Clean Heat Grant Scheme
REA and WHA response to biomass questions

The Association for Renewable Energy & Clean Technologies (REA) is pleased to submit this response to the above consultation. The REA represents a wide variety of organisations, including generators, project developers, fuel and power suppliers, investors, equipment producers and service providers. Members range in size from major multinationals to sole traders. There are over 550 corporate members of the REA, making it the largest renewable energy trade association in the UK. The Wood Heat Association is the members forum within the REA that advocates for the modern wood heating and related biomass heating industry including wood fuel suppliers, biomass boiler and stove installers and distributors, and anyone involved in the supply chain.

Summary of Response – Clean Heat Grant Scheme

It is welcome that BEIS is bringing forward a support mechanism to help the decarbonisation of heat following the Renewable Heat Incentive. However, we believe the proposals for a Clean Heat Grant scheme are wholly inadequate in both scope and the level of support on offer if the intention is to drive meaningful decarbonisation of UK heat production.

Further Heat Policy is urgently needed to maintain and continue to grow the clean heat sector.

The consultation highlights how heating our homes, businesses, and industry accounts for a third of UK's greenhouse emissions, requiring a mass transition to low carbon heat. However, the proposed scheme focuses on a very small section of the heat market which, by itself, will not deliver the level of decarbonisation required to meet the UK's net-zero heat target or reignite growth of the renewable heat sector.

While we recognise that the Government are expecting to bring forward further heat decarbonisation policies, the lack of a clear strategic ambition means we urge BEIS to expand the scope of the proposed Clean Heat Grant Scheme. This includes:

- Raise the capacity cap above 45 kW. This should be in line with the small-scale biomass tariff within the ND RHI, which is up to 200 kW, to allow for a wider range of domestic and small scale non-domestic properties to install clean heat systems.
- Amend the grant so that it meets a proportion of the cost for each kW capacity being deployed. This should be based on the heat loss assessment which should be required for all applications. This should be accompanied by a low-interest loan, as seen in Scotland, to meet the remaining project costs.
- Implement tight emission and maintenance standards for urban biomass projects rather than ban them from deploying in on-gas grid areas. Such a restriction, which ignores the results that can be achieved from deploying Best Available Techniques

(BAT), adopts an approach seen nowhere else in the world and sets a dangerous and difficult-to-reverse precedent which will further obstruct the deployment of renewable heat, particularly in larger buildings.

The current scope of the Clean Heat Grant Scheme will see the industry contract

The REA REview 2020 [1] identified over 32,000 direct jobs in the heat pump, solar thermal, biomass boiler, biomass CHP and AD sectors combined in 2018. This grows to well over 44,000 jobs when you also include those employed in ancillary services such as the production of biomass for fuel. These are all sectors that are already contracting. The twelve-month gap between the end of the Non-Domestic RHI (ND RHI) and the start of Clean Heat Grant Scheme is expected to see the sector shrink further, resulting in the loss of jobs, skills exit and collapse of supply chains associated with these sectors.

With the focus of the Clean Heat Grant scheme on small-scale projects, the current supply chain is left with no future growth opportunity. As supply chains tighten and it becomes harder to access maintenance services or feedstocks, those already using renewable heat system are driven back to using fossil fuel alternatives – a trend which has already been observed. This will undermine the existing renewable heat sector, established by the RHI, as well as debilitate the ability of the Clean Heat Grant scheme to succeed.

Expanding the proposed scheme, as well as bringing forward further heat policies, is necessary if the clean heat sector is to grow in line with the UK's net-zero ambitions.

Consultation Question 22 - Do you agree with targeting support at domestic and non-domestic installations with a capacity up to and including 45kW? Yes/No. Please provide evidence to support your response

Raise the capacity cap to allow for the deployment of all small-scale clean heat projects.

Installations under 45 kW account for a very small proportion of installations deployed under the existing RHI. In the case of Biomass, REA analysis estimates that only 12% of the projects deployed under the ND RHI 'small biomass' tariff are below 45 kW's [6]. This equates to an estimated 11,400 small scale biomass projects that would not have been deployed if a similar capacity cap had been in place. Current figures under the Domestic RHI also suggest that deployment is currently so low that there is a net loss of RHI biomass boilers on the scheme in the last three quarters since Q3 2019 [7]. The proposed cap is simply not suitable for biomass projects and will not even deliver the limited number of 'niche' biomass projects identified within the consultation.

There is no strong justification within the consultation for the level being set at 45 kW. This is a fairly arbitrary number that originated from the EU Renewable Energy Directive, that required consumer protection measures to be in place for installations below 45 kW, it was not in itself intended to be a threshold for a domestic installations. The use of this threshold has led to

cases in the Domestic RHI where installations where undersized to ensure they fit below 45 kW when the needs of the property were in the region of 60 to 80 kW's.

The 45kW cap creates a huge policy gap, excluding many of the small-scale heat decarbonisation projects the scheme is meant to be focused on. BEIS should reconsider the cap in line with the data they have on what has been deployed at the small scale of the ND RHI and what size of projects represent the best value for money. REA encourage BEIS to consider implementing a cap of up to 200 kW, in line with the small biomass tariff in the current ND RHI, to ensure continued deployment of heat projects across all technologies, while further heat decarbonisation policies are brought forward for larger projects.

The potential for biomass heat is underestimated within the Clean Heat Grant Scheme.

The renewable heat sector has huge potential for sustainable growth in the UK. The REA's Bioenergy Strategy [8] identified the contribution from bioenergy alone could sustainably increase by a factor of 2.3 by 2032 to 113 TWh (20% of UK heating needs). Biomass heat, utilising efficient biomass boilers burning wood chip or pellet, could sustainably deliver 42 TWh of this by 2030, making a sizable contribution to UK heat decarbonisation.

