GREATER**LONDON**AUTHORITY

[redacted]
(By email)

Our Ref: MGLA200120-0637

19/ February 2020

Dear [redacted]

Thank you for your request for information which the GLA received on 17 January 2020. Your request has been dealt with under the Environmental Information Regulations (EIR) 2004

You asked for;

> *…a copy of all policy advice or briefing received by the mayor or deputy mayors or advisors regarding making London carbon neutral by 2030, from August 2019 to present.*

Our response to your request is as follows:

Please find attached the information we have identified as within scope of your request.

If you have any further questions relating to this matter, please contact me, quoting the reference at the top of this letter.

Yours sincerely

[redacted]
Information Governance Officer

If you are unhappy with the way the GLA has handled your request, you may complain using the GLA's FOI complaints and internal review procedure, available at:
https://www.london.gov.uk/about-us/governance-and-spending/sharing-our-information/freedom-information

[redacted]

[redacted]

From: [redacted]@london.gov.uk>
Sent: 04 October 2019 13:17
To: Shirley Rodrigues [redacted]@london.gov.uk>; [redacted]@london.gov.uk>
Cc: Aram Wood [redacted]@london.gov.uk>; [redacted]@london.gov.uk>; [redacted]@london.gov.uk>
Subject: 2030 position

Hi here it is with gaps filled in

[redacted]

Quote

"I am absolutely committed to accelerating action on tackling the climate crisis. Achieving net zero by 2030 in London or indeed the UK may well not be possible, but it is right we aim for as early a date as is feasible. I have already set a 2030 target for the ending of sales of new fossil fuel vehicles, and am calling on government to follow my lead. We should be doing all we can to increase our chances of keeping within the 1.5C, and government must commit to taking the earliest action possible. This means we need tough new policies and resources now."

- *Note this is similar to a recent quote by John Sauven, the executive director of Greenpeace UK, said: "Net zero by 2030 will be extremely difficult, but it may the right date to aim for. If it can be done, it should be, and if it can't, then missing the target by a few years, or even a decade, is still a far better outcome than hitting the government's 2050 target, which is dangerously late."*

Key lines to take:

- A 2030 or earlier zero carbon target is of course desirable but with the lack of historic and current action being taken by our government, it is highly unlikely to be achieved. For example, to reach zero carbon in London by 2030, we would need to scrap all fossil fuel vehicles and gas boilers, retrofit 1.5 million buildings in London to make them energy efficiency and install heat pumps in 3.5 million homes in London *(note some will connect to DH schemes)* within just ten years. The number of flights we take would need to be significantly reduced and there is unlikely to be sufficient headroom for any airport expansion. Action would need to start TODAY, but it is highly unlikely that this could be achieved given immature supply chains and without public understanding and support.

- To achieve an earlier target, the government would need to provide massive financial help, alongside strong regulation, to drive-uptake. Even if this were to happen there are major challenges to this, such as the current lack of supply of electric vehicles as replacements for fossil fuelled vehicles or enough installers and suppliers of heat pumps.

- Net zero by 2030 would also require the complete decarbonisation of the electricity grid, requiring an unprecedented ramp up in investment in renewables power. The Committee on Climate Change highlighted the need to build 6-10GW of renewables a year to achieve 95% of electricity generation by renewables by 2050. This for example would require offshore wind deployment to more than double from its peak in 2017. It would also need a large deployment of power stations fitted with carbon capture and storage (0.4-1 GW/year) to provide a carbon neutral back up electricity supply for when renewable electricity is not generating. The Government is nowhere near delivering this: it has stopped supporting both onshore wind and solar and has to date only committed to deliver 57% renewable generation by 2030. Talk of nuclear fusion by 2040 is way beyond 2050 - even fusion scientists don't believe that nuclear fusion can be delivered by 2040.

- None of these things are in the gift of the Mayor but rely on Government to act and to act quickly. The current government has not put any plans or resources in to even start to deliver the scale and pace of change we need.

- The Mayor has consistently said we would do more if given powers and resources and is already taking urgent action to cut emissions. He has signed up to the C40 Fossil Fuel free streets declaration which commits London to ensuring a major area of our city is zero emission by 2030 and has already made significant progress towards this with the introduction of ULEZ, rolling out electric buses and Low Emissions Bus Zones.

