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30th of April 2026

By email to NPTandCrossBorderCO2@energysecurity.gov.uk

Carbon Capture, usage and storage: Consultation on Non-Pipeline Transport

Dear Sir or Madam

Fuels Industry UK represents the six main oil refining and marketing companies operating in the UK. The Fuels Industry UK member companies – bp, Essar, Esso Petroleum, Phillips 66, Shell, and Valero – are together responsible for the sourcing and supply of product meeting over 85% of UK inland demand, accounting for over a third of total primary UK energy[1].

The refining and downstream oil sector is vital in supporting UK economic activity. It provides a secure supply of affordable energy for road and rail transport, aviation, and marine applications, as well as for commercial and domestic heating. It also supplies base fluids for use in lubricants, bitumen for use in road surfacing, and graphite for use in electric vehicle batteries and as electrodes in steel and aluminium manufacture.

Our members have an interest in the Non-Pipeline Transport (NPT) based Carbon capture, usage and storage (CCUS) as a means to assist in the decarbonise their operations, particularly where access to pipeline-based infrastructure is limited.

Fuels Industry UK welcomes the opportunity to respond to the consultation on Carbon Capture, usage and storage (CCUS): Consultation on Non-Pipeline Transport (NPT).

[1] Based on the Department of Energy Security and Net Zero Digest of UK Energy Statistics 2024

Yours sincerely

Chris Gould

Energy Transition Lead, Fuels Industry UK

Attachment 1: Fuels Industry UK Response

1. Who are you responding on behalf of, and what is your interest in this consultation?

Fuels Industry UK

Fuels Industry UK represents the six main oil refining and marketing companies operating in the UK. The Fuels Industry UK member companies – bp, Essar, Esso Petroleum, Phillips 66, Shell, and Valero – are together responsible for the sourcing and supply of product meeting over 85% of UK inland demand, accounting for over a third of total primary UK energy[2].

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Our members have an interest in the Non-Pipeline Transport (NPT) based Carbon capture, usage and storage (CCUS) as a means to assist in the decarbonise their operations, particularly where access to pipeline-based infrastructure is limited.

2. If you consent to members of the team reaching out for clarifications on responses provided, please provide contact details.

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[2] Based on the Department of Energy Security and Net Zero Digest of UK Energy Statistics 2024

3. Using the data template, please could you provide any information on any prospective full chain unsupported or semi-supported NPT projects you may be involved in?

Fuels Industry UK is not directly involved with any prospective full chain unsupported or semi-unsupported NPT projects.

Our members may be involved in these and are better placed to respond directly on this question.

4. Do you agree or disagree with the proposed mechanism to deliver NPT support through the capture business models, and enable delivery of the three archetypes (option E: store-led, capture-led and intermediary led)? In your view, is this approach preferable to the other options considered in the consultation? Please explain your reasoning.

Agree

This option appears to be the most flexible approach, allowing operators to choose the commercial structure they wish to use.

The approach also offers flexibility to evolve the market in the future, potentially as the market moves to a market-based approach.

However, a market-based approach relies on a higher carbon price relative to cost of capture, transport and storage, coupled with appropriate carbon leakage protection. If the carbon price is not high enough, as the consultation notes, then it will not be sufficient to enable the market transition. We note this, and we are concerned that a high carbon price without carbon leakage protection will lead to decarbonisation through deindustrialisation.

However, it should be noted that by making the UK a more expensive place to manufacture products that are then carbon leakage protected (CBAM), the UK is deliberately making manufacturing uncompetitive in the export market and restricting any manufacturing to the UK only. This lowers the scale of UK manufacturing and makes the UK less investible for incremental production of energy intensive products. Only products that cannot be stored over periods of time and moved internationally such as electricity can have a carbon price imposed without a reduction in competitiveness of that product. In the case of electricity, driving up UK electricity prices makes industry less competitive and drives out investment.

The commercial structures associated with this option can be developed from existing structures, for example the transport and storage of liquid fuels.

We agree that a further consultation on this is needed to help define the detailed NPT support mechanisms, as suggested in the consultation document.

5. Where could co-investment add the most value in enabling the deployment of the first NPT projects?

Co-investment could be through grant funding, particularly if the CCUS industry has not yet moved to a market-based approach. This would enable the market to be "kick-started", demonstrating the technology and potential. Such co-investment can be targeted, short lived and focused on key strategic industries and enabling infrastructure.

