# LOCAL SUPPLY: OPTIONS FOR SELLING YOUR ENERGY LOCALLY

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regensw
delivering sustainable energy

## 2nd EDITION
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# 1 INTRODUCTION

**Our energy system is changing. Communities across the UK are no longer satisfied with a centralised, carbon intensive energy market that is dominated by the big six. Instead, many have expressed a desire to have a stake in local, low carbon energy generation and management projects.**

At the beginning of 2015 there were over 5,000 community energy groups active in generating, managing, purchasing and reducing energy,[1] and this number continues to grow.

To date, much of the focus for community energy groups has been on setting up their own generation projects. The natural progression from community owned generation is to use and sell that energy within the local community.

When the economic benefits of local generation can be shared with the whole community, the development of new generation can become much more acceptable. A closer relationship with the energy we use can also help us manage it more effectively.

The purpose of this paper is to help community groups, local authorities and housing associations understand what options they have for local supply of energy (with a focus on electricity) by setting out how the electricity supply market currently works, the local supply options that are available in the current regulatory and commercial context and potential future models of local supply.

This paper was initially published in June 2015. Since then we have seen a considerable increase in local supply activity. For example, in the last seven months there have been over 100 new supply licenses granted by Ofgem. Furthermore, a number of perceived barriers have been overcome and consequently the traffic light system on page 19 has been updated. This second edition reflects the changes we have seen in this fast pace industry.

1 Community Renewable Electricity Generation: Potential Sector Growth to 2020. January 2014. Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/274746/20140108_Community_Energy_Modelling_FinalReportJan.pdf

# 2 DRIVERS FOR LOCAL SUPPLY

There are a number of benefits of local supply. These include:

- Enabling locally-owned generators to sell power directly to the local community without going through the wholesale market and therefore having more control over the price
- Enabling the economic benefits of energy supply to be maximised locally, through local job creation and keeping the profits in the local economy (see section 2.1 below)
- Greater control over energy bills and the ability to pass on savings to customers, helping to reduce fuel poverty
- Helping communities meet their carbon and environmental objectives
- Creating social enterprises that customers can trust
- Building support for local renewable energy projects
- Potential to overcome grid connection barriers through local supply and balancing.

Government has recognised the value of these benefits and set up a Local Supply Working Group to explore the regulatory barriers to change and Ofgem published a discussion paper on 'Non Traditional Business Models: Supporting transformative change in the energy market'.[2]

### CASE STUDY: Wadebridge, Cornwall

In 1926 Wadebridge had its own Electricity Supply Company, which was housed in the building shown below.

Nationalisation in the 1960s and distribution through the National Grid meant Wadebridge lost its energy independence.

But Wadebridge Renewable Energy Network (WREN) has plans to once again be energy self-sufficient. Stephen Frankel of WREN says

***"The most profound and long term impacts of community energy cannot be secured unless communities control their supply of energy. WREN is therefore determined to complement its work on community engagement, energy efficiency, the facilitation of micro-generation and smart solutions by securing the income streams, as well as control over supply arrangements, that will follow from community ownership, through the Wadebridge Energy Company, of renewable generation at the scale of consumption."***

2 https://www.ofgem.gov.uk/ofgem-publications/93586/non-traditionalbusinessmodelsdiscussionpaper-pdf

## 2.1 Localising energy spend

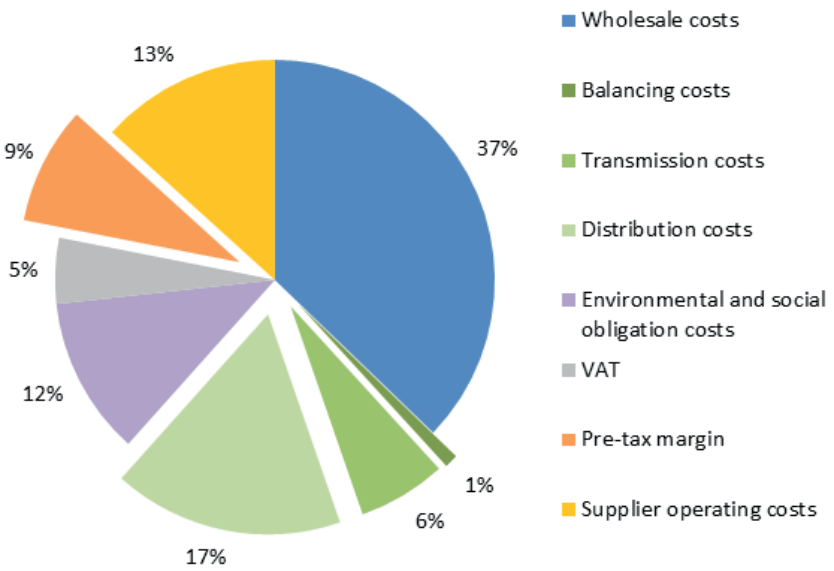
The motivation for some local areas to generate and use their own energy locally is to keep their energy spend in the local economy. Unless you have your own microgeneration or a private wire to a local generating scheme, it is likely that the majority of your energy bill will leave your local economy.

