



Department
for Transport

Net Zero Ports

Call for Evidence



Department for Transport
Great Minster House
33 Horseferry Road
London SW1P 4DR



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How to respond

The call for evidence period began on the 25th March 2025 and will run until 24th June 2025. Please ensure that your response reaches us before the closing date. If you would like further copies of this call for evidence document, it can be found at <https://www.gov.uk/dft#consultations> or you can contact NetZeroPorts@dft.gov.uk if you need alternative formats (Braille, audio CD, etc.).

You can respond to this call for evidence in four ways:

- By downloading the response form and emailing us the return to: NetZeroPorts@dft.gov.uk
- By email, to: NetZeroPorts@dft.gov.uk
- Posting your response to:

Net Zero Ports call for evidence,
Maritime Environment and Decarbonisation Division, Maritime Directorate,
Department for Transport, Zone 1-5, Floor 4,
Great Minster House,
33 Horseferry Road,
London,
SW1P 4DR.

When responding, please state whether you are responding as an individual or representing the views of an organisation. If responding on behalf of a larger organisation, please make it clear who the organisation represents and, where applicable, how the views of members were assembled.

Please note that we do **not** expect you to submit evidence or views in response to every question listed if not applicable. We encourage responses via the accompanying questionnaire as it uses skip logic to guide respondents to the questions most relevant to them.

If you have any suggestions of others who may wish to be involved in this process, please contact us.

We are aware that in the responses to this call for evidence there may be commercially sensitive data and information provided. To ensure open and comprehensive returns, we will ensure that responses are treated confidentially and anonymously and commit that no data submitted will be linked to individuals or organisations.

Freedom of Information

Information provided in response to this call for evidence, including personal information, may be subject to publication or disclosure in accordance with the Freedom of Information Act 2000 (FOIA) or the Environmental Information Regulations 2004.

If you want information that you provide to be treated as confidential, please be aware that, under the FOIA, there is a statutory Code of Practice with which public authorities must comply and which deals, amongst other things, with obligations of confidence.

In view of this it would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information, we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on the Department.

The Department will process your personal data in accordance with the Data Protection Act (DPA) and in the majority of circumstances this will mean that your personal data will not be disclosed to third parties.

Data Protection

The Department for Transport is carrying out this call for evidence to gather evidence on Net Zero Ports. This call for evidence and the processing of personal data that it entails is necessary for the exercise of our functions as a government department. If your answers contain any information that allows you to be identified, Department for Transport DfT will, under data protection law, be the Controller for this information.

As part of the call for evidence process, we are asking for your name and email address. This is in case we need to ask you follow-up questions about any of your responses. You do not have to give us this personal information. If you do provide it, we will use it only for the purpose of asking follow-up questions.

DfT's privacy policy has more information about your rights in relation to your personal data, how to complain and how to contact the Data Protection Officer. You can view it at <https://www.gov.uk/government/organisations/department-for-transport/about/personal-information-charter>.

Your information will be kept securely on a secure IT system within the department and destroyed within 12 months after the call for evidence process has been completed.

1. Introduction

Purpose of this call for evidence:

The Maritime Decarbonisation Strategy, published alongside this call for evidence, sets out the government's aim for UK domestic maritime to achieve zero fuel lifecycle greenhouse gas (GHG) emissions by 2050. This will be delivered through a range of policy measures, which will support the government missions to become a Clean Energy Superpower and to Kickstart the Economy.

The Strategy includes a commitment to consider *the introduction of measures to reduce emissions from vessels at berth, and to support ports to play a key role in the transition required to meet our 2050 goals*. This call for evidence is intended to gather further evidence to inform policy making relating to this commitment, and to ensure that government interventions are effective and impactful. It is split into two sections, which explore firstly the role ports will play in enabling their tenants and vessels that call at the port to decarbonise, and secondly how ports can decarbonise their own operations.

Ports and some parts of maritime transport are a devolved competence. As a result, this call for evidence only focuses on ports in England and Milford Haven as a reserved port. However, we will continue to engage with the Devolved Administrations to promote joined up working on net zero ports policy, and we welcome participation from all UK ports in this call for evidence.

We are actively seeking input and engagement from a diverse range of stakeholders, as we recognise that shaping a net zero emission ports policy requires input from multiple perspectives. As well as ports, we encourage engagement from shipping companies, any entity that operates within the boundaries of a port, energy networks and associations, technology firms, infrastructure providers, and any other organisation or individual that has an interest in these policies.

Background

Ports are crucial to this government's mission to Kickstart the Economy as vital economic assets for the UK. As an island nation, their services underpin much of the UK's wider industrial and business activity. They are a core part of the maritime and freight sector, and there are clear opportunities for them to support decarbonisation,

clean energy and green growth going forward. Ports will be crucial in delivering on two of the Prime Minister's five missions to make the UK a Clean Energy Superpower and to Kickstart the Economy, as well as the Secretary of State for Transport's priority to deliver greener transport.

The UK became the first major economy in the world to set a legally binding target to reach net zero emissions by 2050. The Climate Change Act requires the UK government to set legally binding carbon budgets, which set the maximum amount of GHGs emitted in the UK over a five-year period.¹ Achieving this requires a reduction in GHG emissions across all sectors of the economy and, within DfT, across all modes of transport.

Decarbonising ports can also deliver other positive environmental impacts, particularly contributing to legal requirements to reduce air pollution² set through the Environment Act 2021.

Some port stakeholders have highlighted the role they can play to catalyse decarbonisation initiatives, whether by enabling vessels at berth to reduce their emissions, reducing emissions from their own operations, supporting their tenants and the related breadth of activities they undertake to decarbonise, and by influencing whole sectors, such as shipping, logistics, land transportation, carbon capture and storage and offshore wind.

Structure of this call for evidence:

This call for evidence seeks to build a comprehensive understanding of the evidence and data, activities, challenges, and developments that are key factors as we chart the best path towards reducing emissions at berth and decarbonising ports. We are specifically looking to gather evidence on the role ports will play in:

- providing or enabling the deployment of infrastructure to help shipping decarbonise;
- any onsite energy generation (solar, wind and alternative fuels);
- delivery of a potential requirement to reduce emissions and air pollutants at berth;
- any refuelling capabilities within a port;
- the current and future electricity requirements at ports, including the drivers of additional electricity demand;
- the growth opportunities for ports, and wider sectors, in decarbonising ports;

¹ UK becomes first major economy to pass net zero emissions law, 2019

<https://www.gov.uk/government/news/uk-becomes-first-major-economy-to-pass-net-zero-emissions-law>

² The air pollutants in scope of this call for evidence are particulate matter (PM2.5 and PM10), nitrogen oxides (NOx), sulphur dioxide (SO₂), non-methane volatile organic compounds (NMVOC) and ammonia (NH₃).

- the current state of decarbonisation in ports including a breakdown of emissions from port operations and the challenges and options to reduce these emissions;
- data on non-GHG environmental impacts of ports such as air quality, noise and biodiversity, and the challenges and options to reduce these impacts;
- future decarbonisation technologies, the challenges faced developing and rolling out these technologies, and their implementation timelines; and
- how ports have decided on their individual decarbonisation goals and how government can support the sector to reach net zero, contributing to five-year Carbon Budget targets

Chapter two focuses on the role ports can play in enabling their tenants and the shipping sector to decarbonise. We recognise that most ports will need extra power to decarbonise and to support their own growth. This will coincide with the additional power needed to facilitate the transition for others operating on their land. It will also support the Secretary of State's priority to deliver greener transport through the growth in green shipping and reducing emissions and air pollutants at berth. This chapter seeks to gain an understanding of current electricity capacity and usage at ports, along with future electricity demand. It also seeks information about on-site energy generation capabilities and other refuelling infrastructure. The evidence gathered from this chapter will inform our approach to tackling emissions at berth.

