

An aerial photograph of a residential neighborhood with rows of houses, green lawns, and trees. A semi-transparent white box is overlaid on the top portion of the image, containing the title text.

Oil boiler support under ECO2t

September 2017

About the Sustainable Energy Association

The Sustainable Energy Association is a member based industry body, engaged with the promotion of sustainable energy. We promote holistic approaches to developing heat policy 'wrap then heat' in line with our wide-ranging membership. We are technology agnostic, taking a whole house and whole heating system approach, which does not favour one technology over another, but rather focuses on the right solution.

Our membership includes retailers and manufacturers of energy saving measures, insulation and heating systems, energy suppliers, housing and finance providers.

Executive summary

- BEIS are committed to decarbonisation as well as tackling the cost of energy in order to reduce fuel poverty. Reducing emissions from buildings is challenging, but necessary if the UK is to meet its long-term climate change targets.
- 1,742 'non-gas' boiler replacements have been made under ECO2t in the first 8 weeks of the scheme. SEA member market intelligence, and the scheme's deemed scores suggests that the vast majority of these are likely to be oil boilers.
- Extrapolating this deployment rate forward, at least 15,700 oil boilers could be installed over the 18-month ECO2t scheme. These are incentivised by the gas boiler deployment cap, and relatively attractive oil boiler deemed scores.
- Government policy supports both the installation of oil boilers under ECO2t, and the replacement of fossil fuel heating systems with renewable technologies under the domestic RHI. In practice, current financial grants for oil boilers makes decarbonising heat in the UK more expensive (by ~40%-100% against current domestic RHI subsidies).
- The SEA calls on BEIS and Ofgem to restrict oil boiler eligibility under ECO3 by better promotion of and support for low-carbon heating technologies potentially by linking the RHI and ECO; providing an uplift in scores for these technologies; encourage the improvement of standards; and support low-carbon heating supply chains.



Securing clean and cost-competitive energy

The Department for Business Energy and Industrial Strategy's has 4 objectives:

- developing and delivering a comprehensive industrial strategy and leading the government's relationship with business
- **ensuring that the country has secure energy supplies that are reliable, affordable and clean**
- ensuring the UK remains at the leading edge of science, research and innovation
- tackling climate change

The challenge contained within the second objective (in bold) is known as the energy trilemma, which recognises the importance of simultaneously providing a secure *and* affordable supply of energy, as well as one which minimises emissions of dangerous air pollutants and Greenhouse Gases (GHGs). Without lowering emissions from our energy supply and reducing demand, the UK will fail to achieve BEIS' fourth objective and will not effectively tackle climate change.

Decarbonising heat – a challenge

Decarbonising heat is a challenge. Indeed the 2017 Committee on Climate Change report to Parliament, noted that emissions from buildings have actually risen over the past 2-3 years. Figure 1 shows a 2% increase between 2015 and 2016. This makes hitting our long-term climate change targets – which require near zero emission buildings by 2050 - very difficult. Further action is needed.