- We are also not relying on greater levels of offsetting or on currently unproven technologies. That's why London's current 2050 target only relies on 10% offsetting, similar levels to that recommended by the Committee on Climate Change for the national carbon target.

Background (internal)

- XR and others are pushing for an earlier date with as soon as 2025 being adopted by some. Many cities and boroughs are declaring climate emergencies and adopting targets earlier than 2050 but do not have plans to get there. Eg. RBKC have adopted a target to be carbon neutral/net zero by 2030 (by 2025 from its own operations for all the non-housing stock, and carbon neutral by 2030 from its own operations and activities including the Council housing stock).

- Latest position on targets for other stakeholder include:
    - Labour - net zero by 2030
    - Green - net zero by 2030
    - Conservatives, net zero by 2050
    - Liberal Democrats, net zero by 2045

- Our current target is net zero carbon London by 2050. Informed by evidence, bottom up analysis on what is feasible in London given powers, resources, state of London's buildings, supply chain etc etc. It is in line with the CCC pathway and IPCC trajectories consistent with a limited probability of overshooting 1.5C warming.

- The Mayor has been clear that we would do more if given powers, but that without these powers, he cannot bring forward the date:

    - "I only have the powers and resources to achieve less than half the emissions reduction required to make London zero-carbon by 2050".

    - "What we have done is the three five-year carbon reduction targets are already shown by the C40 to get us towards meeting the requirements of the Paris Accord. As it is, for us to meet those ambitious and stretching targets, we need the Government to do much more. I am worried, as it currently stands, the Government is not going to do enough for us to meet even those stretching targets. The two criteria we have had is being ambitious but being realistic. Some of the things we

need, just to meet those targets by the way, before you go even further, is we need the Government to provide strong and consistent national policy that will help us meet our targets. We need help with regulation, economic incentives and funding. Without those some people are querying whether we can even reach the targets we currently have."

- As the Mayor does not have powers to deliver the reductions, the GLA has not commissioned expensive new research to find out what a new target date could be in London. We are instead focused on what we can do earlier within our powers and resources to take action now.

EXAMPLE

To reach a 2030 target, all gas boilers in homes and buildings would need to be replaced. The average boiler has a life of 16 years. Even if we started the process now to introduce legislation to ban all new gas boilers, this legislation would be unlikely to be in force before 2021, only 9 years before the 2030 target. This would lead to a significant scrapping of boilers and there does not currently appear to be the political or public will to do this.

These boilers would either need to be replaced with hydrogen boilers or either individual heat pumps or ones connected to a communal system:
For the hydrogen boilers to be feasible, large scale hydrogen production would be required. This does not exist and our analysis estimates that a switch in the gas grid to hydrogen is not likely to be viable until into the 2040s.

For the heat pumps, this would require individual ASHPs to be placed on the outside of buildings (including individual flats) or whole new communal heating systems installed. Many homes would also need to have insulation installed first to allow the heat pumps to work properly. This will involve either cladding the outside of all buildings, or placing internal solid wall insulation on the internal walls of properties. To achieve this by 2050 would have required retrofitting up to 160,000 homes annually by the late 2020s (roughly 40% of homes needed to be retrofitted). However these figures would have to be achieved at an earlier date to meet a 2030 target, costing £10bn. The total retrofit costs for all homes would exceed £16bn. There are currently limited UK supply chains (or wider global supply chains) to deliver these technologies.

Even with strong political and public support, these rates on installation are highly unlikely to be achieved. If work was started now, we may be able to reach a 2040 date.

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From: [redacted]@london.gov.uk>
Sent: 27 September 2019 11:24
To: Shirley Rodrigues [redacted]@london.gov.uk>
Cc: Aram Wood [redacted]@london.gov.uk>; [redacted]@london.gov.uk>
Subject: Position on 2030 carbon target

Hi Shirley you asked for 200 words on what our position on a 2030 net zero target might mean. Is this what you were looking for?

A 2030 zero carbon target is desirable but with the lack of action being taken by our current government, entirely unachievable. To reach zero carbon in London by 2030, we would need to scrap all fossil fuel vehicles and gas boilers, retrofit 1.5 million buildings in London and install over 3.5 million heat pumps within just ten years.

To make this happen, the government would need to provide huge incentives, alongside strong regulation, to drive their uptake. There would be major challenges to this, such as the current lack of supply of electric vehicles as replacements for fossil fuelled vehicles. We would also need to see air travel curbed in London and airport expansion would need to stop.

