CARBON ZERO+ ACTION PLAN - Direct Operations

2018/19- 3018t of CO2

2030- net zero

Council CO2 emissions 2018/19- Total 3018 tonnes

- Gas: 36.97%
- Diesel (fleet): 40.19%
- Business Travel (pool cars): 1.04%
- Electricity (buildings): 21.63%
- Electricity (vehicles): 0.15%
- Business Travel (Staff vehicles): 0.01%

Total CO2 emissions: 3018 tonnes
LANCASTER CITY COUNCIL DIRECT OPERATIONS

TRANSPORT

In 2018/19 Lancaster City Council’s fleet used 453,130 litres of diesel in delivery of its vital services, resulting in 1,218 tonnes of CO2 emissions. A further 31.5 tonnes of CO2 were produced from business travel in staff owned vehicles.

Direct Fleet CO2 emissions 2018

- Refuse Collection: 65%
- Street cleansing: 19%
- Council Housing R+M: 7%
- Grounds Maintenance: 4%
- Other: 5%
## TRANSPORT ACTIONS

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<tr>
<th>No</th>
<th>% Cont.</th>
<th>Action</th>
<th>When</th>
<th>Estimated Additional Cost</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>5%</td>
<td>Small / medium vehicles replaced with electric vehicles in line with replacement programme</td>
<td>2019-2026</td>
<td>Within existing budgets</td>
<td>Requires additional charging infrastructure</td>
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<tr>
<td>2</td>
<td>2%</td>
<td>Convert 2 existing refuse collection vehicles to plug in electric to cover areas with the worst air quality</td>
<td>2020/21</td>
<td>£400K</td>
<td>Capital cost of conversion £200K / vehicle but will be reduced rev costs</td>
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<tr>
<td>3</td>
<td>23%</td>
<td>Switch refuse collection fleet to hydrogen electric in line with replacement programme</td>
<td>2021-2030</td>
<td>£3.6M *</td>
<td>Assume each vehicle costs £150,000 more than a diesel vehicle</td>
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<tr>
<td></td>
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<td>Refuelling station</td>
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<td>£1.0M</td>
<td>A joint bid between Lancaster Uni/ EDF Harry Lonsdale University has been submitted for to cover the hydrogen project.</td>
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<td></td>
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<td>Tube trailers</td>
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<td>£500K</td>
<td>This project depends very much on the outcome of that bid.</td>
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<td>OR</td>
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<td>£4.45M*</td>
<td>Allow £1M for charging facilities</td>
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<td>Switch refuse collection fleet to plug in electric in line with replacement programme</td>
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<td>*Assess feasibility of 2 collection shifts per day / introduce different collection arrangements. This will vastly reduce the capital costs and ongoing revenue costs</td>
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<td>No</td>
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<td>Estimated Additional Cost</td>
<td>Comments</td>
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<tr>
<td>4</td>
<td>7%</td>
<td>Switch cleansing vehicles to plug in electric in line with replacement programme. Note the 7.5tonne sweeper is due for replacement now. No electric version is available. Replacement with an electric version will take place in the next replacement year of 2025.</td>
<td>2019-2028</td>
<td>£1.5M</td>
<td>Includes provision for charging</td>
</tr>
<tr>
<td>5</td>
<td>3.5%</td>
<td>In line with technological advances switch other specialised vehicles (eg ride on mowers) to electric in line with replacement programme</td>
<td>2019-2030</td>
<td>TBA</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>4%</td>
<td>Use lean systems thinking and technology (vehicle tracking / route optimisation) to generate efficiency and therefore reduce mileage.</td>
<td>2019-2030</td>
<td>TBA</td>
<td>Aim for 10% reduction in mileage</td>
</tr>
<tr>
<td>7</td>
<td>1%</td>
<td>Provide sufficient plug in electric cars for the operational needs of services and consequently remove the need for staff to use their own vehicles And Provide electric pool bikes for staff to use</td>
<td>2020-2021</td>
<td>£50K one off additional amount for infrastructure</td>
<td>Requires additional charging facilities hence £50K one off. (May attract OLEV funding)</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Develop Council Travel plan</td>
<td>2020-2022</td>
<td>Within existing budgets</td>
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</tbody>
</table>
ENERGY/ BUILDINGS

Across the Council’s direct estate (excluding Council housing)

In 2018/19 the Council consumed 2,371,423 kWh of electricity. This resulted in 671.28 tonnes of CO2 emissions
In 2018/19 the Council consumed 6,067,684 kWh of gas. This resulted in 1,102.72 tonnes of CO2 emissions.
(NOTE- The Council already owns a number of solar installations across its estate (including Council Housing) in 2018/19 these generated 247,006 kWh of renewable electricity.)

