ofgem | future insights

Ofgem's Future Insights Series

Local Energy in a Transforming Energy System

Ofgem's Future Insights Series

Local Energy in a Transforming Energy System

Abstract

Local energy, and the overlapping concept of community energy, are growing features of the GB energy system. Local energy projects have a range of characteristics and often cut across traditional sector boundaries such as generation, supply and consumption. These schemes stem from the desire to involve local communities in delivering energy outcomes and, in many cases, contribute to broader local social, economic and environmental objectives.

In this paper, we assess the current local energy landscape and the types of models that are emerging. We focus on those involving supply to local or community groups, including with associated generation, not on issues associated with distributed generation more generally. We consider the potential benefits and risks for consumers, and the implications for us as a regulator.

We conclude that the emergence of local energy is a welcome development and one that is likely to increase consumer engagement and choice. We recognise that local schemes need proportionate treatment and that regulatory arrangements should enable the emergence of business models that are in the long-run interests of consumers. But that should not be at the expense of customers who aren't included in a local scheme, and will need to provide appropriate protection (such as opportunities to switch) if service standards and value aren't maintained to the satisfaction of those customers.

This is the third in our series of Future Insights publications. It developed from our Insights for Future Regulation project, launched in Spring 2016.

The views expressed in this paper are emerging thinking from the project and do not represent established Ofgem or Gas and Electricity Market Authority positions.

Future Insights contact details: energy.futures@ofgem.gov.uk

What is local energy?

Introduction

'Local' means different things to different people. From an administrative perspective, local can mean anything from a neighbourhood to a local authority district, a city or even reach across different administrative boundaries.

In energy terms, there's no universally accepted definition of 'local energy', nor a comprehensive register of schemes. The phrase may refer to arrangements which operate at a scale lower than the traditional centralised model, such as generation connecting at the distribution level (also known as embedded or distributed generation). But it is also used to describe energy activities that explicitly set out to maximise social benefits for people or organisations in a specific geographical area or community. There are overlaps between local and community energy, and differences too. For the purposes of this paper we focus on models that address the needs of local groups of energy consumers. We recognise that community owned distributed generation schemes raise additional interesting issues, but they are beyond the scope of this paper.

So for the purpose of this paper, we define local energy as:

> *Energy arrangements led by (or for the benefit of) a local group and for the benefit[1] of local consumers. A local group is a collection of people and organisations with shared interests in local energy outcomes within a common geographical area[2].*

Local energy archetypes

Over recent years we have engaged with many projects that identify as local, which covers a broad range of models[3]. Table 1 categorises them into a set of archetypes. This approach helps to illustrate the regulatory interactions and the implications of different models, although we understand that some schemes may cut across archetypes.

Most schemes are focused on electricity. Some are also centred on heat technologies (including district heating schemes), with others looking to find efficient interactions between the power and heat sectors. The focus of this paper is electricity; we recently published a Future Insights paper on the decarbonisation of heat[4].

Table 1

Local Energy Archetypes		
Archetype	Description	Example projects
Local consumer services[5]	Services that aim to improve energy outcomes for local people: a. Energy awareness and advice schemes b. Energy efficiency schemes c. Collective switching and purchasing schemes d. Fuel poverty schemes e. Energy Services Company (ESCO)	Home Energy Scotland - local advice centres providing free, impartial energy advice. Brighton and Hove Energy Services Cooperative - finances energy efficiency measures paid for by consumer bill savings. The Big London Energy Switch - collective switching scheme run by a number of London councils. Nest - Welsh government scheme supporting households struggling with their energy bills. OVESCO - ESCO providing energy services in Lewes.
Local generation	Involves a local generation asset to benefit local consumers. Projects can be financed (wholly / partly) by the local community. The asset can be actively managed or passively owned by the community, generating revenues for local use.	Brixton Energy - revenues from block of flats' roof-top solar farm support community energy activities and local shareholders' dividend. Rumbling Bridge Hydro - Scottish community-owned hydro scheme with revenues supporting a community benefit fund and to enhance local economic outcomes. Awel Coop - a community-owned windfarm being built north of Swansea with revenues supporting local fuel poverty and renewables projects.
Local supply	Models aimed at supplying local communities with affordable / low carbon energy. a. Direct supply (licensed and exempt) b. Retail / commercial models (white labels / sleeving / tariffs)	Robin Hood Energy - a national supplier, owned by Nottingham City Council with local discounted tariffs. GLA - Greater London Authority is developing a Licence Lite supply arrangement. Greener for Life Energy - Anaerobic Digestion (AD) plants supplying electricity through a private wire. OVO Communities - white label tariffs provided through local authorities (including Peterborough and Southend). Good Energy local tariff - local tariff 20% less than standard for homes within 2km of wind farm.