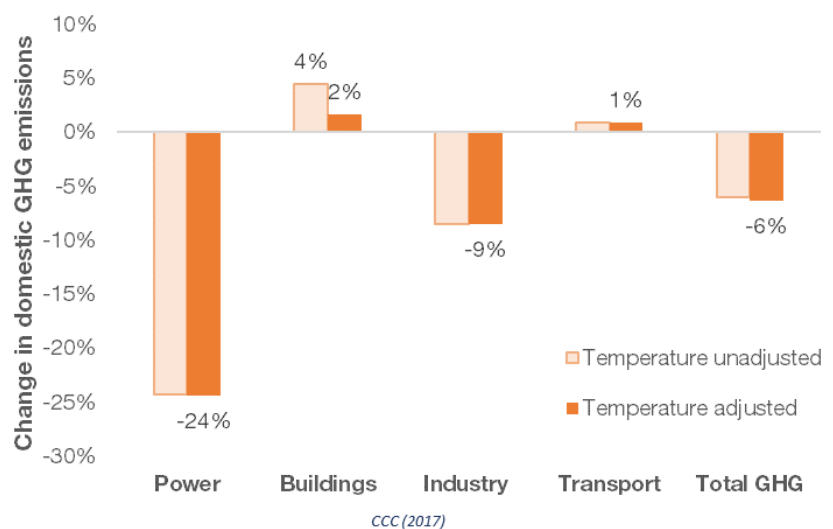
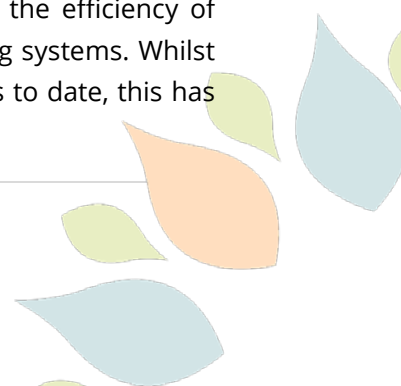


Figure 1 - Change in domestic GHG emissions between 2015 and 2016 (CCC, 2017)

The Government has introduced a number of policies to reduce emissions from buildings, notably the Renewable Heat Incentive (RHI) which has encouraged the deployment of renewable heat technologies, and the Energy Company Obligation (ECO) which has improved the efficiency of properties across the UK and supported the installation of new efficient heating systems. Whilst the RHI has supported over 1.8 TWh of renewable heat and 56,000 installations to date, this has come at a cost of over £200 million of subsidies.



Oil boiler deployment under ECO

ECO has supported the uptake of over 2 million energy efficiency measures, lowering fuel bills and reducing emissions. Obligated suppliers are responsible for achieving a level of delivery, with costs passed through the supply chain to consumers via increases to energy bills. From a societal perspective the installation of energy efficiency measures lowers consumption and thus reduces energy bills sufficiently to offset against ECO scheme costs.

The 2017 Amendment to ECO2t *Help to Heat* scheme has been operational since 1st April 2017. As part of the Affordable Warmth (HHCRO) obligation, 1,742 qualifying non-gas boilers have been replaced as at the end of May 2017 over the 2-month period. In addition, 7 qualifying gas boilers have been replaced by non-gas boilers.

Market intelligence from SEA members (many of which are involved with ECO) suggests that the vast majority if not all of these ‘non-gas’ boiler replacements are oil (Figure 2, highlighted in orange). This conclusion would be consistent with the scheme’s incentives which are discussed further in this note. We therefore have assumed that these qualifying non-gas boiler replacements are all oil boilers.

