Dr Andrew Roberts
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Via email: industrialelectrification@energysecurity.gov.uk

Industrial Electrification Team
Industrial Decarbonisation
Department for Energy Security and Net Zero
2nd Floor, Spur 2
1 Victoria Street
London
SW1H 0NE

Dear Sirs,

Fuels Industry UK response to DESNZ call for evidence "Enabling Industrial Electrification"

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

As mentioned in the responses to questions posed in the call for evidence, electrification is not considered as a prime option for decarbonisation of refineries. Instead, the focus is on decarbonisation of heat using hydrogen produced in the refineries and carbon capture from combustion and other units where there are significant CO_2 emissions from refinery process units. Substitution of crude oil feedstocks by biomass and waste-derived materials is also being considered, along with production of so-called e-fuels using captured CO_2.

[1] BEIS Digest of UK Energy Statistics (DUKES) 2023.

Fuels Industry UK welcomes the opportunity to respond to the call for evidence - our responses to the questions posed are given in Attachment 1.

Yours faithfully,

Dr Andrew Roberts
Director – Downstream Policy

cc:	Michael Duggan	Department for Energy Security and Net Zero
	Simon Stoddart	Department for Energy Security and Net Zero
	Emilio Marin	Department for Energy Security and Net Zero

Attachment 1

Fuels Industry UK response to DESNZ call for evidence "Enabling Industrial Electrification"

Q1. What is your name?

Andrew Roberts

Q2. What is the name of your organisation?

Fuels Industry UK

Q3. What is the address of your organisation?

1st Floor, 1-2 Castle Lane, London SW1E 6DR

Q4. Do your views specifically relate to one of the Devolved Administrations?

Not related to a specific devolved administration

Q5. Do you represent or hold expertise on a specific industrial sector? Please select all that apply.

Refining

6. Do you represent or hold expertise on a specific process or technology? If so, please select all that apply from the below.

Boiler

CHP

Reforming

Furnace

Motor-driven equipment

Q7. How did you hear about this call for evidence?

e-Mail from this department

GOV.UK alert

Q8. If you are content to share your email address with us, for the purpose of being contacted relating to responses given, please share it below.

andy.roberts@fuelsindustryuk.org

Q9. What type of organisation do you represent? Please select one:

Trade association or other industry body

Q10. How many industrial sites does your company have? If your company has multiple sites, please choose a representative site based in the UK and answer the questions in Part II (site survey) with respect to that site only.

Multiple sites in the UK and one or more sites outside of the UK.

Fuels Industry UK represents the eight main oil refining and marketing companies operating in the UK – bp, Essar, Esso Petroleum, Petroineos, Phillips 66, Prax Refining, Shell and Valero. Together, they are responsible for the sourcing and supply of petroleum products meeting over 85% of UK inland demand, accounting for a third of total primary UK energy[2]. They also own and operate the six major UK oil refineries[3], and, along with other companies involved in the downstream oil sector, a range of critical infrastructure including 41 coastal terminals to import, export and store fuel; 20 inland terminals; 3000 miles of pipeline; and almost 8500 filling stations[4].

bp, Essar, Esso (ExxonMobil), Petroineos, Phillips 66, Shell and Valero also operate one or more refineries outside the UK.

Q11. Please provide the SIC code for your company.

The activities covered by this response to the call for evidence fall under SIC Code 19.20 “Manufacture of refined petroleum products”.

Q12. What best describes your job role/background?

Other – trade association activities (largely technical or policy related)

Q13. What ‘product(s)’ are the main output of your industrial site(s) (e.g., chocolate, ceramic tableware, aluminium, cardboard packaging)?

The main products produced by the six UK refineries are as follows: petrol, jet fuel, heating oil, diesel, gas oil and fuel oil. They also produce feedstocks for the chemicals sector (including naphtha and sulphur), along with specialised non-energy products such as lubricants, bitumen for use in road surfacing, and graphite for use in electric vehicle batteries and as electrodes in steel and aluminium manufacture.

