



12 November 2024

Electricity Authority

Via email: fsr@ea.govt.nz.

Tēnā koutou

Consultation Paper— Addressing common quality information requirements

WEL Networks appreciates the opportunity to provide feedback on the Electricity Authority's consultation paper Consultation Paper— Addressing common quality information requirements (the consultation).

WEL Networks (WEL) is New Zealand's sixth largest electricity distribution company and is 100% owned by our community through our sole shareholder WEL Energy Trust. Our guiding purpose is to enable our communities to thrive, and we work to ensure that our customers have access to reliable, affordable, and environmentally sustainable energy.

We believe that extensive sector-wide alignment and coordination, involving policymakers, regulators, participants, and consumers is vital to an efficient future power system operation in New Zealand. This will require concerted efforts by many players to raise public awareness, improve data access, adapt technology standards, introduce flexible regulations, and establish effective national policy statements for the energy sector.

Should you require clarification on any part of this submission, please do not hesitate to contact me.

Ngā mihi nui

Michelle Allfrey

GM Commercial Engagement



WEL Networks' Submission

WEL Networks has some general comments which provide context for WEL's answers to consultation questions. Comments on the consultation questions are contained in Appendix A.

General comments

Modelling approach is not static

The system operator's and grid owner's current approach to modelling the transmission system is based on a decades old paradigm wherein a limited number of large transmission elements and generating units were explicitly modelled to determine power flows and power quality. It is questionable as to how far this approach can be extended into smaller and smaller capacity distribution networks.

It is impractical for the system operator and grid owner to model all distribution networks given the far greater orders of magnitude of elements in the sub-transmission, distribution and low voltage networks which will be beyond the capability of power system analysis tools. Instead, distribution networks are modelled as lumped models. The purpose of using lumped models was not to determine what might be happening on the distribution network rather to model the effects of the distribution network on the transmission network.

Lumped models require the good judgment around certain model parameters to properly represent the behaviour of the distribution network. Increasing amounts of controllable load reacting to different inputs will reduce the accuracy of lumped models. Likewise small IBR based DER reacting to conditions on the distribution network and other signals will further reduce the accuracy of the lumped model.

Other modelling approaches such as parameter-less models or the use of artificial intelligence may be a better response to increasing amounts of small IBR and controllable load.

It is possible that system operator and grid owner may change their modelling approach in the future which will result in new asset information requirements in the future with accompanying costs of providing that information. It is desirable to confirm that the current modelling approach is not likely to materially change in the near future.

Inefficiency in handling asset information

The consultation paper suggests that duplication and costs associated with common quality information are incurred by the system operator and Transpower. An alternative to duplication and costs associated with common quality information repositories by the system operator and Transpower, would be that the SO provides a validated model to the grid owner and other parties. There is no real need for the grid owner to maintain a separate common quality information repository or indeed separate models of existing assets.

Mismatch between the assessment of transmission capacity or stability limits between the system operator and grid owner can be addressed by better communication around the assumptions underlying such assessments between the two parties and the use of a common model.

While the asset information needs of the system operator, Transpower as grid owner and distributors overlap to some extent, the needs for each party are not exactly the same. The system operator needs asset information to confirm compliance with the asset owner performance obligations and to plan and operate the transmission system with existing assets.



Transpower as grid owner needs asset information about assets that will exist in the future such where the assets might connect, size, technology type and so on.

Distributors need asset information to determine the effects of assets on their network, the ability of the distributor to meet its asset owner performance obligations and transmission agreement obligations.

Cost benefit analysis

The EA has summarised the consultation issue as

“Network owners and operators have insufficient information on assets wanting to connect, or which are connected, to the power system to provide for the planning and operation of the power system in a safe, reliable and economically efficient manner.”

The consultation issue will benefit from some redefinition. Network owners and operators can always operate the power system in a safe and reliable manner noting this may require load shedding at time when there is a lack of generation or reserves offers or network capacity. Network owners can always plan for a safe and reliable system but at a potential cost of overbuilding. The main concern is the consultation issue is around the economically efficient manner aspect.

The economic efficiency aspect has generally not been investigated in detail so far by the Electricity Authority. There is a cost to modelling (the more detailed the models, the greater the cost in collecting and storing asset data, the greater processing power required by the models and the greater the effort to interpret the output of the models). This cost needs to be balanced with the benefits of the modelling. In addition, more detailed modelling may indicate problems that do not exist in reality but result in increased costs as the problems are investigated and solutions devised.