However, we note that there are challenges in the "kick-start" approach to creating a self-sustaining industry in the UK. For example, electricity generation from wind now requires long-term support to achieve financial viability [3].

6. Do you agree or disagree with the proposed approach to provide support for NPT projects via a separate payment element referred to as the 'NPT fee'? Please explain your reasoning.

Agree

This approach keeps support within a limited number of counterparties, as it deals with the capture projects directly rather than a more widespread number of companies. It also aligns with the proposed arrangements of CCUS support, which improves investor familiarity and investability.

The commercial structures associated with this option can be developed from existing structures, for example the transport and storage of liquid fuels. It should be recognised that by creating a linked system, the design is in affect creating a pseudo-monopoly so may lead to Regulated Asset Base (RAB) mode requirements.

[3] https://www.gov.uk/government/news/new-plan-to-kickstart-onshore-wind-revolution

7. Please provide views on the challenges that could arise for your organisation if the government agrees the NPT fee with capture projects, with NPT service providers not being directly involved in negotiations.

The market for NPT services is as yet nascent and undeveloped. As such, the costs of these services may be difficult to predict, particularly in the early years of the schemes.

There needs to be suitable review clauses in place, to ensure that the NPT fees paid out reflect the actual costs of the NPT services being provided. This aligns with the desire to minimise subsidy costs, while ensuring that capture projects can cover their NPT costs, allowing a level playing field for market participants.

8. Do you agree or disagree with the proposed scope of NPT costs covered by the NPT fee? Are there any costs that you believe should be included or excluded? Please explain your reasoning.

Agree

This seems like a reasonable starting place and splits the costs in the supply chain in a transparent and equitable manner.

We would question whether the reduction in NPT fee payments is likely as the sector moves to a market-based approach. These payments reflect the higher costs associated with capture projects not associated with pipeline-based solutions. Some form of support is needed to allow NPT based capture projects to compete on a level playing field with those based on supported pipeline projects.

9. Do you have any comments on the proposal for oversizing of NPT infrastructure? What criteria should be used to assess appropriate sizing to deliver contractual throughput? Please explain your reasoning.

Economies of scale are possible, but we would question the degree to which they are achievable in reality.

Fixed costs, such as manpower and investment repayments, will enjoy economies of scale. However, variable costs such as energy or fuel costs will also be very significant (for example road tanker diesel costs).

Shipping costs will reduce with bigger ships; however, these are likely to be bespoke ships, of a predetermined size and in service for a lengthy duration, so a reduction in these costs is not realistic. There may be some opportunity to fill "gaps" in ship programmes to lower costs. It is unlikely in the first instance that ship rotations durations and ship sizes will perfectly match capture plant rate and associated buffer storage inventory at the capture plant and Transport and Storage Company (T&SCo) location.

For technical reasons, the operability of equipment at lower throughputs also needs to be appropriately considered; for example, some capture equipment may have difficulty operating at low turndowns. This needs to be considered in the oversizing of NPT infrastructure to ensure that it remains capable of operating safely and efficiently. Creating provision for expansion or turndown via mechanical equipment count selection may be possible; e.g. scaled for 2 out of 3 pumps operating, but able to run at 1 out of 3 gives a wider turndown or turn up range. All this rate flexibility, however, comes at a higher front end loaded capital cost than a less flexible approach and this needs to be recognised.

10. Using the data template, please provide technical data and potential costs associated with your NPT solution based on fee option 1. Please provide comments on how costs may change and how risks could be managed commercially, based on other NPT fee options presented.

Fuels Industry UK is not directly involved with any NPT projects. Our members may be involved in these and are better placed to respond directly on this question.

11. Do you agree or disagree with the payment of the NPT fee, and where applicable capture costs, on throughput at point D (indicative fee option 1)? If you believe that another fee option presented may better support policy constraints and fiscal constraints noted on page 23, please provide evidence to support this.

Disagree

In theory, this seems a reasonable approach. It also provides consistency with support provided to pipeline-based solutions, allowing NPT and non-NPT based solutions to operate on a level playing field. It also reduces the administrative burden on companies and government.

