Supplier of last resort costs for renewable generation capacity

CALL FOR INFORMATION

Guernsey Competition and Regulatory Authority

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1. Introduction

1.1 In April 2019 the Guernsey Competition and Regulatory Authority (**GCRA**) issued a Statutory Notice of a Final Decision on Guernsey Electricity Limited's (**GEL**) Standby charge for embedded electricity generation (CICRA 19/16). These standby charges contribute to the costs to GEL of its supplier of last resort obligations. Accompanying that Decision was a statement by the GCRA to the effect that the standby charge applied by GEL at the time was high compared to other jurisdictions. As an interim measure, the tariff was reduced until a full review of the appropriate level was undertaken.

1.2 Since it published that Statutory Notice of a Final Decision the GCRA has received further representations regarding the level of the GEL standby charge asking for this review to be prioritised.

1.3 This Call for Information is therefore intended to inform a decision by the GCRA as to whether there is a case for commencing a full review of GEL's standby charge at this time, seeking views on the key principles and information relevant to such a Decision.

2. Background

2.1 GEL applies a standby charge to a category of electricity customers who install what is referred to as distributed renewable generation, when those customers continue to require supply from GEL should all their requirements not be met by their own generation source. Revenue from the GEL standby charge is intended to contribute to the cost of this supplier of last resort obligation on GEL which is a legal requirement to meet reasonable demand by customers for electricity.

2.2 Specifically, GEL currently applies the standby charge to any 'behind the meter' generation capacity of a commercial electricity customer where the capacity installed exceeds 25 kW[1]. The charge is applied equally to all commercial customers irrespective of whether they are the customers of GEL or of a third party.[2]

2.3 The appropriate level of such a charge is a matter of difference between parties. There are contrary views on the costs and benefits that distributed renewable generation brings, or could bring, in Guernsey, and the effect the standby charge has on investment decisions. The GCRA has also heard concerns about risks of potential free-riding on GEL's infrastructure investment which is believed to impact on the competitive playing field and suggested to have adverse equity effects on electricity customers.

2.4 The role played by the current standby charge is therefore central to the issues in this area.

[1] Commercial Customer | Guernsey Electricity

[2] The GEL charge is not applied to isolated premises that have generation capacity installed 'behind the meter' since in these circumstances GEL will have been released from the obligation to supply.[2]

3. Drivers of distributed renewable generation

3.1 The main drivers for the increased level of interest in local/on-site renewable generation appear to the GCRA to be in three areas namely, CO2 reduction, improved economics of investment in the technology, and the choices that distributed renewable generated electricity provides.

3.2 Renewable electricity generation is valued because it **replaces fossil fuel generated electricity capacity**[3]. Distributed renewable generation provides a means to do that at an individual customer level and customers who wish to reduce their personal CO2 footprint may see merit in an investment that promotes those ambitions. The **improved economics of renewable generation** increases incentives to invest in the technology, since it is financially accessible to a greater number of people with such ambitions. A new class of user, termed prosumer because they consume and produce electricity, is therefore developing. These potential prosumers may also see a potential investment opportunity where their own generated electricity has a payback period they find acceptable. As the costs of installing the technology fall, the change in economics of renewables also attracts capital investment by commercial investors and market entrants who see a market opportunity in installing the equipment. A **greater degree of control** this form of generation potentially provides to people and/or businesses is made possible by communication and computing technology advances that allow monitoring of usage, storage of electricity and dispatch decisions to be made by the customer. Such technology developments give a level of autonomy and choice where consumers historically had very little control of the economic factors in this market. A degree of autonomy for some customers is also associated with the arbitrage options it gives which improves the cost benefits assessment, for example the ability to reduce exposure to time-of-day tariffs of the conventional supplier or to sell electricity onto the grid at opportune times.

Discussion

3.3 While a range of renewable technologies exist, Wind and Solar PV based renewables in particular appear to reduce CO2 emissions significantly with reports indicating these are comparable to nuclear generation[4] in that regard. The evidence for the view that Solar Photo Voltaic production, on-shore wind, and battery technology costs changes have increased the attractiveness of investment in the area of renewables both at the commercial, as well as the domestic level is set out in Annex A.

[3] Additional renewable generation capacity does not however necessarily equate to an equivalent reduction in the need for fossil fuel generated electricity capacity since full utilisation of renewable generation capacity is rarely if ever feasible. The nature of renewables is such that it relies on environmental conditions, which are not always optimal.

[4] "Why did renewables become so cheap so fast? And what can we do to use this global opportunity for green growth" (Max Roser, Programme Director, Oxford Martin School, University of Oxford) 4th December 2020)

https://ourworldindata.org/cheap-renewables-growth.