Less than half of our electricity bill is the wholesale cost of electricity. Roughly a quarter of our bill is paid to the transmission and distribution network operators to deliver energy into our homes and businesses, and 17 per cent is paid to the government in tax and for environmental schemes. Almost a quarter goes to the supplier for billing, metering and their margin.

The chart below shows Ofgem's estimate of a typical larger supplier's annual costs and pre-tax margin across a rolling 12-month period.[3]

If supply is localised, it is possible to keep the supplier and wholesale energy costs in the local economy, which equates to half the bill. It would also give the community much greater control over the pre-tax margin, which they may choose to reduce or re-invest in local schemes. The cost of transmission, distribution and balancing could in theory be eliminated (see section 3.2 below for further information about balancing). However, there would be a cost of a private wire network and balancing technology.

**Costs and pre-tax margin of typical large supplier**




3 Ofgem Charts: Outlook for costs that make up energy bills.
Available at https://www.ofgem.gov.uk/publications-and-updates/charts-outlook-costs-make-energy-bills

# 3 INTRODUCTION TO CURRENT ELECTRICITY SUPPLY MARKETS

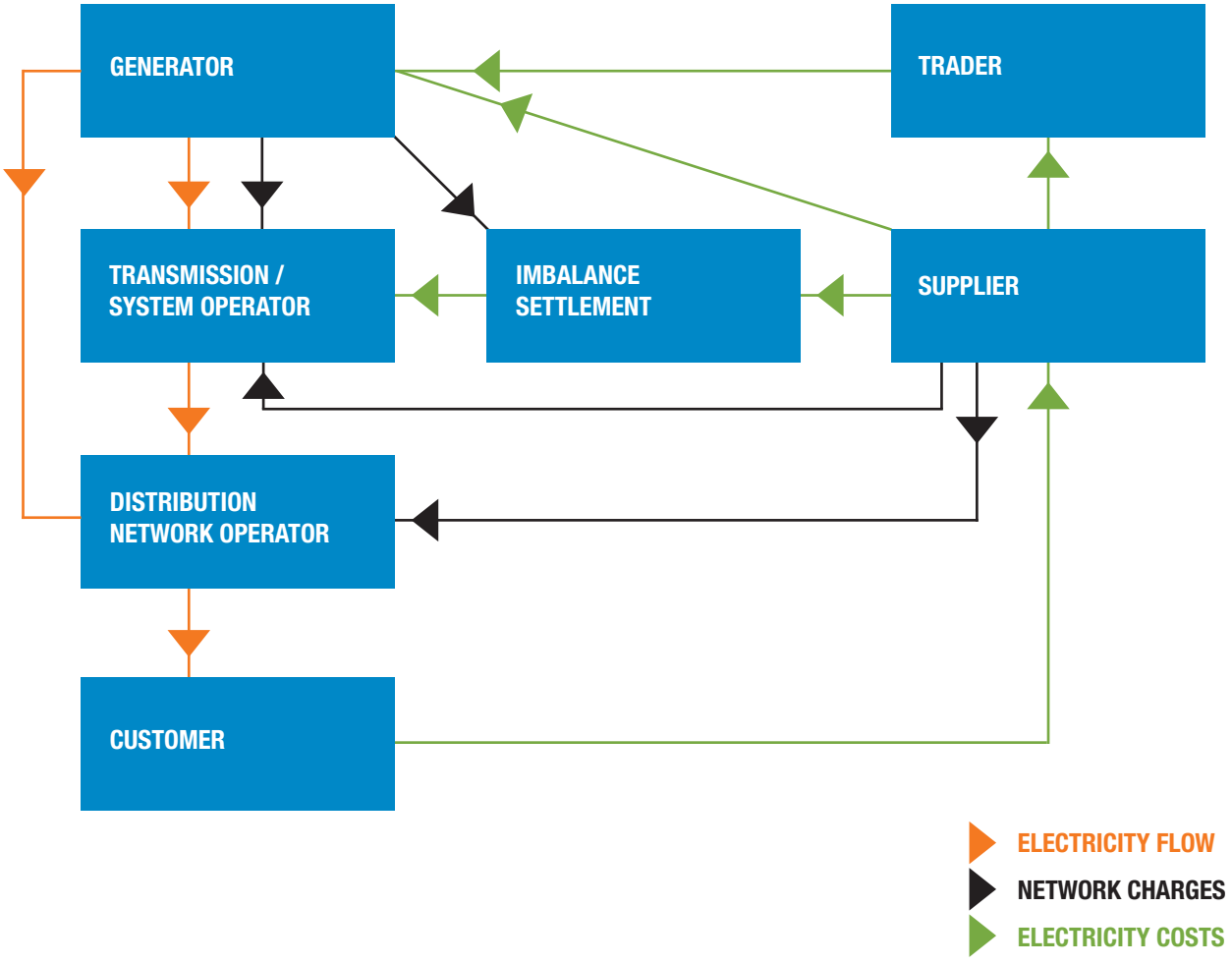
## 3.1 Centralised market

Our electricity system was designed around a centralised market, where large power stations generate energy, national suppliers buy and sell this energy and the whole system is balanced on a national scale.

The market is complex and involves a number of parties, which are set out in the diagram below.

In order to supply electricity in the UK, you must have a supply licence and comply with a number of industry codes and regulatory obligations to ensure that the system is safe and we avoid blackouts. Suppliers have various options for buying electricity, including a contract with a generator, through a trader over an energy exchange or within their own company if they are vertically integrated.

