Community Energy Grid Connections

Working group report to the Secretary of State

July 2014

1. Goals of the Group

1.1 Scope

The government's Community Energy Strategy sets out how local communities can make an important contribution to maintaining energy security, tackling climate change and keeping costs down for consumers. In particular, community energy generation can help achieve the UK's goals of decarbonising the power sector and seeing a 15% share of our energy provided from renewable sources by 2020.

To deliver these benefits, and meet the public policy aims of the Community Energy Strategy, the majority of community energy projects will need to connect to the electricity grid. Given the constraints on large parts of the distribution and transmission networks, due in part to the increase in renewable and distributed generation, this is already a major barrier to many community energy projects and is set to increase.

The Secretary of State for Energy and Climate Change requested that a working group be formed to consider what can be done to make it easier for community generation projects to connect to the grid. The group brought together community energy groups, distribution network operators (DNOs), advisory bodies, government and the regulator (see Annex 1 for details), and was a valuable opportunity to better understand each other's needs and responsibilities.

The community energy representatives on the working group indicated more broadly that models of ownership and regulation beyond the current market structures could better enable the sector's aspirations. However, at the Secretary of State's request the working group focussed its efforts on the topic of community energy grid connections.

1.2 Key messages

Sections 3-5 of this report set out actions that can be implemented within the current rules governing the operation of the grid to reduce the barriers to community energy project connection. These actions fall into three broad themes: **customer engagement**, **enabling smart connection offers**, and **managing the cost of connection**. Many are already underway or planned as a result of the working group's process, which has (for example) prompted improved engagement from DNOs as a result of shared best practice, and instigated community energy involvement in the Smart Grid Forum (see section 4.1).

First, however, section 2 of the report examines more transformational measures needed to address the specific challenges community energy projects face, but which would require changes to the current rules. In particular, enabling these more **transformational solutions** would require a clear public policy steer from government on the case for distinct treatment of community energy projects. The costs and benefits to energy consumers as a whole, as well as the implications for other public bodies, would need to be assessed before these measures could be implemented.

1.3 Identifying impact

To help identify the most effective measures, all of the recommendations and actions have an indicative rating of their potential impact in three respects:

- Cost – the extent to which it would reduce the grid connection costs of community energy projects
- Transparency – the extent to which it would improve community energy projects' sight of network status, and application and payment processes

- Timescales – the extent to which it would speed up the development of community energy projects, by bringing forward grid connection dates.

These impact ratings should aid consideration of the most targeted next steps for grid connection.

1.4 Next steps

The working group understands that the three Community Energy working groups (Hydro, Grid Connections and Planning) will report to the Secretary of State by the end of July 2014. The Community Energy Unit will analyse the reports over the summer, including a preparation of costings, to prepare a formal government response in the autumn and an action plan by March 2015.

The actions in this report are assigned to a variety of actors. Some are already in progress, and working group members have agreed to implement those which remain. Where these relate to DNOs Ofgem will be monitoring progress through the price control process tools. However, to ensure that improvements are made in all areas, the working group recommends that alongside developing the action plan DECC also monitors the report's actions and publishes an evaluation of progress.

2. The Challenge

2.1 The current regulatory framework

When a customer connects to the network they pay:

- the cost of the assets required to make the connection that will be used only by the new facility
- a share of wider costs if network reinforcement is required (unless the connection cost is above a high cost threshold of £200/kW, in which case the customer pays the full reinforcement costs over that threshold).

Any remaining reinforcement costs are spread among all customers and recovered through electricity bills. Ofgem estimates that, between 2010 and 2013, on average 95% of all completed connection requests did not involve network reinforcement.

When charging for connections, a balance has to be struck between providing affordable connections and keeping electricity bills down. The current system is designed to protect the connecting customer from paying for infrastructure that they will not directly use. It also means that the wider customer base does not cross subsidise connection assets which primarily benefit a single party. This policy helps keep the distribution element of the electricity bill down for all consumers.

The current arrangements also encourage efficient network use, which benefits all consumers. The price of connection encourages customers to locate where network capacity is available, and encourages them to engage with smart grid solutions to reduce the cost of their connection and electricity use. More efficient use of the network benefits all its users, although this approach may not maximise the potential for connecting additional generation capacity which requires new network infrastructure.

Ofgem has recently published a guide to its connections policy. This information should help community energy groups understand how the connection process works and applies to their projects.

2.2 What is community energy?

The working group used the definition of 'community energy' in the Community Energy Strategy: community projects or initiatives focused on reducing energy use, managing energy better, generating energy or purchasing energy. Projects share an emphasis on community ownership, leadership or control where the community benefits. This seemed to be an appropriately inclusive definition.

In this report a 'community group' refers to an individual community organisation involve in a renewable energy project. A 'community representative body' or 'regional / umbrella group' refers to an organisation that represents the interests or members of a number of community groups.

