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Dear Andrew:

Below is SEF's submission on the Reserve Generation Proposal which I have prepared on behalf of Sustainable Energy Forum.

Regards
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Submission: Reserve Generation Proposal

1. Introductory comments: Support for increased investment in reliability

The Sustainable Energy Forum is an informal group of individuals with an interest in the evolution of a sustainable energy future for New Zealand. Membership is unrestricted and ranges from staff in major energy companies to students and retired people. Membership fees are very small. Many members are in active businesses in small-scale energy supply and energy efficiency services.

We strongly support Government's moves to go beyond the framework of existing legislation in taking definite action to improve reliability of supply. The "Autumn 2003 power shortage", together with the demise of the Industry Electricity Governance Board, has created an opportunity for constructive change.

Decreased reliability of electricity supply and increased volatility of prices has followed restructuring not only in New Zealand but also in electricity systems around the world. At the same time societies' needs for a reliable and affordable supply have increased as electronic technologies become pervasive. These tensions have led to development of innovative technologies and management systems to better match electricity demand and supply, both within New Zealand and overseas. But so far no jurisdiction has been able to effectively integrate small-scale supply or demand management into competitive markets.

The Centre for Advanced Engineering's very recent report "Distributed Generation, a Study of Opportunities" confirms SEF's view that distributed generation (CAE defines this very widely) can cost-effectively improve reliability, augment primary energy supply, and reduce loads on networks. But these values are often not recognised, and today's electricity markets can actively discriminate against distributed generation. The proposed Reserve Market has the potential to further discriminate against it.

This submission calls on Government not to commit investment funds for Reserve Generation capacity or fuel storage until the potential for such investment to economically “crowd out” small-scale generation and demand-side management is fully assessed.

We further express concern about the intention that the proposed Electricity Commission, as a Crown Agent, will be required to give effect to Government policy, without the degree of independence that would be seen in the Independent Crown Entity that almost everybody believed was the intended model.

The scope of this submission is broad. Our specific comments on details of the Reserve Market proposal follow an overview of the proposal and also the new Governance proposal. The former logically begins with the definition of the “electricity problems”.

2. Problems in NZ electricity system

A particular problem is faced by businesses supplying small-scale sustainable energy technologies (CAE’s “distributed generation”). New Zealand’s intermittent but recurring power shortages has given rise to a boom-bust cycle of demand for our services, swamping us with work during and for a period after the shortages. But demand drops off as sufficiency or surplus of capacity reappears, as happened subsequent to the 1992 shortage. During the 1990s many of our most active businesses became unviable in New Zealand and moved overseas.

New Zealand’s electricity problems, as identified by our April-May email discussion group, are:

- no incentive to build or maintain reserves of capacity or fuel or demand reduction
- a near complete block-out of small participants, whether providing supply or demand management.
- lack of any convincing future planning or reliable information on which either planning or efficient markets can be based.
- no mechanism to require public purposes (reliable supply, reduction of environmental and social impacts) to be achieved by energy businesses.
- generators, retailers and most local lines companies do not extend their business activities into energy efficiency, presumably because they lose profits when people use less electricity.
- The people now involved in electricity (and gas) reforms are steeped in the culture of “liberalisation”, immersed in supply-side technical detail, and not prepared to consider small-scale sustainable energy options on either supply or demand side.

3. Addressing electricity problems

To successfully address these problems within New Zealand’s current framework will require Government to specify:

- What outcomes are to be required from the Electricity Commission, through modification of the Government Policy Statement on electricity;

- How the Commission will be set up - through changes to the Electricity Act;
- Who will be chosen as Commissioners - a happy combination of expertise, open-mindedness and wisdom will not be easy to find.

Arguably the list above is in reverse order of importance in determining likely outcomes.

3.1 The GPS of Feb 2002 will need to be modified, but with care:

The GPS as it stands is silent on retail electricity markets. But these are crucial as it are the prices to end-use consumers which create the incentives to switch off or switch on - decisions which immediately determine whether high cost generators must run.

The GPS statement: "Responsibility for managing risks relating to supply rests with market participants" will no longer be strictly correct. Government will now take on some risk. This must be carefully specified in the new GPS.

