The Future of Small-Scale Support Team
Clean Electricity Directorate
Department for Business, Energy & Industrial Strategy
1 Victoria Street
London

30 August 2018

Dear Sir/Madam,

The future for small-scale low-carbon generation: A call for evidence

Scottish Renewables is the voice of Scotland's renewable energy sector, working to grow the sector and sustain its position at the forefront of the global clean energy industry. We represent around 250 organisations working across the full range of renewable energy technologies in Scotland and around the world, from large suppliers, operators and manufacturers to small developers, installers and community groups, and companies right across the supply chain. Our membership includes a number of project owners, developers, operators and manufacturers across the small-scale renewable generation sector.

The UK energy market, and policy ambition surrounding energy, has changed drastically in recent years. Along with technology development, and our wider energy system adapting to increased decentralisation and renewables penetration, new and emerging technology-driven market opportunities are continually appearing. Small-scale embedded technologies are at the forefront of this transition. We expect this to be revolutionary for how consumers, businesses and energy generators engage in the energy market. The opportunity this shift presents to tackle issues such as climate change and fuel poverty while growing the UK economy should not be underestimated.

Scottish Renewables sees huge opportunity for renewable generation in the UK across all scales. The pace of change is remarkable, and our members – across technologies and scales – are continually adapting to a changing operational environment. It is important that policy-makers appreciate the scale of change underway across the energy industry and the opportunities and challenges it presents.

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We see small-scale renewable energy projects in the UK as being significant in three main ways:

Firstly, small-scale renewable energy generation both necessitates and facilitates the transition to a smart energy system. Renewables have led the decentralisation of our energy fleet, moving us towards a more dynamic, responsive and flexible approach to energy which will allow households, communities and businesses to take advantage of low-cost, clean energy supplies.

Secondly, small-scale renewables deliver growth opportunities and a varied set of socio-economic benefits to households and often remote communities – helping meet government's ambitions set out in the Industrial Strategy.

Finally, these projects generate volumes of low-carbon power (often for local use), helping us meet our climate and energy targets.

Scottish Renewables is concerned about the impact that a number of changes to the policy landscape are having on the small-scale renewables sector, threatening the opportunity to deliver across these three areas.

Uncertainty over the future of the Feed-in Tariff (and severe degression)[1], the forthcoming closure of the RHI[2], changes to the tax regime[3], and issues surrounding planning have caused considerable uncertainty for the renewables industry - leading to Scottish and UK businesses entering liquidation[4]. For large-scale projects, uncertainty remains over pot 1 technologies in the CfD regime. A number of industry-leading projects considering the future of electricity networks are ongoing.

The evidence put forward in this response details the benefits that small-scale renewable generation has already delivered to consumers, communities, businesses and our energy system as a whole. We set out how small-scale renewable technologies can create the cities of the future and support our rural economy. We also detail the challenges the sector is facing.

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[1] N.B. Scottish Renewables will be responding to the BEIS consultation on the closure of the tariff scheme separately

[2] https://www.gov.uk/government/consultations/a-future-framework-for-heat-in-buildings-call-for-evidence

[3] https://www.scottishrenewables.com/publications/position-paper-business-rates/

[4] For example: https://www.businessgreen.com/bg/news-analysis/3028452/gaia-wind-calls-in-liquidators-as-industry-slams-government-feed-in-tariff-inaction

Without some form of government intervention to support the small-scale renewables sector, it is our view that projects will stall and these benefits will cease to be delivered.

In our full response to the call for evidence we set out key points we believe should frame government policy-making:

- The importance this sector will have in driving our transition to a smart, flexible and decentralised energy system, enabling smart consumers and low-carbon businesses to take control of their energy supplies.
- The role this sector has in supporting the rural economy, including rural businesses such as farming.
- The impact this sector has on national infrastructure development, particularly in driving the development of our electricity network.
- The economics of small-scale development, and how these differ from large (CfD scale) developments and between technologies.

To ensure a future for this sector, and secure the benefits it can deliver, in our view it is imperative that government:

- Does not allow for a cliff-edge in support for the sector following the proposed closure of the Feed-in Tariff in March 2019 – either through ensuring alternative mechanisms are in place by April 1st 2019 or through creating a transition period.
- Creates a level playing field for small-scale generation through implementing appropriate changes to the tax regime and planning system.
- Sets out its long-term vision for small-scale decentralised renewable energy generation.

To that end, Scottish Renewables presents a number of recommendations to both UK and Scottish Governments in the course of this document (summarised in section 8).

Our principle recommendation is for government work to protect the sector from a potential 'policy gap' through implementing a transition period out of the Feed-in Tariff. This would involve ensuring:

- The full utilisation of existing budget within deployment caps
- The continuation of an export tariff
- The reform of the export tariff upon the emergence of flexibility markets

- A route to market mechanism to lower risk for small-scale generators in tandem with operational flexibility markets.

Further detail and data is presented in our response below and we would welcome the opportunity to work with you further to ensure that the small-scale renewable energy sector can continue to deliver for the UK.

Should you have any further questions, please don't hesitate to contact me.

Yours sincerely

Hannah Smith

Senior Policy Manager

Scottish Renewables

Response: Call for Evidence Future of Small-Scale Low Carbon Generation

Table of Contents

A new energy system: the opportunity

Small-scale renewables are helping transform our energy landscape by developing smart systems, delivering energy and wider benefits to the rural economy, and contributing to the roll out of national infrastructure.

1) State of Play

Here we offer an overview of the technologies making up the sector, deployment and stakeholders engaged.

1.1 Sector Overview

Scottish Renewables defines small-scale renewable generation to be both heat and electricity generating technologies which are less than 5MW in size. These technologies can be integrated into buildings and businesses to provide energy at the point of use or connected to the distribution network.

This is a multifaceted and hugely complex sector, covering a range of technologies each with different sets of technical requirements, project economics and benefits delivered.

In terms of electricity generation projects, we see a considerable difference between 'small commercial' projects at the larger end of this spectrum and 'micro' projects (below 11 kilowatts). As we set out in section 5, the economics across different scales of projects vary considerably.

The small-scale sector though, is changing fast – and increasingly including new and innovative technologies. Electric vehicles, low-carbon heat technologies, and AI-enabled 'smart' household appliances – as well as other forms of energy storage will all be central to our energy system as it develops further. As we look to decarbonise the heat sector, solar thermal, biomass and heat pumps are technologies we expect to grow in importance.

The principle generation technologies in this space supported by the Feed-in Tariff (FiT) are set out below:

- **Small-scale onshore wind**: Small and medium scale wind turbines can produce enough energy to power an entire community. There are 7,929 accredited small scale onshore wind installations in the UK, providing a cumulative capacity of 731.8MW[5].

[5] https://cfr.ofgem.gov.uk/#/

- **Small-scale hydro power**: From rural landowners to community groups powering their own towns/villages, the FiT supports a wide range of hydro installations. There are 1,189 accredited small scale hydro installations in the UK, providing a cumulative capacity of 222.1MW[6].

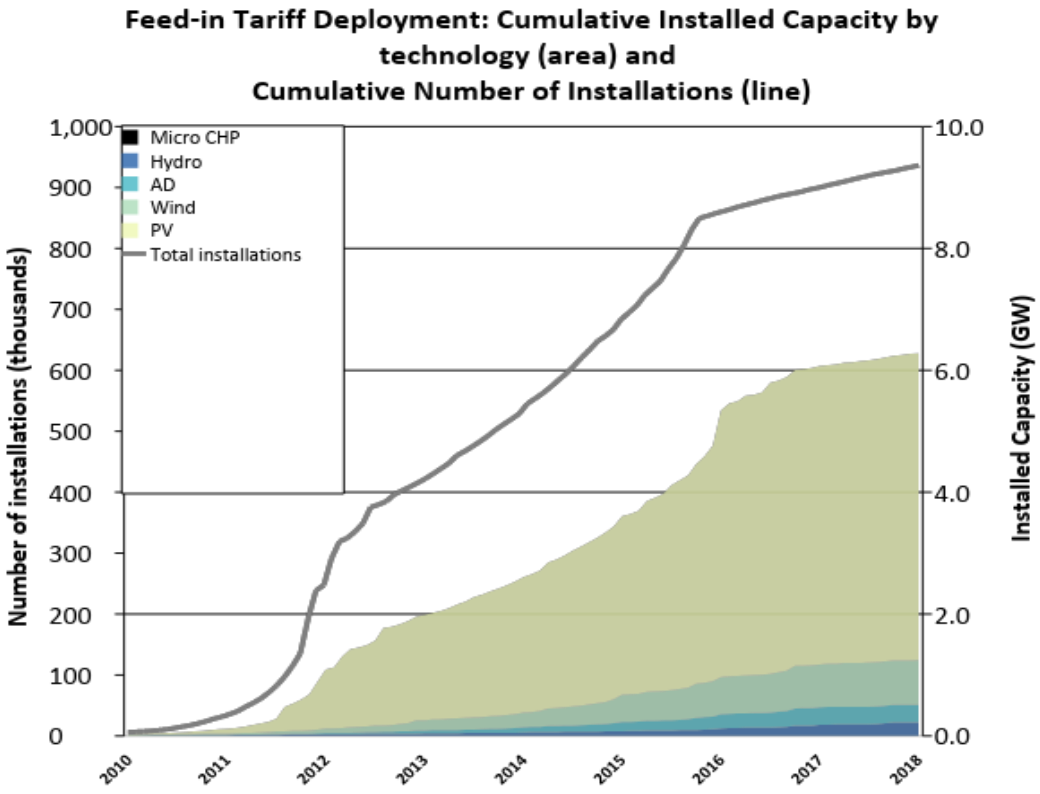
- **Solar PV**: Solar electricity systems, also known as photovoltaics (PV), can range from individual panels on a house, through to large commercial rooftop and solar farms. There are 929,054 FiT accredited PV installations in the UK, providing a cumulative capacity of 5,100.2 MW[7].

- **Anaerobic Digestion**: Biogas produced by anaerobic digestion (AD) of biomass sources can be fed into the gas network, or combusted directly as a way of producing low-carbon power and heat. There are 420 FiT accredited AD installations in the UK, providing a cumulative capacity of 288.8 MW[8].

- **Micro Combined Heat and Power:** Micro combined heat and power (micro-CHP) is a technology which generates heat and electricity simultaneously, from the same energy source, in individual homes or buildings. There are 708 FiT accredited micro-CHP installations in the UK, providing a cumulative capacity of 0.7MW[9].

[6] https://cfr.ofgem.gov.uk/#/
[7] https://cfr.ofgem.gov.uk/#/
[8] https://cfr.ofgem.gov.uk/#/
[9] https://cfr.ofgem.gov.uk/#/

Figure 1: Feed-in Tariff Deployment[10]



Following policy uncertainty around the closure of the FiT and future government support, installations have fallen significantly across these technologies. Since 2015 there has been a 50 per cent reduction in hydro installations, a 90 per cent reduction in small wind and a 97 per cent reduction in commercial solar installations recorded on the FiT register[11]. These rates refer to projects which began prior to policy change from government. There have been almost no new projects commenced, particularly in the wind and hydro sectors[12].

