

# Electricity labelling in the EU

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## Keywords

electricity disclosure, labelling, consumer information, electricity bills, policy

## Abstract

Liberalisation is sweeping across Europe and giving consumers the right to choose their electricity supplier. This choice is usually based on price, but a new initiative – disclosure – would enable people to decide using environmental criteria. Under the current draft revision to The Electricity Directive, the minimum disclosed information would be based on the fuel mix used to generate electricity, which could be supplemented by information on carbon dioxide emissions and nuclear waste. An EU Commission funded project is examining the options to introduce disclosure for European consumers (Consumer Choice and Carbon Consciousness for Electricity, 4C Electricity, [www.electricitylabels.com](http://www.electricitylabels.com)).

The 4C Electricity project is:

- Evaluating the practicalities involved in developing an EU-wide label for disclosing the source of each consumer's electricity.
- Undertaking focus groups and interviews to identify consumer needs and understanding, to aid the design of the information label.
- Recommending how disclosure could be implemented, especially in relation to subsidiarity issues, and how it will be integrated with other EU and Member State energy policy.

- Finally, policies which support disclosure and make use of disclosure will be examined, and the likely impact of these will be explored through scenario analyses.

This paper will outline the issues involved in labelling electricity and provide a review of this on-going project. The design of the label and its content is likely to combine mandatory core elements with those subject to subsidiarity. The success of disclosure will depend on decisions in 15 Parliaments as much as in Brussels.

## Introduction

At present consumers who purchase electricity generally do not know the source of the electricity they are receiving, nor the environmental impact of its use. For a fully transparent market consumers should have this knowledge, so their choice of electricity is not based on price alone. To complete the liberalisation of the electricity (and gas) markets in the EU, a revision to the EU electricity directive is about to be finalised (EU-COM, 2002). One of the clauses in the directive is to provide consumers the information on the source and environmental impacts of their electricity usage.

This disclosure, or labelling of electricity, has recently been introduced in around half of the USA States, as part of their liberalisation process. More recently Austria has introduced a disclosure scheme, while Belgium and the Netherlands have plans to implement such schemes in the near future.

This paper provides a summary of an ongoing EU Altener project, 4CE, which began in January 2002. The project has undertaken technical analysis of different methods to introduce tracking systems, the so-called backside of the disclo-

sure system. Views from different stakeholders in the European electricity industry, which includes regulators, electricity traders, suppliers and generators, have been solicited. In addition the study has been looking at the visible part of disclosure, the label that the consumer will see. In order to develop a successful disclosure label, the research team has undertaken a series of focus groups with different types of consumers. The intention is to understand the issues consumers have with labels and prepare telephone surveys to obtain representative data on the understanding and likely response by EU electricity consumers. Telephone surveys are currently underway, whilst policy development issues and scenario analyses are about to be addressed. The project is still underway and will be completed by the end of September 2003.

The clause relating to disclosure in the revision to the electricity directive has changed several times during the directive's development. The latest version (29<sup>th</sup> January 2003) states:

"Member States shall ensure that electricity suppliers specify in or with the bills and in promotional materials made available to final customers:

- a) the contribution of each energy source to the overall fuel mix of the supplier over the preceding year;
- b) at least the reference to existing reference sources, such as web-pages, where information on the environmental impact, in terms of at least emissions of CO<sub>2</sub> and the radioactive waste resulting from the electricity production from different energy sources, is publicly available.

With respect to electricity obtained via an electricity exchange or imported from an undertaking situated outside the Community, aggregate figures provided by the exchange or the undertaking in question over the preceding year may be used.

Member States shall ensure that appropriate mechanisms are put in place, e.g. by the supplier, to verify the reliability of the information on the fuel mix."

This paper will provide an overview of the issues that have been, and are being, addressed by the study. Initially, the main options for different tracking systems will be summarised. Following this will be a brief discussion on the supplier-consumer interface, the visible side of disclosure. This should include a study of consumers understanding and their likely response to disclosure. Finally, the affect of disclosures and interaction with other policy will be explored.

### Tracking the generating source

The basis for any disclosure system is the ability to be able to attribute generating source to the supply of electricity, the link between generators and suppliers. Obviously it is not possible to track electricity from particular generating systems, however it is possible to follow financial contracts made, or provide certificates at the point of generation which then have to be 'handed in' by the supplier. Thus, at the simplest level, disclosure can be on the basis of contracts or tradable certificates.

### CONTRACT-BASED DISCLOSURE

A contract-based approach is where the information for disclosure is attached to financial electricity transactions. In a strict contract-based system, all transactions must be associated with information about the characteristics of power generation. In a more flexible system, market participants could choose for every transaction either to use "unit contracts" which carry the characteristics of a specific power plant or to leave the quality of the power transaction open. All non-specified electricity could then be assigned the average quality of all generation that has not been used for unit contracts.

