

Session 6 Carbon Management Plan: Net Zero Ready

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Glossary

Greenhouse Gases as defined under the Kyoto Protocol: Carbon dioxide, Methane, Nitrous oxide, Hydrofluorocarbons, Perfluorocarbons, Sulphur hexafluoride, and Nitrogen fluoride

Global Warming Potential, amount of warming the gas would cause over 100-year period, relative to Carbon dioxide.

Global Warming Potential Example

Carbon dioxide Global Warming Potential = 1,

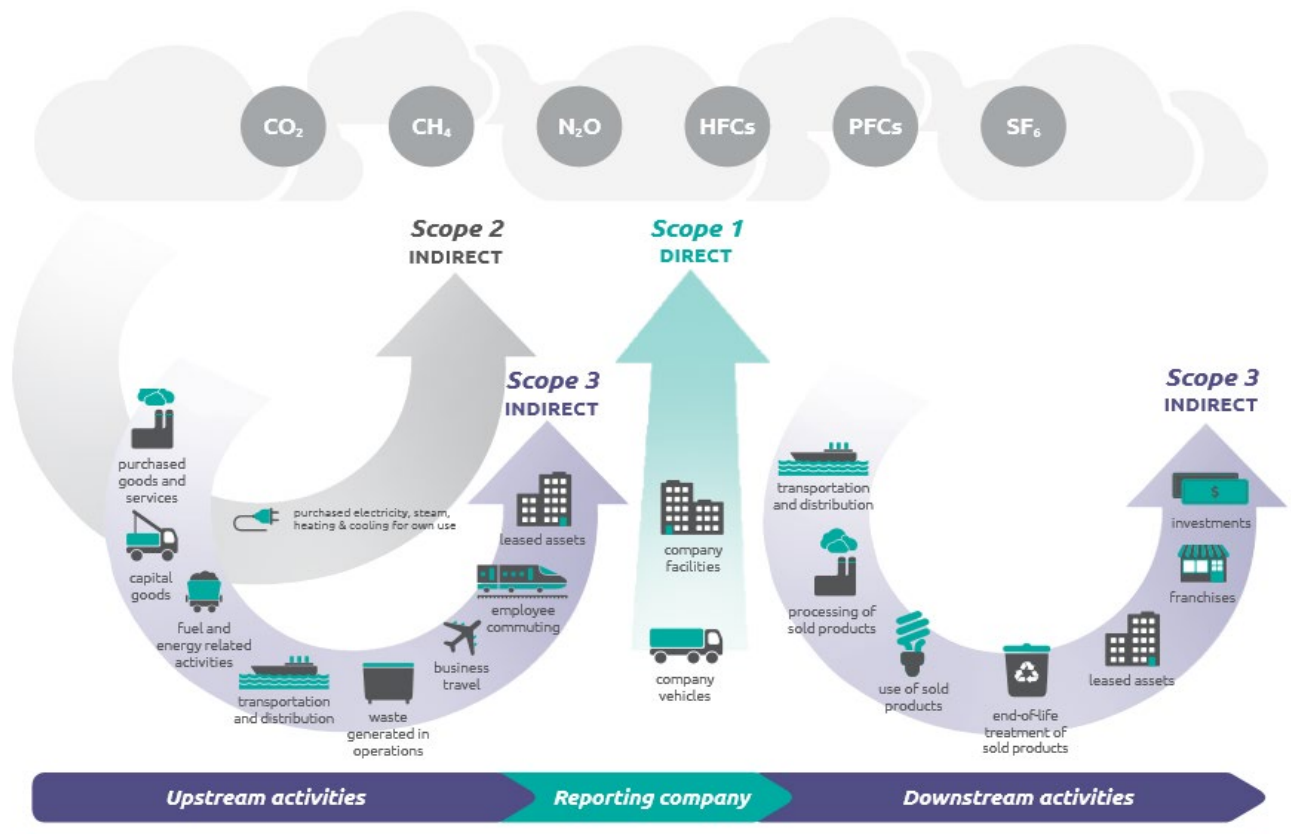
Methane Global Warming Potential =25

Releasing 1 kilogram of Carbon dioxide equivalent is equivalent to releasing 25 kilograms of Methane as they have the same warming effect over a 100-year period.

