



Glasgow City Council

Net Zero and Climate Progress Monitoring City Policy Committee

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PRESENTATION OF THE NET ZERO ROUTEMAP

Purpose of Report:

To present Committee with Glasgow's Net Zero Routemap and provide information on the next steps for integration of the Routemap outcomes.

Recommendations:

It is recommended that the Committee:

- Note the content of the report.
- Note the next steps outlined for integration of the Routemap outcomes.

Ward No(s):

Citywide: ✓

Local member(s) advised: Yes ▪ No

consulted: Yes ▪ No ▪

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1. Introduction

- 1.1 [In June 2021 Glasgow's Climate Plan](#) was approved by the City Administration Committee. The Climate Plan outlines the City's approach and strategic actions towards net zero carbon emissions, healthy biodiversity, and climate resilience.
- 1.2 It sets out the City's ambition to reduce emissions through direct mitigation, while also adapting to the impacts of climate change and addressing the ecological emergency, all of which will provide carbon sequestration opportunities, whilst improving quality of life for the citizens of Glasgow.
- 1.3 The Climate Plan includes a target for the City to achieve Net zero carbon emissions by 2030. Action 6 within the plan is for Glasgow City Council to develop a first of its kind Net Zero Plan for the city to achieve its net zero carbon emissions target.
- 1.4 The purpose of this report is to present Glasgow's Net Zero Routemap (plan) and to provide information on the next steps for integration of the Routemap outcomes.

2. Background

- 2.1 In 2019 Glasgow declared a Climate and Ecological Emergency. Following this, extensive stakeholder engagement and consultation led to the creation of Glasgow's Climate Plan. There was a clear aspiration from all involved that Glasgow should lead the way in taking action to address climate change, culminating in agreeing the aspirational Net Zero carbon target of 2030 and an action to create a Routemap for the city.
- 2.2 The Net Zero Routemap provides the scientific evidence to underpin the ambition set out in the Climate Plan and establishes a scientific basis for scenario planning that is both rigorous and flexible. The development of Glasgow's Net Zero Routemap includes the use of a software platform (ClimateView OS), which utilises data so that we can be agile as we work towards addressing the evolving challenge that climate change presents.
- 2.3 The background work for the Net Zero Routemap has also drawn on previous research and technical reports from across the Council to ensure that the outcomes build on our understanding of the net zero scenario options for the city.
- 2.4 Alongside the development of the Net Zero Routemap for Glasgow, there is complementary work being led by the [Scottish Climate Intelligence Service](#) (SCIS) at a National level to ensure that all public sector organisations are taking a consistent approach to emissions tracking and recording. The SCIS have recently commissioned [ClimateView](#) to be used across all local authorities and have appointed staff to provide direct support to public sector organisations. ClimateView have also recently made public their work to

support ICLEI through the use of their online tool.

- 2.5 The development of the Net Zero Routemap takes us a step further towards maximising Glasgow's contribution to the Climate and Ecological crises.

3. Development of Glasgow's Routemap

- 3.1 Emissions in Glasgow have been steadily declining since the 2006 baseline, both due to the impact of Council policies and spending and wider grid decarbonisation.
- 3.2 Work done by the Council to date has identified the need for a unified model for the City's emissions performance, which can explore with more detail and flexibility the different interventions required across scopes 1 and 2 and help us understand how to prioritise these actions.
- 3.3 As a result the Net Zero Routemap project was commissioned in March 2024 and provides a multi-vector, whole city appraisal of the City's existing emissions performance alongside an Impact Assessment Model to help us to appraise the needs, impacts, costs and interventions required to support the City in its net zero Transition.

3.4 Methodology

The approach to the development and delivery of the Net Zero Routemap followed a structured and inherently collaborative process. The key steps are outlined below and more detail is provided in Appendix 1: [Integrated Net Zero Routemap for Glasgow: Executive Summary](#). Key steps were:

- Inception and familiarization with scope and ambition
 - Policy review and gaps analysis
 - Emissions Inventory Data Collection
 - SBTi appraisal
 - Introduction and creation of the Climate View platform
 - Stakeholder workshops
 - Scenario modelling and carbon budget appraisals
 - Cost modelling
 - Risk assessment and mitigation options
- 3.5 Critical to the success of this work has been our approach to engagement both internally and with key external stakeholders. a Net Zero Routemap working group was established, comprising of staff from every specialist area needed to input into the technical aspects of the Routemap development. This included staff from Transport, Housing, Fleet, Asset management, Planning, Economic Development, Parks and Green Space and Business Intelligence. Working group meetings were scheduled monthly to provide a forum for updates and discussion. In addition, the consultants also hosted and facilitated a series of workshops throughout the project.

