

PIU Project on Energy Policy - Energy Efficiency and CHP

Response by London Electricity plc

These are comments by London Electricity (LE) plc on the paper **Energy Efficiency and CHP – Some Further Questions** posted on the PIU website in August 2001.

Key Points

- The UK has pursued successful energy efficiency programmes for a number of years and suppliers have actively contributed to this record of achievement. Additionally, LE operates CHP/District Energy schemes at Heathrow Airport, Imperial College, London, and the Barkantine Estate on the Isle of Dogs, London.
- It is generally recognised within the industry that a more focused effort is now needed if existing barriers to energy efficiency are to be overcome and if levels of emissions reductions in line with the Climate Change Programme are to be achieved. However, recent initiatives should be allowed to settle down before further measures are pursued, and it will be important to monitor the impact of new initiatives such as the Home Energy Efficiency Scheme (HEES) and the Energy Efficiency Commitment (EEC) to see how remaining barriers can be most effectively tackled.
- Communication and enhanced public awareness are likely to be very important in addressing the barriers.
- Energy efficiency support measures targeted to produce environmental benefits through carbon abatement should be developed as part of a more comprehensive framework that accommodates other abatement measures (e.g. renewables). Suppliers should be enabled to evaluate the range of options for achieving targets on a consistent basis in order that they can pursue the most cost efficient options and those that best fit their competitive positions.

Responses to questions raised

Q1. *Are there any reasons to suppose that the rate of technical change affecting energy efficiency will alter in the longer term?*

Rates of technical advance are strongly linked to actual and perceived benefits. We cannot identify anything at present in the current domestic or business environment that will give rise to a step change in technical advance affecting energy efficiency in the next 5-10 years. A creeping rate of gradual improvement appears most likely.

In this regard, advanced meter reading (AMR) technologies could represent an important “enabler” in the area of more efficient energy usage. The PIU

scoping notes do not specifically address this issue but the energy policy review should do so.

Q2 *Are there any reasons to suppose that barriers to the take-up of energy efficiency which have already been identified will alter in the longer term?*

The barriers to take-up of energy efficiency are reasonably well understood, and we consider that these are unlikely to change significantly over the short to medium term.

In the domestic sector, energy efficiency development faces a fundamental barrier to development due to the fact that energy is relatively cheap, while the total cost of annual household energy consumption is not high relative to income levels for much of the UK population. At the same time, lower-income band homes are unlikely to be in a position to have capital to invest in energy efficiency appliances or in home insulation to reduce energy consumption. Renting tenants will also usually not have any control or incentive to invest in energy efficient solutions.

Public awareness needs to be tackled and end consumer attitudes need to change. A further barrier for the domestic sector arises due to the customer's (perceived) difficulty in finding organisations that offer energy efficiency improvements in which the consumer can have confidence about service delivery and performance.

Overall, it is difficult to see how such barriers can be materially altered under current price levels, but much closer monitoring and market research of new schemes such as the EEC and the HEES should help deliver a better understanding.

As regards the business sector, specific energy efficiency measures tend to be evaluated by individual companies on a cost/benefit basis. Existing barriers are likely to remain until such time as the potential cost benefits of implementing energy efficiency measures become sufficiently significant relative to other competing business priorities.

That electricity usage can respond to price is shown clearly by load management response in the form of "triad avoidance".¹ The new NETA market has also been introduced to enable active demand side response to prices. It is clear that there remain barriers to uptake of demand side bidding by large industrial users and the scope for consolidators needs to be improved, if market participants are to capture the true dynamic benefits on the demand-side under the new NETA markets.

Looking forward, in an economy that is moving from energy intensive output to knowledge acquisition and application, the total requirement for, and hence

¹ Triad benefits are achieved through reduced TNUoS charges by users moving peak demand on the transmission system from periods of likely peak usage. NGC estimates that some [1GW] of demand has moved in response to these peak use prices.

cost of, energy relative to other costs is likely to fall. If so, this tendency will reduce the incentives on business to pursue energy efficiency measures and could create further barriers to take up of energy efficiency.

Q3 What is the expected long-term effect of prices on energy efficiency in each sector?

The impact of price on energy efficiency is hard to gauge.

As noted in response to Q2, in the domestic sector, demand for energy is relatively inelastic in the face of rising costs. In recent years, energy price paths have been declining, which has meant erosion of incentives to invest in energy efficiency.