3.4 In Guernsey, the primary source of electricity is importation from the French network. The GCRA understands that imported electricity comes from nuclear or non-fossil fuel generated sources. GEL can acquire validated renewable electricity from France delivered through the interconnector in addition to or instead of nuclear generated electricity and it is the GCRA's understanding that all imported electricity is now validated as renewable sourced electricity. If reduction in CO2 emissions is a major driver for distributed renewable investment, the extent to which fossil fuel generated electricity is displaced by additional renewable generation capacity would therefore seem more relevant to the reduction in CO2 sourced electricity consumed than the absolute renewable capacity installed.

3.5 In particular, during the warmer period of the year GEL can meet all the Island's electricity demand from imported capacity. This being the case, the question arises whether on-island renewable generation investment will make any contribution to reducing CO2 emissions in Guernsey during the summer when the Island's electricity demand in the summer can be met entirely from the capacity provided by the interconnector for the foreseeable future.

3.6 In the colder months however, GEL relies on fossil fuel-based electricity generation on-island to supplement imported electricity, though it should be noted that investment in a second interconnector would provide capacity to reduce this reliance on Island-based generation capacity.

3.7 The contribution of renewable generation in circumstances where there are materially different benefits from renewable generation investment between seasons seems relevant to the level of the standby charge for distributed renewable generation and principles that underpin that. In particular, whether the GEL standby charge should be set net of the contribution that such capacity brings to the network or wider policy ambitions in Guernsey and whether it should vary by season.

4. Purpose of standby charges

4.1 GEL has a legal obligation to supply electricity on request which is set out in Section 10 of The Guernsey Electricity Law 2001[5]. Except for exemptions from the duty to supply as set out in Section 11 of the Law, any premises must be supplied as *"... determined by a tariff under section 12, or a special agreement under section 16, and specify the tariff or the proposed terms of the agreement, …"*[6]. Customers that invest in on-site renewable generation and are not permanently disconnected from the grid who require supply of electricity from GEL either intermittently or as a permanent supplement to their own generated sources, therefore have a right to receive supply

[5] Except for exemptions from the duty to supply as set out in Section 11 of the Law, any premises must be supplied as "... determined by a tariff under section 12, or a special agreement under section16, and specify the tariff or the proposed terms of the agreement".

of electricity to their premises from GEL. This requires the maintenance of network facilities and infrastructure capacity so that it is available should it be needed adequate to meet that obligation. Such costs need to be paid for and it is suggested that without the standby charge these costs are not adequately covered by tariffs paid to GEL by these customers.

4.2 The rationale as described by GEL for requiring the charge is as follows (for the avoidance of doubt, the GEL explanation was made at a time when the rate was set by the company):

"*….GEL currently applies a monthly standby charge of £6.8594 per kW of installed capacity on customers ("**decentralised customers**") who have their own embedded generation capacity exceeding 25kW. This charge is confirmed on GEL's published Tariff and represents the "insurance" cost to GEL of decentralised customers remaining connected to the grid for backup or additional power in the event of an outage, and ensures that they pay their share of any infrastructure costs associated with the grid. The charge is applied to any "behind the meter" generation capacity regardless of whether the capacity operator is a GEL customer or a third party, such as the holder of a generation licence, as there is no difference in the cost to GEL in either case, and it is only fair that all those who benefit from the grid should meet equally the cost of maintaining it. If that were not the case, then the centralised customers, who form the vast majority of Guernsey residents, would be subsidising the decentralised ones.*"[7]

4.3 A related argument is that without the standby charge there are implications for the competitive playing field between GEL and competing suppliers/generators as well as fairness concerns. Alternative providers of electricity competing for GEL's customers could for example present an artificially enhanced financial case for investment in renewable technology if the costs of the obligation to supply on the basis of a legal obligation on GEL are not recovered from those who benefit. There is a dynamic feature, namely as prices for customers who remain with GEL rise to cover those costs, the economics of moving away from GEL become increasingly attractive for those that have the capital to do so. Those who for different reasons do not wish to become such economic actors, are then, through their electricity charges, effectively subsidising those with the means to invest in renewable generation capacity. This raises fairness concerns particularly if those less-well off are perceived to be subsidising those who can afford to invest in these technologies.

Discussion

4.4 There would not seem to be much objection to the point that there is an 'insurance cost' to GEL of serving decentralised customers who remain connected to the grid for backup or additional power in the event of an outage. The question as to what GEL considers should be included within the category of '*any infrastructure costs associated with the grid*' would however need to be examined in further detail to inform a position on the appropriate level of such an 'insurance cost'.