Q14. What is the operating temperature of the main piece of equipment or process that your site(s) mainly use?

A typical refinery configuration usually includes up to 20 main production units with associated furnaces and boilers, along with CHP or conventional power generation plant. Furnaces used for crude oil and other feedstock heating generally operate at 300-400°C, with steam also generated at different qualities for use across the site:

- High-pressure (HP) steam (>30 bar, 350 – 500 °C), generated in waste heat boilers (cooling of hot off-gases and/or hot products in catalytic processes and

[2] DESNZ Digest of UK Energy Statistics (DUKES) 2023 Tables 3.2-3.4

[3] Essar Stanlow, Esso Fawley, Petroineos Grangemouth, Phillips 66 Humber, Prax Refining Lindsey and Valero Pembroke.

[4] Oxford Economics “The Economic Contribution of the UK Downstream Oil Sector”, 2019.

hydrocrackers) and in fired boilers. HP steam is mainly used in turbines to produce electrical power (and medium-pressure steam).

- Medium-pressure (MP) steam (7 – 20 bar, 200 – 350 °C), generated by pressure reduction of HP steam, is used within the refinery for stripping, atomisation, vacuum generation and heating (e.g., reboilers, tanks).
- Low-pressure (LP) steam (3.5 – 5 bar, 150 – 200 °C), generated in heat exchangers by cooling of hot products, and by pressure reduction of MP steam. LP steam is used for heating, stripping and tracing pipes.

A high level of heat integration is usually found, with recovered waste heat used for pre-heating and other purposes[5]. The operating temperatures found include: <100°C, 100 – 240°C, 241 – 500°C and (in some cases) 500 – 999°C.

Q15. Approximately what proportion (percentage from 0 – 100%) of your energy use is low temperature? For the purposes of our analysis, we define low temperature as 240 degrees Celsius or below.

Most low temperature heat is in the form of recovered waste heat and does not require direct energy use.

Q16. How many people does your company employ?

Each of the six refineries employs more than 250 people, including contractors.

Q17. In which region is your industrial site located?

The six major UK refineries are found in the following locations:

- North West England (Essar Stanlow)
- Yorkshire & The Humber (Phillips 66 Humber and Prax Refining Lindsey)
- South West England (Esso Fawley)
- Scotland (Petroineos Grangemouth)
- Wales (Valero Pembroke)

Q18. Is the site physically located in one or more of the industrial clusters outlined in the BEIS Industrial Decarbonisation Strategy (i.e., within 25 km of Grangemouth, Teesside, Humberside, Merseyside, South Wales, Southampton, or Black Country)?

Yes, each of the six refineries is located within an industrial cluster:

Cluster	Refineries
Grangemouth	Petroineos Grangemouth
Humberside	Phillips 66 Humber, Prax Refining Lindsey
Merseyside	Essar Stanlow
South Wales	Valero Pembroke
Southampton	Esso Fawley

[5] The Refinery BREF document used to define Best Available Techniques for environmental permitting of refineries includes information on the types of processes used and their operating conditions.

Q19. Do you know of any other advantages associated with electrification of industrial processes that have not been described here? If yes, please provide details.

Yes, advances in process control allow more precise control of process conditions where heat generation and motor drives (used for compressors, pumps etc.) can be electrified. Electrification also offers a potential opportunity to improve energy efficiency through replacement of steam turbines installed during the 60s, 70s and 80s with much higher efficiency electric drives, including inverter drives[6], reducing energy consumption. However, contrary to the impression given in the consultation document, widespread electrification may increase risks for high hazard sites with increased exposure to a single failure mode if the electricity supply is disrupted (see also response to Q20).

Q20. Are there any disadvantages of electrification of industrial processes? If yes, please provide details.