**Key parties in electricity supply market**



## 3.2 Balancing and settlement

A key part of the supplier's role is to ensure that electricity supply matches demand as closely as possible. This is because electricity is generated, transported and used in real-time and is difficult to store at large scale. If the supplier does not get this balancing act right, it can be very costly.

Trading and balancing of electricity happens in half hour chunks, called settlement periods. The supplier estimates how much their customers are going to need and buys enough generation to match this amount. Then the System Operator monitors real-time demand and supply and has the ability to pay generators to switch off or on to help balance the system.

Afterwards, actual metered data is collected from suppliers and generators and compared with the amounts contracted. When a generator has generated more or a supplier has used less than expected, they need to sell the electricity to the grid, and when a generator has a shortfall in generation or a supplier's customers use more than expected, they must purchase additional electricity. The process of imbalance settlement is carried out by an organisation called Elexon and follows the rules set out in the Balancing a Settlement Code (BSC). [4]

## 3.3 A changing electricity market

The electricity supply market has long been dominated by the 'big six' energy companies. But we have seen a recent wave of new entrants with independent suppliers increasing their share of the market from just 0.2 percent to 7.6 percent over the last five years.[5] Between publishing this paper in June 2015 and the revised version in March 2016, there have been over 100 new supply licenses granted by Ofgem. Ofgem also states that there are now 33 suppliers active in the market, a huge advance on the dominance of the Big 6.

The regulator, Ofgem, has recognised that increasing competition, especially with the introduction of non-traditional business models (NTBMs), can help deliver lower bills and better social and environmental outcomes. The Ofgem discussion paper on NTBMs states that it is committed to reducing regulatory barriers and supporting innovation where the benefits are clear.[6]

Many regulatory and financial barriers for entry into the licensed supply world remain. However, more and more solutions are being found to combat this.

For example, a number of consultancies are offering "off the shelf" electricity supply licenses attributed to a specifically set up company. This lowers the costs considerably and saves time, but care still needs to be taken to ensure this "off the shelf" supply company is suitable for your needs and can operate in the supply market.

A number of new entrants into the supply market include the community energy sector. Mongoose Energy, a spin-off of Bath & West Community Energy and Bristol Energy, the first municipal energy company in the south west and one of the first in the country, is officially open for business. These new entrants to the electricity supply market will seek to challenge the way electricity is bought, sold and distributed.

4 https://www.elexon.co.uk/bsc-related-documents/balancing-settlement-code/
5 Cornwall Energy, 2014
6 Ofgem, 2015, Non-traditional business models: Supporting transformative change in the energy market

# 4 CURRENT LOCAL SUPPLY OPTIONS

There are a range of local supply options that are available in the current regulatory and commercial context, each with their own advantages and disadvantages.

Most of the options available involve partnering with an existing supplier. However, there are several self-supply options which will also be covered below.

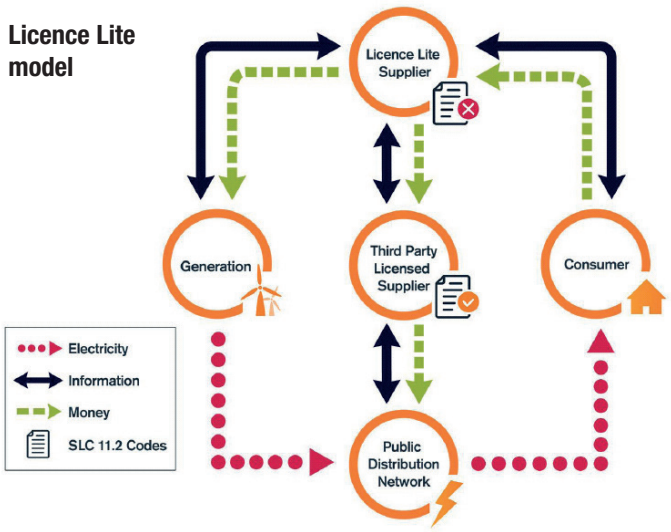
## 4.1 Partnering with a supplier

Partnering with an existing supplier enables you to comply with industry standards without having to obtain your own license. There are a considerable number of new electricity suppliers, which provides greater opportunities for those organisations not wishing to become a licensed supplier to enter into an agreement with a third party, this could be for a specific community energy tariff or a white label.

### 4.1.1. Licence Lite

In 2009 the government introduced a licensing option, known as 'Licence Lite'[7] that allowed generators to become licensed suppliers without becoming direct participants to industry codes. It was recognised that the costs of code compliance was disproportionate for smaller generators and was acting as a barrier to new, smaller suppliers. Instead, the Licence Lite supplier has to partner with an existing licensed supplier, a 'senior supplier', which accedes to industry code on their behalf.

