Establishing a Sustainable Energy Community in Liberec

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Executive snapshot

Liberec is developing a practical model for community energy to support its transition toward climate neutrality. Through support from the City Expert Support Facility (CESF) under NetZeroCities, the project was delivered by EGÚ Brno, a.s., which provided technical, legal, organisational, and economic expertise to help establish the foundations for sharing locally generated renewable electricity across municipal buildings, public organisations, and future community participants.

The initiative responded to growing interest in local renewable energy generation and the need to overcome legal, operational, and economic barriers to energy sharing in the Czech Republic. As part of the project, Liberec established two new entities - Energetické společenství Liberec, z.s. and Energetika Liberec, s.r.o. - to manage governance, operations, and long-term coordination of the energy community.

Using detailed electricity consumption and photovoltaic generation data, the city modelled two electricity-sharing groups capable of efficiently distributing locally produced renewable electricity. The initiative demonstrates how municipalities can act as facilitators of community energy systems while building local resilience, supporting renewable energy uptake, and advancing climate-neutrality ambitions.

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Knowledge Report

THE IMPACT

The project established the operational foundations of Liberec's urban energy community and demonstrated — through detailed technical and economic modelling — the feasibility of large-scale municipal electricity sharing under current Czech regulations.

Importantly, the electricity-sharing groups were modelled scenarios based on real historical production and consumption data from municipal photovoltaic systems and public buildings. The reported utilisation rates and financial savings therefore represent estimated performance under the proposed sharing arrangements, rather than measured operational results from a live system.

Two electricity-sharing groups were designed using 15-minute interval electricity data aligned with Electricity Data Centre (EDC) requirements. The modelling estimated that more than 99.88% of shared renewable electricity could be successfully utilised within the sharing groups due to strong alignment between local generation and consumption patterns.

Sharing Group 1 was modelled to include:

- 5 photovoltaic generation sites,
- 33 consumption points,
- approximately 6,950 MWh annual electricity consumption,
- approximately 327 MWh of electricity available for sharing annually.

The modelling estimated annual electricity cost savings of approximately CZK 1 million (around EUR 40,000). After accounting for reduced electricity export revenues from photovoltaic generation sites, the estimated net annual financial benefit for Sharing Group 1 was approximately CZK 828,000 including VAT (around EUR 33,000), corresponding to an estimated overall saving of roughly 3.8%.
The project also produced a transferable implementation framework to support replication of community energy initiatives in other cities.

THE APPROACH

Liberec adopted a phased and systems-oriented approach to design a legally compliant and operationally feasible model for community energy sharing. The work combined technical, legal, and organisational development with long-term expansion planning.

The project began with analysis of municipal electricity consumption and photovoltaic generation profiles using real historical 15-minute interval data compatible with the Czech Electricity Data Centre (EDC) system. Based on this modelling, ten municipal photovoltaic systems were divided into two pilot sharing groups (SSE 1 and SSE 2) designed to maximise the local utilisation of surplus renewable electricity.
To support implementation, the City of Liberec established:

- Energetické společenství Liberec, z.s. — the formal registered energy community,
- Energetika Liberec, s.r.o. — a municipally owned company responsible for operational, administrative, legal, and technical management.

The project also included development of:

- governance and membership procedures,
- internal operational regulations,
- GDPR and compliance documentation,
- contractual frameworks,
- energy management guidance,
- employment and safety procedures.

Alongside the pilot group simulations, the city evaluated future expansion scenarios involving additional photovoltaic systems, households, and small businesses. The analysis identified both opportunities for scaling and practical constraints linked to current Czech regulatory and technical limitations.

OUTCOMES AND LEARNING

- Two pilot electricity-sharing groups (SSE 1 and SSE 2) were designed and simulated using municipal electricity consumption and photovoltaic generation data. Detailed technical and economic results were presented in the project's conceptual framework report.
- The simulations demonstrated very high technical efficiency, with estimated renewable electricity utilisation rates of 99.994% for SSE 1 and 99.885% for SSE 2.
- The modelling estimated annual net financial benefits of approximately CZK 828,000 (around EUR 33,000) for SSE 1 and CZK 782,000 (around EUR 31,000) for SSE 2.
- The City of Liberec established two new entities — Energetické společenství Liberec, z.s. and Energetika Liberec, s.r.o. — alongside a governance and operational framework to support long-term operation of the energy community.

What worked:

- Detailed consumption and generation data enabled highly efficient modelling of local renewable electricity sharing.
- Existing municipal energy assets provided a strong foundation for launching a city-led energy community.
- Combining technical analysis with legal and governance preparation helped create an implementation-ready framework rather than a purely theoretical concept.

Transferable insight:

- Liberec's experience shows that community energy development requires cities to integrate technical modelling, governance structures, and regulatory compliance from the outset. The project also highlighted current limitations within the Czech Electricity Data Centre (EDC) system, including restrictions on generation-sharing configurations and the administrative complexity of scaling participation to households and small businesses.

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NEXT STEPS FOR THE CITY

Liberec plans to continue developing its energy community by expanding photovoltaic deployment and gradually onboarding additional participants, including households and small businesses.

Future development will focus on:

- optimising energy-sharing configurations,
- adapting the model to future regulatory developments,
- identifying external consumption partners to absorb additional renewable electricity generation,
- and strengthening the long-term operational and economic viability of the community.

The city also intends to build on the governance and operational structures established through the CESF project to support future implementation and scaling of community energy initiatives.

WANT TO KNOW MORE?

Learn more about Liberec

Read the report "Komunitni Energetika Liberec" (Cz)

Still got questions? Ask us:
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