Tonnes of Carbon Dioxide equivalent is a standardised measure for carbon footprints. It refers to all Greenhouse Gases being calculated in carbon dioxide equivalent using Global Warming Potential to allow for comparison on a like by like basis.

Carbon emissions: Tonnes of Carbon Dioxide equivalent/all Greenhouse Gas emissions

Figure 1: Overview of scopes and emissions across a value chain



(Source: GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard)

Net Zero

The International Panel on Climate Change defines net zero emissions as follows:

“Net zero emissions are achieved when anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period. Where multiple greenhouse gases are involved, the quantification of net zero emissions depends on the climate metric chosen to compare emissions of different gases (such as global warming potential, global temperature change potential, and others, as well as the chosen time horizon).” (International Panel on Climate Change, 2018)

A similar definition is used by the Committee on Climate Change and the Scottish Government. 'Net Zero' in the context of this report refers to reducing emissions from all Greenhouse Gases as much as possible and counterbalancing the remaining emissions through offsetting. This should not be confused with 'carbon zero' or 'carbon neutral' which refers only to Carbon Dioxide emissions and not all Greenhouse Gases.

Offsetting

When applying Net Zero definition to an organisation such as the Scottish Parliamentary Corporate Body where there is limited scope for anthropogenic removals, as we do not own or manage large areas of land for tree planting or peatland restoration. Therefore, any remaining emissions when stating 'Net Zero' must be removed through 'offsetting'.

Theoretically the Scottish Parliamentary Corporate Body could immediately purchase offsets to claim net zero status, however as a public body it is our duty to reduce absolute emissions as much as possible before considering offsetting in a responsible manner. The Scottish Parliamentary Corporate Body has therefore chosen to focus on reducing carbon emissions as much as possible and await updated guidance from the Scottish Government regarding purchasing offsets if required.

'Green' Electricity

Electricity supplied to the Parliament comes through the National Grid. Our electricity tariff is UK Renewables 100%, this means that our supplier purchases Renewable Energy Guarantee of Origins administered by the Office of Gas and Electricity Markets. Although it would be possible for the Scottish Parliamentary Corporate Body to claim zero emissions from electricity using a market-based methodology, this would not truly reflect our carbon emissions from electricity.

For honest and transparent reporting of emissions, in-line with the location-based approach within the Greenhouse Gases Protocol and Scottish Government public duty reporting, the Scottish Parliamentary Corporate Body uses the Department for Environment, Food and Rural Affairs annual emissions factor to calculate the carbon emissions from electricity.

Although the 100% renewable tariff is important to show our environmental consideration, we use the grid average emission factors, the same as all public bodies in Scotland, to accurately reflect the Scottish Parliamentary Corporate Body's true Greenhouse Gas emissions, responsibilities, and to push for further action to reduce our electricity consumption.

Introduction

This Carbon Management Plan for Session 6 replaces the previous Carbon Management Plan which targets ended in March 2020. With the Scottish Parliamentary Corporate Body looking to set Net Zero targets, this Carbon Management Plan starts the process of Scottish Parliamentary Corporate Body preparations to become 'Net Zero Ready', so that the building is prepared and ready for low carbon heating, and decarbonised electricity.

The Carbon Management Plan will have the following structure:

- The aims and objectives of the report will be clearly stated as well as legislative context and requirements which are fulfilled by this Carbon Management Plan.
- The previous Carbon Management Plan and targets will be discussed including details on the impact of COVID-19 and plans to improve measurements of the Scottish Parliamentary Corporate Body Scope 3 emissions over Session 6.
- Session 6 target of 66% reduction in carbon from our current 2005/06 baseline will be set and costed, along with detail on what projects are required to reach this target.