**Licence Lite model**




**Advantages**

- Direct supply of generation to local customers rather than through a third party
- Regulatory costs of complying with industry codes is covered by the 'senior supplier'
- It is quicker and cheaper than setting up as a fully licensed supplier
- Encourages community buy-in

**Disadvantages**

- Yet to be tested in practice
- Licence requirements are lighter than becoming fully licensed, but still comes with costs (especially domestic supply)
- Required to balance demand and supply, so better for predictable generation
- Must enter national market – there is no option to be a local supplier – so will be exposed to charges levied by senior supplier for balancing

### CASE STUDY: Greater London Authority

The Greater London Authority is the only applicant for Licence Lite to date. Formal application for the junior electricity supply licence was made to Ofgem on 1st March 2013 after years of assessment and development of the licence lite arrangements.

The GLA's ambition is to purchase low carbon electricity (mostly from combined heat and power plants in London) and then sell this output to the London Underground. It aims to increase the value that goes back to the generator, helping improve the business case for more low carbon generation plants in London.

At the time of writing, no announcement had been made regarding the launch of the initiative. The procurement process for electricity generators took longer than anticipated. And further revisions had been made to the license application.

7 https://www.ofgem.gov.uk/licences-codes-and-standards/licences/licence-lite

### 4.1.2. Licence exempt

All suppliers of electricity need to either have a licence or an exemption. In theory supply exemptions are available for suppliers that are providing electricity they have generated themselves of up to 5 MW in total, of which no more than 2.5 MW can be supplied to domestic customers, roughly corresponding to 500 domestic customers. The supplier is required to have a contractual arrangement with an existing licensed supplier, as they deliver and sell their power over the public network and may need their power to be topped-up when they are not generating enough or to spill energy when there is too much.

However, government considers that in most cases it is not appropriate to grant exemption from the requirements of a supply licence. This is because it is rarely considered appropriate for these activities not to be subject to the full terms of the licensing regime.

Alternatively it can be used for the resale of electricity from a licensed supplier or from onsite generation. This option has been used by some Registered Social Landlords (RSLs) when they buy power in bulk from a supplier and sell it on to their tenants

**Advantages**

- Can be used for resale of electricity from a licensed supplier

**Disadvantages**

- Difficult to get the exemption for sale of own generation – no examples to date

### 4.1.3. Energy Service Company (ESCo)

ESCos provide energy services, such as hot water, lighting or energy efficiency savings, as opposed to the direct supply of electricity or gas. Therefore, the ESCo revenue is often not directly linked to energy consumption, which incentivises the ESCo to create energy savings.

If an ESCo delivers services outside of the current regulatory arrangements, such as heat networks, they will not require a licence. But if they are directly supplying electricity, they will need to partner with a licensed supplier or set up a private wire.

**Advantages**

- Provides a model for investment in energy efficiency
- Best suited to unregulated services, such as heat

**Disadvantages**

- Still require a license or a private network to supply electricity

### CASE STUDY: Thameswey Energy

Thameswey Energy[8] is an unregulated public/private joint venture ESCo set up by Woking Borough Council in 1999. It is 90 percent owned by Thameswey and 10 percent owned by Xergi Limited, a Danish company involved in the building and operation of the energy centres.

Thameswey Energy has nearly 10 MW of gas fired combined heat and power (CHP) units and 2 MW of solar PV. It supplies hot water to its customers through its own pipe network and electricity through private wires.

Thameswey generates and supplies low carbon and renewable energy to a wide range of public and private sector customers in Woking and Milton Keynes, including over 1,250 domestic customers, Network Rail, Sainsburys, Holiday Inn and Woking Borough Council.

### 4.1.4. White label

A white label supplier works in partnership with a licensed supplier to offer tariffs under a different brand. The white label supplier negotiates their own tariff and can therefore shape it to meet their own objectives, whether that is profit generation, lower tariffs, investing in local energy efficiency measures or developing its own generation.

The white label supplier will handle much of the customer facing activity and will build the customer base. The licensed supplier will provide the back-office functions and will meet the requirements of metering, balancing and will comply with industry codes.

**Advantages**

- Can negotiate a tariff that meets local objectives
- Set up costs are low and licensed supplier meets all industry codes
- Some suppliers offer ability to combine with ‘sleeving’ options for own generation (overleaf)

**Disadvantages**

- Not supplying energy directly – customers still purchasing energy from a licensed supplier
- Cannot set price for own generation
- Has been criticised as providing free marketing for licensed suppliers
- Only relevant to larger community groups

### CASE STUDY: Ovo Communities

Ovo Energy has introduced a concept called Ovo Communities,[9] where it offers organisations the opportunity to supply their own electricity to their local community with the aid of the energy supplier. These include local authorities, housing associations and community benefit societies.

Ovo Energy will purchase the electricity generated by the local community and sell it at an agreed price to the customer. Ovo hold the view that individuals would feel secure by purchasing their electricity from a local organisation opposed to an energy provider.

Ovo also believes that customers are more likely to listen to local authorities and other community organisations when they talk about energy efficiency and tackling fuel poverty.

8 http://www.thamesweyenergy.co.uk/
9 http://www.ovoenergy.com/energy-plans/communities/

### 4.1.5. Local tariffs

Suppliers are able to offer local tariffs that are linked to a local generating site. Good Energy has done this with several of their wind sites (see case study below). This approach can be effective at building local support for a project and help people make the link between local generation and their own consumption.

Good Energy has offered this model to various community and local generators to enable them to provide local tariffs. However, the tariff needs to be subsidised in part by the generator in order to keep the price low, which can mean a reduction in profits for the shareholders.

