



**Hampshire  
& Isle of Wight**  
FIRE & RESCUE AUTHORITY

## **HIWFRA Full Authority**

Purpose: Approval

Date: 6 DECEMBER 2022

Title: **CARBON REDUCTION PATHWAY UPDATE**

Report of Chief Fire Officer

### SUMMARY

1. This report provides an update to activities undertaken as part of the Fire Authority's Carbon Reduction Pathway.
2. The Authority has set a target to reach net zero carbon emissions by 2050 which will require sustained investment to reduce our organisational impact on the environment. This is driven by several factors: the Government Climate Change Act; the increase in energy prices; and a need to reduce the future consequences of inaction, since the Service acts as a first responder to events such as flooding and storms, both impacted by changes in climate.
3. This report seeks approval to establish continued funding for the Carbon Reduction Pathway, primarily focused on efficiency upgrades to buildings over a five-year period. The report seeks funding to be allocated at £500,000 per year for five years. This investment is forecast to realise an annual (at year 5) £125,000 reduction in utility costs (based on current unit pricing) with an average 18-year return on investment (ROI).

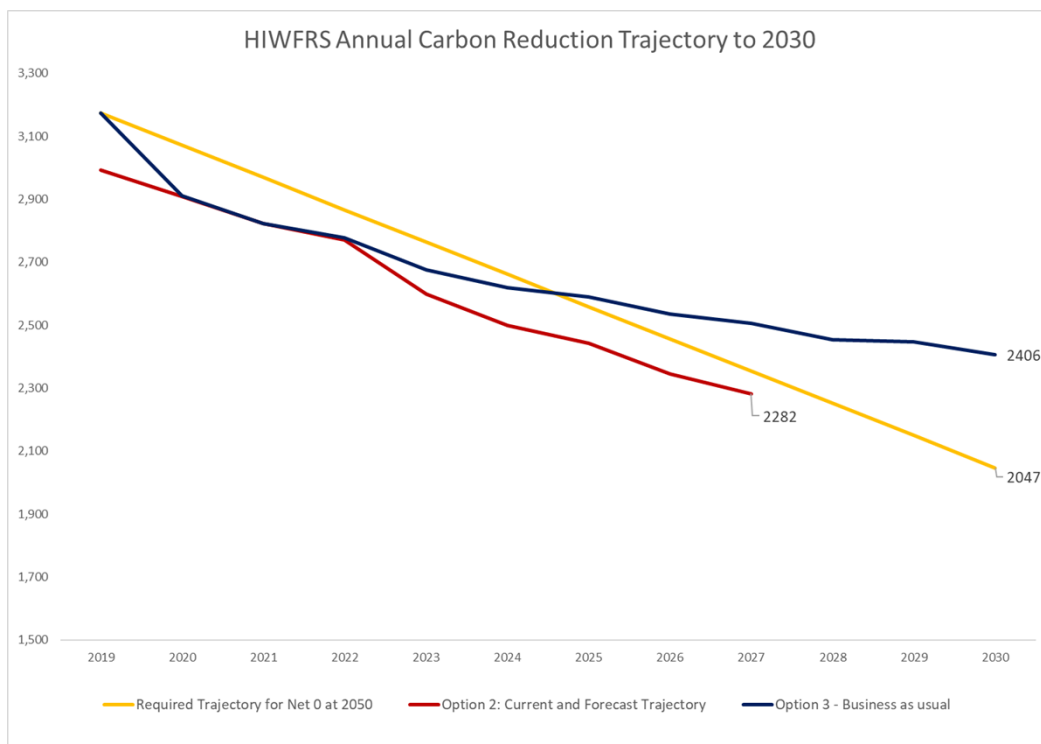
### BACKGROUND

4. Hampshire & Isle of Wight Fire & Rescue Service (HIWFRS) takes a proactive approach to reducing our environmental impact and following a successful project to install Solar PV across 16 sites in 2012 which achieved a 30% reduction in carbon emissions, the Property & Facilities team engaged with the Carbon Trust to assess our baseline 2019/20 carbon footprint (Appendix A).
5. In 2021 the Fire Authority approved the Carbon Reduction Pathway, setting the target of HIWFRS reaching Net Zero Carbon Emissions by 2050 to align

with the UK National Target of being Net Zero by 2050. This paper included £1.1m of funding; to install an infrastructure of electric vehicle charging points across the estate and to assess the building estate for a long-term programme of works to improve the building fabric and heating systems.