It should be noted that this 66% target is close to the 67% reduction achieved during 2020/21, a year significantly affected by the COVID-19 pandemic, and which resulted in a large majority of staff working from home, no international travel, and limited business travel. This highlights the importance of a green recovery and ensuring that as many positive behavioural changes as possible are kept, allowing the Scottish Parliamentary Corporate Body to reach future targets. Although we would not want to keep all changes, we should acknowledge that there are a large amount of emissions that need to be reduced to reach the 66% target.

The Carbon Management Plan is a live document which should be reviewed every 6 to 12 months and updated as new approaches and opportunities for reducing emissions are identified.

All new Scottish Parliamentary Corporate Body projects will go through the Sustainable Development Impact Assessment Tool to assess whether they are viable in terms of Sustainable Development. Where projects are seen to have a large positive or negative impact on energy and carbon usage at the Parliament this will be measured, and the data updated in this Carbon Management Plan.

Aims and Objectives

The Scottish Parliamentary Corporate Body is striving to become a zero emissions organisation, on the journey to this, during Session 6 the Scottish Parliamentary Corporate Body aims to become 'Net Zero Ready' by fulfilling the following objectives within this document:

- Set out the Scottish Parliamentary Corporate Body's carbon target for Session 6.
- Highlight projects and interventions that will be undertaken over Session 6 to reach these targets.
- Fulfil compliance to government legislation in setting targets and demonstrating how the Scottish Parliamentary Corporate Body is contributing to Scotland achieving its emissions reduction targets.
- Be in line with the Scottish Government's Climate Change reporting amendments, with this document providing information on how the Scottish Parliamentary Corporate Body will align its spending plans and use of resources in order to contribute to delivering its emissions reduction targets.
- Be a public document open to public scrutiny on our actions to reduce carbon.

Limitations and Uncertainties

This report was written within the following limitations:

- Decarbonisation of the electricity grid is based on Government predictions which can change.
- Many costed projects do not have information regarding energy saving or carbon data.
- Currently for projects outside of Facilities Management, the increase of carbon emissions from the project is not considered during the approval process.

Legislative Context

The Paris Agreement is international legislation on reducing carbon emissions. The agreement was reached at the 21st Conference of the Parties of the United Nations Framework Convention on Climate Change. The Scottish Climate Change legislation objective is to contribute appropriately to the world's efforts to deliver on the Paris Agreement.

The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 amends the Climate Change (Scotland) Act 2009 to set new targets of net-zero emissions for 2045. This target is in line with advice from the Committee on Climate Change which

published a report to guide the UK Government in setting emissions reduction targets. The Committee on Climate Change report 'Net Zero – The UK's contribution to stopping global warming, which was published in May 2019, set a net zero date of 2045 for Scotland due to its greater capacity to remove emissions through afforestation and carbon capture, and storage (Committee on Climate Change, 2019).

Scottish climate change legislation requires public bodies to: contribute to carbon emission reduction targets, contribute to climate change adaptation and act sustainably. The Climate Change (Duties of Public Bodies: Reporting Requirements) (Scotland) Order 2015 requires public bodies such as the Scottish Parliamentary Corporate Body to report annually on compliance with the climate change duties. The public bodies reporting duties were amended in 2020, to ensure that within annual reports the following is given:

- Target date for achieving zero direct emissions of greenhouse gases, or such other targets that demonstrate how the Scottish Parliamentary Corporate Body is contributing to Scotland achieving its emissions reduction targets.
- Targets for reducing indirect emissions of greenhouse gases.
- Information on how the Scottish Parliamentary Corporate Body will align its spending plans and use of resources to contribute towards delivering its emissions reduction targets.

In line with The Scottish Government's Climate Emergency Declaration and net zero by 2045 targets it is vital that the Scottish Parliamentary Corporate Body has a vision and plan to reduce absolute carbon emissions, consistent with the global urgency to mitigate climate change.

