



ELECTRICITY, BREXIT AND THE FRENCH CONNECTION

The States must protect our energy bills, energy security, energy independence and the environment



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Introduction

Congratulations to Government.

Not an opening to be expected from an organisation that scrutinises government action, but credit where it's due.

In line with GPEG's urgent call back in March, the updated Government Work Plan gives the highest priority to the electricity strategy and increasing the use of renewables. It also supports the establishment of an expert panel to plan for net zero.

The problem is - this is only the start.



Negotiations with France

Negotiations to extend the current favourably priced electricity supply contracts with France or wider European suppliers using the existing cable via Jersey are taking place through the Channel Islands Electricity Grid – a partnership with Jersey. Success would help protect existing decarbonisation gains and enable Guernsey to build on those.

But there is no guarantee negotiations will succeed.

Failing to do so would threaten both future progress and gains made so far because we would have to revert to burning expensive and polluting fuels.

Ageing equipment, infrastructure and oil tankers would need to be replaced. Some experts argue that a significant part of the power station would need to be completely rebuilt at a cost of somewhere north of £85m. There would be enormous pressure to introduce local renewable energy generation as a matter of urgency. Large sums could be invested on solutions at risk of becoming obsolete very swiftly.

When the contracts were negotiated, France had an abundance of electricity and was one of the cheapest electricity markets in Europe. Since then, historically low prices have driven up French domestic consumption, some nuclear generation capacity has been lost, and the Ukraine invasion has cut off much of Europe's gas, oil and coal supply. France has adequate nuclear power capacity to cope in summer, but not in winter. It has to import power – much of it coal derived – from Germany and has recently been one of the most expensive electricity markets in Europe.

The concerns are obvious – will France export power in future, at what price, and perhaps only off-peak? Cable connections are vulnerable to mechanical failure. Political factors may threaten supply.

What Guernsey needs is a strong hand to back up its negotiations.

Time is running out

This is where the bigger challenge looms into sight – agreeing the overall Electricity Strategy and deciding whether or not to install a new cable to France. Having an agreed strategy and being able to bring both current and future negotiations into play would give Guernsey the strongest bargaining position possible.

But only if this is done while time is on our side.

And time is running out. Price protection arrangements allowing the CIEG to price hedge up to three years ahead expire in 2027 with nothing at all beyond that unless a new contract is put in place. At that point we could have no supply agreement with France at all. Negotiations must therefore be complete by 2024.

Timing also matters for meeting Guernsey's ambitious green agenda. The low carbon nature of French energy enabled Guernsey to reduce emissions in 2020 by 47.9% from 1990 levels. The 2030 target is a reduction of 57%.

The Electricity Strategy is due to be finalised this year for a States debate in early 2023. Deputies will have the complex task of deciding on the best way of protecting the price and security of supply, laying down a secure foundation for Guernsey's economic future, increasing the use of renewables, and achieving the longer term goal of energy independence for Guernsey.

A crucial part of the Electricity Strategy will be the business case for a new cable to France, covering the route survey, engineering design, terms and conditions of supply and the process for obtaining the required permits and consents from



France. It will also address the elephant in the room - who should pay the estimated £85m to £100m cost?

The stakes could not be higher. A delay in making these crucial decisions could fatally undermine Guernsey's objectives.

Unfortunately, the barriers to progress are also high - the fallout from Brexit and Guernsey's political process.

As a result of Brexit complications, detailed discussions with France on the cost and terms of supply have been slow.

In addition, Guernsey's flawed political process takes democratic political debate to its destructive conclusion. Every Deputy in a States debate has the freedom to challenge every proposition because there are no formal groupings to marshal support. Preparations for the debate have to ensure that all potential challenges have been identified and counter arguments are to hand. This is not only a complete waste of time and resources, because civil servants are employed generating defences against arguments that may never be made, but there is a major risk that an issue raised during the debate will derail progress. In time critical situations this can turn the debate into a do-or-die affair.

As it stands, a number of alternatives to the new cable are being put forward. Any one of them could prove sufficiently seductive during the debate to cause the States to defer a decision while further research is carried out, unless Deputies have the opportunity to give all the alternatives due consideration before the debate.

A process should be established whereby Deputies – in advance of the debate - have the opportunity to consider and discuss all the alternatives, including the

business case for the new cable. The urgent deadlines explained above make it essential that a clear strategy is agreed at the debate in early 2023 without any possibility of delay.

Some of the alternatives

This paper begins that process by considering some of the alternatives currently being raised, to assess how realistic they are.

“Wind turbines are the solution”

Onshore generation is well established and makes economic sense at current prices, but no one wants the large and noisy machines near their houses. Apart from possibly a few small and discreet sites, onshore wind is a political impossibility on our crowded island.

Offshore wind is more expensive, but if the turbines are not too far offshore and large enough to justify the connection costs, the economics can work. The problem is that the wind sometimes doesn't blow hard enough, if at all. Big batteries could help store power, but at current prices capacity could never be enough even for one windless day.

Offshore wind could provide part of the solution, but could not be the sole energy source. In addition, installation would take many years.

“Solar is the solution”

Solar power is even less dependable than wind power, being unavailable at night and severely restricted in poor weather and during the winter months. In addition, limited site availability and the cost of installation would make achieving adequate capacity in Guernsey problematic if not impossible.



“We should install a new cable big enough to allow us to sell surplus power to France”

The drawbacks of wind and solar generation are relevant here too. In addition, increasing investment in low carbon generation in Europe will reduce the market for renewable energy. It is likely that when we had a surplus (high winds or clear summer skies coupled with low on-Island demand) France would too, so they would not want our surplus.

