



Office of the Sark Electricity Price Control Commissioner

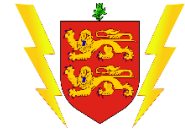
Electricity Prices – Price Control Order

Summary

1. On 31st May, 2018, I sought views on a proposal to set a maximum price for sales of electricity on Sark for the next year of 52 p/kWh (1st July, 2018 to 30th June, 2019). I also proposed to set a maximum price for sales of electricity of 49 p/kWh for July, 2019 to June, 2020. This consultation closed on 25th June. Only Collas-Crill, acting as lawyers to Sark Electricity Limited, has suggested that I should not proceed to setting a Price Control Order. I have considered their arguments in detail. I conclude that just one, concerning the incentives on SEL to sell electricity, has merit. I recognise that the proposal to reduce the maximum price for 2019/2020 were electricity demand for the year commencing 5th August, 2018 to exceed 1,600,000 kWh would deny SEL's shareholders the benefit of a rise in profits as demand rises. I have decided to dispense with any adjustment to prices for 2019/20 if demand exceeds 1,600,000 kWh, as described in paragraph 38 below.
2. Having found that the current electricity price of 66 p/kWh is neither fair nor reasonable, under Section 13 of the Control of Electricity Prices (Sark) Law, 2016 (the "2016 Law"), I am issuing a "Price Control Order" under Section 15 of the 2016 Law. I am setting a maximum price for electricity sold on the Island of Sark of 52 p/kWh for the year August 5th, 2018 to August 4th, 2019; and 49 p/kWh for August 5th, 2019 to August 4th, 2020, with adjustments if demand is less than 1,400,000 kWh and average annual untaxed diesel prices, as reported by Eurostat for the UK, differ from 42 p/l.
3. Since this Control Order takes effect on 6th August, 2018, I recommend that customers read their meters as close as possible to midnight on 5th August, 2018 to facilitate appropriate billing.

Sources of information

4. In preparing this Price Control Order, and the Determination which preceded it, I have sought to take all material considerations into account, including, but not limited to, each of the matters listed in section 13(2) of the 2016 Law.
5. In considering these issues, as well as relying on my own knowledge, based on a career in the energy and financial industries, and publicly available and authoritative sources of statistics and information, including Eurostat, I have sought to test, challenge and validate my initial working assumptions through discussions with industry colleagues and regulatory



economists. I have also taken note of the following materials, and the documents referenced in them –

- (i) specially commissioned reports from NAREC DE¹ covering the following aspects of possible alternative arrangements for Sark –

Domestic Property with PV, Battery and Diesel
Island Grid with Wind, Solar and Batteries
New HV and LV Infrastructure
Hotel with PV, Battery and Diesel
Note from NAREC-DE describing its Methodology

- (ii) a EURELECTRIC Report '*Towards the Energy Transition on Europe's Islands*' – February 2017;

(iii) an Arup/Siemens Report "*Distributed Energy Systems 'DES' – Flexible and Efficient Power for the New Energy Era*";

(iv) Siemens Report '*Grid Integration and Distributed Power Hybrid Power Systems*' – PowerGen Asia 2016;

(v) a Report provided by SEL '*Sark Electricity Generation and Infrastructure – Independent Valuation*' by Eur Ing J H Blowes CEng – March 2017;

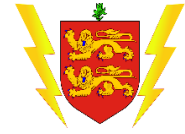
(vi) Sark Electricity Ltd's accounts for the period 2009-2016, and its budget estimates for 2018, and other information provided or made available by the company, including spreadsheets describing its assets and their replacement values (unfortunately, SEL was unable to provide an asset register giving the equipment's purchase prices and commissioning dates) and numbers which I used to make my own provisional estimates and revenue calculations;

(vii) comparative information provided by Alderney Electric;

(vii) representations made by Sark Electricity Limited since my appointment, including on its website at www.sarkelectricity.com, its newsletters to customers on that website, in correspondence, and on behalf of Sark Electricity Limited by Collas-Crill;

(viii) representations made by other members of the public, businesses and public bodies before the December 2017 Paper, after the December 2017 Consultation, following the release of the Determination and following the release of the Proposed Price Control Order.

