

STATES OF JERSEY



CARBON INTENSITY OF IMPORTED ELECTRICITY: REVIEW

**Lodged au Greffe on 30th September 2009
by Deputy P.V.F. Le Claire of St. Helier**

STATES GREFFE

PROPOSITION

THE STATES are asked to decide whether they are of opinion –

to request the Minister for Planning and Environment to instruct the Planning and Environment Department to participate in an independent consultant's review of the carbon intensity of imported electricity with Jersey Gas Company Limited.

DEPUTY P.V.F. LE CLAIRE OF ST. HELIER

REPORT

I have been looking for some time into strategic issues regarding energy supply and land use in Jersey. The current allocation of resources in my view is poor both from a land use perspective and an energy choice for consumers in the long-term. The States need to consider the implications of not only the use of land but also the consumers use and choice in relation to energy. If the States are to convince the community that it should sign up to a programme of environmental responsibility, including the need for environmental taxation, then the foundation and basis for its policy must be robust and enduring. I believe that there is sufficient concern from those within the energy industry to warrant a fundamental review into the question that has driven much of the progress to date and that is the carbon intensity of energy and in particular electricity. I believe unless the States are willing to have an independent review of this matter then the question of our carbon footprint will be open to challenge in the future internationally. I am sure that States members would wish us to embark upon a firm and sustainable path in this regard. If members are minded and the Minister agrees then this review's costs will be met in the main by Jersey Gas. The benefits in terms of certainty will be for the island as an internationally respected community comparing like with like on internationally agreed and understood methods and principles which will have a bearing on our commitments to the planet, its Government's international agreements and the people in our community.

Background

The development of the States of Jersey Energy Policy and the introduction of the proposed updates to the Building Bye-laws have been frustrated by an ongoing disagreement between the Planning and Environment Department and Jersey Gas Company Limited with regard to the assumed carbon intensity of electricity imported from Europe.

The carbon intensity of a fuel indicates the amount of carbon dioxide emitted per kWh of energy. It is important to know the carbon intensity of the various fuels available in order to develop a strategy to combat global warming/climate change. The States of Jersey Energy Policy, the second draft consultation document issued September 2007 (latest draft), page 24, figure 19, "an energy hierarchy for Jersey", declared a strategy of "using low carbon fuels" second only to "using less energy". Hence it is imperative for policy purposes that fuels are assigned an appropriate carbon intensity.

The Planning and Environment Department formed the opinion, and still believe, that electricity imported from Europe should be assigned a carbon intensity of circa 0.056kg of CO₂/kWh on the basis that this represents the average carbon intensity of electricity generated/supplied by EDF (Electricité de France), the Jersey Electricity Company's current supply contract is with EDF. Jersey Gas Company Limited do not agree with the Planning and Environment Department's methodology. They argue that imported electricity should be assigned a figure more representative of the market from which the electricity is taken, e.g. the EU15, EU25 or EU27 average carbon intensity. The most recent EU27 average carbon intensity figure published by the International Energy Agency is 0.357kg of CO₂/kWh. Jersey Gas Company Limited argue that the Planning and Environment Department's approach is too simplistic, not in line with other jurisdictions and is not consistent with others' findings. Jersey Gas believes that the promotion of electricity as a fuel for heating will actually lead to increased global carbon dioxide emissions. Their position is supported by a number of independent consultants and substantial evidence including data on the carbon

intensity of electricity in France. I asked the Jersey Gas Company Limited to provide a summary of their evidence; it is appended to this proposal.

In March 2009, following a meeting in which the Jersey Gas Company Limited presented their case to the Planning and Environment Department, the Planning and Environment Department Chief Officer suggested that all stakeholders are included in an independent review of the carbon intensity of imported electricity. Also in March 2009 Jersey Gas Company Limited were given an opportunity to present their case to the States of Jersey Environment Scrutiny Panel. The Environment Scrutiny Panel was supportive of the proposed independent review.

However in August 2009, the Planning and Environment Department notified Jersey Gas Company Limited they were cancelling the independent review because of the lack of commitment from the oil distributors (RUBIS, Total and Esso) and as result of the JEC withdrawing. Given that the Planning and Environment Department's position on the carbon intensity of imported electricity has not changed, Jersey Gas Company Limited have offered to fund the whole review, subject to a reasonable quotation. However, the Planning and Environment Department have not been prepared to commit to the Jersey Gas Company Limited's offer. Hence I bring this proposal to the States of Jersey.