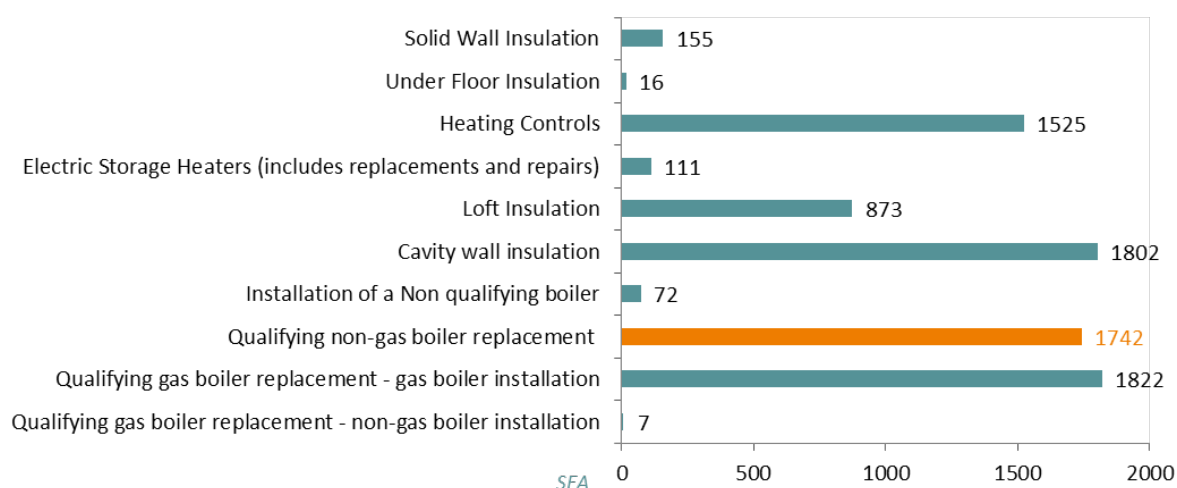


Figure 2 - Number of measures installed under ECO – “Affordable Warmth”¹

Projecting forward linearly, this take up of non-gas (oil) boilers for the remaining periods (until September 2018), would result in 15,678 boiler installations in total – equal to £110 million capital spending² (Figure 3). Oil boilers typically have a long lifetime and once the infrastructure (e.g. oil tanks) is installed, consumers can be locked into the technology for many years. It is reasonable to assume that the measures installed under the Affordable Warmth obligation will be operational for a minimum of 12 years (Ofgem assumption used for deemed scores³), resulting in a minimum of 980 KtCO₂e⁴ of emissions (Figure 4). By comparison, the same number of ground source heat pumps would emit 286 KtCO₂e. However, it is not unreasonable to assume that as the gas boiler cap, which was introduced as part of ECO2t (*Help to Heat*), is reached, the oil boiler installation rate may increase. This in turn would mean an increase in the associated emissions.

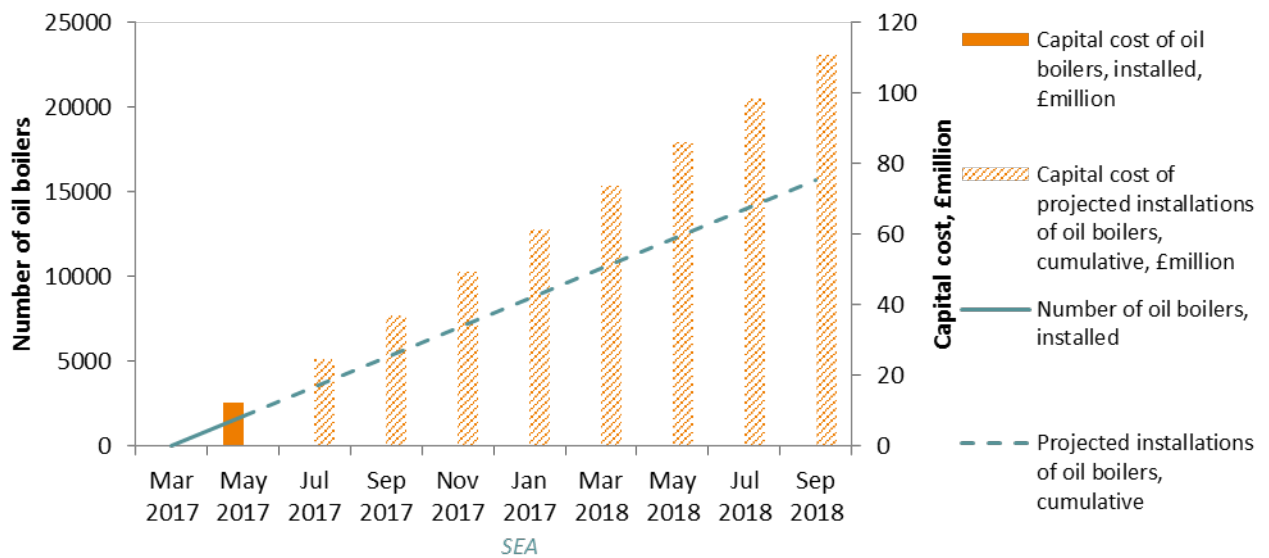


Figure 3 - Oil boiler ECO installation rate projection and the associated capital costs, £million

