Clean Growth Strategy team
Department for Business, Energy and Industrial Strategy
1 Victoria St, Westminster
London SW1H 0ET

24 December 2017

CleanGrowthStrategy@beis.gov.uk

Dear Sir/Madam

Scottish Renewables response to the Clean Growth Strategy

Scottish Renewables is the representative body for the renewable energy industry in Scotland, working to deliver secure supplies of low-carbon, clean energy for heat, power and transport at the lowest possible cost. We represent around 270 organisations ranging from large suppliers, operators and manufacturers to small developers, installers and community groups, and companies right across the supply chain.

We welcome the publication of the Clean Growth Strategy and in particular the renewed support for offshore wind deployment and innovation, as well as the commitment to work with the industry on a Sector Deal. This will help move the UK towards its goal of reducing carbon emissions while delivering affordable energy and clean growth.

It is, however, disappointing that there is little mention in the Clean Growth Strategy of the role that onshore wind or solar PV – the cheapest forms of new power generation - can play in making significant progress towards our targets. Such technologies are ready and waiting to deploy quickly and deliver substantial quantities of clean, cheap energy to Britain's homes and businesses.

The central estimates of generation capacity presented[1] (table 1B) indicate some cause for concern. With the exception of offshore wind, growth across all other technologies is low - stagnant. There is no real growth forecast for large-scale hydropower and solar PV, and effectively stagnant capacity for onshore wind. Technologies providing renewable heat, such as biomass CHP, have equally poor forecasts and data shows barely any forecast growth for the market across small-scale technologies. This is entirely at odds with policy ambitions on providing low-cost clean energy, decarbonising heat and moving towards a smart, flexible energy system.

However, we are pleased to see the terms for a new Control for Low Carbon Levies, announced alongside the 2017 autumn Budget, allowing for allocation above the

[1] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/660986/Control_for_Low_Carbon_Levies_web.pdf

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£557 million budget where such allocation would have a ‘net reduction effect’ on bills. This would suggest that new projects for established technologies like onshore wind could potentially be brought forward in future auction rounds.

The Clean Growth Strategy also signals that the UK Government, despite making some progress to close the gap, expects to fall short of meeting its fifth carbon budget, relying instead on past success to offset missed targets with the rapid power decarbonisation that we’ve seen to date and on the option to buy international carbon credits.

While the 5th Carbon Budget is ambitious, it is achievable if the full range of renewable technologies is afforded the route to deploy at scale.

Enclosed is a summary of what specific elements of the Clean Growth Strategy mean for each part of the renewable energy industry in Scotland.

Yours sincerely

Jenny Hogan
Deputy Chief Executive

BEIS Clean Growth Strategy – Scottish Renewables' detailed comments

Carbon pricing

Scottish Renewables welcomes the government's commitment to target a total carbon price at a similar level to today's until unabated coal is no longer part of the electricity system. A clear carbon price and carbon price forecasts are valuable signals for industry, and we support the broad intent in the Strategy. In order to meet our 2030 and 2050 targets, it is crucial that investment in renewable and low-carbon energy is enabled through a stable carbon price set at the right level.

We believe that a carbon price retains an important role, even once unabated coal is phased out of the UK's energy sector.

There is significant uncertainty around the ETS component of the carbon price once the United Kingdom leaves the European Union. Clarity on this would be welcomed by the sector.

The carbon price support (CPS) proposals should be mindful of the intended consequence of increasing investment in renewables and avoid unnecessary increases in consumer bills. Whilst the government has previously indicated that unabated coal production will end in 2025[2], there is evidence that retaining the current carbon price risks incentivising a return to coal production[3].

Control of Low Carbon Levies

The Levy Control Framework (LCF) and related mechanisms such as Contracts for Difference (CfD) have delivered significant amounts of renewable generation to the UK energy system, while enabling a stable investment framework for included technologies and driving cost reduction.

The commitment to enable access to up to £557 million for further CfDs is therefore welcome. Greater visibility of future allocation round timescales is now necessary to allow industry and investors to plan ahead and maintain confidence in the market.

