



Office of Utility Regulation

Electricity in Guernsey

Moving Forward - from policy to implementation

Document No: OUR 02/19

May 2002

Office of Utility Regulation

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Foreword

Electricity is an essential service that we all take for granted in every aspect of our lives; from steaming hot water and instant cooking capability to the uninterrupted running of the computer systems we rely on in the workplace. Electricity is a true utility service and ensuring that electricity supply to consumers in Guernsey is reliable, sustainable and cost-efficiently produced and provided is an objective that the States of Guernsey has set to underpin the legislative and operational regime for electricity in the island.

Since the enactment of the Electricity (Guernsey) Law, 2001 the Office of Utility Regulation has been working to develop the regulatory regime that governs the electricity sector in a manner that fulfils the objectives and policy targets of the States of Guernsey. In putting in place the various operational steps that are necessary to do this, OUR has sought to ensure that it considers the overall States of Guernsey social and economic policy and we have sought to highlight wherever possible the linkages and impacts of electricity sector policy on these wider matters.

This report pulls together some of those linkages and shows how the development of the regulatory regime will interact with various other policy decisions. It is designed to act as a base line study from which the regulatory regime will be developed and gives all relevant stakeholders visibility of the detail behind the immediate work of OUR in the electricity sector. It also provides a valuable tool in the process of reviewing the question of whether or not competition should be introduced into the electricity supply market in Guernsey. OUR has been charged with carrying out such a review and will report to the States by spring 2003 with recommendations on a way forward.

The contents of this report will be of interest to those involved in the electricity sector – suppliers, producers and large customers – and also to policy makers and politicians. As OUR develops specific aspects of the regulatory regime, specific open consultations will be published on relevant topics and we look forward to the involvement of all interested parties in those debates.

Regina Finn
Director General of Utility Regulation

1. Executive Summary

This report brings together various threads of policy within Guernsey that are relevant to the development of the electricity sector and the development of the regulatory regime for electricity. The report highlights the strong linkages between the electricity sector and the development of the overall economy of Guernsey and the welfare of its people.

This has identified some key issues within the electricity sector that are also of critical importance in the wider context. These are:

- the security of supply of electricity in Guernsey, i.e. ensuring that the risk of interruption of electricity supply to Guernsey electricity consumers is minimised;
- commercial developments on the island, such as potential e-commerce initiatives in the Bailiwick, and the accompanying demand for electricity that such developments might generate; and
- the planned Energy-from-Waste plant.

These issues do not arise as a consequence of the recent changes in the status of Guernsey Electricity or the creation of the Office of Utility Regulation and would need to be addressed even if no such developments had happened. However, now it is necessary to consider them in the context of the new arrangements of commercialisation and regulation.

The analysis identifies that if there are significant blocks of growth in the demand for electricity, this could potentially require additional production capacity (i.e. electricity plant), to be put in place to meet that demand. How, and where, such plant is acquired ties in with security of supply considerations and ultimately the question of where the cost of acquiring any plant is recovered from. This document has analysed these issues from the perspective of the electricity industry and presents the implications in that context. It does not consider the wider costs and benefits of such developments but identifies some policy issues that are a matter for the States of Guernsey to decide on.

It is possible that the Energy-from-Waste plant could contribute to the island's required production capability. However, in order to ensure that the costs to electricity customers can be minimised as provided for in the regulatory framework, the plant would have to operate within the framework of economic purchasing set out in the licences, in other words, its cost of producing electricity would have to be competitive with other sources.

In addition to these strategic issues a number of steps need to be taken in order to implement policy, including developing the working framework which would apply to wholesale competition, and how this could be assessed in parallel with the scheduled review of supply competition and this report identifies these work streams.

Having reviewed the available policy framework and identifying the key strategic issues above, the Director General will be progressing the implementation of current electricity sector policy within the context of developing the regulatory framework in the coming months as set out in more detail in this report. The report also identifies some policy implications that may be addressed separately by the Board of Industry or other policy arms of the States.

2. Introduction

This report has been prepared by the Director General of Utility Regulation to

- identify and co-ordinate the key strands of States energy policy;
- outline the Office of Utility Regulation's ("OUR") plans for implementing the regulatory framework for Guernsey's electricity sector; and
- inform the Board of Industry, which has residual responsibility for policy in the regulated sectors, and other policy Committees of key impacts of the regulatory framework, including the primary policy and strategic implications.

For around the last 100 years, the Island of Guernsey been provided with electricity by the States through the States Electricity Board ("SEB"). On 1st February 2002 the first stages of the reform of the electricity sector in Guernsey took effect. Guernsey Electricity Ltd was created as a States Trading Company and took over the functions of the former SEB.

The way in which Guernsey Electricity Ltd operates will now change over the upcoming years. Core electricity network activities (conveyance or distribution and transmission) remain in their original monopoly structures, the electricity generation market is being opened up to competition with the objective that prices in that market will ultimately be controlled by competitive market forces, and the supply market is remaining in a monopoly structure for a year while alternative structures are investigated.

It should be noted that separate arrangements apply to the electricity sectors elsewhere in the Bailiwick of Guernsey.

3. Structure

The rest of this paper is structured as follows:

- Section 4:** provides an overview on the major areas of electricity sector policy which are presently in place.
- Section 5:** examines the policy issues relating to the island's security of supply. We set out the basis of the policy and its rationale; describe the existing arrangements; identify the implications of the policies; identify the linkages between the policy and other sector policies and set out the steps needed to implement the policy.
- Section 6:** examines the policy issues relating to the objective of increasing the efficiency of the electricity sector as a whole, following a similar format to that adopted in Section 5.
- Section 7:** considers the interaction of States policy and the regulatory regime insofar as they relate to the Director General and Guernsey Electricity and summarises the steps which are envisaged to take forward the key policies including the identification of areas where further work is required prior to implementation.

4. Overview of Electricity sector reform policies

Whilst there are many strands to existing electricity industry policy within the Island of Guernsey (either explicit or implicit) it can be broadly set out in the following statements:

1. **Security of supply is of critical importance and should be provided for on a long term basis by generation sited on Guernsey; and**
2. **The electricity sector restructuring is to deliver the efficient provision of electricity on Guernsey.**

The legislation recognises that the role played by the Director General is a complex one, and requires that she should balance a range of objectives as specified in the extract of “*The Regulation of Utilities (Bailiwick of Guernsey) Law, 2001*” set out in Table 1.

Table 1 – Director General’s General Duties

<p>2.</p> <p>(a)</p> <p>(b)</p> <p>(c)</p> <p>(d)</p> <p>(e)</p> <p>(f)</p>	<p><i>In exercising their respective functions and powers, the States and the Director General shall each have a duty to promote (and, where they conflict, to balance) the following objectives -</i></p> <p><i>to protect the interests of consumers and other users in the Bailiwick in respect of the prices charged for, and the quality, service levels, permanence and variety of, utility services;</i></p> <p><i>to secure, so far as practicable, the provision of utility services that satisfy all reasonable demands for such services within the Bailiwick, whether those services are supplied from, within or to the Bailiwick;</i></p> <p><i>to ensure that utility activities are carried out in such a way as best to serve and contribute to the economic and social development and well-being of the Bailiwick;</i></p> <p><i>to introduce, maintain and promote effective and sustainable competition in the provision of utility services in the Bailiwick, subject to any special or exclusive rights awarded to a licensee by the Director General pursuant to States’ Directions;</i></p> <p><i>to improve the quality and coverage of utility services and to facilitate the availability of new utility services within the Bailiwick; and</i></p> <p><i>to lessen, where practicable, any adverse impact of utility activities on the environment;</i></p> <p><i>and, in performing the duty imposed by this section, the States and the Director General shall have equal regard to the interests of the residents of all islands of the Bailiwick.</i></p>
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The following two sections examine the main policies in detail, and how they can be taken forward whilst balancing the diverse and potentially conflicting objectives of the legislative regime.

5. Security of supply issues

5.1 Issues

5.1.1 Security of supply

In developed economies, the primary objective of the electricity sector for Government, regulators and the electricity industry is to ensure that all reasonable demands for electricity can be met – for both social and economic reasons. Guernsey, like other liberalising jurisdictions in the economically developed world, has determined that there should be no deterioration in the security of electricity supply as a consequence of the broader changes within the Island’s economy generally and in the electricity sector in particular.

This paper uses the term **security of supply**. In broad terms, this terminology describes the long term provision of adequate generation to meet forecasts of reasonable demand for electricity in future years. This requires that sufficient power is available to meet peak demand, even under circumstances where some generation plant is unavailable due to outages – both scheduled and unplanned. How much “margin” (essentially the difference between forecast generation capacity and forecast demand) is required involves an informed judgment to be made on the probability of unlikely events happening concurrently, and the costs of insuring against increasingly unlikely outcomes. One would anticipate utilising demand scenarios for forecasting purposes on the basis of fulfilling reasonable expectations of peak demand¹.

Whilst the thrust of the discussion in this section relates to security of supply over a planning timeframe (typically 5 - 15 years), the real time operational considerations (the ongoing balancing of supply and demand in real time) raise significant issues for the conveyance part of Guernsey Electricity Ltd. Typically an electricity system operator aims to keep sufficient generation available to it to maintain both the system frequency², and meet all customer demands in the event that the single biggest source of power onto the network became unavailable. However, when the cable link to France via Jersey (“the EDF link”) is at high levels of capacity the potential size of the biggest instantaneous failure on Guernsey could be around 100% of the demand of the island.

¹ The criteria which may be applied would be to consider the single half hour period of peak demand each year. Such a system peak would be driven by extreme weather conditions. In some systems which are summer peaking this would mean high temperatures. In Guernsey however, the peak is during the winter, and thus extreme cold would be the main driver. Ensuring that the level of demand which could arise in highly unusual weather conditions or other circumstances is potentially extremely expensive – few systems build in such margins. A common level of planning adopted is, however, to plan to meet all demands for electricity except perhaps for the one of two highest peaks of demand in the worst winter in ten years. Even where such standards are applied, the outcome is rarely that the power system simply fails to meet energy requirements – much more likely is the failure of parts of the conveyance network. However in Guernsey it has been traditional to plan to the higher standard of meeting the highly unusual and occasional peak.

² In common with the UK and western Europe, the Guernsey electrical network is designed to operate with system frequency maintained at 50 Hz, thereby ensuring the stability and safety of network as well as the quality of the product delivered to end users.

Obviously, the cost of maintaining an instantaneous response³ capability against this level of contingency would be significant, and not in line with costs borne on other, larger networks. At present, in order to ensure that supply could be rapidly restored in the event of failure, Guernsey Electricity Ltd has fast start generation plant in the form of Gas Turbines, which would be used until slower start, but cheaper to run, on-island generation is synchronised. Using this method “instantaneous” response means power restoration would normally commence within 20 minutes.

5.1.2 ON-ISLAND GENERATION POLICY

Existing States policy regarding future electrical self sufficiency represents a continuation of the pre-liberalisation principles.

“However electricity services are provided in future, they are to be provided within a policy of retaining sufficient on-Island generation plant to meet the total long term demand, to cover for the possibility of interruption of unavailability of power through the cable link to France”⁴.