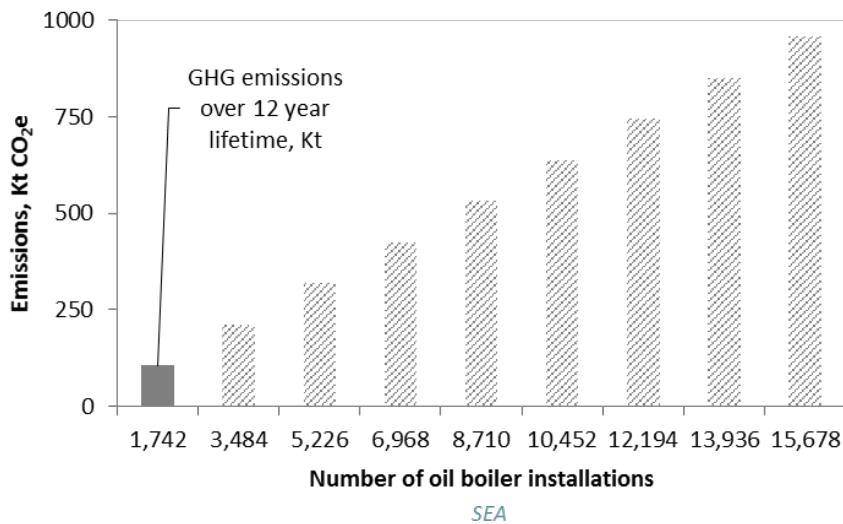


Figure 4 - Oil boiler ECO installation rate projection and the associated emissions (KtCO₂e) over 12-year lifetime

Impact of oil boiler installation on running costs

Oil prices are historically low, and the installation of a new oil boiler should lower operational costs for many households this year. However, these costs have been shown to be highly variable. Indeed, prices were double current levels less than 4 years ago. In addition, BEIS forecast an increase in domestic oil prices over the next 10-15 years as shown in Figure 5 below. Therefore, it should be questioned whether the installation of oil boiler infrastructure is a good investment over the next 10-15 years when volatile oil prices are expected to rise.



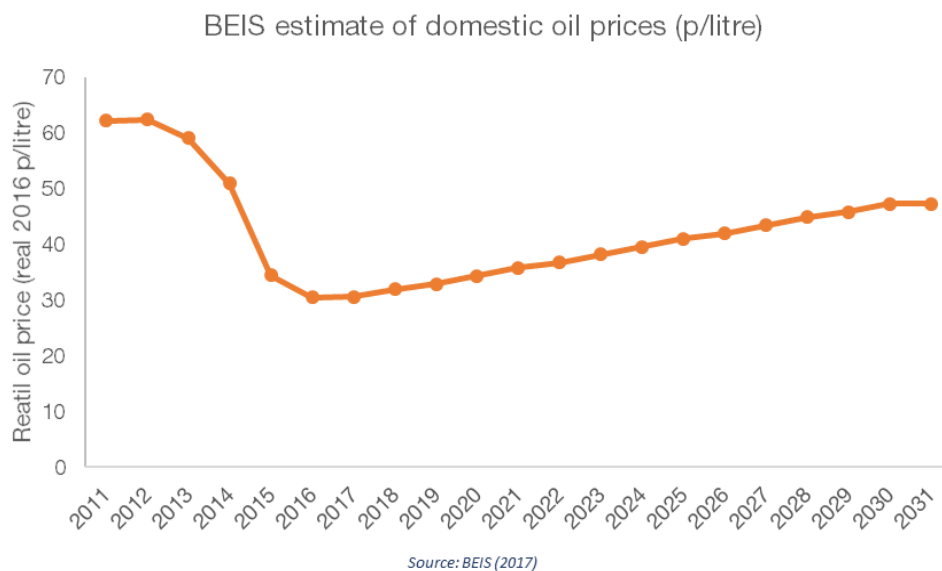


Figure 5 - Retail oil prices estimate (p/litre) (BEIS, 2017)

Additionally, the installation of a new oil boiler is not the only technology solution which can lower energy bills and help tackle fuel poverty. New low-carbon heating technologies can deliver similar energy bill savings for many houses operating old and inefficient heating systems, and should be encouraged under ECO.