BEIS data demonstrates that using wood fuels also provides the lowest cost heat decarbonisation option, with an average of £463/kW across the three biomass ND RHI tariffs. [9] Furthermore, analysis by the consultancy In Perpetuum, concerning off gas grid decarbonisation, demonstrates that bioenergy applications provides the cheapest Annualised carbon saving cost, with Biomass costing about £271/tonne of carbon saved, more than a hundred pounds cheaper per tonne then pure electrification [10]. Biomass heat has provided some of the best value for money projects under the RHI and should be enabled to do so again in the Clean Heat Grant Scheme.

Much of BEIS analysis for off gas grid decarbonisation is based on the findings of the Delta-EE report *"Electric Heating in Rural Off-Gas Grid Dwellings: technical Feasibility"*. This highlights the strong potential for heat pumps to be used for decarbonisation. We generally support the findings of this report but urge BEIS to take note of the full implications of their modelling. We particularly highlight this paragraph within the Executive Summary:

> *"The results from the network modelling show that based on average peak winter day temperatures, around 84% of homes can be electrified at their current level of insulation. This increases to around 93% if all suitable homes have loft & wall insulation installed.* ***However, based on a 1-in-20 winter peak scenario, the proportion of homes that the current low voltage network can support drops to around 64% if ground-source heat pumps are the preferred technology for households, or to 41% if air-source heat pumps are the preferred technology (assuming that air source heat pumps require a direct electric heating back-up in a 1-in-20 winter scenario****). For both merit order scenarios, adding loft and wall insulation results in only a marginal improvement in electrification rates." [Emphasis added]*

Delta EE make clear that when considering harsher winters, which are widely predicted to become more common, policy makers need to be considering the role of higher heat load

technologies. There is no doubt that heat pumps are of high strategic importance and have a primary role to play in the decarbonisation of such properties, however policy makers cannot afford to underestimate how big the 'niche-role' role that is actually left for biomass.

With Delta-EE identifying over 1.3 mn off gas grid properties in the UK, the above suggests there could still be over 468,000 off gas grid locations [11] where heat pumps may not be appropriate and where biomass, or other bioenergy options, are likely to be the best suited heating option. This leaves a potential biomass market 17 times [12] the size of what has already been deployed by the RHI and requires a strong and established sector to be in place.

In addition, conversations in the Electric Vehicle Energy Taskforce, on which the REA sits, indicate that electricity networks (eg DNOs) are concerned about making major new investments in expanding network capacity to facilitate the transition to electric vehicles without a clear steer from Government on the extent of the electrification of heat. This is partly as a full-scale electrification of heat would multiply the UK's electricity demand by several factors, dwarfing new demand from electric vehicles. Even a partial electrification of heat will require both distribution and likely transmission system upgrades. In addition, most domestic properties also typically only have a single-phase electricity supply making charging a car and running a heat pump a demanding prospect. These are issues which are not considered in Delta-EE's report and need to be carefully considered as part of BEIS's broader heat decarbonisation strategy.

Finally, the role of biomass has previously also been identified by BEIS as being particularly important within larger residential developments and for commercial and industrial sites. This was the reason for the 2018 ND RHI reforms which encouraged larger-scale projects. Having pivoted the biomass heat sector towards these projects, which government argued represented the best value for money, the current design of Clean Heat Grant scheme is now incentivising only a very limited number of very small-scale biomass applications, setting a worrying precedent that ultimately will shrink the sector.

The scope of the Clean Heat Grant scheme must, therefore, be widened to realise this potential by offering a flexible grant and raising the kW capacity cap.

Endnotes

[6] REA Analysis based on FoI RHI Data as of May 2018. Given very low deployment rates since 2018, 12% is expected to be a reliable estimate.

[7] BEIS RHI Monthly Deployment Data as of March 2020.

[8] REA (2019) *REA Bioenergy Strategy Phase 2: A Vision to 2032 and Beyond*, https://www.bioenergy-strategy.com/publications

[9] BEIS RHI monthly deployment data: December 2019 (Annual edition)

[10] Full study already Shared with BEIS – available again on request with permission to share analysis from In Perpetuum. Figures also used in Oftec (2019) *A Strategy for Decarbonising Oil Heated Homes* https://www.oftec.org/docs/default-source/publications/pub115-oftec-industrial-strategy-for-decarbonising-oil-heated-homes.pdf?sfvrsn=71afe801_18

[11] 468,000 based on Delta-EE number that 64% of properties could be electrified if ground source heat pumps are the preferred technology in a 1-in-20 peak winter scenario. 36% of 1.3mn off gas grid properties equals 468,000

[12] The RHI has deployed 16,954 accredited biomass boilers in the ND RHI and 9,418 accredited biomass boilers in the domestic RHI, totalling 26,372 as of May 2020.

Consultation Question 23 - *Do you agree that support for buildings technologies should change from a tariff to a grant?*

No, current proposals do not address the serious problems associated with previous grant schemes.

A tariff mechanism ensures that payments are only made for the low carbon heat produced, while also providing greater control for the scheme administrator, addressing some of the issues associated with earlier grant-based schemes.

