Salt Ayre Leisure Centre Decarbonisation Project

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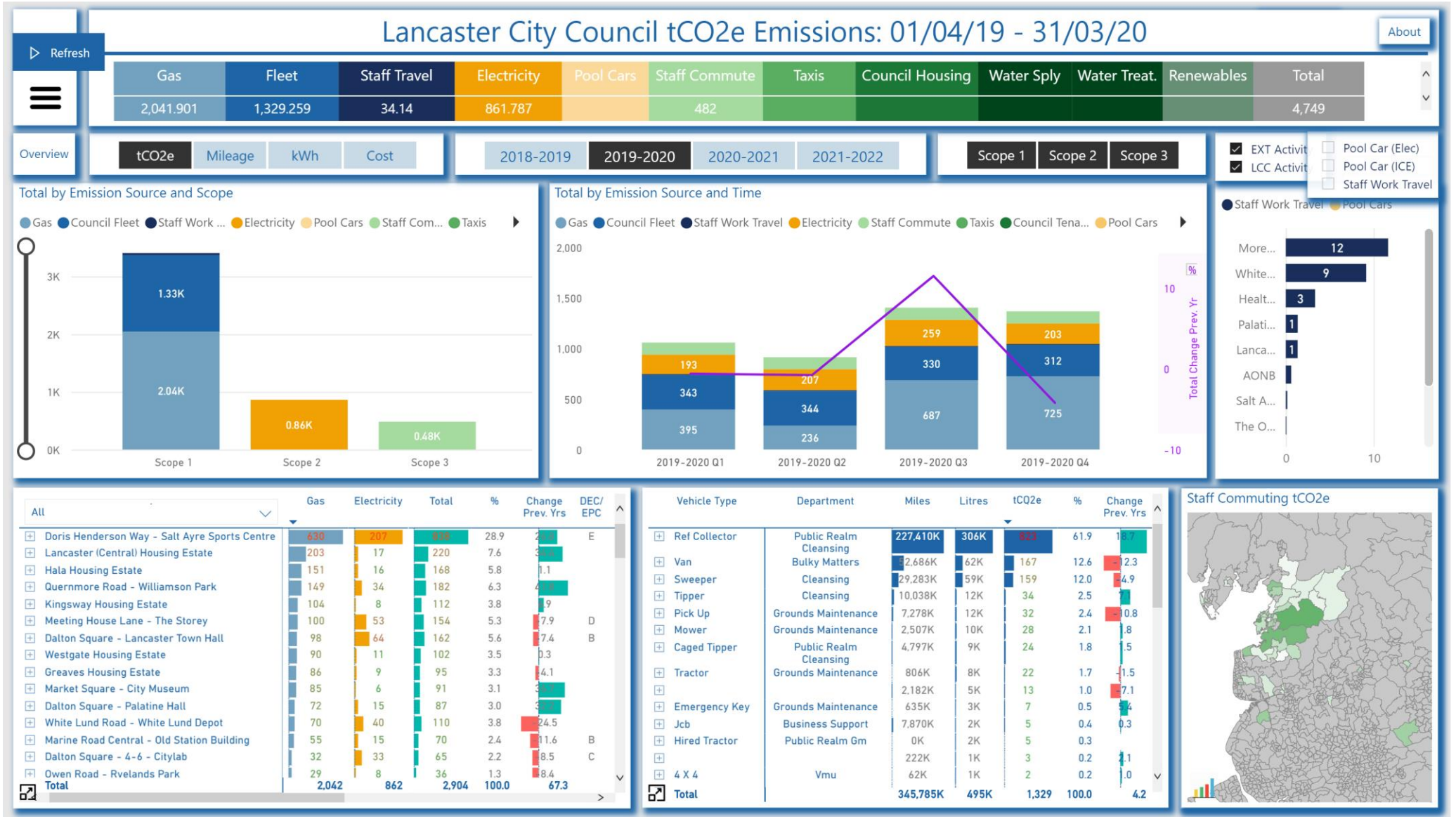
Salt Ayre Leisure Centre Redevelopment

- £5m redevelopment in 2016/17
- Immersive spinning classes
- Europe's first gravity tower
- 80 station gym
- Adventure play area
- Climbing walls
- Barista-style café
- Luxury spa
- Visitor numbers and usage has more than doubled in most areas
- Membership now at 3,560
- Income increasing from £800k to circa £3m pre-pandemic
- Popularity means **high energy usage**!