Net zero by 2030 would also require the complete decarbonisation of the electricity grid, requiring an unprecedented ramp up in investment in renewables power. It would also need massive deployment of large scale power stations fitted with carbon capture and storage to provide a carbon neutral back up electricity supply for when renewable electricity is not generating and the government is nowhere near delivering this. Costs would be likely to be higher as there would be less time to optimise the energy system and build in storage and demand flexibility that can significantly reduce the need to invest in electricity networks.

None of these things are the gift of the Mayor and the current government has no ambition to deliver them. However, if we had government that committed to put in place the regulation and investment required to deliver these things, then a 2030 zero carbon target starts to look credible.

London could reach a net zero target earlier if it relied on greater levels of carbon offsetting. However we need to take responsibility for our own emissions and not rely too heavily on currently unproven technologies. That's why London's current 2050 target only relies on 10% offsetting, similar levels to that recommended by the Committee on Climate Change for the national carbon target.

Briefing: UK net zero carbon target

To: Nick Bowes, Mayoral Director of Policy
From: [redacted] – Environment Team
Cc: Shirley Rodrigues, Deputy Mayor for Environment and Energy

This paper sets out the changes that have been made to the UK's 2050 carbon target, the implications for London, and options for changing London's long-term carbon targets.

To continue to play a leadership role London could commit to setting an earlier net zero target but this would require certain preconditions of the government (in addition to our current lobbying asks). We should in any case press for the 2020 review of the 6th carbon budget to be robust, meeting CCC's advice, and that the government put in place as soon as possible new policies to address our lobbying asks and new funding through the Spending Review.

We should consider packaging up our asks and pre-conditions as a form of London Green New Deal.

Section 1: Changes to the government zero carbon target

Overview of changes to government 2050 target

The Government has committed to bring forward legislation to amend the 2008 Climate Change Act and revise the UK target to be net zero carbon by 2050 instead of the current 80 per cent reduction by 2050. The amendment will become law on 3 July.

The government sets a series of 5-year carbon budgets (15 years ahead) to meet its 2050 goal. These have now been agreed out to 2033. However, in 2018, in light of the Paris Agreement, the Government and Devolved Administrations' asked the Committee on Climate Change (CCC) to review the UK's 2050 target. In its resulting advice on moving to a net zero target by 2050, the CCC has indicated that government may need to revise the pre-2033 carbon budgets, and will provide advice on this next year, but government has yet to commit to adjusting these. This means that there is unlikely to be changes to the UK's medium-term climate 'targets' and resulting action in the next year or so. However, the review of the 6th carbon budget in 2020 (and advice on the 4th and 5th budgets) is likely to show an even steeper trajectory of emissions reduction is required by 2033, which may highlight the need for government to put in place new policies sooner and ahead of 2033.

The move to a new target has been generally welcome although there has been criticism that the Government will:

- retain the ability to use international carbon credits to offset UK emissions (against the CCC recommendation)
- conduct a further assessment within 5 years to confirm that other major economies are taking similarly ambitious action to ensure UK industry does not face unfair competition.

This has been criticized as it does not offer long term certainty and stability for e.g. business to confidently invest in the transformation needed.

Impact on London targets
This change in government policy is a positive step in that the UK's target now aligns with London's net zero 2050 target. However, the government's existing carbon budgets (to 2033) are less challenging than London's (and on a less steep trajectory) and as set out above, the change in the 2050 target does not have any immediate impact on these short-term carbon budgets. The government's current budgets have also not been verified to be on a 1.5C degree pathway. Therefore there are no new drivers for government to take the more urgent action that is needed to meet London's steeper trajectory to zero carbon by 2050.

This is important as the Mayor currently only has the powers to realise less than half the emissions reductions that are needed in London and so relies on the government to put in place strong policies on decarbonising heat, transport and electricity, and to vastly improve the energy efficiency of our buildings.