The uptake of new FiT projects since the restructuring of the scheme has been limited. Industry has previously put forward evidence on a number of bandings which we believe

[10] BEIS Monthly feed-in tariff commissioned installations
[11] https://cfr.ofgem.gov.uk/#/
[12] https://cfr.ofgem.gov.uk/#/

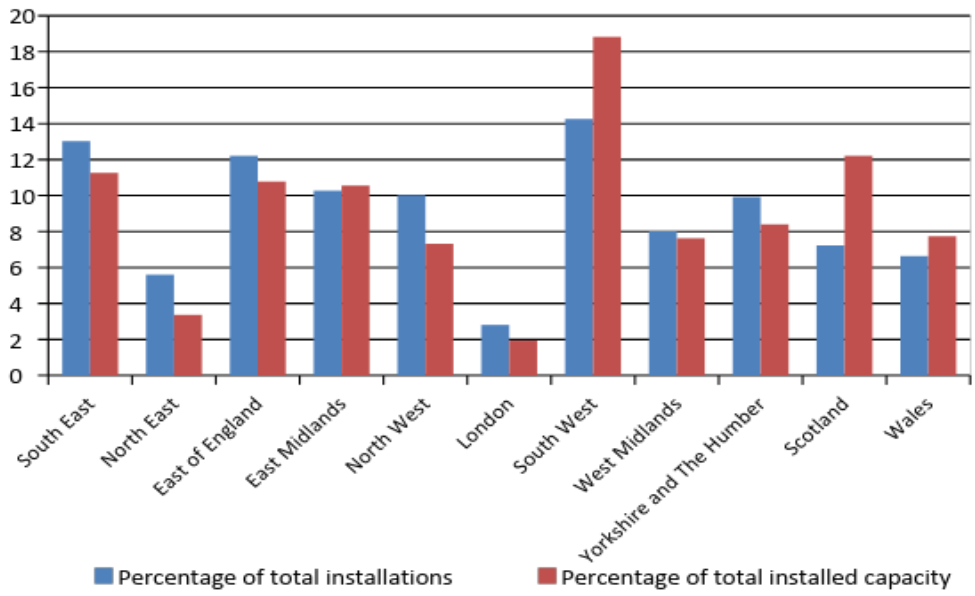
have been incorrectly set[13]. As you will be aware, this has resulted in full budgets of particular technology/scale bandings being spent quickly, while other bandings have seen almost no uptake. This has left the FiT with a level of remaining budget as no capacity has been brought forward in some particular bandings.

1.2 Geographical Impact

Small-scale renewable energy generation has delivered benefits across the length and breadth of the country[14].

We see particular hubs in Scotland, with considerable activity in Glasgow and Edinburgh, and across the Highlands and Islands. Crucially, as illustrated in the below chart from BEIS, small-scale FiT-supported generation – and the local socio-economic benefits accrued from these projects – are often in areas outwith traditional centres of economic activity.

Figure 2: installed capacity[15][16]



[13] https://www.scottishrenewables.com/publications/consultation-changes-feed-tariff-accreditation/
[14] https://www.scottishrenewables.com/publications/industrial-impact-power-scotlands-renewable-sector/
[15] https://www.ofgem.gov.uk/environmental-programmes/fit/contacts-guidance-and-resources/public-reports-and-data-fit/feed-tariffs-quarterly-statistics
[16] BEIS Feed in Tariffs: Quarterly Statistics

1.3 Stakeholders

Several diverse groups of stakeholders have demonstrated a keen interest in supporting and developing small-scale renewable energy projects. These include:

- ***Householders, consumers and bill payers***: primarily installing rooftop solar PV while supported by the FiT, but also installing renewable heating systems.
- ***Businesses***: Energy intensive industrial sites, such as manufacturing facilities have installed renewables such as rooftop solar PV. Farms and estates have boosted their income and gained control of their energy supplies through installing small wind and hydro schemes, as well as anaerobic digestion facilities and solar PV.
- ***Community groups***: Communities up and down the country have regenerated their economies and built their local communities through the utilisation of local renewable energy assets[17]. Thanks in part to the support for projects under the FiT, Scotland has become a world leader in developing innovative local energy systems[18].
- ***Local authorities***: Renewable energy installations have been supported across local authority assets and the public estate, including rooftop solar PV and small wind in schools[19][20].
- ***Renewable energy developers***: A variety of businesses are involved in the development and operation of small-scale renewable energy projects. A range of organisations are involved in the development including consultants, professional services (legal, finance), technology developers/manufacturers, project developers, and installers.

[17] http://www.communityenergyscotland.org.uk/projects.asp
https://www.localenergy.scot/who-we-are/
[18] https://www.carbontrust.com/media/671519/scotland-innovation-potential.pdf
[19] https://www.bedford.gov.uk/pdf/DECC_Solar_on_schools_factsheet_April2014.pdf
[20] https://www.solar-trade.org.uk/about/leading-lights/

2) Supporting a smart, flexible and decentralised low-carbon energy system

(Answering questions 2, 3, and 20)

This section provides evidence on the role of small-scale renewables generation in facilitating the transition to our future energy system.

2.1 Smart Systems and Flexibility: the role of small-scale decentralised renewable generation

Scottish Renewables is supportive of the Government's recently published Clean Growth Strategy which identified the delivery of clean, smart, flexible power as a key growth sector for the economy[21]. It is well recognised that the development of new smart infrastructure itself will deliver economic benefits across the UK, with an estimated potential of £13 billion of Gross Value Added, £5 billion of potential exports to 2050 and 8,000 – 9,000 jobs over the 2020s and 2030s associated with creating smart grids[22].

Similar analysis by Imperial College for the National Infrastructure Commission has shown that a smart energy system could save businesses and households up to £8 billion per annum by 2030[23].

Driven by embedded small-scale renewable generation, the decentralised low-carbon power sector is leading a fundamental transition in the UK power system and contributing to the UK's journey to maximise its position as a leader in clean growth. Our grid networks – particularly at a distribution level- are developing into dynamic local systems of small-scale decentralised energy assets, supported by a portfolio of larger assets.
The development of this system will hinge upon a varied fleet of local renewable energy resources, able to nimbly respond to dynamic networks and market signals, be accessible to consumers and able to create and integrate into local energy systems.

Small-scale renewable generation coupled with other technologies will offer local balancing solutions, actively contributing to the resiliency of the system, and offering a series of benefits to consumers and businesses across the country including cheaper, clean energy

[21] https://www.gov.uk/government/publications/clean-growth-strategy
[22] https://www.renewableuk.com/news/371075/Unprecedented-energy-industry-alliance-unites-to-drive-new-era-of-smart-energy.htm
[23] https://www.gov.uk/government/publications/smart-power-a-national-infrastructure-commission-report

supplies, health benefits through warm homes and improved air quality, avoided costs of network reinforcement being passed to consumers as well as a variety of stakeholders having greater autonomy in their energy use and supply. We expect to see an operational model emerge where energy is not bought and sold as a commodity, but as a data-driven service.

It is crucial though, that Government appreciates that while we are on the cusp of this system – it is not here now.

Community and domestic-scale storage and generation assets will be pivotal to developing this system, particularly as we look to balance increased electric vehicle charging and anticipate a further electrification of heat. Businesses require an incentive to invest in generation assets, innovative systems and innovative business models. Under the current policy framework no such incentive exists.

Also underlying this transition are changes across our network regulatory system, to develop a smart network with a usage framework that works for consumers. Several ongoing programmes are underway to facilitate this change – all with completion dates in the early-mid 2020s[24].

It is well recognised that as our energy system evolves, local networks and balancing markets will develop. In July 2017 BEIS and Ofgem published a Smart Systems and Flexibility Plan[25], setting out actions for government to undertake to enable this transition to a fit-for purpose energy system.

A key action set out in the plan is that "synergies between a smart energy system and future government policy on small-scale low-carbon generation should be realised" with the commitment that "in developing future policy on small-scale low-carbon generation, the Government will look to ensure the system and consumer benefits of storing electricity for self-consumption and export to the grid at peak times are realised".

In the absence of local market structures for the time being, and with small-scale renewable generation lacking a route to market, this government ambition will not be realised.

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[24] https://www.ofgem.gov.uk/publications-and-updates/charging-futures-forum and http://www.energynetworks.org/electricity/futures/open-networks-project/

[25] https://www.ofgem.gov.uk/system/files/docs/2017/07/upgrading_our_energy_system_-_smart_systems_and_flexibility_plan.pdf

In our view, without government intervention to support this sector, projects and deployment pipelines will stall, businesses will not be incentivised to develop innovative technologies and businesses models, while consumers and businesses will become disengaged in the market – all threatening our transition towards a smart and flexible energy system.

The proposal to remove the export tariff is of particular concern. We believe that the removal of this tariff will slow down the development of new energy assets, business services and business models, slowing the transition to a smart-service –led energy system. We set out further detail on the export tariff in section 8 of this response.

We believe that the absence of this tariff would remove the incentive for businesses to explore new opportunities and continue investing in vital infrastructure. For example, we have seen the emergence of some interesting 'electric vehicle to grid' business models, which have worked in conjunction with solar PV and the export tariff[26]. Ultimately, this disincentive for businesses will serve to lower consumer and business choice in the market.

It is therefore our position that government should:

- **Maintain and act upon commitments to ensure self-consumption and export are realised, as set out in the Smart Systems and Flexibility Plan through a continuation of the export tariff until new flexibility markets are realised and commercially viable.**
- **See our full ask on the export tariff in section 8.**

[26] https://www.ovoenergy.com/guides/electric-cars/vehicle-to-grid-technology.html

2.2 Case Studies

Case study 1: Smart Fintry

The SMART Fintry project is a local energy scheme linking local demand to a range of local small-scale renewable generators, including wind, solar PV and anaerobic digestion, through the creation of a local energy tariff.

The project hinges on the installation of smart meters by residents, to enable effective forecasting of local demand against the generation portfolio and allow for local system balancing to take place.

[27]

Case study 2: Smart Island Energy Systems

The SMILE project based in Orkney fosters collaboration with technical, grid and academic partners across Europe to tackle challenges raised by renewable energy and electric transport. Increasing electricity demand through the transport network has been an innovative way to help overcome grid constraints. This project seeks to build on this through considering the integration of battery technology, electric power to heat, and electricity stored aboard boats.

[28]

Case study 3: Innovating with small-scale sites

Not just in technology, but in business models, can small-scale projects act as a test-bed for innovation that can be adopted for larger projects across the energy system to deliver savings to consumers.

With the right support in place, small and large operators alike can pursue innovative projects in a lower-risk environment than with a large-scale site. Ripple Energy, a newly formed company developing renewable energy assets with co-ownership models, is a good example of a company doing just that.