The timetable for each stage in my consideration of these issues has been reflected in documents posted on the website for the Office of the Electricity Price Control Commissioner at www.epc.sark.gg



Background

6. The Proposed Price Control Order², published on 31st May, 2018, suggested that the maximum price for electricity on Sark should be 52 p/kWh for 2018/9 and 49 p/kWh for 2019/20, with adjustments described above and in paragraph 24 to 26 of the Proposal. I have shared this proposal with the Policy & Performance Committee of Chief Pleas and SEL. The document is also generally available on my Office's web-site; www.epc.sark.gg. Consultees were given until 25th June to respond.
7. I only received a substantive representation on the consultation on the proposal to make a control order from Collas-Crill, who act on behalf of Sark Electricity Limited. Collas-Crill argue that it would not be within my powers, as set out in the Control of Electricity Prices (Sark) Law, 2016 ("The Law") for me to set a Price Control Order because the Determination itself was invalid. The Proposed Control Order explained my grounds for dismissing Collas-Crill's belief that I was not being fair and reasonable in coming to my Determination. Collas-Crill now holds that the Proposed Control Order is invalid for three general reasons and for technical issues associated with the cost of capital, my methodology and my interpretation of the reports I commissioned from the UK's National Renewable Energy Centre, known as Narec-DE.
8. I also received a response from a resident informing me that, in view of the price proposal, they would not be progressing with their plans to disconnect from the SEL system. I also note that, subsequently, there has been an application by Sark Green Energy to build a solar farm on the Island, with the intention of building a network and selling power to residents. I have also received a letter dated 30th May, 2018, from David Gordon-Brown, the Director of SEL. This letter has been copied to residents of Sark. This letter claimed, amongst other matters, that SEL would have to shut the company down, were such a price imposed, since it would be insolvent. Indeed, Collas-Crill also mentioned in a letter to me, dated 30th April, 2018, that "SEL has no statutory (or even contractual) service obligation. It chooses to pursue its electricity business freely and is similarly free not to operate that business and deploy its capital elsewhere...". Such statements by a "sole supplier" of electricity are a material issue. My analysis suggests that insolvency would not follow from the price order I am imposing. The issues surrounding any proposal by Sark Electricity Limited would need to be addressed by other means.

Collas-Crill's Arguments

9. Collas-Crill believes that there are General, Methodological and Procedural reasons why I may not set a Price Control Order. I will explain why I am not persuaded by their arguments.

General Grounds

10. Collas-Crill holds that:-

² Office of the Commissioner, May, 2018.



- a. It is disproportionate and unreasonable for the Commissioner to base his Proposed Order on and/or have regard to policy objectives regarding the adoption of renewable energy; and
 - b. It is disproportionate and unreasonable for the Commissioner to base his Proposed Order on/or have regard to the cost and means of production of a supply of energy which is not the supply produced by SEL.
 - c. the Commissioner has failed to consider alternative means of meeting his policy objectives other than setting a maximum per unit price for the supply of electricity... A standing charge and a lower variable tariff might avoid the “vicious circle” of customer defections and rising prices.
11. Collas-Crill’s argument that I should not have regard to policy objectives regarding the adoption of renewable energy is misplaced. Sark does not have policy objectives with regard to the adoption of renewable energy, so such considerations did not form part of my analysis. The Law, itself, does not mention the environmental characteristics of different forms of generation. I considered the prospects for wind and solar simply because they might generate electricity at a lower cost than diesel.
12. I explained in the Proposed Determination³ why I believed that Collas-Crill had misinterpreted the Law, as suggested in b. The 2016 Law specifically charges me to “take all material considerations into account, including without limitation the following matters-
- a) The cost of distributing the supply of electricity, including the cost of –
 - i. Acquisition and maintenance of any plant and equipment,
 - ii. Fuel and other consumables, and
 - iii. Labourrequired to generate the supply.
 - b) The replacement cost of any plant and equipment required to generate and distribute the supply,
 - c) The quality and reliability of the supply of electricity and the economy and efficiency with which the supply of electricity is generated and distributed,
 - d) The margin of profit obtained by such other electricity suppliers, generating and distributing electricity in similar circumstances in such other islands or territories, as the Commissioner thinks fit,
 - e) The entitlement of the regulated electricity supplier to receive such reasonable return, as the Commissioner sees fit, on the value of the assets (including plant and equipment and working capital) operated or used by the supplier for the purpose of generating and distributing the supply, and