2.3 Why is community energy different?

The regulatory arrangements described in section 2.1 help protect the interests of all consumers. However, they also present challenges that are specific to community energy groups as opposed to commercial developers. Community energy groups:

- cannot move to areas where the grid is not constrained
- are unlikely to have significant finance available for the early stages of project development, although they have proved they can raise finance at later stages
- are less likely to have expertise in grid connections
- use governance models which mean that projects will typically take longer to develop and may, therefore, find it difficult to respond as quickly as commercial developers when capacity becomes available
- employ atypical, often shared, ownership models
- are often established with social objectives, eg supporting vulnerable consumers and reinvesting in local energy projects.

These factors mean that community energy projects can face significant challenges when connecting to the grid, particularly in areas where the network is constrained. However, the group also acknowledged that community support will be central to the successful roll out of distributed energy, a key public policy objective. Community ownership through community energy schemes can play a central role in underpinning this support. In addition, the group acknowledged that community energy groups can help relieve limited grid capacity by matching supply and demand more efficiently than other developments, and contribute to wider public policy initiatives.

2.4 Potential solutions

When the working group first convened the community energy representatives put forward a number of potential solutions to the difficulties they face when connecting to the grid. These became a long list of potential actions and policy changes which was developed and discussed by all members of the group, and then refined to become this report.

The group agreed that there are many activities which can be taken forward within the current framework to help community energy groups manage the challenges identified above. These are explored further in sections 3-5 below. However, the group also agreed that to address wider challenges that arise from the distinct nature of community energy, more direct assistance or policy change may be required. A number of more transformational solutions are described below, and could form the basis for further work with DECC's support.

<u>Socialising connection costs</u>

Community energy groups have suggested increasing the share of costs which are socialised (ie paid for through energy bills or general taxation) when a community energy project connects to the network. This would reduce the share of the cost which the project would need to pay for, thereby reducing the need for up-front finance, and the risk to investors. This is the approach taken in other European countries such as Denmark and Germany, and further investigation of the potential to move connection charging boundaries so that the connecting customer does not pay for any wider network reinforcement has been supported by distributed energy representatives that are likely to require connections in the future. If necessary the socialised cost could be capped, though this would not entirely remove the risk to other customers.

Paying for connection in instalments post-connection

Introducing delayed payment (after the connection is live) where reinforcement costs are incurred would help community energy projects, as operating revenue could be used to cover those costs. This could also work better with the finance packages offered by banks and other lenders, as a proportion of the project costs would be de-risked allowing projects to access cheaper financing. Project-specific risks would continue to largely fall on the connecting customer, minimising risks to wider customers. If this approach were enabled, DNOs and community groups could run a number of 12 month pilot projects to trial the approach (see section 2.5).

At the moment, community energy groups can only delay connection payments by agreeing a payment schedule with a third party which is willing to underwrite the risk, for example as part of a consortium. We explore this model further in section 5.3; however, trials are still in their early stages and such a model may not be appropriate or possible for all community energy projects. Allowing for instalment payments post-connection would, therefore, represent a more widely-applicable solution, but is likely to require intervention by a third party with a remit to facilitate community energy grid connections and with access to significant long-term finance.

Investment ahead of need and reserving capacity

Community energy groups have suggested that DNOs should invest in the network ahead of need with a view to enabling community energy projects. Investment ahead of need will reduce the reinforcement costs community energy projects will need to pay, and may also speed up their connection process. Ofgem's price control framework already encourages network companies to use funding to invest strategically, where such investment is in the interests of customers more widely. Ofgem's price control framework already encourages network companies to use funding to invest strategically, where such investment is in the interests of customers more widely. When they do so, that DNOs can recover the same level of costs as they would have otherwise spent under a non-strategic approach. Detail is set out in Ofgem's price control strategy decision.

There is currently a lot of interest surrounding investment ahead of need, and many different categories of customer that could benefit beyond community energy groups. To make sure that community energy groups, rather than other connection customers, benefit from this investment, a proportion of the capacity within each DNO region would need to be reserved for their use. This would make the community energy groups' inability to move (to an area with more spare capacity) less of a disadvantage.

2.5 Making the case for transformational measures

These proposals would help to overcome the specific challenges facing community energy. They also require changes to fundamental aspects of the existing arrangements, and there would be consequential impacts on other customers. The proposals either

directly move costs that community energy projects currently face onto the wider customer base, or indirectly require the wider customer base to underwrite some of the risk associated with community energy projects. They will come at a cost to the wider consumer base by increasing the network-costs element of the bill, but individual consumers may benefit from reduced energy costs (if energy can be supplied to them directly), and net benefits to society could include increased economic activity or health levels. The level of this cost and the overall net impact requires further work to quantify precisely. In addition, any changes could have an impact on the efficient use of the network.

