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System Operator

Transpower New Zealand Limited

PO Box 1021

Wellington 6140

Dear System Operator team

TOP ENERGY FEEDBACK – TSO–DSO COORDINATION CONSULTATION

Thank you for the opportunity to comment on the System Operator's consultation on TSO–DSO coordination. Top Energy's responses to the consultation questions are enclosed.

For Top Energy, TSO–DSO coordination is a daily operating reality, not a future one.

We connect to the grid at a single, net-exporting GXP at Kaikohe. Behind it sit geothermal generation and three grid-scale solar farms that we actively manage through Adaptive Network Management, while a Transpower runback scheme on the Maungatapere–Kaikohe 110 kV circuits acts on the same plant. System Operator dispatch, transmission protection and distributor curtailment therefore already interact on our network.

We support the no-regret, use-case-led approach and the five operational requirements as a foundation. Our key points are:

- **Two-way exchange.** System Operator information to distributors – including special protection scheme states, confirmed transmission limits and GXP forecasts – is as valuable as information flowing the other way, and is a low-cost early priority.
- **Constraints and coordination.** Distribution constraints and curtailment should be visible to the System Operator, and joint procedures are needed where transmission protection schemes act through distribution systems.
- **Proportionality and funding.** Requirements should follow operational need at a location, reuse existing systems and data, and come with a clear pathway for EDBs to recover efficient costs before any new obligations apply.

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We would welcome discussing whether Kaikohe could support an early GXP forecast trial using existing data, and we would like to take part in, or be kept closely informed of, the proposed working group. Please contact me if you would like to discuss any aspect of our feedback.

Yours sincerely



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TOP ENERGY RESPONSE: TSO–DSO COORDINATION: OPERATIONAL REQUIREMENTS

Q1. What should be changed, added or removed from the five operational requirements?

We support the five requirements as a foundation and would not remove any. We suggest five changes.

1. **Requirements 2 and 3** should explicitly cover congestion and constraint management inside distribution networks. Our ANM curtails the solar farms when generation exceeds network limits, following our congestion management policy and curtailment sequence. The System Operator would benefit from knowing when curtailment is happening and roughly how much, because a GXP-level picture of installed capacity alone can be misleading.
2. **Requirement 1** should cover how distributor-led curtailment and System Operator actions interact, including primacy, so the two do not work against each other. This is a practical issue for us today. The System Operator dispatches generators connected to our network without seeing any distribution constraints, while our ANM acts on the same plant.
3. The System Operator-to-distributor information in **Requirement 3** should include the live state of special protection schemes that act through distribution systems. For example, whether a runback scheme is in service should be confirmed, backed up by control room to control room communication. It should also include confirmed transmission limits for each state of the supply circuits. These directly set how much distribution-connected generation can export.
4. **Requirement 5** should acknowledge that small DER is currently managed through static export limits under Part 6, and that dynamic limits will need a national trust framework for device communication (see our general comments).
5. State more clearly that materiality thresholds will be defined, saying when asset-level data, real-time data or new telemetry is triggered, so EDBs can plan accordingly.

Q2. For each information item listed, is the proposed source best placed to create and maintain an authoritative value?

Broadly yes. The EDB is the right source for the embedded generation and batteries it approves, its network topology and constraints, material distribution faults and outages, and the ripple-controlled load it operates, whether for congestion (constraint) management or wider demand management. It is also the authoritative source for distribution constraints that bind on generators the System Operator dispatches. These include the limits of sub-transmission lines and transformers between those generators and the GXP.

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For grid-scale generation that the EDB (e.g. Top Energy) manages through ANM, the EDB can provide availability and curtailment information. Asset Owners remain the authoritative source for plant characteristics and settings. For large loads, the EDB can provide connection capacity, but expected operating characteristics should come from the customer that owns or operates the load. Where a large load site also has generation or storage, the Asset Owner should provide the characteristics of the plant. The EDB is not the best source for flexibility operated by retailers and aggregators. Those parties hold the control, availability and response data, and should be the authoritative source, with the EDB informed. The same applies to the as-installed settings and actual behaviour of behind-the-meter CER. The EDB knows the connection approval and export limit, but not necessarily the current inverter configuration on site.

Where more than one party is listed as a source, the authoritative party should be agreed per dataset. EDBs should not become the default collector of data they do not control.

Q3. Is the proposed level of aggregation and timing proportionate to the operational use?

In general, yes. Aggregating by GXP, with asset-level data only where penetration is material, is sensible and proportionate for a network like ours. We also agree that timing should follow the decision it supports and that real-time telemetry should be the exception. Our cautions are as follows:

- A GXP aggregate can hide what is happening behind the GXP. Net flow at our GXP is shaped by our ANM curtailment of distribution-connected solar under our congestion management policy, applied through ANM, and by a transmission runback scheme. Rooftop solar is also cancelling most of the midday load on some urban 11 kV feeders. A figure built from installed capacity alone would be wrong on exactly the days that matter, so the aggregate should carry a flag or estimate for active curtailment where it is material.
- MVAr and real-time data should only be required where a specific study or event need is shown. Our visibility below the feeder head is limited. For other dynamic items, day-ahead and event-triggered exchange is a reasonable starting point.

An exception is where a distribution constraint binds on generation the System Operator dispatches. There, a small number of real-time points would be proportionate, such as the loading of the distribution line and transformers concerned. We already hold this data in our ADMS.

Q4. Which requirements can already be met through existing information, systems or processes?