The benefit provided by more detailed modelling has not been investigated. For example, what are the economic costs of the system operator having to apply more onerous constraints than it might have otherwise had it more detailed information. Likewise, the grid owner has not identified the economic benefit provided by more detailed asset models in the presence of other uncertainties such as inaccurate load forecasting, assumptions around power system operation in the presence of reduced power system strength and inertia and around future market requirements.

We consider that the high-level cost-benefit analysis for this proposal should be evaluated before progressing further. An understanding of the cost-benefit trade-offs will help the system operator and grid owner being able to justify what they “reasonably require” in terms of asset information.

Document incorporated by reference

There is a proposal for a new document to be incorporated into the Code by reference. The Legislation Act 2019 permits the Authority to incorporate documents into the Code by reference where the requirements of section 64(1) of that Act are met.¹ It is not clear which requirements will apply:

¹ See <https://www.legislation.govt.nz/act/public/2019/0058/latest/DLM7298339.html>.



64 Power for secondary legislation to incorporate material by reference

- (1) This section is sufficient authority for secondary legislation to incorporate 1 or more of the following by reference:
- a. a standard, framework, code of practice, recommended practice, or requirement of an international organisation or a national organisation:
 - b. a standard, framework, code of practice, recommended practice, or requirement prescribed in any country or jurisdiction, or by any group of countries:
 - c. any other written material that deals with technical matters if it is reasonable to consider that—
 - (i) it is impracticable to include the material in the secondary legislation; or
 - (ii) the material is so large that including it in the secondary legislation will prevent persons to whom the law applies from using or understanding the secondary legislation with reasonable ease.

Part 8 currently contains various common quality related information requirements which implies the inclusion of these requirements is not impractical. As one reason to have a document incorporated in the EIPC is to avoid the need to go through a rule change process, we suggest an alternate rationale is used.

The argument in the consultation paper for having a new document incorporated by reference is also inaccurate. The system operator does not need a new document to meet its common quality Code obligations.

The common quality performance obligations in Part 8 on the system operator are:

- Produce a policy statement relating to the principal performance obligations of the system operator
- Obligations for the review of the policy statement.
- Investigate harmonic and voltage non-compliances in respect of 7.2(D).
- Restoration following events disrupting the system operator's ability to comply with the
- Produce a system security forecast.
- Around contracting for higher levels of common quality.

The system operator does not need a document specifying the common quality-related asset information requirements necessary for the system operator to meet its common quality Code obligations. None of the common quality obligations on the system operator require common quality-related asset information. The system operator does require common quality related asset information in regard to complying with the principal performance obligations.

It is not clear what the scope of the document incorporated by reference into the code will be. Will the scope be limited to the present aspects of common quality or would be extended over time according to the whim of the system operator.

Part 8 currently contains various common quality related information requirements which implies the inclusion of these requirements is not impractical. As the real reason to have a document incorporated in the EIPC is to avoid the effort of going through a rule change process, we suggest an alternate rationale is used.

Sharing of asset capability information between Transpower and system operator

The consultation paper notes:



“4.37. Under the Code, Transpower, as the system operator, is not authorised to share asset capability statement information with the transmission network owner side of Transpower. Therefore Transpower, as a transmission network owner, must independently source the same asset capability statement information provided to the system operator. This duplicative process is inefficient.”

The transmission benchmark agreements already provide a legal way for Transpower to access the asset capability statements of grid connected parties:

“2. CONNECTION REQUIREMENTS

2.1 Requirements for equipment capability: As and when the Customer must provide an asset capability statement to the system operator under the Code, the Customer must also provide the same asset capability statement to Transpower (in the same manner in which it provides the asset capability statement to the system operator) but including the information specified in clause 2.2 (b), (c) and (d).”

<https://www.ea.govt.nz/documents/5095/Code - Part 12 - Transpart 17 June 2024.pdf p340>

The consultation paper suggests that:

“5.23 (g) Enabling the removal of the requirement, in transmission agreements, for distributors to ensure that embedded generators provide asset capability statement information to Transpower, as a transmission network owner.”

