GSCG Ltd
Energy Market Advisory Services.

18th August 2025

To: fsr@ea.govt.nz

Re: Submission on Future System Operations

This submission from GSCG Ltd, an energy market investment advisory business, reflects my personal experiences both advising and participating in the electricity and wider energy market segments in my 35 years working in the New Zealand energy market. I have undertaken strategic investment and market operating responsibilities for a large Gentailer, smaller Independent Generators and Retailers, niche services providers in the Industrial and Waste to Energy segments, and in start-ups owned by Distribution Businesses. My views expressed in this submission are based on this relatively wide sector experience, servicing many large and small customers, with new and emerging technologies, and using relatively complex systems and data integration requirements.

Appended is the completed EA Response Template.

1.0 General Comments;

I support the Electricity Authorities (EA) market feedbacks three important systems management areas that need to be improved to ensure future system performance. The overall system architecture required to achieve future co-ordination across an increasingly sophisticated, diverse and dynamic operating market will be a challenging change environment, given the legacy technologies and market performance gaps of the current NZEM.

NZEM is not alone in having to deal with a fast-changing market environment, in particular the potential for rapid growth in distributed solar and storage generation (DGH) investments, and the emerging aggregators of consumer DG and demand resources (DER), are currently hampered by institutional barriers within NZEM. These barriers to new investment and innovation are now more concentrated and pervasive than when the market was formed back in 1996.

Some past examples of barriers to the drivers of change noted above;

(i) Consumer Preferences and Behaviours

- EA reported consistently over 15 years that the retail segment, with over 36 competing Retailers, was "workably competitive" but its wasn't in reality. Independent Retailers only managed to secure ~15% retail market share before falling one-by-one by the wayside. Emerging DER aggregators do not want to share the same investment experience over the next 15 years.

- Consumer preferences favour small and nimble retailer brands, offering alternative innovative products and trading systems. Those brands including Simply Energy, PowerShop, Flick, Ecotricity and many other brands have now all been subsumed into Contact, Meridian, Genesis Energy businesses. The loss of retail innovation was due to the wholesale markets failure to achieve sufficient trading liquidity, pricing transparency and trading anonymity.

- Transpower created a demand trading project around 2008, acquired a modern demand flex-trading and offer platform and ran a successful commercial pilot through to 2014. It was then parked-up for the next 10 years despite getting reasonable engagement with industrial and distributed customers. Wiithout better consideration for the goodwill secured from innovative first movers in the flex-trading segments, the value of demand side Participation that was identified through research and commercial pilots in 2014 will never be realised by the NZEM.