We prefer dry year risk to be managed through mandatory hedges between market participants, an option to be enabled according to the May 20 announcement, but to be given a lower priority than the Reserve Contracts option. Mandatory hedge offers by generators would lead to an increasingly liquid market for risk management, in place of the essentially illiquid market of today. A liquid market opens the door to independent energy traders who can enable small-scale energy suppliers and service providers to gain increased value from their businesses. Note that the vesting contracts set in place by Government in 1996, at the outset of the competitive electricity market did share risks between generators and the then-separate retailers, but the generators were not prepared to renew the contracts, and Government did not press them.

To allow consumers to benefit by being willing to share electricity market risks, tariff options should be available as of right which would allow them to avoid all or part of any "security levy" by accepting significant volatility in their own pricing plan. An evolving "engineered market" as described by the CAE report on distributed generation, would utilise smart metering, real time pricing, remote control and integrated energy management systems. This could progressively extend active demand side management to more and more consumers.

It is important for Government not to compromise core dry-year policies of the 2002 GPS -

that electricity industry participants should ensure that they take responsibility for managing dry-year and other supply risks;

that the government will not step in to protect those who fail to provide adequate protection.

It is equally important to retain other parts of the GPS that would appear challenged by the 20 May announcements - e.g.

Minimisation of greenhouse gas emissions

Downward pressure on electricity costs and prices
 Tradeoff between quality and price linked to customer preferences (do most customers really prefer a 1 in 60 security standard given the projected costs of providing that?)

With the demise of industry self-regulation, the GPS will need an additional section covering the principles of public consultation which are to be adopted by the Commission.

The function of market surveillance and the power to impose sanctions, now encompassed in the private contract that created the wholesale electricity market, will need to be specified in the GPS and assigned to an appropriate body. As the taxpayer gains (through dividends to the SOEs) from the exercise of market power by generators, a surveillance committee independent of government is required.

3.2 Organisational structure of Commission

The Commission acting as regulator needs to be an Independent Crown Entity, as it should not be required to give effect to government policy. This is essential to ensure reasonable stability in market rules and other regulatory parameters, to ensure a stable investment climate for businesses.

Any commercial role taken on by the Crown, such as purchasing of Reserve Capacity, should be completely separated from the regulatory and governance roles.

The regulatory work of the Commission should not be carried out in a vacuum. A range of consultation options would exist:

- full public consultation as is done in U.S. electricity regulation
- semi-judicial hearings as done by the NZ Commerce Commission
- formal consultation with a stakeholder committee
- management as a Crown Agent advised by a government department, with no consultation rights specified (but intrinsically subject to extensive lobbying)

Effective consultation requires a real understanding of the complexities of electricity markets as well as ability and willingness to represent interests of stakeholders. The Industry Electricity Governance working groups did not effectively represent small consumers and made no attempt to represent "distributed generation", energy efficiency providers, or environmental interests - all strongly impacted by the electricity markets.

We recommend a formal consultation process with stakeholders representing both electricity market participants and retail consumers and suppliers. On the wholesale side, the assembly of price makers - fuel supply providers, generators, transmission, local networks, retailers, and major electricity users. On the retail side, the price takers - small consumers, small providers of energy services including energy efficiency and distributed generation, and environmental advocates. That comes to a committee of nine - any larger might become unwieldy. The Commission should fund the Committee and the expert advice which stakeholders will require. Self-funding is inappropriate (for

example) for generators, who represent around a half dozen players with differing interests. Self-funding is impossible for retail side representatives. Publication of meeting papers on the web will ensure stakeholder advice to the Commission is contestable.

Whatever institutional model is chosen, it will be important to open the forecasting and economic modelling to public scrutiny. Desirably the forecasting model itself will be open-source, so its design can be challenged and modified. The simple economic models used to date do not incorporate network effects, which make electricity uniquely difficult to model. Nor does present modelling incorporate any active role for the demand-side of the industry – it thus cuts out the most cost-effective ways of balancing supply and demand

Independent market surveillance and provision for remedial action needs to be provided, as a means of mitigating market power, especially that of the dominant “gen-tailers”. The performance of retail electricity markets is arguably as important as that of the wholesale market. We anticipate that some regulation of generating and retailing activities will be proved necessary from the outcomes of both market surveillance and economic modelling.

The Commission’s performance indicators should be linked to the broad purpose statement of the GPS, - “efficient, fair, reliable, and environmentally sustainable”. Objective measures of each can be devised. For “environmentally sustainable” we propose to include the degree to which New Zealand’s electricity industry moves towards its obligations under the Kyoto Protocol.