[7] GEL letter of 14 August 2018 in response to CICRA's Standby Charge for Embedded Electricity Generation – Call for Information.

4.5 A view that might be put forward is that it is contrary to normal market dynamics for the 'insurance cost' to be based on a principle that GEL should be fully compensated for all revenue lost because customers choose alternative supply or generation sources. The basis for the level of a charge might seem more appropriately informed by the economic concept of cost causality or cost avoidance of the supplier of last resort obligation. Specifically, costs incurred by GEL which are not directly attributable to GEL's supplier of last resort costs for this class of customer should not be included in what GEL refers to as '*infrastructure costs associated with the grid*'. The rationale for this position is that GEL incurred such costs irrespective of the specific number of decentralised customers on its network and obliging such customers to bear those costs going forward when they were not specifically attributable to them is an unfair principle to apply to recovery of such costs.

4.6 It might alternatively be argued that the appropriate elements that comprise the 'insurance cost' to cover the supplier of last resort obligation are only those GEL costs that are eliminated when decentralised renewable generation customers choose not to remain connected to the grid. This is arguably highly pertinent to the level of any 'insurance cost' since the costs no longer incurred by this class of customer provide an accurate gauge of the true costs of decentralised renewable generation customers that remain connected but continue to benefit from the supplier of last resort obligation on GEL.

5. Applicable principles

5.1 With the above information and discussion as context, principles under consideration are listed below on which views are sought to inform an approach to set a standby charge to cover the supplier of last resort obligation on GEL (what GEL refers to as an 'insurance cost') in circumstances where distributed renewable generation capacity is installed at premises. These are:

i. A supplier of last resort obligation incurs a cost to Guernsey Electricity Limited, for which a specific charge is required and paid for by the beneficiary of such a service.

ii. The cost drivers relevant to the supplier of last resort obligation are those directly attributable to the obligation, for example, ongoing maintenance and repair costs of infrastructure specifically for the purpose of ensuring the ongoing supply of electricity to distributed renewable generation customers.

iii. Those costs that are indirectly attributable, such as overhead costs, would not be relevant to supplier of last resort charges since they are not directly attributable to that obligation.

iv. Income received by Guernsey Electricity Limited through other tariffs, for example unit tariffs, is relevant to an assessment of what a fair standby charge should be for distributed renewable generation customers where these customers also contribute to the supplier of last resort obligations through paying such charges.

v. Where forms of distributed renewable generation contribute to the security of supply[8] and

[8] Security of supply – Proponents of renewable generation point to interconnector failure in support of the view that reliance entirely on interconnector technology has risks and that these are not unique to Guernsey's interconnector failures. This view points to the extended period to repair such infrastructure and the impact in financial as well as environmental terms from those failures. They also suggest that because on-site renewable generation is local it is not subject to the significant transmission and distribution losses of imported electricity

resilience[9] of Guernsey Electricity Limited's network these should be recognised in any assessment of the standby charge.

vi. To the extent that distributed renewable generation capacity contributes to security of supply and resilience through options which enable the potential benefit of this capacity to be exploited (such as call-on, call-off, and contracted capacity), these should be factored into an assessment of the supplier of last resort costs.

vii. Materiality of distributed renewable generation capacity is relevant to the basis for a standby charge, which would only be introduced when such capacity reaches a capacity threshold that GEL can demonstrate represents a material risk to its financial or operational integrity of its business.

6. States energy policy

6.1 In 2020 the States of Guernsey's Committee *for* Environment & Infrastructure published an energy policy, entitled "States of Guernsey Energy Policy 2020 – 2050". The States were asked to decide whether after consideration of the policy letter dated 28 February 2020, the policy ambitions proposed were approved. This was in large part agreed but is now under review following the 2020 Guernsey general election that took place on 7 October 2020.

6.2 Energy policy ambitions will be relevant to the GCRA's assessment, informing the relative weight given to considerations such as policy priorities for renewable energy and the trade-offs between the different priorities set out in policy. The GCRA will engage with States of Guernsey policy makers to inform its position.