- 3.6 The methodology undertaken for this project has also needed to consider the longer-term use of its outputs. As part of this work, [ClimateView](#) have created an online public facing platform which can be used to communicate our progress to date, mitigation actions underway and also to provide visual representation of the journey ahead of us.

4. Key Routemap Outcomes

- 4.1 **Science Based Target Initiative:** In advance of the work undertaken to model the different mitigation actions and their impact, an internationally recognised approach to Science Based Target assessment was undertaken using the D2020 method, replicating the approach taken by many other cities around the world.

- 4.1.1 It was identified however that the ClimateViewOS platform provides a more robust science-based framework for setting carbon budgets for Glasgow's 2030 Net Zero target, primarily due to its transparency of data use and its ability to identify pathways per emissions sector.

- 4.1.2 This aligns clearly with Scotland's National approach through the SCIS to roll out the use of the ClimateViewOS platform to all local authorities.

- 4.2 **Projected and Accelerated pathways:** Energy, Heat, Transport and Waste make up over 95% of the City's emissions, and therefore these have been the focus of the study. The hierarchy used to assess the priority and planning of mitigation actions was assessed in line with the [Climate Change Committee \(CCC\) Pathway to Net Zero priorities](#) below:

- **Demand reduction** – can we do less carbon intensive activity?
- **Improved efficiency** - Can we maintain activity with less waste?
- **Electrification** - can we use low carbon electricity in place of fossil fuels?
- **Hydrogen** - is low carbon hydrogen an option?
- **Carbon Capture** - if we can't avoid emissions can we capture and store them?
- **Removal** - for any remaining emissions, we need to remove an equivalent amount from the atmosphere to meet Net Zero.

- 4.2.1 As a result of this assessment, two pathways have been developed. A **projected pathway** which forecasts emissions based on the ambitions of the current policy and strategies and an **accelerated pathway** which has been modelled to meet the Council's 2030 net zero ambition, including limiting reliance on carbon capture and removals as much as possible. Both pathways are built using the same inventory data, but the type of mitigation action and the speed at which action happens differs between pathways.

- 4.2.2 Both pathways have been modelled on the following mitigation areas (referred to as Transition Elements in the platform), which form the basis of the building blocks within the ClimateViewOS platform:

- Private Transport
- Freight Transport
- Non-Residential Heat
- Residential Heat
- Energy
- Carbon Removal

4.3 Projected Pathway: This pathway has been created based on projected emissions reductions associated with the ambition and commitment within the Council's current policies and strategies, alongside the National interim net zero targets of 75% reduction by 2030. Figure 2 below provides an overview of the contribution of the different emissions categories within this pathway.

Glasgow's Projected Pathway Carbon Abatement contributions

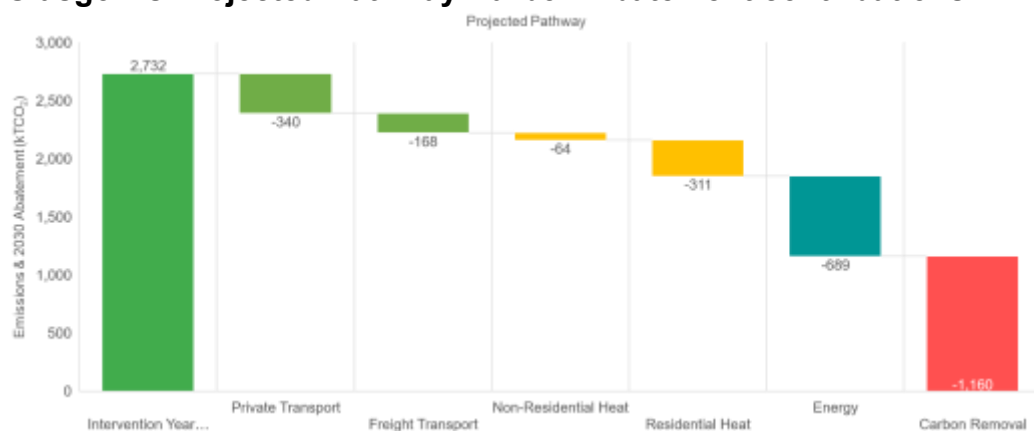


Figure 2

The graph above shows the contribution that each different mitigation action makes to our over all emissions reduction. This pathway results in an approximate emissions reduction of 60%.

4.3.1 The projected pathway contains a number of key differences in approach to the accelerated pathway, these fall into 3 broad categories:

- A lower reliance on heat-pump powered district heat networks
- Higher proportion of less energy intensive travel methods eg more walking, cycling and shared public transport systems above transition to EVs.
- Lower use of electricity due to continued use of fossil fuels for building heating.