[29]

[27] https://www.goodenergy.co.uk/blog/2017/04/26/smart-fintry-one-year-on/
[28] http://www.communityenergyscotland.org.uk/smile.asp
[29] https://www.rippleenergy.com/

2.3 Smart Living and Smart Cities

Globally, we are on the cusp of a 'smart living' revolution – where our homes and the places we live look dramatically different from those of today. Already in some areas of Scotland forward-thinking local authorities are creating 'carbon positive developments' – with low-carbon living at the centre of creating economic, health and social wellbeing[30].

How we power and heat our communities is changing rapidly – driven not just by the climate imperative and the desire to build sustainable communities, but through incentives and market signals such as government commitments on electric vehicles.

Smart households and cities will draw on a number of technologies and technology innovations, empowering consumers and delivering low-cost energy.

Four technologies lie at the nexus of this transition: household storage, smart-infrastructure (meters and AI-enabled appliances), electric vehicles, and small-scale generation.

Be it the pairing of household rooftop solar PV and battery storage units, or a community wind turbine or hydro asset, linked to a local EV charging network – combinations of technologies such as these will work to reduce fuel poverty, engage consumers in the energy market, generate local revenue streams (including for resource constrained local authorities) and encourage business investment and growth – boosting productivity. Small-scale renewable energy generation is critical to unlocking this transformation.

While this shift offers a number of opportunities it is important to remember that market structures to enable this transition have not yet matured. While by the mid-late 2020s we would expect some of these new business models to have emerged, the market for these structures remains in its infancy.

We would therefore ask government to consider a range of incentives to enable the full transition towards smart living/smart cities, and enablers to help ensure that small-scale renewable generation is able to support this transition.

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30 http://www.edinburgh.gov.uk/info/20206/sustainable_development_and_fairtrade/910/climate_change/1

Government should consider:

- **Setting minimum standards in building regulations to ensure enabling technologies are embedded into new-build infrastructure as quickly as possible**
- **Facilitating the roll out of next generation smart meters.**
- **Ensure there is no policy gap in support for small-scale low-carbon generation (see further recommendations in section 8).**

2.4 Businesses – low carbon energy management

Small-scale renewable energy installations offer businesses in both urban and rural environments the opportunity to take control of their energy supply, upgrade their assets and improve their productivity. Along with individual businesses gaining green credentials, renewables integrated to businesses provide valuable certainty over energy costs and can boost competitiveness – outcomes that are in line with the government's aim of saving £6bn in energy costs set out in the Industrial Strategy.

While a number of businesses have developed onsite assets, a number of hurdles stand in the way of further development:

- **Revenue Certainty**: along with utilising small-scale renewable energy for self-consumption, businesses have taken advantage of the opportunity to sell excess power back to the grid, generating an additional revenue stream. With uncertainty around the closure of the Feed-in Tariff (particularly the export tariff) and what structures may come into place moving forward, the case for businesses to utilise renewables is less clear.
- **Grid availability:** securing a grid connection, particularly for a small business, can be a challenging process. We welcome work across the DNOs to improve access and network connections.
- **Planning:** Navigating the planning system can be challenging for small businesses.
- **Licensing Fees:** Increasing license fees (for example from a 'one off' to an annual payment for small hydro for SEPA CAR License fees)
- **Business rates:** Increases to (Non Domestic) rates for small-scale renewables, particularly around self-consumption have jeopardised the economic viability of using renewable energy assets in this environment. There is a particular challenge around self-consumption on site, which we would encourage both the UK and Scottish government to review.

In our view, to maximise the benefit that small-scale renewables can bring to businesses, the market ought to be incentivised through the following:

- **Permitted Development Rights in Scotland should be amended to 1MW to create consistency with the rest of the UK and encourage businesses to develop onsite solutions for their energy needs. In addition to Permitted Development Rights, we would suggest government implements a presumption in favour of renewable development in areas where adjoining businesses/communities are able to develop projects and create local energy systems.**
- **Business Rates relief should be granted for small-scale renewables and onsite consumption until a more suitable ratings method is determined through a wider review.**
- **Government should create an incentive scheme for businesses to install onsite renewable energy assets (including but not limited to grant funding). Where the installation of an onsite asset on a commercial site opens up the opportunity for a local energy system to develop, we would encourage government to fund strategic pieces of infrastructure, such as network reinforcement.**
- **To ensure commercial entities can also support electric vehicle uptake, we would encourage government to set criteria to ensure businesses of a certain scale provide renewable-powered electric vehicle charging points.**

2.5 Co-located sites

It is well understood that co-located sites, bringing together multiple technologies with renewable generation could a range of opportunities. Co-locating a renewable resource such as wind or solar with a battery system can, for example, help with grid balancing, help overcome grid constraints, and assist in provision of ancillary services.

However, while there is appetite from industry to pursue these types of projects it is important to note that there are a number of barriers to their delivery including:

- **Economic viability**: the addition of new technology, such as battery storage is not a ‘quick fix’ for all small-scale renewable energy sites. Co-locating small wind and hydro

with battery storage is not currently a viable option in the proposed absence of an export tariff. In nearly all circumstances – both in front of and behind the meter, the addition of a secondary technology increases CAPEX to a point where returns are unviable. In the case of hydropower, for example, the volumes of power schemes generate would mean a very large – and costly – battery system would be required. The CAPEX involved would outweigh any economic advantage to installation. While grant funding for battery installation may ease financial pressures on businesses, in itself that would only go some way to stimulating a long-term market). Our understanding is that capital costs would need to reduce by around 50 per cent for project economics to be viable. We expect this to take several years and to be directly linked to the level of uptake.

- **Cash flow implications**: Even where the benefit to creating a multi-asset site does outweigh the CAPEX cost, for small businesses with more fragile revenue streams, this is not always attainable due to cash flow implications.
- **Ofgem guidance:** Final and definitive guidance from Ofgem on co-location is still pending, network charging arrangements are under review (Targeted Charging Review, Charging Futures), ancillary services are under review by the System Operator, and the DSO transition is being considered (Open Networks Project). These factors all impact the business case for co-location and the current lack of certainty creates high risk with respect to potential revenue streams and costs for deployment. This is especially true for small and medium wind generation which do not benefit from the economies of scale and size which larger projects do.
- **Consenting hurdles:** Planning and consenting hurdles remain problematic for co-located projects. Ensuring market-reflective decommissioning bonds continues to be a challenge.
- **Land rights and wayleaves**: For both additional installations and considerations such as grid connections points, securing land rights and wayleaves can be problematic and time consuming.
- **PPAs:** Existing PPA agreements may need to be renegotiated for co-located sites. PPAs for private wire projects are also challenging, and usually too costly for the sector. Regulatory challenges make PPA negotiation for co-located projects difficult too – for example, Ofgem's definition of battery storage.
- **Unclear revenue streams:** Revenue streams from co-location/ancillary service markets are unclear due to the infancy of technologies and a DSO-driven market. There have been instances of revenue streams being subject to change, such as triad avoidance payments relating to residual TNUoS charges (payments reducing from £47/KW to

between £3 and £7/KW), known as embedded benefit[31]. Where revenue is uncertain, banks and other lenders in the market either increase their costs or become inactive. Reduced availability of finance hampers development.

- **Grid connection**: Options to connect to the network, and under which type of connection, will depend on the output profiles and the commercial use cases for the co-located site. Separate connections may be required, which can result in significant costs (which again, may outweigh the benefits).
- **Financing:** Given the market for co-located sites is relatively immature, debt financing remains novel. Risks and costs of finance structures may prevent certain co-located projects from progressing[32].

In order to facilitate the smart systems transition, we would encourage government to support industry in developing co-located projects until the flexibility market has developed and costs reduced to a point where the business case is economically viable.

We believe government should:

- **Provide grant support for installation – to lower CAPEX costs for projects and help encourage deployment, reducing costs.**
- **Commit to ensure regulatory change to level the playing field for co-located developments.**
- **Commit to work with the regulator and industry to develop future market opportunities.**

2.6 The role of smart tariffs and half hourly metering

Many of the new business models that will offer small-scale renewable generation a route to market will hinge upon the successful development of smart tariffs, time of use tariffs and technology/regulatory advancements such as half hourly metering.

[31] https://www.ofgem.gov.uk/publications-and-updates/ofgem-decides-lower-payments-embedded-generators-protect-customers

[32] https://cms.law/en/GBR/Publication/Storage-and-Renewables-The-next-frontier

2.7 Ancillary services markets and the DSO transition

We understand that the transition towards a DSO-led network system and market may open up potential revenue streams for small-scale renewable generators.

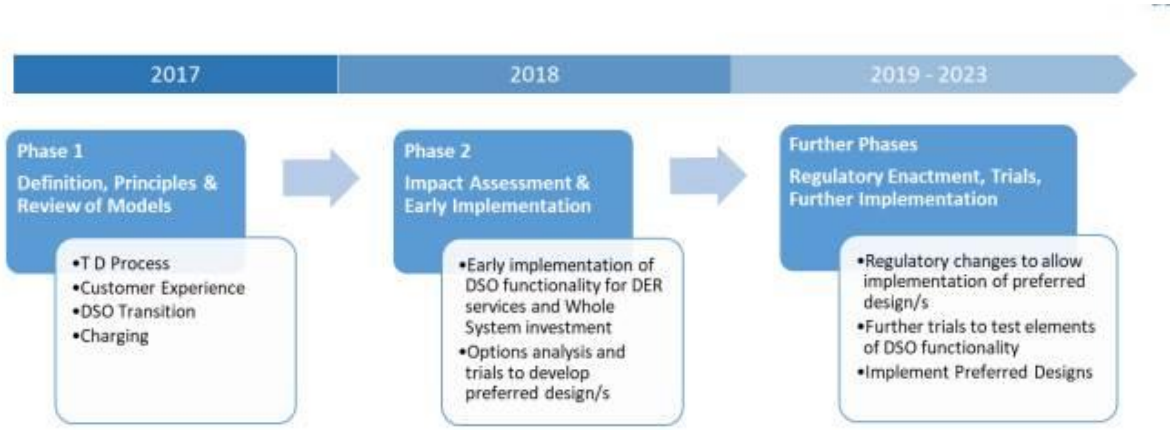
Various technologies are well-equipped to offer a range of grid services, such as voltage and frequency control. However, we stress that at this stage the full realisation of these flexibility markets remains ambition not reality. A full set of flexibility markets, likely to emerge through the DSO transition, are not currently in operation and may be some years away. There are a number of barriers preventing renewable assets, across scales, to compete fairly.

For example, currently wind energy converters are capable of offering, *inter alia*, frequency response, synthetic inertia, reactive power and voltage control, fault ride through and asymmetrical current injection. There are a variety of wind farm control and interface options. Most of these capabilities are standard or readily available, yet generators cannot capture the full value of these not only because ancillary services specifications cannot accommodate such provision, but often because the network connection requirements do not allow for this use case.

The Open Networks project, driving forward several aspects of this transition, is currently consulting on five potential models for future industry structures[33]. This is a major initiative which we expect to determine several aspects of the future operating landscape for distribution connected generation. While this project is moving rapidly, given the scale of the change it is considering, we do not expect it to conclude until 2023. While markets will develop to a degree as this project progresses, the scale of the project serves to underline the scale of transition required.

