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RAPL – Submission on NEG Draft Design Consultation

The National Energy Guarantee (NEG) has three primary aims - provide *Reliable* electricity which meets a national *Emissions target* at *Minimum cost* to consumers. Under the NEG, it is proposed that retailers will be obliged to meet both the reliability and emissions targets, with the market ensuring minimum cost to consumers.

Context – National Electricity Market (NEM)

The NEM was designed around a dispatchable generation fleet which competes on price to generate and sell electricity. The NEM enables generator bids from minus \$1,000/MWh up to \$14,200/MWh, with the price earned by all dispatched generation in a given market period set at the price where supply meets demand. Characteristics of the NEM include:

1. Short-term pricing is volatile as different generators compete to meet the constantly changing system demand. Most customers want price certainty, so dispatchable generators often provide financial contracts to retailers and customers which fix the wholesale price of a specific quantity of electricity in each market period for both parties months or years ahead.
2. Some dispatchable generators choose not to take fixed-price contract risks with customers and instead earn income solely from market sales (merchant risk). Such generators still provide valuable competition in the market.
3. Negative bids were designed to ensure dispatchable generators could bid to remain on-line at minimum output to manage their contracted price risks. Conversely, dispatchable generators need contracts in place to enable negative bidding without taking excessive risks.
4. If dispatchable generators like coal-fired thermal or gas combined cycle (CCGT) are not dispatched by the market they must be idled, and it may take hours to

restart. When forced off-line, these generators cannot mitigate price risks in their electricity contracts, so denying dispatch to these generators essentially denies them the ability to provide firm long-term contracts to consumers.

The introduction of a large supply of subsidised, intermittent wind and solar energy (Renewables) via the Federal Government's Renewable Energy Target (RET) has destabilised both the physical electricity supply and the associated financial contract market with the consequent generator closures contributing significantly to the approximate doubling of wholesale electricity prices over the last five years. Intermittent Renewables generators cannot provide the long-term, time-of-day contracts required by consumers to manage price risk. Consequently, Renewables are typically financed by a contract with a retailer for a fixed-price, 'bundled' (renewable certificate plus energy price) payment for each MWh generated, with the total price independent of the time-of-day of the market period and the market price. With such a contract in place, a renewable generator can bid minus \$1,000/MWh in the NEM to earn (say) \$65/MWh – without further financial risk for non-dispatch other than to meet an annual minimum amount of generation.

The NEM has around 5,000MW of wind and solar (ex-rooftop) capacity with another 30,000MW committed and proposed. These technologies produce a highly variable, co-correlated power supply which cannot be forecast accurately over the medium term. This has seriously distorted the market, particularly during temporary Renewables energy gluts when dispatch has been denied to thermal generators operating at minimum output. As a result, without the ability to ensure dispatch, thermal generators cannot prudently write long-term, fixed price contracts with retailers and consumers. Without these contracts, thermal generators cannot bid negative and compete to stay on-line at minimum output levels. The loss of reliable dispatch has been an important factor in the loss of over 5,000MW of dispatchable generation from the NEM since 2012, and the consequent reduced competition has increased NEM wholesale prices.

NEG – Reliability Requirement

The NEM design provides system reliability as a consequence of some dispatchable generators competing to sell financial contracts which fix or cap prices for retailers and customers. System reliability arises from these financial contracts because contracted generators are exposed to extreme market prices if they cannot generate sufficient MW when the market price spikes. This financial liability is the prime driver ensuring that dispatchable generators provide sufficient generation; in turn providing system reliability.

In principle, the proposed NEG reliability requirement (NEG Consultation Paper, Chapter 5) strengthens retailer accountability to contract reliable supply for the future which should complement and improve the existing market and regulatory mechanisms. Where some retailers or customers 'under-contract' their offtake, regulators should determine if additional capacity/reserves are required to provide

additional reliability and the costs (or penalties) should be allocated to uncontracted retailers and customers.

The pre-condition needed to forecast accurately and then achieve system reliability at minimum cost is to ensure that low-cost dispatchable generation (coal and CCGT) have confidence to provide long-term financial contracts to retailers and consumers. The NEG Consultation Paper relies on retailers to support a range of different generation technologies through financial contracts. However, the obligations under a financial contract can be met by paying the difference payments and does not require the physical supply of electricity.