4.3.2 As can be seen in figure 4, the projected pathway results in an emissions gap of c. 1.16 MTCO₂¹ per annum. This is based on a slightly accelerated rate of change than the City has seen to date based on progress from the 2005/06 baseline.

4.3.3 As part of this work an indicative cost model has been developed for each of the pathways. This has focused on developing cost metrics from delivery knowledge and experience or nationally agreed units of measure. For the

¹ MTCO₂ is the abbreviation for Million Tonnes of carbon dioxide (Source, [Climate Jargon web link](#), 2024)

Projected pathway there is an estimated cost of c. £23.5 billion.

4.4 **Accelerated Pathway:** Within this pathway the boundaries of demand reduction and improved efficiencies have been pushed to their limits, based on the need for systemic change by 2030 and are recognised as highly ambitious and very challenging. This pathway limits reliance on carbon capture and removals as much as possible and results in an approximate emissions reduction of 80%.

4.4.1 Stretching the boundaries of mitigation actions has only been applied to viable technologies eg electric vehicles, however the pace and scale at which the changes are needed may be unachievable without systemic change and significant funding.

4.2.2 Figure 3 below provides an overview of the contribution of the different emissions categories within this pathway.

Glasgow's Accelerated Pathway Carbon Abatement

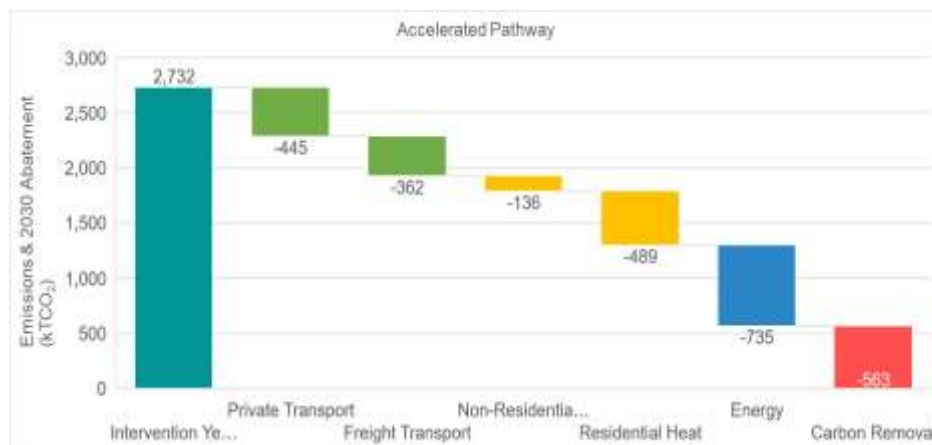


Figure 3

4.4.3 The key aspects to this model are:

- The reliance on the private and public sector to support a significant shift in Electric Vehicle uptake.
- The electrification of freight vehicles.
- That the council leads by example for the development and delivery of heat networks.
- The role of heat pumps is significant, supported by the correct market conditions.

4.4.4 The accelerated pathway results in an emissions gap of c. 0.6 MTCO₂ per annum, about half that of the projected pathway.

4.4.5 The cost modelling for the accelerated pathway outlines an estimated cost of c. £36.8 billion.

4.5 **Role of Carbon Removal and Sequestration:** The City's net zero target is based upon reducing emissions as much as is possible whilst tackling the residual emissions through carbon removal. The emissions gap quantified in

each pathway will require reliance on carbon removal, through activity such as carbon capture or sequestration.

- 4.5.1 The sequestration potential for the city has been mapped as part of this work and identifies that a small proportion of emissions could be offset through enhancement of the city's existing green spaces c. 30,000 tCO₂/annum and vacant and derelict land utilisation (additional 7,000 tCO₂/annum).
 - 4.5.2 However this equates to only 5% of the emissions gap in the accelerated pathway, and 2.5% of the gap for the projected pathway. Based on the residual emissions for the accelerated pathway, managing the c. 0.6MTCO₂ of annual emissions would require c. 40,000 hectares of rich natural habitat (native broadleaf). The requirement is double for the projected pathway.
 - 4.5.3 Whilst there has been significant work undertaken across the City to enhance and develop programmes of tree planting and habitat enhancement, it is clear from this data that the City is not able to meet its own carbon removal / sequestration needs within the city area, needing therefore to consider a regional or national approach to supporting the development of sequestration opportunities, requiring collaboration with other landowners and local authorities.
- Risks and Mitigation: A detailed risk appraisal was undertaken as part of this work, which has been summarised within the Executive Summary in [Integrated Net Zero Routemap for Glasgow - Executive Summary](#)

