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MINISTERIAL REVIEW OF ELECTRICITY MARKET:

IMPROVING ELECTRICITY MARKET PERFORMANCE DISCUSSION DOCUMENT

SUBMISSION TO THE MINISTRY OF ECONOMIC DEVELOPMENT

16 SEPTEMBER 2009

BACKGROUND TO IPENZ

The Institution of Professional Engineers New Zealand (IPENZ) is the lead national professional body representing the engineering profession in New Zealand. It has approximately 10,000 Members, including a cross-section from engineering students, to practising engineers, to senior Members in positions of responsibility in business. IPENZ is non-aligned and seeks to contribute to the community in matters of national interest giving a learned view on important issues, independent of any commercial interest.

THIS SUBMISSION

This submission is structured around the consolidated recommendations that were presented in Section 7 of the discussion document. General comments are provided in relation to the areas for improvement, followed by specific comments on the specific recommendations.

SUBMISSION

IMPROVING THE MANAGEMENT OF DRY YEARS

- 1. Require retailers to make payments to consumers in the event of a public conservation campaign or enforced power cuts, with a graduated scale reflecting the level of nationwide savings (as determined by the System Operator), and with a minimum payment of, say, \$10 per week.**

The first steps in improving the management of dry year is to recognise that dry year management starts in January, not when the lakes are already at a low level. It is important to incentivise having sufficient water in the lakes in early April to ensure that if the rest of the autumn and early winter turned out to be dry, there would not be a shortage. The objective of dry year management is to make the optimal trade-off between the cost of reserve capacity and the costs to the economy of an inadequate or excessively expensive supply of electricity.

IPENZ appreciates the objectives listed in Paragraph 33, in particular to incentivise the conservation of electricity. Despite this, we question whether the provision of a payment from retailers to consumers is the best solution and would incentivise a behaviour change in retailers. We also consider that operating a payment system would be complex, particularly given the recommendation that there be exemptions from the payment as detailed in Paragraph 34. The payment would add to the cost structure of retailers who would have to increase tariffs to recover the costs.

The main issue with the management of dry years is that if the generator/retailers faced the correct incentives (that is, they weren't able to rely on "free" public savings) then they would be able to make these sort of arrangements with their own customers. Centrally regulated arrangements such as those proposed are likely to create significant market distortions and punish both the "good" and "bad" market participants.

The electricity market does not take into account the cost to the economy of an inadequate supply. This would be resolved if any load involuntarily disconnected was treated as if it was a demand-side bid at the value of the lost load (VoLL). This is the economic cost of lost productivity resulting from the loss of electricity supply. This is what happens in Australia, where the cost has been A\$10,000/MWh and is now going up to A\$12,500/MWh. The VoLL value could be paid to consumers as compensation. Retailers would be very careful to cover their sales obligations so they were not exposed to it (as in Australia), and by doing so outages would be avoided.

IPENZ believes that with this, it would be unnecessary to have a public conservation campaign.

- 2. Put a floor on spot prices during any public conservation campaign or during any enforced power cuts in a dry year of, say:**
 - 2.1 \$500/MWh (50c/kWh) when a public conservation campaign is activated.**
 - 2.2 \$1,000 - \$5,000/MWh (\$1 - \$5/kWh) if and when forced power cuts are activated.**

These floors on spot prices start to create a heavily regulated market that becomes worse than a regulated monopoly. The design and operation of these arrangements would be complex and difficult. By simply using the VoLL pricing outlined above these interventions could be avoided.

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One IPENZ Member pointed out a particular issue that could be addressed through spot prices – relating to the landfill gas industry. Currently some landfills in Auckland have sufficient gas to install further generators, but while exposed to low spot prices, it is a more secure option for the company to consider installing an additional flare to simply destroy this gas. At times when the company turns off renewable generation to favour flaring (because the spot price does not cover the cost of operation), there are thermal generation facilities (coal) that continue to operate.

Therefore IPENZ suggests a greater recognition of renewable energy by proposing a floor (minimum) spot price for electricity sold into the grid for particular industries with positive environmental benefits such as the waste industry.

3. Clarify roles and responsibilities for security of supply (as set out in Table 2 on page 21).

The review does not adequately explain what confusion exists or explain the allocations in Table 2.