Chapter three focuses on the wider opportunities to reduce emissions from landside emissions at ports, including port operations. It aims to gain insights into the current levels of emissions in ports and the options, benefits, and challenges in reducing emissions. We are looking to gather information on GHG emissions from port operations, as well as other environmental data such as the impact on air quality (for example, from nitrogen oxides and particulate matter), noise, biodiversity and adapting to the impacts of climate change. We are asking these questions because it is important to be able to baseline GHG emissions and environmental impacts from ports and our current evidence is limited. This chapter also seeks to understand the progress ports are making in reaching net zero by asking about their decarbonisation goals, any interim goals and how government can provide support to help overcome some of the barriers ports face. In addition, we are keen to understand the future skills needs (both in terms of capacity and capability) of the maritime sector to enable ports to decarbonise their operations.

Related policies:

It is useful for respondents to be aware of the wider context in which these policies are being developed, which will also influence the role of ports.

International Maritime Organization (IMO)

The 2023 IMO Strategy on Reduction of GHG Emissions from Ships (the IMO 2023 GHG Strategy) set a target for GHG emissions from international shipping to reach net zero by or around 2050. It included interim emissions reduction checkpoints to

reduce the total annual GHG emissions from international shipping by 20%-30% by 2030 and 70%-80% by 2040, compared to 2008 levels. To deliver these targets, IMO Member States are developing a package of global regulatory measures, including an international fuel standard, which are due to be approved in Spring 2025 and come into force in 2027.

Maritime Decarbonisation Strategy

The Maritime Decarbonisation Strategy, published alongside this call for evidence, complements international action through the IMO, and explains how maritime will reduce its emissions to support delivery of UK Carbon Budgets and net zero. It sets out our aim for UK domestic maritime to achieve zero fuel lifecycle GHG emissions by 2050, with at least 30% reduction by 2030 and 80% reduction by 2040, relative to the 2008 baseline. Policies to meet these aims include extending the UK Emissions Trading Scheme (ETS) to domestic maritime from 2026, exploring domestic fuel regulations to complement IMO measures, and introducing measures to reduce emissions from small vessels and in targeted subsectors.

A separate call for evidence about Emission Reduction Measures for Small, Sub-400 GT Vessels and Accelerating Uptake in Targeted Subsectors has been launched to accompany the Strategy; there are some overlaps with this call for evidence, in particular questions on port infrastructure and capabilities. Any evidence gathered through both calls for evidence will be shared between teams to ensure joined up policy development.

National Wealth Fund (NWF) and Great British Energy (GBE)

The government has created the National Wealth Fund, which will mobilise billions of pounds of investment in the UK's world-leading clean energy and growth industries and support the delivery of our new Industrial Strategy. The NWF will have a total capitalisation of £27.8bn to catalyse investment that would not have otherwise taken place. It will inherit the UK Infrastructure Bank's existing capitalisation and have an additional £5.8bn, which will be committed over this Parliament. At least £5.8bn of the NWF's capital will focus on the five sectors announced in the manifesto: green hydrogen, carbon capture, ports, gigafactories and green steel. In addition, GBE in its role as a new publicly owned energy company will, as one of the five functions set out in the Founding Statement³, drive forward investment in ports and clean energy supply chains, including potentially through its partnership with The Crown Estate.

Freight Energy Forum

Recognising the wider role of ports beyond the maritime sector, DfT established a cross-modal Freight Energy Forum to address the short, medium, and long-term challenges in the provision of energy infrastructure for the freight sector. Through the Freight Energy Forum, the freight, and logistics sector, including the ports sector, is leading work, with support from government, including the Department of Energy Security and Net Zero (DESNZ) to analyse future energy demand across the sector. This analysis will inform a holistic understanding of the type of energy required, when

³ <https://www.gov.uk/government/publications/introducing-great-british-energy/great-british-energy-founding-statement>

and where it will be needed, and the scale of the connections required. This call for evidence will complement and build upon the work of the Freight Energy Forum by providing more granular insight into future electricity capacity at ports, contributing to a better understanding of the aggregated energy demand across the freight sector.

2. The role of ports in enabling others to decarbonise

Setting the context:

To decarbonise, those operating at a port, vessels calling at a port and the port itself will need to find alternative sources of energy for their operations, replacing current energy sources that emit GHG emissions. Multiple alternative energy sources are available to satisfy the changing energy demand for zero and near-zero emission shipping. Examples of alternative sources of energy include electricity, hydrogen, and hydrogen derivatives such as ammonia or methanol, produced from zero or near-zero emission sources.

In the Maritime Decarbonisation Strategy, the government has set out that it is considering *introducing an emissions at berth requirement*. The government's approach to alternative energy sources is underpinned by a number of guiding principles. This includes creating the right framework for investment decisions, and remaining technology and fuel neutral, whilst setting out the GHG and wider environmental considerations industry should make. This will allow ports and those operating at ports to make informed decisions about the right decarbonisation pathway for them.

Whatever decarbonisation route the sector chooses, it is clear there will be an increase in electricity usage to support ports to decarbonise their own operations and the activities of tenants on their land. It may also support vessels that call at a port by allowing them to connect and utilise shoreside electrical power when at berth, allowing vessel engines to run on the local electricity supply and emit zero operational emissions at berth. There may also be a need to provide electric charging infrastructure, including rapid charging infrastructure for vessels using battery electric propulsion.

While the UK's electricity network is continually decarbonising, there may still be upstream emissions depending on how the electricity is produced. As offshore wind provides secure, domestically generated electricity, it will play an important role in achieving clean power by 2030 and forms a key part of the government's Clean Energy Superpower mission. Ports play a vital role in the deployment, operation, and maintenance of offshore wind farms by providing access to land and infrastructure,

and supporting the manufacture, assembly, integration and storage of turbines and components. The Floating Offshore Wind Centre of Excellence Industry Roadmap 2040 identifies the need for £4bn of investment into UK ports by 2040 to support the roll out of floating offshore wind⁴.

This chapter of the call for evidence looks at the role of ports in enabling their tenants and shipping to decarbonise by considering current electricity supply at ports and future electricity demand at ports. The electricity supply and grid connections at ports are often a shared infrastructure and enabler of decarbonisation for port operations, the operation of some of their tenants and for shipping. It also explores the role of ports in their potential role as energy and decarbonisation hubs and helping the UK become a Clean Energy Superpower.

This chapter makes references to the decarbonisation scenarios that the refresh of the Maritime Decarbonisation Strategy has set out for domestic maritime. It seeks to explore in greater detail how ports will deploy or enable the deployment of the infrastructure for shipping to decarbonise, and the cost and benefits of doing so. This will help inform next steps on whether to introduce an emissions at berth requirement.

Current electricity capacity at ports:

The British Ports Association (BPA) has set out that seven of the ten largest ports in England and Wales are already operating at or near the ceiling of their current grid capacity⁵. They highlight that, even when there is additional grid capacity, this might not be enough to meet the extra electricity demand that shore power and other efforts to electrify port operations create. The government recognises that securing extra electricity capacity from their Distribution Network Operator (DNO) is key for ports to decarbonise their own operations. It would enable the deployment of shore power allowing ships at berth to utilise the local electricity supply and emit zero operational emissions; it would allow for the deployment of electric charging infrastructure, including rapid charging for vessels that operate on battery electric propulsion; and it could facilitate the decarbonisation of any of their landside tenants.