However, the NPT fee looks like it will be structured such that it will only pay the variable or throughput component with no fixed component. This will present a challenge for those value chains with intermittent volumes. By paying fees only on a variable basis, the UK Government is committing to cover the financing of the capital over a long duration at commercial rates. Commercial interest rates are greater than government rates, so this makes the overall total CCUS cost higher. This issue should be addressed in the design of the NPT fee payment structure.

The commercial structures associated with this option can be developed from existing structures, for example the transport and storage of liquid fuels. This includes provision for liability in the event of product loss during transportation, as well as metering, sampling and testing requirements.

12. Do you believe any of the three subsidy options are more suitable for specific capture project sectors, transport modes, organisational structures, or financing strategies? Please explain your reasoning.

We cannot provide a detailed response to this question due to limited expertise in this area.

However, any market-based approach relies on a high carbon price coupled with appropriate carbon leakage protection. If the carbon price is not high enough, as the consultation notes, then it will not be sufficient to enable the market transition. A high carbon price without carbon leakage protection will lead to decarbonisation through deindustrialisation.

However, it should be noted that by making the UK a more expensive place to manufacture products that are then carbon leakage protected (CBAM), the UK is deliberately making manufacturing uncompetitive in the export market and restricting any manufacturing to UK only. This lowers the scale of UK manufacturing and makes the UK less investible for incremental production of energy intensive products. Only products that cannot be stored over periods of time and moved internationally such as electricity can have a carbon price imposed without a reduction in competitiveness of that product. In the case of electricity, driving up UK electricity prices makes industry less competitive and drives out investment.

13. Do you have any views on the administrative role which capture projects may have under fee options 2 and 3? For responses by capture projects, it would be helpful to understand the potential cost implications of this administrative role.

We cannot provide a detailed response to this question due to limited expertise in this area. However, it seems reasonable to expect the administration of the CO_2 value chain is best owned and delivered by the capture project or intermediary.

14. Do you have any concerns in relation to payment of comingled CO2 under any of the three NPT fee options? Please explain your reasoning and provide alternative suggestions.

We cannot provide a detailed response to this question due to limited expertise in this area.

15. Do you have any views on potential payment or other policy mechanisms to realise cost efficiencies, as more users join or greater operational efficiencies are achieved over the lifetime of a capture contract?

Cost efficiencies are possible, but we would question the degree to which they are achievable in reality.

Fixed costs, such as manpower and investment repayments, will enjoy cost efficiencies. However, variable costs such as energy or fuel costs will also be very significant (for example road tanker diesel costs).

Shipping costs will reduce with bigger ships; however, these are likely to be bespoke ships, of a predetermined size and in service for a lengthy duration, so a reduction in these costs is not realistic. As we note in our response to Q9, there is some potential for lower costs by filling gaps between cycles for the committed contract.

16. Do you have any views on a proposed optimisation mechanism? What are the benefits and challenges in the creation of an optimisation mechanism?

We cannot provide a detailed response to this question due to limited expertise in this area.

17. What are your views of the proposed position on stranded asset risk for the NPT solution? Please provide detail to your response in reference to areas such as investability and bankability, and where required, additional scenarios where you believe stranded asset protection may be required.

This seems to be a realistic approach, with an appropriate identification of risk throughout the supply chain.

Some degree of risk is inevitable with any commercial investment, and mature companies are well aware of these.

However, we note that CO_2 is a government mandated market with no consumers in a traditional sense; i.e. it is not a market where companies invest for consumers. The margin is essentially fixed through the contract with the government with no upside benefits. This limits the investment case that would drive companies to take risks in the way that they would do for a true commercial asset.

This includes stranded asset risk. It is not realistic for companies to invest and expect a return with no acceptance of a degree of risk.

Assets may become stranded at short notice due to bankruptcy, for example in the case of Prax Lindsey refinery in 2025 [4]. This possibility needs to be considered in wider government CCUS policy development, including NPT based solutions.

18. Please can you provide suggestions for how the termination fee for the NPT solution is calculated. We welcome views on what cost components should be considered in the structure and how the residual value of the assets is calculated.

The calculation of the termination feed could be calculated using principles of liability on the part of the investor. If the project has become a stranded asset due to issues out with its control, such as a change in government policy, then a higher termination fee may be payable.

The cause of an asset becoming stranded could also be bankruptcy, where the NPT service providers will be one of many creditors with investors likely to be a lower priority for repayment of their investments.