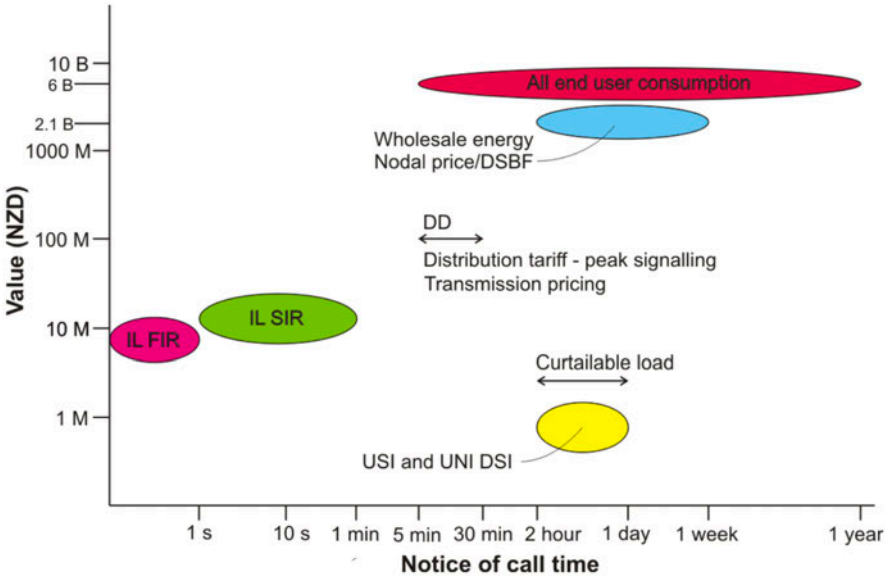


Figure 1 Annual value and speed of response timescales of various forms of DR in NZ. Arrow headed lines denote call time only. IL values correspond to cleared quantities for 2009 and 2010 obtained from Electricity Authority data. USI and UNI DSI values are total call and availability payments made for 2013. Wholesale and all end user values are for 2011 [3].

Source: Strahan & Miller (Canty' Uni,) & Tahue (Transpower) Demand Management Paper EEA Conference & Exhibition 2014, 18 - 20 June, Auckland

(ii) Better Coordination of the Power System

- Smart meters were introduced from the early 2000's, with a subsequent expenditure exceeding $600m into new metering assets, with a promise of better information and coordination. Some 20 years later there is little evidence of broader consumer and service provider information services, of aggregation of demand pools, or the realisation of avoided distribution infrastructure costs. The promise of smart metering benefits are yet to be delivered to consumers.

- Network pricing methodologies have been moving from more variable, to higher fixed connection charges for ten years. There is now a lack of Network operational information supporting a more dynamic DG operating envelopes and pricing incentives to avoid network over-builds. The market cannot co-ordinate with asymmetric operating and consumer information. The interests of consumers are subservient to the avoidance of natural competition for new infrastructure investment from emerging technologies.

- EA's transmission pricing policy changes in 2021 effectively removed the marginal pricing signals for peak transmission and downstream spot demand pricing incentives for DG and Distribution businesses to pass through signals for demand management to consumers. Consumers and innovative service providers preferences for clear and strong pricing incentives were ignored by market policy managers despite the strong evidence presented during consultations.

Distributed Systems Operations are not going to achieve results if infrastructure marginal pricing incentives are not clear and sustained to support the underlying new investments required to aggregate and manage DER. The iDSO platform provides this information transparency and operational independence.

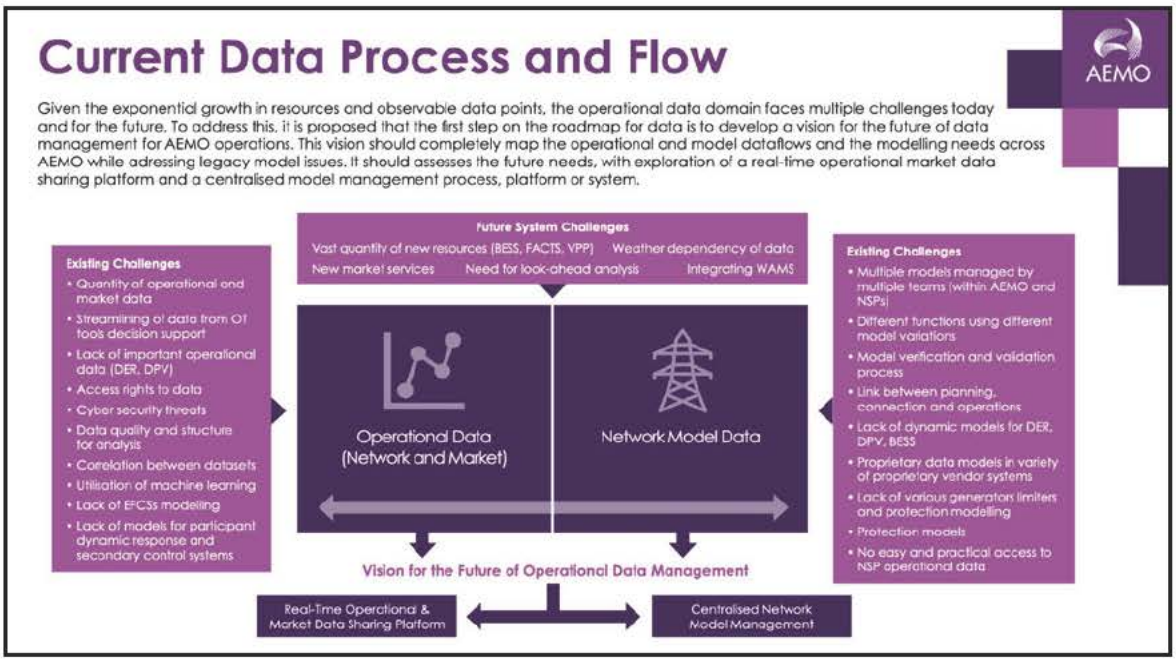
(iii) Resolving DSO Roles, Functions and. Capabilities