To inform our policy development and our evidence, we want to better understand the existing electricity capacity at ports, including the constraints and costs at an individual port level.

Questions

1. At an individual port level, please provide us with (in megawatt (MW) unless specified otherwise):
 - a) The number of connections that your port has to the electricity grid.

⁴ [FOW-CoE-PR50-Port-Infrastructure-and-Manufacturing-Investment-Models.pdf \(fowcoe.co.uk\)](https://www.fowcoe.co.uk/FOW-CoE-PR50-Port-Infrastructure-and-Manufacturing-Investment-Models.pdf)

⁵ Reducing Emissions from Shipping in Ports: Examining the barriers to shore power, British Ports Association, 2020
https://www.britishports.org.uk/content/uploads/2022/07/bpa_shore_power_paper_may_20201.pdf

- b) The total capacity of the connections you have to the electricity grid.
 - c) Whether these connections are operating at or near their maximum capacity. If you have this information, please provide this information at peak, mean and median capacity.
 - d) The total electricity capacity that you have from the electricity grid and onsite energy generation such as wind or solar, for example.
2. At a port level, and on a monthly basis, please provide us with how much you pay in availability charges for your grid connection(s). Has this changed over the last 12 months? If so, please provide details.
 3. If you have recently upgraded your grid connection(s), please provide a breakdown of the cost of the upgrades and your previous grid capacity, compared to your current grid capacity.
 4. Please set out whether you have a renewable energy tariff for your electricity needs and the cost difference compared to a non-renewable electricity tariff.

Future electricity capacity at ports:

Ahead of this call for evidence, we have engaged with the ports, shipping, and energy network industries. The view from port stakeholders is that they will need extra electricity capacity to achieve their decarbonisation goals and their economic growth ambitions. There will be unique and individual drivers that will determine the amount of future electricity capacity that will be required at each port. This could consist of capacity to decarbonise their own operations and buildings, the potential provision of shore power for their vessels and vessels that call at their port, and charging infrastructure for battery electric propulsion vessels, alongside the extra electricity requirements of their tenants.

There may also be extra demand for electricity capacity to support onsite energy generation. This could enable the export of excess renewable energy from onshore wind or solar generation back to the electricity grid, or the use of renewable energy (whether from the grid, solar or wind) for hydrogen electrolysis where ports are interested in becoming zero or near zero GHG emission refuelling hubs for their own operations, transport, and industry.

We have also heard from ports that the two key challenges they face in securing extra electricity capacity are the cost of new connections and the distance into the future of when DNOs are offering additional electricity capacity. Ofgem has decided that these demand connections will no longer be liable to contribute to distribution network reinforcement costs for electricity distribution network connection applications received after 1 April 2023. However, if the reinforcement costs breach the High-Cost Project Threshold (£1,720 per kVA) the customer will be liable for the costs exceeding the threshold. This will reduce the connection costs for ports where such network reinforcement work is required.

We are aware that some ports are facing waits into the middle of the next decade and beyond to secure connection timeframes for extra power. It is important to mention that this is not an issue facing ports alone, with many sectors of the economy facing long connection timeframes, whether to connect new renewable energy generation or new demand connections.

As the economy electrifies and switches to low carbon generation, the network will need to expand rapidly to meet future demand. The Clean Power 2030 Unit will accelerate the delivery of critical, clean energy infrastructure. It has the mandate to lead bold action in collaboration with industry, Ofgem, the National Energy System Operator, and other delivery bodies to remove obstacles and resolve issues as they arise. New connections will be required to bring new generation onto the grid and enable completion of electrification projects. This will speed up the connection of new power infrastructure to the grid and accelerate Britain's pathway towards greater energy independence. As a result of these ongoing reforms, this call for evidence does not seek views on accelerating grid connections and the delivery of transmission infrastructure.

However, we recognise the scale of the challenge facing ports and want to build our understanding of future energy demand so that we can continue to work strategically with DESNZ and network companies. This will support the considerable work taking place across government to plan for future energy infrastructure needs and to improve issues faced by customers wishing to connect to the electricity network.

Questions

5. Please set out if you are planning your future electrical grid capacity and whether or not your current capacity at an individual port level is sufficient to meet this. Please set out your reasons why.
6. If you require extra electrical grid capacity, please provide at an individual port level (in MW unless specified otherwise):
 - a) The extra number of connections to the electricity grid you will need.
 - b) The total size of the future connections to the electricity grid and whether that is 100% of the future electricity requirement at your port(s). Please provide us with an overview of what is driving your requirement for extra electricity and what year you need it by.
 - c) A breakdown of the cost or quotes that you have received for the increased electrical capacity. Where possible this should include contestable and non-contestable costs, connection costs, network reinforcement costs and availability charges or your Connection Offer Expenses Letter.
 - d) Whether the quotes you received were before, on or after 1 April 2023.
 - e) The proportion of those costs in comparison to yearly revenues.

- f) The year of your connection window to the electricity grid and how that compares to what you were initially seeking. Please set out if you have accepted the connection offer from your DNO.
 - g) When it comes to onsite generation of renewable energy at ports, what is the current and future capacity of the energy that will be installed? Please provide this figure in megawatts and on a yearly basis.
7. What are the implications of capacity constraints or long connection timeframes to secure additional electricity grid capacity for port growth?
 8. Have ports or their customers lost out on any opportunities due to insufficient grid capacity? If so, please provide details.

Alongside the need to secure extra electricity capacity, the port sector will need to consider whether to plan and invest to deliver this incrementally versus installing 100% of their future electricity requirements ahead of need. In this context, incrementally refers to submitting more than one grid connection upgrade application at a particular port as their energy requirement increases over time. We are not referring to the approach that DNOs can take to ramp up capacity over time until reaching the final grid capacity the customer demands. The government wants to understand the views of industry and DNOs on the advantages and disadvantages of the two approaches, including what would influence the difference in costs between them.

Questions

9. What are the advantages and disadvantages of increasing electricity capacity at ports incrementally versus installing 100% of your future electricity requirements ahead of need?
10. Have you estimated the potential cost difference of installing future electricity grid capacity incrementally versus investing 100% of your future electricity requirements, ahead of need? If so, please provide details of any estimates.
11. When seeking new grid connections, have ports collaborated with any other energy users in their region to spread the cost? If so, how?
12. Are there any other barriers that ports face when upgrading their electricity connection?
13. What economic and environmental benefits would ports receiving their grid connection have on your business and customers?

Examples may include reduced emissions, increased profits and job creation and/or retention. Please provide as much detail as possible, including details of assumptions made in the calculation of figures where applicable. For emissions figures, please refer to the guidance in Box 3.1. For employment figures, where possible please provide estimates of full time equivalent (FTE) employees by

Standard Industrial Code (SIC) code, and whether these are 'green jobs,' per the Office for National Statistics definition.⁶

Onsite solar and wind energy generation at ports:

Alongside securing additional electricity power from their DNO, our engagement has shown that some ports have already installed solar and wind turbines across their estate. We have also heard that some ports are looking to increase the number of solar and wind turbines on their site and others are looking to deploy onsite energy generation for the first time. The government has opened the way for new onshore wind developments in England, with 22 onshore wind projects announced as a result of the sixth Contracts for Difference auction round.⁷ In addition, the new government has ended the previous government's de-facto ban on new onshore wind developments in England. Whilst this means that more ports are now able to plan for the installation of new onshore wind turbines within their boundaries, there may be other barriers to deployment beyond planning policy which we would like to hear about.