Previous Carbon Management Plan

The Scottish Parliamentary Corporate Body's second and most current Carbon Management Plan was published in 2013 and set targets to 2020 to reduce emissions by 42% compared to a 2005/06 baseline. This target was updated in 2019 to be in line with the Scottish Government's 56% reduction target by 2020 – Financial Year 2020/21. As can be seen in Figure 2 emissions have decreased from 4,377 tonnes of Carbon Dioxide equivalent in 2005/06 to 2,016 tonnes of Carbon Dioxide equivalent in 2019/20, a 54% reduction and an absolute emissions reduction of 2,361 tonnes of Carbon Dioxide equivalent. This is a great achievement and the Scottish Parliamentary Corporate Body has also met the overall Carbon Management Plan 2020 target of a 56% reduction by 2020/21.

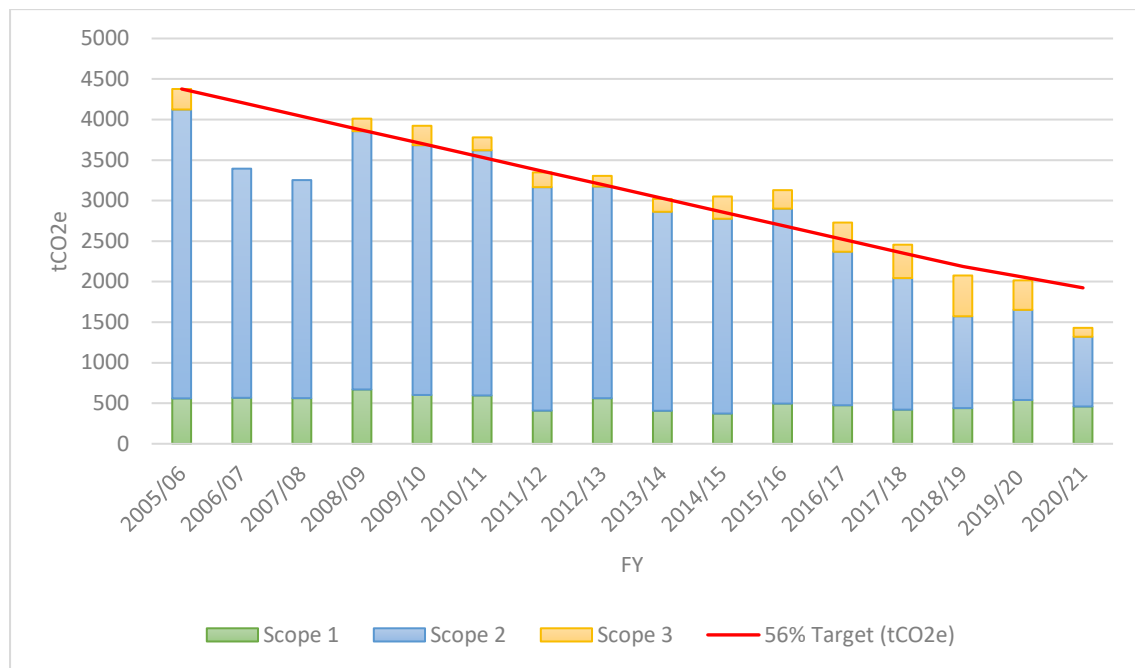
The Scottish Parliamentary Corporate Body acknowledge that overachieving this target has been due to COVID-19 restrictions in travel and building occupancy. Carbon emissions for 2020/21 are sitting at 1,439 tonnes of Carbon Dioxide equivalent (awaiting verification). This is greater than the 56% target, as can be seen in Figure 2. It is understood that these emissions are likely to rise slightly after 2020/21 as we return to normal ways of working and travelling. However, it would be

a missed opportunity not to encourage a continuation of the behavioural changes seen, such as the increase in use of digital meetings, and a reduction of non-essential travel.

Another aspect of the reduction in emissions due to COVID-19 is that although some of these emissions, such as business travel, have been eliminated, others such as the reduction in electricity and gas have been transferred to staff working at home. To ensure this is considered within the 2020/21 Annual Sustainability report the 2020/21 staff travel survey has been created to allow for collection of data on home working emissions during the past year.

