Request for information - Orion CPP

RFI submitted:	10 September 2026	**#RFI 016 (Orion RFI 056)**
Response due:	21 September 2026	
Subject:	Forecast cost of unreliability (ie, expected unserved energy cost)	

Request for information:

The Commission has carried out some calculations to estimate Orion's existing and forecast cost of unreliability (ie, expected unserved energy cost).

While we understand that Orion is unable to presently calculate the unserved energy cost effect of investment at a bottom-up expenditure category level, we provide Orion the opportunity to look at this from a top-down network perspective. We have some questions we would like to pose and to confirm some calculations we have made in our expenditure evaluation.

1. **Cost of existing network unreliability:**

1.1. In our analysis we wanted to understand the current cost of unreliability in your network. To do this we used Orion's ID data, some international data and made an assumption about Orion's N-1 'no break' network.

1.2. Our analysis has included the following steps:

1.2.1. Step 1 – calculate the network unreliability based on SAIDI disclosure data.

1.2.2. Step 2 – calculate the network unreliability of the LV network.

1.2.3. Step 3 – calculate the network unreliability of the N-1 'no break' network.

1.3. We have attached a calculation spreadsheet setting out how we carried out the calculations for Steps 1-3 for you to provide comment. Explanatory notes are included in the spreadsheet: 'Orion CPP proposal – existing network unreliability cost calculation.xlsx'

1.4. Following our calculation, we estimated that the existing Orion network unreliability, based on the worst-case Class C unplanned SAIDI of 54.8 customer minutes (ID data between RY21 and RY25) to be valued at approximately $27.3m.

1.5. If Orion has carried out alternate calculations that give a different result, please provide these in spreadsheet form and discuss the source of the assumptions made.

2. **Cost of future network unreliability – Orion's views**

2.1. From a top-down network perspective we have the following questions about Orion's future network unreliability:

2.1.1. If Orion was to hold investment at the RY27 forecast level for the next 15 years, at an aggregate network level, is Orion able to estimate the expected network unreliability cost year-on-year over that period?

2.1.2. If Orion was to hold investment at the RY27 forecast level for the next 15 years, at an aggregate network level, what would Orion expect is a reasonable estimate of network asset health to decline by per annum? Our initial estimate is that this could be in the range of 5% to 9% per annum.

3. Cost of future network unreliability – key aspects of our analysis for Orion's opportunity to comment

3.1. We carried out our calculation of network unreliability costs (EUE costs) over time assuming a 7% compounded network health decline over 15 years.

3.2. We have used a simple compounded interest rate formula to mimic the effect of network asset health decline compounding in a non-linear fashion like a survivor curve.

3.3. We have assumed that by year 15, the failure rate on the network is 50 times when compared to year 1. The CNAIM data in the attached spreadsheet suggests this could be closer to 20, although we have no information on the timeframe of that decline.

3.4. Our Totex NPV analysis assumes that the totex uplift starts reducing at 10% per annum after year 5 (CPP year 5+1), although this assumption has no bearing on the 5-year NPV analysis result.

3.5. We have assumed that the optimal investment uplift is when the uplift totex NPV is equivalent to the EUE NPV over a 5-year CPP period. The assumption is that this is an investment cost vs avoided EUE cost CBA, and that no other costs or benefits (such as losses or O+M costs) significantly affect the results.

3.6. The key assumption in the uplift analysis is that spending the uplift totex equivalent to the EUE over years 1-5 maintains existing asset health and defers the network asset health decline.

Date Received	10/09/2026	**Due Date**	23/09/2026
Prepared By	David Healy	**Expenditure Category**	Capex

CONFIDENTIAL RESPONSE: *No*

RFI #056 – *FORECAST COST OF UNRELIABILITY*

Section 7 sets out our response to the specific RFI questions.

1 INTRODUCTION

Orion appreciates the opportunity to review the unreliability cost calculator (model) provided with the request for information (RFI) and for the discussion with Commission staff on 15 September.