4. Phase out the reserve energy mechanism, and reassign the Whirinaki power station to an SOE or sell it.

Resolution of this issue relies on modifying the design of the electricity market so that plant like this can be provided and operate on a commercial basis. Currently this is undermined by the “free” public conservation process and the subsidising of Whirinaki by consumers through the security of supply levy.

IPENZ believes what is needed is a robust market design that supports the provision and operation of such plant on a commercial basis. This is important as there are a number of different technologies and demand-side options. Innovative and cost-effective solutions are more likely to evolve through market processes.

5. Alternatively, if the Government wants to retain the reserve energy mechanism as a backstop, then it should:

5.1 Reassign Whirinaki to an SOE or sell it.

5.2 Ensure that a mechanism is developed (such as a surcharge on spot prices) through which parties that benefit from any reserve energy when it is called on (that is, parties that are exposed to spot prices) contribute to the standing costs of that reserve energy.

The response to 5.1 is answered above. Regarding a mechanism through which parties contribute to the standing costs, it is unfair to charge people a levy if they have already made their own back up arrangements. It is also it is administratively very difficult to identify these parties and then the only option is to charge the “free riders”.

6. Require SOEs to disclose their risk positions and other relevant information in the same way as private-sector companies listed on the Stock Exchange, to improve the quality of information available on risk and sharpen risk management incentives.

IPENZ supports the provision of information to inform market participants. We support the recommendation to require SOEs to disclose their risk positions and other relevant information. However an analysis of whether the NZX continuous disclosure rules will be sufficient is required. The requirement may need to provide direction on the risk specific to this industry and some key results should be mandatory – for example, hedging risks, dry year risks, the risk of operational failure, and intermittent generation risks.

- 7. Investigate developing terms and conditions for accessing 'reserve water' in lakes in dry year emergencies which cap benefits to generators and provide for compensation to affected communities and mitigate or avoid environmental effects.**

IPENZ supports the use, when the alternative is large-scale blackouts, of water below normal minimum resource consent levels in extreme dry years. However, we question whether accessing water below absolute minimum levels is the best solution to overcoming dry-year shortages. We consider that New Zealand needs to have sufficient generation available to minimise shortages and that reserve energy should be used in preference to accessing water below absolute minimum levels given the environmental effects that may result from using this water.

IPENZ notes that, according to Paragraph 47, resource consent wording in relation to water below normal minimum resource consent levels is unclear or outdated. IPENZ supports clarifying this wording.

RESTRAINING THE COSTS OF GENERATION

- 8. Ensure, when making decisions on climate change policy, that full weight is given to the importance of providing certainty for investors including, to the extent possible, providing for stability and predictability on the future cost of carbon and other emissions.**

IPENZ supports this recommendation, noting the proviso that certainty be provided to the extent possible. There has been concern raised by some Members for the situation where there is spill from hydro lakes at the same time as thermal generators are operating. The ETS is intended to place a price on emission externalities to discourage thermal generation and incentivise hydro generation – but the recently announced proposals for the ETS will involve a price cap of \$25/tonne of carbon dioxide. This raises the question whether this price will be sufficient to reduce the number of instances where thermal generation replaces hydro generation. IPENZ would like this matter to be considered in the wholesale market design.

- 9. Ensure that the current reviews of the Resource Management Act and water allocation consider:**
 - 9.1 Whether and how the 'call-in' process could be used to better effect for generation projects (new and existing).**
 - 9.2 Other fast-track mechanisms for consenting (or re-consenting) nationally significant generation projects.**
 - 9.3 Providing for water and geothermal rights to match the life of the assets.**
 - 9.4 Whether certain types/sizes of generation could be deemed to be a permitted activity in predefined circumstances and areas.**
 - 9.5 The terms for consents, particularly the lapse provisions, to better recognise the nature of large-scale generation investment projects.**
 - 9.6 Whether powers such as compulsory acquisition of land, with appropriate compensation provisions, should be available for nationally significant generation projects.**

IPENZ submitted on the Resource Management Act (Simplifying and Streamlining) Amendment Bill in April 2009. In that submission we suggested that large electricity

generation projects should be eligible to fit in the “nationally significant” criteria. We therefore support **recommendations 9.1 and 9.2** and the fast-tracking of nationally significant electricity projects as for all nationally significant projects.