The RHI tariff ensured applicants used their low carbon heating systems, rather than being incentivised to install a system which was left idle due to lower fossil system running costs. For example, the grant will support the deployment of heat pumps in on-gas grid properties. In 2019 the average domestic unit cost for electricity was 16.6 p/kWh compared to an average unit cost for gas of 3.79 p/kWh [13]. A consumer switching from a gas boiler to a heat pump is likely to see significant increase in running costs which is not addressed by a one-off capex focused grant support mechanism. Very similar comparisons can be made to the ongoing costs of biomass feedstocks compared to continuing to burn oil. Any saving the consumer makes in upfront costs is quickly negated by ongoing operational expenditure, providing little incentive for the consumer to make the switch.

Similarly, the tariff mechanisms allowed for ongoing obligations to be placed on the applicant at risk of losing future payments, helping to enforce sustainability or usage standards.

If tariff levels are set correctly, allowances like 'Assignment of Rights' can overcome the requirement for up front capital expenditure, as has been the case at some scales within the RHI. Strong design, installation and maintenance standards are needed to accompany a grant scheme to ensure quality installations are installed and used.

We strongly encourage BEIS to further consider a tariff-based scheme, especially for larger scale projects, where economies of scale mean that up front capital are less of a barrier due to access to finance. Lessons can be learned from reforms made to the RHI to ensure that a future tariff mechanism are well designed.

Endnote

[13] BEIS (2019) Annual Domestic Energy Bills, https://www.gov.uk/government/statistical-data-sets/annual-domestic-energy-price-statistics

Consultation 24 - *Do you agree with our proposal to offer a technology-neutral grant level? Yes/No. Please provide evidence to support your response*

The REA support the policy intention to deliver a technology-neutral support mechanism, however this is not what will be delivered by the current design of the clean Heat Grant Scheme.

The consultation states clearly that the current design is *"comparatively less attractive [for biomass] than it is for ASHPs. Covering a lower proportion of the upfront cost, coupled with stringent eligibility criteria"*. Similarly, the consultation highlights several technologies purposefully excluded from the scheme, including solar thermal, biofuels, hybrid systems and geothermal.

The consultation goes onto to directly identify ASHP's as of strategic importance, while the stated capex figures within the Impact Assessment demonstrate that the grant has been designed to primarily deliver this technology. As such, the policy objective cannot be claimed as technology neutral and the resulting policy sends a clear market signal, which ultimately also heavily restricts consumer choice.

As described in answer to question 25, a technology-neutral grant could be achieved through a flexible grant level based on the capacity deployed. This would help cover the partial cost of each kW, no matter the technology. This would allow developers to assess a property and its heat requirements, allowing for the design of a heat installation in accordance with the need of the building. The continued use of heat lost assessments will also ensure BEIS's strategic objective of primarily delivering heat pumps, with biomass where it is most appropriate to do so, is also met.

As it stands the grant directly encourages the installation of cheaper technologies and smaller systems. It does not encourage installers to assess the right technology and size of project for that building's needs.

Consultation Question 25 - *Do you agree that £4,000 is an appropriate grant amount to meet the aims of the scheme?*

No, the current grant of £4000 is not an incentive for most small-scale heat decarbonisation projects to deploy.

In the table below we highlight the capex costs for renewable heat installations according the BEIS's own numbers in the 2019 Domestic RHI Annual Deployment Statistics. As demonstrated, the proposed grant of £4000 will not incentivise renewable heat projects of any technology type much above 10kW, as the proportion of the total costs of the project are simply not significant enough. In all technologies, capacities of above 10 kW fall foul of BEIS's justification of the "psychological threshold" described in the cited "Price elasticity research". This makes clear consumers are much more likely to pay capital costs once the price falls below £10,000 pounds, with significant consumer uptake once below £7,000.

The £4000 level means that if a project is deployed above 10 kW, they are likely to be of low quality, or undersized to a level that does not meet the consumers heat needs. Applicants are effectively disincentivised to consider better designed projects where the grant will cover less of the total project cost.

It is further worth noting that much of the activity in the RHI market to date at the <10kW scale has been usefully driven by social housing providers taking advantage of the RHI to

replace night storage heaters, and should not be seen as an indicator of the likely future growth market for renewable heating systems.

As explained further in answer to question 26 we strongly encourage BEIS to consider a flexible grant-based on the capacity needed to be deployed.

Table 5:

REA Response Table 5: A flat grant of £4000 will not incentivise deployment much above 10 kW.

Technology	Installation Capacity (kW)	Median recorded cost of installation under the Domestic RHI April 2014 – Dec 2019	Cost per Kilowatt of Capacity (£/kW)[2]	Percentage (%) of project cost covered by £4000 grant	Expected capital cost still needed to be met by the consumer	Is cost to consumer below £7000 - the "psychological threshold" for deployment
Air Source Heat Pump	Less than 5	£7,290	£1,480	55 %	£3,290	Yes
	6 - 10	£8,220	£1,080	49 %	£4,220	Yes
	11 - 15	£11,500	£920	35 %	£7,500	No
	16 - 20	£13,000	£810	31 %	£9,000	No
	21 - 25	£17,970	£770	22 %	£13,970	No
	26 - 30	£20,000	£710	20 %	£16,000	No
	31 - 35	£20,000	£630	20 %	£16,000	No
	36 - 40	-	-	-	-	-
	41 - 45	£22,500	£530	18 %	£18,500	No
	Average across the range	£11,274	£866	35 %	£7,274	No
Biomass	Less than 5	-	-	-		
	6 - 10	£13,000	£1,360	31	9,000	No
	11 - 15	£11,760	£820	34	7,760	No
	16 - 20	£13,000	£690	31	9,000	No
	21 - 25	£14,750	£610	27	10,750	No
	26 - 30	£16,500	£600	24	12,500	No
	31 - 35	£18,000	£510	22	14,000	No
	36 - 40	£19,390	£500	21	15,390	No
	41 - 45	£25,000	£570	16	21,000	No
	Average across the range	£16,425	£708	24	12,425	No

A £4000 grant will not cover the VAT for projects deploying at the upper end of the capacity range

In addition to the capex costs of a project, we also encourage BEIS to consider what proportion of the consumers cost is VAT. As of last year, VAT on energy saving materials, which includes domestic renewable heat technologies like heat pumps and biomass installations, increased from 5% to 20% (unless certain relief criteria applied). As such, BEIS need to be conscious of the fact that a large proportion of the grant will simply be paying the government applied tax on the technology.