These approaches would also involve community energy schemes receiving preferential treatment compared to other connection customers. While Ofgem can apply different regulatory arrangements to promote renewable schemes, it does not believe these can be limited to community energy-only projects. In addition, Ofgem does not believe DNOs can unduly discriminate in their treatment of different categories of customers under current EU and GB arrangements.

Community energy groups contend that these measures would not discriminate against other grid customers, but ensure a level playing field for a customer group that is currently disadvantaged for the reasons set out in section 2.3. It is principally for government to identify the need to support a particular consumer group or industry sector, which it can then translate into specific targeted measures (eg renewable energy support, the Warm Home Discount etc). The working group would therefore welcome a clear public policy statement from DECC on its view of the case for distinct treatment of community energy projects.

As noted in section 2.3, it can be a particular challenge for community energy groups to finance the early stages of a project (such as grid connection) before FIT support is available. Currently, many sources of upfront funding do not cover development costs and so cannot support community energy projects through the connection process. Alongside the current consultation on combining Feed-in Tariffs and grants for community energy, DECC may wish to consider establishing a pilot fund to offer community energy projects grant funding for the proportion of connection costs over a high cost threshold. Unlike the proposals above this would not necessarily involve recovering the costs through consumers' bills, and may be a more targeted way of ensuring the support reaches community energy projects through means compatible with the current regime.

A high cost threshold of £200/kW and a fund budget of £5m could allow approximately 25MW of new community energy projects to progress. If the pilot were successful, a larger-scale programme of direct financial support could open up grid constrained areas with high community energy potential. Any pilot would need to be compatible with European state aid rules.

To review the case for implementing this sort of subsidy and the solutions listed in section 2.4, both DECC and Ofgem would need evidence that current and future energy consumers would receive benefits from community energy which counteract the increased costs and risks; DECC would also be able to consider wider benefits to society. This could be supported by pilots exploring the feasibility and impact of the transformational solutions.

2.6 Recommendations

Beyond the current framework: recommendations			**Potential impact for community energy**	
Who	What	Timing and cost	Reducing connection	Reducing connection

			cost	timescales
DECC, Ofgem, regional / umbrella groups	Develop evidence base regarding the impact of community energy on energy consumers and society as a whole	2014 and beyond	Low	Medium
DECC	Provide a clear public policy statement on its view of the case for distinct treatment of community energy projects	2014	High	High
DECC	Investigate the merits and feasibility of establishing pilot funding for a proportion of high connection costs	Pilot lasting 12-18 months, proposed £5m fund	High	Medium
Ofgem, DECC, DNOs, regional / umbrella groups	Explore the potential for pilots to investigate the feasibility and impact of transformational solutions, in particular reserving capacity for community energy groups, spreading connection costs beyond commissioning and establishing a body to make strategic network investments on behalf of community groups	2014-15	High	High

3. Encouraging Customer Engagement

Individuals involved in community energy projects often have limited experience of the energy sector. They would therefore benefit from simple, clear information to help plan and implement their developments. Better customer engagement is key to the success of community energy projects. This is something the industry has already recognised; in some of the following examples, what's needed is consideration of community energy-specific issues (as set out above) within actions that are already underway.

3.1 Tailored engagement

Aside from a relative lack of expertise, many of the challenges community energy groups face when connecting to the grid are shared with distributed generation (DG) more broadly. Some of these issues are being considered through the DG Forum, an industry group which addresses DG connection issues. The forum is also open to community energy representatives.

Some of the actions requested by DG representatives in 2014 will also benefit community energy groups, including interactive application processes, connection quotes broken down by contestable and non-contestable works, heat maps, and online information on available circuit capacity. In addition, the DG Forum and the Smart Grid Forum are both considering opportunities for demand management to ease grid constraints (see section 4 for more detail). Although neither currently emphasise the potential role of community generation, solutions developed by these groups could benefit community energy projects looking to connect.

DNOs are already incentivised to engage with stakeholders and meet the needs of connection customers as part of the Broad Measure of Customer Satisfaction (BMCS) scheme. As part of the BMCS, those DNOs that score above the industry average earn a financial reward and those that score below the average incur a penalty. DNOs are also encouraged to reach out and respond to the needs of connecting customers through the stakeholder engagement element of the BMCS, and can earn a reward for doing so. This provides significant incentive for DNOs to understand the specific needs of community energy groups and develop tailored solutions for them. This includes having an engagement strategy in place to develop an understanding of who their stakeholders are and how to engage with them. Governance arrangements also need to ensure the engagement takes place and that feedback leads to meaningful outcomes. Finally, DNOs need to provide evidence of outcomes that resulted from the engagement process.