5. Conclusions

- 5.1 The development of the Net Zero Routemap has provided science-based pathways to net zero carbon by 2030. The Routemap also provides scenario modelling of the different interventions that could be applied, giving the City options for continual consideration and development, ensuring we can be both proactive and reactive in our response to the climate and ecological emergency.
- 5.2 The access to and ongoing use of the ClimateViewOS tool will enable GCC to monitor progress and take an agile approach to the prioritisation of mitigation and carbon sequestration activities.
- 5.3 The development of the Routemap has highlighted that a systems-based approach to deploying net zero interventions is required to facilitate systemic change at the pace required. Actions should not be viewed in isolation and need to be considered holistically to ensure that the full impacts of each are understood.
- 5.4 Early engagement with key stakeholders is required as a priority to stress test ambitions and opportunities presented within the Routemap.

- 5.5 Net zero and decarbonisation is highly dependent on policy levers from both the Scottish and UK Government and as such the city's role has limitations which needs to be recognised.

6. Next Steps

- 6.1 In order for the city to deliver the scale and pace of action required, a priority needs to be placed on stakeholder engagement and communication activity to ensure that all relevant stakeholders are aware of the Routemap and the role they need to play. The Routemap findings will be disseminated through groups such as Sustainable Glasgow.
- 6.2 The detail and priorities outlined in the preferred pathway need to be translated into tangible activities within the Climate Plan. This activity will work in parallel with the proposed review timeline for the Climate and Adaptation Plans in early 2025.
- 6.3 Internal staff resource will be dedicated to the ongoing ownership and management of the ClimateViewOS platform and the data that underpins it. On going use of this tool will help us track and manage progress towards our net zero targets.
- 6.4 We will continue to work with the Scottish Climate Intelligence Service and utilise their position to help us work in partnership with the other local authorities in Scotland to work together where possible to address our common challenges, such as tackling the combined needs for carbon sequestration.
- 6.5 The outputs of the Net Zero Routemap are critical to inform the technical input into the development of the Climate Finance work, which in turn, is critical to the delivery and financing of the infrastructure required to progress the City forward along its net zero pathways.

7. Policy and Resource Implications Resource Implications:

Financial:	There will be financial implications to fund the delivery of the preferred pathway. Funding may be required to support further studies and research, support action on the ground, as well as communications and capacity building activities.
Legal:	The delivery of this plan strongly supports the requirement to fulfil the Public Bodies Duties on Climate Change under Climate Change (Scotland) Act (2009).

Personnel:	There may be resource impacts as actions are developed and passed onto the appropriate areas within the council family for delivery/stewardship.
Procurement:	No direct implications
Council Strategic Plan:	<p>Specify which Grand Challenge (s) and Mission (s) the proposal supports. Where appropriate the relevant Commitment can also be listed.</p> <p>This supports the Council Strategic Plan Grand Challenge 3 "Fight the climate emergency in a just transition to a net zero Glasgow", specifically Mission 2 "Become a net zero carbon city by 2030"</p>

Equality and Socio- Economic Impacts:

<i>Does the proposal support the Council's Equality Outcomes 2021-25? Please specify.</i>	Yes, the routemap aims to ensure that those citizens most vulnerable, due to their socio-economic circumstances or geographical location, are not disproportionately affected by climate impacts or left behind in the transition to a net zero society.
<i>What are the potential equality impacts as a result of this report?</i>	The ambition is for the Routemap to deliver positive equality impacts. It aims to address the impacts of climate change and ensure not only that those most vulnerable in our society are not disproportionately disadvantaged by the costs of the transition to a net zero economy, but also that they don't bear the brunt of the impacts of climate change.
<i>Please highlight if the policy/proposal will help address socio- economic disadvantage.</i>	Place Based Climate Action is known to provide multiple wider benefits, it supports action to address environmental loss, improve quality of place, helps to reduce socio economic inequalities, and supporting economic prosperity.

Climate Impacts:

Does the proposal support any Climate Plan actions? Please specify:

The proposal supports the overall implementation of the city's Climate Plan, including its vision for a fairer, greener and healthier city. Specifically it addresses Action 6.

What are the potential climate impacts as a result of this proposal?

The potential climate impact is that of a net zero city by 2030.

Will the proposal contribute to Glasgow's net zero carbon target?

Yes. This work underpins our approach to net zero.

Privacy and Data Protection Impacts:

Are there any potential data protection impacts as a result of this report:

No

8. Recommendations

It is recommended that the Committee:

- Note the content of the report.
- Note the next steps outlined for integration of the Routemap outcome