Consultation Response

4th December 2019

Local Energy Policy Statement

A consultation

The Energy and Utilities Alliance (EUA) provides a leading industry voice helping shape the future policy direction within the sector. Using its wealth of expertise and over 100 years of experience, it acts to further the best interests of its members and the wider community in working towards a sustainable, energy secure and efficient future. EUA has six organisational divisions - Utility Networks, the Heating and Hotwater Industry Council (HHIC), the Industrial & Commercial Energy Association (ICOM), the Hot Water Association (HWA), the Manufacturers' Association of Radiators and Convectors (MARC) and the Gas Vehicles Network (GVN).

1. Are you clear on the purpose of the statement? *Please explain your view.*

EUA are clear on the purpose of the statement: the statement aims to deliver a more decentralised flow of decarbonised energy. We are aware that the Scottish Government intends for this to be a socially just transition, however we are concerned that there could be unintended consequences outside of Scotland's control. Germany's model is the closest to a prosumer energy system, however Germans pay amongst the highest in Europe for their energy, so clearly Scotland needs to ensure consumers are adequately protected[1]. We are aware that much of the document does indeed talk about protecting consumers, so we are confident that the Scottish Government will address this concern carefully.

2. What are your views on the 10 principles?

We agree with the first principle as EUA takes the line that consumers should be at the heart of decarbonisation given the wide-ranging impacts it will have on their lives. We also agree with the second principle, however we are concerned that such a decentralised system could lead to winners and losers based on postcodes and levels of engagement, which in a worst case scenario could create uneven costs and a hierarchy in heat. For example, if one area gained a new energy system and free insulation, while another area did not, it could be seen that one area is funding the other area's energy system.

Given Scotland's commitment to a just transition, we are confident that such concerns can be alleviated. We strongly agree with the sixth principle because we also believe it is important to consider the whole energy system while considering local, regional and national solutions. The Scottish Government need to ensure that local energy systems can interact given the grid will continue to play an important role for back up for years to come.

[1] Clean Energy Wire article: *What German households pay for power*, April 2019

We strongly agree with the seventh principle as products must be commercially viable to be prioritised; we would add that they should also be the most cost-effective method and require the least disruption to consumers. Finally, we agree with the tenth principle as there should be a just transition for workers, but we would add Scotland should ensure there are no job losses as a result of decarbonisation.

3. How can the Scottish Government encourage stakeholders to adopt the principles set out within this document?

It will be hard to convince all stakeholders to agree with all principles, because some of the technologies they advocate will conflict with them. For example, with regards to the eighth principle which states that low regret opportunities should be identified and acted upon, some appliances may not be low regret if certain decisions are taken on the future of heat. For instance, if heat pumps are rolled out in Scotland and the UK subsequently decides to go down a fully hydrogen route, the electricity grid may not be able to cope with the additional demand. Additionally, low regret has a low cost criteria and some technologies are extremely expensive so do not fulfil a low regret criterion.

4. Are you clear about the roles of all the different stakeholders who may be involved in the development of local energy systems?

We are aware of all the roles the different stakeholders have who are involved in the development of local energy systems.

5. How can we ensure that all socio-economic groups in all regions across Scotland will benefit from the transition?

We agree with the statement that change happens 'with consumers, not to them', and that this requires a high level of consultation. The Scottish Government should consider implementing a further policy which guarantees that those in fuel poverty should never face increased costs from decarbonisation and that the costs for the rest of the population should be kept as low as possible. In order to ensure change happens with consumers not to them, increased costs should not be a feature of decarbonisation. Polling suggests people are willing to make changes to limit climate change, but few are willing to pay higher energy bills. Further to this, any scenario where there are uneven costs based on one's postcode should be avoided as this will not be seen to be fair. The best way to do this is a more uniform rollout of one technology for those on-grid and off-grid, only deviating where absolutely necessary.