Local Energy Archetypes		
Archetype	Description	Example projects
Micro-grid	Decentralised grids which operate in parallel to or independent of the national grid. a. Grid connected b. Off-grid	Centre for Alternative Technology Micro-grid - renewable powered micro-grid in Wales exporting to the grid. Isles of Scilly - an island based micro-grid that is connected to the national grid via a subsea cable. Isle of Eigg - micro-grid for small, remote island without a connection to the GB national grid. Knoydart - hydro-powered renewable electricity off-grid micro-grid.
Virtual private networks	Virtual private networks (VPNs) seek to operate on the public distribution network, typically offsetting generation and demand (local balancing) through commercial arrangements. Projects in this archetype are not widespread, often in concept design or trial phase and vary in scale. They range from very localised peer-to-peer approaches to multi-party arrangements and others exploring Distribution Network Operator (DNO) level market arrangements.	Fintry smart meter - aims to deliver a more affordable tariff for local residents (and understanding the potential for such schemes more widely) by virtual linkage of consumption with local generation including a nearby AD plant. Energy Local - pilot in Bethesda matching local consumer demand to local generation to minimise imbalance and provide lower tariff to consumers through licensed supplier. Heat Smart Orkney - scheme anticipates curtailment (network constraints mean renewable generators are sometimes curtailed) and switches on local electrical demand to maximise local generation. Centrica's Local Energy Market (LEM) - a smart technologies pilot in Cornwall involving renewable generators, businesses, households, large energy users and energy storage to unlock new revenue streams. Participants will connect to a virtual marketplace to sell their flexible energy capacity to both the local and national grid, plus the wholesale energy market.

Activities towards the top of the table tend to be more established. Those at the bottom are often more at the proof-of-concept and development phases, tend to be more complex and to be less aligned with current market and regulatory arrangements.

The emergence of local energy is a development common to other countries. The prevalence of local in a country depends on that state's administrative, policy, governance and market arrangements[6].

What's driving local energy?

As with any business model, local energy schemes require a financially viable business case, which may hinge on support schemes or incentives. However, many projects are also driven by other considerations often concerned with consumer involvement and maximising benefits within a local area. These include:

- **Devolution:** for some projects, the broader devolution agenda is an underlying motivation for a move away from the current centralised system.
- **Consumer preferences and involvement:** a powerful motivation for some consumers may be the desire to be more independent and have greater control over their own energy affairs. More broadly, consumer involvement appears to be a crucial factor in the appeal of local projects; this is particularly so for local generation schemes, where the relationship between community engagement and reward is self-reinforcing.
- **Trust:** general consumer dissatisfaction with larger energy utilities may mean a greater proportion of those disengaged consumers willing to engage with entities they trust (such as local authorities).

The benefits of local energy schemes for the developer and for consumers will depend on the archetype, the locational characteristics and the relevant commercial arrangements which provide a value stream. It does not necessarily follow that all local models can be scaled significantly or replicated in areas without similar characteristics.

Consumer and retail market implications

Retail market developments

Many local energy schemes, particularly within the local supply archetype, can enhance consumer choice and competition. The GB supply market has diversified significantly over the last decade. Independent suppliers now have a 14% share of the electricity supply market, compared to just 1% in 2012[7]. Between December 2012 and March 2016, the number of active domestic gas or electricity suppliers more than doubled from 20 to 43.