There are several potential use cases for solar and wind energy generated at ports. This could help ports increase their total energy capacity, electrify parts of their operation, use excess renewable energy to charge batteries or export it to the grid, and to produce zero or near zero GHG emission fuels. In addition, battery storage may be able to smooth peak electricity demand at a port when demand surpasses a level that a port could receive from the grid, a private wire connection or from onsite renewables. Given the role of solar, wind turbines and battery storage at ports, we are seeking additional information on their costs, use cases and where they have been deployed at ports.

Questions

14. If you have installed or are exploring the installation of onshore wind turbines, solar panels, and other sources of renewable energy generation within the boundaries of a port, please provide us with the cost and details of these (e.g. installed capacity).
15. Please provide us with the use cases, the costs and the advantages and disadvantages of installing battery storage at ports.
16. What other options have you considered when it comes to onsite energy generation?
17. What do you expect the energy generated onsite from wind and solar to be used for?

⁶ ["Green jobs" update, current and upcoming work - Office for National Statistics \(ons.gov.uk\)](https://ons.gov.uk/green-jobs-update-current-and-upcoming-work)

⁷ [contracts-for-difference-AR6-results-successful-applicants-split-by-pot.xlsx \(live.com\)](https://ons.gov.uk/contracts-for-difference-AR6-results-successful-applicants-split-by-pot.xlsx)

The role of ports in enabling shipping to decarbonise and informing a potential emissions at berth requirement:

To successfully meet the emissions reductions required under the IMO 2023 GHG Strategy and the decarbonisation goals set out in the Maritime Decarbonisation Strategy], shipping lines need to start or continue making decisions about how they will transition their fleet. This could be through the purchase of vessels capable of zero or near zero GHG emission propulsion, or vessels that will be capable in the future or through retrofitting. However, shipping operators need to have confidence that they will have access to the right infrastructure, at the right place and at the right time to reduce their emissions and invest in new technologies. At present, over two million tonnes of marine bunkering occurs in the UK⁸. As we move to zero or near zero GHG emission fuels and electrification, it is likely that the volume and provision of fuels (including electricity) at ports will change, as will the market supplying it.

DfT has previously commissioned external research to provide evidence on the market failures and other barriers to reducing maritime emissions⁹. One of the barriers identified was a clear ‘chicken and egg’ market failure about what comes first – investment in new vessels or investment in new infrastructure. We have sent a signal to the ports industry in the Maritime Decarbonisation Strategy that they will have to play an increased role in directly providing or enabling third parties to provide the infrastructure that will enable shipping to decarbonise. This will require the continued collaboration, or in some places strengthened collaboration between ports, shipping operators and potential infrastructure providers.

Any emissions at berth requirement would build on the call for evidence on shore power, published in 2022, and the engagement we have had with the ports industry, which has welcomed a more technology-neutral approach to reducing emissions at ports and for ships at berth. It is our working assumption that any requirement will have to apply landside and to vessels. We will work through the policy detail informed by the evidence received in this call for evidence and our continued engagement with the sector. We will also work through how this requirement will align with a future fuel standard, both set at the IMO and any domestic policy.

A key principle of the Maritime Decarbonisation Strategy is creating the right framework for investment decisions. When it comes to enabling the reduction of emissions at berth, we want to be as technology neutral as possible, subject to the future fuel mix for maritime, and to be mindful of the air quality implications of our policies. This also includes supporting the delivery of new Environment Act 2021 air quality targets. To help inform any future policy development, we want to understand how the ports and shipping market would respond to a technology-neutral emissions at berth requirement and what solutions would prevail. This includes identifying whether the government will need to direct the market towards utilising electricity at berth, while allowing other technologies to be used, drawing on learning from the European Union’s (EU) FuelEU Maritime approach.

⁸ Energy Trends Table 1.3: [Energy trends - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/statistics/energy-trends)

⁹ [Reducing the maritime sector's contribution to climate change and air pollution: identification of market failures and other barriers to the commercial deployment of emission reduction options: report \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1144447/reducing-the-maritime-sectors-contribution-to-climate-change-and-air-pollution-identification-of-market-failures-and-other-barriers-to-the-commercial-deployment-of-emission-reduction-options-report.pdf)

We are also keen to understand how technology-neutral solutions that comply with a zero or near zero GHG at berth requirement would impact air quality and the ability of the ports and shipping markets to reduce air pollutant emissions. This is particularly important, as the air quality surrounding ports and beyond will likely be impacted, either positively or negatively, by the emerging solutions to meet such a requirement, and by the future fuel mix of the maritime sector. The impact on air quality may be determined by the extent to which the market delivers shore power as the dominant solution. To reduce air pollutants where possible and mitigate any negative air quality impacts at source, we will design any at berth requirement to ensure the solutions developed will also reduce air pollutants. If we do proceed with this requirement, we will continue to engage with industry and to work closely with the Maritime and Coastguard Agency on the design of any future requirement.

Questions:

18. Do you agree or disagree that ports will play an increased role in directly providing or enabling third parties to provide the infrastructure that helps shipping to decarbonise? Please state your reasons why.
19. Do you agree or disagree that there is sufficient collaboration between ports, shipping operators and infrastructure providers to decarbonise shipping? Please state your reasons why.
20. Do you agree or disagree that ports have the existing powers to directly provide energy to vessels that leave the port? Please state your reasons why.
21. What measures could government take to increase certainty about the adequate supply of infrastructure at ports and the subsequent demand for use of that infrastructure?
22. Do you agree or disagree that introducing an emissions at berth requirement will be effective at reducing at berth GHG emissions and air pollutants surrounding ports?
23. What are the technological solutions that will most likely prevail if an emissions at berth requirement is implemented? Please state your reasons why and any evidence that supports it.
24. In your opinion, does the government need to direct ports towards a certain default technological solution (e.g. electrification) for ports to meet the emissions at berth requirement, whilst enabling other technologies where appropriate through exemptions?
25. When developing the requirement, what can the government do to ensure it improves/protects air quality surrounding ports?
26. From a regulatory perspective, what do we need to consider to support the decarbonisation of at berth emissions from shipping?

Evidence from the previous call for evidence on shore power suggested that only vessels that spend at least two hours at berth should be in scope of any requirement

to connect to shore power. This assumed that it would take at least one hour to connect a vessel at berth to shore power and a further hour to disconnect the vessel from the system. The two hours at berth time criteria also aligns with the planned EU requirement for passenger ferries (including cruises) and container ships above 5,000 Gross Tonnage to connect to shore power or run on alternative zero emission technologies from 2030 onwards¹⁰, when they are at berth at certain EU ports¹¹.

However, we also received responses from the shore power call for evidence that suggested demand uncertainty was a barrier to the installation of shore power and that ports that service the same vessels on a regular schedule may be able to build stronger business cases. This included ferry routes, regular roll-on roll-off (Ro-Ro) cargo, workboats, and crew transfer vessels. As we are now considering a more technology-neutral requirement, there is scope to consider additional services below the assumed two-hour criteria in cases where a high volume of scheduled port calls are made, and which contribute to emissions at berth¹².

We have not defined what services will be considered 'high frequency, low time at berth' but we want to give respondents enough information to answer questions 27 and 28. To contextualise your responses, existing evidence shows that just over 15,000 Ro-Ro and roll-on and roll-off passenger (Ro-Pax) voyages on certain ferry routes called at a port in England and spent less than two hours at berth, but made at least 100 calls during 2023 (equivalent to two services per week)¹³. Some of these services are highly likely to transition to battery electrification propulsion in the future or could make use of batteries on hybrid vessels to service their power requirements at berth.

