BRIEFING - February 2025

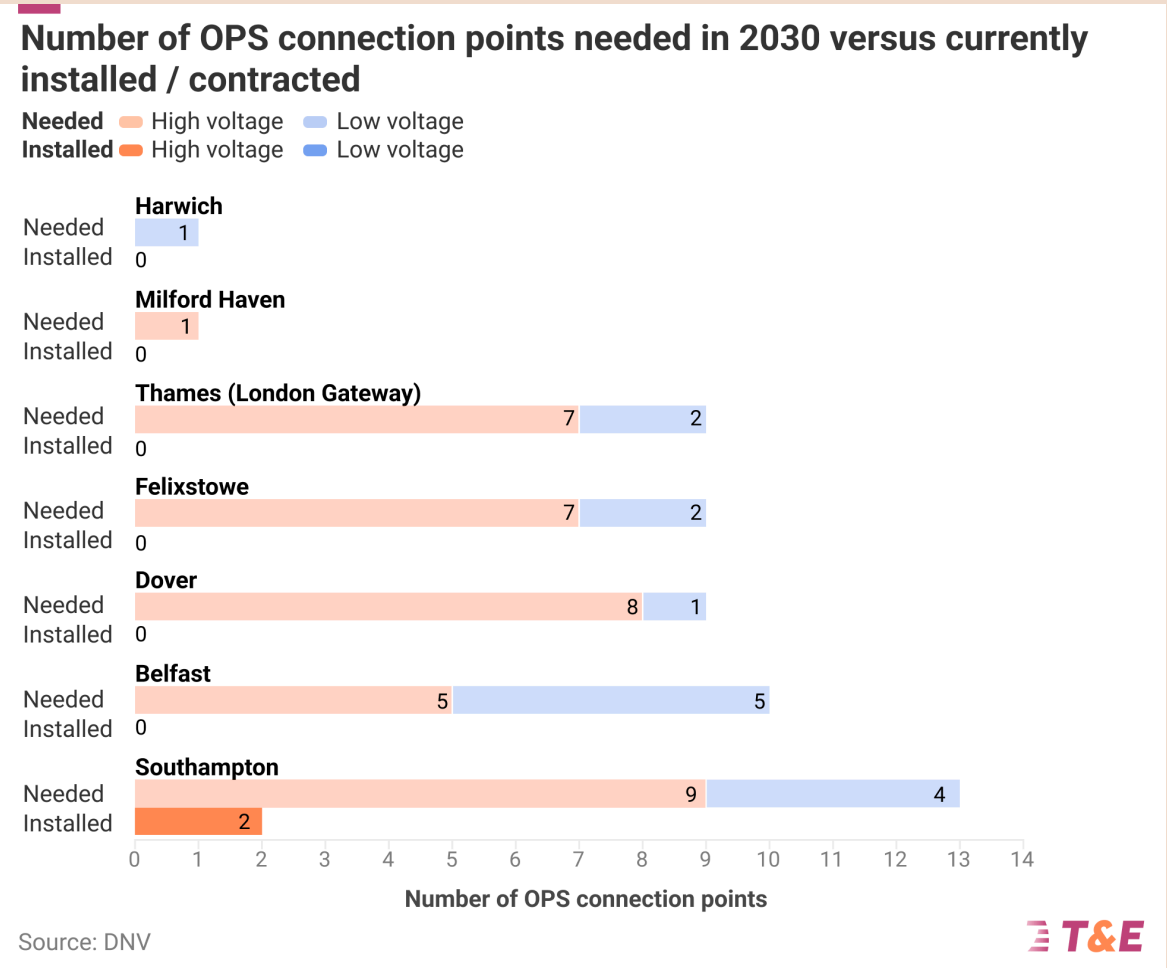
Lack of government policy means UK ports not investing in onshore power supply

Study commissioned by T&E shows strong predicted demand from 2030, but almost no investment. The Government needs to take bold action to support ports to install much-needed onshore power supply to eliminate greenhouse gas and pollutant emissions.

Summary

The Government is failing to adequately support the decarbonisation of the UK's shipping sector. This is shown by a study T&E commissioned from consultants DNV, assessing the state of onshore power supply (OPS) in seven major UK ports. OPS allows ships to plug in to electricity at berth instead of running engines for power, and is an essential emissions reduction technology. But as the study shows, almost no OPS has been installed to date.