In addition to the BMCS, the next DNO price control (which begins in 2015) introduces an Incentive on Connections Engagement (ICE – see box 1). The ICE aims to drive DNOs to understand and meet the needs of major connection customers (including distributed generators), and should encourage DNOs to engage with community energy groups understand and address their specific requirements.

The BMCS and ICE will drive DNOs to be more responsive to community energy groups. Ofgem is considering how assessment criteria for the stakeholder engagement incentive can be amended to take into account how well DNOs engage specifically with community energy groups.

Box 1: Incentive on connections engagement

The connection needs of large commercial customers sometimes differ from those of domestic customers. As part of the next DNO price control, Ofgem is introducing a specific incentive for large connection customers: the Incentive on Connections Engagement (ICE). It aims to drive DNOs to understand and meet the needs of major connection customers (which includes distributed generators).

Ofgem is trialling the ICE for distributed generation customers in 2014-15. Although the needs of distributed generation and community energy customers are not identical, there are similarities. The DNOs have already submitted their action plans for the trial year, and they include activities such as holding community energy workshops and adding flexible options and payment schedules to connection quotes.

Tailored engagement actions			**Potential impact for community energy**		
Who	What	Timing and cost	Reducing connection cost	Increasing connection transparency	Reducing connection timescales
DNOs	Carry out community energy-specific engagement	Within 2014-15 ICE trial	Low	Medium	Low

	through BMCS and ICE	and beyond			
Ofgem	Add community energy engagement expectations to DNOs' Stakeholder Engagement incentive assessment criteria	Autumn 2014	Medium	High	Low
DNOs, regional and umbrella groups	Share best practice regarding community energy engagement (eg via umbrella groups, DECC's "one-stop-shop", the ENA, DG Forum outlets etc)	In 2014 and beyond	Low	High	Low

3.2 Sharing information

As well as active engagement by the DNOs, the community energy sector would benefit from more accessible information to help improve the sector's expertise. Network data and maps, as well as details of the location of other community energy initiatives around the UK, would help to guide connection plans and enable joint projects, as long as community energy groups are also supported in interpreting that information.

In addition to this, a transparent and, where appropriate, more consistent approach from DNOs can help community energy groups share their learning across projects and regions. For example, DNOs should be clear about the terms of the connection offers they typically provide, and do so in a standard format to the extent possible to aid comparisons. Community energy groups could also usefully benchmark the information they find useful in connection quotes and highlight best practice to enable DNOs to meet their requirements. The ICE incentive provides a framework within which this can be explored (see section 3.1).

Once community energy groups have access to this information, it will be important for them to identify particularly helpful behaviours and practices so that DNOs have a benchmark to aim for. The DG Forum (see section 3.1) and Smart Grid Forum sub-group on community energy (see section 4.1) will be useful avenues for this; in addition, community energy could be discussed at the DNOs' Stakeholder Best Practice Sharing Group to ensure they are comparing practices and feedback.

Box 2: Community energy outreach

Western Power Distribution (WPD) and Regen SW are working together to improve customer service for community energy groups who are planning to connect to the grid. They have held an event in Cornwall specifically for community energy groups, at which WPD set out the process of connecting to the network and then provided a detailed surgery for community energy groups with specific projects. They are now planning further dedicated sessions for community energy groups in other locations. They have also begun work on a guide on connecting to the network specifically for community energy groups. This will be drafted from a customer perspective to recognise that community energy groups are often new to the process of connecting to the grid.

Sharing information actions			Potential impact for community energy		
Who	What	Timing and cost	Reducing connection cost	Increasing connection transparency	Reducing connection timescales
DNOs	Ensure more transparency in quoting arrangements	Already underway via DG Forum	Low	High	Low
DNOs, regional and umbrella bodies	Provide network data and maps to guide connection plans, and support in interpreting such information	Already underway via DG Forum	Low	High	Low
DNOs	Explore more consistency in connection offer terms across DNO regions	Already underway via the DG Forum	Low	High	Low
DNOs	Include community energy in Stakeholder Best Practice Sharing Group	2014 and beyond	Low	High	Low
Regional and umbrella bodies	Highlight best practice in contracts / arrangements (eg via DNO Stakeholder Best Practice Sharing Group and DG Forum)	2014 onwards	Low	High	Low
DECC	Provide information about the location of community energy groups for coordination and support purposes	Alongside rollout of "one-stop-shop"	Low	Medium	Low

4. Enabling Smart Connection Offers

It can be a challenge for community energy groups to find the capital necessary to pay for upfront connection costs. This situation is exacerbated in places where there is little available capacity and reinforcement is required. One way to manage these challenges is to use flexible connection as a way to avoid reinforcement costs.

4.1 Identifying opportunities

When the capacity requirements of a development exceed the available capacity, it may trigger network reinforcement and the associated costs. The combination of demand management and 'non-firm' connection offers could help some community energy projects reduce their connection costs by limiting the amount of reinforcement needed.