We also welcome the additional detail about the replacement for the LCF, the new Control for Low Carbon Levies (CLCL), announced alongside the 2017 autumn Budget, allowing for allocation above the £557 million budget where such allocation would have a 'net reduction effect' on bills. This would suggest that new projects for the cheapest established technologies, like onshore wind and solar, could potentially be brought forward in future auction rounds.

We would now encourage the UK Government to closely engage with industry to more fully understand some of the challenges being faced across the sector and the opportunities waiting to be unlocked.

In order to meet the UK's binding emission reduction targets, and to ensure the best value for money for the consumer, it will be vital that the cheapest forms of low-carbon generation are

[2] www.gov.uk/government/uploads/system/uploads/attachment_data/file/650476/unabated-coal-consultation-summary-of-responses.pdf
[3] www.auroraer.com/insight/carbon-price-thaw-post-freeze-future-gb-carbon-price/

able to deliver and that innovative technologies are supported on the route to commercialisation.

As we detail below, as the cheapest forms of new low-carbon generation, onshore wind and solar PV ought to have a viable route to market to enable investment.

Onshore wind and solar PV

There is little mention in the Clean Growth Strategy of onshore wind and solar PV's role in making progress towards our decarbonisation targets. Onshore wind currently makes up the largest proportion of Scottish renewable energy generation and, together with solar PV, is one of the cheapest forms of new power generation. With cost reduction recognised as an important part of the continued growth of our low-carbon energy system, the importance of a route to market for established technologies should be included in the Clean Growth Strategy.

It is disappointing that no commitment has yet been made to allow these technologies to compete for contracts to sell the substantial quantities of clean power they can produce. Given the latest evidence showing the low costs of both onshore wind and solar PV, it is clear that established technologies should be eligible to participate in new Pot 1 Contracts for Difference (CfD) auctions at the earliest opportunity.

A recent study for Scottish Renewables by Baringa Partners found that a new Pot 1 CfD auction for established renewable technologies in 2018/19 could deliver around 1GW of the most competitive new onshore wind capacity at no extra cost to consumers over the life of the contract and could even pay back more to the public purse. This analysis was based on the latest evidence of cost reductions as a result of innovation, decreasing turbine prices and the use of auctions to ensure competition. 1GW of onshore wind capacity can meet the equivalent annual demand of 600,000 homes. The capacity delivered through the auction – most of which is expected to be in Scotland - would result in more than £1 billion of private sector investment in clean energy generation across the country, and would displace some 8 million tonnes of CO2 over the lifetime of the projects. Crucially, The CfD mechanism still has a fundamental role to play, offering a low-risk route to market. Scottish Renewables, therefore, believes the UK Government must hold a new Pot 1 CfD auction for established technologies in 2018/19.

It is important to stress that this outcome currently only applies to the most competitive 1GW of projects in the development pipeline. Scotland has over 5.4GW of onshore wind either in planning or consented and awaiting construction. This significant additional capacity in the system can play a crucial role in helping to meet the Scottish and UK Government's energy ambitions.

We note the announcement that onshore wind projects on Scotland's remote islands will be allowed to bid in future CfD auctions. We welcome the commitment to support delivery of renewables projects on the Scottish islands. However, it is necessary to resolve the barrier created by the prohibitively high use of system charges. The cost of new grid connections placed on non-mainland projects will result in connection charges around 10 – 20 times greater than projects connecting in the North of Scotland and load factors on Scottish islands are 25-57% higher than the UK average. Grid access and grid use of system charging must be resolved in tandem for the problem to be overcome.

In March 2016 the Scottish Government commissioned consultants Baringa to provide independent analysis of the economic opportunities that could be available to the Scottish

islands through further development of renewable energy[4] . The report identified potential for 1GW of renewable energy deployment by the early 2020's, increasing to 1.4 GW by 2030, and that delivering this increased level of deployment could result in:

- Benefits to the island economies of up to £725 million (gross value added)
- Community benefit payments of up to £230 million, paid directly to local communities
- An additional 5% increase in the island economic output during the peak development phase
- The potential for valuable revenue streams worth up to £43 million per year through equity stakes in island generation projects
- Up to 2,000 jobs created during peak development.