In relation to water rights, geothermal rights and **recommendation 9.3**, the Electricity Commission¹ assumes plant lives of 40 years for a hydro plant and 25 years for a geothermal plant respectively. Both water use and geothermal use are managed under the Resource Management Act 1991 through resource consents. The maximum period that a resource consent can be granted is 35 years.

We consider that water rights and geothermal rights for electricity generation should be provided for as long as possible, up to the current 35-year period. The review process of the existing RMA and the requirements for subsequent consenting are appropriate and allow the opportunity to consider performance, and the availability and best use of water. The amount of take for geothermal plants should be related to field capacity and should be flexible, and if, as time goes on, if the field is not declining as fast as predicted – which usually happens – then that take should be allowed to increase to match the rate of depletion (as a percentage of the field capacity) that was originally envisaged.

IPENZ considers it appropriate that electricity generation systems continue to require resource consents as these ensure systems are well managed and do not cause significant negative impacts on neighbouring properties and the environment. We therefore do not agree with **recommendation 9.4**, which allows some types/sizes of generation to be permitted activities. We can envisage few cases where the environmental effects would be less than minor and are thus unable to justify this status of permitted activity.

In relation to **recommendation 9.5**, and the terms for consents, the comments have equal application to other major infrastructure such as roads, bridges and wastewater treatment plants. Therefore, in this respect, there is nothing special about generation plants and the general provisions in the RMA, particularly as amended, address any concerns, and should apply to all infrastructure.

However in accordance with our comments on **recommendation 9.3**, we do recommend that resource consents be granted for as long as possible to give investors and operators certainty and to encourage the investment in new generation.

Regarding **recommendation 9.6** we consider that compulsory acquisition should follow the Public Works Act, as all infrastructure should. Again there is nothing special about generation infrastructure. We note the acquisition and compensation provisions of the Public Works Act 1981 are being considered for integration in Phase 2 of the Review of the RMA.

10. Ensure that the current petroleum resources review takes full account of the importance of gas to electricity generation using existing or new assets.

IPENZ notes the contribution that gas makes to generating electricity in New Zealand. IPENZ supports the review considering the importance of gas to electricity generation.

11. Improve the quality of published information on gas reserves.

IPENZ supports this recommendation.

12. Identify barriers to the development of geothermal energy which can and should be addressed by the Government.

¹ Electricity Commission web site:

www.electricitycommission.govt.nz/pdfs/opdev/transmis/soo/pdfssoo/2008/GEM-input-data.xls

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IPENZ supports this recommendation and considers that geothermal energy is likely to develop further in the future. One thing that could be done is specify the annual take for a geothermal plant, for instance, on a three-year rolling average basis.

There is a widely held belief that geothermal plants can only operate at base load but this is not correct. Overseas, many geothermal plants do load following, and for a while, Poihipi geothermal plant ran for about 12 hours per day at full output. They can contribute to peaking, complement wind power, and run continuously in a dry year while backing off as soon as it begins to rain.

13. Consolidate responsibility for the promotion of energy efficiency in EECA, and remove it as a responsibility of the electricity regulator, while:

13.1 Carrying out a strategic review of EECA to ensure it is well-focused and performing effectively.

13.2 Transferring best practice approaches developed by the Electricity Commission where possible.

13.3 Reviewing funding for EECA, with a general principle that funding should be through levies where the beneficiaries can be clearly identified and administrative (collection) costs are low.

IPENZ considers that the overlap between EECA and the Electricity Commission in the area of electricity efficiency is somewhat overstated and roles have been reasonably well defined in Memorandum of Understanding between the Electricity Commission and the Energy Efficiency Conservation Authority. Clearly energy efficiency (home insulation, etc) should be the responsibility of EECA, but IPENZ is less convinced on the arguments on where electricity efficiency should lie. In our view, the Electricity Commission's programmes have been very successful as have been those of EECA.

With **recommendation 13.3** we expect that there will still be a significant number of activities where beneficiaries are unable to be identified and will be of public good nature. These activities will need to continue to be funded by government.

Also, some consumers (especially large ones) make their own efficiency arrangements, and they should not pay a levy to subsidize others. Therefore any funding mechanism would have to consider how to allocate cost only to those beneficiaries who do not undertake electricity efficiency measures. It is suggested that this would not be feasible.