The only way to ensure physical reliability is to have sufficient capacity on-line holding spinning reserve (i.e., coal plant and CCGTs must be able to be dispatched at mingen levels). Under current dispatch rules, wind takes priority, and hence, forces thermal plants off-line. To remedy this issue, the NEM dispatch rules must ensure dispatchable generators have priority over non-dispatchable generation when there is negative bidding. This will encourage dispatchable generators to contract to enable negative bidding without taking excessive risks. Competition between dispatchable generators will still determine which of these remain on-line, and contracted dispatchable generators will have the commercial advantage in negative bidding.

The Energy Security Board (ESB) should recommend this necessary change to NEM rules in its final proposal because it is essential for an effective reliability requirement at minimum cost. Without a change to the NEM rules reinforcing this link between financial contracts and minimum physical dispatch there is no guarantee of supply.

A final point on reliability; the operating mode of any electricity storage must be considered carefully in forecasting system reliability because storage cannot provide reliability once discharged. Battery and pumped storage investors may operate as merchants buying, storing, and selling electricity based on the market price, or they may sell firm contracts/caps for some or all of their capacity at specific times. Retailers will need to confirm to AEMO/ESB the firm contracts they have from electricity storage plants, but when owners of electricity storage plan to switch significant capacity away from contracting they must give AEMO sufficient notice before doing this – for example, providing the ‘warning period’ required from owners of dispatchable power stations being closed.

NEG – Emissions Requirement

Retailer and consumer contracts are financial instruments and the emissions associated with these contracts can have little relationship to the emissions of the generator that stands behind the contract. The difficulty of ascribing emissions to financial contracts can be best understood by referring to the deemed emissions in *Box 3.1: Example calculation of a retailer's emissions per MWh* (NEG Consultation Paper, p 19):

- The contract from the “Specific-source contract (hydro plant)” example is deemed to have emissions of 0 tCO₂-e/MWh. In practice a hydro plant has

limited energy stored and normally bids below the contracted price, but at a level above where the market often clears, ensuring much of the contracted electricity physically comes from other generators. Thus the power price contracted by the hydro plant could well be physically sourced from low-cost brown coal generation - the deemed hydro zero emissions simply don't match reality. (Note: the hydro generator can contract a volume of power greater than its stored energy via this mechanism.)

- The "ASX contracts" item is deemed to have emissions of 0.7 tCO₂-e/MWh. This can represent the average emissions from a number of dispatchable generators, however for simplicity assume this is a HELE coal-fired thermal generator. The generator must bid some capacity low/negative to remain on-line, but variable output sales to finance the balance of the contract will normally be bid at or above the marginal fuel cost. If sufficient low-cost wind/solar is generated, the market can clear below the marginal fuel cost and part of the coal generator's retail contract is physically supplied by zero-emissions renewables.

In summary, retailers and customers have financial contracts with generators, but these contracts cannot be used to measure emissions intensity based on the ultimate generator counterparty because they are not linked to physical generation output. Given this, and the complex nature of NEM contracting and bidding, it is inherently difficult to measure emissions of specific retailers based on their power contracts. Conversely, any attempt to contract physical supply is a fundamental distortion of the NEM and will result in higher-costs for consumers.

The history of the RET should also be a warning against making retailers the liable entities for any emissions requirement which distort the market. Large, incumbent retailers that own coal-fired firming generation are the dominant entities underwriting new, non-dispatchable Renewable generation to meet the RET, and this has generated massive profits for retailers. If the emissions guarantee again provides investment conditions which favours these existing retailers-generators controlling large portfolios of RET-subsidised Renewables it is difficult to see how consumers will get least-cost compliance. Any new emissions requirement must provide both existing retailers and new entrants an even playing field to ensure acceptable price outcomes for consumers and a viable investment structure for new dispatchable generation.

In view of the complexity posed by these two core elements, Rusal believes development of a NEG emissions requirement via a retailer liability will be complex, market distorting, and favour the existing retailer oligopoly, with the consumer bearing the resultant excessive costs.

Government entities operating at National or State level are much better placed to tender new generation to meet their emissions target(s) at minimum cost to consumers, with political accountability for the cost remaining with government. This concept is not embraced under the NEG emissions requirement proposal.

RUSAL Australia would be pleased to have an opportunity to expand on its views on these issues. This is particularly important for the company as it considers its future investment profile and planning for Australia.

Yours faithfully

A handwritten signature in black ink that reads "John Hannagan." The signature is written in a cursive style.

John Hannagan
Chairman
RUSAL Australia

cc:

Hon Josh Frydenberg
Hon Scott Morrison
Hon Angus Taylor