³ Office of the Commissioner, March, 2018, page 7



f) Any representations made in response to a request given under section 14, or otherwise.”

13. This list of duties does not restrict me to consider only the cost of generation from SEL’s diesels. Indeed, as I described in the December 2017 Consultation paper⁴, I based my analysis on my assessment of the actions of a reasonably efficient operator. Such an operator would, in my view, consider all possible ways of providing an affordable and reliable supply of electricity. I do not think it is reasonable for customers to pay higher prices because SEL has chosen to:

- increase prices in response to a fall in demand caused by the closure of hotels,
- use diesels exclusively,
- not consider deploying either wind or solar and
- continues incurring unreasonable expenses

14. The suggestion that I have not considered tariff reform is incorrect. I raised the topic in the December 2017 consultation paper. The Law charges me to determine whether or not prices charged are fair and reasonable and then to set a maximum price if they are not. I am not responsible for setting tariff structures. That is SEL’s choice. Nevertheless, I raised this possibility in the December consultation paper, in the section “Further Thoughts on Tariffs” (page 9). This described a structure consisting of a standing charge per meter and a variable charge based on fuel costs. I specifically asked readers for their views on tariff structures. SEL had sympathy with the proposal but was concerned that it would not work on Sark. SEL stated that no other utility recovered all its fixed costs through a standing charge and suggested that customers would simply remove some of their meters. Of the 11 responses to the December 2017 paper, four regarded the proposed tariff structure as unworkable. One of the four was concerned about the impact on fuel poverty. The other seven made no comment on this issue. In any case, having a higher standing charge would make the annual costs of all forms of electricity supply more transparent. Such a change would not, by itself, stop customer defections, if the costs of self-supply are lower, as I have discovered.

Methodological Grounds

15. Collas-Crill argues that the Proposed Determination is disproportionate and unreasonable because it “was the result of an analysis conducted by the Commissioner which is beset of errors” and because, having conducted my analysis, “erred in the methodology adopted for the determination of the maximum price”. Collas-Crill provided schedules to explain their misgivings.

Errors in the analysis

16. Collas Crill hold that the analysis was invalid because my estimates of the costs of solar and wind generation were based on high level assumptions and information gathered from the

⁴ Office of the Commissioner, December, 2017.



internet and that therefore these costs would be “inadequate to robustly inform the cost of an alternative form of electricity supply on Sark”. I accept that I initially based my analysis on a number of high level assumptions, based on a career in the energy and financial industries. I also made use of the internet to search for the latest information on wind, solar batteries, diesels and system operation. I then commissioned research reports and reviews by regulatory economists to test my assumptions. SEL has not provided any of its own assessments of the cost of installing or operating either PV or wind-based generation.