European Union (EU) regulations require the supply of commercial-scale OPS in major EU ports from 2030, and for most container, cruise and passenger ships to use it. This will create considerable demand for OPS in UK ports, because almost all international vessels calling at EU ports also call at the UK. This means that the vast majority of UK international container, cruise and passenger ships will be OPS-capable in 2030. T&E therefore commissioned a study of seven major UK ports' readiness to match the demands of EU regulations on OPS in 2030.



The study finds the following:

- 52 commercial-scale, low- and high-voltage OPS connectors are required in 2030 across the seven major UK ports assessed, but only two connectors are currently

operational - **just 4% of the number needed**

- Whilst some ports are taking steps towards OPS - including mapping funding opportunities and the need for electricity grid upgrades - **commercial-scale OPS is offered in just one of the ports assessed**
- According to the information available, none of the ports assessed have signed any contracts for additional connectors by 2030

This study is a code red for the Government. It shows the pressing need for urgent government action to support the shipping and ports sectors to install essential emissions reduction technologies, as is happening in the EU. It shows how the market on its own cannot deliver large-scale OPS. And it shows the critical need for strong policy and regulatory signals backed by a clear strategic vision for eliminating shipping emissions.

T&E therefore recommends that the Government:

1. Require major UK ports to provide OPS wherever practicable, and ships to use it. These requirements should be introduced as part of a broader, zero-emission berth mandate and as soon as possible
2. Publish a plan for OPS with clear, time-bound targets. This should identify the most suitable ports for early-phase OPS deployment (i.e. ports where infrastructure upgrades are cost-effective and which will also see high volumes of OPS-capable vessel traffic). Connection should be required in the first of those ports from 2030
3. Implement a Norwegian-style charge for pollutant emissions on all ships calling at UK ports, with the revenues funding OPS and other zero-emission technologies
4. Signal the intention to take these policies forward with immediate effect in the imminent maritime decarbonisation strategy

1. The UK has no regulations to drive port OPS uptake

Shipping is an essential part of the UK economy, transporting 95% of the country's trade. It is also highly polluting, burning 7 million tonnes of fossil fuels each year and producing one-fifth of UK transport greenhouse gas (GHG) emissions[1]. Supporting the shipping sector's urgent transition away from polluting fossil fuels should therefore be a top priority for the Government. However, according to the Climate Change Committee[2], the Government has "no credible policies" to eliminate these emissions for Net Zero.

The lack of emissions policies is not limited to GHGs. Exhaust from ship engines also contains oxides of nitrogen and sulphur, and fine particulate matter. All are poisonous and damaging to

[1] T&E (July 2023). *Implications of an e-fuel mandate for UK shipping.* Retrieved from https://www.transportenvironment.org/te-united-kingdom/articles/implications-of-an-e-fuel-mandate-for-uk-shipping

[2] Climate Change Committee (June 2023). *2023 Progress Report to Parliament*. Retrieved from https://www.theccc.org.uk/publication/2023-progress-report-to-parliament/#downloads

human health. A recent T&E study[3] found that very large quantities of these pollutants are being discharged by ships running engines whilst moored in the UK's many port towns and cities, 24 hours a day.

The European Union (EU) is beginning to address the problem of its own shipping emissions. It has set clear regulatory signals to support the sector's transition away from polluting fossil fuels and towards alternative, zero-emission forms of energy. Regulations include requirements for the provision and use of OPS in EU ports.

In contrast, the UK has no such regulations in place or planned, and for a port to obtain the necessary grid connection can take 5 years or more[4]. This is despite a 2022 consultation on OPS showing that almost ¾ of respondents supported it[5], and despite industry calls for a national framework to "ensure fast and widespread adoption of shore power infrastructure and operation" in UK ports by 2030[6].

This briefing presents the results of a study commissioned by T&E from consultants DNV, assessing seven major UK ports' preparedness to meet predicted demand for OPS in 2030.

2. Demand for UK OPS will be increased by EU regulations

EU regulations will create considerable demand for OPS in UK ports. The FuelEU Maritime (FEUM) regulation requires all seagoing passenger, cruise and container ships above 5000 gross tonnage (GT) calling at major EU ports from 2030 to use OPS (or alternative zero-emission technologies) to meet on-board electricity requirements when at berth. Ships must therefore be OPS-capable. Under the Alternative Fuels and Infrastructure Regulation (AFIR), ports must install enough OPS connectivity to meet most[7] electricity demand from these ships by the same date.