For the purposes of this paper we refer to this policy as “**ON-ISLAND GENERATION POLICY**”. Prior to the commissioning of the link the Island of Guernsey relied solely on generation from imported fuels). The link enhances security of supply for Guernsey but its existence leads to a more complex series of decisions regarding the reliance which should be placed on it, compared with the sources of generation sited on Guernsey. This paper assumes that the current “**ON-ISLAND GENERATION POLICY**” as set out above means that **generation plus a margin for generation failure is held on the island**, not that installed capacity equals forecast demand. Furthermore, not only will the overall level of generation on Guernsey be important, but so will the type of generation as it is appropriate for the ON-ISLAND GENERATION POLICY to be provided efficiently.

In respect to security of supply, the ON-ISLAND GENERATION POLICY relates to the long-term planning horizon.

Clause 2(b) of The Regulation of Utilities (Bailiwick of Guernsey) Law, 2001 requires the Director General to perform her duties so that sufficient production sources are made available to satisfy all reasonable demands for electricity consumption. Furthermore, it specifies that such production sources can be either within the Bailiwick or supplied to it. Within this context, it is clear the Director General should not make any distinction between on-island production sources and electricity imports from France via Jersey. This objective potentially conflicts with the States policy obligation on Guernsey Electricity Ltd to ensure that Guernsey should be independently able to meet its own forecast demand from on-island generation. In order to deliver this policy objective it

³ Instantaneous response can take many forms – it may be held in the form of generation which can respond within specified timeframes (in the UK referred to as primary and secondary response). This can be very fast start plant or highly responsive demand. Reserve can also be held on generation already operating on the system. “Spinning Reserve” is the term used to describe plant already synchronised to the network and able to respond instantaneously to frequency deviations caused by the failure of a generation unit or, less likely, an unforeseen step change in demand. Spinning reserve is generally held on part loaded generation units – i.e. a generating unit not operating at its full capacity and holding some of its possible output as a reserve.

⁴ Source: Billet d’Etat XXIV 2001, clause 2, Annex 3 States Guidance to the Advisory and Finance Committee in exercising on behalf of the States the role of shareholder of Guernsey Electricity Limited.

would be necessary to maintain sufficient generation, plus a margin to cover for the potential unavailability of on-island generation. In essence “**ON-ISLAND GENERATION POLICY**” (as a strict interpretation of States policy) equates to **long term planning on the basis that the link to France via Jersey, does not exist**. This raises significant implications which are discussed in Section 5.2 below.

For discussion purposes, an alternative approach, referred to in this paper as “**DIVERSE GENERATION POLICY**” is also considered. This approach assumes that the **firm availability of the EdF link under the commercial framework (currently 16 MW) contributes towards Guernsey’s security of supply**. In this case, the objective set out in Clause 2(b) of The Regulation of Utilities (Bailiwick of Guernsey) Law, 2001 (see Table 1) is applied and it is assumed that it is not relevant where the source of power is located, either on Guernsey or elsewhere.

5.1.3 Related policy initiatives

Clearly the plant margin necessary to maintain security of supply has two main influencing factors – the availability of generation and the level of demand. Where demand growth is relatively stable, and low, it presents few short term problems. However, large incremental blocks of demand which would represent a significant percentage of current island demand present an entirely different problem. In this context two other States initiatives have a direct bearing on the future security of supply in Guernsey:

- the construction of a Energy-from-Waste generator; and
- the development of commercial ventures that could involve significant demand for electricity, such as e-commerce centres⁵.

The only planned development on the production side is a Energy-from-Waste plant. This facility would primarily be developed to satisfy the requirement for alternative means of waste disposal on Guernsey, but it would have the supplementary benefit of providing between 4 MW and 7 MW of energy into the system⁶. In common with any generation new entrant, the waste-to-energy plant would be rewarded at the prevailing market price consistent with the economic purchasing regime prescribed by legislation.

On the demand side, the States has developed a pro-active e-business strategy that aims to develop e-commerce based initiatives on the Island. Estimates of the energy requirements of such potential developments vary but even at the lower end of the scale, it could equate to 20 MW i.e. a 30% increase in the existing peak demand. The development of such schemes could clearly facilitate the economic and social development of the Island of Guernsey but this benefit is not addressed in this paper.

⁵ In terms of block demand growth, the impact of any significant step changes in demand would be broadly similar for system planning purposes – so long as any new demand contributed to the level of system peak. On that basis the developments at Admiral’s Park are no different to the potential e-commerce developments, or other significant new demands. In this document mention is made of the potential impact of e-commerce developments on the basis that these are the only significant block changes in demand of which OUR has been made aware.

⁶ Energy-from-Waste plant is prudently assumed to be 4 MW based on the Board of Administration estimates of between 4 MW and 7 MW.

Both the development of the Energy-from-Waste plant and significant blocks of new demand would therefore have serious implications for the security of supply on Guernsey in the upcoming years. The linkages between these developments are examined in Section 5.2, but clearly there is a requirement for the initiatives to be jointly pursued and considered in a holistic manner. Failure to do so would mean that either security of supply was physically threatened, and security standards compromised, or that new commercial development could not be accommodated by the electricity sector in Guernsey within the required development timescales.

5.1.4 Electricity Production

Figure 1 – Production Sources

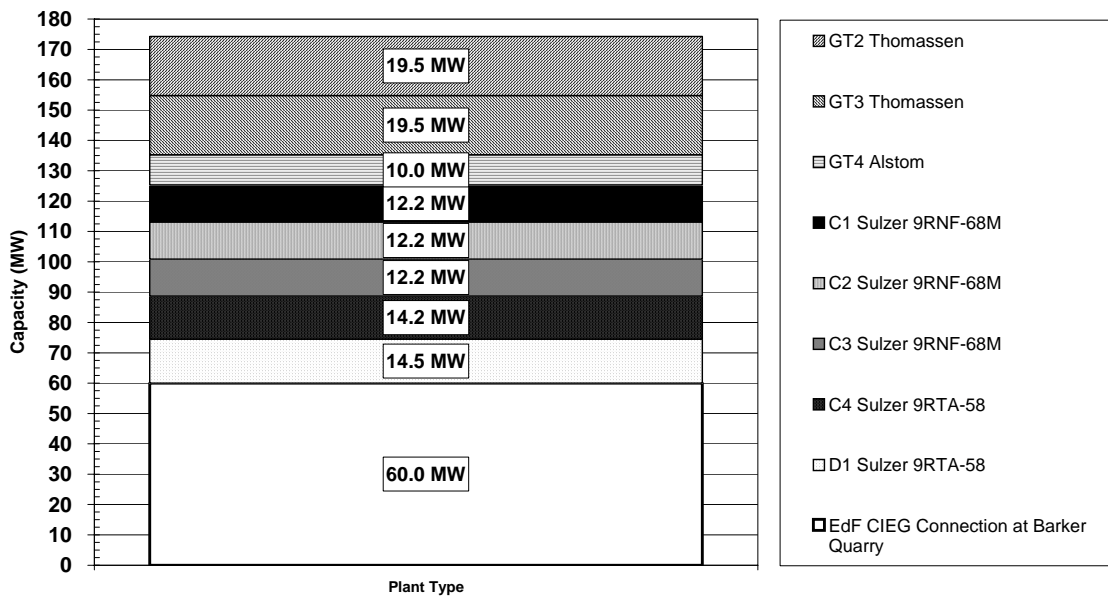


Table 2 – Production Sources

Name	Generator type	Capacity (MW)	Thermal efficiency (%)
EdF CIEG Connection at Barker Quarry	Interconnection	60.0	N/A
D1 Sulzer 9RTA-58	Slow Speed HFO	14.5	46
C4 Sulzer 9RTA-58	Slow Speed HFO	14.2	45
C3 Sulzer 9RNF-68M	Slow Speed HFO	12.2	41
C2 Sulzer 9RNF-68M	Slow Speed HFO	12.2	40
C1 Sulzer 9RNF-68M	Slow Speed HFO	12.2	40
GT4 Alstom	Gas Turbine	10.0	13
GT3 Thomassen	Gas Turbine	19.5	
GT2 Thomassen	Gas Turbine	19.5	

Source: Guernsey Electricity

At the present time, Guernsey has sufficient generation to meet its existing peak demand of approximately 65 MW⁷ plus a significant margin. Figure 1 and Table 2 above summarise the existing generation portfolio on the island. The salient facts are as follows:

⁷ System peak during 2000/2001 was 59.6 MW. The maximum system demand recorded is just below 65 MW.

- Slow speed generation totalling 65.3 MW (37.5% of total capacity).
- Peaking Gas Turbines generation totalling 49.0 MW (28.1% of total capacity).
- The interconnection to France has a capacity of 60 MW (34.4% of total capacity) but availability is significantly less during winter months in particular. At all times of the year the firm capacity is 16MW.
- Total production capability is 174.3 MW.
- Assuming all plant is available, the on-Island plant margin is 75.8% above peak demand (excluding the link).
- There are no new build plans expected to be on line before 2014 except for the 4 MW Energy-from-Waste⁸ plant in 2005⁸.

At this stage it is necessary to briefly examine the impact of the French link on the provision and operation of generation on the island. The French link provides for between 16 MW and 60 MW of electricity to be imported on commercial terms from Electricite de France (“EdF”). It is worth noting that international experience suggests that such interconnections are generally a highly dependable source of power provision and statistically physical interconnections are very reliable⁹. The importing system in this instance is provided for by the portfolio of generation in France which, in aggregate, is more reliable than individual generating stations. Whilst the construction of the link may be questioned as there is already a significant excess of production sources over the peak winter requirement, it must be noted that the provision of the link provides Guernsey with added resilience in the following ways:

1. reducing the Island’s exposure to oil price fluctuations; and
2. the stabilising system frequency;

In essence the link provides Guernsey with fuel diversity and significant operational resilience.

In the summer months, when the commercial availability of the French link is 60 MW, the total production capacity is 174 MW to meet peak demand levels of around 50 MW. Therefore, during the summer, there is over 200% excess capacity available. In winter the link may be operating at transfers as low as 16 MW meaning that total capacity could amount to 130 MW (114 MW installed capacity plus 16 MW over the link), and demand is in the order of 65 MW. Therefore in the winter there is at least 100% excess available power. Therefore both in winter and summer, the availability of the link contributes towards increasing the security of supply in Guernsey.

⁸ The Energy-from-Waste plant is prudently assumed to be 4 MW based on the Board of Administration estimates of between 4 MW and 7 MW.

⁹ Despite this statement, the Director General notes that some well publicised failures have occurred e.g. the long term outage of the North Island–South Island interconnect in New Zealand. Also the France-Jersey-Guernsey interconnect itself was unavailable on three separate occasions during its commissioning phase but has operated successfully for the last 8 months.

5.1.5 Operational requirements

At times when the link is operating at its full capacity it is essentially providing all of Guernsey's electricity demand. The loss of the link at such times would be catastrophic in the absence of back up provisions.

