

THE CAUSES OF THE ELECTRICITY CRISIS AND OPTIONS FOR ITS RESOLUTION

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These comments reflect direct involvement with or observation of the electricity reform process since the 1980s, and my experience as a business consumer of electricity. The reform process was generally unsatisfactory and frustrating. Many of the officials and advisors involved lacked the requisite capability and experience, the electricity supply industry was given too much latitude to determine outcomes in its own interest, consumer views were very largely ignored and there was a lack of overall astute guidance and leadership. These failings are largely responsible for the current electricity crisis.

Over the years I, and others – especially the Major Electricity Users Group and the Consumers Coalition 93 (formed in 1993 to draw attention to these problems), have commented regularly on our concerns.

The current electricity crisis is fundamentally different from and more serious than the other post-1990 supply shortages, because it is policy based and will require significant policy changes, well designed and implemented, to overcome it.

Unless it is resolved quickly and effectively it will cause serious medium to long term damage to the New Zealand economy and community.

It is already causing considerable economic damage, through the impact of the very high spot prices on some businesses; and through the impact of a loss of confidence in the electricity supply system and the Government's regulation of it on business confidence and investment.

The fundamental causes of this crisis have been evident and developing for a decade or so.

In spite of increasing grounds for concern in recent years the warnings have been largely ignored.

WHAT IS THE PROBLEM

1. There is a shortage of electricity generating capacity.

No new large hydro power station has been permitted, or built, in New Zealand for more than 2 decades, even though there is an identified hydro generation potential of some 20,000MW (MOWD), of which some 10,000MW was considered to be economic and environmentally reasonable to develop. No development applications for large hydro power stations have succeeded in this time.

No new coal fired power station has been built since Huntly, approved some 2 decades ago, even though there is a very large quantity of coal in New Zealand, and an excellent potential to use seaborne coal for competitive domestic electricity generation.

The development of new gas fired power stations has been stalled by the inability to secure gas supplies.

2. There is a shortage of fuel for thermal generation

There is now a serious shortage of proven gas reserves and of contractable and accessible gas for electricity generation. The Maui redetermination was not a pivotal event in this context. It simply drew attention to and underlined the seriousness of the position that had been allowed to develop over some years. Thus, the easiest and quickest basis for putting new generating capacity in place is not readily available, even though New Zealand is regarded as highly prospective for gas.

There is a shortage of coal for existing coal fired generation. Huntly Power Station does not have enough accessible and usable coal to operate at full capacity through this winter. Domestic and seaborne coal is abundantly available but the necessary mining and infrastructure arrangements have not been put in place.

3. Water inflows to hydro generation storages are low

The New Zealand hydro generation system has little storage capacity and is heavily reliant on continuing good water inflows, which underlines why sufficient reliable and cooperatively operated thermal generation is so important.

In March, when water levels were moderately below average levels and inflows were low, it became clear that there was a crisis as existing thermal generating capacity/fuel availability was inadequate. Now the water position is much more serious, but it only took a relatively moderate water event, of a nature that the system should have been well able to handle, to precipitate a crisis.

4. Lack of generator cooperation

There has been inadequate cooperation between at least the state owned generators, when cooperation between thermal and hydro generators is essential for the efficient use of existing resources, especially water.

5. Poor quality policy and outcomes

The development of policy and regulatory framework for the electricity sector, since the 1980s, has been inept and the resulting industry and its institutions are seriously and fundamentally flawed. Specifically,

- No-one has an obligation to maintain the capability to supply electricity, including the State-owned generators and Transpower.
- None of the State-owned generators are not required to have regard to the national interest.
- Generators have been allowed to vertically integrate and purchase retail capacity, to an extent that they have become largely integrated vertically and internally hedged. A serious consequence of this is that hedge markets have been inadequate, lacking depth and competition. While vertical integration has reduced the risk faced by generators, it has substantially increased it for others, exposing them to the exigencies of a highly unsatisfactory spot electricity market (see below).
- The shock impact on a business of spot electricity prices rising from a typical value of about 5c/kwh, to 20, 40, 60 or 80cents, or more per kwh, can be considerable, on cash flow, profitability and confidence.
- Because of this vertical integration, all of the extremely-high-price impact of the supply shortfall is concentrated on a relatively small number of firms, but a significant slice of the economy.
- It cannot be considered a well designed or efficient market or industry if the higher prices, which are meant to lead to reduced demand, are not signalled to most consumers- who also account for most of the demand for electricity. How then are the higher prices meant to lead to demand side management and energy conservation?
- These serious flaws in the market design explain why the Minister has to intervene and call for savings whenever there is an electricity shortage – because the market is poorly designed and does not work. It is regrettable that the last electricity shortage Enquiry did not recognise that basic point.