Perhaps more important are the economics of transferring power from a large windfarm located offshore Guernsey to France. Bringing the electricity onshore, to take advantage of this local generation, would involve the installation of expensive equipment to convert the power to a voltage to match the local grid environment. A better option from Guernsey’s point of view would be to buy electricity directly from the European grid at the right voltage.

“Tidal or wave power is the answer”

Tidal power is not weather sensitive and recent power prices make the economics less daunting than they were. Nevertheless, there are very large up-front capital costs - estimated at between 3 and 10 times the cost of offshore wind for the same energy generation. If damming is required there will be additional environmental considerations. There has been much discussion over many years about tidal power in Alderney and Guernsey, but the costs have always deterred investors. Technology is improving, but is at an early stage. Tidal power currently looks too expensive and would take several years to install.

Wave power is sometimes mentioned, but would be weather dependent and technology is even further behind than tidal technology

“A new cable via Jersey is a better option than a direct link to France. There is an unused cable already lying on the seabed which should be used”

A new cable to Jersey would secure the current 60MW of capacity through Jersey, but would not allow any further decarbonisation on Guernsey. Additional capacity would be required both into Jersey from France and across Jersey. This is likely to cost about the same as going to France, although it might phase the capital expenditure.

There have been suggestions that an old cable could be recommissioned, however it is understood that this has inherent design faults, making it technically a non-starter.

Biomass?

Burning imported wood chip or local waste to generate power is little different in cost and environmental impact from burning oil and local waste volumes are too small.

Hydrogen?

A clean fuel which burns to generate water, hydrogen can be made in a very green manner by using wind or solar power to split water into hydrogen and oxygen, but at present this is a very expensive process. Hydrogen can also be made commercially from fossil fuels but not in a green way.

Most usefully, hydrogen could be an alternative to batteries for storing energy at times of excess wind or solar generation and it could also be used directly to power vehicles. However, although technology is advancing, the cost of production and storage issues mean that hydrogen does not currently look like a solution in the short term.

There are other more “exotic” possibilities.



A small nuclear plant?

The technology does not currently exist for plants small enough to work for Guernsey in isolation and it is likely there would be considerable opposition. Rolls Royce are developing micro reactors but prototypes are still five years away and it could be some time after that before they became commercially available.

Geothermal?

This uses heat from rocks deep below the surface and may be feasible. A plant producing both electrical power and hot water for heating is nearing completion in Cornwall. While costs are high (the Cornwall plant involved drilling 5,300 metres down and additional infrastructure is needed), operating costs are low and the activity is very green. Guernsey's granite is a promising rock and there is volcanic history under our feet, but the deep geology of the Island appears to be unknown. It might well be worth a little expenditure to see what the prospects could be – but it would probably take at least a decade to see any power output even if a good site could be identified.

Fracking?

Drilling could also reveal whether this would be feasible. Again, no-one knows the geology, but this is relatively easy to get going, if the geology works. But it is not green. It would merely be a potential source of cheaper hydrocarbons.

Carbon capture?

Technology to eliminate carbon emissions from the atmosphere or to collect carbon emissions at the point of production is being developed and may be a solution in the longer term, but it is in its infancy and is extremely expensive. The Island's emissions are tiny in global terms. Using the same amount of money on other offsetting methods could be more cost effective.

Demand management?

Clearly, it would help if the Island used less electricity. There could be higher insulation standards for construction – although the rate of construction is slow and the impact would be small. Retrofitting insulation would be more effective, but is very expensive and there would be calls for substantial government subsidies. There could be restrictions on street lighting hours, office temperatures, air conditioning in public places, and many other things. The use of personal transport could be discouraged by improving public transport, limiting parking, taxing car mileage, increasing the number of dedicated cycle lanes and imposing high tariffs for larger and faster EV chargers. A "Smart Grid" (expensive and very complex to install) could be imposed to switch off chargers and electric appliances or reduce heating output when demand exceeded supply. Tariff management could vary charges in the evenings to encourage consumers to use battery storage of off-peak power.

The problem is that many of these measures present their own challenges. Energy is wasted when it is stored because of the efficiency of conversion. Some disabled and elderly cannot use bikes. The less well-off will struggle with heating in the evenings. Those who can afford it may install their own generation capacity and disconnect from the grid, burdening those left with higher charges to cover fixed costs. The list goes on.

In conclusion

Many of these alternatives may have their place, but none can provide an immediate and complete solution. Strategy needs to be dynamic so each alternative is evaluated and introduced if appropriate as the technology matures.

For the foreseeable future the only approach that takes Guernsey's electricity strategy closer to net zero and also provides the greatest likelihood of security of supply is a combination of French power with a fill-in and back-up of on-Island, oil (perhaps gas) powered, generation – moving to lower carbon fuels as they are developed. Developing renewable power will help progressively as it gets planned and installed.

The immediate challenge for Deputies is to establish a process which ensures the debate in early 2023 is well informed and decisive.

Timing is critical, both to maximise Guernsey's negotiating power and to allow as long as possible to build alternative generating capacity if negotiations fail. The deadline of 2024 for protecting prices is uncomfortably close.



Previous GPEG reports on electricity

1. States' Trading Supervisory Board (STSB) - With great power comes no accountability; the 10 year failure of Guernsey Electricity Limited (GEL)
https://www.gpeg.org.gg/files/ugd/58aa14_045df13ae6ee4e23a5d587a1df64fc13.pdf
2. Action and Independent Expertise Are Needed Now on Energy and the Environment
<https://www.gpeg.org.gg/post/action-and-independent-expertise-are-needed-now-on-energy-and-the-environment>