This response is provided within the timeframe requested. It addresses the items raised in the RFI, together with matters discussed on the call of 15 September. In addition to those specific items, the bulk of this response sets out broader views on the model and on the use the Commission may envisage for it. In this regard, the Commission has not advised us of whether they will apply the model to our CPP Proposal nor, if they were to, how they will apply it. Given that, we have structured our views through four broad considerations. The earlier considerations (1 through 3) relate to the merits of the approach, while number four discusses its execution. We regard the earlier considerations as more fundamental.

1. **Established CPP practices:** whether the introduction of an experimental and untested model, at this stage of a CPP assessment and without prior consultation, is consistent with regulatory precedent and with the Part 4 framework;
2. **Accepted expenditure review practice:** whether a top-down model of this design reflects accepted practice for expenditure reviews, including whether comparable tools are developed, published and applied in Australia and other jurisdictions;
3. **Good electricity industry practice**: whether the model reflects actual expenditure drivers for an electricity distribution business, where reliability is one outcome among safety, resilience, network transformation, compliance, business and network capability, and customer preferences; and
4. **Modelling methodology**: whether the model as built, including its inputs, its degradation assumption and its treatment of costs and benefits over time, is robust enough to be used in this process.

In developing this response, we have considered the model and its methodology carefully. But we are also constrained in our ability to respond fully by the fact that the Commission has not explained the purpose of the model, and its underlying rationale and design have not been clearly explained. We may provide further analysis and material (including from external specialists) in the coming weeks on these areas.

Orion is firmly of the view that the model is not suitable for setting or constraining expenditure allowances and should not be used as part of Orion's CPP assessment.

We would welcome further engagement with the Commission on this response.

2 SUMMARY

Orion has reviewed the model and does not consider it suitable for use in the assessment of its CPP proposal. Our concerns extend beyond the model's inputs and calculations. They concern the appropriateness of introducing a model of this kind into a CPP assessment, the implied expenditure adjustments signalled by it, and the robustness of the underlying methodology.

Departs from established CPP practice

The model has not been published or consulted on, has no precedent in a New Zealand CPP determination, and is not provided for by Input Methodologies (IMs). We are not aware of an equivalent model being used in any assessment framework. It has been introduced part way through the assessment, with no context of whether or how it will be used and with a short period allowed for Orion to review it and provide a response. Its design features and input assumptions have not been tested by the industry nor by any independent party. Broad industry iterative consultation over a reasonable period is normal practice for a tool of this kind.

Introducing this model within a specific CPP process, rather than through a framework or Input Methodology process, does not, we believe, reflect good regulatory practice. Orion has been asked to comment on and supply inputs to a model, without being told how results would be applied. There has been no explanation of how the model interacts with other aspects of the Commission's review.

Use of the model would displace the role of independent verification, which the CPP regime is predicated on. If used, it would override the detailed, bottom-up independent verification undertaken by GHD against the expenditure objective. Similarly, it would set aside our detailed submission material.

A CPP is entered voluntarily and undertaken at considerable cost. The requirements and matters the Proposal is assessed against are laid out extensively in the IMs. If a verified and consulted proposal can be reduced by an entirely new process or methodology (e.g. an aggregate model) introduced late in the assessment, significant uncertainty is created and the incentive to use the mechanism is removed.

Departs from accepted expenditure review practice

The model values a hypothetical level of network unreliability. It derives that value from an implied annual risk estimate. The estimate cannot be verified or calibrated, and its effect compounds over time. Regulatory frameworks do not ordinarily determine expenditure on this basis.

The Australian Energy Regulator (AER) does not use this type of approach. It encourages networks to apply condition-based risk management across asset classes, using risk in monetary terms and assesses a wider range of consequences than SAIDI. Orion is not aware of a reliability model of the kind the Commission has developed being used in Australia.

We understand from the Commission that elements of the approach are informed by "AER reports" (based on the content of RFI051). However, the AER does not appear to use an approach that resembles this model. Instead, it uses bottom-up reviews by specialist experts. The AER publishes its repex models and guidance, consults on them, reviews them periodically and states their limitations.