For those off-grid, especially in rural areas, the Scottish Government should consider biofuels given they cost less on average than a fully electric alternative to install and run. BioLPG and biopropane are terms used to describe LPG which is derived from production processes that use a variety of biological materials as feedstocks, including waste streams. Importantly, biopropane or BioLPG is chemically indistinct from LPG and so can be used in a conventional LPG system. This also means that it can be 'dropped-in' to existing supply chains and appliances without the need to modify existing infrastructure or the technical specifications of LPG gas appliances. This sets it

apart from bioliquids that cannot be blended with their conventional counterparts and thus require new infrastructure to transport and changes to existing appliances.

Unlike other low carbon heating alternatives, the use of biopropane does not face significant barriers to uptake. It requires no additional capital outlay, nor does it require the householders to change the way in which they use their heating system. Alternative technologies, such as heat pumps, may require new radiators and better levels of insulation in order to facilitate a lower temperature heating circuit.

Instead, householders will merely purchase a different fuel and their heating system will continue to function as before. Consequently, eliminating the price differential between LPG and biopropane would provide sufficient incentive to stimulate the uptake of biopropane. When discussing biofuels, it is often mentioned that their mass production can result in land use changes. These changes could exacerbate climate change, decrease biodiversity and have a negative impact on food security. However, as stated in DECC's 2014 Evidence Report: Biopropane for Grid Injection: "biopropane has an advantage in this respect, because it can be sourced to a large degree from non-food feedstocks, such as inedible fractions of palm oil, animal fats and wastes (such as used cooking oil)." As long as adequate sustainability 11 criteria are imposed, such as those imposed upon biomass under the RHI, the use of biopropane should have no negative ecological consequences.

As with any new energy source, it is necessary to evaluate the current capacity and potential scalability of the UK market. Initially, it is estimated that 40,000 tonnes of biopropane will be available within Europe annually. The vast majority of this would be destined for the British market and would be sufficient to heat 30,000 homes. Calor introduced BioLPG to the UK in March of this year demonstrating that this is not a future technology, but one available to consumers today.

Over the coming years, global production of biopropane could be increased dramatically by taking advantage of worldwide HVO production and developing new pathways for production. For example, biopropane can be produced through the conversion of biomass feedstocks into syngas using gasification, followed by catalytic conversion of the syngas into methanol, di-methyl ether and finally biopropane.

Initial industry research shows that waste derived (using household waste) biopropane could cost slightly less than current prices for fossil LPG and significantly less than technologies such as heat pumps. A report published by GreenEA4 in September 2015 estimated that the production capacity of HVO within Europe will increase by 88.5% in the next three years. This rate of growth would be sufficient to sustain the deployment detailed in the second scenario in our analysis.

Unlike other forms of bioenergy, BioLPG is non-corrosive and so existing LPG storage and distribution infrastructure does not require an upgrade. Although not a wholly zero carbon fuel source, biopropane could offer an opportunity for LPG households to significantly reduce their carbon footprint by up to 90% compared to fossil LPG. The combustion of biopropane does result in carbon being emitted, but this is offset by the carbon that was removed from the atmosphere when the biomass feedstock was cultivated. Carbon emissions will result from the fertilisation of the feedstock, as well as from the transformation of the feedstock into a useable form of bioenergy. The exact carbon footprint of biopropane depends upon all of these factors, but also

upon whether it is defined as a residue or a co-product under the European Union's Renewable Energy Directive (RED).

The main alternative to biofuels would be an air source heat pump, however they are more expensive, make noise and require a large amount of space. OFTEC have said heat pumps cost 88% more to run than high efficiency oil boilers; this could leave rural consumers facing a rise in their heating bills of up to £750 per year. In addition to much higher running costs, even with the incentive payments currently available through the domestic Renewable Heat Incentive (RHI), heat pumps still cost at least £6,000 to install, making them prohibitively expensive for most households to take up. This excludes the cost of fitting the larger radiators and additional insulation often required for heat pumps to work effectively in rural properties, which tend to be older and less well insulated. The pros and cons of all options should therefore be explained to consumers to ensure that they are aware of these costs before they commit to them.