14. Review whether there are likely to be net benefits, compared to alternatives, in developing a National Environmental Standard for small-scale distributed generation, such as solar photovoltaics, micro-wind turbines and solar water heating panels.

IPENZ strongly supports the use of national policy instruments such as National Policy Statements (NPS) and National Environmental Standards (NES) on the assumption that they provide a public benefit over the alternatives.

IPENZ provided a submission to the Board of Inquiry considering the National Policy Statement for Renewable Electricity Generation in October 2008. In that submission IPENZ noted that the proposed NPS needed to ensure flexibility for future technologies. If a NES was developed for small-scale distributed generation, we recommend that the NES provide flexibility to ensure that it applies to future technologies.

As noted previously, IPENZ also submitted on the Resource Management (Simplifying and Streamlining) Amendment Bill. In that submission IPENZ suggested that an NPS and

NES should be developed for all major infrastructure. We believe that NPSs can inform the identification of what constitutes a project of national significance.

We also suggested in that submission that an NPS and NES should be developed to cover all electricity generation, not just renewable electricity generation (noting there is a NPS for transmission). We therefore recommend that a NPS and NES be developed to cover all electricity generation, including renewable electricity generation and distributed generation and these be sufficiently flexible to allow for future technology advances.

IMPROVING PROCEDURES FOR UPGRADING TRANSMISSION SERVICES

IPENZ supports the upgrading of the transmission services. We note the limited investment in transmission during the 1990s and the issues noted in Paragraph 84. We note and support the increased investment planned by Transpower, as shown in Figure 7.

- 15. Amend the Grid Investment Test to make it clearer, simpler and less prescriptive, and to take into account wider competition benefits.**

IPENZ has no comments on this recommendation.

- 16. Transfer approval of major grid upgrades to the Commerce Commission to ensure integrated consideration of transmission expenditure, performance and prices, subject to rules on service and reliability standards, pricing methodologies and the grid investment test set by the electricity regulator.**

Currently there is an MOU between the Electricity Commission and Commerce Commission on grid upgrade approval processes and the Commerce Commission takes into account the Electricity Commission's approval decisions and there is good co-ordination between the two.

The Electricity Act and the Administrative Settlement between Transpower and the Commerce Commission currently provide for the transfer of regulation of Transpower to the Electricity Commission.

Transmission is an integral part of the electricity market and regulation of it should be considered in light of this.

While IPENZ does not have a view on which body should be responsible for this activity, if this goes to the Commerce Commission they will need to have a high level of technical knowledge to approve the grid upgrades proposed by Transpower. For the Commerce Commission to be an effective regulator it will also need to have expertise on the entire supply chain – wholesale energy, ancillary services (voltage support, reserves, etc), transmission, distribution and retailing.

TO IMPROVE WHOLESALE AND RETAIL COMPETITION AND HELP RESTRAIN PRICES

IPENZ notes that lack of competition is an issue in many sectors of the small, isolated, New Zealand economy. In general, the development of mechanisms to increase competition and keep downward pressure on prices is supported.

- 17. Subject to further analysis following submissions, restructure SOE assets, by either:**

- 17.1 Option One: Create a new SOE generator-retailer comprising the Huntly and Manapouri power stations, and, additionally, transfer Tekapo A and B to Genesis and Whirinaki to Meridian.**

17.2 Option Two: Transfer the Huntly power station to Solid Energy, the Manapouri station to Genesis and the Whirinaki station to Meridian.

17.3 Option Three: Transfer the e3p and P40 power stations from Genesis to Meridian and the Manapouri power station from Meridian to Genesis.

IPENZ does not support restructuring the SOE assets as this would be very disruptive and costly – with benefits that are marginal at best. Also, some generators have developed a particular brand that would be lost. It may be better for the SOEs to contract among themselves to better manage their risks and resources – that is, arrange better hedges between each other to cover the difference between dry years and wet years. Other market design changes such as VoLL pricing and transmission hedging would achieve similar outcomes at a lower cost.

18. Introduce, as a priority, a transmission hedging mechanism to assist retailers manage risks created by transmission congestion.

