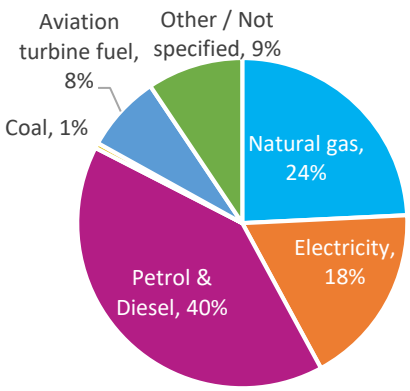
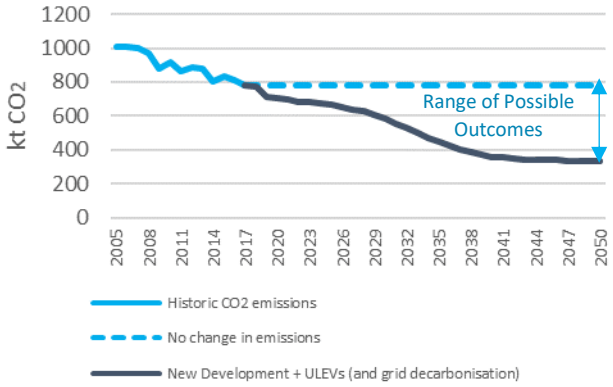
Newcastle-under-Lyme Climate Change Mitigation & Adaptation Report

AECOM has been commissioned to contribute towards a technical evidence base for new energy and sustainability policies for Staffordshire County Council and its eight constituent Local Authorities. This note summarises key issues for Newcastle-under-Lyme.

Scope 1, 2 and 3 GHG Emissions



Illustrative Scope 1 & 2 CO_2 Emissions Scenario



Total Scope 1, 2 and 3 emissions are c.903,000 tonnes CO_2 per annum and per capita emissions are 7.0 tonnes CO_2 per annum. This is lower than the average for Staffordshire County and higher than the average for the UK as a whole (7.4 and 5.4 tCO_2 p.a. respectively). The largest single source of emissions in Newcastle-under-Lyme is associated with burning of petrol and diesel, which is primarily used for road transport. For further details, please see the Baseline Report.

The above figure shows that, even when accounting for new development, the decarbonisation of grid electricity and switching to Ultra-Low Emission Vehicles (ULEVs) in Newcastle-Under-Lyme could result in up to a 57% decrease in emissions by 2050 compared with 2017 levels. However, this outcome is highly uncertain which means it is important to take local action. Other emissions would have to be eliminated through energy demand reduction, building fabric improvements, renewable energy generation, switching to low carbon heating and offsetting remaining emissions.

Newcastle-under-Lyme's Illustrative Path to Net-Zero

Sustainable Transport

2020	2030	2050
248 ULEVs 25 EV Charge-Points	30% of vehicles are ULEVs	100% of vehicles are ULEVs

ULEV projections are based on the National Grid's Future Energy Scenarios.

Renewables

7.5 MW of Solar PV
0.5 MW of Onshore Wind

→ 100% of energy demands met with renewables

Built Environment

45,000 Gas boilers
2,900 Electric Boilers
1,200 Oil Boilers

16% of heating systems are served by Heat Pumps

57% of heating systems are served by Heat Pumps

Note: 2020 data is from 2011 census.
Heating technology projections are based on the National Grid's Future Energy Scenarios.

Natural Capital

Net 12,000 tCO_2 Sequestered Annually

→ +2,250 tCO_2 Sequestered Annually

Carbon sequestration projections are illustrative, based on 100% conversion of SCC landholdings in Newcastle-under-Lyme to woodland.

Policy Options

Reducing CO_2 Emissions in the Built Environment

- Require all proposals to meet or exceed Building Regulations through energy efficiency alone
- New proposals should be 'futureproofed' to facilitate uptake of low-carbon heating, onsite energy generation and energy storage**.**
- Aim to achieve Net Zero regulated & unregulated emissions.
- Consider requiring developers to conduct Lifecycle Carbon Assessments (LCA) and monitor & report on operational energy use and CO_2 emissions.
- Set high standards for water efficiency and conservation including rainwater collection.

Holistic Interventions in Development

- Incorporate circular economy principles such as designing out waste, adaptability, reusability etc.
- Consider requiring applicants to undertake a BREEAM or HQM assessment (or similar) with a minimum target for relevant credits achieved.
- Integrate and co-locate green and blue infrastructure with pedestrian and cycle routes and sustainable drainage systems (SuDs).
- Integrate LZC technologies into the built environment.
- Specify locally sourced materials with a low environmental impact.