17. I recognised that, although I could make a reasonable assessment of the capital cost of installing solar PV and wind generators on the Island and maintaining them, I could only make educated guesses as to the likely capture of energy from the sun and wind, based on reports of average production from these technologies in southern England and NW Europe. I did not know how the production from these sources would vary over the year and the extent to which they would complement each other. Narec-DE provided assessments of such capture using satellite data and recordings from weather stations in the region on a twenty-minute timescale. They were able to assess the way in which the solar, wind, batteries and diesels could combine to provide power.
18. Collas-Crill also took issue with the way in which Narec-DE calculated average costs of production. Collas-Crill seem to believe that Narec ignored the cost of financing in its methodology. On the contrary, as Narec explained in its methodology note, it spread the cost of financing by using the “PMT” function in Excel. This function calculates the equal annual payments that are required on a loan having a given cost of capital, over a given number of years. I calculated financing charges in the Proposed Price Control in the same way. The generation cost of the technology or system is then found by dividing this annual charge and the annual maintenance costs by the amount of electricity produced each year. As such, Collas-Crill’s assertion that Narec, and by implication, me, ignored the time value of money, is incorrect.
19. Collas-Crill also took issue with the difference between the financing term and the economic life of the asset. This is standard practice in the renewables financing industry where loans for wind generators, for example, are often for shorter periods than the associated contract to sell the power.
20. Collas-Crill also questioned why I suggested different costs of capital for the different schemes. The reason is the decision of a householder to install this equipment would be posed in a different way to a commercial entity, such as a hotel. A household might have many considerations, such as surplus cash sitting in a bank account, a wish to avoid large price increases in the future and a desire to avoid emissions of greenhouse gases. A hotel’s shareholders would have a plethora of other investment opportunities but also value knowing the future cost of electricity and, for marketing purposes, the value of using “green” electricity. That is why it is likely, but not definite, that the required returns from such an investment might differ. Indeed, both types of customer may welcome having predictable power prices.
21. Collas-Crill has made a number of calculations of the production costs of renewable energy schemes based on different financing assumptions and has come to different results. They



also suggest that weather related incidents and other “hassle factor” problems, such as the need to maintain a “back-up” diesel generator, may have been underestimated by Narec.

22. The reason why I carried out these calculations was to determine whether, at a price of 66 p/kWh, SEL was in danger of losing customers. I believe that this threat is real. Indeed, just last month, a planning application was made to build a solar farm on the Island.

Errors with my interpretation of the analysis

23. I reported that I was concerned that SEL’s customers would choose to disconnect from the existing network. My own assessments of domestic customers’ costs of supply from batteries and solar PV came to a cost of around 50 p/kWh. The Narec analysis of the hotel came to a range of 42-47 p/kWh – or about the same. Narec’s hotel cost estimation came to 51-77 p/kWh, but identified that using diesels alone could supply at 42 p/kWh. I therefore believe that the Narec results confirmed my belief that a hotel would be able to self-supply at under 66 p/kWh.
24. Part of the Narec-DE study involved the estimation of the cost of building the electrical distribution system on Sark. Collas-Crill argues that I have been selective in presenting the results of the Narec work. In particular, Collas-Crill noted that Narec estimated the cost of building a new network to be £4.3m, and I did not mention that this is higher than the £2.2m value I estimated for the SEL network in my December 2017 consultation paper. Collas-Crill has made a serious error in equating the two figures. Narec’s £4.3m is an estimate cost of building a *new* network. This could, reasonably, be compared with SEL’s consulting engineer’s estimate of £3.0m for *replacing the whole system as new*. This difference between these two assessments is hardly surprising, given that Narec had not been to Sark and seen the existing layout. As Narec explained:

“Based on the information provided and by the use of Google Maps the total cost of a new HV & LV network on Sark to 250 properties is likely to be in the region of £4,344,500.00. This may be reduced with a full on-site assessment of the likely excavation requirements and ground type. A full detailed study may be able to remove one or two substations or even reduce cable sizes slightly”.