This congestion problem could be overcome by allowing competitors to buy Financial Transmission Rights (FTR) entitling them to a share of the rents on congested lines. This effectively allows them to lease part of the transmission capacity, for a fixed and stable fee. FTRs were intended to be an integral part of the New Zealand market design but, despite an abortive attempt in 2002, they have not yet been implemented. Recent industry debate has centred on a similar, but more approximate, regime involving Locational Rental Allocation (LRA), as an alternative to implementing a full scale FTR market.

With neither in place, the degree of competition, while arguably adequate overall, may remain inadequate in some regions. Arguably, the whole South Island could fall into that category due to difficulty in providing adequate southward flows, in dry years, although that concern should be relieved by the current HVDC expansion. On the other hand, there is a danger that an overly generous LRA regime, for example, could effectively remove all locational differentiation, and thus remove desirable incentives for regional investment in generation, and demand-side management. The LRA and/or FTR design could just relate to constraints (and not include losses), so this would not remove all locational differentiation. Also LRAs could just apply to load.

In the limit, just averaging prices over a wider zone, as in Australia, could enable more aggressive retail competition. But it would also create significant dispatch inefficiencies.

These issues relate to the wider concerns of transmission pricing, and the degree of locational differentiation that provides with respect to investment signals, particularly for generation. The status quo does charge generators for “constraint costs”, and does distinguish between HVDC and North Island/South Island cost components, with a relatively greater focus on peak capacity charges in the upper part of each island. But charging South Island generators for the HVDC does not actually give them the correct marginal signal for investment, once the HVDC costs have been committed, while the North Island/South Island charges do not really reflect the implications of generator siting decisions for reinforcements that may be required deeper in the network.

Thus IPENZ believes that in order to improve competition, the refinement of locational price signalling to encourage economically efficient generation investments is a major issue that needs to be addressed in the current review of transmission pricing arrangements.

19. Facilitate greater demand-side participation in the wholesale market, including providing for:

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19.1 More accurate forecasting of spot prices.

19.2 Real-time (not ex post) spot prices.

19.3 Demand response to be dispatched in the same way as generation.

IPENZ supports demand-side participation and these specific recommendations. The benefits of improved demand-side participation are clearly documented and it is also clear that the current market design could be significantly improved in this area with pricing that allowed consumers greater certainty, improved cost-reflective pricing, and enabling mechanisms and incentives to participate in the market to reduce the overall costs of supply.

20. Allow lines companies to provide electricity retailing services in their local areas subject to:

20.1 Retaining the existing provisions in the Electricity Industry Reform Act that:

- **Require corporate separation and compliance with arms-length rules between lines and energy (generation and retailing) businesses.**
- **Require lines companies to put in place transparent and non-discriminatory use-of-system agreements with their retail business.**
- **Have the effect of prohibiting common ownership between lines businesses and generators owning more than 100MW of generation connected to the national grid.**

20.2 Prohibiting a retail business owned by a lines business from buying the customer base of an existing retailer (to ensure there is a net increase in retail competition).

IPENZ does not support the ability for lines companies to be involved in retailing as lines businesses are natural monopolies, subject to a comprehensive regulatory regime, whereas retailers act in a competitive market with little in the way of regulation – these are two different cultures. It is also important to ensure transparent and open access to distribution for competing retailers and generators – and for lines businesses to also be involved in retailing will require complex regulation and monitoring.

In order to improve competition, the refinement of locational price signalling through FTRs as discussed above in question 18 will reduce locational risks. This will assist with competition in remote areas in particular.

21. Develop more standardised tariff structures and business rules for use-of-system agreements for lines businesses to facilitate access by retailers.

This is supported as is the work of the Electricity Commission on model pricing structures and rules.

22. Ensure that guidelines and standards on smart meters provide for (or allow upgrades for) energy efficiency capability, open access communications, customer switching, and the development of smart networks.

IPENZ supports the installation and use of smart meters. We consider that smart meters are important as they place responsibility on individual users of electricity and provide opportunities for householders to make changes to reduce their electricity usage. We

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also appreciate the role that smart meters can play in management of the grid. We therefore strongly support **recommendation 22**.

New Zealand is now clearly well behind internationally in the development of home area networks that provide energy management services and is missing out on opportunities to improve innovation and productivity. A standardised, open-access communications system relating to the meter and the information specific to the consumer's premises would enable new technologies that improve efficiency and information to be deployed over time. However, it needs to be recognised that the smart metering technology, including smart appliances, is probably 10 years away.