Other additional Scope 3 categories such as commuting and energy usage from local offices have been collected over the last few years. With new public body duties requiring a target for indirect emissions the Scottish Parliamentary Corporate Body plan to create a full Scope 3 Assessment and Prioritisation Strategy over Session 6. This strategy will be created to focus on expanding the measurement of Scope 3 and to set out targets and goals for these previously unincorporated emissions.

Figure 2. Annual Carbon figures including target line of 56% reduction in emissions which has been achieved.



(* 2006/07 & 2007/08 Scope 3 was not measured, see Table 1 for categories included in each Scope)

Carbon Management Plan – Session 6

Boundary

As highlighted in Figure 1 carbon emissions are categorised into three scopes by the Greenhouse Gas Protocol, the most widely used carbon accounting tool. Scope 1 is direct emissions from sources such as fuel for company vehicles or gas burned for heating. Scope 2 covers the indirect emissions sources such as emissions from electricity. Scope 3 covers indirect emissions due to the activities of an organisation, such as water usage, waste and business travel.

The Scottish Parliamentary Corporate Body incorporates emissions from all Scope 1 and 2 sources, and some Scope 3 in the boundary of this Carbon Management Plan. This Boundary is highlighted below with the details from 2019/2020 in Table 1.

Table 1: 2019/20 carbon emissions and sources

Scope 1 (27%)	tonnes of carbon dioxide equivalent	Scope 2 (55%)	tonnes of carbon dioxide equivalent	Scope 3 (18%)	tonnes of carbon dioxide equivalent
Gas	531.26	Electricity	1,112.18	Waste	2.35
Fuel for van, gritter, generator.	2.09	-	-	Water	22.7
Fluorinated gas from chillers and refrigeration	6.7	-	-	Business Travel	338.57

Carbon Target

To provide consistency in our reductions the last full set of data for 2019/20 has been used, this represents the last 'normal' year before COVID-19. By setting targets in this way, we are trying to ensure that during any uncertainty and fluctuations over the next few years we will continue to reduce emissions consistently from 2019/20 and achieve reductions by the end of Session 6.

Table 2a: Carbon figures

Financial Year	Target	Tonnes of carbon dioxide equivalent total
2005/06	baseline	4,377
2019/20	53% (achieved 54%)	2016
2020/21	56% (higher achieved)	1,926 to reach target (1,439 achieved)

Table 2 b: Future Carbon Targets

Financial Year	Target	Tonnes of carbon dioxide equivalent total
2021/22	58%	1,838
2022/23	60%	1,751
2023/24	62%	1,663
2024/25	64%	1,576
2025/26	66%	1,488
2030	Net Zero	-

The Session 6 target is for a 66% reduction from the 2005/06 baseline. This target of 1,488 tonnes of carbon dioxide equivalent is similar to where the carbon emissions are for 2020/21 during the COVID 19 pandemic, with a large majority of staff working from home, no international travel, and limited business travel. This highlights the importance of a green recovery and ensuring as many positive behavioural changes as possible are kept, enabling the Scottish Parliamentary Corporate Body to reach future targets.

This equates to an absolute reduction of 528 tonnes of carbon dioxide equivalent by March 2026, from the last full set of pre COVID-19 carbon figures 2019/20.

The bulk of this will be achieved through grid decarbonisation and reducing gas, electricity and business travel. Planned and possible projects for reducing carbon in Session 6 are set out below.

Carbon Reductions

Table 3: Session 6 Carbon Table

Project	Carbon reduction from 2019/20	Comments
Grid decarbonisation	444 tonnes of carbon dioxide equivalent	See Annex 1 for calculations
Queensberry House Fabric Improvements	24 tonnes of carbon dioxide equivalent	Integrated Environmental Solutions report
Chiller Replacement	30 tonnes of carbon dioxide equivalent	Integrated Environmental Solutions report, also need to consider increase in Fluorinated gas from installation
Replacing diesel van with electric vehicle or using a hired EV	2 tonnes of carbon dioxide equivalent	Increase in electricity usage - not measured.
Air Handling Units planned for July 2021 (plus 10, 11 and 12)	5 tonnes of carbon dioxide equivalent	Data calculated from MITIE report
Chiller pump replacement	5 tonnes of carbon dioxide equivalent	Data from MITIE report
BEMS optimisation strategy for Session 6	unknown	Unable to predict reductions from Integrated Environmental Solutions report
Switch to LED lighting	Unknown	-