- On **30 January 2019**, Lancaster City Council declared a climate emergency after councillors unanimously voted to work towards creating a zero-carbon district by 2030.

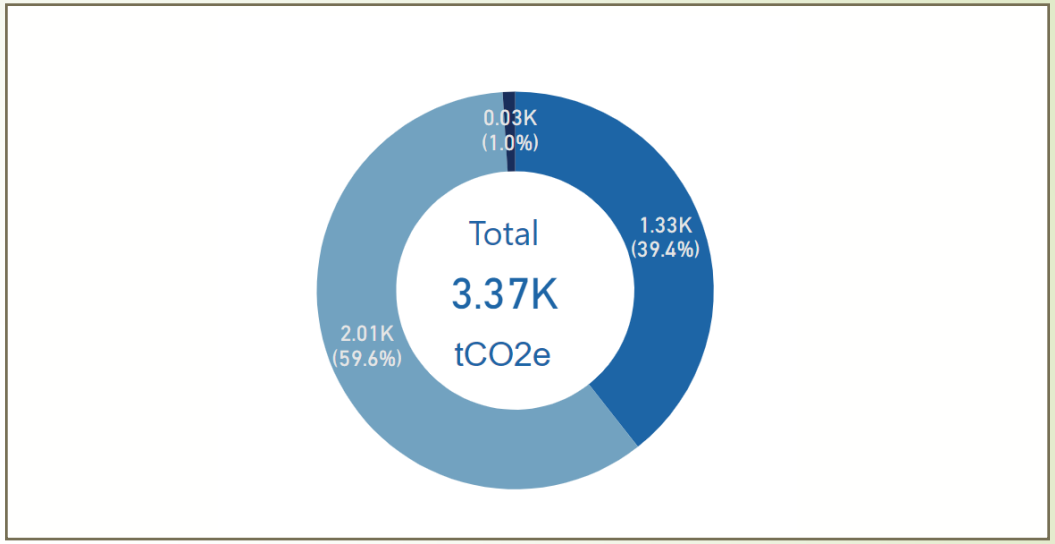
Gathering The Data: The Council's CO2 Dashboard

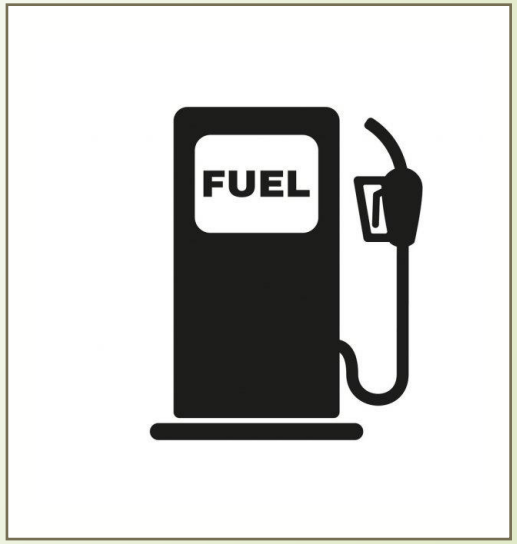


19/20 Scope 1 Emissions

- 59.5% from heating buildings (gas)
- 39.4% generated from fleet (diesel)
- 1% from casual business travel
- **Total: 3,370 t(CO2e) p/a**