Electricity systems are designed and operated at contingency levels which allow them to withstand a number of generation or transmission losses and to maintain demand on the basis that all plant would not be available operationally when required. Operational best practice is for the system operator to secure the system against the instantaneous loss of the single biggest source of power on the system. Consequently, the system operator (e.g. Guernsey Electricity Ltd's conveyance business) holds capability in reserve to cope with unplanned generation failures.

The following notation is commonly used when considering a failure of production sources:

- Normal operation is referred to as "n";
- Holding against a normal circumstance plus one major contingency is "n-1"; and
- Holding against two contingencies is "n-2".

In some systems the approach adopted is to plan and operate on the basis of "n-1". However, the planning and operational standards can differ, e.g. a system operator may plan against "n-2" but operate against "n-1". Using a planning standard of "n-2" is not untypical.

The single biggest source of power for on Guernsey is the interconnection. For a small system such as Guernsey this presents particular problems – specifically the relative amount of fast response reserves which must be held is extremely high compared to other, larger systems¹⁰. For planning purposes, Guernsey Electricity plans for "n-2" on-island (i.e. the loss of the two large Gas Turbines total 39 MW as well as the link) and this reflects:

- (a) the ON-ISLAND GENERATION POLICY, and
- (b) the prudence necessary to operate a small system with relatively large generation components.

However, operationally Guernsey Electricity Ltd's ability to hold against even "n-1" is challenging if the link is highly utilised. In such circumstances, Guernsey Electricity would be completely reliant on all of its Gas Turbines starting when required as in the event of the link failing, the Gas Turbines are intended to restore most, if not all, load within 20 minutes and continue to do so until the more economic diesels are synchronised.

¹⁰ In England and Wales the maximum demand is approximately 48,000 MW. The single biggest generation loss is assessed at 1,350 MW, and reserve is held to secure the system from frequency deviations resulting from such a loss with a combination of primary response, secondary response and back up reserve.

In summary, if the French link catastrophically failed, essential services on Guernsey would be restored within 20 minutes, and normal demand levels met within hours. These operational arrangements reflect the Guernsey Electricity's implementation of prudent long term planning.

5.1.6 Demand

This section considers the profile of demand and possible demand growth in Guernsey over the coming years.

Table 3 – Estimated Significant Consumption Increases

Site	Likelihood	Anticipated maximum demand (MW)	Anticipated date of requirement
Admirals Park	Definite	5	Winter 2002
Former Bus Station	High	15	Winter 2003
Airport	High / Medium	15	Winter 2005
Property Developers	Medium	10	Winter 2004
Large Data Park	Medium / low	25	Winter 2005
Total		70	
<i>Source: OUR estimates</i>			

The planning assumption used by Guernsey Electricity is that organic growth will be 3% per annum. In addition, Table 3 sets out potential large developments, each of which would represent a significant step change in demand in addition to the background level of growth. For the basis of this paper we consider a base case scenario plus 3 block demand growth scenarios:

- Base Case** organic growth at 3%.
- Scenario 1** organic growth at 3% plus a 10 MW (net) block of load.
- Scenario 2** organic growth at 3% plus a 25 MW (net) block of load.
- Scenario 3** organic growth at 3% plus a 50 MW (net) block of load.

These scenarios have been considered over a seven year period from 2001/02 to 2007/08. It should be noted that the scenarios all consider that the demand will occur in areas of the island that lend themselves to connection to the conveyance network and that any reinforcement of the network that may be necessary can take place reasonably quickly and without undue difficulty. Depending on the size and location of any new block of demand this assumption may or may not be robust, as Guernsey Electricity Ltd would need to consider any given scenarios on a case by case basis.

5.1.7 Plant margin

Figure 2 – Total Capacity vs Demand Growth Scenarios

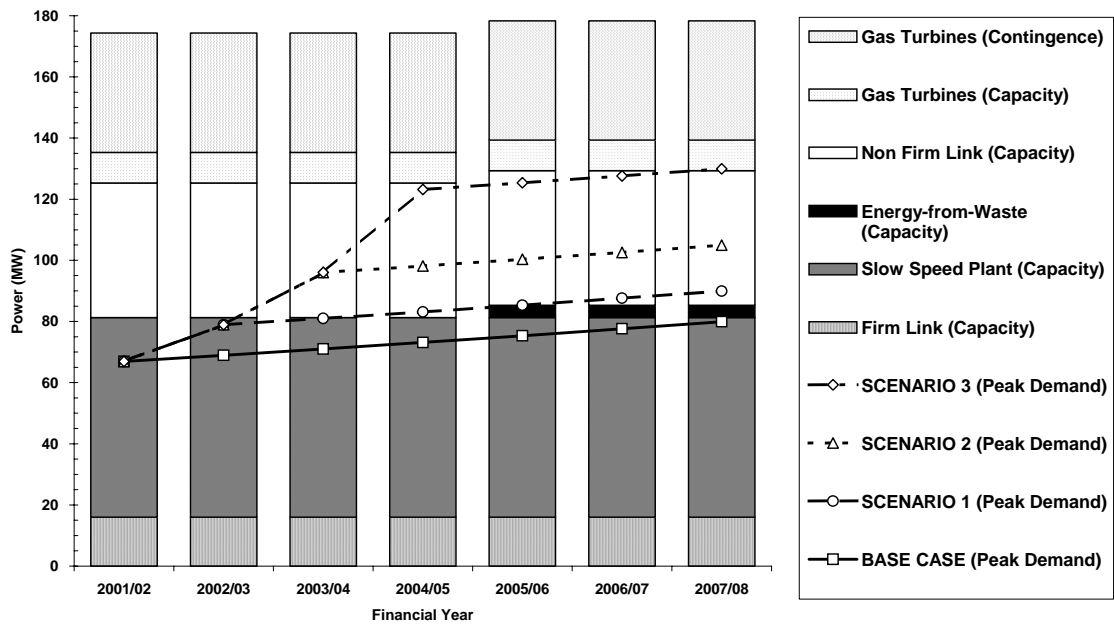
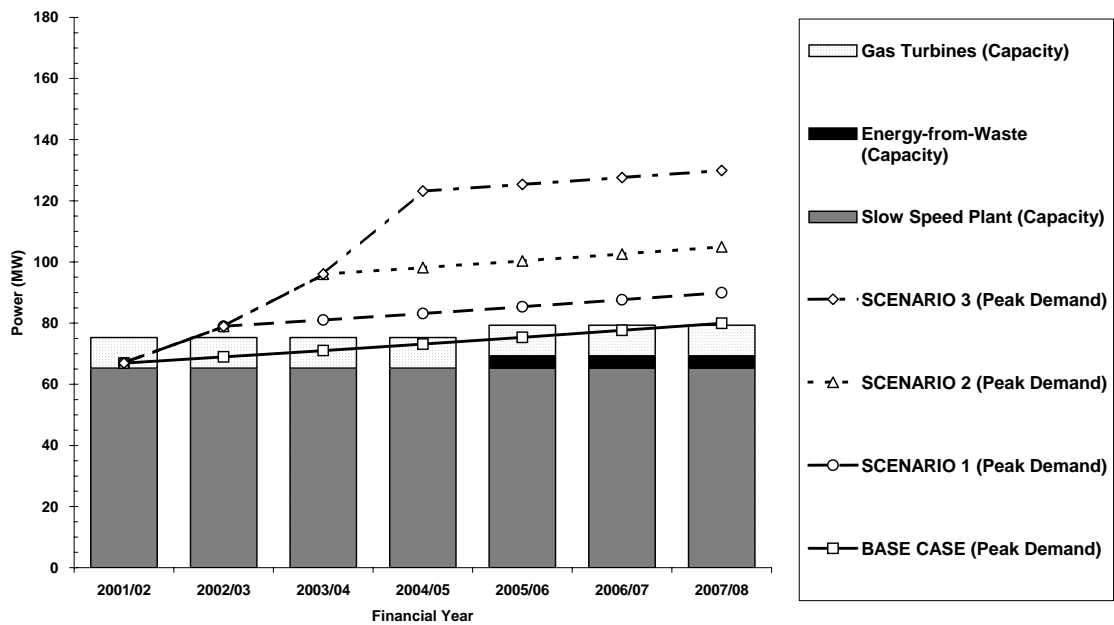


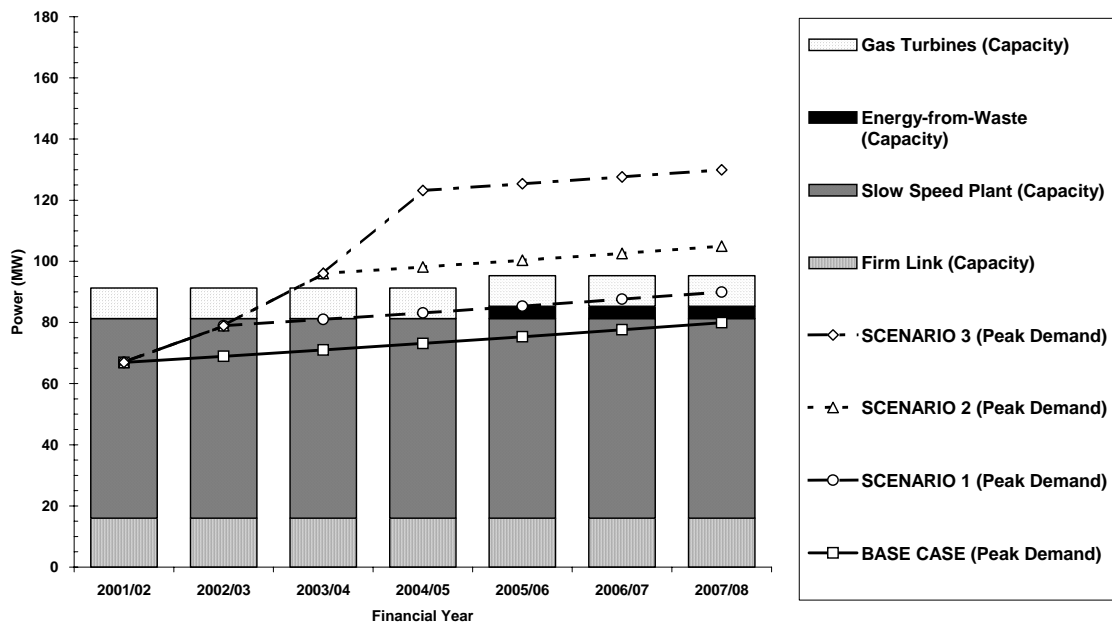
Figure 2 compares the capacity of the various production sources described in Section 5.1.4 grouped by plant type with the base case for demand growth and three additional demand growth scenarios set out in Section 5.1.6.

Figure 3 – ON-ISLAND GENERATION POLICY Capacity vs Demand Growth Scenarios



Furthermore, Figure 3 compares these demand growth options against the capacity that contributes to ON-ISLAND GENERATION POLICY (as discussed in Section 5.1.2).

Figure 4 – DIVERSE GENERATION POLICY Capacity vs Demand Growth Scenarios



Finally, Figure 4 compares these demand growth options against the capacity that contributes to DIVERSE GENERATION POLICY (as discussed in Section 5.1.2).