Demand management can take a number of forms:

- For existing demand customers: payment for flexibility in the form of a rebate on distribution use of system charges (DUoS) or direct payment.
- For new demand customers: a reduced connection charge in exchange for the DNO being able to interrupt services (called a "non-firm" or "non-secure" connection).

As an example of the latter, a non-firm connection allows a DNO to curtail the generator in emergencies or at given times of the day, depending on the contractual agreement between the two parties. In return, a generator will pay less for the connection as the DNO will not need to carry out any wider reinforcement works. This approach is being explored by Scottish Power through the LCNF-supported Accelerating Renewable Connections project (see section 4.2), which involves a workstream focused on community-led solutions to demand side management.

Community energy projects are uniquely placed to participate in enabling flexible connections and local demand management. These groups are often seeking both to support low-carbon generation and to reduce local energy demand and costs through energy efficiency. Some community energy groups are already pursuing demand-management solutions, including the Gigha battery project (see box 3).

Box 3: Gigha battery project

The Gigha battery project is an example of a community energy project that has found an innovative solution to a grid constraint, by using flexible onsite demand. Rather than waiting for an expensive grid upgrade, the project will have a connection capacity that is smaller than its peak output. Thanks to £3 million of funding from DECC's Energy Storage Technology Demonstration Competition, a vanadium flow battery next to the turbine will store surplus power, which can then be exported to the grid at low-wind periods without breaching the generator's permitted export capacity. This project required innovative and collaborative thinking on the part of the community (Gigha Renewable Energy Limited), Scottish and Southern Energy and DECC. Community Energy Scotland acted as a broker, bringing the parties together and working with Ofgem to clarify Feed-in Tariff eligibility in light of the grant funding received from DECC.

There are already mechanisms to help introduce demand management. DNOs will usually make a standard connection offer, charging for the connection based on the methodology described in section 2. However, DNOs may also make an offer for a non-standard connection; this would include any offer involving demand management.

Demand-management opportunities typically involve several parties and have not been a traditional activity for DNOs or other stakeholders. Demand management connection solutions therefore need incubation and piloting, as well as clear policy support to signal the need for engagement by DNOs and other organisations such as local authorities. Ofgem's innovation funding and price control mechanisms give DNOs opportunities to consider demand management options when connecting customers.

In addition, a new working group (with members including several community energy representatives) has been set up under Work Stream 6 of the Smart Grid Forum to look at how smart grid options can be adapted to best fit the needs of community energy projects. The working group will provide stakeholders with an opportunity to further explore demand management and flexible connection options, which could help significantly reduce connection costs and address some of the key issues which community energy schemes are currently facing.

Producing proposals for these arrangements requires information on where there is most potential for demand management, for example where heat demand can shift between oil and electricity and so alter electricity use in an area. While this data is useful in identifying areas to investigate, more detailed information is also needed – for example power flows and local demand profiles – to help community energy groups design location-specific solutions to grid constraints. Some of this is a question of making existing information accessible to community energy groups. However, some cases require funding for network monitoring equipment, good communications and engagement from DNOs, and a trusted intermediary (such as a local authority or Local Enterprise Partnership) to facilitate the process. For example, SSE has been collaborating with Community Energy Scotland on developing a model for community generators to request the installation of advanced network monitoring equipment, to help identify innovative connection options in their area.

A key barrier to progressing smart connection arrangements arises from projects which are not able to export their full capacity to the grid; schemes of this type can be prevented from securing Feed-in Tariff (FIT) accreditation. This is because the FIT legislation requires an applicant to show that they can consume the full declared net capacity (DNC) of the installation. Where the grid connection is less than the DNC and there are no loads onsite (eg use in buildings), the installation will be viewed as not having been commissioned. As a result, it won't be eligible to receive FIT support, despite the installation being operational. DECC is reviewing the legislation to ensure it doesn't create unintended barriers or deter community groups from exploring flexible connection solutions.

Identifying opportunities actions			**Potential impact for community energy**		
Who	What	Timing and cost	Reducing connection cost	Increasing connection transparency	Reducing connection timescales
Regional and umbrella groups, DNOs, DECC	Provide and promote technical advice to help community energy groups evaluate connection alternatives	2014 and beyond; full provision may require additional funding	Low	Low	Medium
DECC, regional and umbrella groups	Identify and publicise heat demand and gas grid databases	Already in progress (DECC updating heat map in autumn 2014)	Low	Low	Medium
DECC	Review FIT accreditation legislation as part of the 2015 FIT review	2015	High	Low	High
DNOs and community energy groups	Use new WS6 sub-group on community energy explore demand management	2014 and beyond	High	Low	Medium

	and flexible connection options and share learning				
Local authorities, Local Enterprise Partnerships, regional and umbrella groups	Coordinate community energy groups and DNOs to explore connection options	Within community energy strategies (for local authorities); as part of standard practice (for LEPs)	High	Low	Medium

4.2 Incentives

Community energy groups could be given a further incentive to use demand management through a rebate to DUoS charges or direct payment from the DNO. Eligible generators that can demonstrate generator and load control to create power flows that use only specific parts of the distribution network could receive a rebate for their services, for example as a regular payment from the DNO. Arrangements will vary based on the agreement between the two parties, and further piloting is needed to develop these commercial models and the technologies that underpin them.