Questions:

27. How should government define high frequency services with short turnaround times at ports, for the purpose of an at berth requirement? Please explain your rationale and any supporting evidence.

28. Do you agree or disagree that high frequency services with short turnaround times at ports should be captured in any future emissions at berth requirement?

Ports are increasingly looking towards onsite energy generation capabilities to support themselves and others to decarbonise and to navigate existing grid constraints. Furthermore, we know that some ports are considering becoming zero emission refuelling hubs and seizing the economic opportunities of entering new markets, alongside helping the UK become a Clean Energy Superpower. These zero emission refuelling hubs may be used to:

¹⁰ Article 6: Additional zero-emission requirements for energy used at berth and Annex III: General requirements for zero-emission technologies. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32023R1805>

¹¹ EU's Trans-European Transport Network of core maritime ports and comprehensive maritime ports.

¹² In line with the approach in the Seafarers Wages Act and upcoming regulations, multiple vessels can serve the same service.

¹³ DfT analysis of Sea/ by Maritech 2023 data

- Decarbonise the direct operations of ports, such as shifting their Non-Road Mobile Machinery (NRMM), Heavy Good Vehicles (HGVs), cargo handling equipment or maritime vessels to alternative fuels.
- Provide a local source of energy to decarbonise the operations of entities or the tenants that operate on the port.
- Provide zero or near-zero GHG emission fuel for vessels that call at a port.
- Potentially provide a refuelling option for HGVs or other vehicles that transit through or call at the port.
- Provide a source of zero or near-zero GHG emission fuels for transport modes that operate outside of port environment or a fuel for non-transport purposes.

Renewable and zero and near-zero emission fuels will play a significant role in decarbonising maritime with potential additional benefits of improved air quality. We anticipate that this will primarily rely on (standalone or as a hybrid) hydrogen produced from renewable electricity, including its derivatives such as ammonia and methanol, and battery-electric propulsion. For these fuels and energy carriers to succeed in decarbonising the sector, the supply, infrastructure, and safe storage of these fuels will be essential. Ports will play a key role here. For some ports in the future, their role in bunkering fuel into vessels using the port will change as they transition to a refuelling hub (as already mentioned above) and supporting the delivery of our Clean Energy Superpower Mission. Similar to connecting to the grid, it is important to recognise that securing zero and near zero emission fuels in the future will be highly competitive across sectors, and it is not a problem unique to maritime.

This section of the call for evidence seeks to collate more information about where this is already taking place, the costs and benefits of this approach and any potential barriers that the port sector is facing when planning or implementing onsite energy generation or becoming zero emission refuelling hubs and bunkering facilities.

When answering the below questions, please specify who you expect to use the refuelling hub. This could be the port itself as you decarbonise your own operations (NRMM, HGVs and maritime vessels), vessels that call at a port, entities that transit through the port or any other potential customers. It would also be beneficial if you set out what share each market would receive from a refuelling hub.

Questions:

29. Please provide us with a) any current examples of and b) any examples of future plans for zero or near zero GHG emission refuelling production, storage, import and export terminals at ports for alternative fuels such as hydrogen and hydrogen derivatives (e.g. ammonia or methanol)? Please provide as much information as possible, including distinguishing between the different fuels where possible, and providing details about where any infrastructure is/will be located, and the companies with which you are working.

30. What are the barriers that ports face in becoming zero or near zero GHG emission refuelling hubs? Please state your reasons why, including any safety barriers.
31. What are the estimated costs and timeframes for building zero or near zero GHG emission refuelling hubs? Please provide us with the evidence and assumptions that you have used in this response.
32. What are the potential markets and end use sectors that can be supplied when a port becomes a zero or near zero GHG emission refuelling hub? Please set out whether these are domestic and/or for international export markets.
33. What are the potential growth opportunities of ports becoming zero or near zero GHG emission refuelling hubs?
34. What bunkering facilities does your port currently offer and what types of services use these facilities? If not available, are the users aware of where bunkering takes place?
35. What is the estimated cost of installing electric charging infrastructure for vessels (boats or ships)?
36. What transport and storage infrastructure for fuels are available at ports and what do you see as the barriers to safely repurposing this infrastructure for alternative fuels such as hydrogen, methanol, and ammonia?

The role of ports in enabling their tenants to decarbonise:

Alongside the operations of the port and the vessels that call there, a wide variety of tenants may operate within the geographic boundaries of a port. The type of tenants at ports varies and can include warehouses, offices, terminal or berth operators, manufacturing sites and future energy hubs. Ports are not the source of these emissions but some of these emissions will take place within the geographic boundaries of a port.

Ports will have a commercial relationship with their tenants, which may include their lease or rent and other potential charges and fees, such as the supply of electricity. We are interested in better understanding the range of tenants that operate in ports and what ports are doing to help them decarbonise or the barriers they might face in doing so.

Questions:

37. Please provide us with the number of tenants and entities that operate within the landward and seaward boundary of your port(s) and their economic activities.
38. What actions can ports take to help their tenants decarbonise and reduce wider environmental impacts?
39. What barriers do ports face in helping their tenants to decarbonise?

40. From the perspective of a tenant at a port, how can your landlord(s) help you to decarbonise?

3. Decarbonising Port Operations

Setting the context:

To explore the potential to reduce port emissions, we need to understand how ports or those that support port operations (third party providers) are planning and progressing decarbonisation of their own operations. From our engagement, we understand that industry uses the GHG protocol¹⁴, which is the most widely used GHG accounting standard. The emissions that are accounted for under the GHG protocol are the seven Kyoto gases: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆) and Nitrogen trifluoride (NF₃).

The GHG protocol considers GHG emissions within three different emission scopes, as outlined below:

- Scope 1 emissions are defined as direct GHG emissions from sources that are owned or controlled by the company, for example, emissions from combustion in owned or controlled boilers, furnaces, vehicles etc¹⁵.
- Scope 2 emissions account for GHG emissions from the generation of purchased electricity consumed by the company. Purchased electricity is defined as electricity that is purchased or otherwise brought into the organisational boundary of the company. Scope 2 emissions physically occur at the facility where electricity is generated.
- Scope 3 emissions are a consequence of the activities of the company but occur from sources not owned or controlled by the company. Some examples of scope 3 activities are extraction and production of purchased materials, transportation of purchased fuels, and use of sold products and services.

Whilst the maritime industry uses the GHG Protocol, the 2008 Climate Change Act sets the legal framework for the UK's overall level of climate ambition, with the government determining how best to balance emissions reductions across the economy. On the pathway to the 2050 net zero target, the UK has interim targets

¹⁴ [Homepage | GHG Protocol](#)

¹⁵ [ghg-protocol-revised.pdf \(ghgprotocol.org\)](#)

called carbon budgets under the Climate Change Act and Nationally Determined Contributions (NDCs) as part of our international commitments.

The UK announced the headline ambition of its 2035 NDC mitigation target on 11 November 2024, setting a target to cut emissions to 81% below 1990 levels by 2035¹⁶. Carbon budgets restrict the total amount of GHGs that the UK can emit over five-year periods, ensuring continued progress towards our long-term net-zero target. NDCs are commitments made by Parties to the Paris Agreement, which show how Parties intend to reduce their emissions to meet the temperature goal of the Paris Agreement. The UK's NDC pledge is to reduce emissions by at least 68% by 2030 on 1990 levels. In June 2021, the government set in law the sixth carbon budget (CB6) limiting the volume of GHG emitted from 2033 to 2037. CB6 reduces emissions by approximately 77% by 2035 compared to 1990 levels. For the first time, CB6 formally incorporates the UK's share of international aviation and shipping emissions, which will allow for these emissions to be accounted for consistently with other emissions, as we approach our whole-economy 2050 net zero target.