25. Collas-Crill also does not acknowledge that the Narec system would accommodate power flows in different directions, depending on the pattern of generation and demand at any time, unlike the current network. However, by comparing these estimates of replacing the SEL network with new equipment with my estimate of the Regulatory Asset Value (RAV), Collas-Crill makes an even more serious error. I calculated The Regulatory Asset Value as £2.2m, as I took into account the fact that the SEL system is not brand new. As I explained in the December 2017 consultation paper (see Table 1, p4), SEL was unable to provide records of the purchase cost and commissioning dates of the assets, so I took SEL’s consulting engineer’s assessment of the replacement costs and I made assumptions of the age of the various pieces of equipment. I have now discovered that I underestimated some of these ages, so my initial assessment of the RAV at £2.6m is probably too high. As I explained in the Determination, it is difficult for me to make such an assessment since SEL does not have an asset register which would record the purchase price and commissioning date of all its



operating assets. I have therefore suggested to SEL that it undertakes an assessment of the asset lives by appointing a consulting engineer, who could provide such an age adjusted assessment. Collas-Crill has also ignored the fact that my assessment of the Regulated Asset Value incorporated a reduction for SEL charging some customers for 100% of the cost of connecting their premises to the network, following practice common in the utility sector. What is not common practice is the fact that SEL charges customers a return on these assets. In other words, SEL claims that they are part of SEL's Asset Base. It is neither fair nor reasonable for customers to pay more than once for assets that only they use. SEL has been unable to provide me with any details of these payments, apart from claiming that they were not significant.

26. Collas-Crill complain that I do not explain my statement in the Proposed Price Control Order that SEL could reduce its costs of generation by around 8 p/kWh. I described in paragraph 17 of the Proposed Price Control that I estimated the cost of larger scale solar PV production at 9 p/kWh and a similar figure for wind. In paragraph 13, I explained how I arrived at my estimate of 17 p/kWh for the cost of electricity from diesels, after allowing for system losses. Hence my estimate of 8p/kWh. I recognise that this would require the existing diesel engines to accommodate variations in net demand arising from generation from solar PV and wind. As I explained in the Appendix to the Draft Order, these diesels do not, necessarily, suffer a reduction in efficiency, depending on how they are operated. Indeed, the ability to use batteries to allow the diesels to generate in their optimum range will help SEL to minimise its fuel consumption. Collas-Crill believes that such high-level assumptions, as used by Narec and me, should not be relied upon, owing to Sark's unique circumstances, saying, for example, that "any costs in relation to real estate and construction materials would be more expensive on Sark than in the UK". I can think of many other places in the UK where this would also be the case. Moreover, there are other costs that are lower, such as an absence of VAT and other forms of taxation. I do agree that a more granular investigation is warranted. Therefore, I am allowing an additional 3 p/kWh on the tariff to fund such a study of these different forms of generation. However, I think it would be unfair to customers to delay a price reduction any longer.
27. Collas-Crill is also suggesting that there is no incentive on the company to run its diesels, "at cost" and not make a profit. This is incorrect. I expect SEL to cover its costs at the very least at a price of 49 p/kWh.

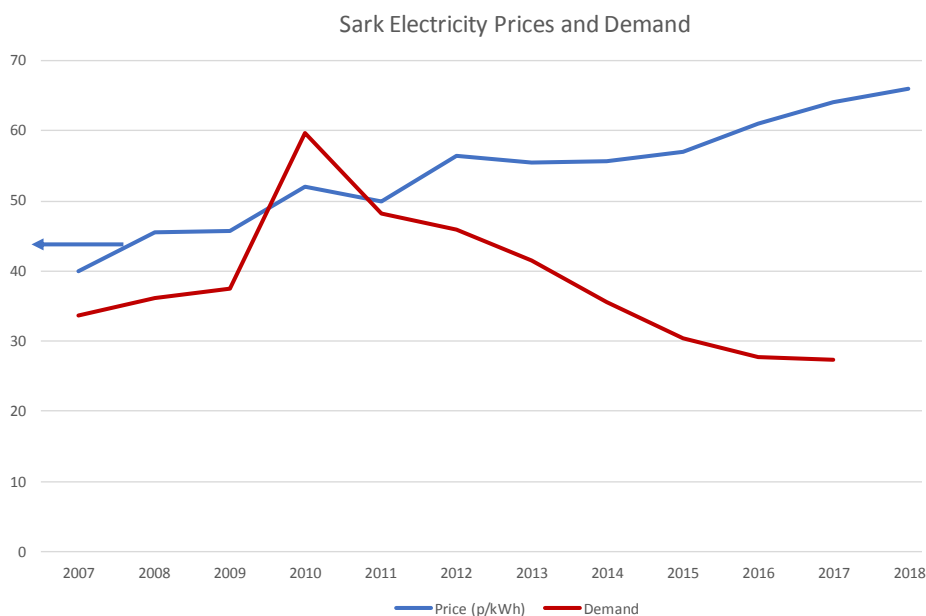
Methodological Errors in the Determination of the Maximum Tariff