Yes. Refinery units are usually spread over a large area and power cabling and control systems, including instrument air required when electrifying processes, must be installed over a large area. This can lead to increased cost and production disruption where existing processes are electrified.

Equipment and cabling used in hazardous areas classified under the Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR)[7] must comply with additional safety requirements set out in the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016[8] (often referred to as requirements under the ATEX Directive 2014/34/EU, which the Regulations take into UK law). Again, this can lead to increased costs.

Electric heaters and boilers able to achieve the temperatures and capacity required for refinery applications are now becoming available[9], although electrification of refinery heat has previously been considered unlikely[10]. However, substitution of refinery fuel gas and natural gas by hydrogen is likely to be preferred over electrification of refinery heat as a means of decarbonising refineries. This can be considered alongside investment in additional hydrogen production required to process biomass and waste feedstocks and hydrogen production for third party use[11].

The steam and power balance for a facility also needs to be considered; for example, some refinery process units such as fluidised catalytic cracking (FCC) units may generate their own steam on-site as a by-product of their main conversion processes. For reasons including unit resilience in the event of electrical issues, or the economics of installing additional power generation, it may be prudent to use steam drives rather than to

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[6] See Fuji Electric AC Drives.

[7] The Dangerous Substances and Explosive Atmospheres Regulations 2002, UK SI No. 2776.

[8] The Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UK SI 2016 No. 1107.

[9] For example, Watlow Helimax™ Electric Heat Exchangers.

[10] DECC/BIS Report "Industrial Decarbonisation and Energy Efficiency Roadmaps to 2050 - Oil Refining", 2015.

[11] The Hynet North West project at the Essar Stanlow refinery is an example of this approach to decarbonisation.

consider electrification. Therefore, the specifics of each application need to be considered in detail[12] to ensure that the optimum solution is used for process heat.

Process heaters and boilers used in the refining sector are large, typically between 40 and 100MW. At present, Fuels Industry UK understand that any application to take additional power from the grid in excess of a few 10s MW are given a preliminary supply date after 2037 to allow time to build grid capacity.

Refineries often have duplicate systems for safety and reliability reasons, for example, two pumps in a given location, one powered by steam and one by electricity. Full electrification may impact system reliability in event of power failure, with possible implications for process safety. Larger steam turbine drives are also generally considered to be more reliable than electric Variable Frequency Drives (VFDs). Assessment of the reliability and safety implications requires specialist knowledge and input and may require additional investment to mitigate specific risks.

The refinery fuel gas balance is also an important consideration. Refinery off-gases are recovered for use as refinery fuel gas (RFG) in furnaces and boilers, with RFG representing over 75% of energy use by the six UK refineries[13]. Electrification of heat applications and rotating equipment would reduce internal demand for RFG, which would then require further investment for processing into marketable products (e.g., LPG, chemical feedstocks); this is usually uneconomic. As an alternative, RFG can be used as a feedstock for hydrogen production via steam cracking with carbon capture, but this again requires very significant investment[11]. The scale of investment required in both cases limits the degree of electrification that can be considered.

Q21. Do you agree with the information presented in Table 1? If you disagree, please provide specific details and supporting evidence.

No. Over 50% of UK refinery combustion units (process heaters and boilers) are greater than 100MW capacity, with another 30% between 50 and 100MW[14]. Although electric heat exchangers of up to 200MW have been commercialised, there remain issues with their efficiency compared to gas-fired units due to limitations on the level of watt density that can be achieved with an acceptable unit life expectancy[15].

The current TRL and power ratings identified for electric process heaters in Table 1 may therefore need to be qualified in terms of the potential for refinery application.

Q22. Is there any new evidence you would like to submit on electrification technologies, either in relation to the technologies listed in Table 1 or technologies that might be missing from Table 1? If yes, please provide details.

No. Fuels Industry UK has no response to this question.