## WHERE WE ARE NOW

- HIWFRS Carbon Footprint has been calculated from the 2021/22 figures as **2,823 tCO<sub>2</sub>e**. This is an 11% reduction from our baseline of 2019/20. Should the Fire Authority approve the recommendation of this report, the carbon footprint is projected to continue to reduce to a total of 28% when compared to the 2019/20 baseline year, maintaining the trajectory towards net zero in 2050.



- The assessment of our carbon footprint includes the direct emissions from the combustion of gas, vehicle fuel, and other fossil fuels and purchased electricity, heat or steam. Emissions that were prevented from solar PV electricity generation for example, is shown separately as avoided emissions. These are referred to as 'Scope 1 and 2' in the 2021/22 Carbon Footprint at Appendix A.
- A project was undertaken to install electric vehicle charging points across 60% of stations. Fleet Management Services have started to replace light fleet vehicles with electric or hybrid options as older vehicles reach the end of their working life, with three fully electric vans commissioned and a further 28 vehicles expected for commissioning during the 2022/23 financial year.

9. Estate wide energy condition reports were conducted from July 2022, covering all structural, mechanical, and electrical systems, with an additional in-depth focus on energy and carbon reduction requirements. From these surveys the proposed programmes of carbon reduction works were identified.
10. Recent approval by the Fire Authority of the Asset Management Policy will also support the sustainable management of our estate, vehicles and equipment going forward.
11. If action is not sustained to maintain a strong trajectory of carbon reduction, the opportunity to steadily reduce the carbon footprint of HIWFRS will be increasingly difficult to recoup from and will require a much larger financial investment later. Based on the current trajectory, without proactive improvements being made, in 2024/25 HIWFRS will fail to meet Net Zero by 2050.

#### PROPOSED NEXT PHASE

12. The carbon emissions from the energy use of our buildings are currently 60% of our total carbon footprint. Our estate is large and ageing, with 62 sites across Hampshire and the Isle of Wight, the majority of which were built post-war. The recommended Option 2 seeks approval to complete three major projects over a five-year period:
  - (a) Upgrade all appropriate lighting on the estate to LED.
  - (b) Install solar photovoltaic and battery systems across retained stations.
  - (c) Improve the heating controls and zone all appliance bays from the main stations, allowing a lower temperature in the appliance bay.
13. Currently programmed into the business-as-usual long-term revenue maintenance plan, the following works will be considered through existing funding:
  - (a) Increase roof insulation as roof repair projects are undertaken.
  - (b) Upgrade remaining single glazing to double glazing.
  - (c) Aim to replace all wooden, steel concertina and single glazed appliance bay doors with insulated bi-folding doors.

#### SUPPORTING OUR SAFETY PLAN AND PRIORITIES

14. ***Our Communities:*** *We work together to understand different community needs and deliver accessible, local services which build safer places.*

- (a) This proposal will better support our communities by improving the long-term resilience of HIWFRS as an organisation, while reducing our contribution to climate change.
- 15. ***Our People:*** *We look after each other by creating great places to work and promoting the health, well-being, and safety of our people.*
  - (a) The improvements to the estate will create better and healthier working environments for colleagues.
- 16. ***Public Value:*** *We plan over the longer-term to ensure our decisions and actions deliver efficient and effective public services.*
  - (a) Without investment in the present, the trajectory to reach net zero by 2050 will become increasingly difficult to reach and will require much higher levels on investment to obtain.
  - (b) During the current instability in the utility market and the subsequent increases in cost, the increase in self-generation and focus on reducing energy consumption will provide public value and free up funding for operational activities, while also reducing reliance on more expensive purchased utilities.
- 17. ***Learning and Improving:*** *We have the support of policy and guidance with the freedom to use our discretion to do the right thing, learning from ourselves and others.*
  - (a) Certified IEMA energy management training was delivered to relevant members of the Property & Facilities team to ensure that the team is confident and skilled in the management and delivery of the Carbon Reduction Pathway going forward.
  - (b) PRINCE2 project management training has been provided for the Carbon Reduction Project Officer.

## CONSULTATION

- 18. An external consultation was undertaken from August 2020 to February 2021 with The Carbon Trust. This established a baseline of our 2019/20 carbon footprint and identified opportunities for carbon reduction going forward.
- 19. The Carbon Trust is a company set up by the UK Government to accelerate the UK's move to a low carbon economy, providing expert advice to help organisations cut their carbon emissions.