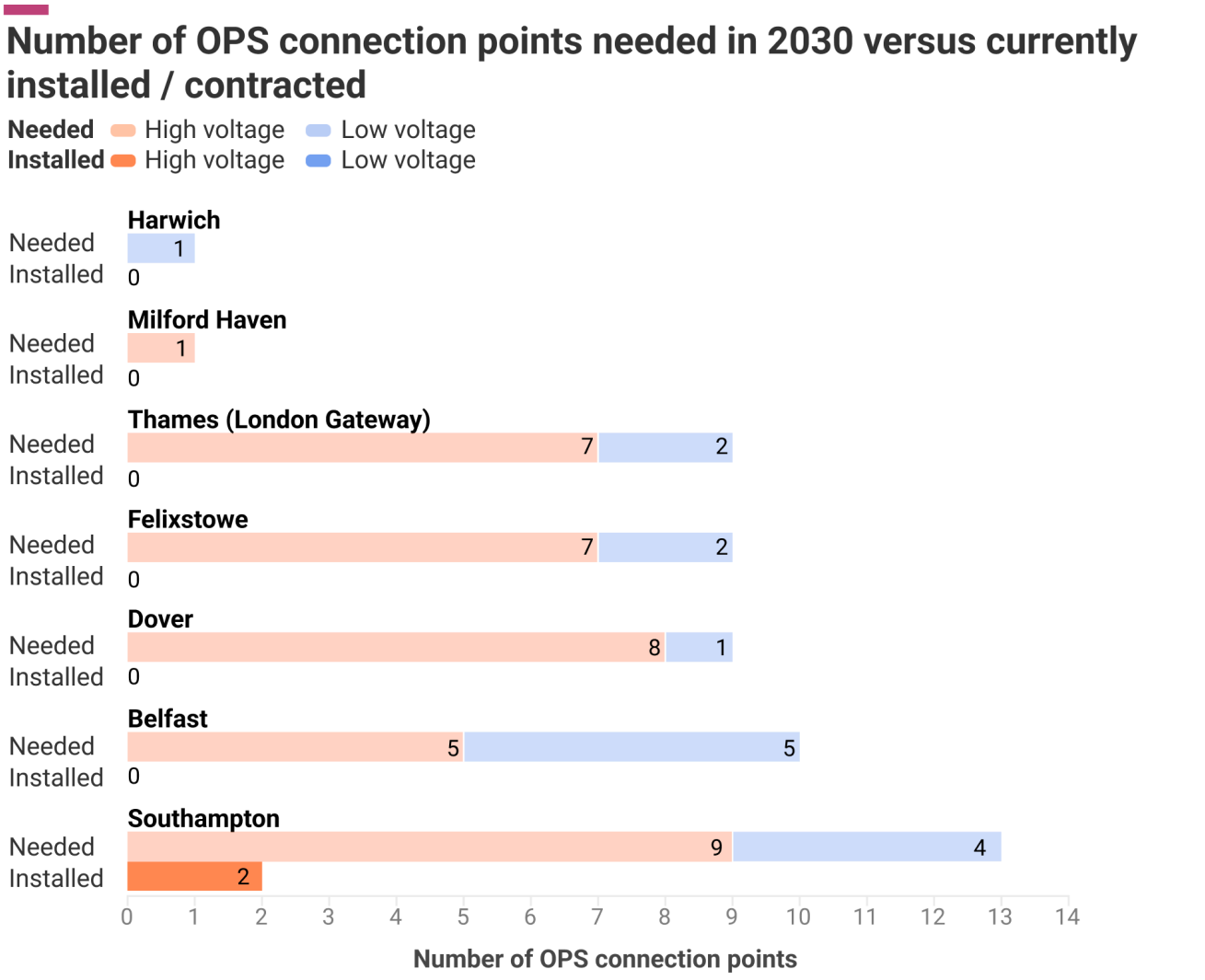
Around one-third of UK shipping travels directly between the UK and EU[8], and almost all UK international vessels above 5000GT also routinely call at EU ports[9]. These vessels are in scope of the EU regulations, meaning that as of 2030, most UK international shipping will be equipped