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[12] J.A. Souza, J.V.C. Vargas, J.C. Ordonez, W.P. Martignoni and O.F. von Meien, Thermodynamic optimization of fluidized catalytic cracking (FCC) units, International Journal of Heat and Mass Transfer, 2011, 54, 1187–1197.

[13] DESNZ Digest of UK Energy Statistics (DUKES) 2023 Tables 3.2-3.4 and 4.1. Electricity use is currently around 10% of refinery energy use, with natural gas used as the balancing fuel.

[14] See individual refinery environmental permits for details.

[15] Watlow white paper, "How watt density specifications may be holding back optimal electric heat exchanger design".

Q23. Listed below are the areas of focus for innovation of electrification technologies. Please rate their importance using the following scale: 0 = Don't know, 1 = Not at all important, 2 = Slightly important, 3 = Moderately important, 4 = Important, 5 = Extremely important.

Focus area	**Importance**
Reducing the cost of commercially ready electrification technologies	5
Scaling up technologies to meet commercial production requirements	5
Demonstration of electrification technologies on sites	2
Research and development of high temperature electrification equipment	4
Targeted innovation in a particular sector, technology or process	3
Improved reliability and/or performance of electrification technologies	4
Other – electricity cost reduction	5

Q24. If you rated "Targeted innovation in a particular sector, technology or process" at a 3 or above in the previous question, please provide details on your reasoning for this.
Technology is already commercially available for applications in the refining sector where electrification is likely to be considered, for example, electrification of motor drives. However, electric heat exchangers and boilers of the scale with the temperature and heat transfer capability required for refinery application have limited commercial availability. Further development and innovation will be required if such units are to be considered (see also response to Q20/Q21). This includes understanding the issues of heat exchanger fouling with electrical heat equipment which can impact exchanger capacity and run life prior to maintenance (these mechanisms are well understood for conventional process heat exchangers).

Q25. Do you agree with the site archetypes defined in this chapter?

Yes.

Q26. Do you agree with the role of electrification of these archetypes presented here? Please provide details.

No. The refining sector should be removed from Archetype 1/2 and added to Archetype 4. See also response to Q20.

Q27. Please rate the barriers to industrial electrification in terms of their severity using the following scale: 0 = Don't know, 1 = Not a barrier, 2 = low severity, 3 = moderate severity, 4 = severe, 5 = extremely severe, don't know.

Barrier	Severity
Technology innovation and demonstration	4
Financial	4
Infrastructure and supply	5
Organisational	2
Regulatory/policy	5

Q28. If you rated any of the above barriers as 4 or higher, please provide further details.

Technology innovation. Again, technology is already commercially available for applications in the refining sector where electrification is likely to be considered, for example, electrification of motor drives. However, electric heat exchangers and boilers of the scale with the temperature and heat transfer capability required for refinery application have limited commercial availability. Further development and innovation will be required if such units are to be considered (see also response to Q20/Q21). This includes understanding the issues of heat exchanger fouling with electrical heat equipment which can impact exchanger capacity and run life prior to maintenance (these mechanisms are well understood for conventional process heat exchangers).

Infrastructure and supply. Electrification of refinery process heat would result in significant increases in electricity demand, likely to be at least 100MW and possibly much higher (see responses to Q20 and Q21). This would require increased grid supply capacity.

Financial. There are also financial significant economic barriers to electrification of heat units within process plants. Refinery process units are heat optimised with waste recovery and use for pre-heating etc. Retrofit of electrical heating may lead to significant reconfiguration costs and additional process integration issues. Operating costs are also likely to be higher for sites importing additional electricity from the grid, due to high UK electricity prices. See also response to Q20.

Regulatory/policy. Achievement of Net Zero by 2050 will require transformation of refineries into hubs for carbon capture, hydrogen and low carbon liquid fuel production (e.g., sustainable aviation fuels and power-to-liquid fuels using captured CO_2 as a feedstock) or face closure. Any business case for electrification must therefore also consider the future reconfiguration of the refinery as a whole. If an electrification project has a 5-year payback period, at least 10-15 years life would be required to justify the expenditure and to deliver an adequate return on the investment.