Direct port operations and vessels that call at ports not only release GHGs, they also release air pollutants. The air pollutants considered in this chapter of the call for evidence are particulate matter (PM_{2.5} and PM₁₀), nitrogen oxides (NO_x), sulphur dioxide (SO₂), non-methane volatile organic compounds (NMVOC) and ammonia (NH₃). In this chapter, we want to understand the extent to which ports can decarbonise their operations in a way that reduces air pollution emissions.

This chapter seeks more information on the progress in decarbonising port operations, any decarbonisation goals that they have set and how government can galvanise the sector to decarbonise and make Britain a Clean Energy Superpower.

Measuring and Reducing Port Emissions:

We recognise that each port is different and may have different emissions from their direct operations. As a result, this call for evidence does not prescribe what those emissions are, beyond giving contextual examples. They may include emissions from workboats (such as tugboats and pilot boats) dredging vessels, cars, and vans. They may also include emissions from tank cleaning, ballast water treatment, waste and water management, warehouses, energy intensive cargo facilities such as cold storage for food, refrigerated units and containers, hydrographic survey vessels and maintenance vessels and equipment, as well as NRMM.

The scope of this call for evidence includes all NRMM used at ports including, but not limited to, cranes, rubber tyred gantry cranes, forklifts, telehandlers, reach stackers, shuttle carrier/straddle carrier and terminal tractors.¹⁷ The government has committed to develop an NRMM decarbonisation strategy, further details will be announced in due course.

As ports and those involved in port operations decarbonise, they will need to invest and innovate in new technologies that may stimulate sustainable economic growth

¹⁶ The UK's 2035 Nationally Determined Contribution emissions reduction target under the Paris Agreement [Written statements - Written questions, answers and statements - UK Parliament](#)

¹⁷ [Non-road mobile machinery: decarbonisation options - GOV.UK \(www.gov.uk\)](#)

and new jobs within the ports and the wider supply and value chains across the whole United Kingdom, making it a Clean Energy Superpower. To meet the Streamlined Energy and Carbon Reporting¹⁸ requirements, some ports already report their emissions. However, due to the method of reporting, DfT has limited understanding of the emissions that are produced because of port operations. We are keen to address our limited understanding of this area through this call for evidence.

Questions

To strengthen our understanding of direct emissions from port operations, please provide us with the following information:

41. Are there any sources of direct GHG emissions at ports that have not been mentioned in the examples above?
42. What sources of direct GHG emissions at ports (e.g. specific types of vehicles and equipment) are particularly challenging to decarbonise?
43. What are the main options for reducing direct GHG emissions at ports? Please provide evidence of technological readiness and financial costs and benefits of these options.
44. What are the current main barriers and incentives to reduce direct GHG emissions from port operations?
45. In addition to GHG emissions, there are likely to be additional environmental impacts at ports, such as air quality (for example from emissions of nitrogen oxides and particulates), noise and biodiversity impacts. What opportunities and challenges are there to reduce these impacts as ports decarbonise?
46. If you are, for example, a technology, equipment, services, fuel, or energy provider, what growth, or other opportunities, are presented by ports addressing their direct GHG emissions?
47. What skills (both in terms of capacity and capability) does the maritime workforce need to develop in order to enable ports to decarbonise their operations?

To support future analysis the department may undertake on direct GHG emissions at ports, ports are asked to provide us with the following information (see box 3.1 for further information):

48. Do you monitor your direct emissions in your port? If yes, how? In tonnes of CO₂ equivalent (CO₂e), please provide evidence to quantify the current level of annual direct GHG emissions in your port. Please disaggregate this information as much as possible to cover the different sources of direct GHG emissions, for example, the emissions from specific types of equipment used in port operations.

¹⁸ Environmental reporting guidelines: including Streamlined Energy and Carbon Reporting requirements <https://www.gov.uk/government/publications/environmental-reporting-guidelines-including-mandatory-greenhouse-gas-emissions-reporting-guidance>

49. In tonnes of CO₂ equivalent (CO₂e), please provide evidence to quantify any savings you have achieved in your annual direct GHG emissions. Please disaggregate this information as much as possible to cover the different sources of your emissions, for example, the emissions from specific types of equipment used in port operations.
50. Do you monitor the additional environmental impacts such as air quality, noise, and biodiversity from the sources of your direct emissions at your port? If yes, please provide details of these environmental impacts. Please disaggregate your response as much as possible.

Box 3.1 Guidance for answering direct port emissions questions.

- Please provide as much detail as possible on the sources and methodology used in estimating the GHG emissions from your direct operations, include references to publicly available sources if possible.
- Please include your responses as tonnes of CO₂ equivalent (CO₂e). If you do not measure your emissions using this metric, please provide your estimates using your alternative preferred metric. Please include the methodology used and the rationale for using this metric.
- Please include your estimates in the greatest possible level of disaggregation of the sources of GHG emissions as a result of your direct operations, such as by type of equipment at your port. Please include the total direct GHG emissions for your port as well if possible.
- When answering question 49, please indicate what the previous level of emissions were prior to any activity you have taken to reduce emissions from your direct operations. Please also note whether the activity you have undertaken to reduce emissions is likely to further reduce emissions in the future.
- If possible, *in addition to the above*, please include your estimates of emissions per unit of activity at your port – whether this be by passenger, cargo type or by weight.
- For air quality, biodiversity and noise impacts reporting, please use the metrics recommended in the Transport Appraisal Guidance Unit [A3: Environmental Unit](#). If your air quality emissions cannot be reported using the metrics recommended in the Transport Appraisal Guidance, please provide your emissions in grams per kilowatt hour (g/kWh).

Existing decarbonisation goals that UK ports have set:

Each port in the UK is unique, catering to different segments of the maritime trade and leisure markets. Some ports in the UK are also playing an increasing role in the new green sectors of the future and our mission to be a Clean Energy Superpower. Due to their role as an ecosystem of trade, ports in England directly contributed £8.7 billion gross value added and 100,000 jobs in 2019¹⁹. Alongside the economic benefits they bring and their footprint, the activities that ports undertake which

¹⁹ The economic contribution of the UK ports industry (England only data), CEBR report for Maritime UK, 2022 <https://www.maritimeuk.org/media-centre/publications/2022-cebr-reports/>

contribute to harmful GHG emissions need to be reduced as part of reaching net zero.

We understand that many port operators have already begun their decarbonisation journey and are increasingly setting out their own forward plans and commitments. Port operators are increasingly publishing their decarbonisation goals for their direct operations and procuring 100% renewable electricity supply. For example, the Port of Aberdeen²⁰, Associated British Ports²¹, the Port of Dover²², Peel Ports²³, Hutchison's UK Ports²⁴ and many more ports have published their own decarbonisation goals. The government welcomes the proactivity of industry setting and publishing these goals, including many ports planning to achieve net zero direct emissions ahead of the UK's legally binding 2050 net zero target. We also recognise how their plans will contribute to our mission to Kickstart the Economy through economic growth in the sector and our mission to making Britain a Clean Energy Superpower through the creation of new green jobs.