In any event, the termination fee should not be higher than the value of the assets at the time. It should also take into account the resale value of the infrastructure such as trucks, rail cars, or plant equipment.

19. Do you agree or disagree that CO_2 quality risk within the NPT project can be effectively managed by industry? Please explain your reasoning.

Agree, up to a point.

The commercial structures associated with this option can be developed from existing structures, for example the transport and storage of liquid fuels. This includes provision for liability in the event of quality risks, as well as for sampling and testing, and procedures to be followed in the event of a quality dispute (such as the appointment of independent inspectors and arbitration).

What the NPT project cannot manage is the risk of a change in government policy, for example the cancellation of NPT subsidies.

[4] https /www.gov.uk/government/news/prax-lindsey-oil-refinery-limited-prax-storage-lindsey-limited-and-prax-terminals-killingholme-limited-in-liquidation-information-for-customers-sup

20. Do you agree or disagree that the NPT project is best placed to manage the timing mismatch risk? Please explain your reasoning.

Disagree

There is no clarity in the consultation document about liability in the scenarios presented in Table 3; it simply indicates that payments will not be made in the event that full chain availability is not achieved.

It is unclear how the capture project will be reimbursed if the carbon is not captured for circumstances out with its control. Placing the responsibility solely on the NPT solution risks the capture project not being reimbursed if the NPT solution is not available, particularly for an extended duration.

There needs to be better clarity on how the carbon project is protected if there are a timing mismatch and a delay in commissioning the NPT solution.

21. Do you agree or disagree with the creation of an NPT solution readiness OCPs and ICPs? Please explain your reasoning.

Disagree

The role of the OCP and the ICP in the transfer of liabilities on commissioning is not well defined in the consultation. This needs to be clarified to ensure that the correct liabilities sit with the right entities on commissioning.

22. To what extent is being able to access CCU markets significant for the commercial viability of your project (during operations and in cross-chain risk events) and to Government's missions (e.g. kickstarting economic growth and accelerating the transition to net zero)?

Fuels Industry UK is not directly involved with any NPT projects.

Our members may be involved in these and are better placed to respond directly on this question.

23. Beyond mechanical failures, do you have any views on what scenarios could result in an unplanned disruption within the NPT value chain that could result in system availability losses? Please use the data template to share scenarios, potential likelihood, impact and mitigations.

There are a range of scenarios where transport could be disrupted, in addition to mechanical failures.

These include, but are not limited to:

- Interruptions to road journeys such as traffic accidents or roadworks.
- Interruptions to rail traffic including engineering works
- Delays due to poor weather including flooding, snow and ice, or fog, wind, sea state, swell or congestion in restricted water ways, and damage to necessary but not direct NPT infrastructure (e.g. ferry jetties at Holyhead), provision of 3rd party services failures.
- Industrial action including strikes

We cannot comment in detail on the cost impacts and mitigations of these.

24. What are the cost implications of using technical and commercial strategies (e.g. extra vessels/interim storage/permanent storage capacity or redeployable rather than fixed assets) to mitigate cross-chain risks?

Initially there will be limited flexibility to mitigate cross-chain risks.

For example, it is unlikely that extra vessels or road tankers will be built over and above the minimum required.

Over time, as the market develops, there will naturally be additional capability in the market which can be used to mitigate these risks, but only as additional capacity (e.g. Road and rail tankers, and ships) are added in other supported schemes and such stand-alone NPT's have "spare capacity" in their systems due to inherent timing or usage design, as indicated in our response to Q9)

25. Do you have any views on potential mechanisms required to enable CO2 is transported to another store in the event of a T&S outage?

It is likely that alternative stores will incur higher costs, either through increased transport durations or a lack of an established storage contract in the first instance. Capacity availability and alternative stores could also be a restriction. However, we expect that this will be challenging; for example, the Hynet system has already booked capacity equivalent to its initial capacity limits, without the provision of any import NPT capability.

The need for a mechanism is unclear at this time; commercial operators can make the appropriate decisions for themselves based on contracts, liabilities and alternative options available. This is in line with existing commercial arrangements in other sectors, such as the liquid fuel market.

We also ask for clarity on how is the NPT scheme will address higher or different shipping costs implied by a change to the expected route? For example, if shipping has to go further and needs an additional vessel in the rotation to address the longer sail time, how do these additional costs get reimbursed or addressed through the contract?