[33] http://www.energynetworks.org/electricity/futures/open-networks-project/future-worlds/future-worlds-consultation.html

Figure 3, Phases of the Open Networks Project[34]



National Grid's System Needs and Product Strategy (SNAPs) review[35][36] was a welcome recognition of the need to reform the ancillary service markets to enable the transition to a smart, flexible energy system. While some reform has been announced, there remains a lack of clarity as to the overall future of the balancing services landscape, and some market proposals remain at the trial stage or have yet to be fully determined.

We similarly welcome reviews of services such as the Capacity Market and Black Start provision.

It is our view that given the maturity of ancillary services markets, barriers to entry of existing markets, market value and the economics of small-scale renewables development (see section 5), active market participation would not be a substitute for long-term route to market support from government.

Our members have highlighted a number of general issues around building sustainable revenue streams based on ancillary service markets. These include:

- A lack of visibility over procurement rounds
- Short term contracts (1-2 years) against long term asset payback

[34] http://www.energynetworks.org/electricity/futures/open-networks-project/
[35] https://www.nationalgrid.com/uk/electricity/balancing-services/future-balancing-services
[36] https://www.scottishrenewables.com/publications/consultation-response-SNAPS/

- A lack of an appropriate mix of long and short term contracts
- Contracts are competitively bid with bidding rounds oversubscribed, pushing prices down to a point where returns are marginal
- Lack of clarity over the ability to 'stack' services versus service requirements
- Lack of visibility over what communications infrastructure is required onsite to enable market participation
- Cost of finance when revenue streams are to be based on revenue stacking

Asks of government:

- **To realise government ambitions around a smart, flexible energy system, government must recognise that small-scale renewables need to be supported until new flexibility markets have fully emerged. See our full recommendations in section 8.**
- **We would encourage government to ensure that programmes considering the future of the electricity network actively consider small-scale renewable generation, and that their processes and outputs are timely, transparent and in line with wider government ambitions surrounding clean growth, smart energy systems and industrial development.**

3) Supporting the rural economy

Along with generating electricity and playing a fundamental role in driving our transition to a smart-flexible energy system, small-scale renewable generation has played a crucial role in supporting rural and peripheral economies.

3.1 Hydropower and the rural economy

Hydropower has an intrinsic connection to its geography. The technology itself requires a particular topography and the history of hydro development has been driven by figures such as Tom Johnstone and his campaign to use hydro schemes to develop highland areas of Scotland[37].

[37] http://sse.com/media/87078/powerfromtheglens.pdf

Those same benefits are evident today. One of Scotland's main national parks, Loch Lomond and the Trossachs hosts 35 Feed-in Tariff scale hydro projects – as well as Scotland's second most powerful station, Sloy[38] - taking advantage of the natural geographical advantages.

These schemes are helping residents generate secure, sustainable, clean power and projects supported by the Feed-in Tariff provide the park authority with a valuable source of revenue, helping them invest in other assets across the national park.

Hydro schemes, large or small, bring employment to rural areas and contribute to the development of local infrastructure, such as roads and the wider electricity grid network[39].

The schemes themselves have an expected lifespan of 50-100 years, meaning the benefits they bring are sustained over the long term.

From Arrochar to Aberdeen, communities have embraced the possibilities that hydro schemes create. Callander Community Development Trust, is one of many to have capitalised on this, installing a 425kW scheme, which is community owned. The project, supported by the Feed-in Tariff aims to provide income to support a range of community projects. Over the 20 year timeframe the project is expected to generate up to £2.85 million for the community. The project also received start up grant funding from the Scottish Government's Community and Renewable Energy Schemes (CARES)[40].

[38] http://sse.com/whatwedo/ourprojectsandassets/renewables/Sloy/
[39] There is an unfortunate lack of ONS data on employment in the hydro sector, as it has not been reported latterly. We are in active discussions with Scottish Government and the ONS as to how to improve reporting so we can better measure the jobs that this sector delivers.
[40] https://www.localenergy.scot/media/74986/callander-case-study.pdf

Case Study: Nevis Range Hydro
Nevis Range 1.1MW Hydro Scheme has onsite usage for the gondola and base station, exporting excess generation to the grid. This project was developed to ensure a sustainable future for Nevis Range Mountain Resort. Supported by FiT, because of the complex nature of the development and the construction techniques required, local support from contractors, ecologists and other key personnel from around the local area, were utilised throughout the construction process. Given the remote location, and the challenging terrain, the CAPEX costs were significant and without FiT support the development would not have been possible.

[41]

Without some level of government support, hydro projects will no longer be viable moving forward (see section B5 on project economics). To allow for continued development we recommend government:

It is our position that government should

- **Recognise the longevity of hydro through supporting CAPEX cost reduction. This could be achieved through issuing loans for equipment to be paid off over longer timescales more in line with the lifetime of the asset.**
- **Utilise national and green banking structures to help reduce the cost of finance for projects.**

3.2 Rural businesses

A variety of rural business have utilised small-scale renewable energy generation to take control of their energy supplies and create additional revenue from selling excess generation.

Farming is a particular example of a sector that has recognised the value that integrating renewable energy into business operations can bring.

The National Farmers Union notes that this diversification, where it offers stable and predictable returns "makes our agricultural businesses more resilient, with a broader portfolio

[41] https://www.nevisrange.co.uk/hydro-completion-ceremony/

of enterprises for the next generation of farmers"[42]. As the agricultural policy landscape changes, the business sustainability and diversification that renewables allow will only increase in importance.

Across solar, small wind, AD and other technologies, it is our understanding that the economics of these technologies will mean that even on site usage is unlikely to be viable going forward.

Case Study: Farming and Renewables

Scottish Renewables' member organisation Green Cat Renewables worked with a client to install renewable energy assets on a farm in Scotland.

Farm buildings, machinery and houses were all supplied by onsite renewable electricity from a small number of 0.5MW turbines.

The income generated from these turbines has enabled the farmer to expand the farm egg business and become more self-sustaining.

As a result the farmer has been able to install a private electricity network – overcoming local grid constraints. Ground source heat pumps have been installed to provide heat to the farmer's hen sheds, which use electricity supplied by the wind turbines and some solar PV.

The farmer envisages a switch to electric or hydrogen farm vehicles in the next couple of years, and there is scope for further generation capacity within the farm's network. It is the overall goal to produce a carbon-free free-range egg, which are not currently available in the UK market.

Furthermore, prior to erecting the 1st turbines in 2014, the farmer employed 12 staff. As a result of these small-scale low carbon projects, the farmer now has 30 staff on the pay roll.

42 https://www.google.co.uk/search?q=National+Farmers+union+makes+our+agricultural+businesses+more+resilient%2C+with+a+broader+portfolio+of+enterprises+for+the+next+generation+of+farmers&rlz=1C1GGRV_enGB751GB751&oq=National+Farmers+union+makes+our+agricultural+businesses+more+resilient%2C+with+a+broader+portfolio+of+enterprises+for+the+next+generation+of+farmers&aqs=chrome..69i57j0l5.4647j0j4&sourceid=chrome&ie=UTF-8

4) Infrastructure Building with small-scale renewable generation

The UK's Industrial Strategy recognises the benefits that delivering a renewables-based smart and flexible energy system can delivery. The roll-out of a fleet of small-scale renewable generation assets has the additional benefit of contributing to wider national infrastructure priorities. This section sets out the role of the small-scale renewables sector in delivering government's objectives on housing, transport and electricity networks.

4.1 Housing

Developing adequate housing provision in the UK is a current challenge for government, and we have supported government's ambition surrounding smart homes as part of the Smart Systems and Flexibility Plan[43].

We see considerable opportunity for consumers and householders to benefit from generation of renewables and participation in local energy markets - and a national stock of smart houses will be a fundamental part of this. As mentioned previously, already in some areas of Scotland forward-thinking local authorities are creating 'carbon positive developments' – with low-carbon living at the centre of creating economic, health and social wellbeing.

As is set out in section 2.3 of this response, small-scale renewable generation will be a key part of developing smart homes across the UK.

In 2017, Government noted that the Plan, including "rolling out smart meters, enabling suppliers to offer lower tariffs and making it easier for firms to develop smart appliances and gadgets" would "help consumers use energy when it is cheapest or get rewarded for returning it to the grid when it is needed".

4.2 Transport

The interface between small-scale renewable generation and our transport system is growing in importance.

As we look to increase deployment of electric vehicles in line with government targets[4445] small-scale renewable generation (particularly at a household or community scale) coupled

[43] https://www.gov.uk/government/publications/upgrading-our-energy-system-smart-systems-and-flexibility-plan
[44] https://www.gov.scot/Publications/2018/02/8867/12

with a storage, could assist with balancing out peaks of demand as consumers look to charge their vehicles.

As local low-carbon energy systems develop, electric vehicles pair well with small-scale renewable resources to balance out peaks in supply and demand. Orkney has long been home to the largest concentration of EVs in the UK – with over 200 at the time of writing. With a surplus of renewable generation and severe grid constraints, EVs have been deployed to best utilise local assets and meet local needs. As early as 2014, Orkney Islands Council had developed a strategy for an electric transport rollout[46].

Orkney is also pioneering another potential interface between renewable generation and our transport network – hydrogen. Excess renewable generation is used to produce hydrogen which is soon to be utilised on a hydrogen-fuelled ferry, a world first[47]. This will in time replace the three million litres of diesel used annual to power the ferry fleet[48].

Small-scale renewables can also play a role in providing local solutions to decarbonising public transport infrastructure. Trials in Aberdeen and Dundee have demonstrated renewable-powered hydrogen busses[49].

Small-scale renewable energy could also be used to power electrified public transport. For example, small wind or solar coupled with a battery would be a natural fit with electric busses which require fast charging at a reasonably large load level.

Utilising renewable energy to decarbonise our transport fleet has the additional benefit of improving air quality in towns and cities – key to meeting a range of Scottish and UK government health objectives[50].

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[45] https://www.gov.uk/government/news/government-launches-road-to-zero-strategy-to-lead-the-world-in-zero-emission-vehicle-technology

[46] http://www.orkney.gov.uk/Files/Transport/Electric/Orkneys_Electric_Vehicle_Infrastructure_Strategy_Accessible.pdf

[47] https://mcphy.com/en/press-releases/hyseas-iii-world-first-renewables-powered-hydrogen-ferry/

[48] https://www.scottishrenewables.com/news/blog-what-we-can-all-learn-orkneys-bold-vision/

[49] https://www.stagecoachbus.com/promos-and-offers/north-scotland/aberdeen-hydrogen-bus-project

[50] https://uk-air.defra.gov.uk/air-pollution/uk-eu-policy-context

4.3 Electricity networks

Our electricity system is undergoing a fundamental period of transformation; moving away from a network designed to accommodate large-scale centralised plant close to demand. As small-scale, decentralised generation has developed it has helped reinforce our electricity networks out to peripheral regions.

Much of this network growth is directly financed by renewable energy generators, who pay for network upgrades to enable a connection.