Like many EDBs, Top Energy can meet some of these from the data we already have. SCADA at zone substations and feeder heads, an ADMS with feeder level load and fault and outage

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information, connection records of approved generation and export limits, and smart meter data that is starting to give better LV visibility.

Where an EDB manages grid-scale generation through ANM, that generation is already managed against network limits. At Top Energy, for example, a Transpower runback scheme already acts on those farms through our systems. Every farm meets the required two-second shutdown.

Without new work, EDBs generally cannot provide LV and behind-the-meter visibility at scale, dynamic control or confirmation of small DER, or governed machine-to-machine exchange with the System Operator. Before building new interfaces, for efficiency, we would expect to reuse existing operational channels with the System Operator wherever they are fit for purpose.

Q5. Where are the material information, quality, access or capability gaps?

We believe that the main gaps are as follows.

- Visibility below the feeder-head: many EDBs have limited access to smart meter data and limited LV visibility, because it has historically been cost prohibitive. This is improving, but it is still some way off what operational use needs. Where EDBs do receive smart meter data, it usually arrives a day or more after the event, is accessed through metering providers under commercial arrangements, and does not always include voltage. As rooftop solar and EV charging grow, voltage and reverse flow issues show up first on the LV network, where feeder-head measurement cannot see them. For coordination with the System Operator this means the amount of solar behind a GXP, and how small DER behave in an event, can only be estimated.
- Third-party control: there is limited visibility of what retailers and aggregators control on EDB networks, or how it would respond in an event.
- Inverter settings: EDBs hold approved export limits, but there is limited evidence of as-installed settings and ride-through behaviour. Standards and regulatory requirements for confirming inverter settings have not yet caught up.
- Joint procedures: where a transmission special protection scheme acts on distribution-connected generation, the operational steps should be set out in a standard joint procedure with the System Operator. These include how capacity is shared after a circuit loss, how plant is restored, and how export is managed when the scheme is out of service.
- Visibility of distribution constraints: as far as we are aware, the System Operator has no live view of the distribution constraints that bind on the generators it dispatches on EDB networks.
- Information from the System Operator: EDBs would benefit from regional demand and generation forecasts, transmission constraints, special protection scheme states and system warnings in a usable form.

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Closing these gaps takes capability and investment that are needed to phase and recover from consumers.

Q6. Which initial information exchange(s) should be prioritised for early definition or trial?

We suggest three priorities, all drawn from the five use cases in the paper.

1. Relevant System Operator information: GXP-level forecasts, transmission constraints and outages (on the circuits supplying a GXP), the live state of special protection schemes, confirmed limits for each circuit state, and system warnings. This is low cost for EDBs, helps avoid conflicting actions, and supports EDBs' own congestion management.
2. GXP forecast: including the effect of distribution-level curtailment on net GXP demand and injection. Networks, like Top Energy, with large distribution-connected generations behind a constrained point would be good test cases. Kaikohe is a single, net-exporting GXP with geothermal and grid-scale solar generation, distributor ANM and a transmission runback scheme behind it, and we would be interested in discussing whether it could support a trial using existing ANM data.
3. Material distribution event: the information largely exists and mainly needs common thresholds and a format.

We would defer high-cost dynamic exchanges, such as real-time MVAr or device-level data, until a specific operational need is shown.

Q7. Are there relevant initiatives or standards we should align with to avoid duplication?

Yes. The work should align with the Electricity Authority's DSO roadmap and the Part 6 changes for small distributed generation. This includes the export limit arrangements taking effect from November 2026, so that connection information and export limits are captured once and reused. It should also align with the ENA's work on DSO models, so EDBs are not asked to support conflicting frameworks. We also encourage common definitions, for example of curtailment, so that reporting is consistent across EDBs.

Q8. Do you agree with the priority use cases that we have identified? If not, which would you consider are higher priority?

We broadly agree with the five use cases. In our view, the most valuable early ones are the GXP forecast and Relevant System Operator information use cases, because they deliver benefit in both directions at moderate cost. We suggest the GXP forecast use case explicitly include distribution-level constraint and curtailment actions, not only installed capacity.

We would add a use for case coordination where System Operator dispatch, transmission special protection schemes and distributor ANM act on the same generators. At our Kaikohe GXP, all

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three already apply to the same three solar farms. The procedures that join them up are not yet written down jointly.

General comments

- Proportionality for EDBs: many networks, including ours, are long, rural and radial with small, dispersed customer bases. Requirements should be triggered by operational need at a given location, not applied uniformly to every EDB.
- Cost recovery: the paper acknowledges new capability will be needed, particularly in distribution businesses, but gives no cost estimate or funding pathway. Before any obligations are set, there should be a clear way for EDBs to recover efficient costs through regulatory settings.
- Build once: requirements should complement EDBs' existing ANM, control room and future DERMS plans, and reuse data already collected under Part 6 connection processes, rather than creating parallel systems.
- Protection schemes acting through distribution systems: where a transmission special protection scheme acts on distribution-connected generation, there should be a standard joint procedure, joint testing and clear ownership of each step. This includes restoring plant afterwards and operating when the scheme is out of service.
- Small DER trust framework: dynamic management of small DER needs a nationally agreed framework for device communication (certificates, protocol, fallback). We encourage the System Operator and the Authority to progress this alongside these requirements.
- Confidentiality: asset-level data about generators and customers should be shared only where needed, with clear confidentiality and use controls, consistent with the secure and resilient principle.
- Working group: we would like to take part in, or be kept closely informed of, the proposed working group, so that the perspective of a rural EDB with significant distribution-connected generation is represented.