These economic benefits go beyond the island communities alone. It is estimated that 50% of supply chain required to develop these projects will be UK based.

Offshore wind

Scottish Renewables welcomes BEIS' commitment to "improve the route to market for renewable technologies such as offshore wind" through the £557 million budget for future CfD auctions. Clarity is now required on the exact timings and budgets of future auctions, and also on the opportunities for floating technologies.

Scotland's consented offshore wind projects, which have already invested tens of millions of pounds, have the most significant role to play in achieving Scotland's 100% renewable electricity target, while delivering vital jobs and investment as part of the UK's Industrial Strategy to communities across Scotland as well as other parts of the UK.

We understand that the next auction round is planned for Spring 2019, however further detail is required urgently in order to provide certainty to investors and the UK supply chain, allowing them to plan accordingly.

Floating offshore wind affords access to deep-water resources, while aiming to reduce costs associated with construction and installation. Utilising the UK's offshore wind expertise to commercialise floating offshore wind will present opportunities to further exploit our offshore wind resources and to export know-how overseas.

We are pleased that the UK Government, the Research Councils and Innovate UK have partnered to invest c£177 million towards the cost reduction of renewable energy, "including innovation in offshore wind turbine blade technology and foundations." The UK supply chain has the potential to make an enormous impact on a global scale in making existing offshore wind farms more efficient, developing the next generation of larger and more powerful turbines, and advancing the innovative technologies of the future. Expertise from Scotland and the UK's oil and gas, engineering and marine sectors will all be valuable in achieving cost reductions.

We also welcome the Government working with industry as it develops a Sector Deal for offshore wind, and would encourage that both UK and Scottish governments coordinate closely as this process progresses. Provided costs continue to fall, this could result in 16GW of new capacity built in the 2020s. There may also be opportunities for additional offshore wind deployment in the 2020s, if this is cost-effective and deliverable. It is positive that the Government will work with The Crown Estate and Crown Estate Scotland to understand the

[4] http://news.gov.scot/news/ministerial-working-group-welcomes-islands-commitment

potential for deployment of offshore wind in the late 2020s and beyond. However, we would suggest that discussions with industry regarding future leasing rounds should also be held at an early stage.

Small-scale renewables

The Feed-in Tariff (FiT) for smaller-scale renewables has proven to be a valuable mechanism allowing communities, householders and businesses to take a stake in their own energy future while allowing some, such as farmers and other rural enterprises, opportunities to diversify their income streams. Since the introduction of this scheme, over 6GW[5] of capacity has been delivered and Scotland represents more than 10% of the capacity installed to date[6]. While a large majority of this capacity can be attributed to significant cost reductions in solar PV, the FiT is central to the business model for many technologies including small-scale wind, hydro, anaerobic digestion and micro-CHP.

In July 2015 the UK Government consulted on proposed reforms to the FiT system and, despite more than 90% of responses setting out concerns that the proposed cuts could render projects uneconomic[7], the tariff levels introduced for wind and hydro schemes were reduced further than proposed. While many have worked to adapt to this new environment, there has been an expectation that the UK Government would seek further input on supporting smaller-scale development beyond the closure of the FiT in 2019. We would strongly encourage the UK Government to proceed with this planned consultation as a matter of urgency.

The industry is working with government to develop a Sector Deal for the decentralised power sector to help secure continued growth across a range of technologies which support a low-carbon, smart and flexible energy system.

Additionally, as our energy system develops and changes, the number of small-scale decentralised plant is expected to grow greatly. A range of existing generators plus new small-scale technologies are all able to offer valuable system services, as well as low-carbon generation. The right framework for these technologies to come forward is vital to ensure we develop our energy system to the best of its potential.

Wave and tidal power

Scotland and the UK are already leading the way in terms of innovation and R&D in areas such as wave and tidal power and floating offshore wind. However, we need a new level of focus if we are to accelerate the development of these technologies and secure the benefits they can bring, not only in terms of generation but as regards export opportunities and local economic growth.