Q29. Are there any other barriers preventing the switch away from fossil fuels towards electricity? If yes, please provide details.

Electrification is not considered as a prime option for decarbonisation of refineries. Instead, the focus is on decarbonisation of heat using hydrogen produced in the refineries and carbon capture from combustion and other units where there are significant process CO_2 emissions from fluid catalytic crackers and steam reformers. Substitution of crude oil feedstocks by biomass and waste-derived materials is also being considered, along with production of so-called e-fuels using captured CO_2. The last has a high level of electricity intensity, which would require significant additional renewable electricity generation and may require improvements in grid infrastructure to support higher demand levels in the medium- to long-term.

Q30. How do these barriers impact electrification of sites in each of the below archetypes? Archetype 1 – Low temperature, dispersed; Archetype 2 – Low temperature, clustered; Archetype 3 – High temperature, dispersed; Archetype 4 – High temperature, clustered.

Fuels industry UK understand that limitations in grid supply capacity are likely to have highest impacts for sites in Archetypes 3 and 4. For sites that have their own power generation such as refineries, there may be some potential to cover additional electricity demand resulting from electrification, but the site power generation as a whole then requires decarbonisation, either via carbon capture, hydrogen firing or installation of new renewable power generation.

Q31. Please rank the following factors to describe the underlying reason(s) for fuel cost as a barrier to electrification using the following scale: 0 = don't know, 1 = not a factor, 2 = slightly important, 3 = moderately important, 4 = important, 5 = extremely important.

Factor	**Severity**
High electricity price relative to gas	4
Uncertainty about future electricity prices	4
Uncertainty regarding other fuel options (e.g., future hydrogen price)	3
Uncertainty of future energy prices	4
High price relative to other countries causes competitiveness issues	5
Other – high electricity price relative to value of refinery fuel gas	5

Detailed analysis by Fuels Industry UK of the international business environment shows the UK refining sector to be at a disadvantage to the UK's main competitors with high carbon costs, poorer incentives to develop low carbon technologies, and a lack of investor certainty.

Overall, the cost of our operations is almost double that of our US competitors. The carbon costs associated with the UK Emissions Trading Scheme (UK ETS) have been consistently higher than our competitors in the EU, US Gulf Coast states, China, South Korea and New Zealand.

UK gas costs are higher than those facing our competitors in North West Europe, and more than twice as expensive as for key US states such as Texas. For electricity, UK industry also faces higher costs than in competitor countries including France, Germany, Netherlands and Belgium.

Q32. Please rank the following factors to describe the underlying reason(s) for capital cost as a barrier to electrification using the following scale: 0 = don't know, 1 = not a factor, 2 = slightly important, 3 = moderately important, 4 = important, 5 = extremely important.

Factor	Severity
Capex is high relative to natural gas technology	3
Capex is high relative to the hydrogen/biomass/CCUS alternative	3
The payback period is too long to justify the higher capex cost	2
The project is too risky to justify the higher capex cost	4
Difficulties accessing finance	3
The cost of retiring incumbent technology early	2
Other	?

Due to the international nature of the major oil companies concerned, decarbonisation projects proposed for investment in UK refineries compete with other opportunities elsewhere, including projects in other sectors where the refinery operators have interests. During evaluation of the business cases against one another, factors such as operating costs, the level of policy certainty and the regulatory environment will be considered, along with the level of potential support available from government. In this regard, the level of support available under the US Inflation Reduction Act (IRA) and EU Fit for 55 package (and simplicity of the IRA) show that other countries are making ambitious moves to attract investment in decarbonisation, leaving the UK at risk of falling further behind. See also response to Q29.

Q33. Please rank the following factors to describe the underlying reason(s) for electricity grid access as a barrier to electrification using the following scale: 0 = don't know, 1 = not a factor, 2 = slightly important, 3 = moderately important, 4 = important, 5 = extremely important.