#### Advantages

- Communities can benefit from local generation
- Help build local support for renewables projects

#### Disadvantages

- Does not provide a means for community energy groups to sell their own generation
- Relies on proactive suppliers to set up tariffs

### CASE STUDY: Good Energy's Local Tariff in Hampole

The local tariff fulfils a long-standing ambition of Good Energy to ensure communities benefit from their local wind farm.

Hampole wind farm has been created and has offered the local tariff to those 2 kilometres from the turbine development.

The site would feature four turbines and have a total generation capacity of 8.2MW, sufficient to power around 4,900 homes.

Eligible customers are able to benefit from a tariff that will always be at least 20 percent cheaper than its standard tariff. A community fund has also been set up worth £8,200 a year for the lifetime of the wind farm, to support local charitable causes. [10]

### 4.1.6. Sleeving/third party netting

Sleeving or third party netting is a variant of a standard Power Purchase Agreement (PPA) between a licensed supplier and generator and serves the purpose of linking the generation to the customer. This allows the customer to purchase energy directly from the generating plant via a licensed supplier, which manages the imbalance risk.

#### Advantages

- Good for corporate responsibility purposes as allows organisations to link supply directly with renewable generation
- Can help finance if you can guarantee demand and negotiate a long term PPA

#### Disadvantages

- Not necessarily a cost advantage as power is wheeled over the public network via a supplier, which incurs a cost

### CASE STUDY: South West Water

South West Water has a 'sleeving' arrangement with its half hourly electricity supplier, Total Gas & Power. This enables it to 'buy back' energy from its own renewable energy generation sites that has been exported to the grid at market rate - effectively resulting in South West Water only paying delivery charges on this volume. The majority of the volume that it moves through this arrangement surrounds its two hydro power stations in Tavistock, though it also has a handful of other sites that export a small proportion of their generation to the grid.

10 http://www.goodenergy.co.uk/press/releases/2014/04/29/good-energy-launches-local-tariff

## 4.2 Self-supply

There are some options for self-supply that do not require involvement of a third party supplier.

### 4.2.1. Fully licensed supplier

A licensed supplier has full control over the purchasing and retail of electricity. In order to retain its licence, it must comply with a number of industry codes and commitments, including:

- Balancing and settlement code (BSC)
- Connection and use of system code (CUSC)
- Distribution code
- Distribution connection and use of system agreement (DCUSA)
- Grid code
- Smart energy code
- Master registration agreement (MRA)
- Obligation under the Renewables Obligation (RO)
- Small-scale FiT (<5MW) levelisation process.

As explained in section 3.2., a key part of the supplier's role is to ensure that electricity supply matches demand as closely as possible. If this is not achieved, the supplier is exposed to high costs through the imbalance settlement.

**Advantages**

- Full control over the purchasing and retail of electricity
- Beneficial for larger generation projects (100 MW+)
- Full control over achieving strategic aims

**Disadvantages**

- High costs to set up
- High level of risk
- Exposed to high costs through the imbalance settlement
- Not suited to small generation projects

**CASE STUDY: Bristol Energy**

Bristol Energy was launched in early 2016. It is among a new wave of municipal energy companies with a full supply license. It is wholly owned by Bristol City Council, but is a separate subsidiary.

The fundamental objective of Bristol Energy is to deliver the triple bottom line of sustainable economic prosperity, reduction in social inequality and improved environmental performance. This will be achieved by:

- Having a focus on locally generated, low carbon energy, with a mission to be the most environmentally conscious and trusted local energy supplier
- Providing a fairer deal for households currently on prepayment meters
- Supporting community investment in renewable low carbon projects
- Protecting the city's critical infrastructure, thereby improving resilience.

As a result, Bristol Energy aims to be a different type of energy company, supporting the business of the council and the city, generating a new revenue stream for the council for reinvestment into the city.

### 4.2.2. Private wire

Private wire agreements essentially allow an energy generator to sell power to neighbouring premises without transmitting through the public network. Private wire contracts require significant capital investment for the cabling, metering and connections but could benefit all parties involved.

Where a private network is to be relied on to transmit the electricity to the end consumer(s), consideration will need to be given to various factors, including the network design or route, infrastructure and installation costs, land availability, planning constraints, and operation and maintenance requirements.

Through the price negotiations the electricity generator should receive a higher price than it would by selling to the grid, while the end user can buy power for a lower price than they would otherwise pay. Since the government cuts to renewables subsidies, many developers have looked for private wire opportunities to get a better price for their energy.

If an end user typically pays £95/MWh for electricity and the generator would normally receive £50/MWh for exporting to the grid, a mutually acceptable price of £75/MWh might be agreed.

The private wire agreement needs to be the subject of a legal contract.

**Advantages**

- Avoid distribution and transmission costs so generator and end user get a better price
- Direct control with no intermediary supplier
- Can still be connected to network for energy spill or top up

**Disadvantages**

- Significant capital investment in private wire network
- Requires guarantee that demand will remain over lifetime of generation plant or that alternative could be found

### CASE STUDY: Greener For Life Energy Ltd

Greener For Life Energy Ltd has developed 10 Anaerobic Digester plants across the UK with capacities ranging from 500 kW to 2 MW. Where gas to grid has not been feasible, Greener for Life has entered into private wire agreements when suitable strategic partners have been available.