[3] T&E (May 2024). *The UK's most polluted ports, ranked in order*. Retrieved from https://www.transportenvironment.org/te-united-kingdom/articles/the-uks-most-polluted-ports-ranks
[4] UK ETS can nudge shipping towards decarbonisation, but won't suffice on its own (24 January 2025). Retrieved 3 February 2025 at https://carbon-pulse.com/361295/
[5] HM Government (updated 5 July 2023). *Use of Maritime Shore Power in the UK: summary of call for evidence responses*. Retrieved from: https://www.gov.uk/government/calls-for-evidence/use-of-maritime-shore-power-in-the-uk-call-for-evidence/outcome/use-of-maritime-shore-power-in-the-uk-summary-of-call-for-evidence-responses
[6] UK Chamber of Shipping (April 2022). *UK Chamber of Shipping's Position on Shore Power.* Retrieved from https://www.ukchamberofshipping.com/sites/default/files/Shore_Power_Position_Paper_-_endorsed_by_SB_22.4.22.pdf
[7] AFIR requires core and comprehensive (TEN-T) ports to install sufficient OPS facilities to provide OPS to 90% of port calls by seagoing passenger, cruise and container ships above 5000GT every year from 2030.
[8] T&E analysis of 2023 UK shipping trade flows
[9] T&E analysis shows that 97% of UK international shipping >5000GT also called at an EU port in 2023

to take OPS.

T&E therefore commissioned a study of seven major UK ports' readiness to match the demands of EU regulations on OPS in 2030. This was done by estimating the at-berth electricity demands in 2030 of vessels in scope of the regulations, and comparing this demand to OPS capacity currently operational and contracted for operation by 2030. The study also includes an assessment of the approximate electricity infrastructure costs necessary to convert Wightlink's Portsmouth to Isle of Wight ferry service to battery-electric operation. The UK has many ferry routes suitable for battery-electrification, and battery charging can require power delivery at a scale comparable to the largest OPS category assessed (greater than 10 megawatts, MW). Battery-charging needs should therefore be considered as part of planning for OPS.

3. Just 4% of UK OPS capacity required in 2030 is currently available



Source: DNV

The study finds the following:

- 52 commercial-scale[10] OPS connection points (low- and high-voltage) are required in 2030 across the seven major ports assessed, but **only two connection points are currently operational - just 4% of the number needed in 2030**
- According to the information available none of the ports have signed any contracts for additional connections by 2030
- Whilst some ports are taking steps towards OPS (Belfast is considering funding opportunities and Dover and Milford Haven are mapping the need for local electricity grid upgrades), **OPS is only offered in one port - Southampton - and at just a fraction of the capacity required to meet projected demand in 2030**
- Over £16 million in electricity system infrastructure costs could be required to convert Wightlink's Portsmouth (Gunwharf) to Isle of Wight (Fishbourne) ferry service to battery-electric. This estimate does not include vessel or electricity network upgrade costs

These findings are telling. The ports included in the study are not installing much-needed, commercial-scale OPS and they have no concrete plans to do so. This is despite the study indicating strong demand for OPS in 2030, and also the price signal from the Government's 2023 proposal to include at-berth emissions from domestic vessels in the UK Emissions Trading Scheme from 2026[11]. Factors which could increase the cost of shipping are not so far resulting in change. These include ship owners installing expensive OPS capability on vessels to meet EU requirements but being unable to use it in the UK if OPS is unavailable.

This study is a code red for the Government. It shows that the Government needs to take urgent action to support the shipping and port sectors to install essential emissions reduction technologies, as is happening in the EU. It underlines how the market on its own cannot deliver large-scale OPS, despite the drivers noted above helping to create favourable conditions in the UK. And it highlights the critical need for strong policy and regulatory signals backed by a clear strategic vision for eliminating shipping emissions.

The Government cannot ignore this problem any longer. OPS is needed: it is a proven technology for reducing ship emissions at berth and by 2040 is projected to be cheaper than

[10] "Commercial scale" refers to power capacity of an OPS system and reflects the relatively high power demand of vessels in scope of the EU regulations on the provision and use of OPS. Vessel power categories assessed for this study range from <100 kilowatts (kW) to >10 megawatts (MW). Low voltage systems can cover up to 1000kW. Above this, high-voltage is required.