The business sector is likely to be more responsive to price increases. In particular, industries which have a high energy cost as a proportion of total production costs will generally focus more sharply on energy efficiency than industries where energy cost is a lesser proportion of total costs. Pay-back timescales for individual measures are crucial.

Q4 How will long term structural change in the economy, for example the “knowledge economy”, affect energy efficiency and energy demand?

Consumers in the “knowledge economy” may be less inclined to achieve improved energy efficiency levels, as total energy costs are likely to be a smaller proportion of business operating costs. In such circumstances, energy price changes have a smaller impact on profitability and competitive position, and maintaining profitability and competitive position is likely to be pursued through building the value of knowledge rather than seeking to cut energy costs through improved efficiency.

As a general rule, the greater the shift to the “knowledge economy”, the greater the overall reduction in the importance of energy to total business costs. This shift might be expected to counteract long-term upward price effects and slow down the uptake of specific energy efficiency measures.

Q5 Can we make any inferences about the extent to which changes in energy markets will serve to alter the take-up of energy efficiency, and CHP, in the longer term?

The prospects for energy efficiency hinge on the prices in energy markets and their relativity.

As regards CHP, the current position, wherein some stations have been taken out of use and some new CHP projects shelved, suggests that CHP is not a pure energy efficiency measure. Rather, most CHP schemes, especially those with electrical capacity in excess of host-site load, were developed primarily to provide economic benefit to the user.

Changes in fuel prices and the erosion of electricity export benefits has had a detrimental impact on the prospects of CHP, though this tendency was already apparent prior to implementation of NETA. Steps to better promote take-up of CHP are addressed further under our response to Q8.

Q6 Are there any policy instruments which could be used to encourage energy efficiency in each of the different sectors which might become available in the longer-term, and which do not form part of current debates?

In our view, the effectiveness of policy instruments currently available needs to be better understood. As we have already noted above, it will be important to monitor the impact of new initiatives such as the HEES and the EEC to see how the barriers can be most effectively tackled and whether new initiatives are required beyond the immediate three year window.

It is also timely for the government to bring the range of different initiatives across sectors together into a more coherent energy efficiency strategy or framework, in order that measures competing for resources can be better evaluated and targeted.

Looking forward, support schemes targeted to produce environmental benefits through carbon abatement need to be developed as part of a uniform framework. Suppliers need to be able to evaluate options for achieving targets on a consistent basis in order that they can pursue the most cost efficient options and those that best fit their competitive positions. In this context, energy efficiency options and schemes could be incorporated within broadened emissions trading arrangements.

Q7 What are the prospects for the development of energy service markets in the domestic, commercial and industrial sectors?

Our analysis suggests that demand for energy services in the domestic market is low at current price levels. In the commercial/industrial sectors, take-up is already occurring as a normal part of the competitive process driven by pay back periods.

Overall, there seems to be at best low to modest further growth potential for energy services.

Q8 How can we assess the longer-term possibilities for further use of CHP?

Numerous studies have been completed on the potential for CHP, though assessments tend to be short-term and technology driven. Our view is that there are no significant technical barriers to further CHP implementation – indeed the technology has been employed for over 30 years.

In LE's opinion, there are three key areas in which effort should be focused to assess what framework might encourage better take-up of CHP.

First, analysis of the economics of CHP should include specific assessment of carbon savings as well as the cost/benefits of the impact of CHP on network investment and operating costs.

Second, the implications of current market and regulatory incentives need to be assessed. The UK electricity supply industry has become progressively more fragmented over recent years, and the practical benefits of CHP cannot be properly realised under current structures, as the regulatory framework does not properly acknowledge many of the benefits to participants other than the station operators.²

Third, further work is required to assess the potential impact that could be achieved on CHP development through greater integration of energy policy and planning policies/building regulations as local planning remains a significant barrier to it.

Q9 *What are the prospects for Micro-CHP, and how might that be encouraged?*

Information currently available on Micro-CHP suggests that, although there are a number of suppliers of technology in this area, none is yet close to achieving a sustainable market position in the short-term. Centrica and RWE are both understood to be trialing systems with a view to bringing these to market around 2003/04. In the past, however, forecasts of timing and market penetration of such technologies have tended to be consistently over-optimistic.

**London Electricity
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² See also LE response to Q25 on networks.