Energy EUROPE

ENERGYCITIES

An initiative of the European Commission

Lund (Sweden)

A micro-grid key for the digitalisation of the local energy sector

In 2025, the City of Lund switched on Europe's first operational micro-grid that is built on internet-style architecture. Just as computers share data on the internet, several buildings now share rooftop solar power over their own cable, with energy routers deciding where it flows. Grid capacity is a problem many municipalities face. It has the potential to shield consumers from power blackouts and bring flexibility to the traditional grid. This pilot started with two buildings and is now growing to 10.

Lund | Sweden 133.000 inhabitants
Readiness level: Testing pilot Full Plant
Energy sector: ☑ Electricity ☑ Efficiency **Type of plant(s):** ☑ Solar PV
Energy activity: ☑ Production ☑ Distribution ☑ Aggregation ☑ Storage ☑ Storage
Who was in lead: ViaEuropa (local business)
Key partners: the local stakeholder coalition CoAction Lund, and Lund's Municipal Housing Company (LKF)

coaction lund

The challenge

Everything started with two major ideas: Lund's goal of a climate-neutral city by 2030 and the desire to connect new loads without slow, expensive grid reinforcement.

Published October 2026

Role of the municipality and partners

The idea of a micro-grid emerged from a multi-stakeholder platform that was launched and led by the City of Lund[MP1] in 2022. This dialogue platform called "CoAction Lund" gathers local stakeholders, many of them from the business sector. The city and its partners are co-designing sustainable solutions both for mobility and energy flexibility. The smart micro-grid EnergyNet, a premiere in Europe, is one of many ways to keep the lively university town an attractive place for residents and companies.



Credit: City of Lund

Credit: CoAction Lund



Credit: COAction Lund

The local solution

Through the climate partnership CoAction Lund, the city tested EnergyNet first in the Brunnshög neighbourhood connecting the office headquarters of the municipal social housing company, and a municipally owned parking house. It used the expertise of its private partner ViaEuropa, a company managing digital networks.

The two buildings produce their own solar power and store it in batteries. This allows for a certain degree of self-sufficiency and adds flexibility to the system. Each building is connected to the micro-grid EnergyNet via a router. As much as an internet router helps sharing data, the energy router helps directing electricity to where it is needed first: the building, the battery, the neighbor or the main grid. All buildings' routers are connected through physical DC cables. The way the energy flows is decided based on both demand and load availability, as happens with internet routers.

It follows the same principle as the LAN available in everybody's home or office where computers are connected to the internet through a wi-fi router. When the internet is not working, people can still access their printer through the LAN. In the same way, with EnergyNet, building users have access to the energy grid through the energy router of their building. In case of a blackout, they would still access the energy stored in the batteries of the buildings connected to the micro-grid.

The first technical pilot (involving two buildings with two different owners) was inaugurated in April 2025. At the same time, the protocol managing the routers was published in open access.
ViaEuropa is now working on a commercial pilot with ten buildings built in 1963 (covering a total consumption of 800,000 kWh): PVs, batteries and cables are in place, and meters will be installed by end of the year. ViaEuropa expects that 60% less grid capacity will have to be used thanks to this set-up.

With EnergyNet, the conventional energy grid benefits from bigger connections as well as batteries that enhance local flexibility. As to the tenants of the second pilot, neither will they need a contract with a usual supplier, nor are they directly connected to the grid: it is the router which links up to the grid and it is the housing corporation that sells electricity directly to them (prioritizing self-consumption).

Implementation insights: how it was grown in practice

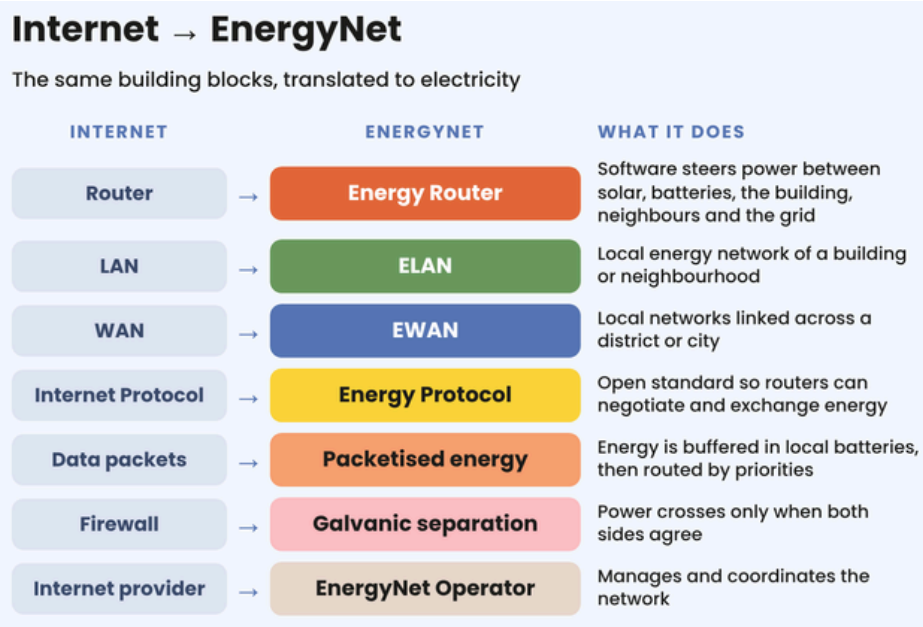
The multi-stakeholder coalition CoAction Lund has more than 43 members, representing 40.000 employees (half of the total number of employees in Lund).

CoAction Lund is organised in four groups, including three “arenas” including one on energy. These arenas serve as testbeds for solutions suggested by coalition members, ahead of any large-scale deployment. In search for a more flexible local energy system, the Energy Arena is testing “EnergyNet”.

Since 2022, Swedish legislation exempts micro-grid, parallel and complementary to the main grid, from the grid-concession requirement, so the DSO cannot block them. The city still permits the cable works.

What changed in practice?

- Tenants of the pilot area only pay for the electricity consumed, are exempted from grid fees, and protected from power shortages.
- Encouraged by the successful collaboration in the EnergyNet pilot, the EnergyArena team of CoAction Lund is now working with the city on a new municipal energy strategy
- Lund used to leave grid planning to its local DSO, which the city co-owns with neighboring towns. Now the city and the DSO want to cooperate more and share data, especially on community energy projects and their impact on the grid.



Funding for the second pilot came from Lund’s social housing company LKF and a commercial agreement between LKF and ViaEuropa. Indeed, ViaEuropa, who also designed the system itself, was convinced of the long-term payback of the infrastructural investment.

Conditions to grow something similar in your place!



- The neighborhood is being renovated or newly built, as digging for cables can be expensive and limited by physical or architectural constraints.
- The local private sector is interested in joining the process, providing not only financial resources, but also crucial IT and engineering knowledge to manage the decentralized system.

> EnergyNet Explained: Internetification of Energy Distribution
> Making the electricity grid work like the internet

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