28. Collas-Crill complains that I am inconsistent in my approach to setting a maximum tariff. It is not a case of being inconsistent. As I explained in my December 2017 consultation paper, setting a tariff on the basis of allowing a reasonable return on my initial estimate of SEL's existing assets will not be sustainable at current levels of demand. I explained that the development of solar PV, batteries and wind generators had rendered SEL's system vulnerable to displacement. The problem I envisage is that wealthier customers will disconnect and cause SEL to increase prices to the less well off. Under Section 13 (2) of The Law, I am allowed to consider fuel poverty as an issue.



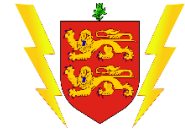
29. SEL's predicament has been caused by the fall in demand since 2010. Some of this loss was caused by the slump in Sark's economy following the completion, and subsequent closure, of new hotels on the Island. However, judging from my meetings with residents, much of this loss has been caused by the high prices charged for power. Most companies facing such problems would have sought ways to lower their costs, reduce prices or increase demand. This SEL has not done to any large extent.
30. I anticipate that more electricity would be used if the price were lower. Inspection of figure 2 in the December, 2017 Consultation paper shows how demand grew at a constant rate from 1969 up to 2010 when the construction activity of hotels on the island led to a large increase in demand. When the hotels were completed and subsequently closed, demand fell precipitously, and prices rose. If prices returned to the level I am suggesting, still high but more in line with nearby Alderney (42 p/kWh)⁵, then it is reasonable to expect demand to rise and return to the pattern established before the intervention of the work on the hotels. Inspection of Sark prices and electricity demand over the last decade, as shown in Figure 1 below (Extracts from Figure 1 in the Proposal to Make a Price Control Order and Figure 2 of the December Consultation) indicates that the price increases on Sark since 2011 may well have contributed to the continuing fall in demand. As such, it is reasonable to expect that annual demand could recover to around the level witnessed towards the end of the last decade. At this level of demand, SEL would enjoy a return on my first estimate of "regulated asset base" of over 10% per annum, even without the additional benefits that would flow from investing in solar or wind generation.

Figure 1



Source: Sark Electricity Limited; Newsletter, 4Q 2017 and earlier newsletters

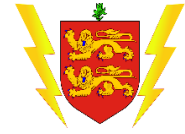
⁵ Alderney Electricity www.aldereny-elec.com; Tariff C



31. I have therefore tried to set a price that is low enough to discourage “own generation” but sufficiently high to allow SEL to earn a reasonable return on its assets. Setting the price is not an exact science. Indeed, it cannot be since one of the determinants is the level of future demand, which is unknown. I have to take into account all the matters in Section 13 (2) of The Law when determining the maximum price. I believe that, if SEL is run in a reasonably efficient manner, it should make such a return on its existing assets of around 5 - 10% per annum real. However, I currently do not know the size of the asset base, as I mentioned in paragraph 23. I also need to understand the various factors that will decide whether or not a customer chooses to self-supply.
32. Unlike Collas-Crill, I do not believe that my approach will dissuade investors. There is no agreement between SEL and the Island of Sark for the supply of electricity. Indeed, the owners of SEL purchased and invested in the company without the comfort of an understanding with Chief Pleas. In future, investors in SEL will take comfort from the existence of a regulatory regime to set the maximum price and the associated 2016 Law.