Implications for lobbying asks of government
As set out above, as there are few changes to government's short-term targets, our existing lobbying asks remain relevant (see below). However, as the 6th carbon budget is likely to be steeper and require more action, the case and pressure for these may increase following next year's review. Our existing asks include:

- End the sale of fossil-fuelled vehicles by 2030, rather than 2040, with appropriate support for the required infrastructure needed for a large scale switch to electric vehicles
- Devolve power to the Mayor to regulate all existing buildings in London, including strengthening existing landlord minimum energy efficiency standards for buildings.
- Fund low carbon heat beyond 2020/21 when the renewable heat incentive ends.
- Support community energy schemes and remove unfair business rates tax treatment on solar

Similar asks are being made by green NGOs although some are going further in some areas. For example in its climate manifesto[1], Greenpeace is calling for Government to place an obligation on gas distribution companies to progressively reduce to zero before 2045 the carbon content of the gas they supply. The manifesto also calls for a ban of the use of fossil fuel heating, including gas boilers, in new homes from 2025. The London Plan supports the deployment of low carbon heating systems through its carbon emission reductions targets and zero carbon building targets but does not include a ban on gas boilers.

Section 2: Options for London's zero emission targets

Background: Net zero targets for other cities or countries
Other cities have set zero carbon targets with a range of different dates. Some of these have detailed modelling to support them whilst other don't, some rely on large levels of offsets, and all reflect to some extent the starting position of the city:

- New York, Paris, Barcelona and Melbourne all have targets for net zero by 2050.
- Los Angeles has a target of net zero by 2045 (framed as a green new deal focused on jobs) but the Mayor has control over its energy supply .

[1] https://www.greenpeace.org.uk/wp-content/uploads/2019/04/0861_GP_ClimateEmergency_Report_Pages.pdf

- Scotland has a target of net zero by 2045 as recommended by the CCC (due to a small population and more space to grow bioenergy, install renewables and undertake industrial carbon capture and storage).
- Copenhagen is targeting net zero by 2025 by using biomass in existing heat networks and investing in dedicated windfarms for the city.
- In the UK, Manchester, Bristol and Edinburgh all have earlier net zero carbon targets than London. Bristol has a target of net zero by 2030 but has not yet set out details of how it will be achieved. Edinburgh is also targeting net zero by 2030 but with a backstop of 2037. Manchester's 2038 target is based on research done by the Tyndall Centre to assess the remaining carbon budget which should be equitably allocated to the UK. Manchester has set out a number of scenarios that result in higher emissions than this equitable allocation, and needs to do further work to show how they can close the gap. Some of this may be through carbon offsetting.

Action required to meet London's current target to be zero carbon by 2050, and the potential to bring this date forward

London's 'net zero' target will see us aim to reduce emissions by 90 per cent by 2050, with 10 per cent emissions offset. This remains a very ambitious target and will require nearly all measures to be implemented on a very swift timeline. This means that there is little opportunity to increase the number of measures that we implement, but there is some limited scope to bring forward the target date for these measures. However, the Mayor does not have powers over the majority of these measures – it will require government policy levers, so any change in target will likely result on a call for Government to act faster.

Under our current target:

- Nearly all homes need to be retrofitted with energy efficiency measures like wall insulation by the late 2030s. This means retrofitting up to 160,000 homes per year in the late 2020s. This is more than four times higher than the peak rate of retrofits seen in 2012, before the Government slashed funding. The Mayor does not have powers over existing buildings, and there is currently not sufficient government policy in place to achieve these existing numbers. Initial high level analysis suggests there is therefore limited scope to bring this action forward.

- Reductions in carbon emissions from transport in our current carbon trajectory are based on the Mayor's Transport Strategy and are already very ambitions ie it assumes a 80% sustainable mode share by 2041.

- A large portion of existing buildings will need to switch from gas boilers to individual heat pumps, hydrogen or be connected to heat networks by 2035[2]. This means up to 145,000 heat pumps[3] will need to be installed a year in London's buildings and we'll need up to 42,000 connections of buildings to new heat networks a year (compared to 30,000 homes connected now). The Mayor does not have powers over existing buildings, so this relies on national government action. Other than the renewable heat incentive (which is due to end in 2020), there are currently almost no policies in place for government to decarbonise heat. The average life of a gas boilers is around 16 years, meaning that any regulation or requirement to switch over gas boilers to alternatives, needs to be in place at least 16

[2] Under zero carbon pathway only 35% of heat from gas systems in 2035
[3] More heat pumps are expected to be installed in the 2030s and 2040s than in the 2020s, as the supply chain is still developing in the 2020s

years before zero carbon heat can be achieved (without having to replace working gas boilers) plus any legislative lead in time. High level initial analysis suggests there is therefore some room to bring forward action on heat, but again this would require government policy and a very significant boiler replacement programme. It would also potentially rule out switching over the gas grid to hydrogen, which is not likely to be viable until into the 2040s (as the large scale low cost production of hydrogen will likely be dependent on carbon capture and storage at scale).