Cost/benefit and resource requirements

The cost of the proposal to the States of Jersey is small if not arguably nil, in financial terms. The benefit is that the States of Jersey and the Planning and Environment Department will get independent advice upon assigning an appropriate carbon intensity to imported electricity. As stated this is essential for the development of a meaningful energy policy. Under this proposal the Planning and Environment Department will need to provide a minimal time input, merely sufficient to ensure themselves that the review is independent. I view such time resource as negligible; indeed the review will possibly offer a net time resource saving for the Planning and Environment Department as they have stated an intention to continue to debate this issue further with Jersey Gas Company Limited.

Terms of reference for the review

Jersey Gas Company Limited has provided proposed terms of reference for the review which captures the area of disagreement. Their proposed terms of reference are –

“The States of Jersey are in the process of developing an Energy Policy. The States of Jersey recognise the effects of man-made carbon dioxide emissions on climate change. The States of Jersey agree with the Stern Report's call to take action now to abate carbon dioxide emissions. As a responsible government, the States of Jersey wishes to develop an energy policy which acts to reduce global carbon dioxide emissions. The hierarchy approach proposed to reduce carbon dioxide emissions is –

Energy Hierarchy

Use less energy.

Use low carbon fuels.

Use less imported energy.

*Reduce other impacts.
Off-set carbon.*

In attempting to establish the carbon intensity of the fuels available in Jersey, a difference of opinion has arisen, with regard to how to treat electricity imported from the European grid. One view is to assign a carbon intensity of 0.056 kg of CO₂/kWh to imported electricity. This is based upon the average carbon intensity of the electricity purchased by the JEC from EDF under its current supply agreement. The alternative view is to assign the European grid average carbon intensity to imported electricity, circa 0.36 kg of CO₂/kWh plus losses (Note 1, re: losses); or to assign a marginal electricity carbon intensity to imported electricity plus losses (Note 2, re: marginal electricity).

We are seeking independent advice as to what is the most appropriate carbon intensity to assign to imported electricity, in order for the States of Jersey to achieve its energy policy objectives of delivering outcomes that reduce global carbon dioxide emissions whilst securing reliable, affordable and sustainable energy supplies for the island.”

Note 1 – when making comparisons between the carbon intensity of fuels it is normal to do so as delivered to the home or point of use. Hence when considering electricity imports one should take account of resistance losses made in the electricity transmission system (from the point of generation to Jersey) and the electricity losses in the distribution system (losses incurred in the local distribution electricity network).

Note 2 – marginal electricity. This is a very detailed and exact approach where you try and establish the exact origin of an increase in demand of electricity. If you can assess where the additional demand was met i.e. which power station/stations you can ascertain what fuel has been used and calculate a carbon footprint for it. France’s nuclear fleet of generators tends to supply the European base load. Nuclear reactors/generators are not easy to switch on or off or wind up or down. Hence they stay on supplying base load. If one were to add an extra 1 kWh of electricity onto the system, at most times this would result in an increase in 1 kWh coming from, most likely, a fossil fuel power station. Fossil fuel power stations are inefficient and tend to have carbon intensities two to four times of that of gas. So it is very important if one is looking for a low carbon fuel to understand how an additional (marginal) electricity load will be supplied. This is particularly important with an energy policy like Jersey was postulating, which would lead to an increase in electricity demand. People are calculating marginal carbon intensities for the French system of 0.5 to 0.6 kg of CO₂/kWh. Also note given that Jersey is so small AEA (consultants) consider the whole of Jersey’s electricity’s load to be marginal in European terms.

Financial and manpower implications

Subject to obtaining a reasonable quotation, Jersey Gas Company Limited will pay the independent consultants fees in full. The Planning and Environment Department’s involvement would be merely to ensure to their satisfaction that the review was conducted in an impartial and objective manner. I believe therefore that there will be no additional financial and manpower implications to the States arising from this review and in any case it is the sort of work that our civil service should be undertaking in keeping up with our international obligations for our island emissions to the U.K.

APPENDIX

Jersey Gas have provided the following summary to support their case for assigning imported electricity a European grid average carbon intensity; or a European marginal carbon intensity.