Total known reductions over Session 6: 510 tonnes of carbon dioxide equivalent

Further reductions will come from projects which are currently at investigation stage:

Cooling strategy after initial investigations, including details on comms rooms	unknown	Data will be available 2022/23
Replace gas for cooking and hot water	unknown	2023/24
Broadcasting and press tower strategy (see Annex 2)	121 tonnes of carbon dioxide equivalent	Detailed investigation needs to be undertaken
Restricting international flights	4 tonnes of carbon dioxide equivalent	Based on 2019/20 figures
If all mileage was undertaken using Electric Vehicles	10 tonnes of carbon dioxide equivalent	Based on 2019/20 figures and emission factors

Total Possible: 135 tonnes of carbon dioxide equivalent

Ensuring a green recovery from COVID-19 where there were the following reductions between 2019/20 to 2020/21.

- This would involve continued working from home /new ways of working, and continued reduced business travel, digital first policy.

Gas	80 tonnes of carbon dioxide equivalent	
Electricity	150 tonnes of carbon dioxide equivalent	(includes decarbonisation of the electricity grid between years)
Business Travel	240 tonnes of carbon dioxide equivalent	

If 20% of these reductions kept: 94 tonnes of carbon dioxide equivalent

As highlighted in Table 3 from the 528 tonnes of carbon dioxide equivalent carbon reduction needed to reach Session 6 targets, 510 tonnes of carbon dioxide equivalent will be reduced through grid decarbonisation and definitive projects.

This leaves 18 tonnes of carbon dioxide equivalent still to be reduced. This will be delivered through a mixture of projects that are currently at investigation stage, possible future projects and through behavioural changes, ensuring a green recovery and new ways of working. The importance of behavioural change and building usage can be seen in the last part of the table which highlights that even if 20% of reductions, which took place during 2020/21, were kept, it would account for 94 tonnes of carbon dioxide equivalent reduction in carbon.

The carbon table will be continually updated when data is available on projects, these should be analysed using the energy model to gain an understanding of the possible impacts. If future projects and policy decisions will create a larger reduction in carbon, the targets will be expanded within the Carbon Management Plan.

Costed Projects

As detailed in the Legislative Context section of this report, the Climate Change (Duties of Public Bodies: Reporting Requirements) (Scotland) Order 2015 requires the Scottish Parliamentary Corporate Body to report annually on information on how it will align its spending plans and use of resources to contribute towards delivering its emissions reduction targets. This is detailed in Table 4 and 5.

There is no direct budget or budget holder for carbon or energy reduction projects, this is covered by Facilities Management, mainly through the projects budget (Table

4), and a small amount through the Environmental Performance Manager budget (Table 5).

Required budgets for future years will be determined on a rolling basis. Research and innovation is an important part of the budget to ensure we can make best use of new technologies which will arise. The research and innovation budget will also be used to examine projects such as renewable energy on site, and possible offsetting projects such as green walls.

The Facilities Management costed projects budget for 2020/21, have been split into the five strategic investment priorities. These are the investment priorities for reaching Scottish Parliamentary Corporate Body Net Zero targets. More details on these can be found in the Leadership Group Net Zero Paper.

Table 4: Costed Facilities Management projects related to energy for Session 5

Project type	2021/22	2022/23	2023/24	2024/25	2025/26
Other;					
Research and Innovation	£30k	£30k	£30k	£30k	£30k
Lighting strategy for whole building and LED install	£55k	0	0	0	0

Building Management System

Building Energy Management System	0	£1.5 m	0	0	0
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Cooling;

Cooling strategy for whole building (comms rooms, pump efficiency etc)	£12k	0	0	0	0
Chiller pump replacement	£38k	0	0	0	0
Chiller replacement	£50k	£50k	0	£900k	0

Heating;

Investigating move away from gas usage.	£10k	0	0	0	0
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These works will not in themselves reduce carbon but are enabling works for future move away from gas.