- By 2050 there will also need to be a near complete decarbonisation[4] of the electricity grid and high level analysis suggests that bringing this forward is not possible. The Committee on Climate Changes suggests that a rapid deployment of renewables in the 2020s could bring power sector emissions down to below 100gCO_2/kWh by 2030 (from 265 gCO_2/kWh in 2017). Getting to almost zero[5] will then require zero emission back-up power stations for any long periods of time when renewable output is low (as batteries are currently unable to store the volumes of power required). These power plants will either need to be run on hydrogen, or if gas powered fitted with Carbon Capture and Storage (CCS) to capture the CO_2 produced. Both of these options require both significant transport and storage infrastructure, and neither is currently deployed at scale in the UK. Any delay to having this infrastructure in place by 2030 is likely to significantly hamper the rate of decarbonisation that can be achieved in the power sector[6].

- The current trajectory also assumes no increases in airport emissions from current levels which will be challenging given the planned expansion of a number of airports.

Bringing forward the target date – 2025, 2030, 2040 and 2045?

Bringing forward the target date poses a number of challenges. Based on the above high-level analysis of potential to bring forward delivery of actions, it will not be possible to meet a zero carbon date for London in 2025 or 2030 without significant offsetting outside of our borders, which is unlikely to be possible, and replacing huge numbers of vehicles and gas boilers many years before their end of life with therefore likely significant economic implications.

There may be some potential to bring forward the date to 2045 or 2040 (although as explained above, this will require government, rather than Mayoral action). Reaching the 2040 target, however, would require:

- Energy efficiency measures are front loaded in the existing model so that all measures are complete by 2040. However to enable a faster roll-out of low carbon heat this is likely to need to be accelerated. Understanding the extent of the acceleration would require further detailed modelling.
- Up to 300,000 heat pumps would need to be installed every year, up from 145,000 for the 2050 target[7]

[4] Model assume electricity sector carbon intensity of under 0.03kgCO2e/kWh in 2050 (BEIS Green Book projections)

[5] Our Zero Carbon Pathway assumes the carbon intensity of the electricity grid in 2030 will be just under 30gCO2e/kWh

[6] https://www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-Technical-report-CCC.pdf

[7] In our zero carbon pathway, we anticipate that most of the heat pumps will be installed in London in the period post 2030, in order to give the supply chain time to develop. With our 2050 target, there will be 20 years after 2030 to install these "post-2030 heat pumps". Bringing forward the target by 10 years to 2040 means we have to install the same number of "post-2030 heat pumps" in half the time.

- Around 54,000 new connections of buildings a year to heat networks, up from an average of 30,000 a year in the 2030s for the 2050 target
- A faster decarbonization of the electricity grid to zero by 2040.

These are initial estimates and would need to be assessed by further modelling as there are limits to the pace at which some measures eg heat networks can be rolled out. Note that this modelling will take fairly significant resource as we would need to repeat the modelling done for the 1.5C plan.

Implications and risks of bringing target forward

- More ambitious targets will require early regulation and could result in higher costs if, for example, it leads to some scrappage of vehicles and natural gas-based heating systems.
- The current zero carbon trajectory involves significant upfront costs to improve buildings and start to roll out low carbon heating, and even greater funding would be required if an earlier target is set. However, this investment could be facilitated through regulation. We are already seeing a step up in investment in heat pumps by developers driven by London Plan zero carbon targets although not at the rate we need.
- The global supply of electric vehicles (EVs) is currently volatile and it is unlikely we will be able to replace London's entire existing vehicle fleet with EVs. Achieving a zero emission transport network earlier than our existing target (by 2050) is likely to require stopping the use of fossil fuel cars, with potentially only limited and expensive alternatives available.
- However, bringing action forward would also result in positive benefits being felt earlier e.g. improvements in air quality and reductions in fuel poverty and reduced utility and fuel bills, which would have a wider economic benefit.