Winston Reed, the MD of the company, advises:

*"Private wire is a great solution and the infrastructure relatively straightforward to install. Our tips for private wire agreements are:*

- *Agree clear benchmark for PPA price*
- *Agree private wire PPA volume and be clear this matches output*
- *Quantify what will happen to any excess power whether this is a known quantity or unplanned surplus (such as end user using lower quantity that PPA for whatever reason)*
- *Understand and be clear in any penalties for undersupply to private wire PPA*
- *Be clear on any accreditation requirements that the end user may need to achieve. These should ideally be in place and aligned with generator accreditation dates*
- *(Ideally) have separate connection to export power to grid in case the private wire agreement fails*
- *Understand recourse to break private wire PPA (with fall back plan in mind)*
- *Ensure accreditation is compatible with PPA (to protect FiT - very important)*
- *Be sure any export to grid is supported by the generator accreditation."*

### 4.2.3. Microgeneration

Small scale generation can be consumed onsite or exported to the network. The UK government's Feed-in Tariff (FIT) pays you for every unit of electricity you generate, which is known as the generation tariff. It also enables you to sell surplus electricity to your supplier, known as the export tariff. If you don't have an export meter (i.e. your scheme is under 30 kW), it is 'deemed' that you export half of the units of electricity you generate.

Both the generation tariff and export tariff go through your licensed energy supplier.

#### Advantages

- Use of energy onsite with no transmission losses
- Payment for every unit of energy generated, even if used onsite
- Deemed export means you can earn the export tariff even if used onsite

#### Disadvantages

- Only suitable for very small scale generation
- Cannot sell energy to others in your community, only to your supplier

### CASE STUDY: Solar PV and storage

The combination of microgeneration and storage technology can help you consume more energy onsite. For example, Green Acorn has provided an energy storage system for a dairy farm based in North Somerset to better utilise their roof mounted solar PV system.

The farm needed additional power outside the hours of generation, which meant that they were buying power at 13.22p/kWh and exporting at just 4.2p/kWh during the day.

After discussions with Green Acorn the farm opted for the REDT Flow Battery system, which is a 5 kW x 40 hour storage system. The advantage of this system is that the power and storage is split, unlike typical batteries currently available. This means they can add more storage as their farming pattern changes over the 20 year life time of the system.

# 5 FUTURE LOCAL SUPPLY MODELS AND THE BARRIERS

There is considerable interest in new models for supply that either address the disadvantages of the models set out above or make use of potential revenue streams from smarter grids. The following local supply models are based on concepts that are being explored or trialled and may or may not come to be rolled out.

## 5.1 Local Balancing Units (LBUs)

Elexon and Cornwall Energy carried out work into how a local supply tariff could be competitive with a national utility regional tariff from a large supplier.[11] Their model estimated that a local tariff from a Licence Lite supplier purchasing local generation would be 3.5p/kWh more expensive than a regional tariff.

Their proposed solution to this barrier to local supply was to create a Local Balancing Unit (LBU) – a new definition of a balancing mechanism unit (BMU), which is the unit of trade under the Balancing and Settlement Code. This would enable the junior supplier to net local generation and consumption before it is added to the senior supplier's position in the balancing settlement. This could reduce balancing charges for the junior supplier and enable them to claim the value of 'embedded benefits'[12] from the senior supplier, and therefore reduce tariffs by an estimated 0.9p/kWh.

If this proposal is adopted by government, it would help bring the cost of local tariffs down under not only the Licence Lite model, but also other models where the local supplier partners with a fully licensed supplier.

## 5.2 Microgrids and local balancing

For some localities, the dream is to set up their own microgrid where all energy is generated and balanced in a closed circuit that is separate from the national grid. This would give the local supplier complete control over prices and would enable them to avoid transmission and distribution system charges, which make up almost quarter of our bills (see chart in section 2.1).

Navigant Research reports that the total microgrid capacity through the world nearly tripled between 2014 and 2015 and now totals over 12 GW of built and proposed projects.[13]

However, the cost of setting up a private wire network is high and would require storage and new smart technologies to help balance the system. The actual cost would depend on the density of the end users and therefore the length of the network, as well as the types of generation technology used. The microgrid would require a system operator to manage demand and supply and to maintain the network assets.

There are also equity issues to explore. If you are unable to live in a community with a microgrid, you may end up paying higher system charges as the cost of maintaining our national assets will remain the same but fewer people will be paying for them.

The cost of energy storage has declined by around 50% during period 2012 to the end of 2015 with this rate of decline predicted to continue through to 2019. Energy storage can provide the balancing capacity to facilitate local energy supply models and maximise the price paid for the electricity that is being sold. It can also reduce grid connection related costs with less capacity being required.

### CASE STUDY: Feldheim, Germany [14]

The village of Feldheim in Germany is completely energy self-sufficient. Households are connected to private heat and electricity distribution systems that are supplied by the local windfarm and biogas plants.

The project is a partnership between the municipality of Treuenbrietzen, the inhabitants of Feldheim and the project developer, Energiequelle GmbH. The heat network is owned by a limited partnership of the connected households, enterprises and the municipality, and the power grid for supplying electricity is owned by Energiequelle GmbH.