Figure 3 shows how a ON-ISLAND GENERATION POLICY assumption places complete reliance on the Gas Turbines to meet peak winter demand in future years – this is a very uneconomic means of generating baseload electricity and would be very costly if used for anything other than meeting peaks in demand. The figure also shows that security of supply would be compromised significantly unless reliance is placed on the link to provide reserve facilities.

The analysis also shows how DIVERSE GENERATION POLICY (Figure 4) places a degree of reliance on the Gas Turbines to meet peak winter demand under Scenario 1, 2 and 3 (again an uneconomic option) and security of supply would be similarly compromised. However, efficiency considerations suggest that alternative production sources, such as medium speed diesel units, would be installed if the Gas Turbines were expected to produce significant volumes of energy.

It should be noted that the scenarios are illustrative – they do not represent a forecast or prediction of future developments.

5.2 Implications

Determining that there should be an ongoing commitment to a level of security of supply in line with that existing prior to liberalisation does not present any unique issues per se – many liberalising markets have broadly adopted such a policy and implemented it through a range of market based mechanisms and direct Governmental measures. The particular issue facing Guernsey is that the historical policy decision which has now been carried forward is clearly to ensure security of supply on an independent basis, specifically without significant reliance on the French interconnect over a planning timescale. In order to assess the effects of this, we must assess the implications of

possible demand and generation growth on security of supply by considering the adequacy of generation margin and the associated cost implications. This is done in the following sections.

5.2.1 Achieving Security of Supply

In this section, we consider two questions.

- 1. Does Guernsey have adequate security of supply assuming ON-ISLAND GENERATION POLICY against the base case and scenarios 1-3?*
- 2. Does Guernsey have adequate security of supply assuming DIVERSE GENERATION POLICY against the base case and scenarios 1-3?*

In addressing these questions the following key generation side assumptions are made:

- a) link is available at commercial minimum of 16 MW; and
- b) the Energy-from-Waste plant with a capacity of 4 MW is available from the winter of 2005¹¹.
- c) an “n-2” 39 MW plant margin (as discussed in Section 5.1.5) is maintained.

Furthermore, it is assumed that there will be no conveyance constraints which bind within the Island of Guernsey, as the conveyance network will be reinforced as required, so that it will be possible for power to be delivered as required. This assumes that the incremental blocks of new demand arise on the eastern seaboard of the Island close to both the beach point of the link between Guernsey and Jersey and Guernsey Electricity’s power stations.

¹¹ This figure is utilised as it reflects the information available to the OUR, although the OUR recognises that the final figures could ultimately be higher. However, the analysis is not fundamentally sensitive to whether the capacity is 4MW, or say 50% higher.

Figure 5 – ON-ISLAND GENERATION POLICY

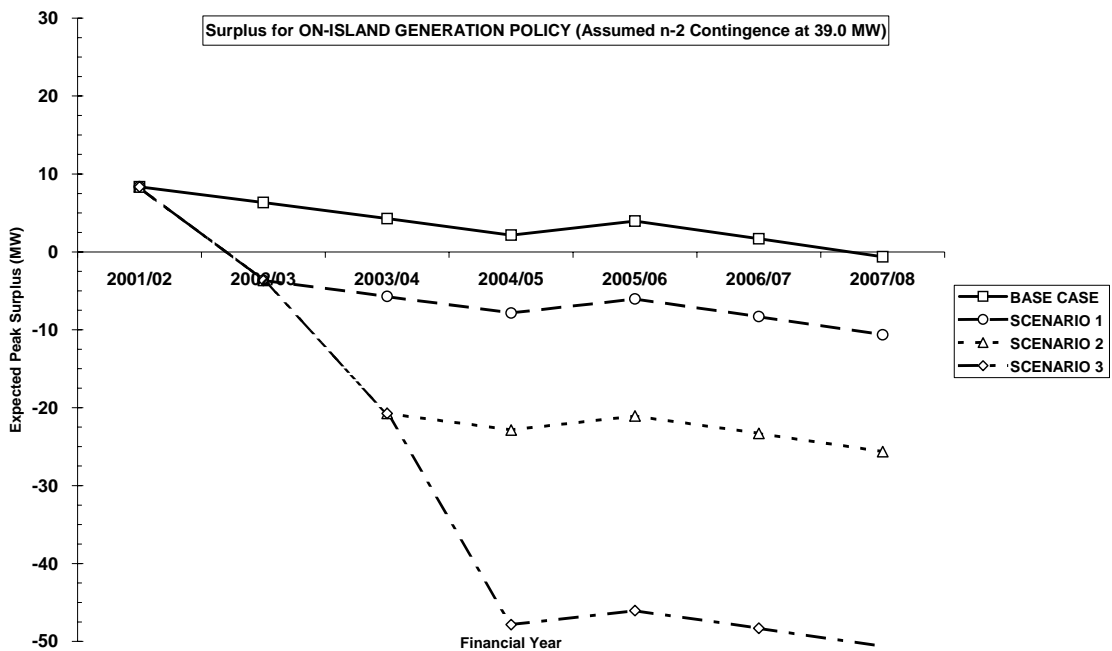
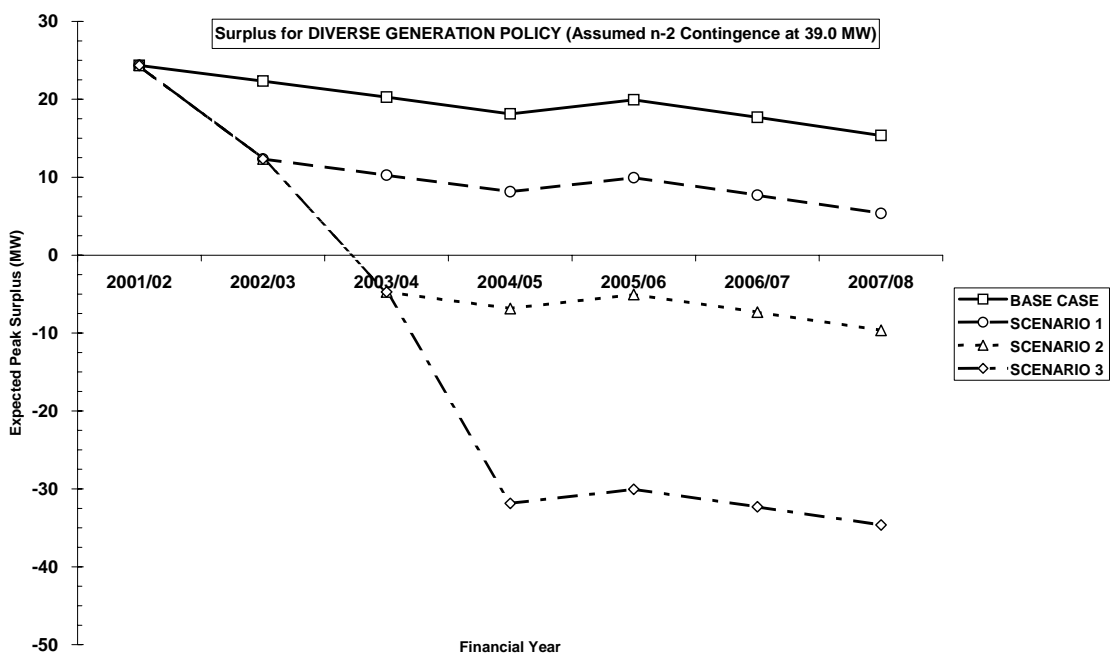


Figure 6 – DIVERSE GENERATION POLICY



The analysis presented (within Figure 5 and Figure 6 above) considers whether there is sufficient generation, plus margin, on the island to meet a range of demand growth scenarios.

The analysis indicates that the existing generation capability will be insufficient to meet organic growth efficiently during the next five years within the criteria of ON-ISLAND GENERATION POLICY, due to the reliance placed on Gas Turbines (as discussed in Section 5.1.7). Furthermore, Scenarios 1, 2 and 3 would require additional production sources to meet the Security of Supply requirements.

Within the criteria of a DIVERSE GENERATION POLICY (with the link measured as providing 16 MW towards the security of supply), the analysis indicates that the existing generation capability will be sufficient to meet organic growth efficiently during the next five years. The DIVERSE GENERATION POLICY requirement implies the link would contribute to meeting the security of supply requirements under Scenario 1 (with some operational reliance on the Gas Turbines), however Scenarios 2 and 3 would require additional production sources to meet the Security of Supply requirements.

It should be noted that the scenarios are indicative, based upon current understanding of some possible and highly uncertain developments. A more comprehensive probabilistic analysis would be required to fully validate this analysis prior to any significant capital commitment.

In summary, it appears probable that ensuring the ON-ISLAND GENERATION POLICY with significant increases in demand will require new generation build on the island. Furthermore, adopting the DIVERSE GENERATION POLICY may offset the new build requirements under the certain demand growth outcomes and defers the decision point for investing in new generation build.

5.2.2 Cost implications

In this section, we consider the following question:

What are the potential cost implications of the block demand growth scenarios 1, 2 and 3?

It should be noted that the cost implications of providing security of supply under organic growth scenarios are not considered within this section as these costs are presently factored into Guernsey Electricity's current cost base, and reflect the status quo. Therefore, existing and future electricity customers will bear the cost of this level of security of supply in any case.

At this stage it is difficult to fully quantify the cost implications of the block demand growth scenarios as it will depend on the actual approach taken to meet that demand. However, the following simple example focuses on the capital costs associated with scenario 2 to demonstrate the key cost implications.

- Given the States of Guernsey requirement to maintain the ON-ISLAND GENERATION POLICY, it is decided that a further 30 MW (3 × 10 MW Medium Speed Units) of on-island capacity is required in three years time to meet the expected future step change in demand arising from e-business initiatives and to ensure the ON-ISLAND GENERATION POLICY is strictly implemented. This approach is adopted, as it is not feasible to operate the Gas Turbines for significant periods of time as the marginal costs are prohibitively expensive and this equipment is not designed for such uses.
- The capital commitment of this project is budgeted at £20m to be depreciated over twenty five years.

- In some outcomes, this long term production commitment may not be matched completely by the expected demand requirements. In the worst case the expected data parks could be built but never occupied. This event, would lead to the £20m becoming a “stranded cost”. Recovery of such costs is a significant issue e.g. allocation across the general public would equate to £872 for every one of the 22,943 domestic electricity customers¹² in Guernsey.

This example demonstrates that there is scope for significant stranded costs to arise under the growth scenarios set out within Section 5.1.6. To date it appears that there has been no comprehensive probabilistic analysis to fully assess the cost of the ON-ISLAND GENERATION POLICY, the costs of alternative criteria of security of supply, and possible means of offsetting any stranded costs – such as exports to Jersey. It should be noted that if the anticipated demand arises, the cost of installing the additional production capacity can be recovered from the new customers. The difficulty outlined above arises where the demand does not materialise.

In summary, it appears probable that providing the ON-ISLAND GENERATION POLICY for higher increases in demand will require significant capital commitments. In the event of demand being realised, this is not a problem, and the capital costs will be recovered over the lifetime of the assets, from the charges levied on customers purchasing the energy from newly installed capacity. However, in the event of anticipated demand not arising, arrangements to recover any stranded costs that may arise under such circumstances are required.