7. Summary

7.1 Advocates of renewable generation maintain that there is a failure by Guernsey Electricity Limited to acknowledge or seek to estimate the positive contribution on-site renewable generation makes, or could make, to security of supply and resilience of supply to the network and capacity infrastructure of the Island. On the other hand, Guernsey Electricity Limited maintains that the cost of maintaining standby capability to fully provide or supplement supply for distributed renewable capacity customers incurs costs that are inadequately met from the other tariffs these users pay which must be recovered through some form of insurance charge. The standby charge should therefore be set commensurate with any infrastructure costs associated with the grid that it incurs. In particular, Guernsey Electricity Limited also maintain that its revenue is diminished when renewable generation leads to a reduction in the demand for its electricity because it receives less income from unit tariffs and this source of income contributes to the costs of the

from transporting electricity over long distances, reducing the absolute amount of electricity supply capacity actually required.

[9] Resilience of supply - On-site renewable generation in sufficient quantity is also argued to provide greater resilience than an interconnector to France, because smaller amounts of capacity are distributed around the Island which avoids single-point reliance and therefore exposure to single-point failure. The addition of a second interconnector is considered a significant additional cost for resilience that could be mitigated by on-island renewables if capacity were expanded sufficiently.

supplier of last resort obligation which it cannot recover in the absence of a standby charge.

7.2 An assessment by the GCRA will be guided by a view whether there is a case for regulatory intervention. If there is such a case, a balanced set of principles that recognise the merits of all these positions will be required to come to a view on the appropriate level of charge to which GEL is entitled. The GCRA has set out some key principles in this Call for Information on which views are sought.

8. Next steps

8.1 Views are sought on whether the GCRA has adequately set out the key issues relevant to an assessment of the need for any regulatory intervention and, if so, what form that intervention might take, if any. Principles that inform approach and enable focus on the most relevant considerations for setting a fair level of charge which Guernsey Electricity Limited is entitled to recover are key to the GCRA's assessment. Respondents are therefore asked to provide their views on whether the GCRA has comprehensively set out the position of parties and whether they agree with the principles set out in this Call for Information as well as any views on alternative or additional principles that might be relevant.

8.2 Interested parties are invited to submit responses to the GCRA in writing or by email to the addresses on the front of this paper. All comments should be marked '**Charges for distributed renewable generation in the Guernsey electricity market – Call for Information'** and should arrive by 16:00 on Thursday 25 May 2021

Annex A

A recent publication cited the Levelised Cost of Energy [10] of Solar PV production had reduced by 89% over the period 2009 to 2019. Over the same period on-shore wind fell by almost 70%.

While Levelised Cost of Energy figures do not necessarily reflect all costs associated with generation from different sources (for example, they do not include transport costs such as transmission, which may differ between generation types based on factors including location), nor do they include reserve energy costs which would vary depending on the reliability and predictability of a given type of generation; they are illustrative of renewable generation costs on a declining trend.

As wind and Solar PV technology reduces in cost per unit generated over its lifetime, it will become increasingly competitive with other technologies on price.

At a smaller scale, costs of Solar PV installations at an industrial/commercial and domestic scale have fallen. For a typically sized 4kW domestic installations costs have fallen from approximately £2,000/kW in 2013/14 to £1,500/kW in 2019/20[11]. At larger commercial premises (such as hotels, data centres, warehouses) schemes may be in the region of 50-100 kW installed capacity and, for illustrative purposes may produce up to 20% of their annual demand by self-generation. Domestic schemes are typically in the range of 5-10 kW installed capacity and produce around 50% of their annual demand.

Battery efficiency has also increased, and costs have fallen significantly over the last ten years. Battery technology complements renewable generation since it reduces the temporal element of many renewables. It can be effectively combined with Solar PV installations to provide a back up supply, provide sufficient power for evening/overnight consumption or increase self supply (which could include exporting at higher priced periods (depending on import/export tariff structures). For example, a Tesla Powerwall 2.0 can output 13.5 kWh (which should cover the average home's evening and overnight energy consumption (estimated at 5-10kWh)[12]. Such batteries can cost in the order of £7-8k installed. UK estimates of payback periods for domestic back up batteries vary depending on the type of battery but are in the order of ten years (based on current installation costs, buyback tariff rates and assumptions on future energy prices[13]). At present approximately 40 domestic battery systems are installed on Guernsey. These batteries are not designed to be used off grid (so require connection to the GEL system). If the costs of batteries continue to fall, and if energy prices rise, they will become an increasingly economic option for larger, and smaller, self-generation sites.

END/

[10] The Levelised Cost of Energy (LOCE) is a measure of the average net present *cost* of electricity generation for a generating plant (in £/MWh) over its lifetime.

[11] https://www.gov.uk/government/statistics/solar-pv-cost-data

[12] https://www.solarguide.co.uk/tesla-energy/powerwall-2#/

[13] https://www.spiritenergy.co.uk/kb-battery-storage-for-solar-residential-economics