How to optimise the deal an energy generator agrees with an energy supplier, now and in the future

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Introduction

• Starting with overview of what a supplier is, how we supply our customers, how we purchase energy and what we do with energy from renewable sites.

• Then look at what can be done now to potentially increase value, and what could be done in the future.

• Matt will then talk about future projects and how they should be developed in a subsidy-free future.
The Midcounties Co-operative

- Trace roots back to Swindon Co-operative Society and 1853
- Largest independent co-operative in the UK, with a turnover of over £1.5bn
- Operates in Energy supply, Food retail, Travel, Healthcare, Childcare, Funeral and others
- The Midcounties Co-operative has won many awards:
  - Queens Award for Sustainable Development
  - EU Renewable Energy Award Winner
  - First Fair Tax Mark reaccreditation
  - Voted ‘Co-operative of the Year’ 2015. Nominated again this year!
  - 100% score in Business in the Community’s Corporate Responsibility Index
- Parent of Co-op Energy
Co-op Energy

Background

• Nationally launched in 2011, to provide alternative to Big 6.
• Largest co-operatively run energy supplier.
• From outset, actively sought power from community generation initiatives through supporting market access via Power Purchase Agreements (PPAs)

Today

• Now the largest Energy Co-operative in Europe with more than 450,000 energy customers, delivering 1.8TWh electricity per annum
• 100% green electricity since April 2017.
• Took on GB Energy as Supplier of Last Resort. Purchased Flow Energy in May 2018.
• More than 500 UK staff in centres from Preston to Ipswich.
• Member customers enjoy a share of profits
• We offer our User Chooser facility to all customers:
  – allows customers to influence the energy mix of electricity they buy
What is a Supplier?

Supplier is primary intermediary between consumers and energy system – suppliers compete for consumers’ energy demand.

The supplier owns the relationship with the customer and serves as a conduit for consumer protection.

Cost recovery:
- Network costs
- Govt levies & policy costs
- Wholesale and SO costs

Meeting demand:
- Procuring generation
- Managing imbalance
- Back up supplier

Managing risks:
- Hedging
- Responsibility for settlement agents

Metering:
- Consumption data
- Meter provision & maintenance

Social obligations:
- Universal Service Obligation
- Vulnerability services inc PPM
- Energy efficiency

Customer Service:
- Billing & comms/promote engagement
- Complaints
- Smart rollout

Market processes:
- Central systems
- Change of tenancy

Ref: Cornwall Insight

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How do we supply our customers?

- Supplied by the transmission and distribution networks
- We purchase the electricity (and gas) to match our customers usage.
- We need to forecast the demand of our customer base, considering:
  - Size of our customer base
  - Accurate meter readings to estimate usage
  - Climate change/Weather impact
- We also need to forecast how our Power Purchasing Agreement (PPA) portfolio will produce, considering:
  - Site specific power generation
  - Weather impact on power generation
How do we purchase?

- We purchase in the following ways:
  - **Hedging** – buying energy in advance, for up to 3 years ahead.
  - **PPAs** – buying directly from the generators.
  - **Shape** – flexible product where you can buy and sell for each half hour.
Power Purchase Agreements

- We currently have 56 PPAs, 54 of which are with community sites.
- PPAs are treated like a hedge, in that we agree a fixed price for a long term, but it also affects shape!
- Output from PPAs go into our settlement
- We “shape” based on forecast output. If forecast is out it can be very expensive for us!
- Therefore we need to know what is happening with our sites.
- No future Government support means the sector needs to focus on PPAs more, as they will likely be the key item which will make or break future projects.
Power Imbalance

• Each half hour Elexon review our position and Buy/Sell on our behalf depending on the below:
  • If we do not have enough electricity purchased they will ‘top-up’ on our behalf and retrospectively charge us.
  • If we have bought too much they will sell the excess on our behalf and retrospectively pay us for the surplus.
• Therefore getting the PPA forecast right is extremely important…
Example of PPA forecasting error

Ronnie's Wind Farm Daily Generation (MWh) Compared Against Cash Out Price - 01/03/2018
Improved PPA offers

- We currently offer a pass-through of the average wholesale price across the contract term.
- The pass-through is related to how “firm” the output is, and allows for the cost of administering the portfolio.
- Guaranteed output is key!
- Making sure we receive current updates on output and accurate forecasts is very important. Sector improvements can result in us being able to review our pass-through rate.
- Having “firm” prices can increase the pass-through – storage can help.
- In a subsidy-free world you want to have set up a project to minimise the exposure from a volatile PPA market – LCOE!
Pure Leapfrog