Thermal Performance;

Queensberry House investigation	£20k	£20k	0	0	0
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Window refurbishments	£40k	£15k	£15k	£15k	£15k
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Electrical Infrastructure;

Power resilience study improvements	£10k	0	0	0	0
Air Handling Unit replacements	£40k	£40k	£40k	0	0

It is estimated that replacement and refurbishment projects will have a small positive impact in reducing carbon, however it should be noted that other projects not listed above, such as additional external lighting, Perimeter Intruder Detection improvements, and additional speakers will likely have a small negative impact.

New projects will go through a Sustainable Development Impact Assessment Tool to assess whether they are viable in terms of Sustainable Development. Where projects are seen to have a large positive or negative impact on energy and carbon usage at the Parliament this will be measured, and the data updated, in this Carbon Management Plan. This should apply not only to Facilities Management but to all Scottish Parliamentary Corporate Body projects.

Table 5: Costed Environment and Sustainability works in Session 6

Project type	2021/22	2022/23	2023/24	2024/25	2025/26
Sustain Network	£5k	£5k	£5k	£5k	£5k
Waste and Circular Economy	£4k	£4k	£4k	£4k	£4k
Sustainable travel programme	£2k	£2k	£2k	£2k	£2k
Audits and Scope 3 work	£18.5	£5k	£5k	£5k	£5k
Corporate Training and Development – includes aspect on behavioural change	£7k	£7k	£7k	£7k	£7k
Publications	£7k	£7k	£7k	£7k	£7k
Total	£34.5k	£21k	£21k	£21k	£21k

Conclusion

This Carbon Management Plan has set out how the Scottish Parliamentary Corporate Body intends to reduce its greenhouse gas emissions and meet its duties under the Climate Change (Scotland) Act 2019 and its revisions, over Session 6.

The Scottish Parliamentary Corporate Body reached and exceeded the previous Carbon Management Plan target and has made great progress in reducing carbon emissions. Steps have also been taken to start to expand the measurement and understanding of all Scope 3 emissions and take full responsibility for all direct and indirect carbon emissions. This will be further investigated over Session 6 and Scope 3 targets set. The new 66% target within the current carbon boundary will require expense (investment) and resource which are detailed in this report. Other projects which are currently at investigation stage will be added to the Carbon Management Plan throughout Session 6.

Although the Scottish Parliamentary Corporate Body have relatively small emissions compared to other public bodies, the Scottish Parliamentary Corporate Body is proud to be able to contribute to reducing Scotland's impact on the climate and hopes that its leadership in this area will provide some encouragement to other public sector organisations on what can be achieved.

Annex 1: Grid Decarbonisation Calculations

When calculating carbon emissions annual emission factors are used. These are published by the Department of Environment Food and Rural Affairs to be used for company reporting¹.

When modelling the impact of grid decarbonisation for the Scottish Parliamentary Corporate Body targets, projected grid carbon intensity used are those published by the UK Government Department for Business, Energy and Industrial Strategy².

Energy Projection Data, Table 1 when using the consumption based – grid average, the emission reductions are quite extreme, when using the consumption based - long run marginal emissions from electricity increased slightly over Session 6. When modelling 2030 or 2045 target, estimation was used for emission factors from 2019 Department of Environment Food and Rural Affairs for 2019/2020 emission factors to 2025 Business, Energy and Industrial Strategy projections. From 2025/26 onwards, graphs are based on Business, Energy and Industrial Strategy figures using: long run marginal, consumption based, commercial/public sector figures.

It should be noted that these figures are predictions and should only be used to give an overview. Business, Energy and Industrial Strategy have also stated that these figures were due to be updated in April 2021 to reflect the UK Government's net zero consistent decarbonisation strategy, so should be checked and updated accordingly after that date.