Cost implications of bringing electricity sector decarbonisation forward

- The CCC estimates that reducing power sector emissions to near zero by 2050 would increase costs by around 10% compared to a gas-based power system (but only if the electricity system is made more flexible[8]). However, this only represents around 0.1% of GDP in 2050 and it would also bring significant co-benefits and industrial opportunity for the UK. Capital investment in UK power generation will need to double from current levels to achieve near decarbonization by 2050[9].
- Due to rapidly falling costs, a strong deployment of renewables in the 2020s will not have high costs, even when including deployment of flexibility measures like storage and back-up power stations to accommodate high levels of inflexible solar and wind generation.
- A more rapid roll out of renewables in the 2020s combined with high electrification of heat and transport could actually lower electricity bills, as they complement each other well and can result in a more optimized system[10]. However, this would need to be supported by a greater volume of contracts for new renewable projects.
- Grid decarbonisation will depend on a significant ramp up in the roll out of offshore wind if the UK Government continues to block onshore wind and solar. To achieve a faster rate of electrification of heat and transport based on low carbon power without solar and onshore wind, offshore wind deployment would need to rise from a peak of 1.7GW in 2017 to 5.4GW a year. This could result in short-term cost increases where there are gaps or bottlenecks in the supply chain, but the global offshore wind sector is expected to continue to scale up dramatically.

[8] If system flexibility was reduced, overall system costs could increase by £3 billion/year. Conversely, further improvements in system flexibility could decrease system costs by £1 billion/year,
[9] CCC, 2019, Net zero technical report.
[10] Vivid Economics and Imperial College (2018) Accelerated electrification and the GB electricity system.

- However significant Government funding will need to be given to develop CCS and hydrogen infrastructure to reach near decarbonization by 2050 – this would need to be accelerated if an earlier target were adopted.

Cost implications of decarbonising buildings earlier

- Our current trajectory assumes ~60 per cent of energy efficiency measures are undertaken in the 2020s, and nearly all of these measures would be undertaken by 2040. Therefore, the total cost would be unlikely to change significantly if the target was brought forward to 2040. However the annual costs may go up if this needs to be accelerated to enable a faster roll-out of low carbon heat.
- The main increase in annual building costs will be down to a faster deployment of heat pumps and connections to heat networks, which could increase average annual costs in the 2030s from £2.1bn to £4.7bn.
- The costs of improving the energy efficiency of new buildings and installing low carbon heat solutions are assumed to be covered by developers, as they are required to do so under London Plan policy.
- Greater regulation of existing buildings would unlock private funding for these measures, however significant support will still be required for those unable to pay to improve their buildings or install low carbon heating, particularly in hard to treat buildings.

Local electricity network cost implications

- Our 2050 modelling showed that even with electrification of heat and transport, strong energy efficiency policy could enable peak electricity demand to decline to 2035 and only the high electrification scenario results in a big increase in London's peak demand.
- Meeting an earlier zero carbon target effectively rules out scenarios that rely on any hydrogen in the gas grid, as low carbon hydrogen with carbon capture and storage at scale is not expected to be available at the scale and cost required by that date.
- There would therefore be a much greater reliance on electrification of heat. Our high electrification scenario for 2050 requires over ten times the investment in grid reinforcement relative to our patchwork scenario (which relies on a hydrogen gas network "backbone"); over £2bn is required for grid reinforcement in the high electrification scenario relative to £200m for the patchwork scenario. With an earlier target, this additional £2bn investment would also be spread over fewer years.

Possible future approach

To continue to play a leadership role, London could commit to setting an earlier net zero target of 2040 (but limiting offsetting to 10% in line with CCC advice on the national budget). Initial high level analysis suggests that the precondition for this is that Government (in addition to the existing lobbying asks):

- Provides adequate funding for energy efficiency and low carbon heat to London
- Enable greater investment in public transport in London through grants or by fiscal devolution eg Crossrail 2, upgrade of signaling on the Piccadilly line and other schemes.
- Develops a proper aviation strategy that curbs demand through new measures eg a carbon tax and funds greater R&D into zero emission technology as recommended by the CCC.
- Faster decarbonization of the electricity grid through changing rules to support renewables e.g. providing permitted *onshore* wind and solar with Government contracts to enable them to be built and providing a greater volume of contracts.

- Government to fund and accelerate its Carbon Capture and Storage programme and hydrogen trials to enable full power sector decarbonization and low carbon hydrogen to emerge as an option for heating and industry in London.

We should press for the 2020 review of the 6th carbon budget to meet the CCC's advice, that the government put in place new policies to address our lobbying asks and this be reflected in the CSR. This could be packaged up as a London Green New Deal ask.