ECO transition period scheme design

ECO is designed to incentivise the installation of eligible energy efficiency measures at least cost. The obligated suppliers must achieve a certain deployment level, based on the amount of carbon or fuel bill savings made by their activities. It is rational for these private companies to minimise costs, and indeed ECO is designed to encourage the cost-effective deployment of energy efficiency measures.

A challenge for the scheme is to ensure that these incentives do not unintentionally lead to poor quality and/or inappropriate installations. **The SEA believes that the support of oil boilers is in general an inappropriate outcome and use of public money.** This contradicts BEIS' objective to promote low-carbon energy, and indeed acts in opposition to government spending on the RHI which promotes switching *from* oil to renewable systems.

Design of ECO incentive scheme

Gas boiler replacements have dominated the Affordable Warmth uptake figures during ECO 1 and 2. For ECO2t, BEIS has capped gas boiler installations at 32,000 over the 18 months, and therefore obligated suppliers will have to consider other eligible measures once this level is reached. This could include other heating systems.

The ECO2t scheme has additionally established a set of Ofgem managed 'deemed' scores which dictate the energy bill and/or carbon savings which can be attributed to each measure, under various deployment scenarios.

Table 1 below illustrates why current deemed scores and ECO incentives will push *non-gas* heating system replacements, towards oil and away from lower-carbon options. The combination of a lower capital cost and high lifetime energy bill saving metric makes the installation of a ‘non-gas’ boiler with an oil system very attractive. This is shown by the low Capex/LTS figure (£0.20) in Table 1 which is lower than BEIS estimate of the marginal measure cost, which is the cost of the most expensive installation BEIS expect to be supported under ECO2t. The renewable heating technologies are above £0.23/LTS and therefore are unlikely to be encouraged by this policy.

Table 1 – ECO2t Help to Heat deemed scores and technology capital costs

	Lifetime savings (LTS) ^(a)	Capex ^(a) and ^(b)	Capex/LTS
<i>(Estimate: 4-bed SW semi-detached house with controls)</i>			
Qualifying oil boiler installation	£36,114	£7,060	£0.20
Qualifying ASHP installation	£34,752	£9,918	£0.29
Qualifying GHSP installation	£38,123	£19,740	£0.52
Qualifying biomass boiler installation	£37,424	£16,880	£0.45
Average Affordable Warmth £/LTS (March '17)	£0.14		
BEIS: estimate of marginal measure cost (£/LTS)	£0.23		
^(a) Source: BEIS (2017) ECO: Help to Heat Impact Assessment			
^(b) Source: BEIS (2017) RHI deployment data – average capital costs			

In summary, we expect oil boilers to be installed under ECO2t and under ECO3 if amendments are not made to the current policy design. **The SEA believes that these incentives conflict with BEIS’ wider objectives, and the policy is failing to promote socially optimal outcomes.**

However, we do recognise the practical challenges involved with delivering ECO obligations. For obligated suppliers it can be challenging to deliver ECO obligations cost-effectively and restrictions on measures without additional incentives for sustainable technologies will increase the challenge. With ECO3 due to be focused on Affordable Warmth in order to make progress towards the Government’s pledge to being fuel poor homes up to EPC band C by 2030, tackling fuel poverty and lowering energy bills is a key objective. More could be done to make alternative heating system installations attractive and create the market conditions which would favour their installation as they can simultaneously provide bill savings and help to lower UK carbon emissions. BEIS could look to opportunities for the RHI and ECO to be integrated for example, and support the burgeoning supply chains through the provision of training and removal of bureaucratic barriers for installers. In addition to this, ECO incentives can be addressed to incentivise deployment of lower emission heating systems over oil boilers.

