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Transpower

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Dear Transpower

Enabling distributed flexibility to support whole system reliability and efficiency: a system operator view

Wellington Electricity Lines Limited (**WELL**) welcomes the opportunity to make a submission in response to Transpower's consultation "*Enabling distributed flexibility to support whole system reliability and efficiency: a system operator view*" published December 2022. This submission refers to the consultation paper as 'the Paper'.

We agree that flexibility services will play an important part in New Zealand future electricity system. We also agree and support the need for the visibility of DER and a co-ordinated response to how flexibility services are used. Like the System Operator, distribution networks also have to manage network security so that we can meet our regulatory quality standards. The use of DER to provide grid-level flexibility will impact the performance of distribution networks – flexibility services need to be co-ordinated both up to the grid and back down to the distribution network.

1. **Question 1. Do you agree that whole system visibility is key to security and efficiency? If not, why not, and what are examples of alternative approaches to achieve this?**

It is essential that each participant in flexibility services have the information they need to execute their specific responsibilities. This includes the information needed for buyers and sellers of flexibility to trade efficiently.

However, it is not necessary for all participants to have all information – this would be an expensive and inefficient use of resources. Part of developing a framework to co-ordinate the use of flexibility services will be establishing what information each party needs to execute their part in the electricity system. For lines companies, this will mean establishing what visibility and information is needed to maintain safety, security, and efficiency in the networks they operate and are accountable for.

For example, the System Operator will need to know the aggregate availability of DER participating in flexibility services on a distribution network (rather than needing visibility of every DER on a distribution network). On the other hand, distribution networks will need to know the location of all DER to provide a secure connection and visibility of those participating in flexibility services to manage low voltage constraints.

2. **Do you agree that whole system visibility is key to security and efficiency? If not, why not, and what are examples of alternative approaches to achieve this?**

We assume that this question should read "Do you agree that whole system ***co-ordination*** is key to security and efficiency? If not, why not, and what are examples of alternative approaches to achieve this?"

We believe that a co-ordinated approach to using flexibility services is needed. Central to this will be establishing a clear hierarchy of needs or services that the electricity system can use to prioritise and co-ordinate multiple purchasers/users of flexibility.

A co-ordinated approach is needed to allow:

- Safe operation of DER within the constraints of the low voltage network, ensuring that the Safety Regulations (voltage limites, inverter setting etc) and electrical quality standards (harmonics, fault ride through etc) that EDBs are accountable for are complied with.
- The efficient co-ordination and prioritisation of flexibility services when there are multiple calls on DER – providing a framework on how a response can be co-ordinated.
- Lines companies to have the confidence needed to rely on flexibility as an alternative to traditional wire solutions – if networks cannot rely on flexibility to be available when it is needed, they will build traditional capacity to ensure they meet their regulatory quality targets.
- The ability to prioritise emergency grid or distribution network response.

Note, we do not believe that whole of system co-ordination using a central controller of the end-to-end network, will allow networks to maintain accountability of their quality performance. Networks have regulatory quality targets they are accountable for (quality targets and operating standards that apply to all network uses – both DER and non DER customers), and they must retain the ability to manage network security to meet their regulatory obligations.

The whole of system visibility is not needed to support a co-ordinated response. What is needed is visibility of what resources and demand capacity are available under a hierarchy of needs.

3. **Question 3. Do you agree that existing data standards and interfaces should be used where possible? If not, why not, and what alternatives should be considered?**

This depends on how the overall market for buying and selling flexibility services works. If the interface with the system operator is after services have been purchased, then using existing standards makes sense.

However, if there are other buyers of flexibility, like distribution networks, then the existing data standards and interfaces may not be the best format. Many uses of flexibility services will be at the distribution and ICP level, not necessarily at the wholesale market level.

4. **Question 4. Do you agree that market participants should control their own assets? If not, why not, and what are examples of alternative approaches that should be considered?**

Yes, we strongly agree that market participants should control their assets. As highlighted in the Paper, direct control by a flexibility buyer will stop the flexibility sellers from providing services to other buyers and will not allow the full value stack to be recognised.