We know that ports have developed their decarbonisation goals based on the uniqueness of their operations and in a way that is pragmatic for their business and in line with their internal investment cycles. This includes considering when some of their assets are coming to the end of their useful life and are replaced accordingly or replacing assets before the end of their useful life with an alternative zero emission asset. We want to better understand the decarbonisation goals ports have set themselves, what they have considered within these goals, the level of investment that will be required, and the benefits realised from achieving their goals.

Questions:

51. If you have a decarbonisation goal, what goals have you set? Please include details of any interim goals and the associated timeframes for achieving these goals. Additionally, please specify if your decarbonisation goal aims to achieve net zero with some residual emissions, or close to or absolute zero emissions.
 - a) If your decarbonisation goal aims to achieve net zero with some residual emissions, how do you plan to address the residual emissions? Different methods of addressing residual emissions include, but are not limited to, carbon capture, usage and storage and carbon offsetting.
52. What considerations have you taken to set your decarbonisation goal(s)?
53. What are the costs or investment required to achieve your decarbonisation goals? Please provide any calculations used for your cost and/or investment estimates.
54. What are the economic and environmental benefits of achieving your decarbonisation goals? As part of your decarbonisation goals, have you also set goals for reducing air pollutant emissions?

²⁰ https://www.portofaberdeen.co.uk/assets/files/Port_of_Aberdeen_net_zero_strategy-1.pdf

²¹ [abp-ready-for-tomorrow.pdf \(abports.co.uk\)](https://www.abports.co.uk/abp-ready-for-tomorrow.pdf)

²² <https://www.portofdover.com/corporate/csr/sustainability/>

²³ <https://www.peelports.com/sustainability/net-zero-2040>

²⁴ [Port of Felixstowe: Hutchison Ports to Achieve Net-Zero in UK by 2035](https://www.hutchisonports.com/Port_of_Felixstowe:_Hutchison_Ports_to_Achieve_Net-Zero_in_UK_by_2035)

55. If you are, for example, a technology, equipment, services, fuel, or energy provider, are there any additional growth benefits of supplying ports with equipment or services that helps them meet their decarbonisation goals?

How government can galvanise ports to decarbonise:

The government is committed to decarbonising the maritime sector and delivering a more environmentally sustainable industry. This section seeks to gather evidence on whether there is more government can do to help galvanise ports to proactively plan their route to decarbonising their direct operations.

We do not intend to set a quantitative decarbonisation goal that solely applies to ports (reducing emissions by a particular amount of CO₂e). However, we want to better understand certain measures the government can introduce to incentivise ports to decarbonise. We also want to understand if smaller ports are sufficiently planning to achieve net zero operations and how the government can encourage and support smaller ports to do so.

One option is ensuring ports have plans in place for how they will decarbonise their operations that are published and periodically reviewed. This could involve making planning of this kind a legal requirement through legislation, subject to further assessment and parliamentary time. We are interested to hear from industry how this could take existing port decarbonisation plans into account.

As an alternative to placing a legal requirement on ports to produce plans, we could explore voluntary decarbonisation measures. For example, this could involve ports voluntarily committing to developing and publishing their net zero plans and to periodically review them. There would be no legal obligation on ports to do this, but it would encourage ports to think about planning to decarbonise their operations if they are not already and help build momentum throughout the sector.

Similarly, government already recommends that major ports produce and publish spatial plans that set out the ports' long-term development aspirations. These plans should be given due consideration in local planning processes and feed into regional and local planning strategies. The development of port master plans is not statutory, and therefore not a legal obligation, but we want to incentivise greater uptake of master planning among large and small ports. As part of a review into current master planning processes, which may lead to an update to the current guidance on port master plans, government can develop criteria to include and encourage ports to include detail specifically on their decarbonisation plans and aspirations.

Alternatively, the government can support the maritime industry incentivising itself to decarbonise. In this scenario, the industry would work together and collaborate to develop decarbonisation initiatives. For example, the BPA launched a Net Zero Maturity Assessment tool that will enable ports to anonymously compare their performance in reducing emissions against other ports²⁵. Industry-led initiatives such as the BPA's benchmarking tool may provide ports with an overview of where they are in decarbonising their operations in relation to their peers and areas where they might improve. Industry trade associations have organised numerous environmental

²⁵ <https://www.britishports.org.uk/ports-launch-industry-collaboration-on-emissions/>

and sustainability groups to provide a forum for the sector to discuss their progress in decarbonising and reaching net zero.

Questions:

56. In your opinion, are both large and small ports adequately planning their approach to reaching net zero?
57. Is there sufficient government or industry led guidance to help ports to decarbonise?
58. Of the measures listed in paragraphs 3.17 – 3.20, which measure(s) would enable ports to decarbonise most effectively?
59. Of the measures listed in paragraphs 3.17 – 3.20, would any measure(s) adversely affect ports' ability to effectively decarbonise?
60. In addition to the measures listed above, are there any government or industry led measures not mentioned here that would incentivise the sector to decarbonise?

What will happen next?

A summary of responses, including the next steps, will be published within three months of the call for evidence closing date. Paper copies will be available on request.

If you have questions about this call for evidence, please contact:
NetZeroPorts@dft.gov.uk

Further background information can be found at GOV.UK

Annex A: Full list of call for evidence questions

Questions. Please provide evidence to support your response.

1. At an individual port level, please provide us with (in MW unless specified otherwise):
 - a. The number of connections that your port has to the electricity grid.
 - b. The total capacity of the connections you have to the electricity grid.
 - c. Whether these connections are operating at or near their maximum capacity. If you have this information, please provide at peak, mean and median capacity.
 - d. The total electricity capacity that you have from the electricity grid and onsite energy generation such as wind or solar, for example.
2. At a port level, and on a monthly basis, please provide us with how much you pay in availability charges for your grid connection(s)? Has this changed over the last 12 months? If so, please provide details.
3. If you have recently upgraded your grid connection(s), please provide a breakdown of the cost of the upgrades and what was your previous grid capacity, compared to your current grid capacity?
4. Please set out whether you have a renewable energy tariff for your electricity needs and the cost difference compared to a non-renewable electricity tariff?
5. Please set out if you are planning your future electrical grid capacity and whether your current capacity at an individual port level is sufficient to meet this? Please set out your reasons why.
6. If you require extra electrical grid capacity, please provide at an individual port level (in MW unless specified otherwise):
 - a. The extra number of connections you will need to the electricity grid.

- b. The total size of the future connections to the electricity grid and whether that is 100% of the future electricity requirement at your port(s)? Please provide us with an overview of what is driving your requirement for extra electricity and what year you need it by.
 - c. A breakdown of the cost or quotes that you have received for the increased electrical capacity. Where possible this should include contestable and non-contestable costs, connection costs, network reinforcement costs and availability charges or your Connection Offer Expenses Letter.
 - d. Whether the quotes you received were before, on or after 1 April 2023.
 - e. The proportion of those costs in comparison to yearly revenues.
 - f. The year of your connection window to the electricity grid and how that compares to what you were initially seeking. Please set out if you have accepted the connection offer from your DNO.
 - g. When it comes to onsite generation of renewable energy at ports, what is the current and future capacity of the energy that will be produced? Please provide this figure in megawatts and on a yearly basis.
7. What are the implications for port growth of any capacity constraints or long connection timeframes to secure additional electricity grid capacity?
 8. Have ports, or their customers lost out on any opportunities due to insufficient grid capacity? If so, please provide details.
 9. What are the advantages and disadvantages of increasing electricity capacity at ports incrementally versus installing 100% of your future electricity requirements, ahead of need?
 10. Have you estimated the potential cost difference of installing future electricity grid capacity incrementally versus investing 100% of your future electricity requirements, ahead of need? If so, please provide details of any estimates.
 11. When seeking new grid connections, have ports collaborated with any other energy users in their region to spread the cost? If so, how?
 12. Are there any other barriers that ports face when upgrading their electricity connection?
 13. What economic and environmental benefits would ports receiving their grid connection have on your business and customers?