We're seeing new types of supplier entering the market such as Robin Hood Energy, Bristol Energy and Our Power[8] owned by public bodies and with an explicit local benefit focus (although their market activities extend GB-wide). Other local authorities and community groups have entered into white label type arrangements with existing suppliers to provide energy to their consumers.

At the same time, the retail market context in which these schemes are emerging is evolving[9]. We are moving from a prescriptive rules-driven environment to one based more on principles, putting the responsibility firmly on suppliers to think about how to deliver good consumer outcomes. This changing environment will allow for greater innovation and new products and services, with some likely to target local communities specifically.

Accessing consumers

At present there are five main regulatory options for supplying end consumers. These options are summarised in table 2:

Table 2

Market entry		Features
Route	Model	
Direct	Licensed supplier	▪ Licence awarded by Ofgem for gas and / or electricity and domestic and / or non-domestic consumers. ▪ Obligations include consumer protection, social and environmental obligations, industry code compliance. ▪ Duty to offer terms to all domestic consumers that request them. ▪ A restricted supply licence (by location or consumer type) may be sought.
	Licence Lite supplier[10]	▪ Reduces entry costs by outsourcing some code compliance to another supplier. ▪ Supplier is fully licensed and responsible for all other aspects of licence.
	Exempt supplier	▪ Legislation allows supply without a licence up to certain thresholds and in particular circumstances[11]. ▪ Requires commercial agreement with a licensed supplier to provide key industry services[12]. ▪ Consumer protection measures set out in legislation[13].
Indirect	White label	▪ Partnership between licensed supplier and third party to offer branded tariffs. ▪ Models vary, but the white label typically recruits and manages the consumer interface. Licence requirements, including code compliance and consumer protection, sit with the licensed supplier.
	Sleeving	▪ Licensed supplier provides commercial peer-to-peer services for participants. ▪ Used by corporates with own-generation on one site seeking to supply load on another. Supplier manages the imbalance risk.

Regulatory implications of the growth of local supply

While the scale of local supply activity is currently limited, we are aware of growing interest from different parties. Community energy schemes accessing Feed-in-Tariffs are growing in numbers, and many are keen to supply their power directly to their local area. Local providers can offer new choices to consumers, enhance competition and bring pressure on incumbents to better understand and respond to their customers' needs. We welcome the potential for local energy to engage and involve consumers more actively.

The licensed supplier model tends not to be a viable proposition for very small-scale supply - compliance with industry codes, in particular, requires significant upfront costs. Instead, many schemes are exploring commercial white label and sleeving type arrangements with licensed suppliers and exempt-supply options. The Greater London Authority is pioneering the Licence Lite model, but it remains to be seen whether there will be further uptake.

Among the regulatory issues we see are:

- Whether suppliers should be allowed to supply only local customers.
- Whether off-grid models should be welcomed as promoting energy independence.
- Whether exempt supply undermines consumer protection.
- How local suppliers can offset key risks such as energy imbalance.
- How new business models alongside supply will alter the position.

We address each in turn before summarising the overall challenges to regulation.

Local-only?

A local offer suggests that some domestic consumers might be 'in' and others 'out'. While localised approaches may lead to more services specifically tailored to the needs of those experiencing vulnerability, there is also the potential for models seeking to offer services only to more active, lower-risk consumers.

Licensed energy suppliers are currently subject to a duty to supply and have to offer terms to any domestic consumer that requests them. This requirement is in place for good reason, ensuring that consumers aren't cherry-picked. Today's regulatory arrangements do allow for a prospective supplier to apply for a licence restricted by geography; to secure this the supplier would need to argue the restriction on the basis of an over-riding public interest rationale. However, now we have a more diverse supplier landscape, this seems a cumbersome mechanism for enshrining consumer protection, and simpler arrangements may be more likely to deliver the benefits local can afford, such as improved choice.