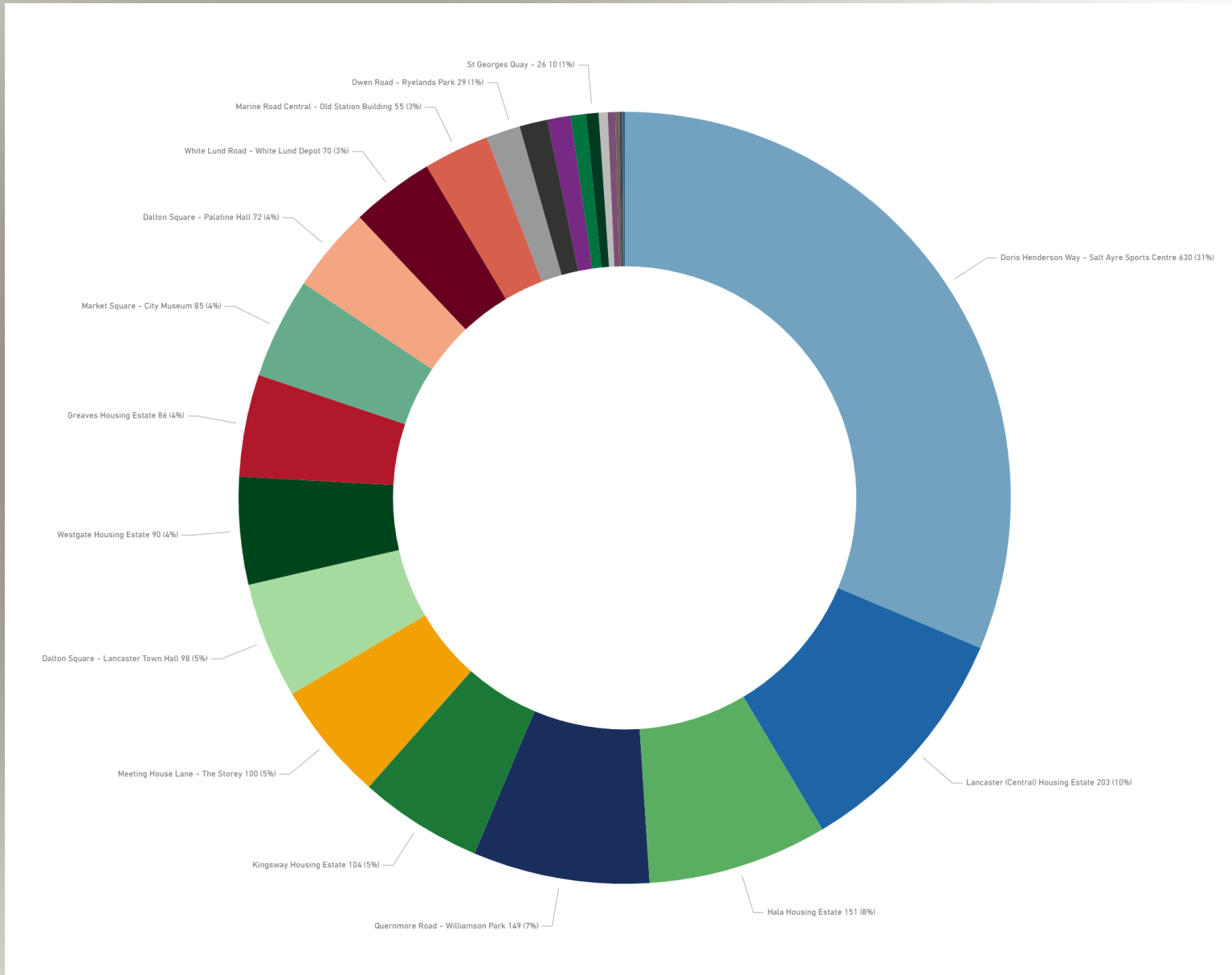
**Scope 2 – Electricity currently provided by a REGO-backed green energy tariff*





Scope 1 Emissions By Building

- SALC single highest CO2 emitter accounting for up to 35% of Lancaster City Council's CO2 from natural gas
- Challenging sites include Town Halls, Museums and flagship Parks – many of which are of a 'listed' status
- Building Heat Decarbonisation plan for all sites completed on 31st March 2022



Lancaster City Council's Journey

SALC Heating and Thermal Efficiency Review

April 2020: Existing gas boilers at Salt Ayre were due for replacement. £300k budgeted for modern gas boilers.