Furthermore, the National Infrastructure Commission say that heat pumps are suitable only in buildings with a sufficient level of thermal efficiency, while other buildings will require some level of energy efficiency retrofit alongside installation of a heat pump. Given that a large number of properties in Scotland are low EPC with no cavity wall insulation, this represents a huge barrier to widespread uptake of heat pumps.

The Scottish Government should ensure that the contract types of any heating options are fully explained because some may come with contracts of up to 20 years which can be very hard to get out of. An example of this would be heat networks; we would advise that they are most suitable for blocks of flats and not isolated rural areas given they can recycle energy from waste heat sources, such as factories, which tend to be located in urban areas. With regards to other options for off-grid, EUA believes that rural heat networks would be complicated and expensive. Whilst it can be argued that a rural heat network has fewer constraints with regards to installation, there are still significant barriers to implementation. Firstly, there has to be a sufficient energy source. It has been discussed that water source heat pumps could be used in local rivers and lakes. However, these require significant upfront costs. They would then have to be connected to homes which would necessitate the digging up of all the roads in a small conurbation. Given that smaller locations do not have access to alternative routes, this could be costlier than similar works in more built up areas.

To offset the high upfront cost of the heat source, the provider would have to assume that all people in the town or village, or at least a significant number, would have to sign up to the scheme. Additionally, there needs to be a fairly high density of housing (>50 per hectare) in order for the heat network to be economic; most rural locations do not meet this threshold. There are a number of competition issues here. What happens if a new home owner doesn't want to be part of the network? Will people be required to sign up in advance? Who will pay for the new heating system? The considerations must be taken into account.

Some have suggested heat as a service models could encourage the uptake of low carbon technologies, such as heat pumps. The barrier to these technologies is not the models themselves, but consumer apathy to innovation in this space. People want heat, they are comfortable with the current model and effectively buy it as a package already when using price comparison websites. When a heating appliance breaks, consumers will choose the model appropriate to them at the time. However, we believe that consumers are wary of products that are new to them and models

that add complications like the non-ownership of the appliance. Unlike with cars where a consumer has a new car every few years, heating appliances have far less social value. Therefore, EUA remain sceptical of heat as a service models to encourage uptake of low carbon heat.

Instead, we would argue that the fuel should be decarbonised, not necessarily the appliance. As previously mentioned, switching oil boilers or LPG boilers to biofuels would achieve this in a fair manner given people would not have to make significant changes to how they heat their homes or pay big upfront costs, as they would in a heat pump scenario. As a whole systems approach, we would encourage Scotland to become an early pioneer of hydrogen for heat and to roll this out as widely as possible. The advantage to this, as opposed to hyper local solutions, is that there are less winners and losers given there could be a uniform uptake of hydrogen across Scotland.

Gas grid extension requires capital investment for a pipe network, but provides an immediate carbon reduction compared to thermal electric heating, coal, oil or LPG. Combined with smart hybrid heating and green gas, decarbonised heat is a possibility with a gas mains extension. This would probably be limited to urban and semi-urban areas. Rural areas would require use of either BioLPG or a bio-oil. If universally rolled out to those on0grid, (and if those within 25 metres of the grid are connected) this could be the fairest method of decarbonisation, given there may be no upfront costs, or connection charges (if supported via taxation) and minimal consumer disruption.

6. How can we ensure that people and communities across the whole of Scotland can participate in local energy projects?

Polling suggests that people do not understand the need to decarbonise and most think that making small changes, like energy efficient light bulbs, saves a lot of carbon. In order to ensure more participate, the Scottish Government needs to communicate to the public that in fact these small changes are helpful, but the bulk of savings are to be made in changes to heating systems. To do this, Scotland could follow the example of the digital TV switchover with an effective public information campaign, explaining why it is necessary, its implications and how to make the change. Targeted help should be given to vulnerable groups, such as the elderly or disabled, who might have trouble understanding or engaging with the campaign.