In addition, Ofgem provides funding to projects trialling innovative solutions under its Network Innovation Competition (NIC) and Low Carbon Network Fund (LCNF). The aim of these schemes is to provide incentives for DNOs to develop and trial new technologies and arrangements which would help achieve savings for consumers. The process is competitive to ensure that customers gain significant return on their funding through the roll-out of successful trials and subsequent network savings and / or carbon benefits.

The criteria for the LCNF and NIC schemes already allow for community energy-based projects to be funded. Ofgem has so far funded three community energy projects under LCNF / NIC:

- Accelerating Renewable Connections project – Community Energy Scotland is a partner
- Ashton Hayes Smart Village
- Community Energy Action.

These projects aim to help DNOs, working in partnership with community groups, to better understand network constraints in areas with lots of distributed generation, and develop demand-side and active network management solutions.

Ofgem expects DNOs to engage with a wide range of stakeholders when developing proposals for innovation funding, and to take proposals from community energy groups into account where they meet the criteria. This expectation is taken into account during the screening process. Where community energy groups feel that their proposals are not being given due consideration, they should raise this concern with Ofgem.

Ofgem will work with stakeholders to identify, assess and where necessary remove barriers community energy groups are facing in engaging with DNOs on credible LCNF and NIC proposals.

Box 4: Flexible Plug and Play

The Flexible Plug and Play (FPP) Low Carbon Networks project is an innovation project led by UK Power Networks and funded by Ofgem's Low Carbon Networks Fund. It has developed, through the integration of innovative technological and commercial solutions, a cost effective method for connecting distributed generation (DG) to constrained parts of the distribution network.

The FPP method is offers connections which allow the renewable generators to connect to the network without the need for extensive reinforcement. This approach can deliver significant connection cost savings to DG customers.

As of June 2014, ten offers had been accepted totalling 33.88MW of renewable capacity (wind, solar, anaerobic digestion), with one of those generators already operational. The project will run and generate valuable learning until December 2014. UK Power Networks has committed to integrate this novel method in its business-as-usual practices by the end of Q2 2015.

Incentives actions			**Potential impact for community energy**		
Who	What	Timing and cost	Reducing connection cost	Increasing connection transparency	Reducing connection timescales
Ofgem, community energy groups, DNOs	Assess barriers community energy groups face in engaging with DNOs on credible LCNF and NIC proposals	2014 and beyond	Medium	Low	Medium
DNOs and community energy groups	Work together to explore projects that meet the criteria of the LCNF / NIC schemes	2014 and beyond	High	Low	Medium

5. Managing the Cost of Connections

To help keep connection costs to a commercially viable level, community energy projects are seeking ways to either share the costs with other parties or spread the costs over a longer timeframe. In Denmark, capital support for early-stage projects (via tax relief on income from investments in renewables and easy access to bank loans for cooperative groups) has been a significant factor in the community energy sector's success.

There is a separate community energy roundtable examining the availability of finance for community energy. There is a clear overlap with this topic, but here we focus on the specific challenge presented by upfront connection costs.

5.1 Staging payments

Although charging methodologies usually require connection costs to be paid before the connection is live, there is flexibility that allows DNOs to apply the charges as costs are incurred throughout the connection process, rather than as a single lump sum at the start of the process. This can be particularly beneficial for community energy projects managing restricted cash flows. (See section 2.4 for a discussion of the benefits of allowing payments to be made after the connection is live.)

Some DNOs already offer relatively flexible payment terms to connecting customers, such as lower deposit requirements and staged payments. This is an area to develop in some ICE action plans. However, the offer varies across DNO regions and it is not consistently reflected in charging methodologies. Community energy projects would benefit from a transparent approach to staged payments across all DNOs, as this enables groups to share learning and best practice.

Staging payments actions			**Potential impact for community energy**		
Who	What	Timing and cost	Reducing connection cost	Increasing connection transparency	Reducing connection timescales
Community energy groups	Identify and share best practice regarding phased payment of connection costs	2014	Low	Low	Low
DNOs	Use clear and transparent methodologies regarding phased payment	2014 and beyond	Medium	Low	Low

5.2 Third parties: external support for costs of community energy connection

Various bodies can provide finance to community energy projects, or low-cost loans to underwrite the risk of a grid connection, and so enable community energy projects to work within the existing framework and yet pay connection costs after the connection is live.