Local residents and the municipality invested in the private network and some funding was obtained from the regional government and EU programmes.

11 https://www.elexon.co.uk/wp-content/uploads/2015/03/Encouraging-local-energy-supply-through-a-local-balancing-unit_March2015.pdf. 12 When a supplier has generating plant exceeding demand from its customers in a Grid Supply Point (GSP) group, that is the region that feeds into one connection point to the Transmission network, it is able to avoid network, balancing and demand charges, which is known as embedded benefits. See https://www.elexon.co.uk/wp-content/uploads/2013/11/embedded_generation_embedded_benefits_v6.0_cgi.pdf for further information. 13 Navigant Research, 2015, Microgrid Deployment Tracker 2Q15. 14 http://www.neue-energien-forum-feldheim.de/index.php/self-sufficient-village

## 5.3. Peer to peer (P2P)

Peer to peer (P2P) trading can take place using software platforms that enable customers to select the generators they would like to buy from. As the energy is transported across the public network, a licensed supplier is required for the balancing and billing functions. This model is similar to sleeving/ third party netting, but instead of relying on just one generator, the customer can buy directly from multiple generators.

P2P provides an alternative route to market for generators and may enable them to get a better price than a standard PPA. It is possible that community owned generation would be more attractive than commercially owned under this model, and may therefore receive even better prices.

Open Utility are trialling this model in the UK (see case study below) and are only including Half Hourly metered buildings or sites, which excludes domestic properties. This is due to the cost of metering and the need to aggregate domestic smart meters to enable half hourly settlement.

### CASE STUDY: Piclo trial [15]

Open Utility and Good Energy are trialling a peer-to-peer trading service that will let renewable generators set the price for their electricity and make it available to local commercial energy consumers to buy.

The online platform will allow commercial consumers to choose where their energy comes from and provides them with a detailed breakdowns of energy bought and sold.

## 5.4. Smart meters and demand side response (DSR)

The roll out of smart meters will enable the use of real-time energy consumption data, which could change the way that energy tariffs are structured, help link consumption directly with generation and provide flexibility services to the DNOs.

#### 5.4.1. Local aggregation

Domestic properties with smart meters can participate in the half hourly settlement process but this is not yet standard practice. Ofgem is investigating how best to reform the settlement process to enable domestic and smaller non-domestic consumers to be settled against their half hourly consumption data.[16]

Until reform has happened, one solution is to aggregate domestic consumption. This can then be used to match demand and local generation through DSR and top up supply when needed.

### CASE STUDY: Energy Local[17]

The Energy Local proposal is that a group of domestic customers come together under an entity called a Community Energy Services Company (CESCo). Their half-hourly smart meter readings are grouped together (referred to as 'virtually aggregated'). This forms one demand curve showing the energy used at different times of day.

The CESCo negotiates with a licensed supplier for time of use tariffs for half-hourly settlement of this one demand curve. Customers are no longer settled on a profile but on half-hourly data based on what they actually use and when.

Subject to Ofgem agreement, where there is on-site renewable energy this can be pooled within the CESCO. This means that the power can be used directly, reducing electricity bills.

15 https://www.openutility.com/piclo/
16 https://www.ofgem.gov.uk/publications-and-updates/electricity-settlement-%E2%80%93-moving-half-hourly-settlement
17 http://www.energylocal.co.uk/

### 5.4.2. Linking DSR and generation

In areas where the electricity network is constrained and there is not enough capacity to connect new generation, it may be possible to offset generation with a shift or increase in demand. This requires bespoke commercial arrangements between the generator, supplier and customer, as well as smart meters in all customer properties and a failsafe monitoring system.

### CASE STUDY: The Sunshine Tariff

The Sunshine Tariff trial is investigating the potential for a time of use tariff (ToUT) to shift domestic demand to times when solar farms are generating and the grid is most constrained in the south west. It will test the concept of an 'offset connection' agreement between the Distribution Network Operator (DNO) and the solar farm generator.

This 'offset connection' would be based on the ability of a community to increase their demand during peak solar output to offset any additional generation added to the network. This would allow the connection to have no net effect on issues at higher voltage levels and allow the connection of generators in conventionally constrained areas.

The trial is taking place in Wadebridge, Cornwall, with Wadebridge Renewable Energy Network (WREN) over summer 2016 with findings expected in early 2017.

# 6 SUMMARY

Local supply is very much a 'Back to the Future' solution when you consider the way in which electricity markets operated until the 1960s when nationalisation of the local electricity companies took place and all distribution went through the National Grid.

This paper sets out a number of options that are currently available as well as some more innovative supply models that may become available in the near future. The complexity of these solutions does vary and this means that some are better suited to certain scales of demand/generation than others.

Before deciding that local supply is the route for the sale of electricity you generate, it is very important that you have a clear understanding of what you are trying to achieve. For example, are you looking for:

- A higher price and financial benefit for the community?
- Self sufficiency at a local level?
- Income generation?

The desire to reach these goals must be balanced against any increased risks and also the time and complexity of putting in place a local supply solution. You must also be able to 'sell' and explain your chosen solution to all of your investors and stakeholders.