The considerable growth in distributed generation has also led to transmission network reinforcements across the network.

Small-scale renewable generation plays a key role in national infrastructure provision. We believe government could better recognise this through the following:

- **The value of small-scale decentralised energy projects to building rural economies is not recognised in the call for evidence. We would encourage government to recognise the value these benefits and work with industry to set out a vision for the rural energy landscape.**
- **Hydropower in particular is valuable asset type, given the longevity of schemes. We would welcome the opportunity to work with government to consider secure future development of this asset type.**
- **We believe government should better incentivise rural businesses to adopt renewable energy assets.**
- **The contribution small-scale renewable energy development makes to larger infrastructure projects is not well recognised. Project economics could be significantly improved if infrastructure elements were funded differently . We are aware that different models exist for this overseas, either taking these elements of projects out of project finance costs (funding them through national infrastructure funds) or through a series of loans to aid cash flow issues around high CAPEX. We would actively encourage government to engage with industry and consider whether creating a model like this would be viable.**
- **Building Standards should be utilised to encourage the integration of small-scale renewables and smart technologies into areas such as new-build homes**
- **A continuation of the export tariff is crucial if consumers are to adopt smart household technologies and become better engaged with energy markets.**

Challenges facing the small-scale renewable energy sector

(Answering questions 1, 3, 4, 5, 6 and 9)

While the small-scale renewable energy sector will underpin the energy transition we seek, delivering benefits to consumers both in cities and rural economies, this sections focuses on the challenges currently facing that sector. We make the case that short-term government support is necessary to ensure the sector is in a position to help secure benefits of a modernised energy system, and helps meet government objectives.

5) Economics of small-scale development

Here we set out the economic circumstances under which small-scale renewable energy projects are operating.

5.1 High level principles of differences between large and small projects

The economics of renewable energy projects are driven by a number of diverse factors, including resource and site locations, supply chain efficiencies and external costs (such as those for planning applications and access to energy networks).

Large-scale renewable energy projects, particularly across onshore wind, offshore wind and solar PV, have shown remarkable cost reduction in recent years – leading to onshore wind being the cheapest form of new generation in the UK. Large-scale onshore wind is now expected to deliver a net payback to consumers with the right policy framework[51], projects from the last offshore wind auctions cleared as low as £57.50/MWh[52], and solar costs have fallen by 70 per cent in recent years[53]. These cost reductions have been driven by a number of factors including economies of size (i.e. utilising larger turbines for maximum efficiencies), economies of scale (driving down supply chain costs), technological advancements, and targeted, collaborative cost reduction programmes, such as the Offshore Wind Cost Reduction Task Force[54] which brought together industry, government and The Crown Estate to enable the UK to unlock the full potential of the UK's offshore wind resources.

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[51] https://bvgassociates.com/the-power-of-onshore-wind/
[52] https://www.windpoweroffshore.com/article/1444146/uk-offshore-falls-5750-latest-cfd-round
[53] https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2018/Jan/IRENA_2017_Power_Costs_2018.pdf
[54] https://www.gov.uk/government/groups/offshore-wind-cost-reduction-task-force

As we set out below, the economics for small-scale technologies are very different, and sites operating at these scales are unable to capitalise on the set of cost-reduction factors that larger projects have been able to utilise.

5.2 Small wind

It is our understanding that small wind is not viable on a subsidy-free basis at this time. Subsidy-free deployment would be dependent on improvements to onsite use economics, new markets emerging and reductions across CAPEX, OPEX and improvements to both access and costs of using the network. With FiT degression, very limited volumes under some deployment caps, and uncertainty over the future of the scheme, there is virtually no route to market for small wind in the UK.

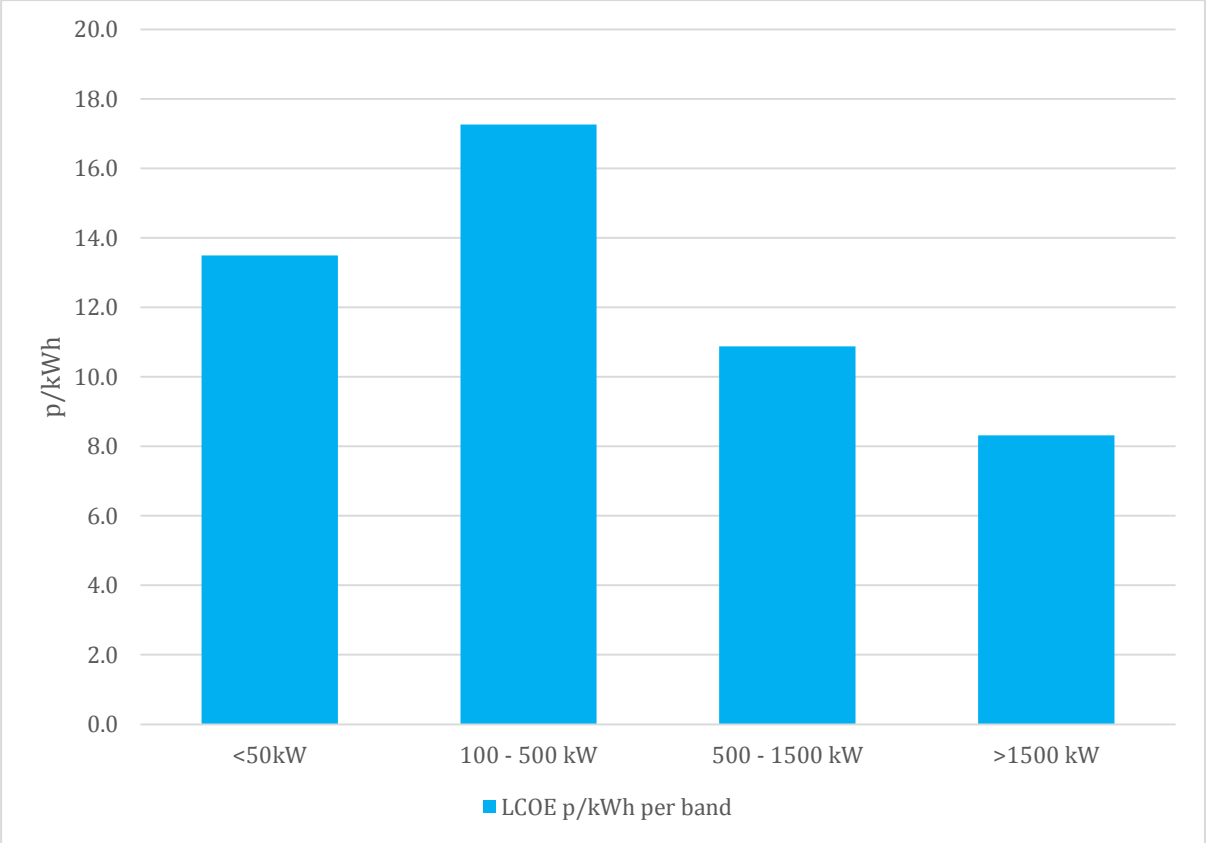
Capacity requirement for development

We understand that businesses operating in the small wind sector have had to diversify or reduce staffing levels to sustain operations due to the severe reduction of small-scale wind build out. To maintain even reduced staffing levels, our members estimate they would need to deploy 20-30MW of small wind annually.

LCOE

Scottish Renewables and RenewableUK analysed data provided by members for costs for small and medium wind projects currently being developed. Figure 3 shows our understanding of the required costs of energy on these projects to recover their investment over 10 years, assuming a 3 per cent cost of capital. This is conservative and actual costs of capital, as well as a requirement to make a return on investment may drive required prices higher. As with most developments, in some specific cases lower prices may be able to be achieved.

Figure 4: LCOE for a return on wind investment over 10 years, 3% cost of capital.



As is evident, even for the largest projects, required prices are well above the wholesale price of energy. Smaller projects will struggle to be competitive in retail markets. We do not expect these projects to be developed without some form of route to market support.

Jobs

On average, due to changes in the operational and policy landscape for the sector, Scottish Renewables members involved in small-scale onshore wind that responded to our survey reported on average a 52 per cent reduction in jobs between 2015 and 2018.

Supply chain

Market stagnation is causing damage to the wider supply chain. One of our members reported an 85 per cent drop in supply chain spend from 2015 to 2018, across areas such as electrical contractors, construction project management, ecologists and technical specialists. Consultancies within the Scottish Renewables membership report shrinking areas of their businesses and competing in a smaller field of consultants for fewer projects.

5.3 Hydropower

Hydro projects have a very unique set of project economics. Hydro infrastructure is designed to last for 50-100 years, while the turbines themselves generally last for 30-40 years if well maintained. The vast majority of these costs are upfront CAPEX costs which have to be balanced against relatively short terms of project finance and revenue support mechanisms lasting around only a quarter of this time. Again, we do not see small hydro as being competitive on a merchant basis at this time. The sector has already stagnated due to degression and uncertainty over the future of the FiT, and without the continuation of revenue support mechanisms or access to new markets we see very limited prospects for future development in the UK.

Capacity Requirement for development

From a survey of our members with interests in hydropower development, we understand that for businesses to maintain an active interest in hydro they would need to be developing around two schemes per year. We estimate UK deployment therefore would be around twenty schemes, with a cumulative capacity of around 100MW.

Jobs

On average, our members surveyed reported a 75 per cent decrease in their employees working to develop hydro projects since 2015.

Supply chain

The stall in hydro development since 2015 has had considerable impact on the supply chain. One member reports spend on suppliers and sub-contractors at over £3m in 2015. In 2018, this was nil. This is due to the lack of development.

5.4 Solar

Some scales of solar development are close to cost neutral operation, however the sector – along with the others – is not operating on a level playing field with other energy assets on the system. We have seen a considerable slow-down in solar deployment since FiT degression, particularly for rooftop PV. This is effectively disincentivising households in particular from investing in PV and from engaging in new flexibility markets as they emerge.

Capacity requirement for development

Data gathered from our members with an active interest in solar development shows that to maintain active business interests in solar, annual UK wide installations of 75MW-2GW per year would be required.

Jobs

On average, our members surveyed reported a 70 per cent decrease in their employees working to develop solar projects from 2015-2018 as a result of policy change and uncertainty.

5.5 The UK Market

A series of policy changes and unfavourable systems (across grid, planning and taxation – outlined in this response) have positioned the UK as a less favourable market for small-scale renewable energy investment. The EY Renewable Energy Attractiveness Index shows a clear fall in inward investment across the whole sector (though thanks to a favourable climate in areas such as Offshore Wind the UK as a whole still ranks well)[55] while the Environmental Audit Committee has noted an 'alarming' collapse in clean energy investment in the UK[56].

Across the small-scale sector, we and our members, report an expected decline in the UK market for small-scale development under the current policy framework. The above figures from a survey of our members demonstrate that the sector is already contracting. While the UK has exceptional renewable resources, the wider policy landscape, compounded by

[55] https://www.ey.com/gl/en/industries/power---utilities/renewable-energy-country-attractiveness-index

[56] https://www.parliament.uk/business/committees/committees-a-z/commons-select/environmental-audit-committee/news-parliament-2017/green-finance-government-response-publication-17-19/

regulatory challenges, is clearly reducing UK competitiveness – going against government objectives both in terms of Clean Growth and Industrial Strategy.