In the case of installations at the upper end of the capacity range, where the grant level covers 20% or less of the total project cost, the grant may only be paying the VAT on the project. In such cases a set level grant does little more than see Government money recycled from BEIS to Treasury, via consumers. This makes the grant redundant offering no benefit, or incentive for heat decarbonisation.

A flat level of £4,000 does not incentivise projects that provide the best value of money

The consultation document also makes clear that the grant is intended "*to target public support on those technologies that offer best value for money*". Again BEIS 2019 Domestic RHI

deployment data indicates that on a cost per kW basis, larger scale projects above 10 kW provide the best value per £ spent. This is true of all renewable heat technologies.

This is especially true for biomass where an average of £708/ kW across the capacity range is lower than any other technology supported by the scheme. This is even lower in the ND RHI where the small-scale biomass tariff averages £463/kW across the three biomass ND RHI tariffs.

Consultation Question 26 - *Do you agree with the recommendation for a flat-rate grant? Yes/No. Please provide evidence to support your response.*

No, the grant level should be flexible, meeting a proportion of the cost for each kW capacity being deployed. This should be accompanied by a low-interest loan, as seen in Scotland, to meet the remaining project costs.

As demonstrated in answer to question 25, the average capital expenditure for any renewable heat system increases with project size. At the same time, the required cost of Biomass or Ground Source Heat Pumps are higher than those for an Air Source Heat Pump. As a result, a flat-rate grant will inevitably be a more attractive offer to smaller projects or a cheaper technology, where the grant makes up the largest possible proportion of total capital costs.

This creates an unbalanced market incentive, where the grant favours a certain type of project at the detriment of considering the full heat requirements for the building. In the case of a £4000 flat rate grant, this will favour sub 10 kW systems and predominantly ASHPs, while disincentivising larger installations or a more expensive technology that may be better suited to the heat requirements. The proposed grant is therefore not technology neutral nor does it ensure quality installations or deploy projects across the total capacity range of the scheme - all of which are stated objectives of the policy.

The grant needs to be able to cover roughly similar proportion of the total cost of a project, no matter the size or technology required. The fairest way to do this would be to deliver a grant based on the capacity required to sufficiently heat the building. This is best achieved by providing a flexible grant that pays out based on £/kW deployed, with a proportion of each kW covered by the grant. An illustration of what this level could be is provided in answer to question 27.

A low interest loan should also be provided with the flexible grant

To further enable larger projects to deploy, a low-interest loan should also be offered in conjunction with the scheme to help cover the remaining cost of the project. This will also help mitigate low quality or undersized projects by enabling consumers to consider more expensive installations.

Such a loan is likely easiest supplied by Government and can be modelled on the successful Home Energy Scotland Loan Scheme, which provides 0% interest loans up to £17,500 for renewable energy systems [14]. At this level, the remaining capital expenditure following

receipt of the grant is easily met and will make the Clean Heat Grant Scheme far more attractive to consumers. This would simply be a case of extending this scheme to the rest of the UK.

Alternatively, a public private sector scheme could be established with an appropriate UK finance body. The Carbon Trust and Siemens collaborated on such a loan scheme from around 2004 to 2013, which proved successful at supporting market growth across all technologies [15]. The REA would be happy to help facilitate Government discussions on this with relevant organisations through our Finance Forum.

Use the heat loss assessment to avoid the scheme encouraging unintended behaviours

It is recognised in the consultation that varying support by installation size has the potential to incentivise unintended behaviours, as seen in some cases within the ND RHI. However, a flat rate grant does not resolve this issue. As currently proposed, the low grant will likely see projects undersized to ensure the grant covers the largest proportion of the overall costs. Alternatively, there is also a risk of multiple small AHPS's/boilers being installed, when one larger one would do, as they could potentially get a flat grant for each installed. While there are genuine situations where multiple boilers are appropriate, it was highlighted in the NAO review of the RHI that the scheme had no way of assessing this need [16].

The proposed heat loss assessment should not only be used to ascertain if the right technology is being installed, but if the right capacity of being proposed on all Clean Heat Grant Scheme Applications. The value of the grant is then based on this assessment, with £/kW paid out on the actual capacity required. This should avoid people being able to benefits from wrongly sizing installations or gaming the system to get more vouchers.

Endnote

[14] For further details see: https://energysavingtrust.org.uk/scotland/grants-loans/home-energy-scotland-loan-overview

[15] For further details see: https://news.siemens.co.uk/news/the-carbon-trust-and-siemens-launch-new-green-finance-deal-worth-550-million-to-green-businesses-in-the-uk

[16] NAO (2018) "Low carbon heating of homes and businesses and the Renewable Heat Incentive" https://www.nao.org.uk/report/low-carbon-heating-of-homes-and-businesses-and-the-renewable-heat-incentive/

Question 27 - If you believe a variation by capacity should be considered, please provide evidence to justify a process and level for varying the grant.

As an illustration, the REA has analysed what a grant based on £280/ kW, with a minimum grant level £4000, would mean for the scheme.