Factor	Severity
Additional grid access takes too long	5
Additional grid access is too costly	4
Additional grid access application refused	0
Other	?

Q34. Does private renewable generation act as an enabler for industrial electrification? Please provide details of your rationale.

Yes. The Gigastack project is an example of private renewable generation acting as an enabler for industrial decarbonisation achieved through use of renewable electricity to produce electrolytic hydrogen[16]. However, Fuels Industry UK understand a decision has been taken the partners in this project, Ørsted and Phillips 66, to delay implementation to allow further project and supply chain development[17].

Although private renewable generation is an enabler to realise low carbon power, installations such as refineries are likely to be connected to the grid to maintain security of electricity supply for resilience purposes. Therefore, all of the barriers for grid connectivity identified still apply.

Q35. Are there any barriers to deploying private renewable generation for industry? If yes, please provide details on how to overcome them.

Fuels Industry UK has no specific response to this question – see response to Q32.

Q36. Could demand side response (DSR) act as an enabler of industrial electrification? Please provide your rationale.

It is unlikely that DSR policies could act as an enabler for electrification of refineries. Although the UK refineries are connected to the electricity grid, they generate their electricity requirements themselves or via supply arrangements with integrated or adjacent power generation facilities. Continuity of supply is critical for refinery operation, often with severe consequences and extended downtime in the event of supply disruption.

Q37. Are there any barriers to using DSR for industry? If yes, please provide details on how to overcome them.

See response to Q36.

Q38. Are there other policies (either current or in development) that could positively or negatively impact industry's ability to switch away from fossil fuels to electricity?

Fuels Industry UK has no specific response to this question – see also response to Q29.

Q39. Considering the whole impact of existing policies and the exploratory/planned policies: is further electrification specific intervention needed to enable the electrification of industry in the 2020s and 2030s? Please provide evidence.

Yes. Policy intervention to increase gid capacity and speed up grid connections are critical to enable early electrification. Further intervention is also critically important to reduce UK electricity costs, removing policy costs and addressing structural factors which make electricity intensive industries uncompetitive against their competitors overseas (see also responses to Q29 and Q46 for more detail).

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[16] Gigastack Phase 2: Pioneering UK Renewable Hydrogen - Public Report, 2021. See also Gigastack website.

[17] ENDS Report, "Ørsted halts flagship green hydrogen project powered by Hornsea 2 offshore wind farm", August 2023.

Q40. Do you agree with these principles for a policy that enables industrial electrification? Are there other principles we should be considering?

Yes. See also response to Q32.

Q41. How could Government facilitate an enabling environment for electrification?

A competitive business environment and policy certainty and simplicity are key factors to attract investment in decarbonisation projects including electrification. However, action should also be taken to ensure regulatory and planning approvals are processed quickly such that projects can be implemented without delay – Fuels Industry UK understand that pre-applications for variations to existing environmental permits can take 12-18 months where new technologies are involved. Here the regulators (HSE and the environmental regulators) and planning authorities must see themselves and act as enablers for decarbonisation.

The Government must also take urgent action to address issues with electricity grid access covered under Q33 and in development of additional renewable electricity generation.

Q42. In your view, which of the two options is preferable: policy specifically for electrification or a broader "fuel switching" policy, that allows sites to choose their optimal decarbonisation route?

Fuels Industry UK support broader technology neutral fuel switching policies allowing sites to implement the optimal decarbonisation route given the points identified in the response to Q20 and Q29.

Q43. What regulatory approaches could the Government explore to incentivise or enable electrification?

Electrification is not considered as a prime option for decarbonisation of refineries, as explained in the response to Q29. Use of conditions under environmental permitting regulations, conditionality under government support schemes such as the British Industry Supercharger, continued free allowance allocation under the UK ETS or mandatory requirements to produce site level decarbonisation plans would all deter or delay investment in decarbonisation projects. Use of a regulatory approach is therefore unlikely to incentivise or enable use of electrification to deliver decarbonisation.