### ENERGY ACTIONS

<table>
<thead>
<tr>
<th>No</th>
<th>%c Cont.</th>
<th>Action</th>
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<tbody>
<tr>
<td>8</td>
<td>8.4%</td>
<td>Salt Ayre Leisure Centre consumes over 1,000,000kWh of electricity pa. A 1MW ground mounted solar installation, with a 1MW battery and private wire would generate 896,940kWh of renewable energy</td>
<td>2020/2021</td>
<td>£1.4M</td>
<td>Represents an investment which will generate an ongoing income stream</td>
</tr>
<tr>
<td>9</td>
<td>13.23%</td>
<td>There is space on Salt Ayre tip to locate a 25MW solar farm. This would need to be connected to the grid. The initial cost of grid connection is £1.4M so it makes financial sense to deck it out to the maximum. The site could be decked in stages. 5MW would generate 4,484,700kWh pa of renewable energy. The eventual cost of a 25MW solar farm with a 10MW battery would be £24.3M and would generate 22,423,500kWh pa</td>
<td>2022-2028</td>
<td>£1.4M (connection to grid)</td>
<td>Represents an investment which will generate and ongoing income stream</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>£24.3M</td>
<td>Surplus / Offset 25MW solar farm 22,423,500kWh Council requirement - Gas 1,411,592kWh 6,067,684kWh</td>
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<tr>
<td></td>
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<td>Surplus 14,944,244kWh CO2 saved 4,230 tonnes</td>
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<tr>
<td>10</td>
<td>37%</td>
<td>Go off gas. The amount of renewable electricity being generated would provide the opportunity to convert to electric boilers or depending on the business case ground source heating, hydrogen etc. There would of course be additional costs to this which would need further work to establish</td>
<td>2025-2030</td>
<td>TBA</td>
<td>Depends on heating system used</td>
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<td>Current cost of a 300KW fuel cell CHP system suitable for LTH would cost £1.75M- an external bid for this has been submitted as part of the joint hydrogen project with Lancaster Uni and EDF</td>
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<tr>
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<td>Action</td>
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<td>Additional Cost</td>
<td>Comments</td>
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<tr>
<td>11</td>
<td>TBA</td>
<td>Reduce number of buildings the Council operates from. This would increase efficiency and provide an income to invest in the programme described</td>
<td>2022-2025</td>
<td>TBA</td>
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<tr>
<td>12</td>
<td>TBA</td>
<td>Assess feasibility of a Council owned wind turbine</td>
<td>2023-2025</td>
<td>Feasibility</td>
<td>The feasibility costs of a development of a wind turbine project are considerable</td>
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<td></td>
<td>£500K</td>
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<tr>
<td>13</td>
<td>TBA</td>
<td>Invest in energy management software in main buildings This will then help us develop carbon budgets for teams</td>
<td>2020/21</td>
<td>£50K</td>
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**CULTURE CHANGE**

The most cost effective and efficient way of saving carbon are gained through reducing waste and inefficiency. Buy in from staff is key to this.

<table>
<thead>
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<th>Action</th>
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<th>Additional Cost</th>
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</thead>
<tbody>
<tr>
<td>14</td>
<td>TBA</td>
<td>Set up staff working group to identify and implement practical ways of reducing carbon across the Council</td>
<td>2019</td>
<td>none</td>
<td></td>
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<tr>
<td>15</td>
<td></td>
<td>Include mitigating climate change as an organisational value and provide staff training programme</td>
<td>2020</td>
<td>£20K</td>
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<tr>
<td>16</td>
<td></td>
<td>Employ ‘Climate Change Project Manager’ to coordinate the work streams and support the Director</td>
<td>2019</td>
<td>£150K</td>
<td>3 yr funding</td>
</tr>
<tr>
<td>17</td>
<td></td>
<td>Identify a ‘virtual’ team of existing officers who will be required to significantly support this program</td>
<td>2019</td>
<td>TBA</td>
<td>Need to reprioritise in services and identify if additional resource is required to support day to day work</td>
</tr>
<tr>
<td>18</td>
<td></td>
<td>Develop communications plan</td>
<td>2019</td>
<td>TBA</td>
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## ESTIMATED ADDITIONAL COSTS

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<tbody>
<tr>
<td>Convert 2 refuse trucks to electric</td>
<td>£400K</td>
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<tr>
<td>Switch Refuse collection fleet to electric / hydrogen</td>
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<td></td>
<td></td>
<td></td>
<td>£5.1M</td>
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<tr>
<td>Switch Cleansing vehicles to electric</td>
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<td></td>
<td>£1.5M</td>
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<td>Switch to electric mowers etc</td>
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<td>TBA</td>
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<tr>
<td>1MW Salt Ayre Solar</td>
<td>£1.4M*</td>
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<td>25MW solar farm</td>
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<td>£24.3M</td>
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<td>Different heating systems</td>
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<td>TBA</td>
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<td>Wind turbine feasibility</td>
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<td>£500K</td>
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<td>Million trees</td>
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<td>£200K</td>
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<td>Pool car- infrastructure</td>
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<tbody>
<tr>
<td>Energy Management software</td>
<td>£50K</td>
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<tr>
<td>Staff training</td>
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<td></td>
<td>£20K</td>
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<tr>
<td>Additional staff resource</td>
<td>£40K*</td>
<td>£50K</td>
<td>£50K</td>
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<td>Pool car- infrastructure</td>
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<td>£50K</td>
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<td>Citizens Jury</td>
<td>£40K</td>
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* Denotes where already built into existing budgets
NOTES

- There will be 25 yr income streams from the investment in the 2 solar projects. The 25MW solar farm is estimated to generate £48.5M net profit (over 25 yrs). The 1MW solar farm is estimated to generate £3.6M net profit (over 25yrs)
- Vehicle replacement assumes equivalent numbers of vehicles as now. Different operating methods would aim to increase efficiency. There will be revenue savings from fuel and repairs and maintenance.

OTHER ACTIONS

More detailed action plans will be brought forward to show the indirect actions the Council will take following the Citizen’s Jury. Good progress has been made-

- Launch of 1,000,000 trees project. The intention is to work with landowners, community groups, volunteers and other partners to plant an additional 1,000,000 trees on the District by 2030, as part of the Northern Forest project.
- Commissioning of Citizen’s Assembly. This has now been commissioned and preparatory work is now taking place so that deliberations can begin in January.
- Council Housing stock. The Council has approximately 3,800 Council properties. Significant investment in energy saving works has already taken place. Following the declaration of the climate emergency officers are reviewing the capital programme to ensure that repair and maintenance programmes are prioritised to reduce carbon.