DECC has established a number of funding mechanisms as part of its support for community energy. These include the Rural Community Energy Fund and the Urban Community Energy Fund. There are also other sources of government-sponsored upfront funding, such as the Technology Strategy Board (eg its Local Energy Systems call). As these funds have different eligibility criteria, intervention levels and scope they could be presented jointly to make them more accessible and enable comparison, for example via the "one-stop-shop" information resource to be developed under the Community Energy Strategy. In this context, it would be helpful if the list of resources specifically noted each fund's potential to support community energy projects through the connection process (until they are generating revenue). However, it is also of note that some of the funds involve complex administration which may deter small-scale community projects from applying to them.

Similarly, local authorities have access to a number of funding streams which could allow them to support community energy projects in the form of grants, loans or revolving funds. Examples include the Public Works Loan Board, prudential borrowing and the Community Infrastructure Levy. Local authorities could explore the potential of each of these in their area and provide that information to local community energy groups as part of their local or regional community energy strategy (as requested by the Secretary of State in his letter of 27 January 2014).

Box 5: Cornwall Council

Cornwall Council, through its Green Cornwall programme, supports local community energy groups through mechanisms including a revolving fund, a community energy forum, supplementary planning guidance, coordination, and translation of national

policies and initiatives into a local context.

Cornwall receives European Regional Development Fund support, which aims to reduce structural imbalances in economic performance both within and between member states. The next round of funding is due in 2015, and the council is exploring the possibility of using some funding to develop innovative approaches to unlocking constraint issues that are faced by community energy. In some circumstances this could be repaid once the projects generate enough income to pay them back. The council is aware that grid constraints should not block the development of locally owned generation, with the potential for this to kick-start the move towards a local energy market.

Although few local authorities have access to this particular funding stream, Cornwall Council is also investigating the potential for other income sources to provide the same support, creating a replicable model.

Although the Green Investment Bank is extending its investment criteria to include hydroelectricity and onshore wind developments, its investment strategy will focus on construction risk rather than development risk, so connection costs are outside its scope. However, the Community Energy Finance roundtable has identified bodies that can provide bridging loans (or similar) to support community energy groups' grid connections, examples of which include CO_2 Sense and CARES (in Scotland). However these sources of funding are scaled for individual projects, whereas strategic investment in new network infrastructure requires significant and long term investment.

There are also non-governmental sources of funding which may be able to subsidise connections for community generators. One example is SSE's Community Trust, which can provide support towards high cost connections within SSE's DNO regions, but schemes such as this would need to be much larger to meet the needs of community generators across the UK.

Third parties actions			**Potential impact for community energy**		
Who	What	Timing and cost	Reducing connection cost	Increasing connection transparency	Reducing connection timescales
Local authorities, DECC	Investigate and develop funding streams to finance connections or underwrite the risk	As part of development of community energy strategies, within council resources or loan capabilities	High	Low	High
DECC	Publicise funding streams that could finance connections or underwrite risk	Alongside rollout of the "one-stop shop"	Medium	Low	Medium

5.3 Consortia: collective approaches to community energy reinforcement costs

The nature of the connection charging methodology for distribution network connections means that above a high cost threshold, additional reinforcement costs fall exclusively to

individual connecting customers. For sole-use assets, the costs always fall exclusively to the connecting generator. The cost of network reinforcement can make individual projects nonviable. One solution is for several connecting customers, including community energy groups and commercial developers, to form a consortium and share the cost of a grid upgrade or local connection cost.

Box 6: Street and Bridgewater consortium

Regen SW, a not-for-profit regional centre of expertise in sustainable energy, is working with a collection of community energy groups, renewable energy developers and Western Power Distribution to trial a consortium model for a shared reinforcement in the Street and Bridgewater areas of Somerset. The consortium would share the cost of connecting to a new 'hub' for generation connections, which no single site could fund alone.

The trial is assessing if there is sufficient potential at the chosen location to enable a grid reinforcement collaboration. It will share its learning once complete. So far it has been enabled by close working between Regen SW and Western Power Distribution, the region's DNO. The engagement of community energy projects in the reinforcement relies on developers volunteering to make capacity available.

Regen SW have now launched a collaboration service, supported by local DNOs, which brings together any distributed renewable projects to reduce connection costs, and Scottish Power and Community Energy Scotland are collaborating on a similar initiative.

Once a consortium has formed, arrangements are needed to reserve the capacity required for their collective developments. There are several ways to achieve this:

1) A third party pays the upfront cost of the community energy portion of the reinforcement, if it is still prohibitive. This requires identifying a funding stream, as explored in section 5.2.
2) Developers agree to make a proportion of their reserved capacity available to community energy projects. This is an option in some areas, but would likely need incentives to make it replicable as it currently relies on voluntary action by developers. This option relates to the work of the Community Energy Shared Ownership taskforce.
3) DNOs reserve some capacity for community energy projects for a set period. As set out in section 2.5, this presents some challenges within the current framework. However, DNOs could provide clearer and more transparent information on contracted capacity which has been reserved and paid for by developers but which remains unused and could potentially be released or shared with a community energy group where contractual terms allow.