26. If you have suggested that you need government support to manage any cross-chain risks, please explain what market conditions would be required in order for your NPT project to operate unsupported.

Fuels Industry UK is not directly involved with any NPT projects.

Our members may be involved in these and are better placed to respond directly on this question.

27. What are your views on the effectiveness of the current regulatory framework provided by the Competition Act 1998 and the Enterprise Act 2002 in addressing potential anti-competitive behaviours related to the NPT sector? If you believe economic regulation is required, please provide detailed explanations and economic arguments to support your view.

We note the comments in the consultation on this topic, and that the government view is that economic licensing of the NPT sector is not required at this time.

Given the nascent nature of the NPT sector, it is unclear on how effective legislation will be at addressing anti-competitive behaviour.

We agree with the consultation response that this is an issue that should be kept under review as the NPT sector develops.

28. Do you have views regarding competition if NPT infrastructure was operated by economically licenced T&SCos? Please explain your reasoning.

We do not have a firm view on this topic at this time.

However, we do not believe that this should be a significant issue, provided that the economically licenced T&S Cos behave in an appropriate manner, do not cause market distortions and work to create a level playing field for participants involved in NPT and non-NPT CCUS solutions.

29. Do you have views on the carbon storage licensing requirements for the intermediate storage of CO2? Do your views differ for different types of intermediate storage? Please gives reasons for your answer(s).

We understand that intermediate storage is subject to licences under EA2008. However, EA2008 was aimed at long term geological storage and thereby all intermediate sites not intended for "geological timescale" storage should be definition be exempted from this requirement.

While we recognise the intent to reduce the burden on suppliers, the fact remains that CO_2 is a hazardous material with the associated significant HSE risks that this entails. As such, we agree that CO_2 sites remain subject to COMAH and normal storage licensing for gas storage facilities, just as an LNG or Liquid Nitrogen facility would be.

The HSE requirements for the storage of CO_2 should take account of its hazardous nature, regardless of whether it is intermediate storage or not. As with current practice, this should take into account of the inventory stored, its location relative to the population and the precautions being taken to ensure its safe storage. This includes the licensing and permitting requirements which are designed to ensure the safe handling and storage of hazardous material.

There should be no preferential treatment for intermediate storage, as opposed to any other storage of CO_2 as it is a hazardous material.

30. Do you have views on the interactions between storage licensing requirements for intermediate storage of CO2 and the ETS or other regulatory frameworks?

While we recognise the intent to reduce the burden on suppliers, the fact remains that CO_2 is a hazardous material with the associated and significant HSE risks that this entails.

The HSE requirements for the storage of CO_2 should take account of its hazardous nature, regardless of whether it is intermediate storage or not. As with current practice, this should take into account of the inventory stored, its location relative to the population and the precautions being taken to ensure its safe storage. This includes the licensing and permitting requirements

which are designed to ensure the safe handling and storage of hazardous material.

There should be no preferential treatment for intermediate storage, as opposed to any other storage of CO_2 as it is a hazardous material.

The Government should also consider exempting the facility from ETS as it is not a generator of CO_2 in its own right; losses through the supply chain will be dealt with through loss accounting. As revenue is set by final injection, the capture plant may not (depending on contractual arrangements) receive revenue for CO_2 captured but not delivered. This will very much depend on the contractual position; e.g. if CO_2 sold at capture plant Free on Board (FOB) [5] to a T&SCo, and losses occur between that point and the injection into the field, then the T&SCo is losing the value of CO_2 injection. If it is sold Cargo Insurance and Freight (CIF) [6] at T&SCo, then the capture plant is losing CO_2 value as value set by injection. If sold FOB to an intermediary that then delivers Delivered at Place (DAP)[7] to T&SCo, then losses in the system are value losses that the intermediary is seeing. Finally, we note that these concepts may not be familiar to some and would be happy to explain them in more detail with DESNZ.

31. Do you have views on whether access obligations should apply to facilities used for the onshore intermediate storage of CO2 as part of NPT value chains?

Where NPT infrastructure is funded by private capital without government support, for example in a market-led approach, then there should be no obligation for facilities to offer third party access. This is solely a commercial matter for the entities concerned.

This situation may be different if the infrastructure is subsidised or supported by public money.