1. Independent Consultants Reports and Communications

Jersey Gas and Guernsey Gas have sought the opinions of four independent consultants with regard to this issue. All four suggest the use of the European grid average carbon intensity and or a marginal carbon intensity approach. Note, none have supported Planning and Environment Department's simplistic approach. Copies of full reports/communications are available upon request. The following acts as a summary.

AEA Technology, a U.K. leading consultant on energy, environment and climate change. Relevant extracts taken from the executive summary of their report are quoted "increasing electricity demand on the island is likely to lead to increased overall CO₂ emissions given the way that EDF sources its energy to deal with increasing demand in both the short and long term. Use of marginal emissions convention would more accurately reflect the nature of the electricity market relating to Jersey."

Energy Markets International report. This report indicates the marginal carbon intensity method should be assigned to imported electricity. The report goes on to calculate the marginal carbon intensity figure for the CI for a number of specified days in December 2007. For the period analysed it concludes the carbon intensity figure for imported electricity to be 0.529kg of CO₂/kWh.

Poyry Consultants, Angus Paxton, Senior Consultants, states "one could argue that the European emission factor is the most appropriate."

ISIS Ventures International Limited, Peter Ritson, Director, challenges the Planning and Environment Department methodology.

2. The adoption of the Planning and Environment Department carbon intensity for imported electricity of 0.056kg of CO₂/kWh is not appropriate for policy purposes

Jersey Gas have tested Planning and Environment Department's carbon intensity against various criteria associated with energy policy issues and does not appear to be appropriate.

A carbon intensity of 0.056kg of CO₂/kWh does not reflect how the European grid will react to an increase in load. Europe does not have unused or under-utilised low carbon generation available.

The methodology used by Planning and Environment Department deriving a carbon intensity from the suppliers, suppliers profile (i.e. JEC supplies Jersey customers, JEC in turn is supplied by EDF) is not consistent with other jurisdictions approach of calculating carbon intensity. In the U.K. DEFRA and the Carbon Trust promote the use of grid average, explicitly users cannot

claim low emissions just because they purchase power from a particular supplier.

The methodology used by Planning and Environment Department to derive a carbon intensity is not sufficiently consistent and predictable for policy purposes. Their approach is subject to significant changes, most likely significant increases if for example JEC cannot agree contract terms with EDF and or EDF are acquired, purchase or merge with another electricity supplier. Energy policy strategies should be vulnerable to commercial arrangements beyond the control of the States of Jersey.

A carbon intensity of 0.056kg of CO₂/kWh (this is practically zero) will undermine environmental initiatives. It will undermine incentives to reduce electricity demand. It will undermine incentives to develop real low carbon generation such as solar, wave, under sea turbine and wind because it is inferred that electricity has practically reached zero carbon in Jersey. Another perverse outcome is that a poorly insulated home in Jersey could claim to be environmentally friendly, a low / near zero carbon home if it were heated by grid electricity!

3. Other information

3.1 The French view with regard to electricity used for heating purposes

Europe are pushing ahead with a single market for electricity, as it does so this will affect the carbon intensity for electricity used for heating even in France. ADEME (Agence de l'Environnement et de la Maîtrise de l'énergie) and RTE (Gestionnaire du Réseau de transport d'électricité) have calculated the effects of opening the market on the carbon emissions of electricity used for heating in France. They concluded that electricity used for heating would have a carbon intensity of 0.5 to 0.6 kg of CO₂/kWh. Note, RTE are the company that operates the French National Electricity grid network.

Nathalie Kosciusko – Morizet, a French Secretary of State for Ecology, is quoted as saying “we have a serious problem with electric heating in France. It was a mistake to develop it.” Quotation from an interview in La Monde, 1st October 2008.

3.2 Various CI press releases

There are various press releases throughout the history of the cable link which include comments, from GEL, JEC, Green Peace and Friends of the Earth that suggest that CI's imported electricity was viewed as if the average European electricity. Also there were comments to the effect that the CI was not promoting France's nuclear programme. It would appear that Planning and Environment Department are choosing to ignore this history.

3.3 SEB's billet on Guernsey's future electricity supplies 1996

This Billet was put forward in September 1996 by the SEB to gain government approval for the connection to Europe. In this document the SEB indicated that Guernsey would be accessing European electricity from various sources and declared the average European grid composition. This is contrary to Planning and Environment Department's view.

Jersey Gas are willing to evidence all of the above comments to any interested parties.