Energy independence

Some consumers desire greater control over their energy affairs and more independence from familiar utility arrangements. Reductions in technology costs may make this more realistic, even if more expensive than traditional solutions. Greater control and independence could serve the interests of those consumers.

Historically, 'off-grid' micro-grids have emerged as a means of providing more reliable energy to isolated communities which could not feasibly connect to the national grid (such as some Scottish isles and particularly remote mainland locations). However, if consumers place increasing value on independence we may see consumers choosing off-grid solutions even where a national grid connection is a feasible alternative. Under this scenario, households on off-grid micro-grids may not be afforded some of the other benefits associated with a connection to the national grid, such as the ability to choose a different supplier if they are dissatisfied. Where this is an informed choice, that may be acceptable. We should however recognise that, for example, subsequent occupiers of the same property may inherit the choice.

Another implication may be that they avoid contributing to the costs of national energy policies and systems. In general, competition with the mainstream energy system is a good thing, provided the redistribution of system costs does not raise material equity issues. We discuss this further in the following chapter.

Exempt supply

If there were to be substantial growth of exempt supply, this may raise concerns as the protections available to consumers are not as comprehensive as those available under the licensed regime. However we do not see this as a pressing issue, not least as consumers in exempt arrangements (but still connected to the national network) can exercise their right to switch to licensed supply.

Offsetting risk

Under many of the models described above, the local energy supplier outsources responsibility for imbalance risk to the licenced supplier and is charged accordingly. To enhance the value and viability of smaller scale business models, some are integrating small generators, consumers and demand-side providers into virtual private networks (VPN). These aim to reduce risk by closely matching the available generation and load in aggregate. Closely matching means that the risk of imbalance for the parties could be lessened, thereby reducing the costs incurred by National Grid to balance the system and the imbalance charges for which the parties involved in the VPN would be liable. This is discussed further in the next chapter.

New business models

In the medium to longer term, the transformation facing the energy system may lead to the advent of new business models built on Third Party Intermediaries, peer-to-peer, flexibility services and multi-utility bundled services. Such a transformation may raise fundamental questions about the function of supply, the roles of suppliers and consideration of which activities should be licensed. In answering these questions, we believe that in order to maximise consumer benefits, regulatory structures (eg, licencing, industry codes, supplier-hub, etc) should not unduly prevent the emergence of business models (local or otherwise) that are in the long-run interests of consumers. Our current moves to a more principle-based form of regulation improve the regime's compatibility with a more general legislative or authorisation based regulatory framework, if we were to move away from licences.

Overall challenges to regulation

The key challenge facing regulation is to allow for the emergence of new products and services that benefit consumers, and which do not negatively affect the interests of other existing and future consumers, reflecting the nature of energy as an essential service.

Combined, the developments set out above raise some difficult questions that we, consumer groups, government and broader civil society will need to wrestle with:

a) Is it in consumers' interests for greater consumer differentiation / segregation (by location or other characteristic)?

b) Should the right to consumer choice be a universal principle?

c) New approaches may bring with them new risks; should all consumers bear the risk of failure of these approaches, or only those that benefit?

d) Should domestic consumers expect the same standards of protection irrespective of the type of service or provider they choose?

e) Conversely, should consumers be allowed to choose less protection if they determine the benefits are worth it?

While we do not want to prejudge this debate, it seems to us that guiding considerations should be to reduce entry barriers where practical and that one consumer's choice should not be unfairly constrained as a result of the choices of other consumers.

Network impacts and implications

Introduction

There are some unique features of the electricity system which make it different from most other products and sectors, and mean that understanding the implications of local energy models is not straightforward.

The electricity system is an interconnected system which needs to be continuously balanced in real-time to ensure system and market integrity for all. Electricity can be produced using different technologies and consumed in a range of ways, but once produced it is a homogeneous product that flows in accordance with physical laws, not commercial arrangements. In this sense, 1MW flowing through the network is the same as any other 1MW, regardless of whether it's produced by a local energy project. As system and network impacts arise regardless of the commercial relationship involved, it follows that the impacts on the system for a given generation and consumption pattern (meaning quantity, location and time) are unaffected by commercial characteristics such as a local supply model. Of course, commercial arrangements may cause changes in generation and consumption patterns.