[11] Developing the UK Emissions Trading Scheme: Main response. HM Government (June 2023). Retrieved from https://assets.publishing.service.gov.uk/media/649eb7aa06179b000c3f7608/uk-emissions-trading-scheme-consultation-government-response.pdf

generating on-board electricity using decarbonised fuels[12]. Its use will greatly reduce the UK's chronic, ship-produced port pollution and associated GHG emissions (around 10% of total UK shipping GHG emissions in 2021[13]). However, ports cannot be expected to make the very significant investments required for commercial-scale OPS without regulatory certainty from the Government. Infrastructure costs are high[14] and industrial electricity costs roughly twice as much as electricity generated on board ships using marine gas oil (MGO)[15]. A regulatory imperative for OPS is necessary, both for ports to provide OPS and for ships to use it. EU regulations offer the UK a blueprint.

4. Conclusions and recommendations

As T&E has previously recommended[16], a policy framework for OPS deployment is required, as part of a broader, zero-emission berth (ZEB) mandate[17] in the UK. This should be based on binding, time-bound targets and should include a revenue-raising mechanism to apply the polluter pays principle to pollutant emissions. This would effectively price these emissions and revenues could be returned to ports for investment in OPS. For example, a Norwegian-style charge for ship-produced nitrogen dioxide (NOx) emissions in UK ports could raise £2.4m/year in Southampton alone[18].

Given the very significant electricity system implications of widespread OPS and battery-electric vessel charging, detailed consideration should be given to how best to deploy OPS as part of wider electricity grid planning reform and upgrades. A plan for shore power is needed urgently, identifying the ports most suitable for early-phase OPS deployment[19].

T&E therefore recommends that the Government:

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[12] CEDelft (April 2023). *The role of shore power in the future maritime fuel mix.* Retrieved from https://cedelft.eu/publications/the-role-of-shore-power-in-the-future-maritime-fuel-mix/

[13] T&E (February 2023). *A Pricey Omission: not charging ships for their pollution costs the UK dearly.* Retrieved from https://www.transportenvironment.org/te-united-kingdom/articles/a-pricey-omission-not-charging-ships-for-their-pollution-costs-the-uk-dearly

[14] Work starts to install port's pioneering shore power system. (7 November 2024). Retrieved 2 January 2025 from https://portsmouth-port.co.uk/news/work-starts-to-install-ports-pioneering-shore-power-system/

[15] Revealed: 'Greenwashing' cruise ships burning diesel despite energy pledge. (4 November 2023). Retrieved 2 January 2025 from https://www.opendemocracy.net/en/cruise-ships-greenwashing-energy-shore-power-diesel-uk-ports-mislead-tourists/

[16] T&E (January 2024). *Long, Loud and Legal: the case for zero-emission UK shipping.* Retreived from https://www.transportenvironment.org/te-united-kingdom/articles/the-case-for-zero-emission-uk-shipping-maritime-energy-policy-recommendations

[17] Variable UK electricity grid strength means OPS would be more expensive to implement in some locations than others and in the short-term, there may be a role for alternative, zero-emission technologies such as hydrogen fuel cells whilst the necessary grid strengthening takes place. A zero-emission berth (ZEB) mandate would drive OPS where it is preferable, and reflect the flexibility of the FuelEU Maritime regulation which also permits alternative, zero-emission technologies.

[18] See footnote 2

[19] These should be chosen based on a) cost-effectiveness of port infrastructure and electricity network upgrades, and b) predicted volume of OPS-capable vessel traffic.

1. As part of a broader zero-emission berth (ZEB) mandate, require major UK ports to provide OPS wherever practicable, and ships to use it.
2. Publish a plan for OPS deployment with clear, time-bound targets. The plan should identify the most suitable ports for early-phase OPS deployment. Connection should be required in the first ports from 2030.
3. Implement a Norwegian-style charge for pollutant emissions in UK ports, with the revenues going to ports themselves to fund OPS and other zero-emission technologies
4. Publish the intention to take both policies forward with immediate effect in the imminent maritime decarbonisation strategy.

Further information

Jonathan Hood

Sustainable Shipping Manager, UK

jon.hood@transportenvironment.org

+44 (0)7903 555 378

T&E would like to thank all of the ports included and the ferry operator Wightlink for their cooperation and willingness to provide the information contained in the study.