- A TSO model might better ensure the learnings and institutional knowledge from the current Grid and Generation Market SO operations can be applied to the distributed markets. The broader TSO approach would give better consideration to the future impacts of decarbonisation and shifts in the industrial energy segments.

- Current gaps in SO, Grid and Network planning functions including forecasting future TPM costs to generation and demand side investors, integration of Transmission and Network connection queues, Aggregation of Non-network and Grid Solutions options will not be resolved by a Hybrid DSO model that remains institutionally bound by homogenous regional ownership structures and a lack of incentives to take risks and innovate.

- "Keeping the lights on" should no longer be the primary goal of an electricity market that is merging with primary energy for process heating and transport. The goal should be more aspirational, to ensure growth in a New Zealand economy powered principally by renewable energy.

- A recent 2024 summary of the Australian AEMO distributed markets systems development included a Systems Gap Analysis that best illustrates below how integration of data and information will enable better simulation modelling of future energy delivery systems and enable more optimal alignment of both Grid and Network systems operations and infrastructure investments.



- This AEMO example illustrates there needs to be a working relationship between Network and Market operational data as well as Network Model data. The iDSO model would seem the better approach to help achieving this level of both physical and financial market objectives and outcomes. The cost-benefits of market plus network DSO integration should be further investigated, against the relative costs of new delivery infrastructures without wider consumer market Participation.

2. What success from Future System Operations would look like?

The Authority would be successful with this new TSO/DSO/Hybrid model initiative if the NZEM

- Becomes less concentrated and has more independent investment and Participation. Without new investors the NEZM market will become capital and risk constrained by the current ownership structures.

- Success would see much better wholesale and retail market trading liquidity, in particular for smaller Participants and Prosumers, whom are willing and able to invest in Non-Network and Grid Support solutions.

- Investments in Networks and Grid should carry a degree of technology change risk, so as to ensure Network monopolies are incentivised to contract away a lot of that risk into more agile and innovative investors.

- Gentailers must be required to have non-discriminatory wholesale pricing and have a minimum % of generation productivity available for independent Parties to acquire hedges in a sustainable volume forward market.

- Flex-trading should be able to be exchange-traded, preserving good market trading principles anonymity, price discovery and fungibility of trading contracts.

- Key network load, pricing and real time performance information should be aggregated in standard form across all regional Networks. This would highlight where the most efficient DER technologies can be deployed, and in the shortest timeframes.

These data and information needs must be fully considered before deploying a fractured hybrid systems model.

3. My Conclusions

My submission conclusions, from reviewing the consultation information and reflecting on the above examples from market experiences, is there needs to be more of *a step-change approach to addressing distributed market services opportunities* than taking the more incremental hybrid DSO pathway.

I concur with the Authority that data and information needs to be co-ordinated and made available to Participants and Consumers in a format that *ensures market price discovery and supports capital investment.*

There are perhaps two operational layers to this challenge, by

- continuing the Hybrid DSO for the "Network Model Data" requirements whilst also
- beginning a complimentary iDSO development pathway that focusses on the "Network and Market" Operational Data as described by the AEMO example above.