Adding to the cost of decarbonising heat

The domestic RHI is the principal policy for supporting renewable heating systems. The subsidy is paid per unit of renewable heat produced by the eligible technologies. Figure 6 below provides a snapshot of the proposed 2017 domestic RHI tariffs, and additionally the average cost of an ECO oil boiler installation levelised over the heat it produces over its lifetime (kWh).



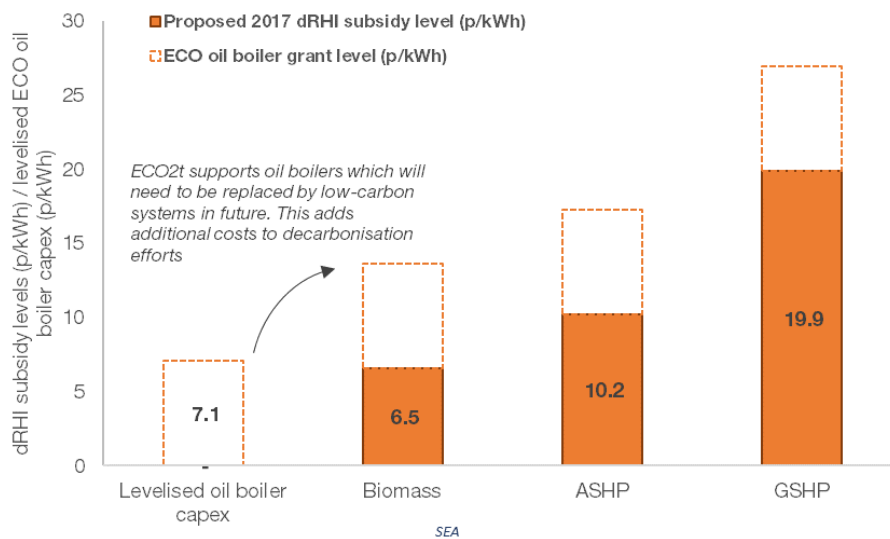


Figure 6 - Domestic RHI proposed subsidy levels and ECO oil boiler grant (in p/kWh)

Simultaneously funding the installation of new oil boilers through ECO, and the retrofit of renewable heating systems in off-gas grid areas is an inefficient use of money. Figure 7 considers the cost of decarbonising heat (£ per tonne of carbon emission saved) based on the 2017 proposed domestic RHI tariffs. The graph shows the theoretical increase in costs born from supporting oil installations today, and then retrofitting these properties with a renewable system at a later date. Clearly the support of oil boilers under ECO adds costs to the UK's efforts to decarbonise heat.

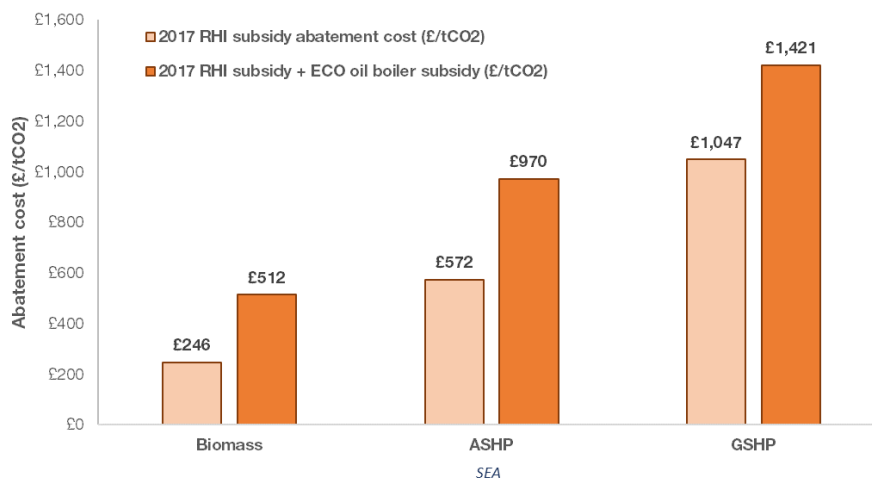


Figure 7 - Increased cost of heat decarbonisation (£/tCO2 saved)