Britain can learn lessons here from its past failure to sustain a global lead in wind technology design and manufacture. Poor Government support in the 1980s saw us fail to develop a substantial domestic manufacturing base for onshore wind, while European and US manufacturers powered ahead to capture a large share of the global export market, with resulting domestic socio-economic benefits. Britain's lead was lost, in large part, due to a short-sighted approach to energy policy combined with prohibitively high property taxes.

[5] www.gov.uk/government/statistics/monthly-small-scale-renewable-deployment
[6] https://publications.parliament.uk/pa/cm201617/cmselect/cmscotaf/83/83.pdf
[7] https://publications.parliament.uk/pa/cm201617/cmselect/cmscotaf/83/83.pdf

While money was spent on the industry and early turbine designs showed promise, these two significant complications were enough to scupper a home market for turbine technology.

Today, there are similar risks that the global technology race for marine energy shifts elsewhere, with significant investments in the pipeline particularly in France and South-East Asia. Avoiding this will require targeted support to facilitate cost reduction - as we have seen with offshore wind - and to foster the commercial development of these innovative technologies.

Deploying devices is the best way to progress down the technology cost curve and along the path to full commercialisation, helping secure thriving industries for the UK. An effective route to market, which supports all stages of development, is critical. As part of this picture, and complementing meaningful access to the Contracts for Difference mechanism, Scottish Renewables has been working with the wider industry on proposals to introduce tax incentives which could support a revenue model for power generation for emerging technologies.

Renewable heat

The Clean Growth Strategy recognises how crucial decarbonising heat will be to meeting the UK's climate change targets, but is a missed opportunity to set out a clear plan of action to tackle this challenge. The Committee on Climate Change recommended that the strategy set clear goals and a timetable for rolling out low-carbon heating and the regulatory framework required to support this shift[8]. The Strategy fails to reflect areas where businesses are already at work deploying low-carbon heat across commercial, off-gas grid and district heat settings. Whilst some policy intent for these areas has been set out, we are disappointed by the lack of a clear strategy that would provide the necessary clarity for businesses, investors and consumers.

Policy action is required now to tackle the low level of public awareness and understanding of low-carbon and renewable heat technologies. This would benefit emerging supply chains that will allow for future growth in key technologies like heat pumps, solar thermal and various forms of bioenergy. Similarly, articulating the Government's vision for these sectors now would help inform critical policy development processes currently underway in both the electricity and gas networks. A successful strategy to decarbonise the energy system will need to take a whole-systems approach and therefore it is vital that heat decarbonisation be considered in these other areas.

Heat represents approximately half of the energy demand in Scotland, and the Scottish Government has set a target that 11% of that heat should be generated from renewable sources by 2020 and 20% by 2030[9]. The Renewable Heat Incentive (RHI) is the main policy driving the take-up of low-carbon heat in Scotland and the intention to develop a new mechanism for beyond the end of the current budget period in 2021 is of great interest to the sector. Whatever policy support replaces the RHI will have a significant impact on the potential growth of the industry.

Scottish Renewables welcomes the intention to make a decision on this successor policy in 2018 (Annex A: Decision Pathways) as policy changes should be signalled far in advance to allow businesses time to adapt. We urge the UK Government to work with the Scottish Government and industry to drive the further development of a regulatory framework

[8] www.theccc.org.uk/publication/next-steps-for-uk-heat-policy/
[9] www.gov.scot/Publications/2017/12/5661

designed to support market growth in renewable and low-carbon heat and increase investor and consumer confidence.

We also welcome the policy intent to phase-out fossil fuel heating in off-gas grid areas during the 2020s, given the more favourable economics of low-carbon technologies in this sector. Signalling an end date to consumers for high-carbon technologies will complement the work to date incentivising and promoting low-carbon alternatives.

The new policy proposals aimed at improving the energy efficiency of the UK's existing building stock are also welcome, as improving the thermal efficiency of buildings is often a necessary first step before retrofitting low-carbon heat.