Furthermore, no New Zealand IPP or CPP determination has applied a top-down aggregate expenditure adjustment derived from unserved energy cost. The Powerco, Aurora, and Transpower determinations use an independent verifier (IV) to conduct a bottom-up expenditure review with specific tests for each spend type.

The model's central assumptions and basis for its methodology have not been tested or verified by the Commission. An expenditure adjustment on this basis is effectively arbitrary. The model applies neither the expenditure objective nor good practice criteria that data, analysis and assumptions be robust, accurate, reliable and appropriate.

Inconsistent with Good Electricity Industry Practice

Orion invests to manage risk and performance across a range of drivers, including safety, compliance, resilience, capacity and reliability. Reliability is only one outcome of investment and is not a driver of our CPP programme, as it accounts for less than 20% of capex and does not directly drive our proposed opex. It is also not a proxy for the risks the expenditure is directed at. A model that reduces the portfolio to a single relationship between totex and unserved energy cost disregards these other drivers. The model does not recognise the consequence of removing expenditure unrelated to reliability performance, or recognise that the consequence of investment deferral is often an increase in network risk or a transfer of cost (to opex or future periods).

The model does not account for what our customers asked for. The investment plan was shaped by extensive and, as noted by the IV, effective customer engagement. Customers asked Orion to maintain reliability at current levels, with improvement targeted at defined locations, and identified safety and resilience as priorities. Resilience was raised in the context of a network that was rebuilt following the Canterbury earthquakes, alpine fault risk, and more severe weather. Engagement did not suggest we trade off these aspects against reliability outcomes.

Deficiencies with the Modelling Approach

Separately for completeness, and of less consequence than the matters above, the model provided for review has a number of shortcomings in its own right.

This is not surprising given, from what we understand, the short time within which it was developed, the lack of expert assurance and industry input. Our sense from the Commission is that it is very much in the early development stage.

Issues with the model we currently see include the methodology provided to us being undocumented. The model's construction is not clear, and the derivation of key figures cannot be traced through the workbook. It includes data that has no apparent purpose, including the CNAIM[1] material. Several inputs are unsubstantiated. No source has been provided for the rate of asset health decline. We have concerns with a number of other aspects. Section 6 provides further details on these.

The introduction of an experimental and untested model at this stage of a CPP assessment would be a departure from established CPP practices. The model has been proposed without prior consultation and is inconsistent with regulatory precedent in previous CPP and IPP processes and the approaches used in Australia.

In our view, the Commission should undertake a broader consultation and development process with electricity distribution businesses (EDBs) and other interested parties outside a CPP assessment. This would help ensure a robust, good-practice risk-based model can be developed. We would be happy to work with the Commission over the CPP period to help develop this capability and supporting tools.

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1 Energy Network Association (UK). (2020). DNO Common Network Asset Indices Methodology (CNAIM).

This would likely be a multi-year process given that tools used to monetise network risk are nascent in the New Zealand sector.

Orion is firmly of the view that the model is not suitable for setting or constraining expenditure allowances. **Orion asks the Commission to withdraw the model.**

3 DEPARTURE FROM ESTABLISHED CPP PRACTICES

Introducing an untested approach at this late stage of a CPP process (i.e. post-issues paper, immediately prior to the draft decision): (a) represents poor process that does not afford Orion (or others) a reasonable opportunity to engage and respond, (b) undermines the scheme of the CPP framework, and (c) conflicts with statements the Commission has made about its expectations of regulated suppliers.

Orion engaged with the Commission directly and through the IV process for several months prior to submitting its CPP application, to understand what the Commission would want to see in an application. In part relying on that engagement, and precedent from previous CPP processes, Orion prepared an application that is intended to satisfy the IM requirements and address the Commission's interests that were communicated to Orion through that engagement process.