June 2020: Commissioned Unify Group to carry out an MEP Energy & Building Fabric Thermal Performance Appraisal

Review included: An appraisal of building fabric upgrades and decarbonised heating solutions. Focus on emission reductions.

Technology and measures reviewed: Solar Thermal, Biomass, Heat Pumps, CHP, modern gas boilers, roof replacement and overlays, curtain wall upgrades, glazing and LED lighting

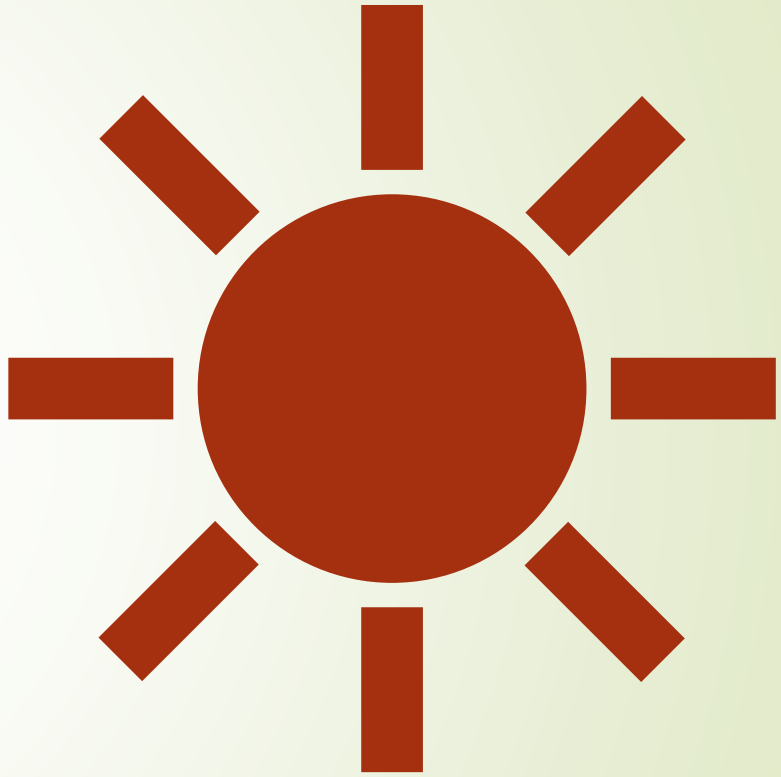
Metrics developed: Cost per tonne of CO_2 saved & ROI based on BEIS projected energy costs

September 2020: Report completed. Preferred measures included two-stage heat pump system, glazing and LED lighting.

Lancaster City Council's Journey

Renewable Energy Generation

- **Solar Farm:** In 20/21 the council budgeted £1m to construct a 1MW solar array with battery storage on an adjacent landfill site and connect to SALC with a direct wire
- **APSE Energy:** Officers had been working with APSE Energy to scope out and deliver the scheme in 21/22
- **CO2 savings:** Focus shifted from simply supplying electricity to SALC, to a fully decarbonised solution incorporating the findings of the decarb report.
- **Merge:** In September 2020, the two projects were merged to deliver a more comprehensive package of work



Public Sector Decarbonisation Scheme Funding(PSDS)

