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Electricity Authority
By email: OperationsConsult@ea.govt.nz

First steps in improving outage coordination – Consultation Paper

Meridian appreciates the opportunity to provide comment on the Electricity Authority's consultation paper on improving outage coordination.

Meridian supports most aspects of the proposal

Meridian is supportive of updates to the Code that clarify the correct approach to notifying the System Operator (**SO**) of outages. To the extent the proposed changes reflect Meridian's current practice, then Meridian supports them fully.

There are however a number of ways in which the proposed Code revisions should be clarified so that their effect is clear. There are also opportunities to clarify existing ambiguities within Technical Code D which we would encourage the Authority to take while the opportunity is available. Finally, some parts of the proposal strike Meridian as unnecessarily burdensome, and they may result in needless compliance breaches.

1. **Definition of *outage*, including in the context of partial capacity ((a)(ii) of definition):** it is not clear what "normal capacity" means, particularly with respect to inverter-based resources. It is also enormously administratively burdensome to notify of all capacity reductions (which can be frequent and minor for IBR resources).

   We suggest that some clear threshold of capacity reduction (e.g. "the lesser of 10 MW or 20% of installed capacity at any given connection point") coupled to an assumption for the baseline (e.g. "based on generation capacity at optimal conditions" or "based on nameplate

capacity") is required as part of the definition. This would also help to make clear that, where a fault takes a piece of equipment offline but there was redundancy in that equipment and overall capacity of the asset is not affected, there is no need for notification. It would also help to address the fact that some outages are onerous to notify and requiring this notification may be disproportionate to their importance or significance to the SO maintaining their PPOs.

A wind farm's nameplate capacity is derived from the maximum output of all the turbines running together. However, in practice this is uncommonly achieved, even when none of the turbines are on outage: the wind could be less than or more than optimum, cross-winds might have tripped some turbines offline, etc. Usually, wind farms produce less than their nameplate capacity on average, even without actual outages. So if one of multiple turbines is on outage, the impact is, on average, less than the capacity of that turbine (which may be a few MW).

Unplanned outages

Exacerbating this is the fact that individual wind turbines frequently trip as a result of overspeed, and this is not always monitored automatically. Depending on how and why the automatic shutdown occurred, resetting the turbine might be done remotely or could require a physical reset (sometimes including maintenance work) at the turbine.

As a typical example, consider a storm event starting to roll through the wind farm and shutting down eight turbines for several different issues. Two turbines can be started remotely in the first 15 minutes of shutdown, another two require manual re-starting from the bottom of the turbine and can be reset any time in the next two hours depending on travel time to the turbines and technician availability. The remaining four turbines require technicians to climb the turbines and investigate the fault and will take as long as the fault takes to fix (this could take four hours or longer). Meanwhile, the storm has rolled through the remainder of the farm and shut down a further six turbines with various faults. This sort of event happens almost every week on one or more wind farms.

Notifying individual turbine outages would therefore require staff to constantly monitor the turbine monitoring software and input single turbine outages as they occur. Implementing this would have material costs for asset owners.

Planned outages

Individual planned turbine outages will change day to day, often at short notice. This is due to the dynamic nature of the wind generation environment and the reactive nature of wind maintenance. For example:

- We often switch maintenance teams around on the day and decide not to take some turbines out of service or take different turbines out of action for different periods of time. This may happen if the weather forecast is unfavourable (e.g. high winds, lightning, etc).
- Sometimes we need to respond to a weather event overnight and so need to divert crews from routine maintenance onto resetting and responding to faults on turbines that have automatically shut down.
- Any work relying on cranes is at the mercy of the weather. We can experience good weather where everything goes smoothly and we bring a turbine back more quickly than expected or vice versa where we experience poor weather and get delayed or have to defer work.

There would be a significant burden on the asset owner if all of these small changes had to be notified to the SO.

2. **Requirement for notification "immediately":** the proposed drafting uses immediacy as the standard for notifying outages and changes at cls 2(1)(a) and (b), and (4). It is not clear why this standard is necessary or justified over and above the previous "as soon as practicable" standard. The Authority does not appear to have detailed the need for this change within its regulatory statements or cost benefit analyses.

   Taken literally, immediacy will be impossible in many cases. Where it is possible, it may be impractical, such that unnecessary costs are being imposed to achieve notification which is only very marginally faster than the previous, perfectly appropriate, standard of "practicality". Meridian sees this part of the proposal as unnecessarily burdensome.

3. **Significance of an SO "*request*" to return (or leave) plant to service**: existing cls 4 and 7 and new cl 7(3) of Sch 8.3,[1] Technical Code D give the SO the ability to "request" an asset owner to return an asset on planned or unplanned outage back to service. It has never been entirely clear to Meridian how binding this request is (and whether it has anything to do with cl 5). In other parts of the Code, "request" is used in a manner that assumes the outcome will indeed occur. On the other hand, it could be concluded that "requests" are more equivalent to the "suggestions" contemplated by cl 5(3); so that that asset owner must endeavour to comply with that request if it can without material cost or

[1] We note a typo here – we assume that the intended numbering is cl 7(2), with the existing clause being relabelled cl 7(1). This submission will refer to the clauses as they appear in the consultation paper.

disruption. The Authority seems to be contemplating the request as a formal avenue for the SO to signal that resolving certain outages is of particular importance (e.g. at 5.11 of the consultation paper) – this suggests that the request is of the latter type and that some level of discretion remains with the asset owner. However, this discretion, and the extent of it, is not clear from the proposed drafting.

Clarifying this is particularly important if the SO is to have the ability to request that unplanned outages be "terminated" (as per proposed cl 7(3)).