The figure of £280/ kW is arrived at based on BEIS 2019 Deployment Data, specifically "*Table S2.1 - Average reported costs of domestic RHI installations, Great Britain, April 2014 to December 2019*", using the following assumptions:

- The median cost per kW for biomass, across a capacity range of 0 – 45 kW, is just above £700/kW. Biomass provides the lowest £/kW figure across all the technologies, providing a figure that can be confidently stated as providing value for money.
- Considering the grant is meant to meet a proportion of the total cost of a project, we suggest a grant level that covers about 40% of each kW deployed.
- 40% of £700/kW would suggest a grant of £280/kW.
- A minimum grant level of £4000 should be maintained, allowing the scheme to continue to prioritise smaller strategic installations, like ASHPs, as stated as an objective by BEIS.

Below, using the median cost of an installations on the Domestic RHI, we compare what a flat £4000 grant would mean compared to a flexible grant based on £280/ kW for consumers. This is done for both ASHP's and Biomass installations.

Table 6 (two charts): Comparison of Flat rate Grant Vs Flexible Grant

Table 6: Comparison of Flat rate Grant Vs Flexible Grant

Air Source Heat Pumps Illustrative costs					
Illustrative Installation capacity (kW)	Median cost (£)	£4000 flat grant		Flexible £280/kW grant, with minimum grant of £4000	
		Grant (£)	Cost left to consumer (£)	Grant (£)	Cost left to consumer (£)
5	7,290.00	4,000.00	3,290.00	4,000.00	3,290.00
10	8,220.00	4,000.00	4,220.00	4,000.00	4,220.00
15	11,500.00	4,000.00	7,500.00	4,200.00	7,300.00
20	13,000.00	4,000.00	9,000.00	5,600.00	7,400.00
25	17,970.00	4,000.00	13,970.00	7,000.00	10,970.00
30	20,000.00	4,000.00	16,000.00	8,400.00	11,600.00
35	20,000.00	4,000.00	16,000.00	9,800.00	10,200.00
40	#	4,000.00	#	11,200.00	#
45	22,500.00	4,000.00	18,500.00	12,600.00	9,900.00
Average	**15,060.00**	**4,000.00**	**11,060.00**	**7,422.22**	**8,110.00**

Biomass illustrative Costs					
Illustrative Installation capacity (kW)	Median cost (£)	£4000 flat grant		Flexible £280/kW grant, with minimum grant of 4000	
		Grant (£)	Cost left to consumer (£)	Grant (£)	Cost left to consumer (£)
5	#	4,000.00	#	4,000.00	#
10	13,000.00	4,000.00	9,000.00	4,000.00	9,000.00
15	11,760.00	4,000.00	7,760.00	4,200.00	7,560.00
20	13,000.00	4,000.00	9,000.00	5,600.00	7,400.00
25	14,750.00	4,000.00	10,750.00	7,000.00	7,750.00
30	16,500.00	4,000.00	12,500.00	8,400.00	8,100.00
35	18,000.00	4,000.00	14,000.00	9,800.00	8,200.00
40	19,390.00	4,000.00	15,390.00	11,200.00	8,190.00
45	25,000.00	4,000.00	21,000.00	12,600.00	12,400.00
Average	**16,425.00**	**4,000.00**	**12,425.00**	**7,422.22**	**8,575.00**

 # - No Data

A flexible grant allows for greater deployment across the capacity range, while keeping the capital cost to the consumer below £10,000.

Table two demonstrate that a flexible grant allows for projects across the proposed capacity range to deploy, with a similar level of each project covered by the grant. Most significantly, a flexible grant of £280/ kW results in the consumer having a remaining capital cost below £10,000 (*highlighted in green*) in most cases, no matter the capacity being installed. This is below the 'psychological threshold' identified in the consultation as being critical to incentivising consumer uptake.

As identified in answer to question 26 the grant should be accompanied by a low-interest loan to help cover the remaining cost of the project.

The grant process can be designed to avoid unintended behaviours

The grant level can be based and issued in conjunction with the heat loss assessment which should be carried out for all applications. The assessment will stipulate both the appropriateness of the technology being installed and the capacity required to effectively heat the building.

On acceptance of an application, which includes an independent heat loss assessment, Ofgem will be able to issue the grant voucher at a value based on the capacity recorded as required by the assessment. For example, if the capacity required is 20 kW's, and a grant of £280 per kW is applied, a voucher for £5600 would be issued. This can be done with the assurance that the project is appropriately sized and well designed to meet the heat needs of the property.

By avoiding explicit tiers and basing the grant on the heat loss assessment, the scheme should be able to avoid the oversizing issues or multiple boiler issues experienced in the non-domestic RHI.

Question 28 - Please provide any relevant views to help inform development of the delivery mechanism

We welcome BEIS's intention to make the delivery of the grant as straight forward as possible.

The size of the project will need to be stated in stage 1 and justified in stage 2.

Given the above suggestion for a flexible grant based on per kW deployed, the first stage of the application will need to include a statement on the size of the project required. This will need to be backed up within stage two with a heat loss assessment that demonstrates the installation is correctly sized and that the grant is issued at a fair level. This also means that a heat loss assessment is required for all projects, not just biomass boiler installations.

Given the intention to make the first stage of the application consumer led, it will be important that the applicant is made aware that the grant they receive is based on the size of the project installed and that this will need to be appropriately justified by the installer in stage 2. It is important that consumers are protected during this process and that in the event that they have been miss sold an installation, that can then not be justified in stage 2, the remaining cost does not revert to the consumer. This will help to ensure installers design and install appropriately sized projects, as failure to secure a grant could see costs come back to them.