5.2.3 Conclusions

The preceding analysis allows the following conclusions to be drawn.

- **Generation cost implications of higher demand growth have not yet been fully assessed.** To meet such demand growth, Guernsey Electricity would be expected in the first instance to utilise its lowest variable cost assets – essentially it would run its heavy fuel oil generation to meet demand. However, given the nature of the growth in demand it would be necessary to use peaking generation with high marginal costs of operation. This paper has not fully assessed these costs, nor considered them in the context of the costs and benefits of such developments as a whole. However, we have examined the high level cost implications to provide some indication of possible impacts.
- **The level of demand under block demand growth is unlikely to be economically met by the portfolio of plant available during the winter months.** Alternatively, another way of expressing this is that the existing revenue stream to Guernsey Electricity’s supply business is insufficient to meet the costs it would incur in purchasing to meet demand.
- **The ON-ISLAND GENERATION POLICY may require increased costs to be borne by customers directly, or indirectly via the States, in addition to energy costs.** The costs of maintaining a plant margin assuming that the availability of the French link is zero imposes a cost on electricity customers in

¹² Data provided by Guernsey Electricity as at 31 March 2001.

Guernsey. This cost may be reduced if some assumption on the availability of the French link is made, say at its minimum level of commercial availability of 16 MW.

- **New generation build to fulfil commercial development demand poses financial risks to Guernsey Electricity Ltd and/or the States.** The costs of additional generation (to satisfy the high demand growth scenarios, such as scenario 3) would be consistent with the existing production costs. The investment in such new generation would reasonably require capitalisation over a 15-25 year period. Conversely it is unlikely that a data park developer will commit to its demand over the same period of time, and thus there is a potential risk to Guernsey Electricity, and the States, if the demand for which the generation has been built ceases to be there. The critical question here is how this risk should be managed: Should the risk and costs be passed on to the developers of major new demand sources, and if so would this deter new investment? If the risks are not passed on to developers, how should any sunk cost risks be met? Should it be borne by Guernsey Electricity Ltd who would seek to pass the costs on to the general consumer base, or by the States from general revenue which is again, a cost passed on to the people of Guernsey in general? The application of a “polluter pays” principle would dictate that existing electricity customers should not be subjected to these risks.
- **Security of Supply cost allocation policy is not defined.** Lumpy, potentially large industrial/commercial developments on Guernsey, would amount to relatively significant increases in demand and would be in excess of those which could be borne many international utilities e.g. the introduction of a 15 MW data park on Guernsey is equivalent to building around 10 aluminium smelters in France. Such developments would represent a significant challenge in meeting demand within defined security standards. In this context the security of supply issues associated with the ON-ISLAND GENERATION POLICY would be likely to impose considerable costs – costs which would need to be recovered either from the developers of such schemes directly, borne by customers as a whole, or some combination of the two.
- **It is unclear how the marginal (possibly little used) generation required as a result of ON-ISLAND GENERATION POLICY would maintain its financial viability.** Ensuring the required capacity has a revenue stream given that the operation of the French link means that in the absence of system security requirements less frequently run plant may be mothballed. If it is required for system security reasons, how is its revenue obtained? It is arguable that as long as the generation business has an effective monopoly (or dominant market position), it should be able to recover its fixed and variable costs and hence the security of supply cost is spread across all customers. It may be appropriate to consider the ON-ISLAND GENERATION POLICY across an expanded Channel Islands’ market as a way of reducing the financial impact. Related issues regarding the efficiency of dispatch arise in Section 6.
- **The appropriate plant margin is not specified** - Assuming over a planning timescale that the French link is not available, a plant margin in excess of forecast demand needs to be maintained. It is at present unclear on what basis this

capacity margin will be determined, although the assumption made in the analysis carried out is that this would need to be at least the level of the single biggest on-island generation loss.

5.3 Implementation

Given the range of her regulatory objectives (see Table 1 in Section 4), *the Director General considers it is consistent with her statutory functions and duties to adopt a “relaxed” interpretation of the ON-ISLAND GENERATION POLICY requirement (i.e. the DIVERSE GENERATION POLICY) that the States has placed on Guernsey Electricity*, thereby reducing the amount of new plant required to meet any block demand growth scenarios. Furthermore, *the Director General is presently minded to allow Guernsey Electricity to recover any costs (associated with delivering the DIVERSE GENERATION POLICY) from electricity customers* so long it could be demonstrated clearly that the costs were efficiently incurred. It should also be noted that *the Director General does not presently believe that Guernsey Electricity should be permitted to recover the additional costs resulting from the ON-ISLAND GENERATION POLICY from electricity customers. Similarly, the Director General, on the basis of existing obligations, does not consider it appropriate that any stranded asset costs associated with meeting anticipated block increases in demand should be recovered from existing customers.*

In order to implement this approach, Guernsey Electricity will continue to assess the balance between future on-island demand needs and the ability to completely fulfil these requirements via a diverse range of production sources. Furthermore, Guernsey Electricity will take all necessary actions to efficiently deliver the DIVERSE GENERATION POLICY, recognising that it must manage the risk that certain stranded costs may arise as discussed in Section 5.2.

Consistent with the approach outlined above Guernsey Electricity will be expected to establish (within the existing regulatory regime) commercially based arrangements for delivering the policy, to include developing:

- Assessment criteria for ensuring appropriate capacity margin; and
- A robust methodology for allocation of the system security costs and new capital projects.

It should be noted that the existing regulatory regime and competitive pressures only allow for the recovery of costs efficiently incurred. Accordingly, the shareholders should ensure that a full assessment of costs is made within any capital commitment decision process.

6. Increasing the efficiency of the electricity sector

6.1 Issues

The second main strand of States' electricity industry policy comprises a series of initiatives which, in combination, aim to increase the overall efficiency in the electricity sector.

6.1.1 Background

The Electricity (Guernsey) Law, 2001 and associated legislation provide a basis for future developments of the electricity sector on the Island of Guernsey. In accordance with the States Trading Company Ordinance, the States has established **Guernsey Electricity Ltd** as a States Trading Company that is licensed by the **Director General of Utility Regulation**. This newly created States Trading Company has certain obligations and objectives. The creation of a States Trading Company is intended to provide for the separation of the commercial electricity sector activities from the formulation of Government policy. The States Guidance to the Advisory and Finance Committee in its role as shareholder of Guernsey Electricity Limited (on behalf of the States) set out the key financial objectives placed upon Guernsey Electricity Ltd. In summary, Guernsey Electricity Ltd is required to:

1. Deliver improved efficiency within its business; and
2. Balance the impact of future prices increases on Guernsey against the requirement to provide a commercial return on the resources employed.

6.1.2 Core and non-core activities of Guernsey Electricity

The Electricity (Guernsey) Law 2001 gives effect to a licensing regime that requires Guernsey Electricity Ltd separate its core utility business into three separately licensed business units:

- Generation;
- Conveyance; and
- Supply.

By definition, this licensing regime creates a fourth business unit. This is the “non-core” business unit covering those elements of Guernsey Electricity Ltd not falling into one of three licensed business units and covers such activities as appliance retailing or electrical installation. It should be noted that the UK experience of electricity liberalisation shows that utilities have progressively exited such non-core activities.

6.1.3 Competitive and Monopoly

Broadly, efficiency gains can be achieved in two ways:

- Through the introduction and development of competition; and
- Through the regulation of the licensed business(es).

In common with other liberalising jurisdictions, arrangements in Guernsey incorporate both these elements – in areas where competition is feasible the licensing regime is designed to facilitate its development, and where natural monopolies exist they will be regulated with the Director General seeking to ensure efficiency gains through price controls. The table below sets out at a high level the approach to each area of activity.

Table 4 – Competition vs Regulation

Competitive ← ← ← ← → → → → Natural Monopoly

Approach	Generation	Supply	Conveyance
Competition	New entrant generators can be licensed by the Director General.	Supply competition is possible, but whether it is likely to be beneficial to customers, and appropriate to Guernsey, is to be reviewed by the Director General by 2003.	Natural monopoly so not subject to competition
Price control regulation	“dominant player” licence provisions apply to protect customers	A one year exclusive licence has been granted for Guernsey Electricity.	Guernsey Electricity has a 10 year exclusive licence. Price controls will be set for the Conveyance business.
<p><i>Note: There may need to be an amendment to the Guernsey electricity value chain regarding the split between Conveyance and Supply were supply competition to be introduced. This detailed matter is considered in Appendix C.</i></p> <p><i>Source: OUR.</i></p>			

It should be noted that, whilst Table 4 splits out the three areas with separate licences, there is not expected to be a complete split of conveyance and supply initially within Guernsey Electricity Ltd. A decision on future levels of business separation is part of the appraisal which needs to be made on the feasibility of retail competition.

The main tasks facing the Director General are thus:

- To ensure that new entrants can compete fairly within the competitive activities (and to advise which activities could be competitive); and
- To ensure that the monopoly elements of the business are appropriately incentivised to achieve efficiency gains where possible.

There are strong linkages between the activities above and these are examined below. The following sections set out in more detail the issues which need to be addressed in the regulation of both competitive and monopoly elements.

6.2 Implications

6.2.1 Competitive and potentially competitive elements of the Sector

Liberalised electricity markets in other jurisdictions have tended to treat two main components of the electricity industry as potentially competitive – generation and supply¹³.

The present arrangements in Guernsey allow for the development of competition in generation. Whether competition in supply has benefits for Guernsey is at present not determined, and thus a one year exclusive licence has been granted to Guernsey Electricity Ltd. The Director General is to review the case for and against supply competition within a year i.e. by 1 February 2003.

6.2.1.1 *Competition in Generation*

The existing licensing regime contains a number of provisions, which in combination deliver the basis for the development of competition in the generation sector. Relevant provisions are set out in Appendix A.

The combined effect of these provisions is that new entrants can be licensed, and should be treated in a non-discriminatory manner by Guernsey Electricity Ltd's conveyance business, and power dispatched on a price basis in competition with the prices offered by Guernsey Electricity Ltd's generation business.

The provisions to allow new entry, and to adequately protect new entrants from both a dominant player in generation, and discrimination against it by other parts of Guernsey Electricity's business, thus exist. Conversely, it is also necessary to ensure that the dominant player is not unfairly prejudiced by future arrangements which place it at a commercial disadvantage.

To consider how the practicalities of market entry into the generation market might work it is necessary to understand the current typical mix of production sources that are used to meet demand for electricity on Guernsey because a new entrant will be competing against these sources of production.

¹³ We note that some markets, such as the UK, have also introduced competition in other activities, such as metering and data aggregation. Others, such as Australia, allow for the development of conveyance (transmission or distribution) by new entrants. However, it is considered that in respect to Guernsey such potentially competitive activities are not likely to be appropriate to the circumstances of the island.