### CERTIFICATE-BASED DISCLOSURE

In a certificate-based approach the generated electricity and the quality identification are separated at the point of generation and can be transferred or traded separately. The physical electricity is traded through the existing market structures. The environmental (and/or other) attributes are transferred through alternative structures in the form of a certificate. Both products can be traded independently. As an example of existing schemes, markets already exist for certificates that are used for the verification of renewable energy obligations in the UK and several other countries. These markets are relatively new but are developing rapidly. At the point of supply to the consumers, the supplier needs to have acquired the same number of certificates as the volume of electricity sold. The demand for different types of certificates is created either by obligation or demand for particular qualities. In the case of obligation electricity suppliers have to prove the characteristics of their power portfolio or products by purchasing and redeeming a corresponding number of certificates such as with the UK's Renewables Obligation Certificates (ROCs). Demand for particular electricity qualities, can be driven by demand for tailored electricity products, e.g. renewable, non-nuclear, low CO<sub>2</sub> content.

### OTHER TRACKING ISSUES

At present there is no requirement for all EU Member States to choose the same tracking method. Ideally, all Member States taking part in the scheme should choose the same implementation method otherwise a sub-optimal system will result. This will manifest in less accuracy, greater complexity, and greater auditing difficulty.

The main stakeholders to be affected by the tracking system will be the generators, suppliers, and traders. Generators are already required to track their generation for emissions purposes. And in addition, many generators already accredit their electricity for other purposes. For example in the UK, approximately 2 200 generators, representing 70% of all generating stations have systems in place to accredit supply, to prove that their source is renewable or comes from bio-mass or combined heat and power.

The most expensive part of a contract-based system is likely to be the changes needed to trading systems to track each transaction. For a certificate-based system the introduction of new trading systems for certificates could add an additional cost, whilst there may be a negative cost for some certificates.

These and other issues have already been addressed in Task 1 of the 4CE project, which has been provisionally reported in Timpe and Buerger (2002).

**Supplier-consumer interface**

The method used to provide information to the consumer is an important aspect of the development of disclosing information to consumers. A parallel may be drawn with appliance energy labels – what is the best way to display the efficiency of an appliance to consumers? Different countries have chosen different ways of showing efficiency information to consumers (e.g. 5 stars in Australia, a linear scale in USA and the A-G scale in the EU). The 4CE study group has tried to build upon their knowledge of these labels, coupled with labels that have already been developed for disclosure. An example of a disclosure label in existence is shown in Figure 1. This label shows the source of generation for a particular product and shows the average state mix to allow comparison.

The main issue is what information to give to consumers. The source of generation should be given, but should the environmental impact (e.g. carbon emissions and sulphur dioxide emissions) also be given? If environmental information is to be given then these should most likely be restricted to carbon emissions and nuclear waste. The style of presentation has also been examined, the extent to which consumers prefer table to pie charts to plain text.

At the simplest level the information could be the source. However, the information is difficult for consumers to understand if these data if presented alone. To aid understanding the data could be supplemented by a comparison set of data, such as the Member State or EU average (as in the California label). This comparison feature could be taken further, as in the EU A-G appliance-labelling scheme, to allow ranking of products. This leads to a discussion on which criteria to rank electricity products – carbon emissions, nuclear waste, some weighting of the two or both. Initial results show that there is some confusion amongst consumers when presenting this additional information.

One of the main issues is whether the information declared should be ex-ante or ex-post. Since consumers choose their supply in advance of consuming electricity, an accurate ex-ante system would seem to be appropriate. However, such a scheme could be open to abuse, and tolerances and an ex-post evaluation scheme would need to be incorporated. It is likely that an ex-post disclosure scheme will be chosen.

These issues have been examined in focus groups and further representative insights will be gained by telephone surveys. At present 3 000 telephone surveys are underway across the EU. These will be presented more fully when the research is complete and results have been fully analysed.

There is the possibility to include additional information with the electricity bills. For example, Belgium is proposing to have historic consumption data on the bills.

**Interaction with other policy**

There are already measures and policies in place that make use of tracing the source of electricity. The most obvious ex-

<b>POWER CONTENT LABEL</b>		
<b>ENERGY RESOURCES</b>	<b>PRODUCT NAME <sup>^</sup> (projected)</b>	<b>2000 CA POWER MIX <sup>**</sup> (for comparison)</b>
Eligible Renewable	56%	12%
-Biomass & waste	-	2%
-Geothermal	-	5%
-Small hydroelectric	-	3%
-Solar	-	<1%
-Wind	-	2%
Coal	8%	16%
Large Hydroelectric	9%	19%
Natural Gas	18%	35%
Nuclear	9%	17%
Other	<1%	1%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>

<sup>^</sup> 50% of (Product Name) is specifically purchased from individual suppliers.