- Pure Leapfrog is a charity that enables communities to take power over their own clean energy future.
- Pure Leapfrog formed from the merging of two long standing organisations, PURE the Clean Planet Trust & Carbon Leapfrog.
- Leapfrog Finance is a wholly owned trading subsidiary of Pure Leapfrog.
- Leapfrog Finance was launched in September 2015 and manages a £30 million revolving loan facility to finance community-owned renewable energy assets.
Leapfrog Finance

• It is a debt fund, able to lend up to 100% of the construction cost or acquisition costs of a community-owned renewable energy project.

• This facility was originally introduced to enable community groups to acquire and/or construct renewable energy projects under the government’s Shared ownership protocol. We are currently developing a number of post subsidy models for projects across a number of technologies (rooftop & ground mounted PV, onshore wind and storage)

• We deliver social impact in several ways, not least of which is increased economic resilience in deprived areas through ownership of cash generating assets, renewable energy generation.
What have we achieved?

- Leapfrog Finance is the leading provider of social investment to community energy projects in the UK.
- We were recognised by Community Energy England in 2017 as winners in the Community Energy Finance award category.
- Leapfrog Finance has funded 23.1MW of community owned projects, utilising £28.8m of bridging finance.
What is the LCOE?

LCOE is a method of benchmarking project’s against each other on a like for like basis.

It compares the average total cost to construct and operate a project over its lifetime to the total energy generated by the plant over that lifetime.

The LCOE is therefore the average minimum cost at which electricity must be sold in order to break-even over the lifetime of the project.
Levelised Cost of Energy (LCOE)

• Courtesy of Wikipedia

\[
LCOE = \frac{\text{sum of costs over lifetime}}{\text{sum of electrical energy produced over lifetime}} = \frac{\sum_{t=1}^{n} \frac{I_t+M_t+F_t}{(1+r)^t}}{\sum_{t=1}^{n} \frac{E_t}{(1+r)^t}}
\]

• This is the simple version and not the easiest thing to read for non-mathematicians but the principle is relatively easy to grasp.

• If you take the projected total cost of a scheme and divide that by how many units of energy are expected to be generated it gives you a £/MW or £/kW figure.
Is my project worth doing?

• This figure is the net present value (NPV) of the unit-cost of electricity over the lifetime of your project.
• What this focuses our minds on is that by maximising the sites generation and minimising the costs where appropriate you will produce a lower LCOE.
• It is important to note though that this does not mean that the cheapest options are the best. A low LCOE is not an indicator of the quality of a project.
• This is one method to assess how economical your project will be over its lifetime.
Post Subsidy world

• In a world without subsidies the ability of the project to generate revenue is wholly based on the PPA which governs the sale of the energy.
• Over the lifetime of a project the average PPA price you achieve will need to exceed the LCOE otherwise the project effectively doesn’t cover it’s own costs.
Project Finance Modelling

- Traditional modelling practices would use the known data for a project to create a cashflow forecast.
- This data would typically include the costs of finance, construction, operation, PPA pricing, future projected power price curves, tax assumptions, inflationary assumptions etc.
- These models typically were used to create debt profiles and IRRs for projects that would indicate whether they were suitable for investment for Lenders and Equity Investors.
- Typically these models would ‘know’ what the PPA price would be.
The Future of Modelling

• As we move towards a market with no minimum support (i.e. Feed in Tariff) it is important to evolve the modelling.
• One methodology we are developing is to reverse engineer the modelling.
• Instead of generating a cashflow profile and comparing the results against the Lender’s & Investors’ expectations we take the minimum baseline profile and work back from to calculate a minimum PPA price the project would require.
The Future of Modelling

• Alternatively if the PPA price is known then you can seek for other solutions such as the maximum affordable cost of a project in terms of capital construction or operational costs.

• With marginal projects this approach can often highlight the areas of cost that have the highest impact and thus potentially negotiated further.

• As you would expect these benchmarking tools are often complex and involve large spreadsheets. I have avoided bombarding you all with large volumes of equations and numbers but am happy to talk to anyone further if you want to get in touch.
Thanks & Contact Details

• Thanks for listening!

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