Q44. How could a funding policy be structured effectively to incentivise or enable electrification while meeting the principles outlined above? Please provide evidence.

As explained in the response to Q32, decarbonisation projects proposed for investment in UK refineries compete with other opportunities elsewhere, including projects in other sectors where the refinery operators have interests. The level of support available under the US Inflation Reduction Act (IRA) and EU Fit for 55 package (and simplicity of the IRA), show that other countries are making ambitious moves to attract investment in decarbonisation, leaving the UK at risk of falling further behind.

Policy certainty and simplicity are therefore key principles for development of UK funding policies, along with creation of a competitive business environment to attract investment for UK projects – investment that will otherwise continue to be made elsewhere.

Q45. Are there any risks of a funding policy for electrification? If so, how could these be mitigated? Please provide evidence.

Fuels Industry UK does not hold strong views on this question but would point out that electrification may not be the optimal approach for decarbonisation (see also responses to Q29 and Q42). Risk mitigation measures must include action to address issues with electricity grid access covered under Q33 and in development of additional renewable electricity generation.

Q46. Are there smaller or indirect policy changes that could enable businesses to electrify? If yes, please provide details on what these might look like.

The UK refining sector is not currently eligible under the EII Indirect Cost Compensation Scheme. The purpose of this scheme is to mitigate against indirect emission costs due to the UK Emissions Trading Scheme (UK ETS) and carbon price support mechanism (CPS) for energy intensive industries (EIIs) exposed to carbon leakage. Indirect emissions costs arise from the obligation on power generators to purchase emissions allowances and pay a tax based on the carbon content of the fossil fuels they use to generate electricity[18].

The EII Compensation Scheme was developed by BEIS under provisions found in the EU Emissions Trading Directive, 2003/87/EC (as amended). The UK Government implemented the Scheme covering indirect emission costs due to the EU ETS and UK CPS for certain energy intensive industries from 2013 and 2014 respectively. Eligible sectors were initially identified in the EU ETS State Aid Guidelines[19]; however, the refining sector was not included as an eligible sector until the Guidelines were revised for EU ETS Phase 4 from 1st January 2021.

Fuels Industry UK remains in discussion with the Department of Business and Trade concerning eligibility under the scheme, where the methodology used is not supported by robust data and differs substantially from that used under the EU ETS State Aid Guidelines and seeks to address parameters beyond the original intention to focus on mitigation against indirect emissions. The qualitative and qualitative assessment of the refining sector performed were also fundamentally flawed. Consequently, UK refineries are now at a competitive disadvantage with those located in around 14 EU Member States which benefit from significant compensation under schemes equivalent to the EII Indirect Cost Compensation Scheme.

Revision of eligibility to include the refining sector would provide some level of support for refinery electrification of electric motor drives etc. through eligibility for compensation against increased indirect ETS costs incurred through increased electricity consumption.

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[18] BEIS Consultation, "Review of the schemes to compensate energy intensive industries for indirect emission costs in electricity prices", June 2021 (closed August 2021).

[19] Eligible sectors were identified in Annex II.

Q47. Are there policy options or international examples that could enable or incentivise electrification that we should be considering?

As mentioned in earlier responses, the level and breadth of support for different technologies available under the US Inflation Reduction Act (IRA) and EU Fit for 55 package (and simplicity of the IRA), show that other countries are making ambitious moves to attract investment in decarbonisation. Since the UK competes against these policies in seeking to incentivise electrification and broader decarbonisation, Fuels Industry UK believe it has little option but to consider similar long-term incentives – policy certainty and simplicity are of critical importance.

Q48. Is there anything further that you think we should be considering when thinking about policy options to enable electrification?

Fuels Industry UK has no further comments on policy options to enable electrification.