A Total System Operator (TSO) perspective must be taken to ensure the integration of *Network Model* and the Market + Network *Operational Data.* The AEMO appears to have developed a reasonably *comprehensive working template describing the functional requirements.*

I have highlighted through examples presented above that we, as a group of market participants, have in the past failed to capitalise on market innovations and efforts of a few, to realise the considerable benefits to consumers of broader participation. I concur with the Authority that a Cost-Benefit analysis is required to support what is considered a reasonable level of market investment *to avoid capital over-reach and an opex over-spend on decarbonisation delivery infrastructures.*

Thankyou for the opportunity to submit on this topic. The EA Q&A short-form template is appended.

Yours truly

Grant Smith
GSCG Ltd.

Addended - EA Response Template.

A. Format for submissions

Submitter	GSCG Ltd

Questions	Comments
Q1. Do you agree with the explanation of the distribution system operator (DSO) role/ entity, and the explanation of the distribution system operation (DSO) functions that one or more DSO entities would be required to perform?	Yes
Q2. Do you think we are correct that the themes we identified in submissions to the initial consultation paper mean we should focus mostly on system operation at the distribution level, and on the new functions required for effective distribution system operation?	Yes
Q3. Do you think we have accurately covered the main changes to the distribution system in this section? If not, what have we missed or where have we gone wrong?	No - the DSO models will require three elements; ability to control power flows, information for Participants in the system, enablement of future trading services.
Q4. Do you agree with how we have defined the problem, as the need for a more coordinated framework of integrated system operation?	No, the iDSO should not be discounted without further consideration of how DSO information will be disseminated to enable Participants to flextrade.
Q5. In your view, what aspects of the Australian and British deliberations around DSO models are relevant to New Zealand?	A more comprehensive Gap Analysis of current vs future platform capabilities, more Independence from Grid/Network investment decisions.
Q6. What do you think about the direction of research conducted in New Zealand by bodies such as the ENA, NEG and SIDG on the challenges of preparing to perform DSO functions?	More research on how Participant behaviours can be changed, and incentivised to gain efficiencies from demand-side and integration with current markets trading.
Q7. What is your view about the need for an independent DSO (iDSO)? Should we consider an iDSO now as an option to perform all DSO functions, or a subset of functions related to market facilitation? Or can that decision wait until the market for flexibility services is more developed?	iDSO is the enabling function for investment and trading of distributed resources. As a minimum, all networks should provide operating and metering data to an iDSO for market visibility of DSO performance and identification of opportunities to invest in DER by independent aggregators.

Q8. What do you think about the three DSO models proposed by the Authority?	TSO model should be seen as the preferred solution, as the New Zealand distribution sector performance is already compromised by ownership constraints. *At the very least, the distributed investment policies should be written from a TSO lens basis.*
Q9. Do you prefer one model over the others?	TSO is preferred to ensure consistency of performance, enable future sector aggregations, and seek more independent investment and innovation in the sector. I ask the question… *how will the proposed hybrid DSO model deliver the anonymised market data and information to uniformly incentivise investments in distributed resources?*
Q10. Given the hybrid model can take several forms, what do you think would be the best allocation of DSO functions between the TSO and one or more distributors as DSOs?	DSO should be limited to improving network control and instrumentation so that networks can all be data mapped and performance managed. TSO should be independent of Grid and Network ownership and manage the information platform and governance of system data for market use.
Q11. How would you rank the DSO models in terms of enabling the process of price discovery in the market for flexibility services to approach the wholesale market ideal of security-constrained economic dispatch?	iDSO has an opportunity to enable market services and create more standardised pricing methodologies and tariffs structures that ensure consistency across all networks and alignment with aggregation products and services. The hidden costs of current mix of pricing methodologies and tariff structures need to be better accounted for in the DSO Cost-benefit analysis.