Except in specific off-grid circumstances, local energy models cannot be viewed in isolation from the electricity system. They form part of an interconnected whole, and decisions taken in one locality can affect the interests of consumers in another. Specific local energy solutions will need to compete with other options to address network issues, such as active network management, storage and demand side response measures.

What are the potential network benefits of local energy?

The pattern of generation and consumption on a network can affect the costs of the network in two main ways:

- Network losses: reducing flows on the network by matching generation and demand, particularly at times of high energy flows, has benefits to consumers through reducing losses and therefore costs. However, adding generation in a generation-dominated area (or the equivalent for demand) will increase losses. To a large degree these benefits are already factored into the market arrangements we have, and are independent of whether the local generation is contracted with local customers or not – only the physical location, quantity and timing relative to the system matter.
- Network constraints and investment: again, reducing flows, at times when local peak flow approaches system capacity, can help avoid situations where network constraints are reached, and hence avoid costly action. Reinforcement investment is driven by expected future capacity limits (constraints) being reached, so deferring investment is the longer term analogue of avoiding constraints. While the regulatory framework enables network companies to remunerate these benefits, this practice is not well established and it is not reflected in market arrangements at distribution level in particular.

  At present, aggregate flows on GB electricity networks are falling, so in most locations capacity limits and constraints are not a current issue and the benefits of action to avoid them are low. However, in some locations either demand or generation may be increasing towards capacity limits and the benefits of avoiding constraints or deferring investment can be substantial. With the expected growth of electric transport and heating, locational hotspots and flexible options to resolve them are likely to increase substantially.

In both cases, it is important to consider impacts on network costs, rather than the short-hand of 'use' of the network, or a particular part thereof. Most network costs are sunk and fixed, and not reduced through lower network flows. It is often misleading, in terms of economic signals, to focus on 'use' of the network. If instead we think about network flows and the costs associated with them, this also helps to recognise that balancing a particular generator to offset an individual demand customer (or a particular group of customers) is generally less valuable than changing generation or demand in response to the predominant balance or flow in the relevant part of the network.

As noted in the previous chapter, balancing generation and consumption can also help reduce energy imbalances managed by the system operator. This is less dependent on location (unless precluded by network constraints). As with network constraints, in general, balancing a particular generator with a specific customer is less helpful than increasing generation or reducing demand when the system overall is short (or vice versa). Again the costs and benefits relating to imbalance are reflected in current market arrangements, so available to market participants. Nonetheless, local markets or local balancing arrangements which allow local suppliers to better manage the risks they face (such as imbalance risk) are valuable, not least because simpler access requirements can increase the ability of smaller businesses to participate. The more we can reduce transaction costs through effective market models, the lower barriers to entry will be.

The network benefits that local projects might create are not, therefore, universal; they are determined by the prevailing physical system characteristics and consumer behaviours in a specific area and can change over time (real-time, daily, seasonally, etc).

Implications for network regulation

Similar to retail markets discussed previously, the growth of local energy may challenge 'status quo' regulatory arrangements for networks and the wider system.

We want to ensure as far as possible that our regulatory framework provides a level playing field for all business models, fairly reflecting cost and benefit impacts. We recognise some regulatory change may be needed to facilitate this – particularly to reflect the value of relieving constraints and deferring investment where that applies. We also note potential interactions with recovery of sunk and fixed network costs. The remainder of this chapter explores these two issues.

Incentives to maximise the value of local projects

We want to ensure (as far as possible) that the growth of local energy is incentivised where system benefits can be realised. This will depend on incentives and price signals which are reliable over investment time-frames. The main options for providing this signal are a contract with or tariff from the network company/system operator which signals the value of the project to the system, or an established liquid market with prices that reflect that value.

Contractual relationships and geographic variation in tariffs are feasible in the near term to reflect the network benefits of local resources – albeit more practical experience is needed to establish these as common practice. We see some interesting developments beginning to emerge, but more action is needed at both DNO and national level.