Figure 7 – Typical Spring Plant Mix

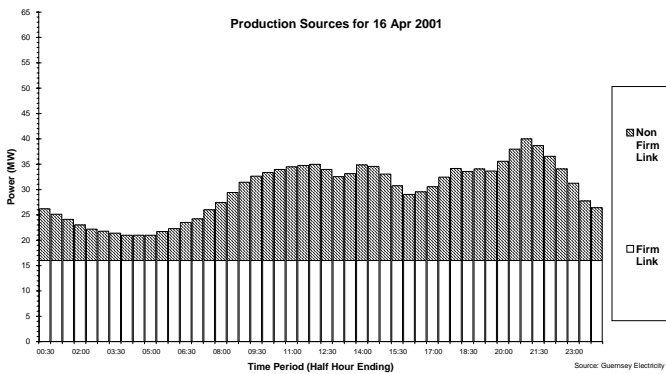


Figure 8 – Typical Summer Mix

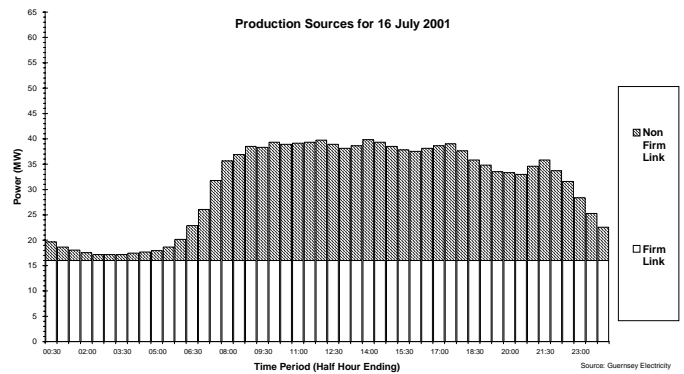


Figure 9 – Typical Autumn Plant Mix

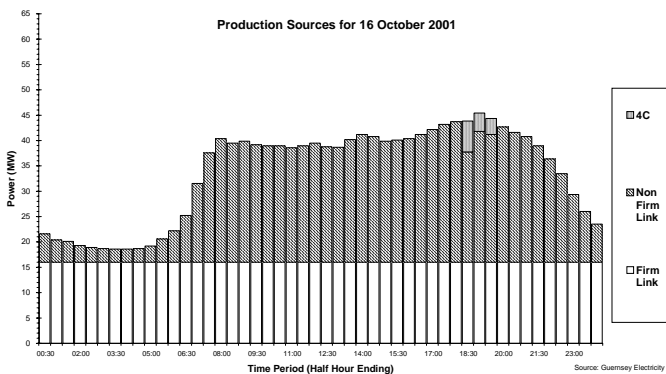


Figure 10 – Typical Winter Plant Mix

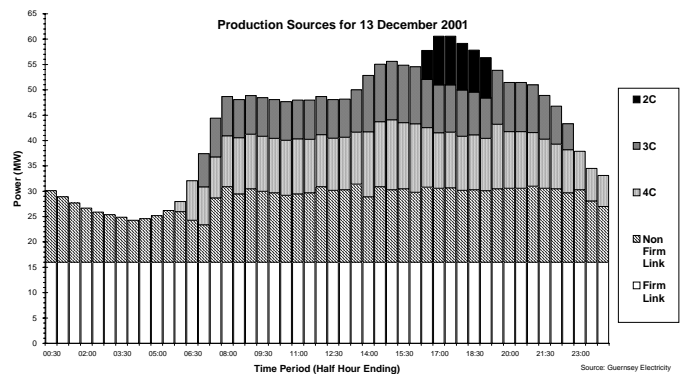


Figure 7, Figure 8, Figure 9 and Figure 10 present the typical mix of production sources used to meet demand on Guernsey during 2001. Figure 10 shows that during the 2001/02 winter period, Guernsey Electricity purchased additional volumes of energy via the link above the 16 MW firm availability to meet that demand. This was done on economic grounds, i.e. because it presented the lowest marginal cost to Guernsey Electricity. These data show that any new entrant generation would need to be price competitive against the energy purchase terms for the link in order for Guernsey Electricity to consider purchasing from such new entrants.

In summary, the current situation is that:

- the licence basis for competition in generation exists, along with the basic framework to allow for the development of a market structure to deal with such competition, including rules of non-discrimination and economic purchase;
- the economic case for generation competition is predicated on the marginal cost of existing production sources as outlined above; and
- the security of supply issue discussed in Section 5 have significant implications on supply and demand.

To develop the regulatory framework at an operational level, these issues must be assessed on a holistic basis. The key question here is how would a new entrant in generation sell its output and compete on a level playing field with Guernsey Electricity?

This gives rise to a number of issues in terms of the existing structure of the electricity arrangements in Guernsey and the existing contractual and regulatory arrangements.

Ensuring that there is a level playing field between Guernsey Electricity Ltd and new entrants will require significant regulatory oversight because of the size of the generation arm of Guernsey Electricity Ltd, and the fact that Guernsey Electricity Ltd is a vertically integrated business. The licensing terms and conditions recognise this and contain a number of tools to address it, including:

- the requirement for accounting separation between the businesses;
- the requirement for non-discriminatory treatment by the Conveyance Business of Guernsey Electricity Ltd Generation business and new entrant generation businesses; and
- the obligation on the Guernsey Electricity Ltd Generation business, because of its dominant position, not to unfairly distort competition.

There are the following implications:

- **Barriers to entry**
 - Guernsey Electricity Ltd generation and EdF have a duopoly which is potentially a major barrier to new entrants. Any arrangements need to be structured to minimise the potential for a dominant position in generation to be abused, and this will require regulatory scrutiny to ensure that Guernsey Electricity Ltd generation and EdF do not receive any more favourable treatment from the Conveyance Business (which is in common ownership), than any other new entrant generator.
 - Guernsey Electricity Ltd is a vertically integrated company. While the licences require non-discrimination by the conveyance and supply businesses, neither the licences nor the legislative regime currently require full business separation, i.e. the establishment of entirely separate States Trading Companies. Therefore it will be essential that clear accounting separation between the businesses is put in place and scrutinised and enforced by the Director General as a tool to ensure non-discrimination.
 - The failure to allocate fairly security of supply costs across all sectors of the value chain could also present a barrier to entry.
 - The current level of capacity owned by the existing duopoly is likely to deliver efficient market signals that will imply new entry is not required in the medium term. The issues surrounding which generation source is utilised, and the price it receives for its generation are likely to be complex, as there is potentially a significant overcapacity at some times of year.

- *Wholesale market signals*

- The licence requires that the conveyance business operates central dispatch and utilises plant based upon its economic merit. At this time the mechanics of this are not fully determined although the law and licenses set out a framework for these activities. It is likely that at times when the link is fully loaded, a vast majority of the Island's demand could be met through it for some years to come. For new entrants, there is a possibility that in dispatching the system on economic merit, the EdF link will always be the lowest cost production source. The present licensing arrangements do not take into account other considerations, such as environmental impacts from utilising one source of generation or another to impinge on this requirement and a more explicit states policy on this issue would be required if this was considered desirable.
- A new entrant (of which the Energy-from-Waste plant is the only one planned prior to 2014) will only operate when it able to provide energy to Guernsey Electricity Ltd conveyance at a lower price than alternative generation sources. Therefore if the prevailing market prices are insufficient to meet the costs of the alternative generation source, i.e. the energy production costs of the Energy-from-Waste plant, those costs could be recovered through a number of alternative mechanisms, for example:
 - a) The necessary revenues could be paid by Guernsey Electricity Ltd and recovered from customers in the form of higher prices under the price controls, thus electricity customers would be covering the additional costs;
 - b) The necessary revenues could be paid by Guernsey Electricity Ltd and absorbed by the business, meaning that the shareholder of Guernsey Electricity Ltd would cover the costs, i.e. the States of Guernsey, which is in effect the Guernsey taxpayer; or
 - c) any shortfalls in revenue could be provided directly by the States to reflect the economic value of the waste disposal component of its operation so as to provide it with a generation operating base which was competitive (although not in such a way or to a level whereby competition would be distorted). In this case the costs would be met by the taxpayers through the States.

Of these options, the direct subsidy route is the most transparent and appears to be the most consistent with the licensing regime envisaged, and the least likely to distort competition.

It is apparent from the observations above that, given the limited possibilities for on-island competition in generation, it may be necessary to expand the size of the market to capture these benefits. Furthermore, it could be argued that increased efficiency benefits (i.e. reduced prices to customers) would be delivered to the Island of Guernsey, were its electricity sector considered within the context of a larger market (e.g. across the Channel Islands).

6.2.1.2 *Competition in Supply*

Whilst the basis for competition in generation is an established element of the arrangements in Guernsey, this principle is not yet established for supply. The following section considers supply in a competitive context, and comments on why there should be merit in considering the ongoing provisions in respect to both generation and supply jointly.

The present licensing arrangements provide Guernsey Electricity Ltd with an exclusive licence for the supply of electricity for one year.

The limited duration of the licence is consistent with the timing of a review of supply arrangements which is to be completed by the Director General by 1 February 2003. The terms of reference of this review are not yet defined although broadly the Director General would expect the review to consider the appropriateness of supply competition to Guernsey. Relevant factors which would merit assessment would include:

- The scope for new entrants to enter the market;
- The size of the contestable market;
- The scale of the fixed costs associated with supply competition compared to the possible savings to customers;
- How / what service standards would apply;
- Whether all, or a sub-set of customers, could be contestable;
- Whether contestability should be staged;
- How the fixed costs of contestability should be apportioned;
- How the marginal costs of contestability should be apportioned;
- The nature of any licence changes that would be required;
- How conveyance/retail separation in Guernsey Electricity Ltd could be achieved;

Clearly Guernsey is a small market. It has some 6,985¹⁴ commercial/industrial customers and 22,943¹⁵ customers on domestic tariffs. Research undertaken has revealed that, to date, the markets which have introduced full supply competition are larger than Guernsey. Some larger jurisdictions have assessed that the costs of supply competition outweigh the benefits.¹⁶ However, under the latest EU proposals, all member states will be obliged to introduce competition in supply to all customers by 2005 – including Luxembourg which has a population of 437,000¹⁷.

¹⁴ Data provided by Guernsey Electricity as at 31 March 2001.

¹⁵ Data provided by Guernsey Electricity as at 31 March 2001.

¹⁶ Queensland - 2001

¹⁷ CIA Worldfact Book 2001

The drivers for the introduction are many; but the most important of them are; to increase the efficiency of the wholesale and supply markets, thus reducing prices to customers, and to improve the range and quality of customer services.

In the context of Guernsey, and the need to assess the ways in which wholesale competition can be introduced, there is a strong linkage between wholesale competition and possible supply competition. These linkages centre around the routes to market available to a new entrant generator, and the considerations which the States may wish to give to the geographic scope of future electricity market arrangements – specifically if a larger market (possibly a Channel Islands market) for generation has benefits, do the similar benefits apply to a larger supply market? Furthermore, is there a need for any such markets to be aligned in their scope? It may be worthwhile undertaking a review of competitive and potentially competitive elements of the Guernsey's electricity industry, which could include a consideration of whether, and if so how, Guernsey may be able to capture the benefits of wholesale and supply competition across the EU in terms of the lower prices which are anticipated during the next ten years once the expected changes have been fully implemented.