## COLLABORATION

20. The Office of Police Crime Commissioner (OPCC) is a partner agency that leases space on multiple HIWFRS sites. Quarterly meetings are held with the OPCC, Hampshire Constabulary and Hampshire County Council to collaborate on Energy initiatives and to ensure a collaborative approach across shared sites.
21. The NFCC has an active group of members, including representatives from HIWFRS, focused specifically on Climate, Sustainability, and the Environment. This group ensures a cross functional collaborative approach is taken and has developed a National Sustainability Charter (Appendix B) to support members work towards a common goal, embed sustainability within each organisation and achieve national and international sustainability objectives. It is the recommendation of this paper that HIWFRS commit to this charter.

## RESOURCE IMPLICATIONS

22. This report seeks approval for £500k per year for five years' funding to be allocated for the period up until the 2027/28 financial year. This consists of upgrading appropriate lighting to LED, installing solar photovoltaic arrays and battery systems across retained stations and improving heating controls and zoning all appliance bays from the main stations.
23. The required £2.5m over five years will be funded through prudential borrowing and aligned to the capital reprofile in the Estates Capital Programme paper and the overall affordability of the capital programme and ongoing associated revenue budget implications as set out in the budget update report.
24. It is expected that this programme can be managed within the current team for delivery. If the time frame is shortened, additional resource may be required.

## IMPACT ASSESSMENTS

25. Full stage one and stage two impact assessments have been completed, and the areas impacted were largely as expected, around environmental and property factors.
26. The environmental impact assessment primarily shows a positive impact on the environment, by reducing HIWFRS's contribution to climate change through reduced utility consumption and reduced carbon emissions.
27. The projects to improve the estate may cause a temporary disturbance for building users, as with normal construction works however this will be offset by the long-term benefits to the environment.

## LEGAL IMPLICATIONS

28. The Climate Change Act 2008 (2050 Target Amendment) Order 2019 legislation was amended in June 2019 to ensure the net UK carbon account for 2050 is reduced to at least 100% lower than the 1990 baseline, which is net zero.
29. The UK Government has recently stated their intention to create an interim target of a 78% reduction of carbon emissions from the 1990 baseline by 2035, however this is not currently a legislative target. Any changes to the current legislation will be closely monitored for potential impact on this Pathway.
30. The UK Government has also brought forward the date from 2040 to 2030 to introduce a ban on sales of new fossil fuel cars and vans and new hybrid cars and vans banned from sale from 2035.

## OPTIONS

31. In drawing the recommendation within this report, several options were explored, these are summarised as below:

- (a) **Option 1: Immediate high-level investment in Carbon Reduction Estate Improvements:** The Carbon Reduction Pathway Estates Improvement programme would implement a five-year programme of works between 2023/24 and 2027/28 requiring £8m of funding to deliver these carbon savings. This would be an accelerated programme towards carbon reduction and a clear pathway leading to 2030.

This option would be to fund estate wide Solar PV and battery storage, LED lighting, double glazing, increased insulation across the estate and upgrading of appliance bay doors, heat zoning and the conversion of sites using heating oil to electric heating. This option would also include the immediate replacement of 60 additional vehicles reaching the end of their working life in the next 3 years, in advance of the normal capital replacement programme, whilst maintaining their current rate of replacing fossil fuel cars at 10 electric vehicles and 20 hybrids per year.

On this trajectory, HIWFRS could reduce emissions by a further 324 tCO<sub>2</sub>e, reaching a total of 32% reduction in emissions compared to the 19/20 baseline. This option will save approximately £150,000 annually through reduced utility costs (based on current cost of energy).

- (b) **Option 2: Immediate scaled investment for Carbon Reduction Estate Improvement (Recommended Option)** – Option 2 would

consist of estate wide funding over a period of five years, provided for the conversion of lighting to LED and the installation of additional Solar PV and solar battery storage, and heat zoning. This provides a benefit to the service by increasing the self-generation of electricity and reducing the electrical demand during a prolonged period of an unstable utility market. Option 2 would also allow for the use of our internal building maintenance technicians to replace lighting with LED as it reaches end of life, reducing project costs.

This option assumes that Fleet Management maintains their current rate of replacing fossil fuel cars at approximately 10 electric vehicles and 20 hybrids per year, based on the three-year capital programme.