A survey of our members revealed that several organisations plan to increase operations in markets such as France, Spain, Greece and Canada – which are widely regarded to have a more supportive and steady policy framework than the UK.

Our members report that hydropower has seen a boom and bust sector emerge in the UK compared to more uniform deployment elsewhere, that the business case for onsite solar and wind generation is marginal, and that the market is not competitive with other areas in Europe.

We understand that while hydropower costs have reportedly fallen in other emerging markets, this has mostly been driven by low-cost labour: a direction of travel not in accordance with UK law or with the sector's commitment to developing a skilled and fairly remunerated workforce.

Solar PV costs have fallen by as much as 70 per cent latterly[57], but our members suggest that expectations of cost reductions being felt in the UK market have been hampered by GBP:EUR exchange rates.

5.6 Uncertainty and the impact on investment

(Answering questions 10, 12, and 21)

Policy uncertainty surrounding the closure of the FiT, coupled with the impact of severe tariff degression has already had a negative impact on the small-scale renewable generation sector.

The impact of policy decisions has already had an enormous impact on the market – creating a boom and bust sector, facing a cliff-edge in support. Without the ability to attract finance and sustain development, the small-scale renewable sector will not be in place to deliver a range of government objectives, including the development of a smart, flexible energy system. A consistent and stable policy landscape is crucial to give certainty and confidence to lenders, investors and developers.

[57] https://www.irena.org/-

It is our understanding that the only visible appetite for investment in small-scale renewable energy projects is where there is an effective behind-the-meter use case – normally with an opportunity for a direct private wire. Onsite use is hugely important in delivering the benefits of small-scale renewables, but it must also be carefully managed. For example, it is important to ensure the visibility of behind the meter installations for network operators. In addition, avoidance of cost recovery charges (network and policy) shouldn't create an incentive for grid defection.

Across the range of small-scale technologies in our energy system, our principal concern is that any policy gap created between the proposed closure of the FiT at the end of March 2019 and the formulation of any new policy support framework results in a hiatus which is too damaging for this sector to withstand.

This would jeopardise government and industry ambition across carbon and energy targets, as well as risk losing the benefits that this sector can deliver to consumers and businesses across the UK.

5.7 Impact on investment

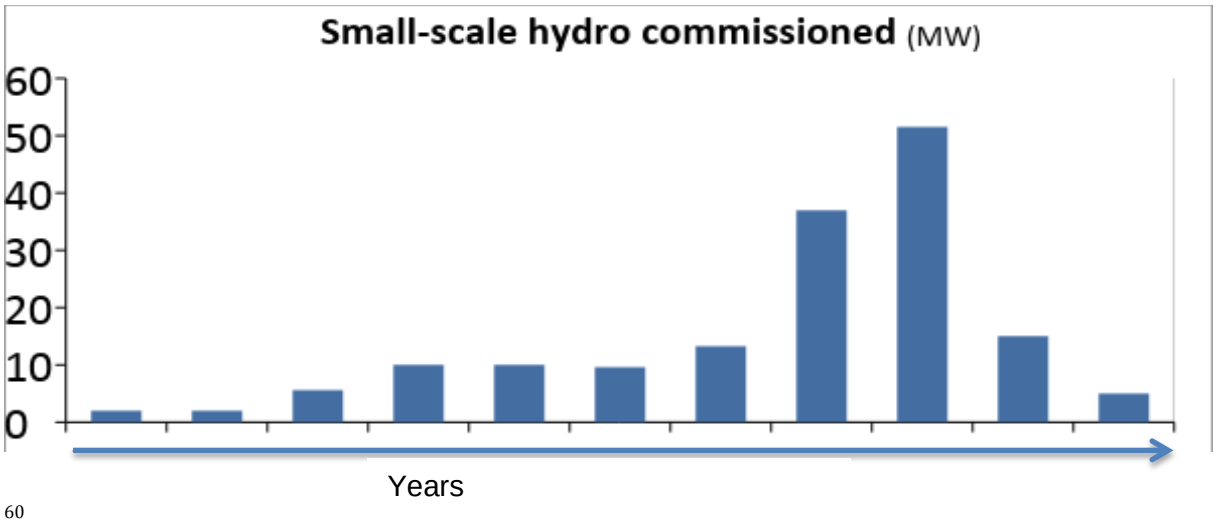
Current uncertainty over the future policy framework for small-scale renewable generators has already led to a stagnation of the sector, with some businesses falling into liquidation.

As set in section 1, since 2015 there has been a 50 per cent reduction in hydro installations, a 90 per cent reduction small wind and a 97 per cent reduction in commercial solar installations recorded on the FiT register[58]. These rates however, refer to projects which began prior to policy change from government. There have been almost no new projects commenced, particularly in the wind and hydro sectors.

The below figure from BEIS details the commissioning of small-scale hydro, and shows a clear drop in projects. FiT degression rates have impacted since 2015, with the last tranche of viable projects built out in 2017.

[58] https://cfr.ofgem.gov.uk/#/

Figure 5: Small-scale hydro commissioned[59]



[60]

[59] https://www.gov.uk/government/collections/feed-in-tariff-statistics

[60] BEIS Monthly feed-in tariff commissioned installations

The future policy landscape

This section details areas we believe both Scottish and UK governments can support the future development of the small-scale renewables sector in the UK.

6) Creating a level playing field

Scottish Renewables is in favour of a level-playing field across renewable technologies at different scales, and the wider energy market as a whole. This section sets out ways by which we believe government could ensure small-scale renewable generation is able to compete on a level playing field with other technologies.

6.1 Creating a fair taxation system: Business Rates and other measures

Taxation policy has long been a lever by which government has incentivised or dis-incentivised activity. It is our position that to create a level playing field for small-scale renewable generation, taxation should be reviewed in the round to account for the challenges associated with development of this nature.

(Non-Domestic) Rates have been a particular area of concern. While we understand rates to be a normal part of business expenditure, a survey of Scottish Renewables members conducted ahead of the 2017 revaluation showed that some small-scale developers were to see business rates increases of over 600 per cent[61].

The Scottish Government has gone some way to address this issue, with relief granted to some asset classes, and a number of reviews expected[62]. However, significant uncertainty remains as to how small-scale renewable generation will be treated in the rates system moving forward.

While community energy projects currently have welcome rates relief (in Scotland), given previous relief has been subject to change there remains uncertainty among the developer community. As set out below, and in additional work on business rates, we believe action taken to alleviate challenges with business rates could have a positive impact on the deliverability of small-scale renewable energy projects.

[61] https://www.scottishrenewables.com/publications/position-paper-business-rates/

[62] The Tretton Review of Hydropower, The Plant and Machinery Review

6.2 The planning system

Scottish Renewables values a fair and robust planning system, ensuring we support the right developments in the right places. We are aware however of a number of concerns around how the planning process relates to small-scale development.

We also note the devolved nature of planning policy, so have focused our remarks here on Scotland.

- **Proportionality in planning fees/ costs**: We understand that the Scottish Government expects to consult on restructuring the categories of development and the associated fees for applications submitted through the planning regime following the passage of the Planning (Scotland) Bill. Scottish Renewables wants to ensure that the structure for charging planning fees is proportionate, fair and ultimately sustainable. We are willing to see an increase in fees but before any increase could be deemed acceptable by the renewables industry we would expect to see tangible improvements to the planning service, as set out in Places, People and Planning[63]. It is our expectation that the increase in planning fees will have a particular impact on ground mounted solar PV, due to the areas of land required even for modest developments. The planning appeal system also needs a thorough review. We are aware of some projects taking 6-12 months to be determined by the Scottish Government. Reform to planning fees must result in a more streamlined appeals process.

- **Understanding within the planning system that small installations come with different sets of consideration to larger ones**: Smaller developments are often required to submit similar amounts of information as larger developments during the planning process, particularly where an Environmental Impact Assessment (EIA) is required, which increases both the duration of the process and project costs. Greater focus on the critical environmental issues is necessary during the screening and scoping stages in order to streamline the EIA process. In particular, there is a need to ensure screening and scoping are project specific to avoid unnecessary work.

- **Repowering**: Repowering offers continued development of the renewables industry and is crucial to Scotland achieving its renewable energy and climate change targets. It presents an opportunity to encourage continued investment in Scotland, and with it, the

[63] https://www.gov.scot/Publications/2017/01/3486/7

creation of more jobs. Repowering would allow for increased capacity and output by use of fewer turbines and with the right planning process, creates a long term, stable investment platform for a clear pipeline of repowering projects. This helps to ease the pressure put on consenting authorities. It is essential that a supportive planning framework is developed to ensure projects can take place responsibly and efficiently.

- **Community Benefit and Shared Ownership**: Some of our members have raised significant concerns over the impact of the Scottish Government's policy on community benefit and shared ownership. From the experience our members have in engaging with communities, we believe it remains crucial to connect with local communities in ways beyond the current protocol. While the industry is committed to continuing to provide community benefit and recognise the Scottish Government will continue to encourage developments to offer community benefit packages, it is important to recognise their impact on the viability of projects given the increasing pressure to reduce the cost of energy and secure a route to market for new capacity. We therefore welcome the willingness of government to consider how future community benefit packages may be designed to reflect new business models. Flexibility in the design of community benefit packages can also ensure they are better able to reflect community needs. Additionally, the Scottish Government's ambitious targets for shared ownership projects require a significant step change in their delivery rates. We believe that the best way for the Scottish Government to improve the prospect of further shared ownership is to ensure a flexible and inclusive approach is adopted. Policy must seek to encourage and empower communities to develop the skills and appetite to become partners in renewable energy projects. Shared ownership is not and cannot be a material planning consideration, however, the ensuing socio-economic benefits of any development may be. Given the lack of clarity amongst stakeholders as to exactly how shared ownership will be treated in the consenting process, we believe guidance from the Scottish Government is urgently needed.

We are working to deliver these messages to Scottish Government as it reviews both its Good Practice Principles (GPPs) for Community Benefits from Onshore Renewable Energy Developments and Shared Ownership of Onshore Renewable Energy Developments as part of commitments through the Energy Strategy and supporting Onshore Wind Policy Statement, as well as its GPPs for Benefits from Offshore Renewable Energy Developments.

6.3 Electricity network access and charging

Cost-reflective electricity network access and charging arrangements- as well as fair policy cost recovery - will be fundamental to ensuring a viable future for small-scale renewable generation.

As our energy system becomes more decentralised electricity networks will be used in a different way, and we welcome ongoing work by Ofgem and other bodies to create a fit-for purpose, fair and cost-reflective charging system through projects such as Charging Futures[64] and consider new models of ensuring appropriate access to the network is delivered. Scottish Renewables is actively engaged in these work streams.

As we have feedback to Ofgem and others, to safeguard the future of small-scale renewable generation across the UK is it vital that access to the network is achievable and at a pragmatic cost point for these sites. We look forward to continuing to work with Ofgem and network operators to develop this work further.

