

We are convinced that the value of the electricity generated from the power/heat schemes investigated has been soundly based, using the realities of the situation.

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REFERENCES

1. N. J. D. LUCAS, The national case for local production of heat and power in parallel with the public supply of electricity, *Applied Energy*, 2 (1976) p. 225.
2. N. J. D. LUCAS, Alternative appraisal of district heating in Glasgow, *Applied Energy*, 2 (1976) p. 309.

Sir,

THE PINKSTON SCHEME

Mr Gronow's criticisms of my paper are:

ignorance of economies of scale,
misunderstanding of the baseload character of the system,
the wrong use of the bulk supply tariff or some similar device,
an ill assessment of the future, and
wrong data.

These points are partly related to one another: I will consider them one by one.

I do not think I am ignorant of the economies claimed for scale of plant, but in any case it is of little consequence because the figures which I have used for capital cost and performance are taken from the published report, and apply to the small capacity plant proposed.

Mr Gronow's use of the word 'baseload' is interesting. The system described by the Board has 220 MW of waste-heat recovery plus 150 MW of standby boilers. The peak demand expected on the system is, bizarrely, less—210 MW. To say that the system operates on baseload implies that it produces these 210 MW of recovered heat whenever the plant is available, even at 3 am on Midsummer's Night. What Mr Gronow means is that the timing of electricity generation is constrained by the demand for heat. This is quite correct and the heat demand will occur at a time when some of the SSEB's old oil-fired stations are currently generating electricity at operating costs which (I guess) exceed 2p/kWh. The fuel cost of electricity from the

combined heat and power scheme is, by comparison, 0.47p/kWh. It is wrong to construct an argument by careless use of the word 'baseload' as a preliminary psychological preparation for an unmerited assumption that the costs of the scheme should be compared with the costs of the baseload power generation.

Mr Gronow states that my use of the bulk supply tariff is inappropriate. Now I acknowledge that the BST is a complex and elegant device with many functions and anything one says about it in a few words is bound to be oversimple. But Mr Gronow's assertion that 'it reflects the costs of the system today' is particularly odd. If it reflected the short-run marginal costs today then there would be no capacity charge because of the present overcapacity of the CEGB system. The capacity charge makes the tariff reflect long-run marginal costs, imperfectly of course, but assessment of the future is imperfect. The BST, although not the best instrument for appraisal of combined heat and power, is, I submit, a reasonable first approximation. I do not see that Mr Gronow has refuted that submission or supplied a better method.

Related to this criticism is a more general criticism that my paper does not deal properly with the options for tomorrow. I agree with this. One should simulate the Pinkston Scheme over its lifetime against a reasonable background model of investment in nuclear stations. I made it plain in my paper that this was what one should do. The SSEB could do this and may have done so. Why then do they not publish such an appraisal? If the SSEB were to publish the heat profiles expected for the district heating schemes then the public could try, albeit less well, to do the calculation for themselves. Will the SSEB publish these profiles? In the absence of knowledge of the heat demand on the district heating scheme one is forced to approximate solutions.

In any case, assessment of the future is terribly difficult. The SSEB clearly have in mind a large nuclear investment which will push the present, efficient, fossil-fired, high-merit, stations down the merit order, permit them to scrap the present miscellaneous array of old oil-fired stations at the bottom and pre-empt any new investment in peaking and mid-merit plant. But even at present prices for fossil fuel, the fuel cost of the electricity from the combined heat and power scheme (0.47p/kWh with coal at 8.7p/therm) is less than the fuel cost of efficient fossil-fired stations such as Longannet which is about 0.6–0.7p/kWh and fossil fuel prices will probably rise in real terms to some (large or small) extent, thereby increasing the difference. There are also difficulties with nuclear investments to which the Board's present plans for new nuclear plant bear eloquent witness.

Mr Gronow finishes by saying that my conclusions are based not only on wrong premises, but on wrong data—this he is in a better position to judge than I because the data come from the SSEB report.

I hope you will forgive the length of this reply. I have tried fully to argue through the Board's criticisms. Being involved it is difficult for me to judge, but I detect little real argument from the Board, rather the iron fist of authority in a, slightly

imperfect, velvet glove. I concede that the Board know and understand their system incomparably better than anyone else could hope to do. I have great respect for their achievements, but nevertheless have the first stirrings of doubt, and so seek an explanation of discrepancies in the dogma. Thus, may I suggest that the Board publish a *professionally rigorous* account of the scheme incorporating an analysis of the heat profiles they anticipate, the logic of the design and operation which they propose, and their appraisal over the life of the scheme against a realistic background investment in nuclear power.

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