Low & Zero Carbon (LZC) Technologies

- Require developments to demonstrate how layout, orientation and massing has been designed to maximise opportunities for on-site renewables.
- Set a target for the proportion of energy demands to be met from on-site renewables.
- Increase support for LZC energy developments that meet local criteria for acceptability and seek to broaden those criteria.
- Encourage the development of heat networks where appropriate.

Climate Risks & Adaptation

- Direct / restrict future development to areas with lower flood risk.
- Require planning applications to consider long term flood risk projections in assessing flood risk and SuDS design.
- Ensure all future development considers the urban heat island effect in its design.
- Require planning applications for future developments to consider thermal comfort, e.g. through a dedicated overheating assessment (in line with CIBSE TM52 or equivalent) that considers high-emission climate projections.

Carbon Sequestration & Natural Capital

- Mitigate against the loss of green spaces and habitats, and seek to improve woodland, heathland and other habitats.
- Identify ways to ensure that biodiversity, carbon sequestration and amenity are all considered as part of land management strategies.
- Ensure ecological experts are involved in the writing of planning conditions (where relevant).
- Increase sequestration on Council-owned land (e.g. areas of greenspace including parks and gardens; linear parcels and green infrastructure such as verges and green spaces alongside roads; and the 'greening' of grey infrastructure in urban settings).

Sustainable Transport

- Enhance the provision of EV charge points.
- Collaborate with key market participants (e.g. WPD and the Government's Office for Low Emission Vehicles) to facilitate the transition to EVs .
- Keep informed of significant changes in hydrogen vehicle markets as they continue to develop.
- Co-locate PV canopies with existing or future parking provision.
- Ensure that the design and layout of developments will reduce reliance on private vehicles while promoting walking, cycling and public transport.

Additional Considerations for Newcastle-Under-Lyme

The Council has declared a Climate Emergency and set a target date for Net Zero emissions of 2030, which is in advance of the UK-wide 2050 target. This is an ambitious target that will require strong and immediate actions if it is to be met. One key challenge will be that, due to the short timescales, the CO_2 savings from national electricity grid decarbonisation are likely to be lower than if the Newcastle-Under-Lyme target was set for 2050. Additionally, although there is expected to be a significant shift towards ultra low emissions transport, this transition is not likely to be complete by 2030, meaning that transport will continue to be a significant source of emissions for some time.

In practical terms this means that Newcastle-under-Lyme will need to (a) reduce energy demands from transport and buildings much faster than were it to align with the UK 2050 target; (b) seek to increase the provision of local

renewable energy as much as possible; and (c) take actions to increase carbon removals from the atmosphere. Because carbon removal technologies have not yet been widely adopted or demonstrated at commercial scales, tree planting and other 'natural climate solutions' are likely to be the preferred option, although these take up to a decade to begin to sequester significant amounts of CO_2 and therefore would need to be introduced quickly in order to deliver a meaningful impact by 2030.

Newcastle-under-Lyme and Stoke-on-Trent have prepared a joint Local Plan, a draft of which was published in Spring 2020. Policy ER2 sets out requirements for wind energy with reference to a map produced as part of the Camco (2010) study. As discussed in our Final Report, future policies could potentially consider broadening the areas that are considered suitable for large-scale LZCs, subject to local criteria for acceptability. Parts of the District are located within the Stoke Green Belt; although these areas could potentially accommodate sensitively-designed renewable energy installations (there is potentially significant capacity in the grid infrastructure in this area, which could help facilitate the connection of large renewable capacity), they also offer significant opportunities to deliver environmental benefits through 'natural' climate solutions such as tree planting.

Newcastle-under-Lyme is home to Keele University, which in recent years has deployed a range of LZC energy technologies that could be viewed as pilot projects for wider adoption in the area. Notably, this includes a hydrogen gas network which is the first of its kind in the UK. In the long term, hydrogen gas may play a crucial role in decarbonising the UK heat supply provided that it can be created using renewable electricity (i.e. 'green hydrogen'). There is also a district heat network in Stoke-on-Trent, and the draft Local Plan would require new developments to connect to such networks where appropriate. The viability of heat networks depends on the energy demands of a development and the proximity to sources of waste heat; our Final Report provides additional details on these topics, which will play an important role in reaching Net Zero.