An example of this is recent work by ScottishPower Energy Networks to collaborate with industry in making it easier to connect after they relaxed rules around the requirement to produce a Statement of Works for PV installations under 200kW. This decision by SPEN will have a significant impact on the business case for small to medium solar installations in Scotland[65].

Scottish Renewables supports a system of fair, transparent and proportionate network charging. We are aware of concerns that with a likely increase in onsite generation, network policy and cost recovery could fall on a small number of consumers, and are feeding this into the above reviews.

6.4 Additional Enablers

We have recognised a number of additional enablers which could be utilised to better level the playing field for small-scale generators.

- **Energy Technology List:** The Energy Technology List (ETL) is a list of high energy efficiency performing products that are eligible for 100 per cent accelerated tax relief from

[64] http://www.chargingfutures.com/

[65] http://www.locogen.com/news/solar-installers-in-scotland-get-huge-boost

Enhanced Capital Allowances (ECAs)[66]. Collectively the ETL and ECA scheme encourage businesses to invest in energy-saving equipment. ECAs for energy saving technologies enable business to claim 100 per cent accelerated tax relief on the purchase of eligible equipment in the year of purchase. This accelerated cost saving further shortens the payback periods and builds the business case for investment into energy saving equipment.

Solar PV was removed from the ETL in 2011, as it was thought that the FiT would provide sufficient incentive. Currently solar has the lowest capital allowance at 8 per cent compared to 20 per cent for general plant and machinery. We would support a review of the ETL to ensure it is accurately capturing energy saving technologies.

- **Resource Efficient Scotland Loan:** Resource Efficient Scotland administers a loan on behalf of the Scottish government to support small and medium sized Scottish businesses to reduce energy and resource costs[67]. The SME Loan provides unsecured, interest free loans from £1,000 up to £100,000 for the installation of energy efficient measures and renewable energy technologies. Renewable energy technologies must not be receiving FiT or RHI for the loan to be interest free.

  Our members report that a £100,000 loan would be approximately enough to install a 120 kilowatt PV system. This would require a roof area of around 1000m^2 and a 200A supply. Commercial properties could opt for much larger systems and would use the loan if it was available for higher amounts. Increased economies of scale would result in greater uptake of PV and more competitive SMEs.

- **Cost of Finance:** Our members report a considerable challenge in securing fit-for-purpose, low-cost finance for projects. High finance costs, coupled with other challenges facing the sector, are a key disincentive to development. We would expect this challenge to continue with the emergence of flexibility markets and revenue stacking potentially increasing project risk and driving more complex financing structures. We would support both Scottish and UK Governments considering mechanisms by which low-cost and innovative financing can be provided to the sector, through both public and private mechanisms.

[66] BEIS: Energy Technology List
[67] Resource Efficient Scotland: SME Loan

- **Training and Skills:** The future of the small-scale renewables sector will depend on a skilled workforce. From renewable energy development skills such as engineering to the IT and data analytics skill-sets we will require to operate a smart energy system, the development of this sector offers a considerable opportunity to develop a future-proofed and agile workforce drawing on existing strengths within the UK economy and skills base. We would encourage Government to think strategically about skills development and offer support to existing businesses to upskill staff.

Asks of Government:

- **Ensure that small-scale renewable energy assets are taxed transparently, fairly and proportionately.**
- **Develop a fair and proportionate planning system.**
- **Should the FiT scheme close as indicated, Government should review the Energy Technology List to ensure it captures the right technologies.**
- **Scottish Renewables recommends that Scottish Government consider increasing the SME loan limit.**
- **Government should continue to engage with Ofgem to ensure fair access to the electricity network and cost-reflective charging arrangements**
- **Governments to consider how low-cost finance can be enabled for the small-scale renewables sector.**
- **Government to think strategically about skills development and offer support to existing businesses to upskill staff.**

7) Delivering a viable route to market

(Answering questions 11, 13, 14, 15, 16, 17, 18, and 19)

This section discusses and sets out policy proposals to deliver a viable route to market for small-scale renewable energy generators.

7.1 Preventing a Support Gap

As this response has demonstrated, the small-scale decentralised low-carbon generation sector is at a transition point, and is both driving and dependent upon a wider change to our energy system to take place. Initial support for the sector has been driven by the Feed-in Tariff, but we recognise the aim in the developing Decentralised Power Sector Deal that the small-scale decentralised power sector is resilient and subsidy-free by 2032, and making a significant contribution to the UK economy and its power system. We recognise analysis which has shown that driven by the value to consumers, businesses and industry, low carbon, decentralised power will come to constitute more than half of the UK's total capacity[68].

The enabling market frameworks that will allow for this transition are not currently in existence. Scottish Renewables is therefore concerned that a gap in support for these technologies will at best prevent the further growth of the sector and at worst lead to further contraction.

[68]In line with modelling such as National Grid's Future Energy Scenario's 'Consumer Renewables' stretch scenario where 52% of total capacity is connected at distribution by 2032.

We see two main ways government can act to safeguard the future for the sector and avoid the creation of a policy gap.

Government must enable a gradual transition away from the Feed-in Tariff through:

- **Full utilisation of deployment caps**

While budget remains in deployment caps for the Feed-in Tariff, we believe the tariff should stay open. This would allow the industry to develop a small pipeline of projects, helping to create some certainty for these small businesses in a challenging operating environment. Given budget has already been committed, this certainty for industry would not come at an additional expense to the consumer. Further, this would alleviate pressure on stakeholders such as statutory bodies which are likely to see a steep increase in workload ahead of the scheme's closure which they may struggle to resource.

- **The export tariff**

The export tariff is critical to the business models for small-scale renewable generators and delivers different sets of benefits for different stakeholders (e.g. onsite commercial use, communities etc.). It is our position that the export tariff should be maintained, at least as a transitionary measure, until new market opportunities exist and are viable.

We believe the maintenance of a tariff would sustain elements of the sector to the point where new business models materialise, helping foster the transition towards subsidy free development.

We recognise that the existing export tariff is a relatively blunt instrument. We do believe the export tariff could be reformed to enable it to better reflect market conditions. This should not be done immediately, but as new business models emerge. One method of making the tariff more responsive is through index linking the tariff to an appropriate marker of the wider market – such as the wholesale price. The second is to introduce variable as well as fixed rate tariffs for different use cases.

7.2 Small-scale deployment with PPAs

The PPA market has garnered much attention within the renewables industry in the past few years as developers look for alternative methods of securing long term revenue certainty.

A conventional route to market will involve a generator signing a PPA with a supplier.

The focus latterly has been on the corporate PPA market, where generators match directly (through a number of contractual and/or physical mechanisms) with corporate offtakers.

While there have been a number of high profile agreements of this nature in the UK energy market, with large corporate offtakers such as Nestle[69] signing PPA agreements with UK renewable generators, these firmly sit at the larger scale of the market and are by their nature limited in number. It is our understanding that in cases where this has occurred, sites have been in receipt of revenue support mechanisms.

Currently, there is virtually no corporate PPA market for small-scale renewable generators. While 'clubbing' mechanisms (grouping smaller generators and offtakers together, to share risk) are possible, there are not well-understood or common structures. Similarly, there is a high degree of rigidity within the PPA market, visible in areas such as contract lengths. Network charging (as is being reviewed through the Charging Futures project is an additional barrier).

While we do not therefore see the corporate PPA market as being a significant driver for the development of small-scale renewable energy projects, we would encourage both Scottish and UK government to support the public procurement of renewable energy – both through utilising energy procurement strategies for government (potentially including public energy company structures) and through incentivising local authorities and public agencies to procure and utilise renewable energy sources.

7.3 A guaranteed market at a discounted rate, viability

Scottish Renewables understands that while a mechanism to reduce risk is helpful for small-scale projects, project economics are such that a market mechanism operating at a discounted rate would not be viable in and of itself for small-scale low-carbon technologies at

[69] http://www.communitywindpower.co.uk/news/cwls-sanquhar-community-wind-farm-to-power-nestl-uk-and-irelands-operations--22nd-june/588.htm

this time. We would however seek further discussion with BEIS on the detail of what this mechanism could look like.

In line with our above proposals regarding amendments to the export tariff once flexibility markets develop, we believe that government should consider a discounted rated route to market as a de-risking mechanism for small-scale renewable generators in due course to support cost reduction. Guaranteed support at least at a level which supports the payment of interest on debt finance could mitigate against any 'gaps' in revenue from flexibility service income – particularly while these markets are in their infancy. Small projects tend not to be able to balance risk across a large portfolio of assets or balance sheet, so risk reduction mechanisms are particularly important to safeguard development.

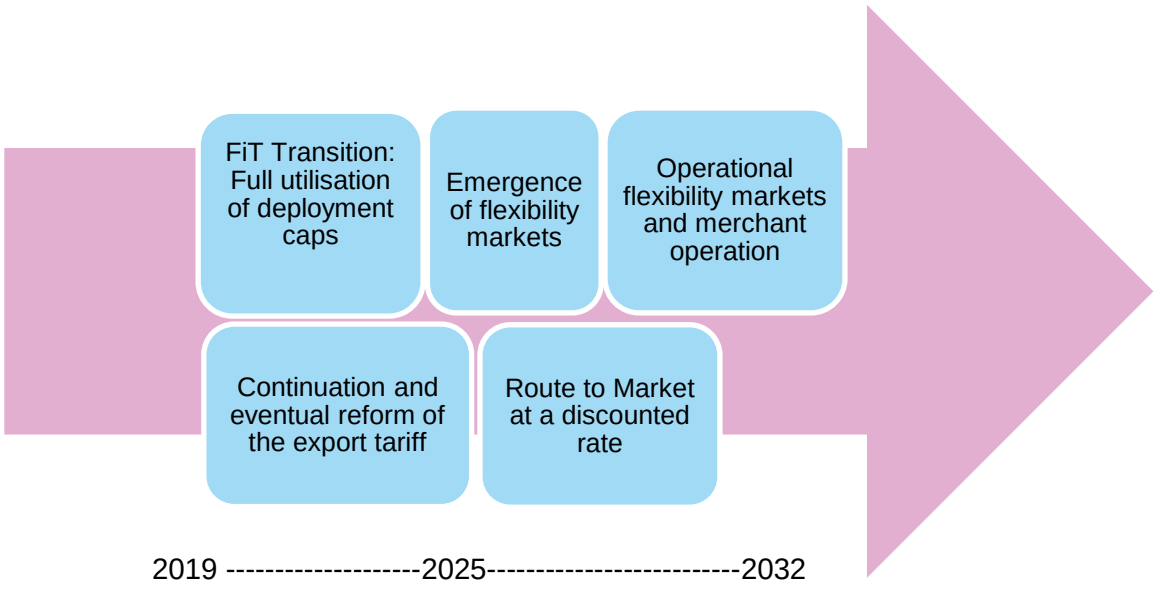
7.4 Route to market proposals from Scottish Renewables

Here we put forward a number of proposals for the short medium and long term which we believe could sustain the small-scale renewable energy sector.