ECO3 and next steps

Tackling the rising cost of energy is a critical challenge for policymakers. Energy efficiency is both the cheapest way of lowering fuel bills, and essential if the UK is to meet its climate change targets cost-effectively. However ultimately the UK will also have to decarbonise the supply of energy to buildings. This is challenging, but the technologies do exist and are being supported under the domestic RHI. More must be done to tackle emissions from buildings which have risen over the last 2 years (Figure 1).

The SEA believes that the Government has the levers to tackle both market failures described in this report. Fuel poverty can be addressed by supporting energy efficiency measure deployment, and emissions can be reduced by tackling the worst performing heating systems simultaneously. We propose that BEIS consider:

- 1. Restricting oil boiler installations under ECO3.** Currently the HHCRO scheme has no restriction on the number of oil boiler that can be deployed. Whilst in the very short term – with low oil prices - the technology is a cost-efficient method of lowering fuel bills, other lower-emission alternatives exist and should be promoted. To do this the ECO3 scoring system should promote the installation of renewable heating systems over oil boiler installations, and BEIS should support alternative heating systems as described below.
- 2. Consider synergies between the RHI and ECO.** The schemes can complement one another to deliver low-emission, low running-cost heating systems to fuel poor households. The SEA has separately shared analysis of an ECO/RHI-assignment of rights proposal with BEIS, whereby a third-party financier could receive RHI payments and deliver ECO measures simultaneously.
- 3. Government and industry should continue to develop policy to improve energy efficiency installation standards.** The SEA supports a ‘wrap the heat’ approach as many heating systems work most efficiently in well-insulated properties. Government and industry need to work together to deliver standards/quality mark which represent consistently high quality. Government should take an active role in initiatives such as Each Home Counts.
- 4. Support low carbon heating supply chains.** BEIS can support the supply chain by promoting installer training, cutting unnecessary administration costs, and ultimately by tackling high-emission heating, addressing market failure and supporting the industry.
- 5. Set out a long-term pathway to sustainable heating.** A heat strategy that eradicates oil heating in the longer term and sets out a staged pathway to the use of sustainable technologies is required. By setting out a long term policy and taking a staged approach with clear milestones, Government will provide industry and investors with the stability they need.

ECO3 should restrict oil boiler installations, which are adding cost to the UK’s efforts to decarbonise heat. Whilst oil prices are historically low today, new low carbon systems can help tackle fuel poverty and lower running costs of existing inefficient boilers. BEIS should be crafting policy which supports such renewable heating technologies, rather than making the transition to low-carbon buildings even more expensive in the long run. The SEA and its members are keen to work with BEIS, Ofgem and other stakeholders to achieve this.



References

¹ BEIS (2017) *Household Energy Efficiency National Statistics, headline release July 2017*. Available from: <https://www.gov.uk/>

² DECC (2016) Table E1: *ECO: Help to heat - transitioning to a new fuel poverty focussed obligation. Final Impact Assessment*. Available from: <https://www.gov.uk/>

³ Ofgem (2017) *ECO2t Deemed scores*. Available from: <https://www.ofgem.gov.uk/>

⁴ BEIS (2017) *Data tables 1-19 supporting the toolkit and the guidance. Green Book supplementary Guidance: valuation of energy use and Greenhouse Gas emissions for appraisal*. Available from: <https://www.gov.uk/government/>



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