Needless to say, some such requests in respect of unplanned outages will not be capable of being complied with. If a piece of plant has failed, then it will usually be physically incapable of being put into service. Where plant has not yet failed, but the asset owner considers that there is an unacceptable possibility that it will (and a consequential risk to people or property, should it fail), then it may be inappropriate, reckless, and/or potentially unlawful for the asset owner to return that plant to service.

It is difficult to imagine scenarios where an unplanned outage actually can and should be "terminated". And while it is useful for the SO to be able to signal importance of some assets (so that the asset owner can prioritise their repair) it is not clear that a formal avenue for this signal is needed, particularly when an informal practice of correspondence takes place anyway, and is inherently more two-sided. It is also not clear on what basis the SO determines that certain outages are crucial to security of supply.

Our inclination is therefore that cl 7(3) is not required at all.

If alternatively, the Authority is confident that cl 7(3) does have utility, and the SO's request to prioritise is worth formalising, then the asset owner's full discretion around whether and how to comply with the request needs to be formalised in turn.

Even where the outage is planned and therefore more likely to be movable, it is still necessary to clarify that moving the outage in connection with cls 4 and 7(2) is at the asset owner's discretion. If there are to be any constraints on this discretion, they should be plainly stated.

Fundamentally, we do not think it is appropriate for the SO to have real control over outages affecting assets the SO is not financially or sufficiently practically invested in. While it is appropriate that the SO has an ability to make asset owners aware of central planning challenges, make suggestions, and that asset owners endeavour to accommodate them where that is without difficulty, the SO should not have the final say in these matters.

4. **Significance of the "*pre-arranged period*" in cl 7.2**: we assume that the "pre-arranged period" refers to a period arranged between the SO and the asset owner for the return of the asset to service. It would be useful for the drafting to clarify how this interacts with the SO's request and the asset owner's discretion.

5. **SO's ability to advise an "appropriate time" for planned outages (cl 5.2):** finally, we note that there is the potential for the SO's existing ability to suggest "appropriate times" for outages to create inefficient outcomes. It is possible that multiple times are all equally appropriate from the SO's perspective, but not from the asset owners. Account should be taken of the asset owner's own needs and constraints before the SO advises an appropriate time for an outage (which the asset owner must then endeavour to meet) – it would be undesirable if asset owners had to use suboptimal dates when better ones would have been equally appropriate for the SO. Meridian therefore suggests that the SO be obliged to consult with the asset owner before advising of an appropriate time.

Concluding remarks

This submission is not confidential and can be released in full. I can be contacted to discuss any of the points made.

Nāku noa, nā

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Appendix A: Responses to consultation questions

Consultation Question	Comment
Q1. Do you agree with the issues identified by the Authority?	Broadly, yes. Meridian feels the present regime is working without issue, but we can understand the desire to align the Code. However, if the Code is to be brought alongside practice, then more issues should be identified and resolved, such as the formal significance of the SO's "request" to terminate an outage, the existence and extent of the asset owner's discretion in dealing with that request, the significance of a "pre-arranged period" (including how / by whom this is per-arranged). These issues are addressed in the body of this submission.
Q2. What other outage coordination issues should the Authority consider for our future programme of work? Please expand.	Asset owners have a lack of visibility – for all purposes – of the SO's methodology for reviewing the risks that outages pose to the market. In particular, asset owners do not have an understanding of the assumptions underlying any SO suggestions for the purposes of Schedule 8.3, Technical Code D. If that process is consistent with other SO methodologies for calculating security of supply risks, then it is likely that outages are currently assessed without considering the existence of and any possible contribution from intermittent generation. This is probably not sustainable as the proportion of intermittent generation assets increases. Reviewing the Outage Protocol and the outage planning process is crucial to support the growth and maximization of renewable generation e.g. inverter-based technologies. This review will enhance the coordination of outages, especially considering the significant market changes since the issuance of these documents. The system operator has made some improvements on how the long-term outage plan can be reviewed against electricity demand through the NZGB tool. However, the lack of visibility of intermittent generation scenarios again shows a lack of modernisation of the tools available to participants to plan appropriately. Providing more information on various intermittent generation scenarios would allow for improved planning.

Q3. Do you agree with the proposed changes to outage coordination obligations on the system operator and asset owners? If not, what don't you agree with and why?	Meridian broadly agrees, noting that the body of this submission contains details of suggested improvements, and in particular: - the new definition of "outage" and related terms will result in a need for a huge number of notifications of frequent and minor outages at IBR resources, which will be costly, administratively burdensome, and offer little benefit to the achievement of PPOs; - the requirement for immediate notification is an unnecessary step-up on the current process; and - there is no need for the SO to be able to request that an unplanned outage is returned to service.
Q4. Do you agree the analysis presented in this regulatory statement? If not, why not?	Meridian agrees in principle that better co-ordination and information on outages will help the market, however our view is that the changes proposed will not make any significant difference to said information or co-ordination given the standard to which it already takes place in practice. To the extent reality is already operating in accordance with the proposal, then Meridian therefore sees the benefits of clarity as outweighing the minimal costs of updating the Code. Where however, the proposals create new costs (i.e. the requirement for immediacy, or the definition of outage), then Meridian does not consider these costs to be justified.
Q5. Do you agree the proposed amendment is preferable to the other options? If you disagree, please explain your preferred option in terms consistent with the Authority's statutory objective in section 15 of the Electricity Industry Act 2010.	Meridian broadly agrees, noting that this submission contains suggested improvements.
Q6. Do you have any comments on the drafting of the proposed amendment?	Yes. Meridian's comments on the proposed drafting are set out in the body of this submission.