7. What do you think the wider benefits of developing local area energy plans might be?

The wider benefits, if the public are sufficiently engaged and their views taken account of, could be local areas with high levels of consent and contentedness with their energy systems. Recognising local difference could also be a wider benefit of local area energy plans, given that some areas, particularly in rural Scotland may have very low EPCs and listed buildings. Therefore, careful attention will need to paid to these areas and a one size fits all approach will not be appropriate. If Scotland gets this right, then it will be able to turn hard to heat and insulate properties into low carbon homes of the future. One additional benefit could be an economic boost to local areas, especially areas that have suffered from decline in recent years. This would be because of the potential to create jobs and if Scotland used local companies this would also give an economic boost to small business in local areas.

8. How can we encourage greater collaboration between the key parties involved in the development of local energy plans?

It is important for whichever body, or bodies, that lead a local energy plan to reach out to a range of organisations and stakeholders to ensure that a diverse range are involved in its development. Community councils or other similar local institutions can often be independent brokers as they usually have no aims and objectives other than ensuring that their community is well served with clean, affordable energy. It would also be important for all parties collaborating on a local energy plan to be clear on what they can achieve for their community through the plan.

9. How do we ensure that whoever is leading a local energy plan is fully integrated into the LHEES process?

There will need to be some level of oversight from the Scottish Government, or a more local agency appointed by them such as a local authority, in order to ensure the leader of the local energy plan is aware of the appropriate LHEES and its requirements. They will also need to be in contact with Energy Efficient Scotland to ensure that any private investment required to deliver local objectives is taken into account in the local energy plan.

10. What infrastructure challenges are you aware of that present an obstacle to delivering local energy projects? What actions would help solve the issue?

There are a number of infrastructure challenges in various areas of Scotland which will also be affected by the technologies which are being proposed. For example, sparsely populated rural areas may not have access to the gas grid and extensions to cover these areas may not be commercially viable. Similar challenges may be presented by implementing a heat network in such areas and even all-electric solutions, such as heat pumps, would require significantly bolstered local electricity infrastructure. The solutions to these challenges will depend on the area where local energy projects are planned but will almost certainly involve direct investment in energy transmission infrastructure which ought to be funded as far as possible by general taxation in order to ensure costs do not fall disproportionately on those in fuel poverty.

11. What other actions could the Scottish Government take to ensure Scotland will have the necessary infrastructure in place to enable resilient, local energy systems?

Continuing with the rollout of smart meters to all homes in Scotland could help to facilitate a more flexible and resilient energy system which could be more responsive to local energy needs.

12. What significant barriers are there to the replication of existing local energy projects and systems in Scotland that this policy statement should take account of?

We have no comment to make on this question.

13. What actions can we take to accelerate the focus on economically and commercially viable low carbon local energy solutions in an inclusive way?

It will be vital for local energy solutions to ensure energy bills do not increase significantly for consumers with low incomes. Hydrogen could represent a low carbon heating fuel, familiar to consumers which would not involve costly or disruptive changes within their homes. It will be important for the Scottish Government to allow for an element of consumer choice so that consumers are not forced to adopt costly technologies.

14. How can we ensure that Scotland capitalises on the economic opportunities from the development of local energy systems?

With its significant renewable energy resources, Scotland is well placed to lead the UK and Europe in the production and usage of renewably produced hydrogen. The UK Government's decision to pull back from investment in carbon capture and storage, and subsequently deciding to commit to investing in it again, shows how advancements in the technologies which could deliver net zero can be stalled by government indecision. If the Scottish Government commits to converting its gas grid to clean, low carbon hydrogen then it could reap the economic benefits of pressing ahead and leading the UK which will soon wish to follow.

Local energy systems will need to ensure the unique energy characteristics of each local area are harnessed and enhanced. For example, areas of Scotland with a high potential for wind energy could use this for hydrogen production when it is not being used by the local community.

15. Do you have any opinions on the initial focal typologies chosen?

We have no comment to make on this question.

16. How can local energy considerations become business as usual for industry?

The policy framework that the Scottish Government has proposed will encourage the energy industry to take local factors and needs into account more frequently. For many businesses and organisations in the industry, looking at energy systems in a holistic and hyper local manner will be a significant change from the wholesale, grid-wide approach which currently dominates. It will be important for local energy plans and LHEES to be clear on how stakeholders in the industry should contribute to their implementation.