Option 2 would reduce annual carbon emissions by 165 tCO<sub>2</sub>e (28% reduction overall, compared to the 2019/20 baseline) and would reduce annual utility costs by approximately 940,000kwh and £125,000 annually through reduced utility costs (based on current cost of energy). The ROI for this option is an average 18 years. However, this option includes only the projects with the best payback periods and therefore could delay the start of more difficult and costly projects that have longer payback periods but are required to continue to reduce the carbon footprint and reduce environmental risk.

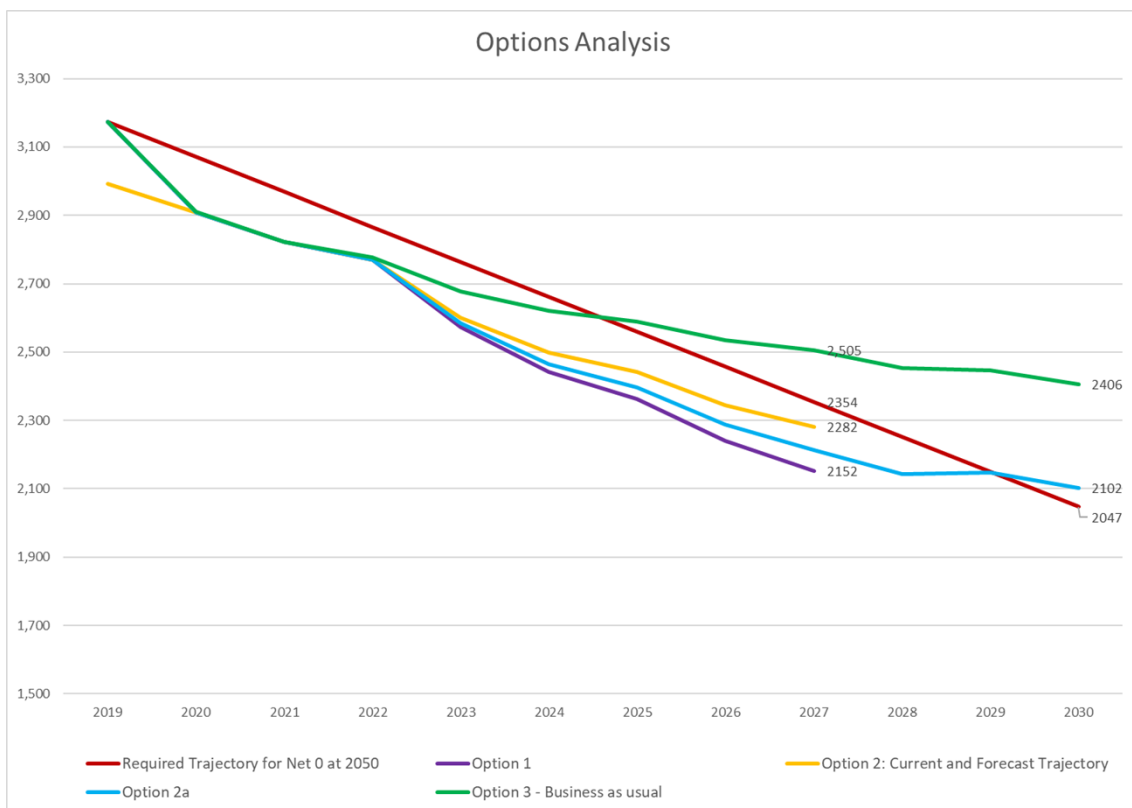
- (c) **Option 2a: Sustained investment for Carbon Reduction Estate Improvement.** Option 2a would consist of estate wide funding provided for the conversion of lighting to LED and the installation of Solar PV and solar battery storage across the retained estate, alongside other estates improvements such as insulation and double glazing, with £650,000 per year funding over a longer period of eight years, to reach the interim 2030 target. This provides a benefit to the service by increasing the self-generation of electricity and reducing the electrical demand during a prolonged period of an unstable utility market.

This option assumes that Fleet Management maintains their current rate of replacing fossil fuel cars at approximately 10 electric vehicles and 20 hybrids per year, based on the three-year capital programme.

Option 2a would reduce annual carbon emissions by a further 239 tCO<sub>2</sub>e and £150,000 annually through reduced utility costs (based on current cost of energy). The ROI for this option is an average of 26 years, however, this option includes the estates projects with acceptable payback periods. This may delay the start of more difficult and costly projects that are in Option 1, that have poor payback periods but are required to continue to reduce the carbon footprint and reduce environmental risk.

