2030 Net Zero Modelling
24 February 2022

Context (slide 2)

We have updated modelling for the 1.5°C Climate Action Plan (now based on a 2030 zero target, previously 2050)

The new analysis identifies:

- Potential pathways for meeting net zero by 2030
- Key actions and policies likely needed for each pathway
- Indicative costs and benefits (emissions savings, jobs)

This analysis and the GLA's response was published on 18 January 2022. The GLA's response:

- Outlines key issues, benefits and challenges with bringing the target forward
- Explains the importance of indicating a preferred route as we have only 8 years to deliver
- Explains that the preferred route replaces the previous net zero pathway in the 1.5°C Compatible Climate Action Plan

The Mayor is indicating a **preferred pathway 'Accelerated Green'** based on feasibility, behaviour change required, and level of powers.

Pathways (slide 3)

We asked Element Energy to model 4 pathways:

No Constraints (14% residual emissions in 2030)

- Requires immediate actions not feasible in the current national context:
  - E.g. requires scrappage of rigid diesel HGVs more than 15 years old from this year, scrappage of cars more than 10 years old from this year, scrappage of boilers more than ten years old from 2024
  - Pushing for these policies immediately would make it more difficult to shield lower income Londoners from the disproportionate costs of the transition

Accelerated Green – preferred pathway (22% residual emissions in 2030)

- Balances urgency and ambition with social justice and deliverability
- Gives more time to influence national policies and does not require the more extreme scrappage policies
- Will require co-ordinated action from Mayor, boroughs, communities, businesses, finance sector and public sector.

- National government will need to play a major role e.g. greater investment in local public transport and its electrification, further funding schemes for retrofit, tighter standards on energy efficiency and funding for enforcement

High Hydrogen (30% residual emissions) **and High Electrification** (27% residual emissions in 2030):

- Do not go fast enough given the urgency of the challenge

Key metrics for accelerated green (slide 4)

To achieve the Accelerated Green pathway it would require:
Car vkm: 27% reduction in car vkm between 2018-30, compared to 12% in line with the MTS and previous 2050 pathway

Retrofit

- 37% reduction in heat demand of domestic buildings by 2030, relative to 2020
- 39% reduction in heat demand of non-domestic buildings by 2030, relative to 2020
- 210,000 homes and 26,500 non-domestic buildings retrofitted each year between now and 2030 (previous 2050 pathway required a peak of 160,000 homes retrofitted in mid 2020s)

Heat pumps: 2.2m heat pumps in domestic and non-domestic buildings by 2030 (previous pathway required 0.9m heat pumps by 2030)

Heat networks: 460k heat network connections in domestic buildings by 2030 (previous pathway required 340k connections by 2030)

Solar: 1.5 GW of solar required by 2030 and 3.9 GW required by 2050 (previous pathway required 0.8 GW by 2030 and 2 GW by 2050)

Emissions, costs and jobs for chosen pathway (slide 5)

Switching from the previous 2050 net zero pathway to Accelerated Green cumulatively **saves 30 MtCO2e by 2030 and 151MtCO2e by 2050**.

Residual emissions are **22% of 1990 levels by 2030**.

- The pathway reaches 10% residual emissions (equivalent to the residual emissions in 2050 in the 2018 1.5°C Plan) by 2037, and 5.5% emissions by 2050.
- Offsetting of residual emissions could cost between **£0.6bn and £4.2bn in 2030**. This provides additional impetus to decarbonise as much as possible in the next 10 years.

Cumulative discounted costs of investment in buildings, infrastructure and fuel totals **£173bn by 2030 and £294bn by 2050**. This is comparable with our previous estimates of cumulative costs by 2050 (£288bn) but the costs are now more front loaded.

A conservative estimate of between **49-73k jobs** would be supported in the peak year of delivery next decade from the scenarios. On average across the decade the scenarios could support between **34-46k direct jobs a year**. This represents jobs in selected sectors only (excludes transport sector) and does not include indirect jobs associated with the supply chain.

Results: fuel and infrastructure costs (slide 6)

Cumulative investment in fuel, infrastructure and buildings is estimated for each pathway to 2050. Transport investment is within the fuel and infrastructure costs and is shown to 2030 in *two presented graphs.*

The first of these graphs set out the cumulative discounted fuel costs to 2030 under the four modelled pathways. The data in this graph is as follows:

£bn	***High electrification***	***High hydrogen***	***Accelerated Green***	***No constraints***
Natural Gas	*16*	*17*	*15*	*13*
Electricity for buildings	*59*	*58*	*60*	*63*
Electricity for transport	*2*	*2*	*2*	*6*
Petrol	*7*	*7*	*6*	*3*
Diesel	*14*	*14*	*13*	*12*
Total	***98***	***98***	***98***	***97***

*******the remainder is made up of hydrogen for buildings, hydrogen for transport and biogas.*

The second graph sets out the cumulative discounted infrastructure investment to 2030 under the four modelled pathways. The data in this graph is as follows:

£bn	***High electrification***	***High hydrogen***	***Accelerated Green***	***No constraints***
District heating	*0.8*	*0.8*	*0.9*	*1.4*
EV Charging	*1.3*	*1.3*	*1.2*	*1.5*
Network costs	*0.1*	*-*	*-*	*0.3*
Electricity grid upgrades	*-*	*-*	*-*	
Total	***2.2***	***2.1***	***2.2***	***3.2***

Wider infrastructure changes to deliver behaviour change (including bus priority lanes, cycling infrastructure, rail capacity upgrades) were outside the scope of this analysis, so will be in addition to the above investment.

TfL have previously estimated the cost of these improvements needed to meet the MTS ambition at **£2.9 bn per year** (£58 bn between 2021-2041). In the Accelerated Green pathway, the total cost could remain the same but investment would need to be brought forward and increased to **£6.4 bn per year to 2030.**

Likely transport policies & actions required (slide 7)

The majority of likely policies and actions required are in line with the MTS but need to be accelerated. Some of these include:

- London-wide road user charging by mid-late 2020s
- Traffic and parking control measures, such as changes to parking supply and pricing, in line with MTS but accelerated by 10 years – meeting the majority of Mayor's Transport Strategy aims by 2030
- Co-location of services, housing and employment in selected areas to reduce travel need by 2030
- Measures meeting Transport Strategy aims for road space reallocation to public, shared and active travel infrastructure, accelerated by 10 years
- Support consolidation of freight and make use of sustainable solutions for last mile deliveries in selected areas, such as through funding, financing and working with freight operators
- Emission zones ramped up post-2030
- Measures to encourage uptake in high mileage vehicles such as enhanced licensing requirements for taxis, PHVs and car clubs, and encouraging company car EV adoption
- Accelerate deployment of public EV charging network (34,000 EVCPs by 2030)
- Lobby for national public HGV charging/refuelling infrastructure by 2040
- End of sales of new ICE cars and vans from 2030

Next steps (slide 10)

- Use the analysis to help inform the GLA and the GLA Group's work programmes and prioritise activities
- Discuss implications with key stakeholders
- Use this analysis to work with others to inform their detailed delivery planning
- Build public consensus around the urgent changes needed to tackle climate change