There needs to be clarity on what the access obligations mean and where the appropriate boundaries are. An example could include where a large emitter has a capture plant (end of capture Business Model, BM), a liquefaction and

[5] https://www.investopedia.com/terms/f/fob.asp
[6] https://www.investopedia.com/terms/c/cif.asp
[7] https://www.investopedia.com/terms/d/delivered-place-dap.asp

local storage tank (part of NPT system), a contract for shipping (part of NPT system) and a contract into T&SCo receipt and storage (T&SCo BM). If a third party had access rights to the large emitters storage tank and thereby the rest of the NPT supply chain, there could be significant scheduling issues. As such we do not believe that access obligations should exist by definition on onshore intermediate storage. This statement is true whether the infrastructure is subsidised or not.
We do however note that onshore intermediate tankage, set up for commercial operation with the intent of multi-party use, would benefit from some form of access arrangement.

32. Do you agree or disagree with our proposal for an industry and regulator-led approach to NPT standardisation? Please explain your reasoning.

Agree

There needs to be appropriate engagement with experts as the standards develop.

BSI is well placed to develop these; the processes for the establishment and maintenance of liquid fuel standards such as those for petrol and diesel is well defined. Appropriate committees bring together experts, who debate the requirements including test methods and limits, which are then agreed by consensus and published.

Equally, the process for defining the low carbon hydrogen standard has operated well, albeit through a similar process.

Government experts can, and do, sit on these committees to provide input on the standard development.

However, in the early years, there may be less expertise in the sector, and less consistency between storage projects. The government may need to take a more active role to bridge this knowledge gap.

We note that the United States (US) has significant CCUS experience and standards with a longer history of CO_2 pipeline and storage and reinjection than in Europe. We suggest that the government engages with US counterparts to share this experience as part of the NPT policy design process.

33. Are there any potential issues with how NPT standardisation is currently developing both in the UK and Europe? Please explain your reasoning.

We are not aware of any issues emerging with NPT standardisation at this time. However, members may be involved directly and able to provide a better view on this question.

34. Which existing international standards do you consider most relevant for review and potential adoption by the UK NPT sector?

We are not aware of any international standards relating to NPT standardisation at this time. However, members may be involved directly and able to provide a better view on this question.

We note that the US has significant CCUS experience and standards with a longer history of CO_2 pipeline and storage and reinjection than in Europe. We suggest that the government engages with US counterparts to share this experience as part of the NPT policy design process.

35. As an NPT service provider, how confident are you in the ability of the value chain to reliably and promptly characterise whether a CO2 stream (from a single source or mixed) is compliant with the CO2 specification as it enters the T&S network?

Fuels Industry UK is not an NPT service provider.

However, we do have expertise in the sampling and testing of liquid fuels, particularly as they enter key national infrastructure networks with significant quality management requirements.

Fuels systems have attributes for

-Sampling & testing regimes

-Agreed specifications

-Availability of labs to determine quality

-Dedicated transportation systems or agreed cleaning procedures for change of service (e.g. HN50 ship cleaning guidelines [8])

- Minimised external cross contamination leaks.

[8] https://www.energyinst.org/industry/publications/topics/hydrocarbon-management/hm-50.-guidelines-for-the-cleaning-of-tanks-and-lines-for-marine-tank-vessels-carrying-petroleum-and-refined-products

We also note that Industrial Gases routinely achieve quality management with O_2 and N_2 tank systems, for example by using different connectors that cannot be mixed up. In other words, physical engineering standards also play a part in creating barriers to contamination.

36. At the point of delivery into the T&S network, do you consider that technical operating processes inherent to the NPT value chain could affect how CO2 quality should be assessed, as compared to on a piped network? Please outline any differences and explain the potential impacts.

The issues and opportunities identified in the consultation for NPT solutions vs piped solutions appear to be the right ones. This includes optionality for the treatment of variations in qualities.

We note that there is significant industrial experience with reliance on appropriate standards and contracts developed over decades of experience for quantity and quality determinations (and need thereof) at various points in supply chains, along with handling ROB (Remaining on Board) volumes and qualities of pressurised transportation systems.

However given the nascent nature of the industry at this time, it is unclear how big an issue this will be. We would recommend that the piped network be established first, and then this issue can be revisited as NPT value chains come online in the future.

37. How will testing requirements at the point of entry to the T&S network be impacted by the batch transfer nature of NPT-derived CO2 flows (as opposed to the continuous flow associated with pipeline-based networks)? Additionally, what could be the role of NPT's batch-wise delivery in remediating any non-compliant CO2 before it enters the T&S network?