If the Commission were contemplating a radically different and novel approach to assessing reliability-focused expenditure, that would have been the appropriate time to raise it. That would have allowed Orion the opportunity to incorporate that concept into its application and also to consider whether it was prepared to proceed with the application knowing how the Commission intended to assess proposed expenditure. Furthermore, we would expect that, if the Commission were to radically change its approach, it would do that in a considered and deliberate way well in advance of the CPP assessment period, allowing for engagement with industry and independent peer review, as well as updates to the information requirements in the CPP IMs and the IV terms of reference. At no point in that pre-submission engagement did the Commission suggest that it would consider approaching reliability-focused expenditure in a radically different and untested way.

Orion has also worked through an extensive IV process, based on the terms of reference set by the Commission. As far as we are aware, the Commission did not ask the IV to consider this approach or anything comparable to it.

The Commission is now introducing this unproven approach at a very late stage, immediately prior to the draft decision. That being the case, Orion has insufficient time to respond adequately before the draft decision is due. There are also constraints on what Orion can reasonably do even after the draft decision is published. In contrast, had we had notice of this approach in the pre-submission stage, we would have had an opportunity to do more extensive analysis to reflect on and respond to this approach.

This "urgent" approach to this untested forecasting method stands in marked contrast to the comprehensive, extensive and considered approach that the CPP IMs and the CPP process are intended to promote.

Some degree of certainty (i.e. the framework we currently have through IMs and precedent) in approach is critical to a fair and reasonable assessment process. Having submitted a CPP application, EDBs are unable to withdraw their application. It is therefore important that suppliers can rely on the Commission's indications of how a CPP application will be assessed. The Commission does provide those indications: both via the CPP IMs and the information requirements for a CPP application,

through the terms of reference for the IV, and through informal engagement. Introducing an experimental and untested approach is not reasonable.

A CPP is a costly and lengthy process entered voluntarily. It is predicated on expenditure being assessed on its merits, at a category level. If a largely verified proposal can be reduced by a top-down, simplistic model, businesses would be unlikely to accept this level of uncertainty. The model would set a precedent for future CPP processes. It would signal that expenditure justified on safety, resilience, compliance and other drivers can be reduced based on a questionable reliability metric alone.

The model has not been published or consulted on more broadly. Its design features and input assumptions have not been tested by the sector or by any independent party. The model was provided as part of an RFI part way through the assessment, with a short response period. Other EDBs have had no opportunity to comment on an approach that could impact them. While we appreciate the Commission may look to consult on this during our CPP assessment process, we believe broader and specific consultation is normal practice for a tool of this kind. Introducing a model of this kind during a CPP process, rather than through a framework or IM process, does not, we believe, reflect good regulatory practice.

Undermines scheme of CPP framework

The Commission's approach to assessing CPPs must comply with / be determined in accordance with:

- the Part 4 purpose statement;
- the CPP IMs, including particularly the expenditure objective, requirements for assessing variations to quality standards, and the information requirements for CPP applications; and
- good electricity industry practice (because GEIP is incorporated into the expenditure objective, the default distributor agreement (DDA), and is the Commission's regulatory enforcement standard in relation to reliability. Because compliance with GEIP is a regulatory and contractual obligation on EDBs, the Commission must allow expenditure adequate to meet GEIP).

The Commission's approach is inconsistent with the Part 4 purpose statement because it ignores safety and resilience as drivers of expenditure. These drivers reflect consumer preferences communicated to Orion through our pre-application consumer engagement. Section 52A provides that the purpose of Part 4 is to promote the long-term benefit of consumers by promoting outcomes consistent with competitive markets such that regulated suppliers have (amongst other matters) incentives to "provide services at a quality that reflects consumer demands". Orion's consumer engagement indicates that consumers prioritise safety, resilience and future capability while maintaining the network's current level of reliability. However, the Commission's unserved energy approach does not account for these drivers.

The CPP IMs state that the Commission will apply the expenditure objective when assessing proposed CPP expenditure. The expenditure objective is that capex and opex reflect the efficient costs that a prudent EDB would require to meet or manage the expected demand for electricity distribution services, at appropriate service standards, during the CPP regulatory period and over the longer term and comply with applicable regulatory obligations associated with those electricity distribution services. The Commission's novel approach does not reflect the expenditure that a prudent EDB would propose to undertake.

