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A Very Simple Approach to the Electricity Strategy



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GPEG – A Very Simple Approach to the Electricity Strategy

The Three Directions

- 1. If the French will not supply electricity beyond the end of the current contract (2027), then there is little in the way of argument. We'd certainly not need a new cable.**

We would be in “DIY” territory, burning hydrocarbons as virtually all our electricity generation until newly constructed wind, (and a smaller amount of solar), energy make a contribution. Tidal energy would probably be a medium-term solution.

However, no matter what we build in wind and solar, on cold, windless days in winter, or even windless grey days in the summer, we would be using hydrocarbons for the foreseeable future. Our carbon reduction targets would be missed.

The cost of hydrocarbons is now lower by (we estimate) around 40% than the estimates that the States used in dismissing the hydrocarbon route as too expensive – it might actually now be the least expensive solution at current prices! (EU gas prices have varied in the last 2 years from 350 Euro per megawatt hour down to 23 Euros. We don't know what price level was assumed.)

The amount of wind capacity needed in such a no-deal scenario is actually quite complicated.

A first substantial issue is that the demand for electricity on the island will be affected in opposite directions from a drop in demand due to the likely more than doubling of electricity prices over the next few years and in the other direction demand will tend to increase as cars and housing are electrifying to meet decarbonisation pressures.

Determined actions are available to reduce demand such as incentivising the use of heat pumps or low energy lighting. Greater use of energy storage can diminish peak capacity requirements. Insulation improvements could be subsidised. These actions are mostly economically better than building new capacity. CHP (Combined Heat and Power) could significantly reduce fossil fuel usage on new buildings.

But actually, we cannot predict the power appetite at all accurately. Our highly paid consultants' estimates of demand are:

The Energy Policy published June 2020 reports on page 18 that in 2050 annual demand volume of electricity will be 491GWh. Report from PwC.

The Electricity Strategy published recently reports on page 53 that in 2050 annual demand volume of electricity will be 625GWh. Report from Siemens.

If we have a few percent of our power from wind, then clearly it would be unlikely to ever generate more power than we need. If on the other hand we have a great deal of wind power then on windy, low demand days (especially in summer) we would have more output than we can use so adding further capacity would become very uneconomic. Obviously, this requires careful consideration.

Then there are green considerations. Clearly wind is far better environmentally than hydrocarbon burning, so if your sole aim is net zero, then we would construct much more wind even if it was uneconomic.

At present the States would probably be able to raise long term debt at an interest cost of around 7%.

So, in this at the most basic level of economics you would definitely want to build windfarms where the return from electricity sales was more than 7% of the capital costs of building the wind capacity. But there is a real problem in defining the value of the output in this no-connection to France scenario. The only sensible comparison would be with the costs of domestically produced hydrocarbon power which are dominated by future oil price volatility. So, you need to fix that price in the derivatives market to ensure the future cost of the output – this does get a bit complex, but it can be done.

Any decision to accept a likely return on wind farm development below 7% would be for environmental reasons and would provide an explicit cost of the net zero policy. Selfishly, this would really be foreign aid as an infinitesimal reduction in CO₂ from Guernsey's actions would be spread globally.

The States seem to have simply decided onshore wind is not possible. Onshore wind is much cheaper at c 1/3rd of the capital cost of offshore wind, and much quicker to build at potentially a few months vs several years. This opposition is apparently mostly on aesthetic grounds – there are a few sites which could work (the UK has 1,500 onshore windfarms, and France some 2,000!) without undue damage to the views but it is a matter of political will.

What price for a view? Half a dozen medium sized onshore turbines (say a total of 10 Mw capacity) could easily cost around £20m less to construct than the equivalent offshore.

2. The French will not agree to a good contract.

This could be contracts with an absence of guarantee of supply, a short, fixed term, restrictions on base-load or on peak demand, or more simply an onerous pricing mechanism. In these cases, it would be reckless to spend on a new cable and really we could be in broadly the same position as the first direction. Another difficult term would

be where the supplier might insist on “take or pay” where Guernsey would be forced to buy power it did not need or could use.

If the French insist on providing us with all of our baseload power, then any windfarms we build would spend a good part of the time turning uselessly. The economics of windpower could be prohibitive or at least it would make sense to greatly reduce the amount of windpower.

Clearly the importance and effect of all these terms will depend upon their exact wording in their effect on the economics. It is genuinely difficult to draft a long contract with so many external variables.

It is obviously tricky when Guernsey might not need any French electricity, because it had a period where wind and solar generated enough power to meet the island’s needs. Essentially the supplier would be competing with the customer – a delicate position!

Guernsey should not commit to any firm strategy formulation without full visibility of all these terms.

However, the supplier is currently in a good negotiation place.....but we should aim for the outcome below:

3. A decent contract is obtained with the French supplier.

Clearly in many ways the most desirable outcome. A new cable would be a good idea and we would have pretty renewable power.

Depending on the exact terms of that contract, the economics of wind and solar energy and the extent and timing of actions would rest on much firmer foundations than currently.

There would be no prospect (whether desirable or not) of attracting any attractive commercial funding before finalising the position with France.

The Big Offshore Wind Idea

It is actually unlikely that the small offshore wind plant being proposed would be good economically. The idea of a much larger (mega-array) offshore wind farm 8 or so miles off our south western coast to supply France, perhaps Jersey and, for a small proportion of its output, Guernsey, is conceivably a good idea. The first step is to get geologic and environmental data. The cost of those surveys, say £10m, could be borne by commercial power companies. But this would a longer term project and it would only make sense with there being a French customer for the output.

In short GPEG recommends that we sort out the French negotiation(s) before committing to any strategy. The costs of getting this wrong would be large.

(GPEG appreciates that there are many complicating and future possibilities not covered above, for example cheaper tidal energy or cheaper energy storage options. The mega-array alternative, in particular, is worth serious consideration – it would potentially generate substantial revenues from the use of our seabed.)