An interesting alternative solution is that, if market conditions (and technological capability for local trading infrastructure) permit, liquid local markets could emerge. This would involve a system of local trading and balancing, analogous to the way national balancing arrangements work (where we try to keep as much balancing activity as possible in the market).

For this to work at local levels, there would need to be a high penetration of local trading (which may occur in some situations but seems less likely to be widespread in the next few years) or a system of pricing signals which allows generation and demand to operate independently. As discussed above, we see more prospect for local balancing to emerge as a response to wholesale market price signals rather than network constraints. This will allow local energy projects to net-off their contractual obligations cost effectively rather than having a large supplier balancing for them.

Network cost recovery arrangements

Although some consumers may wish to completely defect from the grid for non-cost related reasons, it seems unrealistic that we will see such a shift from the majority of GB consumers even if we look decades ahead. A more likely outcome (in the short term at least) is the emergence of local micro-grids, where parties may seek to avoid certain network costs but still maintain a connection to the grid (either as an 'insurance policy', or to sell surplus generation).

Parties engaging in these models, or proposing virtual alternatives across the main network, are already seeking to offer discounted tariffs to consumers, for example, by only paying for (and hence needing to recover) the marginal cost of their activities. In particular, they seek to avoid paying for the sunk costs associated with pre-existing network infrastructure.

From a regulatory perspective, this highlights the fundamental tension between economic efficiency and fairness. There are efficiency arguments for charging consumers (including local energy consumers) only the marginal impact of their activities. However in practice, continued growth of these models could have considerable implications for how other network costs are recovered. Whilst the immediate consumers of such local schemes will benefit from reduced costs, the remaining consumers may increasingly have to pay a higher proportion of the costs of the infrastructure needed to maintain this essential service for **all** consumers. These changes in cost burdens seem likely to have distributional effects – for example with relatively less well-off consumers being less able to take advantage of such offerings and bearing higher costs as a result.

We are already considering such issues, including a review of network charging for embedded generators. We believe that making incremental price signals as cost-reflective as possible, and minimising distortions from the recovery of fixed and sunk costs, will lead to the most robust system possible, to foster sustainable business models (including local energy) that deliver value to the system, to market participants and to consumers.

We recognise that some consumers are more able than others to change their energy arrangements to realise the benefits of local energy. For example, local energy consumers may have an option of avoiding network costs through micro-grids, private wire or behind-the-meter arrangements. This implies that:

a) Network cost charging models should reflect the value (and cost) of any connection to the main network being predominantly in the form of 'insurance'; and,

b) On efficiency grounds, distortions are minimised if network users who have more realistic options to avoid costs make less contribution to revenue recovery, so that they do not act to avoid costs entirely (for example by moving to a private wire or behind the meter arrangement that is less efficient). This would ensure the broader consumer experiences a smaller cost increase than could otherwise be the case if those with the choice decided to defect from the grid. In translating these considerations into specific regulatory decisions, considerations other than economic efficiency (such as distributional consequences) will be important.

Conclusions

This paper explored the complex and rapidly evolving world of local energy. In particular, we have sought to illuminate the different categories or archetypes of local energy models, and identify some of the circumstances in which they may drive consumer benefits. Reflecting our statutory duties to protect the interests of all consumers, current and future, we must continue to consider the broad impacts of the growth of local energy, including its system impacts.

We believe that the viability of local energy models should be founded on improving consumer outcomes. Consumers should be fully informed about the choices they are making and the potential risks and rewards. The viability of projects should not be based on avoiding fair contributions to the system's shared infrastructure. In general, consumers' interests (standards of protection, market and system integrity) are likely to be better served by all consumers being part of an integrated system that allows for diversity of size and scope. Where possible, we aim to ensure that price signals are cost-reflective, and to use a market-based approach to investment allocation. All of these requirements can be delivered through local balancing or market arrangements, provided they are designed with those requirements in mind.