<sup>\*\*</sup> Percentages are estimated annually by the California Energy Commission based on the electricity sold to California consumers during the previous year.

For specific information about this electricity product, contact (Company Name). For general information about the Power Content Label, contact the California Energy Commission at 1-800-555-7734 or www.energy.ca.gov/consumer

Figure 1. California disclosure label.

ample is suppliers selling ‘green’ electricity, i.e. from renewable sources. Their proof of renewable supply is that they have contracts with renewable generators, so they can trace their generation back to the ‘green’ source. Recently, there has been the development of Renewable Electricity Certificates, which guarantee the origin of the renewable supply. It is intended that these can be traded throughout Europe, thus there can be renewable electricity which can have two different claims on it’s ‘green-ness’. This is further complicated in some member states which have placed a Renewables Obligation on the suppliers who are not allowed to profit from renewable claims on electricity which forms part of their Renewable Obligation. Other sources, such as biomass combined heat and power, will also have similar issues. These apparent inconsistencies may be exacerbated by the introduction of disclosure, since there will be new certificates, whether traded or not, for each unit of electricity generated.

Different types of policies will be examined in the study, which can be classified into three different types:

- Policies that promote and explain disclosure for consumers,
- Policies that build upon the label (such as fiscal measures based on disclosed electricity purchase),
- Policies that are independent of disclosure (e.g. renewable obligations).

All of these will be developed, including scenario analyses, which will attempt to estimate the likely affects of disclosure and supporting policy measures. These estimated environmental impacts will be in terms of carbon emissions and nuclear waste.

## Expected impact

There has been no detailed post evaluation from existing schemes, thus the expected outcome from an EU-wide disclosure scheme is still open to speculation. However, there is some anecdotal evidence from Austria, where disclosure has been in place since 2001. It appears that there has been a diversification in the product generation mix sold to household consumers and commercial and industrial electricity consumers. Householders in Austria show a large concern, and generally reduced their purchase of nuclear-based electricity. In the meantime the suppliers sold more nuclear-based electricity to their non-domestic consumers. Thus, the nuclear-sourced electricity was hidden to the domestic consumer, and resulting in no change in the generation mix. Other anecdotal evidence from Austria shows that there was some confusion and impact reduced by having different labelling systems in the nine different regions of Austria.

To gain a better understanding of consumer choices prior to implementation, the 4CE project is running a series of focus groups and telephone surveys. The telephone surveys are currently taking place in 10 countries, for both domestic and SME customers. The first indications from the domestic consumers show that they have a preference for non-nuclear and renewable sources. Depending on implementation, this means that there will be additional purchasing pressure to obtain these sources of supply. How suppliers react to changing demands from consumers will also have an impact on the generation system. The expected impacts from disclosure will more fully analysed later this year.

## Continuing research and conclusions

The 4CE project has still to conclude its telephone surveys, which will provide an insight into consumer attitudes, likely response to disclosure, and supporting policies required. The project with final conclusions and recommendations will be complete at the end of September 2003. Final reporting and comments can be made at the project web-site ([www.electricitylabels.com](http://www.electricitylabels.com)).

In conclusion, disclosure on the source of electricity supplied to consumers will happen as part of the revision to the electricity directive which will finally liberalise the EU electricity markets. Ideally, the systems to be introduced by Member States should, as much as possible, be harmonised; however, this is not yet guaranteed. It is likely that disclosure will increase the demand for renewable and non-nuclear electricity.

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## Glossary

4CE – EU Altener-funded project “Consumer Choice and Carbon Consciousness for Electricity”  
 Altener – EU Commission funding programme  
 ([europa.eu.int/comm/energy/en/pfs\\_altener\\_en.html](http://europa.eu.int/comm/energy/en/pfs_altener_en.html))

## Acknowledgements

This paper is based on a project entitled “Consumer Choice and Carbon Consciousness for Electricity (4C Electricity)” which is being carried out under the framework of the EU Altener programme to investigate the implications of electricity disclosure as a policy tool for informing consumers about their electricity supply. A consortium of 6 research institutions in 5 European countries is conducting the research. The project is lead by the Environmental Change Institute, University of Oxford with IT Power (UK), Oeko Institute (Germany), Stockholm Environment Institute (Sweden), EVA (Austria) and the Central European University (Hungary).