- **30th September 2020:** Supported by Salix Finance, BEIS launched PSDS 1 providing £1bn in grants as part of the government's commitment to support the UK's economic recovery from COVID-19and provide funding to public sector bodies to fund heat decarbonisation
- **LCC's Application:** Officers submitted an application to fund the full scope of decarbonisation work at the leisure centre and in **February 2021** the council was informed that it had been successful with delivery required by September 2021!
- **Expedite Process:** Focus shifted on streamlining process, detailed planning and internal governance

Streamlining Process & External Support

- **Cabinet Approval:** Report had been submitted and approved in Feb 2021 to accept PSDS funds. Delegated authority provided to expedite decision making
- **Consultancy Support:** To substitute known knowledge gaps and support the delivery of the project: APSE Energy, Unify Group, Roadnight Taylor and Planning consultants.
- **Project Planning:** Contractors were procured to deliver the full scope of work and detailed project plans developed to prioritise and guide the delivery. PSDS deadline later extended to June 2022.

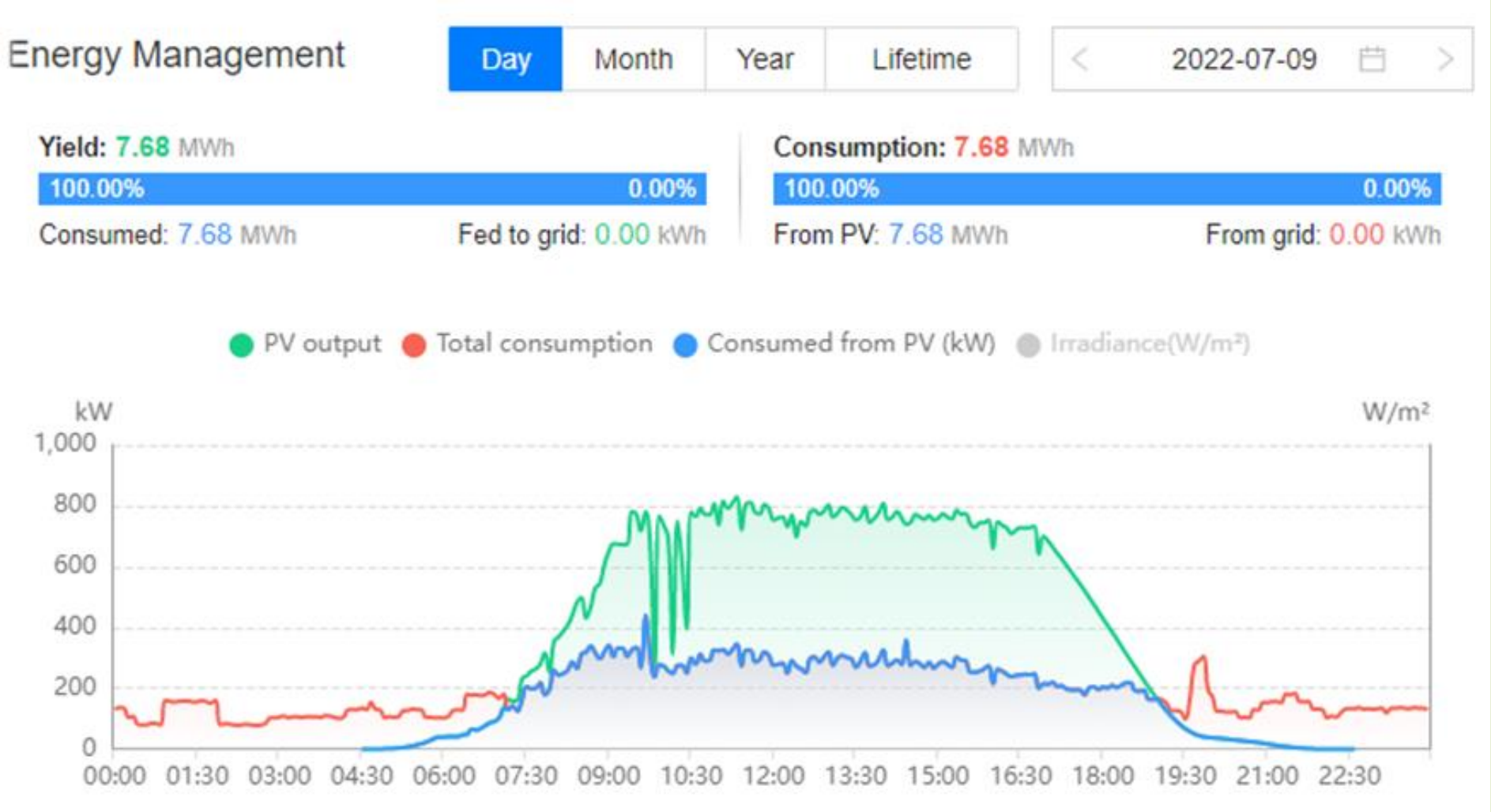
Challenges along the way

- **Unexpected Grid Restrictions:** Limited the size of the generation (inc. battery storage) to 1MW at the inverters and 0.5MW export
- **Planning Consent**: For the solar build and ASHP instillation. Granted with conditions in **April 2021**
- **Lease Negotiations:** To amend the current plans with the permit holder and carve out the solar site
- **Environment Agency**: Consents, assessments and reports to gain consent to construct on a landfill site
- **Leisure Centre:** Project was delivered whilst maintaining an open and operational leisure centre. Disruptive work was scheduled overnight