There is no requirement in transmission agreements to ensure embedded generators provide asset capability statement information to Transpower. There is an obligation for the distributor to provide information about assets connected to the distributor’s assets as reasonably required by Transpower:

“30.2 Information from Customer:

*The Customer will, at the request of Transpower, provide such information to Transpower about the electrical characteristics of the Customer's Assets and any **assets** physically connected to the Customer's Assets, or any maintenance or operation of the Customer's Assets or any **assets** physically connected to the Customer's Assets, as Transpower reasonably requires for the purposes of this Agreement.”*

As a legal way already exists for Transpower to access the required asset capability information, it is not obvious that the costs of amending the Code and potentially the existing transmission agreements are worth the benefits of such a Code change. It is easier for Transpower to obtain asset capability statements via legal contracts than invoking rule breaches and involving further parties in the process.

Barriers to investment

Manufacturers providing commercially sensitive information to distributors under a Non-Disclosure Agreement (NDA) will be unhappy about mandatory provision under the Code of that information to third parties with which the manufacturer has no NDA.

Manufacturers will develop models to meet the needs of their purposes e.g. improving designs, performance etc rather than representing interaction with the power system.



System operator approved list of OEM equipment

A different approach to asset owners providing asset information for assessment and validation on a case by case basis would be for the system operator to maintain a list of approved OEM equipment for which the system operator is satisfied with the validity of the modelling of the equipment. This approach reduces the duplication on effort on the part of asset owners in compiling and validating asset capability information and allows the asset owners to choose equipment with a higher degree of certainty there will be no compliance issues. This approach also gives the system operator some leverage with OEMs who will desire to be on the approved list and to reduce the effort in providing asset capability information, that is, one provision of asset capability information rather than on a case by case basis with new connections and via numerous NDA contracts.

Comments on options

Option 1 is problematic in that distribution system studies and distribution common quality issues will be defined in the code rather than allowing distributors to specify the requirements in their network connection standards or as conditions of approval of DG applications under Part 6.

A “black box” model is generally adequate for equipment performance assessment and checking compliance with asset owner performance obligations. A ‘black box’ model can become problematic for the system operator for future planning to meet the principal performance obligations when the black box model is no longer supported by the OEM.

A similar document incorporated by reference for distributors would need to be developed and it is not clear that the Authority should be the party doing the development.

There may be a problem in that the intent of incorporating a document by reference is to making changing the document easier than changing the Code. This seems to be inconsistent with the principles of legislation in that legislation is only changed following a defined changed process.

Option 2 seems quite one-sided in that the distributors would be generally providing information to the system operator not vice versa as the system operator does not have much asset information that is of use to the distributor. Distributors would effectively be unpaid agents for information collection for the system operator.

At present, the grid owner and distributors can require common quality related asset information from connecting parties as part of the connection process or through transmission agreements and connection agreements.

It is not obvious what information would be provided by the system operator to the distributor and how this information would reduce the potential for distributors to invest in assets to compensate for inadequate information especially as the distribution network operator is not able to share this information with the asset side of the distribution business.

Transpower as grid owner does not need asset information from other parties to meet its common quality obligations:

- HVDC supports frequency
- Provision of South Island AUFLS
- Grid owner assets are capable of being operated and operate within the frequency targets in 7.2A.
- Grid owner assets are capable of being operated over the Voltage range AOPOs





- Load shedding obligations to support voltage
- Other asset owner performance obligations

Transpower's need for asset information is about planning for the future power system which is separate from Transpower's common quality obligations.

Option 3 is more complex with more risk around disclosure of commercially sensitive information to other parties. Similar comments as for option 1 and 2 above apply to option 3.



Appendix A

Questions	Comments
Q1. Do you agree with the key drivers of change in power system modelling requirements identified in this section? If you disagree, please explain why.	<p>Partially.</p> <p>Other drivers include developments in approaches to modelling. New methods and capabilities (e.g. AI) in modelling should also be considered.</p> <p>The modelling requirements for distribution systems should be further considered.</p>
Q2. Are there any other drivers of change in power system modelling requirements which are not covered in this section? If so, please elaborate.	<p>The developing of new modelling approaches (e.g. AI, parameter-less modelling, immittance-based frequency domain models) should be considered.</p>
Q3. Do you agree with the Authority's elaboration on the common quality-related information issue set out in this section? If you disagree, please explain why.	<p>No.</p> <p>Assets can still be connected safely and reliably, it is just that the connecting party and the system operator will need to be more conservative where certain asset information is not available.</p> <p>It is not obvious there is an insufficiency of information on assets wanting to connect or which are connected to the power system.</p> <p>The costs and benefits of the current level of information provided for assets wanting to connect have not been established nor compared with alternative options.</p>
Q4. Do you agree that the current provisions in the Code are insufficient to address the common quality-related information issue described in this section? If you disagree, please explain why.	<p>No. All the system operator and grid owner need to do is to demonstrate that the information they seek is "reasonably required". This has clearly not been done to the satisfaction of the industry in the past.</p> <p>Reasonably required needs to be demonstrated in an economic sense. There are costs to providing asset information which may lead to barriers to entry for new assets.</p>
Q5. Do you consider there to be any other aspects of the common quality-related asset information issue that are not covered in this section? If so, please elaborate.	<p>Appropriateness of system operator and grid owner software for the purpose of meeting the PPOs and planning for the future.</p>