6.2.2 Monopoly Elements of the Sector

The licence arrangements presently allow for the conveyance of electricity to be an ongoing monopoly activity, with the initial licence granted for a ten year period. Supply of electricity is a monopoly activity of Guernsey Electricity Ltd for a one year period, with future arrangements subject to regulatory review. These licence arrangements are summarised in Appendix B.

Generally in liberalised electricity markets the transportation of electricity is treated as a natural monopoly, and any efficiency gains are thus sought through the regulation of the activity. Usually both the local transportation and supply of electricity to end customers are carried out by one company. Such activities are subject to separate licence arrangements and are often required to operate as separate activities. These arrangements require an accounting separation to be made between the activities. Additionally the businesses are usually required to operate under arrangements which prohibit cross subsidy between the businesses and seek to ensure that price discrimination does not occur and distort competition. Some countries have moved beyond accounting separation and required the full business separation of distribution and supply.

Whilst the network elements of the business are almost invariably a monopoly activity, the extent to which supply competition is introduced varies. The UK opened up the whole of the supply function to competition, in stages, over an eight year period. Other jurisdictions have extended competitive choice to industrial and commercial customers only – Queensland in Australia being one such example.

6.2.2.1 *Regulating Conveyance*

Conveyance is an activity for which Guernsey Electricity Ltd will have an ongoing exclusive licence. This activity will thus be subject to ongoing price controls by the Director General as a surrogate for competition. In regard to the existing arrangements the key policy areas are:

- The ongoing conveyance monopoly; and
- The limited split between conveyance and supply.

The issues arising from these arrangements are set out below.

- **The conveyance monopoly requires regulatory scrutiny.** In terms of the establishment of a robust set of arrangements which demonstrably deliver the conveyance businesses licence obligations, and provide for the economic and social development of the Island, issues such as connection charging require early resolution. This requires that Guernsey Electricity Ltd is pro-active in the fulfilment of its obligations, and that the Director General is able to assess its proposals. The alternative, less desirable course, is that such policies are developed on a “case law” basis through the adjudications of the Director General on individual cases – although this would be time consuming and lack a clear policy basis.
- **The lack of separation of conveyance / supply has consequential impacts on the regulatory regime and the company.** Whilst separate accounting between conveyance and supply is anticipated, it is neither possible nor appropriate to enforce this to a very detailed level in the short term pending the review of the scope for supply competition. Consequently, the accounting separation is expected to be undertaken on a pragmatic interim basis. Similarly, in respect to the price controls which need to be set, the licence requires the establishment of a price control approach for both conveyance and supply. It is important that development of these price controls is consistent with the possible future separation of conveyance and supply, without imposing an unrealistic burden on Guernsey Electricity Ltd in the short term. However, should supply become a contestable activity, this pragmatic approach would need to be revisited, and a more robust separation put in place.
- **The necessary enforcement/monitoring criteria and procedures are not fully defined.** The licences provide the basis of regulation at a high level. They provide the powers required by the Director General in the execution of her duties, but how some provisions are given effect is not yet fully defined and will be developed over time. This provides the flexibility to ensure that the regime will develop in a manner that is suited to the market conditions in Guernsey. In some instances the Director General will set out her approach to licence compliance and define what information, in what form, will be required from the licensees. An example of this is the “Statement of Opportunities”. The licence obligation is on the company to provide system planning forecasts to the Director General. The form/content needs to be accepted by the Director General. In addition to the content specified in the licence the Director General can also specify additional information to be provided. These tasks need to be completed within the timeframes specified by the licence.

6.2.2.2 *Regulating Supply*

For the next year (and possibly longer depending on the outcome of the regulatory review of future supply arrangements) supply is a monopoly activity. Because this is subject to

review, the treatment of supply in the short term needs to allow sufficient flexibility for the future arrangements (whether supply competition is introduced or not) to be consistent with the approach taken during 2002.

- **Lack of supply competition requires scrutiny of allowable cost activities.** This requires that the Director General exercises a judgement on the extent to which pragmatism should dominate in the absence of supply competition. This is linked to the review of whether the supply market should become open to competition.
- **Price controls need to be set.** In respect to the price controls which need to be set, the licence provides for the establishment of a price control approach for both conveyance and supply. It is important that these are developed consistent with the possible future separation of conveyance and supply, without imposing an unrealistic burden on Guernsey Electricity.
- **The Director General is charged with reviewing whether the existing supply monopoly should continue beyond its existing one year term.** Whether the market opens to competition impacts other regulatory decisions, such as how financial separation should take effect between separate businesses – clearly such separation is less important if there is no competition in supply. Within this review issues relating to the single buyer regime will also need to be addressed.

6.2.3 Conclusions

The preceding analysis allows the following conclusions to be drawn.

Barriers to entry

- The scope for meaningful competition in the wholesale market may potentially be limited due to the significant barriers to entry that exist. This is especially important when considering the longer term nature of the electricity sector, which is an infrastructure reliant business, where capital projects are typically depreciated over 25 years and electricity customers that are extremely demand inelastic across the medium term. It is clear that these issues require further consideration so as to see how / if they can be address. A lack of a competitive wholesale market would also impact of the scope for successful supply competition.
- The Director General is firmly committed to increasing efficiency in the electricity sector and recognises the potential benefits that will result from a degree of regulatory certainty across the electricity sector. Therefore, establishing the ground rules and expectations would provide some certainty for the existing licensees and potential new entrants.

Regulatory activities

- Specification of the scale and timing of regulatory activities would allow for the Director General and the licence holders to clearly identify the timescales for each regulatory activity, the start date required for its execution and the deliverables

required from the licence holder. The initial cycle of activities required by the Electricity Licence are extensive, and the regulatory resources are limited. There is a need to ensure that the style and scope of regulatory activity is appropriate to the market size and structure. Regulating a market of 40,000 customers requires the same effort as 400,000 given the same licence requirements. Clearly there is a requirement for regulation to be appropriate to the size and nature of the companies being regulated. However, it is also necessary to allow regulation sufficient scope and resources to capture the benefits of possible efficiency gains from monopoly (price controlled activities) or through the seeding of competition.

6.3 Implementation

Given the range of her regulatory objectives (see Table 1 in Section 4), *the Director General will proceed with the split between regulation and competition set out within this section.*

Furthermore, in accordance with the policy of economic efficiency, the Director General considers that the Energy-from-Waste plant should be rewarded for the energy it produces at the prevailing market price compared with the prices offered by Guernsey Electricity's generation business and electricity available from EdF via the link.

Consistent with this approach the Director General will:

- Develop plans for a review of the scope for supply competition. In order to support this activity, the Director General will seek Board of Industry agreement to the objectives and success criteria for such a review. The Director General believes it is appropriate to bundle this activity within a wider review covering both wholesale and supply aspects of Guernsey's electricity sector as discussed in Section 6.2.1.2.
- Identify the actions required by her office to effectively regulate within the existing legislative regime.
- Develop a regulatory timetable in liaison with all electricity licensees. Within this process the Director General will assess any resource implications of delivering the tasks outlined in the regulatory timetable on the basis of (a) establishment, and (b) ongoing operation.
- Consistent with the single buyer approach, apply an accounting separation obligation on Guernsey Electricity between the Supply and Conveyance licensees on an interim basis whilst Guernsey Electricity retains a monopoly on these aspects of the value chain, pending the review of supply competition.
- Develop a price control regime consistent with the limited split between supply and conveyance.

7. Interactions between the OUR responsibilities, States Policy Guidance and the Licences

7.1 Issues

Section 5 and Section 6 described the dual strands of the States overall policy objectives in respect of Guernsey’s electricity industry and its ongoing development – ensuring security of supply and increasing the efficiency of the industry to support the social and economic development of the island. States policy is given effect in two main ways, through States Guidance to the Advisory and Finance Committee as shareholder of Guernsey Electricity Ltd and through the relevant laws and supporting licence provisions. Table 5 examines how each of these routes impacts Guernsey Electricity Ltd and the Director General in respect to the two overarching policy objectives discussed in Sections 5 and 6.

Table 5 - Obligations

	States Guidance	Law / Licences
Security of Supply	Guernsey Electricity Ltd is tasked to provide security of supply through the ON-ISLAND GENERATION POLICY.	The Director General is required to take steps to ensure security of supply is maintained regardless of physical location of provision.
Efficiency	Guernsey Electricity Ltd is tasked with the efficient provision of electricity services.	Guernsey Electricity Ltd has an economic purchasing obligation within its conveyance and supply licences. Director General is required to facilitate competition where appropriate and regulate the monopoly elements to deliver appropriate efficiency gains.

7.2 Implications

7.2.1 Efficiency

States policy in relation to efficient delivery of electricity services is consistent in both its guidance to the Advisory and Finance committee as shareholder and in the Laws and licences of the regulatory regime. There is currently no clear policy objective that impinges on this efficiency objective, e.g. there is no stated policy of relaxing the efficiency requirement in the context of quantifiable environmental benefits from using certain types of energy. Policy on this issue is the responsibility of the States of Guernsey and could clearly be adjusted. Any changes would have to be made having regard to impact on the other interrelated issues, as illustrated in this paper.

7.2.2 Security of Supply

However, there is some disjointedness between the States policy on security of supply as, imposed through its shareholder relationship with Guernsey Electricity when compared with the policy set out in the Regulation Law. States Direction to Guernsey Electricity Ltd is clear in relation to security of supply:

“However electricity services are provided in future, they are to be provided within a policy of retaining sufficient on-Island generation plant to meet the total long term demand, to cover for the possibility of interruption of unavailability of power through the cable link to France”¹⁸.

While there is no specific States Direction to the Director General on this issue, the Regulation Law recognises the issue of security of supply and charges the Director General with taking this into account irrespective of the location of production sources. Furthermore, there is no explicit recognition of:

- (a) the responsibilities of Guernsey Electricity Ltd vis-à-vis the responsibilities of the Director General, or
- (b) how any actions taken by Guernsey Electricity Ltd in fulfilling its obligations under States Guidance (such as costs associated with fulfilling the States Guidance) are to be treated.

7.3 Implementation

In preparing this report, the Director General has considered a wide range of interrelated issues under the two key areas of ensuring:

1. security of supply for Guernsey; and
2. efficiency within Guernsey’s electricity sector.

The consistency issues raised above impact on the development of the electricity sector on Guernsey in the following ways:

First, the clearly stated efficiency objective will be pursued within the regulatory regime, consistent with States policy. This will have to be taken into account by the States in its consideration of plans for the development of a Energy-from-Waste plant.

Second, the Director General’s approach in following the objectives laid out in The Regulation of Utilities (Bailiwick of Guernsey) Law, 2001, lead to a need to consider how the States of Guernsey policy on ON-ISLAND GENERATION POLICY, as imposed on Guernsey Electricity, should be funded if it is to be strictly applied.

¹⁸ Source: Billet d’Etat XXIV 2001, clause 2, Annex 3 States Guidance to the Advisory and Finance Committee in exercising on behalf of the States the role of shareholder of Guernsey Electricity Limited.