All of the options covered by this report are capable of delivering win-win solutions in financial terms for both the generator and the consumer. The generator should receive a higher price for its electricity than under a standard PPA and the consumer should be paying less for its electricity when compared to the prices charged by the national generators.

We see the larger challenge as delivering self sufficiency at a local level and included in the barriers are:

- The need for cost effective local balancing – At local level and with the right blend of energy generation technologies the objective of local balancing is within reach. Energy storage has a large part to play and the cost needs to continue to reduce in order for us to see wide scale take up
- The complexity in gaining approval under options like Licence Lite or becoming a Fully Licenced Supplier – The fact that Licence Lite has only been taken up by the Mayor of London is indicative of the complexity.

The following table summarises the advantages and disadvantages of the different models currently available:

| | ADVANTAGES | DISADVANTAGES |
|---|---|---|
| **LICENCE LITE** | • Direct supply of generation to local customers rather than through a third party<br>• Regulatory costs of complying with industry codes is covered by the 'senior supplier'<br>• It is quicker and cheaper than setting up as a fully licensed supplier<br>• Encourages community buy-in | • Yet to be tested in practice<br>• Licence requirements are lighter than becoming fully licensed, but still comes with costs (especially domestic supply)<br>• Required to balance demand and supply, so better for predictable generation<br>• Must enter national market |
| **LICENCE EXEMPT** | • Can be used for resale of electricity from licensed supplier | • Difficult to get the exemption for sale of own generation – no examples |
| **ESCO** | • Provides a model for investment in energy efficiency<br>• Best suited to unregulated services, such as heat | • Still require a license or a private network to supply electricity |
| **WHITE LABEL** | • Can negotiate a tariff that meets local objectives<br>• Set up costs are low and licensed supplier meets all industry codes<br>• Some suppliers offer ability to combine with 'sleeving' options for own generation | • Not supplying energy directly<br>• Cannot set price for own generation<br>• Has been criticised as providing free marketing for licensed suppliers<br>• Only relevant to larger community groups |
| **LOCAL TARIFFS** | • Communities can benefit from local generation<br>• Help build local support for renewables projects | • Does not provide a means for community energy groups to sell their own generation<br>• Relies on proactive suppliers to set up tariffs |
| **SLEEVING/THIRD PARTY NETTING** | • Good for corporate responsibility purposes<br>• Can help finance if you can guarantee demand and negotiate a long term PPA | • Not necessarily a cost advantage as power is wheeled over the public network via a supplier, which incurs cost |
| **FULLY LICENCED SUPPLIER** | • Full control over the purchasing and retail of electricity<br>• Beneficial for larger generation projects (100 MW+)<br>• Full control over achieving strategic aims | • High costs to set up<br>• High level of risk<br>• Exposed to high costs through the imbalance settlement<br>• Not suited to small generation projects |
| **PRIVATE WIRE** | • Avoid distribution and transmission costs so generator and end user get a better price<br>• Direct control with no intermediary supplier<br>• Can still be connected to network for energy spill or top up | • Significant capital investment in private wire network<br>• Requires guarantee that demand will remain over lifetime of generation plant or that alternative could be found |
| **MICROGENERATION** | • Use of energy onsite with no transmission losses<br>• Payment for every unit of energy generated<br>• Deemed export means you can earn the export tariff even if used onsite | • Only suitable for very small scale generation<br>• Cannot sell energy to others in your community only to your supplier |

This paper has set out a number of local supply options, some of the options are better suited to certain scales of generation and demand. The table below provides an indication of which options are best suited to each scale:

| | LOCAL AUTHORITY | HOUSING ASSOCIATION | LARGE COMMUNITY GROUP | SMALL COMMUNITY GROUP | HOUSEHOLD |
|---|---|---|---|---|---|
| LICENCE LITE | | | | | |
| LICENCE EXEMPT | | | | | |
| ESCO | | | | | |
| WHITE LABEL | | | | | |
| SUPPLIER LED LOCAL TARIFF | | | | | |
| SLEEVING | | | | | |
| FULLY LICENCED SUPPLIER | | | | | |
| PRIVATE WIRE | | | | | |
| MICROGENERATION | | | | | |
| LOCAL BALANCING UNIT | | | | | |
| MICROGRID | | | | | |
| PEER TO PEER | | | | | |
| LOCAL AGGREGATION | | | | | |

The approach we would recommend to any group or body interested in local supply is to first be clear on what you are trying to achieve and why. Then, armed with this knowledge, sit down with a renewables expert to discuss your options further.

SUITABLE

POTENTIALLY SUITABLE

NOT SUITABLE

# 7 ABOUT THE AUTHORS

## Stephens Scown

Stephens Scown's renewable energy team is the largest dedicated renewables in the South West and is recognised by independent legal guide, Legal 500, which highlights the expertise of the team's head, Sonya Bedford. The firm has worked with major developers like IB Vogt, Anesco, SunEdison, British Solar Renewables, Sun Farming and Bath and West Community Energy, and has considerable experience in local supply through advising a number of suppliers and community energy groups including Mongoose Energy.

## RegenSW

Regen SW is an independent, not-for-profit centre of expertise on sustainable energy with frontline experience of working in the renewable energy sector in the south west of England. It uses its expertise to work with industry, communities and the public sector to revolutionise the way we generate, supply and use energy.