All of these proposals are driven by two key issues for the sector, which have been set out in this response. Firstly, that the economics for small-scale projects are very different to large-scale, and moving towards subsidy-free operation is complex. Secondly, that the new market structures on which operation on a merchant basis would depend have not yet fully emerged. This is mainly due to the timescales associated with the DSO transition and infrastructure roll-out around smart homes (EV roll out, smart appliances) upon which local flexibility markets will depend.

The below graphic sets out a sense of how we believe a transition out of the FiT could be structured. We stress that given the tight timeframe in which to develop these proposals, and the uncertainty surrounding future market development, that dates indicated are indicative rather than absolute.

Figure 6: Visual depiction of Scottish Renewables' route to market proposals



8.4.1 A transition period: full utilisation of deployment caps

As the evidence in this response sets out, in the absence of a feed-in tariff the small-scale renewable energy sector is without a meaningful route to market.

While we expect opportunities to emerge as our energy system and markets become smart and decentralised, until we realise that vision, the small-scale generation sector risks contracting further.

A shrinking small-scale sector would go against the direction of travel expected as we move towards a smart, flexible energy system – threatening the delivery of the benefits these technologies and this transition can deliver to homes and businesses across the UK.

To help bridge this gap, we recommend the government creates a transition period out of the Feed-in Tariff[70].

[70] We also set this out in our response to the Consultation on the closure of the Feed-in Tariff.

We understand that, as set out in the Control for Low Carbon levies[71], Government has committed to introducing "no new low carbon electricity levies until the burden of such costs is falling". However, given spend under the Feed-in Tariff has already been committed, and several deployment caps have not yet been used to their full capacity, we recommend that government keep the Feed-in Tariff open until allocated budget is used up or viable alternative routes to market are in place.

Creating this transition period would provide industry with a degree of certainty, enabling further investment in projects. Scottish Renewables' members found similar grace periods put in place surrounding the closure of the Renewables Obligation considerably helpful in preventing a sudden cliff-edge.

We also feel a transition period would help prevent any spikes in activity as projects 'rush' to meet deadlines. This often creates an adverse workload for external stakeholders, such as environmental agencies.

8.4.2 A transition period: the export tariff

Scottish Renewables disagrees with the proposal to end the export tariff after 31 March 2019.

The export tariff is critical to the business models for small-scale renewable generators, which (as we set out in our response to the Call for Evidence have a very different set of project economics to large-scale schemes). It is the tariff which has drawn consumers to take control of their energy supplies, and has indeed made onsite generation viable at all scales, with commercial enterprises using revenue to reinvest in their assets.

As our energy system becomes further decentralised, new markets will emerge around local energy and energy as a service, rather than as a commodity. These markets do not exist at present, meaning the business case for small-scale renewable generation cannot be predicated on them. Conversely, without a thriving small-scale renewable sector to operate in local, dynamic markets – these market structures will not emerge.

It is therefore our position that the export tariff ought to be maintained, at least as a transitionary measure, until new market opportunities exist and are viable.

[71] https://www.gov.uk/government/publications/control-for-low-carbon-levies

The maintenance of a tariff, we believe, would sustain elements of the small-scale sector to the point where new business models materialise, helping lower the costs of small-scale low-carbon generation. This is particularly true if we are to keep consumers engaged in the energy market and develop energy services based around solar, storage and EV charging.

We recognise that the existing export tariff is a blunt instrument, which is unable to reflect changes in the wider market.

We therefore propose two ways by which the tariff could be reformed to enable it to better reflect market conditions. This should not be done immediately, but as new business models emerge:

1) **An index linked tariff**
   Index linking the export tariff to an appropriate marker of the wider market conditions would ensure the tariff is responsive to economic change.
   It is our position that index linking to the wholesale price of energy would be an appropriate measure to ensure market reflectivity.

2) **Variable as well as fixed rate tariffs**
   Once flexibility markets – incorporating ancillary services and innovative tariff structures - are fully operational it is likely that different small-scale renewable energy stakeholders (households, communities, and onsite commercial) will have different needs. While we anticipate the export tariff will need to be retained over this time period, we foresee that offering a series of more diverse and innovative tariff structures – such as variable and fixed rates – could be an appropriate support to small-scale renewable generators while ensuring tariffs remain responsive.

8.4.4 Route to market at a Discounted Rate

In the long-term, once flexibility markets are fully enabled, we see value in government creating a guaranteed route to market to offset risk for small-scale renewable generators. This would encourage investment, market entrants, protect small-businesses and consumers and help safeguard the sector as it transitions towards subsidy free development.

8) Summary of asks and recommendations

Our principle recommendation is for government work to protect the sector from a potential 'policy gap' through implementing a transition period out of the Feed-in Tariff. This would involve:

- **The full utilisation of existing budget within existing deployment caps**
- **The continuation of an export tariff**
- **The reform of the export tariff upon the emergence of flexibility markets**
- **A route to market mechanism to lower risk for small-scale generators in tandem with operational flexibility markets.**

A series of smaller asks are set out below

Ask		Administration
1.	Maintain and act upon commitments to ensure self-consumption and export are realised, as set out in the Smart Systems and Flexibility Plan through a continuation of the export tariff until new flexibility markets are realised and commercially viable	**UK Government**
2.	Set minimum standards in building regulations to ensure enabling technologies are embedded into new-build infrastructure as quickly as possible	**Scottish Government**
3.	Facilitate the roll out of next generation smart meters	**UK Government**
4.	Ensure there is no policy gap in support for small-scale low-carbon generation	**UK Government**
5.	Permitted Development Rights in Scotland should be amended to 1MW in line with the rest of the UK. In addition, government should implement a presumption in favour of renewable development in areas where adjoining stakeholders can create local energy systems	**Scottish Government**
6.	Business Rates relief should be granted to small-scale renewables until a wider review has completed	**Scottish Government**
7.	An incentive scheme for businesses to install onsite assets should be created. Government should fund aspects of commercial projects which contribute to local infrastructure	**ALL**
8.	Government should set criterial to ensure businesses provided renewable-powered electric vehicle charging points	**ALL**
9.	Government should provide support for CAPEX costs of co-located projects	**ALL**
10.	Government should commit to ensure regulatory change to level the playing field for co-located developments	**UK Government**

11.	Government should commit to work with the regulator and industry to develop future market opportunities for small-scale renewable generators	**UK Government**
12.	Government must recognise that small-scale renewables need to be supported until new flexibility markets have fully emerged	**UK Government**
13.	Government must ensure that programmes considering the future of the electricity network actively consider small-scale renewable generation, and that their processes and outputs are timely, transparent and in line with wider government ambitions	**UK Government**
14.	Government should recognise the longevity of hydropower through supporting CAPEX cost reduction	**ALL**
15.	Government should utilise national and green banking structures to help reduce the cost of finance for projects	**ALL**
16.	Government must set a vision for the rural energy landscape – working with industry to recognise the value and benefits small-scale renewables bring	**ALL**
17.	Government must consider how to secure future development of long-term assets, such as hydropower	**ALL**
18.	Government should better incentivise rural businesses to adopt renewable energy assets	**ALL**
19.	Government should recognise, and consider funding, elements of small-scale renewable energy projects which contribute to the development of national infrastructure	**ALL**
20.	Government should ensure that small-scale renewable energy assets are taxed transparently, fairly and proportionately.	**ALL**
21.	Government should review the Energy Technology List to ensure it is fit for purpose	**ALL**
22.	Government should consider increasing the SME loan limit	**Scottish Government**
23.	Government should continue to engage with Ofgem to ensure fair access to the electricity network and cost-reflective charging arrangements	**UK Government**
24.	Government should consider how low-cost finance can be enabled	**ALL**
25.	Government should consider strategic skills development and offer support to businesses to upskill staff	**ALL**

9) Appendix A: Reference -Call for Evidence Questions

1) **Have we accurately captured all the opportunities and benefits that small-scale low-carbon generation can provide to the UK energy system over the short, medium and longer-term? Are there any that we have missed?**

2) **How can government help consumers benefit from small-scale low-carbon generation such as local communities, local authorities, and those in fuel poverty?**

3) **The introduction of enabling technology and systems such as the roll out of smart meters, and half-hourly settlement, will provide commercial incentives on energy suppliers to develop and offer tariffs. Will smart tariffs provide a viable route to market for small-scale low-carbon generation? If so over what time frame, and what are the possible barriers to these smart tariffs?**

4) **Do you agree with the challenges we have identified? Are there any challenges small-scale low-carbon generation presents that you think we have missed?**

5) **How would you propose the small-scale low-carbon sector, suppliers, off-takers, network/system operators, and/or government can overcome the challenges presented?**

6) **What are possible ways to track and monitor behind the meter installations (we would appreciate specific suggestions in relation to how information can be sourced (e.g. direct from businesses and households) and the method for sourcing it (e.g. an annual survey)?**

7) **What are the special consideration that should be made when attempting to track different kinds of behind the meter activity?**

8) **How do we develop our tools to model and evaluate the system (including system costs and resilience) as decentralised generation and storage develop, specifically approaches to system modelling, data capture, forecasting demand and evaluation of value for money?**

9) **Are off-takers, suppliers, and aggregators able to lead the deployment of small-scale low-carbon generation currently? If so how will this occur, over what timescales, and what are the implications of deployment levels? How would deployment be supported by the capacity and ancillary services markets as well as the emerging corporate PPA market?**

10) **What would be the impact on jobs, deployment, and the supply chain, if deployment were left to market forces beyond 2019?**

11) **In your view, are small-scale low-carbon generators currently able to deploy independent of subsidy e.g. through the PPA market? Does this vary for differing technologies and capacities of small-scale low-carbon generation e.g. domestic vs. commercial scale? If not, can you explain how long it will take for this market to emerge and if government intervention is required?**

12) **What factors, including financial, affect your decisions to invest in small-scale low-carbon generation?**

13) **Does government need to take regulatory interventions(s) to enable the development of competitive markets for small-scale low-carbon generation? If so, what and why? If these actions were taken, what benefits would this provide to consumers and the electricity system?**

14) **How can we encourage and unlock private sector finance to enable market-led deployment**

15) How would a guaranteed route to market operating at a discount to the market price impact the transition of small-scale low-carbon generation to competitive markets?

16) What innovative solutions would be required in the PPA market to bring forward small-scale low-carbon generation?

17) A guaranteed route to market would require costs to be robustly controlled for consumers, as outlined in the Control for Low-Carbon Levies. How could this best be achieved, without creating 'boom and bust' cycles for the small-scale low-carbon generation sector?

18) What would be the general challenges (including technical challenges) of designing a guaranteed route to market that offers a time of export tariff to support the aim of developing a smart and flexible network?

19) How long would a guaranteed route to market need to run for to help the development of competitive markets?

20) How could future regulations or other interventions be designed in order to capture the benefits of storage combined with small-scale low-carbon generation? If specific technical requirements are needed, please specify those as well.

21) If implemented what effect would the action you outline have on the small-scale low-carbon generation sector and the benefits this sector brings to UK consumers?