- **Supply Chains:** Lead times and supplies during the covid pandemic
- **Storm Arwen:** Solar construction over winter led to challenging working conditions and some disruption

What has been delivered?

- £6.8M PSDS Funding Secured
- Fully decarbonised heating solution with a two-stage heat pump system using air source and water to water heat pumps.
- Completion of a 1.3MWp solar array on adjacent disused landfill site, connected to SALC with direct wire
- New double glazing to improve thermal efficiency
- External LED lighting
- Eliminated natural gas from site
- CO2 saving of over 640 tonnes p/a
- 35% CO2 reduction from natural gas for the council
- Net 12% CO2 reduction to the council's bottom line
- Carbon neutral leisure centre supported by a new REGO-backed electricity tariff – one of the first in the UK?
- Delivered £156k of social value from local contractors and supply chains
- **Practical completion:** Reached for work at the leisure centre by **Dec 21'** Solar was completed on **31 March 22'**
- Energy savings estimated to be worth >**£300k** p/a over previous system (22/23)

How is the site performing?



During peak times during the spring and summer months ,the leisure centre has been 'off grid' for up to 12 hours per day, powered **completely** by the solar plant

Lancaster Decarbonisation Plan on a Page

Lancaster City Council have set a target to reduce the Council's direct emissions to net zero by 2030. In order to achieve this target, significant investment is required over the coming years.

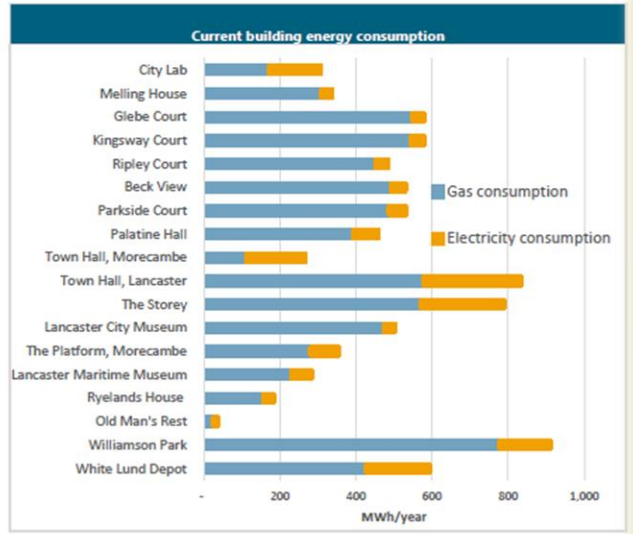
Achieving the target will require dedicated internal resource and significant long term planning. The decarbonisation of the building stock should be planned and budgeted. This report analyses 19 buildings within the LCC stock, and proposes a decarbonisation plan for these buildings.