Umbrella bodies have identified a number of learning points regarding the operation of consortia for enabling grid connections. For example, the development process for renewable energy projects varies widely between different technologies, locations and scales. For a consortium to be effective projects need to have well aligned risk profiles and timeframes to ensure that all members can move forward in step and meet common milestones, but it can be difficult for community energy groups to assess this compatibility, particularly alongside the planning process. Sharing learning may help other community energy groups facing similar issues in the future, although these are likely to remain fundamental challenges.

Implementing a consortium model to help finance grid connection involves setting up supporting organisations. A special purpose vehicle (SPV) is a standard part of consortium arrangements. However, the legal basis of some community energy groups can mean they are unable to make high-risk investments, which could include

consortium SPVs. Regional groups could provide guidance on appropriate legal approaches to avoid this; this advice could also be available through DECC's "one-stop-shop".

In addition, DNOs are not permitted to disclose the names or contact details of contracted generators (though the collaboration service mentioned in box 6 attempts to address this barrier). One solution to this may be for DNOs to publish the capacity and location (but not the contact details) of contracted connection offers. Alternatively, contracted generators could consent for their information to be shared with a third party, but this would require them to be re-contacted by the DNO. In either case, regional bodies could analyse contracted generation information and support discussions between potentially interested parties.

A consortium-based community energy project employing split ownership between community and commercial interests will require separate connections with their own export meters to allow independent operation and separate claims for their preference of Feed-in Tariffs or Renewables Obligation payments. Any plant that is considered part of an installation (FIT terminology) or within the boundary of a generating station (RO terminology) can only receive support under one scheme, and the total installed capacity will be considered one site.

Similarly, the FIT registration procedure may inhibit the registration of some shared ownership projects by preventing the commercial and community generation from registering as separate stations. When considering FIT applications Ofgem determines 'site' in line with Article 15 of the FIT Order 2012, set in legislation by DECC. Ofgem and DECC will work together to consider whether there are any possible alternative arrangements for shared ownership projects.

However, DECC is currently consulting on allowing a community organisation and commercial developer to share a grid connection but apply for separate accreditation under the FIT. This would allow them to claim separate FIT payments, as long as they could prove separate ownership of all infrastructure and electrical equipment up to the point of grid connection. This may make single-connection but split ownership projects more viable and significantly cheaper. DNOs should work with community energy projects to enable single-connection offers where possible, and develop consistent and transparent policies which enable joint owners to assess the options available to them. Regional and umbrella bodies should also follow DECC's consultation and inform their members of any implications for ownership models or financial support.

Consortia actions			**Potential impact for community energy**		
Who	What	Timing and cost	Reducing connection cost	Increasing connection transparency	Reducing connection timescales
DNOs	Use the DG forum to explore options for providing information on the capacity and location of contracted capacity	2014-15	Medium	Low	Medium
DNOs	Develop transparent approaches to connection offers for split ownership grid connections	2014 and beyond	High	Low	Low

DNOs, regional and umbrella groups	Encourage developers to contact community energy groups to explore consortium options and enable information sharing	Within ICE trial year and beyond	High	Medium	High
Regional and umbrella groups; DECC	Provide advice on flexible legal structures and how to enable them	Ongoing; also via the "one-stop-shop"	Medium	Low	Medium
Ofgem, DECC	Explore alternative arrangements to reconcile shared ownership connections with FIT registration	2014	Medium	Low	Low
Regional and umbrella groups	Monitor DECC consultation on shared grid connections	2014	Medium	Low	Low
Regional and umbrella groups	Share learning from consortium trials	As learning emerges	Medium	Low	Low

Annex 1: Grid Connections working group

Responsibilities and scope

The working group was formed at the request of the Secretary of State for Energy and Climate Change. It was created to discuss issues that community energy projects face around grid connections and to identify ways to make a real difference to future community energy projects.

The aims of the working group were to:

1. explore the materiality of issues that community energy projects currently view as barriers
2. explore the causes of these barriers and identify who is best placed to identify and implement solutions
3. discuss how existing best practice, regulatory incentives and further measures can reduce or remove grid connection barriers
4. discuss timescales for solutions, including possible next steps for any longer-term work to be taken forward beyond the working group.

Sarah Harrison (Senior Partner, Ofgem) was asked to Chair the group. The group was asked to report to the Secretary of State in summer 2014.

Conclusions and recommendations are those of the group, but may not represent any individual member's view or Ofgem's policy.

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