A transparent process of recycling unspent budget is required in the legislation.

We support the intention to ensure that vouchers are redeemed in a reasonable time and that unused vouchers are cancelled so that funding can be released for other applicants. This has been a major issue within previous power and heat support mechanism. For example, the FiT scheme had no mechanism to see spending, that had been locked in by a tariff guarantee, recycled when it became apparent a project was not going to be built and the tariff

surrendered. A transparent mechanism that sees the budget recycled, if a voucher is cancelled, needs to be carefully considered within the legislation for the new scheme.

Lessons Should be learnt from the OLEV in terms of Voucher Delivery

The Office for Low Emission Vehicles administer the plug-in grant scheme for Electric Vehicles, again based on a voucher mechanism. Early administration of this scheme has not been smooth, with suppliers of EV's reporting long delays and lengthy administration to be able to claim vouchers following the sale of a car. In some cases, this has put off some dealerships from offering the grant. We encourage BEIS and the scheme administrator to talk with OLEV to learn relevant lessons in relation to voucher delivery.

Clear KPI's must be published for Ofgem and BEIS must hold them accountable on the scheme's delivery.

Over the life of the RHI the REA has regularly engaged with Ofgem E-Serve concerning our member's deep frustrations in the delivery of the RHI. We continue to receive regular communications from members reporting a wide range of operational issues and serious complaints.

Delays to accreditations, or reaccreditations, has been long term concern. A twelve-month delay seems common in the cases reported to us, with several reporting delays of over 23 months. While we appreciate Ofgem needs to appropriately consider applications, the length of delays has been simply unacceptable. In these cases, our members report being engaged, responsive to queries and proactive within the RHI application process. When they do get responses, they are frequently asked for information that they have already sent or for new information which seems irrelevant to the application. Issues seem to be significantly exacerbated by Ofgem being under-resourced or some staff not having received adequate technical training. Most seriously of all, these delays have led to some applicants reaching a point of insolvency due to delays in RHI income.

If Ofgem are to be awarded the contract for administering the Clean Heat Grant Scheme, and it is not put out to wider tender, the existing operational issues must be demonstrably resolved. The new contract must include clear KPI's that BEIS actively hold them accountable with regular performance reviews.

Question 29 - Do you agree with the minimum efficiency requirements for heat pumps and evidence requirements? Yes/No. Please provide further evidence to support your response.

No views provided by members on this question.

Question 30 - Do you agree with the proposal to require electricity metering for all heat pump installations? Yes/No. Please provide further evidence to support your response.

Yes, but this should go further and there should be a requirement to install heat meters on the output of the heat pumps as well. Whilst the installation of an electricity meter allows the householder to monitor electricity usage, it does not give them an understanding of the system efficiency. Fitting a heat meter as well allows comparison of electricity used with heat delivered and thus provides a clear indication of system performance. This will drive installation standards up as householders can hold installers to account. Poor design in heat pump systems can result in excessive electricity consumption, depriving other grid users of capacity and increasing heating costs for consumers.

Consultation Question 31 - *Do you agree with the proposed air quality requirements set out above? Yes/No. Please provide further evidence to support your response.*

No.

Biomass projects, regulated with high emission and maintenance standards, should be allowed to be deployed in on-gas grid areas.

Biomass, due to its ability to meet higher and varying heat loads, has a particularly strong role to play in commercial applications, including public sector buildings such as hospitals, schools, public swimming pools, council offices and innovation in district heating schemes. The RHI has also demonstrated that biomass provides the best value for money of any technology at these scales, averaging £463/ kW across the range of biomass tariffs in the Non-Domestic RHI - half that of any other technology. Such buildings are, however, commonly located within on-gas grid areas.

The proposed restriction ignores the results that can be achieved from deploying Best Available Techniques (BAT), adopts an approach seen nowhere else in the world and sets a dangerous and difficult-to-reverse precedent which will further obstruct the deployment of renewable heat. Ultimately this will make the full decarbonisation of the UK heat requirements more expensive, whilst not addressing the primary causes of emissions.

As has been demonstrated to BEIS during the last urban biomass consultation, emissions from biomass boilers are not an issue where best practice in design and operation are followed, and where flue gas filters are fitted. These are mature technologies which are readily available. Where tighter emission and maintenance standards are put in place, biomass boilers meet emission levels that cause no issues for urban air quality. A survey conducted of WHA members during the previous consultation demonstrated average PM of 5.18 grams per GJ from currently operating installations - a fraction of the RHI's PM restrictions of 30 grams per GJ net heat output. Such levels do not pose a threat to urban air quality [17].

Excluding new installations in urban on-gas-grid areas will also not address the fact that in some locations, excluding background concentrations, peak emissions from domestic fireplaces and inefficient stoves (commonly used as secondary heating for aesthetic reasons as well as comfort) are thought to contribute up to 31% of the concentrations in air of $PM_{2.5}$, particulate matter harmful to health [18]. These forms of heating are meant to be regulated by Clean Air Zones and DEFRA Exemptions, both of which are currently poorly enforced with

low awareness about the legal requirements amongst both suppliers and users. Emissions from wood-fuelled biomass- boilers, by comparison, are far smaller and controllable using high-performance filters.

It must also be remembered that emissions from all types and sizes of biomass combustion is already regulated to emission limit values:

- Large size installations (above 50 MW) are subject to the Industrial Emissions Directive
- Medium size installations (1 MW – 50 MW) are subject to the Medium Combustion Directive.
- Residential heating is subject to the eco-design scheme for solid fuel boilers (Commission Regulation (EU) 2015/1189) and local space heaters (Commission Regulation (EU) 2015/1185) sets minimum efficiency and maximum emissions levels for biomass heating installations that are on EU market. These requirements ensure all new biomass heating installations emit minimum levels of emissions.