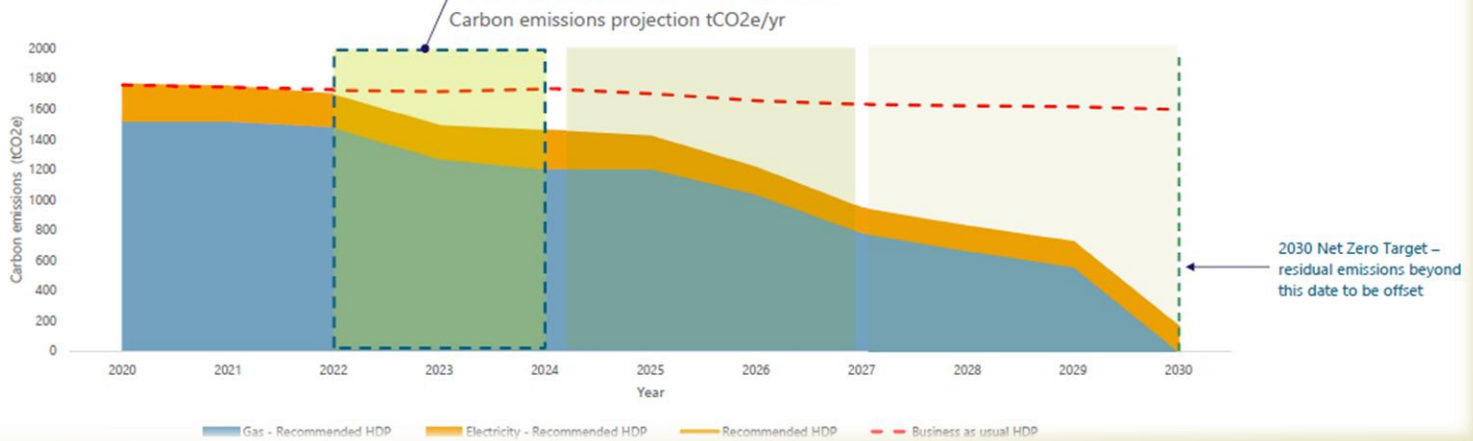
Summary of buildings within scope of this plan	
Number of buildings	18
Total annual energy consumption of existing buildings	8,539MWh
Total annual carbon emissions of existing buildings	1759 tCO2

Outcome of proposed decarbonisation projects within this plan	
Annual carbon emissions in 2030	46.193 tCO2
Annual carbon saving in 2030	1712.96 tCO2
% operational carbon vs existing by 2030	2.63 %
Total capital cost	£ 14.96 million

Short Term Action Plan

- Moving away from reliance on burning of fossil fuels is a key priority. Any boilers coming to their end of life should be prioritised for replacement in lieu of heat pumps.
- Where heating plant is replaced, smart controls should be installed to optimise performance and allow remote visibility of energy consumption.
- Replacement of non-LED lighting should be prioritised across the building stock.
- Regards improvement of fabric, priority should be on the buildings in particularly poor condition or with significant portions of single glazing.
- All priority interventions (i.e., prior to 2024) should be prepared for the next round of PSDS funding (phase 4)





What's next?

- Implement Heat Decarbonisation Plan: X5 sites submitted for PSDS3b (launched 12th Oct'22)
- Deliver on approved fleet electrification programme: 21/22 – 25/26
- Renewable energy feasibility: 4.8MW ground & 1MW roof schemes: Direct use, sleeving and S2G models
- District Heat Network Feasibility: To be completed by May 2023
- Additional Car Club EV's: Open 24/7 to public Oct '22

Thanks for listening....

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