Renewables innovation

The commitments made in partnership with the Research Councils and Innovate UK to invest around £177 million to further reduce the cost of renewables, including innovation in offshore wind turbine blade technology and foundations, are welcome news to the industry.

New innovation opportunities are likely to arise in a number of areas, including floating offshore wind platforms and advanced solar PV technologies as well as across our energy networks, system operation and technologies providing flexibility services. As mentioned earlier, the UK - and Scotland in particular - has already secured a global lead in many of these areas. It is therefore vital that appropriate leadership and support by government is put in place in order to maximise the socio-economic and environmental benefit that retaining a market lead in these innovations can bring.

As Scottish Renewables as set out previously, the below key innovation areas[10] present particular opportunities for the UK which we believe ought to be the focus of a UK energy innovation strategy.

- **Wave and Tidal**: The UK already sits at the global helm of progress in wave and tidal technologies. 1,700 people work in these sectors in the UK[11]. With world-leading test and demonstration facilities, and recently formed initiatives (such as Wave Energy Scotland and the Offshore Renewable Energy Catapult, both based in Scotland) to drive technology development, the UK is well placed to continue to progress the sector and lead internationally.

- **Energy Storage:** Storage technologies enable increased renewables capacity (storing their output at times of low demand), prevent or delay the need for costly network upgrades, and provide a number of ancillary services to the grid such as frequency response. Small-scale devices empower communities and consumers, and deploying energy storage delivers security of supply. The global market for large-scale energy storage has been estimated at almost £20 billion by 2022[12] and the UK could be a major player in this.

- **Low-Carbon Heat:** Heat accounts for 46 per cent of UK energy demand[13], supports 32,600 jobs and had a turnover of £4.9bn in 2013 alone[14]. However, only 4.9 per cent of

[10] www.scottishrenewables.com/publications/briefing-innovation/
[11] www.renewableuk.com/en/publications/reports.cfm/Wave-and-Tidal-Energy-UK-Capitalising-on-Capability
[12] www.reportlinker.com/p02855276-summary/Global-Market-for-Energy-Storage-Forecast-Opportunities-Trends-and-Challenges.html
[13] www.gov.uk/government/uploads/system/uploads/attachment_data/file/48574/4805-future-heating-strategic-framework.pdf

total heat demand was renewable in 2014[15]. Decarbonising the sector will mean raising public and commercial awareness, fully developing new technologies, supporting their large-scale deployment and integrating them into our wider energy system.

- **Systems Integration:** Bringing together different elements of our energy system will allow us to be 'smarter' and drive efficiencies, increase security and reduce costs. Integrating our heat, transport and electricity sectors will be fundamental to tackling the energy trilemma, and developing new technologies and methods will be essential.

- **Network development:** The Committee on Climate Change states that achieving our carbon budgets with a 'more flexible power system' has the potential to save consumers £3bn-3.5bn per year[16]. Securing this flexibility will require a range of new technologies such as Active Network Management (ANM) systems, demand-side response, storage and increasing interconnection using HVDC technology. While some progress has been made across these areas, additional work is still required to see these innovations delivered at scale.

Electricity system flexibility and interconnection

We share the view of the Government that a smart and flexible energy system could offer significant benefits for consumers and the UK economy and will underpin a secure, affordable and low-carbon energy system, now and in the future.

We are pleased therefore to be able to contribute to a variety of ongoing work streams designed to overhaul network regulation in line with these ambitions. We do note, however, the risk that, given the volume and complexity of work carried out across National Grid (System Needs and Product Strategy - SNAPS), Ofgem (Charging Futures, Significant Code Review), and the Electricity Networks Association (Open Networks project, DNO-DSO transition), network policy and regulation can become disjointed. It is vital that these projects are coordinated and communicated clearly, and that the widest possible breadth of industry stakeholders is engaged with in a meaningful way.

It is important to note that a range of technologies, including existing generation, new battery technologies, pumped storage and demand-side response, are all able to offer flexibility services. Accessing and realising the benefit of these services will require a balance of longer term reform to bring regulation and commercial arrangements in line with a modern, clean energy system, and short term 'fixes' to enable the system to move forward. Overall, the objective should be to create a level playing field that allows all technologies to compete and ensures that the most efficient solutions are ultimately delivered for the whole system.