The current industry metering compliance rules and milestones should be reviewed to enable the optimal investment and deployment of these metering technologies.

23. Encourage retailers to make tariffs available, as an option for consumers that provide incentives to better manage electricity consumption including through shifting load to off-peak times and conservation during dry years.

IPENZ supports the development of smart retail tariffs that provide incentives for consumers to participate in demand-side management. This should be achieved through obligations on networks and retailers to develop pricing options that achieve this end.

24. Ensure that all wholesale market data is publicly released the following day to improve scrutiny of and by market participants.

IPENZ supports this recommendation and the move to provide more regular data.

25. Encourage and facilitate customer switching through:

25.1 Providing \$5 million a year, from electricity levy funding, to promote the benefits of customer switching. The fund should be contestable, and should continue for as long as demonstrated benefits, in terms of savings to consumers, exceed \$10 million a year.

25.2 Shortening the timeframe for switching between retailers from 23 days to three days for customers with smart meters.

25.3 Improving the Powerswitch website by requiring retailers to provide updated information to improve its accuracy and coverage.

Overall, IPENZ supports the ability for customer switching, but one of our Members has pointed out that for many products, if the difference in price is around 15 per cent, most customers won't bother to switch suppliers. It would be difficult for many retailers to offer margin of 15 per cent. In other words there is considerable inertia and there is relatively low price elasticity. Therefore, IPENZ believes that initiatives to promote switching will be of limited effectiveness and therefore should not incur ongoing costs to government.

TO IMPROVE THE GOVERNANCE OF THE ELECTRICITY SECTOR

26. Replace the Electricity Commission with an Electricity Market Authority (EMA) as follows:

26.1 The EMA would be an Independent Crown Entity under the Crown Entities Act 2004.

- 26.2 The EMA's objective would be to ensure the efficiency of the electricity market, including reliability, for the long-term benefit of consumers.
- 26.3 Board members would be appointed by the Governor-General on the recommendation of the Minister of Energy and Resources, and nominated as follows:
- Two members nominated by Consumer New Zealand and Business New Zealand respectively.
 - One member nominated by generators and retailers.
 - One member nominated by lines businesses including Transpower.
 - One member and an independent chair nominated by the Minister.
- 26.4 The Minister would only be able to recommend appointments of persons nominated by market participants (as applicable), but would not be required to accept any particular nomination. Criteria for members would be set down in legislation (such as independence, expertise, and ability to work as a Board member).
- 26.5 The functions of the EMA would be:
- Developing and approving market rules (including guidelines and model contracts).
 - Monitoring compliance with rules and, through a Rulings Panel, penalising breaches.
- 26.6 The EMA would be required to set up working groups to prepare proposed rules, and the board would be required to hear representations on proposed rules from the chair of working groups before making decisions.
27. Transfer approval of major grid upgrades to the Commerce Commission as part of its overall regulation of Transpower under Part 4 of the Commerce Act, but with reliability and service standards, transmission pricing methodologies, and the Grid Investment Test set by the EMA.
28. Transfer the following functions to the System Operator:
- 28.1 Information and forecasting on security of supply. Long term forecasting, and preparation of the 'Statement of Opportunities' would be undertaken by MED alongside its preparation of the Energy Outlook.
- 28.2 Emergency management.
- 28.3 Operation of reserve energy (if retained).
- 28.4 Contracting for market operations (for example, market clearance and reconciliation) pursuant to rules set by the EMA.
29. Require the EMA to set up and service a Security and Reliability Council, comprising senior level persons from the electricity market, to meet periodically to help monitor and provide advice on the System Operator's performance of its functions and on security of supply issues generally.

IPENZ does not have a view on which body should be responsible for the various activities. However, representative bodies that cannot practically represent every interested stakeholder are unlikely to be effective and or achieve the objective of political independence. A skills-based selection process would be more appropriate.

Reallocation of activities between various agencies is likely to either reduce the overall level of competency deployed through losing personnel impacted by the change or increase costs and duplicate work.

Activities such as forecasting and preparing the Statement of Opportunities need to be independent of both political processes and major asset owning industry participants.

One significant structural issue that does not appear to have been considered is the creation of an independent System Operator.

CONCLUSION

IPENZ appreciates the opportunity to make this submission and is able to provide further clarification if required.

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