The regulatory framework will need to evolve to ensure consumers' interests are realised in the future energy system. While no-one can be certain about what the system will look like, we believe that we can best protect consumers' interests by adopting a flexible approach to regulation which relies on learning over time. Moving towards a regulatory framework based more on principles and outcomes seems likely to be more robust to future developments. At the same time, we will need to ensure that regulatory arrangements enable the emergence of business models that are in the long-run interests of consumers.

End notes

[1] In this context, a benefit can relate to enhanced local energy outcomes, or broader social, economic, environmental or other outcome identified as an objective by the local participants.

[2] The geographical scale of local is ultimately determined by the shared interests of the parties involved. The shared interests of some parties might mean that they develop schemes that operate across different DNO borders (possibly some local supply schemes). But, it is more likely that local schemes will operate in areas smaller than individual distribution licence areas.

[3] Projects identifying as local exhibit a diverse range of characteristics and business models. Often, the phrases community energy and local energy are used interchangeably; while community energy projects don't always organise on a geographical basis, and consumer engagement is central to their approach, from an energy system and regulatory perspective, they share common features and manifest in similar ways.

[4] The Decarbonisation of Heat Future Insights paper is available here.

[5] Projects in the local consumer services archetype often provide critical services to consumers, particularly those experiencing fuel poverty and living in vulnerable circumstances. These often meet immediate consumer needs, shape future behaviours, or provide consumers with the information they need to get a better deal or be more efficient. These projects are widespread and have limited impact on the wider energy system. We do not discuss these projects further in this paper, except to note that since they drive consumer engagement, respond to the needs of those often most at risk, promote empowerment and support decarbonisation goals, we think that the growth in the number of projects should be welcomed.

[6] Denmark and Germany are often cited for arrangements which incentivise growth in local and community-led renewable energy generation. In Germany, almost half of renewable power capacity was citizen owned as of 2013. Similarly, in Denmark, by 2013 70-80% of existing wind turbines were owned by communities. Diverse market arrangements, policy objectives, administrative and governance frameworks help to explain the prevalence of local approaches in other jurisdictions. In Denmark, for instance, project developers are required to give local people priority in financing community energy projects under its 'right to invest' principle.

[7] More information about supply market shares is available here.

[8] Developed (respectively) by: Nottingham City Council; Bristol City Council; and, a network of Scottish local authorities and Registered Social Landlords / Housing Associations.

[9] More information about the Future of Retail Regulation programme is available here.

[10] Licence Lite was developed as a route to market for distributed generators that operates within the licensed rather than exempt framework. It helps new suppliers reduce the high-cost, high-competency barriers of establishing and operating a supply business by partnering with an existing licensed supplier to deliver some of the more costly and technically challenging parts of a licence. More information is available here.

[11] Licence exemptions (for generation, distribution and supply) are set-out in the 2001 Electricity (Class Exemptions from the Requirement for a Licence) Order. The order details four classes where licence exemptions are permitted: class A (small suppliers), class B (resale), class C (on-site supply) and class D (offshore supply). Class A allows for the supply of up to 5MW of own-generated electricity (but no more than 2.5MW to domestic premises).

[12] The commercial agreement would include the following services: licensed supplier passes on costs of using public network; metering services; affirmation to DNO of agency relationship between the exempt and licensed suppliers for purposes of the National Terms of Connection agreement; top-up, back-up and spill arrangements to meet customer demand where the exempt supplier's generation facility cannot and to manage excess generation.

[13] Electricity and Gas (Internal Markets) Regulations 2011 set out changes to UK legislation to enact EU 3rd package reforms. Specifically, schedule 2ZB set out the duties of exempt suppliers.

[14] More information about the GLA's approach is available here.

London
9 Millbank SW1P 3GE
Tel: 020 7901 7000

Scotland
Cornerstone
107 West Regent Street
Glasgow G2 2BA
Tel: 0414 331 2678

Wales
1 Caspian Point
Cardiff Bay
CF10 4DQ
Tel: 029 2044 4042

www.ofgem.gov.uk