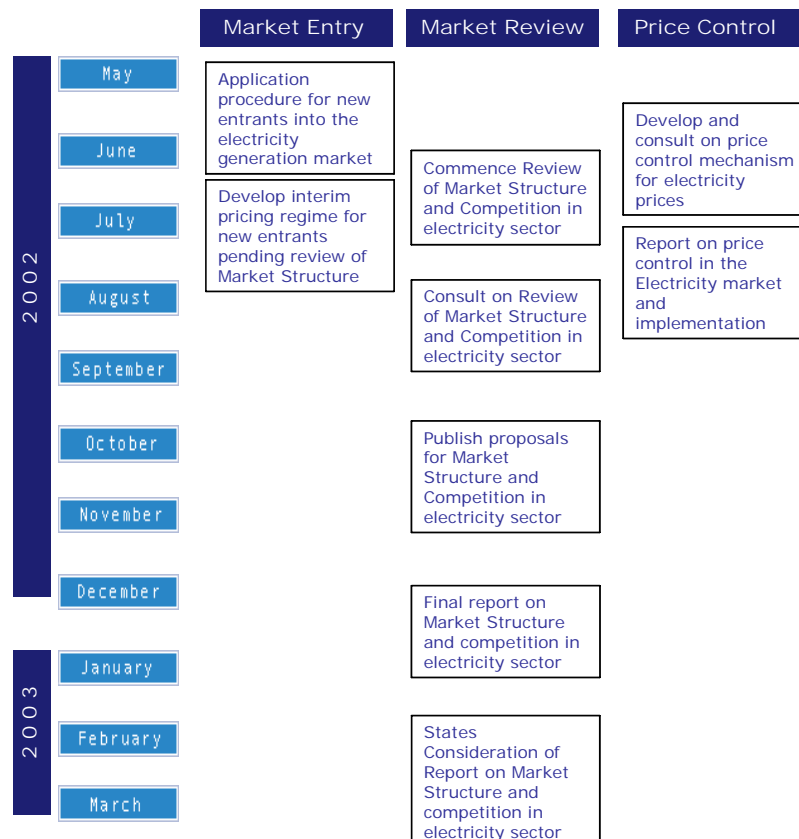
Finally, Table 6 below provides a summary of the expected implementation work streams that result from the matters discussed within the report and

Figure 7 outlines the schedule for each of these work streams.

Table 6 – Implementation Work Steams

Work Stream	Overview
1. Price Control	<p>A. Pending the outcome of the market review, Guernsey Electricity retains a monopoly on the Supply and Conveyance aspects of the value chain. Consequentially, the initial price control for Guernsey Electricity will be developed based on a combined Supply and Conveyance business. There will a consultation on this matter. Only allow efficiently incurred costs regarding the DIVERSE GENERATION POLICY will be reflected within this initial price control.</p> <p>B. A report will set out the approach to be implemented.</p>
2. Market Review	<p>A. A review of the scope for competition within both the wholesale and supply aspects of Guernsey’s electricity sector will be undertaken as the issues are interlinked. An initial consultation on the options will be undertaken.</p> <p>B. If required, a more detailed set of proposals will be developed for further consultation.</p> <p>C. A report setting out the recommended approach will be provided to the States of Guernsey.</p> <p>D. The States of Guernsey will consider the report and determine implementation policy early in 2003.</p>
3. Market Entry	<p>A. The licence application process will be set out to allow new entrants, such as the expected Energy-from-Waste plant, to comprehend what will be required.</p> <p>B. Pending the outcome of the market review, an interim pricing regime will be developed to allows new entrants to be fairly rewarded for services provided prior.</p>

Figure 7 – Implementation Work Steams Schedule



Appendix A Wholesale Legal Basis

Within the provisions covering dominant operators:

- **Clause 18** “The Licensee shall not show undue preference to, or exercise unfair discrimination against, any person or electricity undertaking regarding generation, conveyance or supply of electricity”.

Within the Generation Licence for Guernsey Electricity:

- **Clause 21.3** “The generation licence is non-exclusive”

Within the Conveyance Licence for Guernsey Electricity:

- **Clause 28.1** “In contracting or arranging for the provision of goods, assets and services required to enable the Licensee to carry out the Conveyance Business, the Licensee shall purchase or otherwise acquire such goods, assets and services from the most economical sources available to it, having regard to the quantity and nature of the goods, assets and services required to enable it to discharge its obligations under the Electricity Law and this Licence and to the diversity, number and reliability of such goods, assets and services at that time available for purchase or other acquisition.”
- **Clause 29** “The Licensee shall, subject to paragraphs 29.3 and 29.4:
(a) offer to enter into an agreement to provide a connection to the Conveyance System with any Electricity Undertaking who has made an application for connection to the Conveyance System; and.....”
- **Clause 34.2** “The Licensee shall establish and shall operate a merit order for Generation Units subject to central despatch.

Within the Supply Licence of Guernsey Electricity :

- **Clause 39.1** “In contracting or arranging for the provision of goods, assets and services required to enable the Licensee to carry out its licensed activities, the Licensee shall purchase or otherwise acquire such goods, assets and services from the most economical sources available to it, having regard to the quantity and nature of the goods, assets and services required to enable it to discharge its obligations under the Act and this licence and to the diversity, number and reliability of such goods, assets and services at the time available for purchase or other acquisition.”
- **Clause 39.2** “Any contracts or arrangements for the purchase of goods, assets and services from an Associated Company shall be on arm's length terms.”

Appendix B Conveyance / Supply Legal Basis

Within the Conveyance Licence:

- **Clause 25.3** “The Licensee shall have the exclusive right to convey electricity in its Authorised Area for the first ten years of the Term. The Director General may extend or amend the duration of this exclusive right if so directed by States Direction under the Regulation Law.”

Within the Supply Licence:

- **Clause 36.3** “The Licensee shall have the exclusive right to supply electricity in the Authorised Area for the first year of the Term. The Director General may extend or amend the duration of this exclusive right in accordance with States Direction under the Regulation Law”.

Within the provisions covering dominant operators (applied to the Supply Licence)

- **Clause 20.2** “The Director General may determine the maximum level of charges the Licensee may apply within a relevant market in which the Licensee has been found to be dominant. A determination may; (a) provide for the overall limit to apply to such charges; (b) restrict increases in any such charges or to require reductions in them whether by reference to any formula or otherwise; or (c) provide for different limits to apply in relation to different periods of time falling within the periods to which any determination applies.”

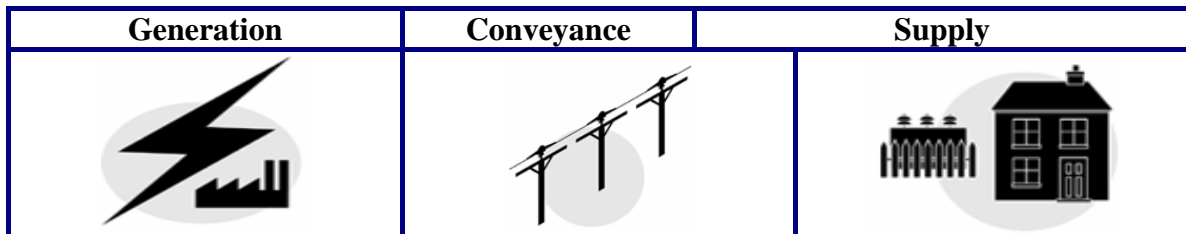
Within the provisions covering dominant operators (applied to the Supply and Conveyance Licences)

- **Clause 16** “Within three months of the Licence Commencement Date, the Licensee shall prepare and maintain accounting records in a form that enables the activities specified in any direction given by the Director General to be separately identifiable, and which the Director General considers to be sufficient to show and explain the transactions of each of those activities. The Director General may provide direction as to the basis and timing of such reports.”

Appendix C Value Chain Segmentation

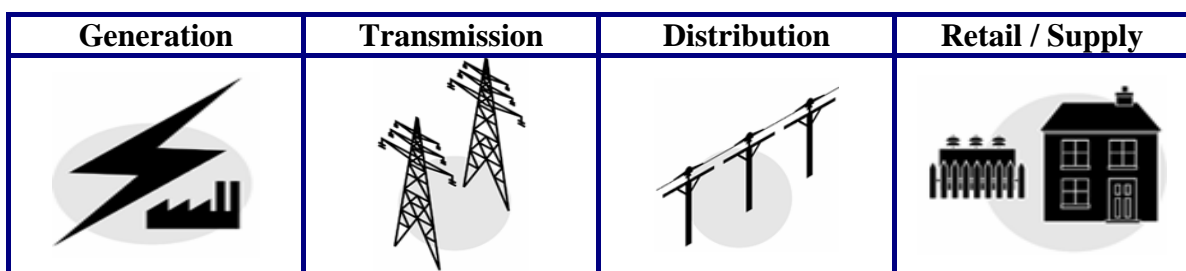
Electricity liberalisation on Guernsey opens up certain aspects of the value chain to competition, with three separately licensed functions created as set out in Figure 11, with the “electrical network” effectively split between Conveyance and Supply.

Figure 11 - Island of Guernsey Value Chain



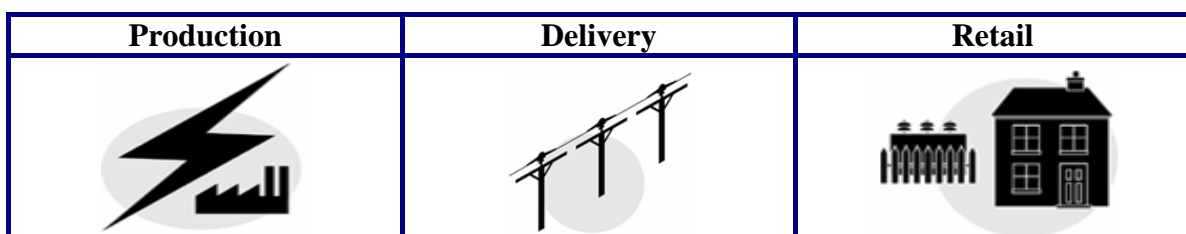
Similar electricity market liberalisations have taken place in several jurisdictions (e.g. UK / Australia / Scandinavia / California) and are presently mandated for all European Union Member States. However it is current international best practice to segment the value chain into four segments¹⁹ as set out below in Figure 12, with all “electrical network” aspects falling within Transmission and Distribution and the Supply²⁰ business focused purely on selling electricity to end users.

Figure 12 - Standard Value Chain



Application of international best practice across the value chain is based on the principle that natural monopolies should be separated from potentially competitive activities. The present licensing regime is inconsistent with this approach and adopting such principles would give an alternative value chain as set out in Figure 13 below, with all of the “electrical network” functions of GE falling within the monopoly “Delivery” business unit and the “Retail” business unit focused purely on selling electricity to end users, which is potentially competitive.

Figure 13 - Alternative Guernsey Value Chain



¹⁹ Within the standard value chain, Transmission is the HV delivery network and Distribution is the LV delivery, however within Guernsey only the LV Network exists.

²⁰ The term “Supply” is used with the Bailiwick of Guernsey (as well as the UK), whereas other jurisdictions (e.g. Australia) use the term “Retail” to describe selling electricity to end users.