For example, reduced emissions, increased profits, job creation and/or retention, etc. (Please provide as much detail as possible, including details of assumptions made in the calculation of figures where applicable. For emissions figures, please refer to the guidance in Box 3.1. For employment figures, where possible please provide estimates of full time equivalent (FTE) employees by SIC code, and whether these are 'green jobs, per the ONS definition).

14. If you have installed or are exploring the installation of onshore wind turbines, solar panels, and other sources of renewable energy generation within the boundaries of a port, please provide us with the cost and details of these (e.g. installed capacity).
15. Please provide us with the use cases, the costs and the advantages and disadvantages of installing battery storage at ports.
16. What other options have you considered when it comes to onsite energy generation?
17. What do you expect the energy generated onsite from wind and solar to be used for?
18. Do you agree or disagree that ports will play an increased role in directly providing or enabling third parties to provide the infrastructure that helps shipping to decarbonise? Please state your reasons why.
19. Do you agree or disagree that there's sufficient collaboration between ports, shipping operators and infrastructure providers to decarbonise shipping? Please state your reasons why.
20. Do you agree or disagree that ports have the existing powers to directly provide energy to vessels that leave the port? Please state your reasons why.
21. What measures could government take to increase certainty in terms of ensuring adequate supply of infrastructure at ports and the subsequent demand for use of that infrastructure?
22. Do you agree or disagree that introducing an emissions at berth requirement will be effective at reducing at berth GHG emissions and air pollutants surrounding ports?
23. What are the technological solutions that will most likely prevail if a requirement for zero or near zero emissions at berth is implemented? Please state your reasons why and any evidence that supports it.
24. In your opinion, does the government need to direct ports towards a certain default technological solution (e.g. electrification) to achieve zero or near zero emissions at berth, whilst enabling other technologies where appropriate through exemptions?
25. When developing the requirement, what can the government do to ensure it improves/protects air quality at ports?
26. What features of a regulatory regime would support the decarbonisation of at berth emissions from shipping?
27. How should government define high frequency services with short turnaround times at ports for the purpose of an at berth requirement? Please explain your rationale and any supporting evidence.
28. Do you agree or disagree that high frequency services with short turnaround times at ports should be captured in any future emissions at berth requirement?

29. Please provide us with a) any current examples of and b) any examples of future plans for zero and near-zero GHG emission refuelling production, storage, import and export terminals at ports for alternative fuels such as hydrogen and hydrogen derivatives (e.g. ammonia or methanol)? Please provide as much information as possible, including distinguishing between the different fuels where possible, and providing details on where any infrastructure is/will be located, and the companies with which you are working.
30. What are the barriers that ports face in becoming near-zero or zero GHG emission refuelling hubs? Please state your reasons why, including any safety barriers.
31. What are the estimated costs and timeframes for building near-zero or zero GHG emission refuelling hubs? Please provide us with the evidence and assumptions that you have used in this response.
32. What are the potential markets and end use sectors that can be supplied when a port becomes a near-zero or zero GHG emission refuelling hub? Please set out whether these are domestic and/or for international export markets.
33. What are the potential growth opportunities of ports becoming near-zero or zero GHG emission refuelling hubs?
34. What bunkering facilities does your port currently offer and what types of services use these facilities? If not available, are the users aware of where bunkering takes place?
35. What is the estimated cost of installing electric charging infrastructure for vessels (boats or ships)?
36. What transport and storage infrastructure for fuels are available at ports and what do you see as the barriers to safely repurposing this infrastructure for alternative fuels such as hydrogen, methanol, and ammonia?
37. Please provide us with the number of tenants and entities that operate within the landward and seaward boundary of your port(s) and their economic activities.
38. What actions can ports take to help their tenants decarbonise and reduce wider environmental impacts?
39. What barriers do ports face in helping their tenants to decarbonise?
40. From the perspective of a tenant at a port, how can your landlord(s) help you to decarbonise?
41. Are there any sources of direct GHG emissions at ports that have not been mentioned in the examples above?
42. What sources of direct GHG emissions at ports (e.g. specific types of vehicles and equipment) are particularly challenging to decarbonise?

43. What are the main options for reducing direct GHG emissions at ports? Please provide evidence of technological readiness and financial costs and benefits of these options.
44. What are the current main barriers and incentives to reduce direct GHG emissions from port operations?
45. In addition to GHG emissions, there are likely to be additional environmental impacts at ports, such as air quality (for example from emissions of nitrogen oxides and particulates), noise and biodiversity impacts. What opportunities and challenges are there to reduce these impacts as ports decarbonise?
46. If you are, for example, a technology, equipment, services, fuel, or energy provider, what growth or other opportunities are presented by ports addressing their direct GHG emissions?
47. What skills (both in terms of capacity and capability) does the maritime workforce need to develop in order to enable ports to decarbonise their operations? What new jobs will be created as maritime decarbonise?
48. Do you monitor your direct emissions in your port? If yes, how? In tonnes of CO₂ equivalent (CO₂e), please provide evidence to quantify the current level of annual direct GHG emissions in your port. Please disaggregate this information as much as possible to cover the different sources of direct GHG emissions, for example, the emissions from specific types of equipment used in port operations.
49. In tonnes of CO₂ equivalent (CO₂e), please provide evidence to quantify any savings you have achieved in your annual direct GHG emissions. Please disaggregate this information as much as possible to cover the different sources of your emissions, for example, the emissions from specific types of equipment used in port operations.
50. Do you monitor the additional environmental impacts such as air quality, noise, and biodiversity from the sources of your direct emissions at your port? If yes, please provide details of these environmental impacts. Please disaggregate your response as much as possible.
51. If you have a decarbonisation goal, what goals have you set? Please include details of any interim goals and the associated timeframes for achieving these goals. Additionally, please specify if your decarbonisation goal aims to achieve net zero with some residual emissions, or close to or absolute zero emissions.
 - a. If your decarbonisation goal aims to achieve net zero with some residual emissions, how do you plan to address the residual emissions? Different methods of addressing residual emissions include, but are not limited to, carbon capture, usage and storage and carbon offsetting.
52. What considerations have you taken to set your decarbonisation goal(s)?
53. What are the costs or investment required to achieve your decarbonisation goals? Please provide any calculations used for your cost and/or investment estimates.

54. What are the economic and environmental benefits of achieving your decarbonisation goals, including co-benefits through the reduction of air quality, noise, biodiversity and adapting to climate change impacts?
55. If you are, for example, a technology, equipment, services, fuel, or energy provider are there any additional growth benefits of supplying ports with equipment or services that helps them meet their decarbonisation goals?
56. In your opinion, are both large and small ports adequately planning their approach to reaching net zero?
57. Is there sufficient government or industry led guidance to help ports to decarbonise?
58. Of the measures listed in paragraphs 3.18 – 3.20, which measure(s) would enable ports to decarbonise most effectively?
59. Of the measures listed in paragraphs 3.18 – 3.20, would any measure(s) adversely affect port's ability to effectively decarbonise?
60. In addition to the measures listed above, are there any government or industry led measures not mentioned here that would incentivise the sector to decarbonise?