- The market rules were originally put to a vote to decide whether they should be implemented. As the generators designed the rules, including the governance arrangements, they were allowed to vote twice, on the production (input) side and on the consumer (output) side, because they also owned retailing capacity. The rules were voted in although consumer vote overwhelmingly against them.
- Most of these failings were not primary the fault of the generators but of those who made the rules under which the generators operated. However, in a business sense, I do think that the generators were at times remarkably short sighted and opportunistic.
- The now-proposed EGEC rules for the electricity sector would, if adopted, make the position considerably worse. They create additional uncertainty and risk for consumers, especially business/productive sector consumers - for no good purpose. They will not be effective in addressing key issues in the electricity sector (Meridian High Court affidavit), but will have a serious adverse impact on the economy (my affidavit and Meridian affidavit). Amazingly, they are still being ardently promulgated by their proponents.
- There are serious transmission constraints throughout New Zealand and little effort has been made to remove them. These have led to the development of regional markets which have, all too frequently led to excessive regional prices.
- While an important justification for the new EGC rules was that they would address this issue, they will not be effective in this regard (Meridian affidavit).
- There have been no channels through which consumers could effectively challenge these unsatisfactory arrangements and policy makers have generally paid little attention to them.

WAS THE CRISIS PREDICTABLE

Yes, it was. Not whether it would be this year, the next or the one after, but key causes of the crisis have been in place for some time and unless there were corrective measure on a timely basis, a crisis was inevitable - as soon as there were moderately low water inflows.

In the early 1990s I initiated a 1000MW coal fired power station, to be based mainly on imported coal. This project was, and I believe still is, the most competitive source for new generation. Some 100 hectares of land was purchased at Marsden Point, near the deep water berths, and pre-feasibility and feasibility studies were completed, including an environmental impact assessment and community consultation. It was then put on hold until there was a reasonable likelihood of gaining a resource consent.

In 1999 Ministry of Economic Development forecasts highlighted the impending problems and identified coal as one of the best remaining options for new generation. Rather than taking the warning seriously the messenger was shot. There have been other similar forecasts, especially from the Centre of Advanced Engineering at Canterbury University.

Concern with the poor outcomes of the electricity reform process led to the formation of the broad-based Consumer Coalition 93, in 1993. Its views have been largely ignored, in spite of its expertise.

In spite of an increasing likelihood in recent years of serious problems nothing was done to avert or minimise the risk or likely consequences.

CONSEQUENCES:

Many businesses currently face serious uncertainty, about the future price of electricity and its availability.

Those that have not followed the industry have been shocked that what was initially a relatively minor issue with supply has caused spot prices rocket, to 20 30 50, 80 or more c/kWh, compared to more like 5c/kwh normally.

The first effect of this is that the costs of the business rise and its competitiveness is eroded. Some capacity or plants will close. The inability to get hedges heightens the risk, and the sense of exposure and uncertainty

However, the second effect is probably the more serious for the future.

Wider knowledge has developed in business recently of the electricity supply risk problems, as the various outlook forecasts and Maui redetermination have received substantial media coverage.

In addition, the dramatically higher recent prices have shocked many managers and directors, previously unaware of the approaching problem, to make urgent and more penetrating enquiry as to the cause of the problem.

The result is identification of the above problems, including the lack of electricity supply development, the lack of gas, the biased and fundamentally flawed industry rules, the unpredictability of future prices or supply reliability, and the persistent unwillingness of the Government to recognise or address these issues.

The probable conclusion is that it would be most unwise to make any investment decision that is based on an expectation of the reliable supply of reasonably priced electricity in future.

Given the shortage of gas, the problem of getting approval for any new generation, the Kyoto commitment and the shonky industry rules, as well as the lead times involved, this is a prudent conclusion. What other conclusion is reasonable.

Moreover, from here on, each price hiccup in the wholesale market reinforces the conclusion that the electricity industry is a high risk element of the economy and one that it would be imprudent to rely on in planning the future operation of a business or contemplating investment decisions. Most of those decisions are now at serious risk, or worse.

There will need to be persuasive evidence of effective action to change this position.

SOLUTIONS:

It is desirable to have a competitive market-based electricity system, but the seriousness of the problems inherent in the current market and industry arrangements necessitate putting a higher priority on implementing effective solutions promptly than on the particularly long-term form of the industry, though it is not a time to get things wrong.

The immediate priorities are:

- Drive for substantial conservation gains – why wasn't this done in March?
- Remove (cap) the extreme spot price signals from the market. Given the market design and industry structure they are basically dispatch values, not market prices.
- Prepare to access additional water in the hydro storages, where this is practicable.
- Abandon the EGEC process and learn from (don't repeat) its serious failing.
- Change the guidance of SOE State-owned generators to cooperate to use available resources efficiently, to have regard to the national interest and to maintain a viable hedge market that operates within reasonable price bounds.
- Maximize the availability of fuel for thermal generation and, to the extent that gas can be obtained, secure additional gas turbine generating capacity on a short-term basis.

The longer-term priorities have been well set out but the Major Electricity users Group.

Key Elements are:

- Separate retailing from generation in the State Sector.
- Fundamentally reform the wholesale market, to establish a proper price formation process, hedge market and governance arrangements.
- Establish an efficient and effective basis for developing new generating capacity.