This assumes a strong hierarchy of needs/services is in place to allow flexibility services to be available for coordination in grid or distribution network emergencies.

It is also worth noting the difference between existing hot water ripple control, which is directly controlled by distribution networks, and future flexibility services. Existing hot water ripple control infrastructure is owned and operated by distribution networks – they are the existing market participant in partnership with households who have agreed to participate in return for lower lines tariffs. Future flexibility services directly managing smart DER do not have the same supporting infrastructure and can participate in flexibility services without distribution investment or direct management.

Distribution networks and the national grid have also been designed to include the existing hot water ripple control demand management capability. This capability must be maintained for networks to continue to provide existing levels of supply security. Future flexibility services have not been incorporated into the network designs yet – networks will be able to adapt their networks to the capacity and capability of the future flexibility market.

5. **Do you agree that ancillary services should be designed to meet system needs? If not, why not, and what are examples of alternative approaches that should be considered?**

Flexibility services offered to different buyers will need to be in a form that they can be used efficiently and provide value. Yes, flexibility services being sold as an ancillary service must be in a form to be of value to the System Operator. In the same way, services being sold to distribution networks must be in a form that provides value to those networks.

It will be the flexibility service sellers who will be responsible for providing those services in a usable format.

Accurate price signals will be important to allow the services to be offered where they provide the most value. A hierarchy of needs will therefore be essential to prioritise services when they are needed to maintain network or grid security (emergency situations).

Consideration also needs to be given to whether flexibility services offer the most efficient solution to solving constraints. It could be that distribution network design or reconfiguration is more efficient than the SO buying DR services. A coordinated response should also extent beyond just managing flexibility services.

6. **Do you agree that services should require proof of performance? If not, why not, and what are examples of alternatives arrangements?**

Yes, we strongly agree. Proof of performance will also be important for distribution networks if they rely on flexibility services in lieu of traditional network reinforcement. If flexibility services don't perform, networks may breach their quality targets and face regulatory fines.

Network operators are conservative in nature due to the consequence of poor service quality or exposure to claims under the Consumers Guarantee Act. Proof of performance will be an essential tool in providing flexibility buyers with the confidence to trust in alternate non-wire solutions.

7. **Do you agree that market design should reflect the underlying physical electricity system? If not, why not, and what are examples of valuable alternatives?**

Yes, this makes sense. The same principles apply at a distribution level. Flexibility services can be aggregated to provide a response to a specific network constraint. Aggregation could be across a suburb for a response to a sub-transmission constraint or at a neighbourhood level for a low voltage constraint.

What is important is that the price for the service reflects the value of the constraint in the underlying physical electricity system that the service is resolving. Prices will vary depending on the value being provided.

Flexibility services will be provided within limits decided by the DER owner. The design of flexibility services must take into account the how they are used, frequency of use and the number of different users so that the services provide the benefits that buyers are expecting. Services will need to be provided within the limits and expectations of both and buyer and DER owner.

8. **Question 8 What do you (or the wider sector) need from the system operator, and how should we work with industry to enable DER flexibility?**

We endorse the need for a coordinated response to using flexibility services - flexibility services need to be co-ordinated both up to the grid and back down to the distribution network to ensure security is maintained across the electricity system.

For flexibility services to be a viable non-wire alternative, they must be available when they are needed. We ask that the system operator continues to promote the need for the industry to develop a market and market rules for flexibility that:

- prioritises services so that they are available when needed in an emergency situation (for both the grid operator and distribution networks);
- a commercial framework that allows services to be traded at a price that reflects their value.

To recognise the full value stack, the market and market rules must cater for all potential users of flexibility services (and not just the system operator). This will mean developing a market and market rules to cater for services at the local network level and at a national level.

9. Closing

If you have any questions or there are aspects you would like to discuss, please don't hesitate to contact Scott Scrimgeour, Commercial and Regulatory Manager, at scott.scrimgeour@welectricity.co.nz .

Yours sincerely

Greg Skelton

Chief Executive Officer