Accelerating decarbonisation: Sunderland City Council's data based approach

Sunderland City Council
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Summary

Sunderland City Council is working in partnership with Nomad Energy Solutions to increase energy efficiency and accelerate progress against its carbon neutral targets for the Council by 2030, and citywide by 2040.

''We knew that our operational estate was a significant contributor to emissions as an organisation and working with the Digital Catapult, Nomad Energy Solutions and BAI Communications has enabled us to pilot an approach which has led to meaningful reductions which we are now focused on continuing to build on''

Cllr Claire Rowntree, Deputy Leader, Sunderland City Council.

The Problem

Sunderland City Council's estate significantly contributes to its carbon footprint as a whole. Overall, buildings represent 54% of the Council's whole scope 1 and 2 footprint and 27% of the Council's estimated scope 3 footprint. Moreover, the diverse range of properties within the Council's portfolio, including buildings with different functions and ages, further complicates the decarbonisation challenge.

There is also a challenge surrounding data. The Council receives some data through energy reports, but it is not in real-time, and does not indicate how or where within a particular building the consumption is. This makes it challenging to identify emissions hotspots, as well as the most cost-effective way to make reductions, especially alongside a limited Building Management System.

Attempts have been made to resolve this, including installing decarbonisation measures into the Council's estate, which focussed on low carbon heating and hot water systems at 8 operational properties. However, significant investment is required to decarbonise the estate further if the Council is to achieve its ambitious commitments.

The solution

To address the council's emissions, the city has developed and adopted a Low Carbon Framework which set out the approach for Sunderland to achieve citywide carbon neutrality by 2040. To achieve this the framework sets out seven strategic priorities, including an energy-efficient built environment, renewable energy generation, and low-carbon transportation. This framework has also been adopted by the City Council's partners which are actively developing and implementing their own plans to enable the city to reach its low carbon goals.

As part of this framework it was recognised that access to high quality data is crucial for achieving decarbonisation goals. So the Council launched a project in 2021 with Nomad Energy Solutions Ltd to leverage smart building technology and real-time data to improve energy efficiency within Council buildings.

This data-centric project takes the Council's approach to the next level, through the targeting that detailed real-time data availability enables. This included the monitoring of carbon emissions, CO2 sensors were installed at two pilot sites, providing detailed data for several months. The trial period yielded a report with short, medium, and long-term recommendations for improvements. Both buildings have experienced reductions in carbon emissions as a result of the project.

Timeline

The idea was first identified in 2021, with recruitment for a suitable partner to collect the data taking place in July of 2021. Recruitment involved a range of innovative approaches, with SME's invited to pitch their solutions to the problem in applications, and a follow-up 'Pitch Day' for shortlisted candidates to present their solution to a judging panel, which chose our final partner.

Once our partner was confirmed, the pilots ran from December 2021 - April 2022. During this time the council provided Nomad Solutions Ltd with a range of technical information about the pilot sites, including floorplans and technical drawings. This enabled Nomad to install carbon dioxide sensors to provide detailed data for several months.

The final results from the pilot phase were presented to the council in April 2022, and offered a range of short, medium and longer-term measures they could take to further reduce carbon emissions in the pilot sites, and across the wider estate through replicable measures. Short term actions taken resulting from the project included making slight adjustments to frost burner settings to cut gas demand at no cost and adjusting ventilation management settings to reduce energy use within safe COVID-19 limits.

Stakeholders

There were several stakeholders and partners that worked on the project, including a range of departments from the Council itself, as well as Sunderland Software City, the Digital Catapult, and BAI Communications, all of whom were integral to the project's success.

Impact

The carbon savings from short-term actions taken so far at the pilot sites, Evolve and Leechmere, equates to 111tCO2e, with the potential to achieve a further 76tCO2e from recommended longer-term measures. Combined, this represents roughly 41% of overall emissions from these buildings. In addition to the carbon savings, the project has resulted in reduced energy consumption and bills, cleaner air, and improved working conditions for staff.

Lessons Learned

- There is no ‘one size fits all’ approach to decarbonising the Council’s estate.
- Data is king, with access to high quality monitoring and different levels of data significantly accelerating decarbonisation, both in the short and long-term.
- Partnerships are critical to decarbonisation and multiple departments are required to work collaboratively together to help aid delivery, including securing buy-in from the staff themselves
- Decarbonisation of some buildings may require significant disruption so the council must plan accordingly.
- Significant investment is required to enable a net zero transition. Decarbonisation progress and pace will be impacted by the availability of resources.

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The initial trial on the Evolve and Leechmere buildings cost £30,000. This consisted of all project support from local businesses including writing the challenge, the tender process, selecting a supplier and managing the trial. The project was funded through the Council’s Low Carbon budget and did not receive any external funding.

Further costs are expected though as we act on the recommendations made to transition the buildings to Net Zero, but it is hoped these initial costs are recouped in the energy savings made.

Next steps

This project was just the beginning for our work in Sunderland as we continue the partnership with Nomad and BAI to scale up for a phased project to address emissions in additional properties This will include a mixture of properties, including offices, business centres, depots, schools and museums.

Links, contacts, and credits

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