Fuels Industry UK is not an NPT service provider.

We note industry experience on dealing with these requirements on a contractual basis.

-Load port determination of quantity

-Dedicated fleet or industry change of service cleaning requirements

-Ensuring that testing further downstream is minimised.

In our view, the use of NPT to blend CO_2 is likely to be minimal. Blending of off-spec CO_2 would require additional storage volumes beyond normal operational requirements. Given that storage is expensive, this appears to be an expensive manner to solve a specification problem. Storage will generally be based on expected batch sizes of receipt or onward discharge. The T&SCo etc should be clear about what a specification is: is this representing the maximum allowed at any point in time, or a maximum that over a duration would be tolerable. This is where most of the flexibility exists.

38. Do you have a preference for which entity within the NPT value chain (in Figure 5) should hold Registered Capacity in the T&S network? Please explain your reasoning.

We do not have a preference at this time.

Given the nascent nature of the industry, it is difficult to comment on this in detail.

We would recommend that a review of this is held once the piped CCUS systems come online, and experience is gained on how capacity is managed in routine operation. This may lead to a better outcome than deciding on this question at this time, with limited information.

39. Would NPT service providers require a constant rate of flow, or can they vary their flow rate into the T&S network? If varying flow is an option, what is required (from a technical, commercial, and operational perspective) to enable this and how quickly can the CO2 flow be stopped and started, from both the NPT service provider and a receiving T&S network's perspective?

Given the nascent nature of the industry, it is difficult to comment on this in detail.

We note that in common with standard industry practice, T&SCo's will need intermediate storage equivalent to the batch sizes that are at least 50% larger than the deliveries they will receive. For example, if ships are 20ktes, the load port will need at least 40ktes storage and the discharge port at least 30ktes. What the T&SCo then does to inject that cargo at a specific rate is a matter for them, but they must be in a position to discharge into buffer tanks in a timely manner. For ships a timely manner by standard contract is handling

the ship (from port arrival to port departure) is 24 or 36 hours although this is slightly vessel size dependent).

We would recommend that a review of this is held once the piped CCUS systems come online, and experience is gained on how capacity is managed in routine operation. This may lead to a better outcome than deciding on this question at this time, with limited information.

40. Do you have any suggestions for new/different capacity products that can effectively accommodate NPT flows and their inherent flexibility? Please explain your reasoning.

We are not aware of any new or different capacity products that can effectively accommodate NPT flows.

We would expect that CCUS will develop using existing techniques, such as road and rail tankers, and shipping, at least in the first instance.

Other technologies may be developed in time as the CCUS sector develops.

We would reasonably expect that the T&SCo would provide the buffer tanks needed for road or rail ship receipt that are suitable for discharging a ship in 24hrs or a road / rail tanker in 1 hr.

41. Should modification of CCS Network Code seek to simultaneously enable all three archetypes supported by the government's preferred option E (as set out in Chapter 1)? Or should modification be phased? Please explain your reasoning, and if phased, please indicate respective priorities for the archetypes.

We do not have a firm view on this question at this time.

We would encourage the government not to make unnecessary modifications to instruments such as the CCS network code at this time, in order to avoid overcomplication and retain investor certainty. The piped sector should be introduced in the first instance; the code can then be updated as required, including in a phased approach, as the sector develops.

42. Do you have any additional comments or views not covered by the questions above? We welcome any further input you consider relevant to the consultation.

We note the government intention to move to a market-based approach. However, a market-based approach relies on a high carbon price coupled with appropriate carbon leakage protection. If the carbon price is not high enough, as the consultation notes, then it will not be sufficient to enable the market transition. A high carbon price without carbon leakage protection will lead to decarbonisation through deindustrialisation.

However, it should be noted that by making the UK a more expensive place to manufacture products that are then carbon leakage protected (CBAM), the UK is deliberately making manufacturing uncompetitive in the export market and restricting any manufacturing to UK only. This lowers the scale of UK manufacturing and makes the UK less investible for incremental production of energy intensive products. Only products that cannot be stored over periods of time and moved internationally such as electricity can have a carbon price imposed without a reduction in competitiveness of that product. In the case of electricity, driving up UK electricity prices makes industry less competitive and drives out investment.