- (d) **Option 3: Business as usual (BAU) Investment** – This option would see no long-term Carbon Reduction Pathway estate improvement programme. Some estate improvement could be done through routine maintenance works (BAU), but due to the size of the estate and budgetary constraints, this would be limited.

There would be some reduction in carbon emissions due to the national grid's increase in renewably generated electricity, and from the gradual electrification of the light vehicle fleet. However, on our current trajectory, by 2030, by the 2024/25 financial year, we will be emitting over the UK National Target trajectory each year and HIWFRS will find it increasingly difficult to realign with the UK National Target of net zero by 2050, with the risk of punitive measures from the government and reputational damage.





Project Type	Option 1 32% reduction from baseline over 5 yrs			Option 2 28% reduction from baseline over 5 yrs			Option 2a 34% reduction from baseline to 2030			Option 3 24% reduction from baseline to 2030		
	Annual tCO2e	ROI (yrs)	Estimated Annual Saving (£)	Annual tCO2e	ROI (yrs)	Estimated Annual Saving (£)	Annual tCO2e	ROI (yrs)	Estimated Annual £ saving	Annual tCO2e	ROI (yrs)	Estimated Annual Saving (£)
Replace all appropriate lights with LED lights across the estate, where required.	12	11	£17,000	12	11	£17,000	12	11	£17,000			
Upgrade the final 8 sites to new double glazing	3	295	£1,000				3	295	£1,000	3	653	£500
Increase the level of building insulation across the estate	71	51	£27,000				71	51	£27,000	9	62	£2,500
Upgrade steel, timber and single glazed Appliance bay doors to insulated bi-folding doors at 14 retained stations	26	208	£8,500							26	208	£8,500
Install Solar PV & Battery Storage across appropriate retained stations	53	11	£72,000	53	11	£72,000	53	11	£72,000			
Improve the Heating Controls and zone the appliance bay so it can be kept at a lower temperature across all appropriate stations	100	38	£36,000	100	38	£36,000	100	38	£36,000	18	34	£7,500
Convert the 4 retained stations currently using Heating oil to Electric Heating	4	n/a	-£10,000									
Purchase of extra EV Vehicles ahead of reaching their end of working life	55	n/a	n/a									
<b>Total</b>	<b>324</b>	<b>50</b>	<b>£151,500</b>	<b>164.85</b>	<b>18.68</b>	<b>£125,000</b>	<b>239</b>	<b>36</b>	<b>£153,000</b>	<b>56.00</b>	<b>150.00</b>	<b>£19,000</b>

## RISK ANALYSIS

32. The UK National Target is already a challenging goal, any delay or break in momentum will make it extremely difficult for the Authority to realign with this target.
33. There is a large risk around the instability of the utilities market caused by multiple external shocks to the industry, being felt in spiralling utility costs. Predictions on ROIs and annual cost savings should therefore be taken with this in mind and may vary depending on when and at what level the market stabilises.
34. Inflation is in a period of instability due to supply chain issues after leaving the EU and while 3% inflation has been incorporated into the calculations, there is a risk that inflation will continue to increase further and therefore lead to higher costs, restricting the scope of this work.
35. A centrally held allowance for inflationary increases over 3% is proposed to be established as part of the budget report.

## EVALUATION

36. The Carbon Reduction Pathway will be evaluated through continued monitoring of our annual carbon footprint to evaluate the HIWFRS current position in relation to the UK National Target trajectory of carbon emission reduction, based on the methodology used by the Carbon Trust.
37. An annual project progress report will be submitted for review.

## CONCLUSION

38. Hampshire and the Isle of Wight Fire & Rescue Authority have set a target to be carbon neutral by 2050, in alignment with the UK National Government targets for public sector organisations.
39. To meet this, there is a need, following the estate wide condition surveys, for sustained investment in the building estate.

## RECOMMENDATION

40. That, subject to approval of funding, Hampshire and Isle of Wight Fire and Rescue Authority approves the programme of works set out in **Option 2** to improve thermal efficiency of buildings and renewable energy generation over the next five years at a cost of £500,000 per year.
41. That Hampshire and Isle of Wight Fire and Rescue Authority approve the adoption of the National Sustainability Charter (Appendix B) as part of the Carbon Reduction Pathway objectives.

## APPENDICES ATTACHED

42. 2021/22 Carbon Footprint Summary Document – Appendix A
43. The National Fire Chief's Council Emergency Services' Environment and Sustainability Group Charter – Appendix B

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