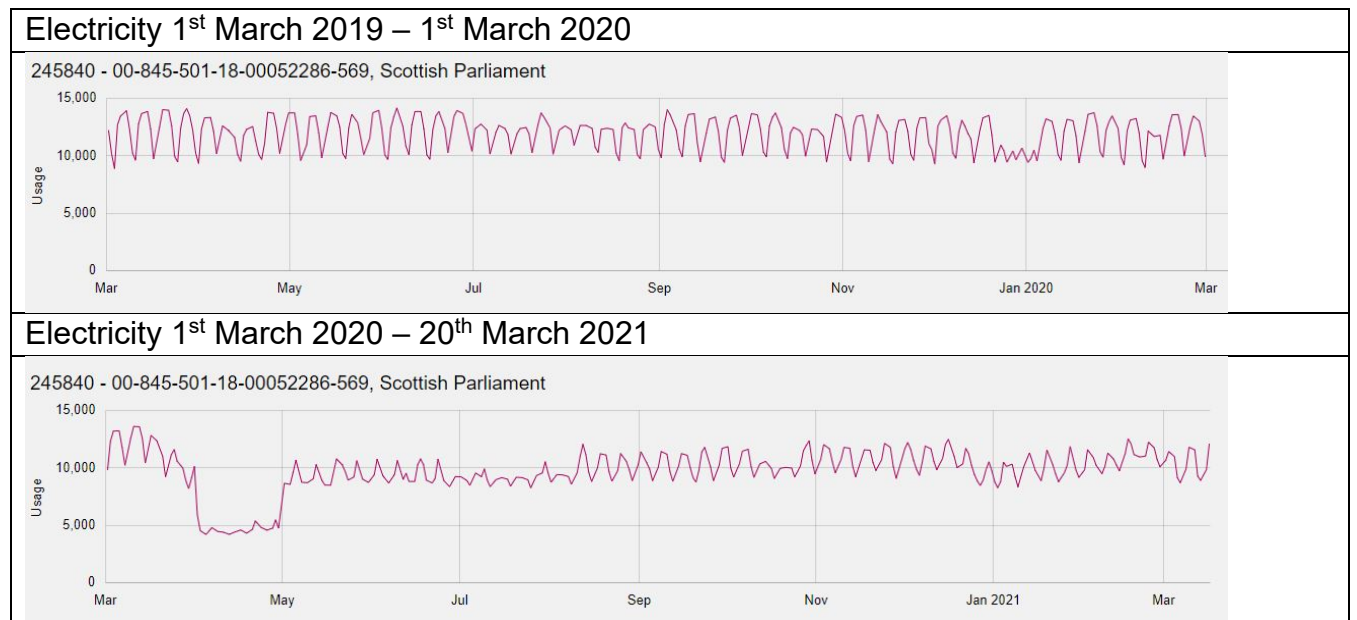
Given the difficulty modelling the Business, Energy and Industrial Strategy projected figures in the shorter term, a decarbonisation of 8% per year in line with 2020 Department of Environment Food and Rural Affairs electricity grid emission figures were used to estimate the reduction in carbon from grid decarbonisation over Session 6. If electricity usage stays at 2019/20 levels, there will be an estimated reduction in carbon of 444 tonnes of carbon dioxide equivalent due to grid decarbonisation.

¹ <https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting>

² <https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2019>

Annex 2: Broadcasting and Press Tower Calculations

Broadcasting and Press Tower



As the above Table shows there is a high electrical baseload at the Parliament, one area of this is used for Broadcasting and the press tower. During the start of lockdown when this area switched off all equipment it shows that there was a large decrease in electricity demand from this sub meter, dropping from around 10,000 to 5,000 kilowatt-hour per day.

Electricity generated: Electricity UK: Unit kilowatt-hour – kilogram of carbon dioxide equivalent 0.23314 kilowatt-hour

If a similar shut down strategy or approach was taken for the weekend this could save: $[5,000 \text{ Kilowatt-hour} \times 2 \times 52]$ (520,000 Kilowatt-hour per annum $\times 0.23314$) /1000 = 121 tonnes of carbon dioxide equivalent

If shutdown over non-business days, i.e. only operating Tuesday-Thursday this could double savings.

Shutdowns throughout recess periods should also be investigated.