For example, pumped storage hydro is a proven technology able to provide valuable system services such as inertial response and black start capability. Yet, without reform to offer investor certainty in the face of infrastructure-scale upfront capital costs, it is unlikely that investment in new pumped storage projects will be secured. Scottish Renewables and the wider industry have long argued for consideration of a mechanism like Cap and Floor (used for interconnection which has a similar investment model) to be applied to pumped storage.

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[14] www.gov.uk/government/uploads/system/uploads/attachment_data/file/416240/bis-15-206-size-and-performance-of-uk-low-carbon-economy.pdf

[15] www.gov.uk/government/uploads/system/uploads/attachment_data/file/437953/Renewable_energy_in_2014.pdf

[16] documents.theccc.org.uk/wp-content/uploads/2015/10/Power-sector-scenarios-for-the-fifth-carbon-budget.pdf

The Strategy highlights the potential for at least 9.5GW more interconnection by the early-to-mid 2020s; in addition to the 4GW today and the 4.4GW currently under construction. The National Infrastructure Commission has set out that a smart power revolution spanning storage, interconnection and demand response is worth up to £8bn to UK consumers, and increasing our connectivity with European energy markets is an important factor in security of supply considerations and enabling the integration of increased renewable generation capacity[17].

To realise the benefits that a smart, flexible and connected system could bring, the lowest-cost technologies must be afforded the opportunity to deliver services to the market. We look forward to continued engagement with the bodies involved in this area of work to ensure that market regulation and commercial mechanisms enable these objectives to be delivered.

Network innovation

Innovation across our energy networks will underpin the transition to a low-carbon, smart and flexible energy system. We welcome Ofgem's decision to make up to £525 million of regulated expenditure available to network operators to support innovation across the networks.

Network innovation needs to occur across several areas:

- **Policy and Regulation:** From removing regulatory hurdles for innovative technologies such as energy storage, to ensuring that flexibility providers and new business models can access the network, policy and regulation need to be designed to enable the transition to a smart energy system.

- **Market Development and Price Signals:** It is important that a range of technologies are able to offer flexibility services. With several revenue-based barriers to making innovative technologies and service providers bankable, ensuring clear price signals are clear and enabling new markets (such as through SNAPS reform from National Grid and enabling the DNO-DSO transition) are important factors.

- **Commercial Arrangements and Charging:** Both commercial arrangements and charging mechanisms across the networks remain complex, and we welcome ongoing efforts through fora such as Charging Futures to assess whether these arrangements are fit-for-purpose given changes in our energy system. Commercial arrangements must enable flexible, renewable generation to enter the market while charging must be fair and proportionate.

- **Innovation to Business as Usual:** Our electricity networks have already seen the positive results brought by a great deal of innovation, such as Active Network Management schemes. Network Operators and/or incumbents in this space must be enabled to deliver these innovations as business as usual.

We set out each of these points in greater detail in our response to the BEIS/Ofgem consultation on smart and flexible energy systems[18].

[17] www.scottishrenewables.com/publications/benefits-pumped-storage-hydro-uk/
[18] www.scottishrenewables.com/publications/consultation-response-beisofgem-call-evidence-smar/

Transport

Scottish Renewables welcomes the recognition that transport is fundamental to the transition to the low-carbon economy, and as such supports the allocation of funding towards low-carbon transport solutions. It must however be remembered that for transport technologies to be zero-carbon, the energy input needs to be sourced from renewables, such as from renewable-generated electricity and/or hydrogen and sustainable biofuels.

Developments across energy storage technologies are fundamental to transport, heat and power, so it's important that a holistic approach is taken to integrating energy systems and that the benefits of supporting the underlying technologies are recognised.

We note that there is relatively little new policy with regard to reducing the UK's transport emissions, with much detail pushed back to the publication of a long-term strategy for the UK's transition to zero road vehicle emissions by March 2018.