	<p>Cost-benefit trade-offs for different modelling requirements.</p> <p>The opportunities for different modelling approaches such as AI.</p>
Q7. Do you have any feedback on the desirability of a document incorporated by reference in the Code specifying various common quality-related information requirements?	<p>It must be subject to similar requirements as the SO policy statement. In particular, a proper consultation process must be followed prior to the document being changed.</p> <p>It is not obvious how a separate document can be justified under the requirements for documents incorporated by reference 64 (1) C. The asset owner performance obligations are already located in the code.</p>
Q8. Do you agree with the pros and cons associated with each option? What costs are likely to arise for affected parties (eg, asset owners, network operators and network owners) under each of the options?	<p>5.16 (a) – agree.</p> <p>5.16 (b) – don’t agree as SO could provide models to other parties as another option.</p> <p>5.16 (c) – don’t agree as network owners and operators do not need other parties’ asset capability information to meet common quality obligations in Part 8.</p> <p>5.16 (d) – don’t agree.</p> <p>5.20 (a) – don’t agree. It is not clear what information the system operator would be providing to distributors. There is also the option of the system operator providing models to other parties.</p> <p>5.20 (b) - don’t agree. It is not clear as the costs and benefits have not been determined.</p> <p>5.20 (c) – don’t agree. It is not clear what the inadequate information is and how distributors might invest in assets to compensate for inadequate information.</p> <p>5.21 (a) – don’t agree as it is not clear what information could lead to conflicts of interest.</p> <p>5.21 (b) - Agree.</p> <p>5.23 (a) – don’t agree as there is option of the system operator providing models to Transpower and other parties.</p> <p>5.23 (b) – not sure what is meant in context of option 3. This seems like a pro for another option.</p>



	<p>5.23 (c) – don’t agree. The system operator is not involved in protection coordination except at the highest level.</p> <p>5.23 (d) – The extent of better investment decision making with more asset information is yet to be established. The models may indicate problems that don’t manifest in reality and investment to mitigate the non-existent problem may result.</p> <p>5.23 (e) – don’t agree. Mismatch between the assessment of transmission capacity or stability limits between the system operator and grid owner can be addressed by better communication around the assumptions underlying such assessments between the two parties and the use of a common model.</p> <p>5.23 (f) – This reduction in costs could also be achieved by the option of the system operator providing models to other parties.</p> <p>5.23 (g) – Don’t agree as there is no requirement in transmission agreements for distributors to ensure embedded generators provide asset capability statements to Transpower. There is a requirement for the distributor to provide information about assets connected to its assets as reasonably requested by Transpower. The distributor is dependant on the embedded generator to provide the information. It may be worthwhile for this obligation to be removed.</p> <p>5.24 (a) – agree.</p> <p>5.24 (b) – agree.</p> <p>Manufacturers are affected parties. Canvassing manufacturers would provide more information about the current and future environment.</p>
--	---



<p>Q9. Do you consider any perceived conflicts of interest under the second and third shortlisted options to be material in nature? If so, please elaborate</p>	<p>Yes. Transpower as grid owner invests in assets to meet future needs of the transmission system.</p> <p>Other parties (e.g. other grid owners) also have the ability to invest in assets to meet those needs. Provision of asset information to one party (Transpower) but not other parties competing in the same space does not improve competition.</p> <p>It is suggested that the system operator should provide models of the power system to all grid owners and other parties.</p>
<p>Q10. Do you propose any alternative options to address the common quality-related information issue? If so, please elaborate.</p>	<p>An assessment of the costs and benefits of asset information provision needs to demonstrate the optimum level of asset information provision.</p>
<p>Q11. Do you agree with the Authority's high-level evaluation of the short-listed options to help address the common quality related information issue? If you disagree, please explain why.</p>	<p>No.</p> <p>The high-level evaluation does not address the costs and benefits.</p>