In addition to the above, in February this year, the Government released new policies relating to using Cleaner Fuels for Domestic Burning. These polices were directly aimed at improving emissions from solid fuels, including wood burning. These new regulations were welcomed by the biomass heat industry and appeared to be moving the conversation in the right direction – recognising that better regulation and public education were the solution to these issues. The new proposed ban therefore goes back on the intentions of that consultation and are inconsistent with the Government announcements earlier in the year.

The proposed restrictions are therefore unnecessary and damaging to both the purpose of the Clean Heat Grant Scheme and to the Government broader heat decarbonisation objectives, creating a barrier to deployment. It also greatly restricts consumer choice. The market will be able to determine where biomass is an appropriate renewable heat technology for a site, in terms of delivering heat requirements and value for money. Rather than an outright ban, the Governments focus must be on the ensuring the tight installation and maintenance standards so that what is installed poses no risk to air quality.

Examples for how standards, in conjunction with support mechanisms, can be effectively used to incentivise high-quality urban biomass installations can be taken from across Europe. In Germany, support is tiered based on the emissions profile of a system, ensuring that the highest levels of subsidy support are only awarded to the best-performing systems. This combination drives installations which are appropriately sized, optimised for efficiency and which are suitably clean for urban areas. This model should be replicated within the Clean Heat Grant Scheme and future heat policies, ensuing the installations built within urban areas meet tight emission and maintenance standards, rather than excluding on gas grid installations entirely.

As further evidence for the this question we also submit the REA Briefing on Air Quality and Biomass Heating, which provides further data relating to true emissions from Biomass Boilers.

[Please upload "Air Quality and Biomass Heating' Briefing saved here: This is saved here: Q:\Consultation Responses\Consultations Responses 2020\Heat consultations\Clean Heat Grant Scheme Biomass Key Messages]

Endnote

[17] WHA and REA response to BEIS RHI Consultation – Biomass Combustion in Urban Areas https://www.r-e-a.net/resources/beis-rhi-consultation-biomass-combustion-in-urban-areas/

[18] Fuller et al. 2017, pg. 4https://uk-air.defra.gov.uk/assets/documents/reports/cat05/1801301017_KCL_WoodBurningReport_2017_FINAL.pdf

Question 32 - Do you have any comments on how best to ensure ongoing compliance with fuel sustainability and quality requirements following the redemption of a grant?

A major weakness of a grant-based scheme is the difficulty of enforcing ongoing obligations on the user where they are not in receipt of continued support. We support the Government's intention to develop new fuel quality standards and maintenance standards, maintain current obligations to use BSL compliant fuel and maintain a legal requirement to comply with environmental permitting and local and national laws.

However, even greater focus will now have to be placed on enforcement and education. Clean Air Zones and DEFRA Exemptions have long been poorly enforced, while much of the public remain unaware of what they are and are not allowed to do. The Government recently brought in new regulations for the cleaner domestic burning of solid fuels and wood, which the WHA and REA welcomed. In doing so the Government made commitments to a new public education campaign on these issues which we are yet to see delivered but will now also need to incorporate the proposals for the Clean Heat Grant Scheme.

Enforcement actions will need to be carefully considered. This will likely require audits of installed systems and the administrator provided powers to issue fines if non-compliance is proven, replacing their power to stop ongoing support payments as done in the RHI.

Question 33- Please provide views on the appropriate requirements for the heat loss calculation, as well as the minimum heat loss value that should need to be demonstrated.

We believe the Heat Loss Assessment should be conducted as part of all applications on the scheme, not just biomass. This should be used to make clear the capacity of the installation required, and the grant level based on this number. See answer to question 26 and 27.

Question 34 - Please provide views on any other criteria to ensure that biomass support is focused on hard to treat properties only.

Additional criteria that could demonstrate biomass as appropriate for a property:

- Grid capacity – the properties grid connection and local distributed grid needs should be considered. It is possible that a house grid connection cannot support the running of a larger heat pump installation, or local grid constraints may on occasion make such an installation impractical, especially if an electric vehicle is also being used at the property. In such cases biomass may be a considered a more appropriate technology to install.

- The heat requirements of a building in a harsh winter scenario, where the higher heat load of biomass might provide energy security, especially on still nights when electricity costs might be highest.
- Value for money for per kW installed or £'s per tonne of carbon saved, where biomass might represent better value for money to the consumer where a larger scale installation is required.
- Possibility for a district heating system, where multiple properties could benefit from a larger scale biomass system or ground source heat pumps running off the same array.
- The cost of a green electricity tariff in that area, impacting running costs. Heating via electricity is only green if the electricity being used is coming from a renewable energy tariff.

Question 35 - What do you consider to be the main consumer protection risks of providing support through an upfront grant and how might they be mitigated? Please provide evidence to support your response to question.

A low level, flat rate grant with a capacity cap of 45 kW could well see installers trying to push down project costs by under sizing projects or reducing quality. This will ensure the grant covers a greater proportion of the overall project cost, making it appear more attractive to the consumer. This could lead to mis selling and leave consumers with installations not suitable for their property or unable to heat the property efficiently. Tight installation standards will help address this issue; however, it would also be helped by having a flexible grant, see answer to question 27 for further details.