3.3: Choice of Commissioners

At least one Commissioner should have expertise in distributed generation, including the techniques needed to interconnect small generators into the national grid. At least one should have wide understanding of the needs of small consumers and the barriers to their cost-effective investment in demand-side management and energy efficiency. At least one should have an understanding of both Kyoto obligations and local and regional environmental impacts.

4. Response to Discussion Paper specific questions

- **Comments** are sought on the most appropriate length of the contracts and how often the Commission should let tenders.

Ringfencing of reserve generation contracts is not appropriate because it would make less effective use of capacity which could otherwise meet other economic and system reliability needs. (Just one example of this is given in Section 5.) If contracts are not ringfenced, then the priority would be to have a relatively small number of reserve generation “products”. Liquidity of any hedging contracts takes much greater priority over than precise matching of contracts with the needs perceived at any time.

- **Comments** are sought on the quantity of ring-fenced capacity required and the balance between new and existing generation in that portfolio.

As noted above, the reserve and “normal” markets will be all but impossible to separate – as noted in the Treasury advice released under the Official Information Act, and also canvassed thoroughly at the Energy Federation’s conference of June 17. As the demand-side becomes progressively empowered to respond to high spot prices, the requirement for high-cost

generation will reduce. Therefore “reserve generation” contracts, if used to cover a temporary shortage, should be relatively small and short-term.

- **Comments** are sought on the appropriate price(s) and conditions under which reserve generation should be offered to the system operator for dispatch.

The discussion paper appears to anticipate reserve generation being called on when spot prices rise only a little higher than the short-run marginal price of the most expensive generator. This would appear to give too little revenue to fund even ordinary new capacity, to say nothing of seldom-used reserve capacity. Spot prices ranging from 15-30c/kWh are insufficient to attract demand side management, or DG opportunities, or new renewable primary energy resource development (e.g. solar water heat). Overseas jurisdictions that cap spot prices set much higher caps.

- **Comments** are sought on whether a levy on wholesale electricity prices is fair and efficient, or whether some other form of cost recovery would be better.

A levy would put the cost of “reserve capacity” equally onto all electricity users. But the advantage of capped spot prices accrues to those who pay spot prices directly – major electricity users, unhedged retailers, and generators subject to risks of shortages. This would be effectively a transfer of wealth from small consumers to major electricity users and some shareholders.

The most effective type of funding of reserve capacity would be derived from the high spot prices themselves. A precedent for this is use of the economic rents that arise from constrained transmission systems – Transpower rebates those excess profits to the connected lines companies, to be returned to their customers and eventually (hopefully) to the end-consumers. There is theoretical backing for either rebating excess spot market profits, or redirecting them to overcome the constraints that gave rise to the shortage. The implementation of that would need to be very carefully worked out.

5. Example of potential for demand-side and small-scale contribution to Reserve Capacity: Standby generators

The CAE report quoted in Section 1 estimates there are some 300 MW of standby diesel and gas-fired generators in NZ, perhaps 10% of which could participate in electricity markets under today’s market structure. Some are in rural locations subject to excessive peak loads, others in commercial buildings and hospitals as part of standby power systems, others in a multitude of locations for as many reasons. Most of these would need upgrading to reduce noise and pollution and address technical interconnection issues, but at much lower cost less than the investment cost of a 190 MW peaking diesel generator at Otahuhu. These would then be available to challenge high spot prices as well as to provide peak support and cover for supply interruptions. If routine maintenance running periods were timed for high peak demand periods, this could benefit owners as well as system reliability.

At least two local networks – Orion and Eastland – are installing diesel generators as a cheaper alternative to expanding their networks and/or paying Transpower to increase transmission into their areas. Eastland goes farther again and is actually reducing network investment in remote rural networks, by encouraging low-capacity connections and penalising high capacity low throughput connections (such as shearing sheds, infrequently used water pumps and holiday houses). Energy efficiency and solar heating are reducing loads, and six 1 MW diesel generators will meet peak demands and provide emergency service. Eastland’s remote network will never become uneconomic – in 2013 or any time thereafter. Progressive renewal and adaptation of

interconnection equipment will safely allow for two-way power flows, leading to a system far more robust than today's.

As other networks see the advantages of that strategy, we can expect numbers of substantial standby diesel generators to increase dramatically . These should be allowed also to generate (subject to environmental constraints and carbon tax) to reduce both ordinary and extreme dry-year constraints as well as to reduce local network costs and Transpower charges. Thus capacity able to meet dry-year events will naturally increase, with no extra funding.