Maximum Prices

33. In the light of the above analysis and taking into account all the circumstances including the material considerations under section 13(2) of the 2016 Law, I believe that a fair and reasonable price for electricity on Sark is 49 p/kWh, based on the current un-taxed diesel price quoted in Eurostat for the UK of 42 p/l and a demand of 1,400,000 kWh. This price level is closer to prices on Sark at the end of the last decade and I expect demand would rise to similar levels. By way of example, if an asset base of £2.6m is assumed, as per my initial assessment, then demand of 2,200,000 kWh would result in a return of well over 10% per annum. SEL could also enjoy a reasonable return on any wind and solar generation it subsequently installs, since the total cost of these forms of generation are around 8 p/kWh lower than the marginal cost of the existing diesel generation.
34. However, I appreciate that SEL needs to undertake a full study and analysis of alternative ways to generate power and raise cheaper finance. This will take some time and resources. Indeed, SEL have written to me, individually, and to customers and Conseillers, suggesting that they may wish to sell the company. A first step in such a process would be a determination of the value of the existing assets. I recommend to SEL that it appoints a consulting engineer to undertake a “Modern Equivalent Asset” assessment of the SEL system. Such a study would determine the cost of replacing the system as new and then depreciate each asset according to its remaining life. The study could also identify the optimum rate of deployment of new forms of generation, the optimum number of diesels to retain and the optimum amount of battery storage.
35. I therefore set the maximum price for the year from 6th August, 2018 to 5th August, 2019, at 52 p/kWh. This maximum price would provide sufficient funding for the study that I have recommended. In common with standard practice at other privately-owned network companies in the UK, I would expect the results of this study to be published. If these funds are not applied for the purposes I recommend, I will take this into account at a subsequent Determination.



Price Adjustments

36. If the average weekly diesel prices reported by Eurostat over 1st July, 2018 to June, 30th, 2019 are higher than 42p/l, then the maximum price for 6th August 2019 to 5th August, 2020 will be adjusted to allow SEL to recover the shortfall suffered during 2018/9. The “under-recovery^f” will be calculated as:

$$\text{Under-recovery}^f (\text{£}) = ((\text{Actual average price} - 0.42) / 2.93^6) * \text{actual demand (in kWh)}$$

37. The adjustment to the tariff, in p/kWh, will be calculated by dividing the under-recovery by the forecast annual demand for 2019/2020, multiplied by 100 to convert £ into p. Similarly, if the average price is lower than 42p/l, the over-recovery^f will result in a lower maximum price for 2019/20, according to the same formula.

38. If demand is lower than 1,400,000 kWh during the year 1st July, 2018 to 30th June, 2019, a similar adjustment will be made to the tariff for 2019/2020. In this case the adjustment will be calculated as:

$$\text{under-recovery}^d(\text{£}) = 0.35 * (1,400,000 - \text{Actual demand}).$$

39. The tariff adjustment will be made by the same procedure as described in paragraph 35 above. Although I sought comments on the frequency of these adjustments in the Proposed Price Control Order document (see paragraph 29 of the Proposed Order), none were provided, so I will make any necessary adjustments annually. I am still willing to consider alternative approaches.

40. I am not setting an “over-recovery” adjustment for the next two years. Therefore SEL has an incentive to sell more power and improve profitability. These adjustments give SEL full protection if demand is lower than 1,400,000 kWh, and allow SEL to retain all the benefit of higher demand. Indeed, each additional kWh sold would generate 35p of gross margin.

41. Should there be sudden, short term, movements in fuel price and demand, I have powers, under Section 15 (6) of the 2016 Law, to vary the Price Control Order.

Anthony White
3rd August, 2018

Commissioner
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⁶ The 2.93 factor converts prices from p/l into costs per kWh delivered, taking into account the losses in generation and distribution.