We also highlight that the design of the grant, which primarily targets ASHP's and bans biomass in on gas-grid areas greatly damages consumer choice. The design of the grant means that consumers are actively discouraged from considering the range of renewable heat technologies which might, in certain situations, better meet their heat needs. This may see the grant support more heat project on the gas grid rather than off it. In addition, consumer should be made aware that they will need a green electricity tariff in order for a heat pump to provide truly renewable heat.

The heat loss assessment should also be used to justify the correct size of installations for all applications to scheme, ensuring the correct size system is being installed for the consumer.

The proposal for quarterly caps on the number of grants issued has the potential to lead to pressure selling from installers. Consumers may be rushed into a decision by being told that the number of available grants could be about to run out.

The REA also endorses the response from the Renewable Energy Consumer Code (RECC) in relation to this question. They have strong data concerning consumer issues within the RHI, from which important lessons can be learned.

Question 36 - Do you agree with the proposed budgetary control mechanisms as a means of preventing scheme overspend? Yes/No. Please provide evidence to support your response.

The answer to this question is already covered in our answers to questions 6, 7 and 8.

Question 37 - Do you agree that quarterly grant windows would prevent overspend and manage demand to ensure an even spread of deployment? Yes/No. Please provide evidence to support your response.

No, not enough detail has been provided around how the quarterly caps would be set for industry to be able to support the proposal.

Given that this scheme is primarily focused on domestic heat users, a quarterly cap risks locking consumers out of the scheme for up to three months, during a period when they could urgently need a new heating installation. Equally, as raised in question 35, quarterly caps could be used to pressure sell, with installer rushing consumers to make a decision on the basis that the number of available grants is about to run out. As such, quarterly caps could become a barrier to consumer engagement and see potential renewable installations abandoned in favour of fossil fuelled systems.

Quarterly deployment caps proved detrimental for the AD industry within the Feed in Tariff, with the caps being set far too low. The result was a queue of projects desperately trying to get a tariff as soon as applications opened each quarter. This created a lottery, often dependent on who had the best internet connection, rather than a fair system of allocation. Such a system discouraged developers from engaging with the scheme, as the risk of not getting a tariff within a quarter became too great. Such impacts must be avoided in the case of the Clean Heat Grant scheme, especially where domestic consumers are involved.

The design for such quarterly caps needs to be very carefully thought out and considered in line with real deployment figures.

Given the UK's heat decarbonisation ambitions, and need for mass transition to low carbon heating systems, if demand for the grant proves to be so great that the budget is quickly allocated, this should be evidence for BEIS and Treasury that further budget needs to be released to the scheme, rather than a reason to restrict the schemes success.

Question 38 - Do you agree with not supporting process heating under the Clean Heat Grant? Yes/No. Please provide evidence to support your response

We do not believe the grant will a sufficient incentive for process heating, so this is unlikely to be a significant issue. Further heat policy is urgently needed to support such heat decarbonisation activities, the closure of the ND RHI leaves a substantial policy gap that needs filling if the UK is to meet its Net Zero targets.

Question 41 Do you agree with not supporting hybrid systems under the Clean Heat Grant? Yes/No. Please provide evidence to support your response

BEIS should consider how biofuels, such as bioLPG, could be supported within the Clean heat Grant Scheme or future heat support mechanism. In off gas grid areas, they provide a direct renewable drop in fuel for oil-based heating systems, providing another cost-effective and proven low-carbon fuel to decarbonise hard-to-treat homes. They also provide benefits in terms of local emissions. For example, bioLPG is a clean-burning and smokeless low carbon gas, producing on average PM of 51 g/GJ and 1.2 g/GJ of NOx.

Given the nature of UK housing stock, with many houses having low levels of energy efficiency, it is right to recognise that a diverse and varied heat market is required to effectively decarbonise. Hybrid heat pumps (e.g. heat pump + biofuel boiler) are a further valuable and cost-effective solution for decarbonising heat. The bioLPG sector have modelled, against an oil baseline, that hybrids could reduce household emissions by at least 94% by 2050, this could be increased to 98% if sourced from lower carbon feedstocks such as wastes. As such hybrids represent a solution well in line with the governments net-zero ambitions.

Smart hybrid systems also enable consumers to make the most of flexible price signals. A household could use increasingly popular time-of-use tariffs and smart energy platforms to optimise their hybrid heat pump to keep bills down. The smart energy platform allows switching between the heat pump and boiler depending on the cheapest price of energy. The boiler is therefore only primarily used when the cost of electricity is above that of the biofuel. Optimising the hybrid in this way ensures that it is financially attractive for the household to use the heat pump to meet around ~90% of the annual heat demand, while the boiler is able to provide heating when it is cheapest to do. This has the added benefit of helping to remove stress from the electricity grid when energy demand is particularly high, such as on a cold still night. Modelling indicates that by optimising the hybrid (using a smart energy platform and a time of use tariff), the household could save between 22% and 32% on their annual fuel bill.

Question 43 - What are the main risks of non-compliance, fraud or gaming associated with the Clean Heat Grant?

As already indicated, we believe a flat rate grant will likely lead to the under sizing of projects to create a more attractive offer for consumers, where the grant covers a greater proportion of the project costs. This could see consumers be mis sold for developers to be able to maximise the number of grants they are able to claim.

Equally, where a larger scale project is needed, at the upper end of the capacity range, there could be the possibility of gaming the system by installing two cheaper smaller systems, claiming two grants, rather than install the size or type of project that is actually required.

There are also concerns that the flat rate grant does not in itself incentivise the use of renewable heating system. The grant could be used by those wanting to 'green wash' their

activities, installing a renewable energy system without the intension to use it as the fossil heating system remains cheaper to run.

July 2020

If you have any questions relating to this consultation and the REA's response please contact heat@r-e-a.net