An aggregate reduction derived in the untested manner proposed does not provide a determination of efficient or prudent expenditure. The model does not align with the expenditure objective, including the requirement to comply with regulatory and statutory obligations. The CPP evaluation criterion

requires data, analysis and assumptions to be robust, accurate, reliable and appropriate.[2] The model does not satisfy those criteria and would not meet the evidence criteria of the IMs. Put another way, had we proposed a similar model to the IV, we would have expected significant challenge. The IV likely would have advised the Commission it could not verify expenditure that relied on the modelling approach the Commission is now proposing.

The Commission's information requirements for CPPs set out what a supplier is required to include in its CPP application. While the CPP IMs don't dictate the Commission's approach to forecasting expenditure, they do create a reasonable expectation, on which Orion relied, about what information and forecasting methods are appropriate to determine expenditure. The Commission's untested approach was not signalled in the CPP IMs information requirements.

Use of such an approach would undermine the role of the IV. The IV (GHD) examined Orion's expenditure forecasts using a detailed, bottom-up approach. The Commission has described the IV's report as integral to the CPP process and confirmed that it is satisfied with the rigour of its analysis. A top-down model that applies neither the expenditure objective nor the rigour of the IV process should not displace those findings. If the Commission does not accept the IV's findings in a particular area, the appropriate course is to set this out with reasoning.

The Commission's introduction of an untested, top-down model to determine reliability-focused expenditure undermines the verification process in a manner that is inconsistent with the IMs. The IV terms of reference provide (amongst other matters) that the IV's role is to assess whether the expenditure objective has been met and whether forecast expenditure is properly justified.

The IV did not have an opportunity to assess the Commission's proposed novel approach. While the Commission is not required to accept the IV's opinion, the scheme of the CPP IMs implies that: (i) the applicant has an opportunity to present information to the IV that will support the type of assessment the Commission will undertake post-submission, and (ii) the IV has an opportunity to review and comment on that information.

As we note above, if the Commission wanted to explore an approach to determining reliability-focused expenditure, it would have been more appropriate to signal this by means of an amendment to the CPP IMs and the IV terms of reference, providing Orion with a reasonable opportunity to prepare an application that responded to that proposed approach, and a reasonable opportunity for the IV to consider it.

Conflicts with Commission's statements in context of quality standards enforcement

The Commission has repeatedly emphasised to EDBs in the context of quality standards enforcement that it does not tolerate EDBs taking risks around network reliability through reduced investment in the network.[3] The Commission has received expert advice on multiple occasions to the effect that it is inappropriate for EDBs to reduce or defer planned expenditure without undertaking a GEIP-compliant

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[2] Subpart 2 - Clause 5.2.1(c) whether data, analysis, and assumptions underpinning the CPP proposal are fit for the purpose of the Commission determining a CPP under s53V, including consideration as to the accuracy and reliability of data and the reasonableness of assumptions and other matters of judgement;

[3] See, for example, the Commerce Commission's Agreed Summaries of Fact in *Commerce Commission v Aurora* and *Commerce Commission v Vector*, available on the Commission's case register. The Commission criticised Aurora for adopting a "top-down" approach to expenditure forecasts rather than a "prudent" bottom-up approach.

risk assessment.[4] The Commission's approach to moderating Orion's forecast expenditure does not meet this standard.

The introduction of an experimental model at this stage of a CPP assessment would be a departure from established CPP practices. The model has been proposed without prior consultation and is inconsistent with regulatory precedent in previous CPP and IPP processes and the approaches used in Australia.

4 DEPARTURE FROM ACCEPTED EXPENDITURE REVIEW PRACTICE

The central task of an expenditure review is to assess whether the expenditure Orion proposes is prudent and efficient. The model does not attempt to achieve this. The proposed approach does not consider the material Orion has provided in its submission, nor the findings of the IV.

Typical Review Practice

Any decision to reduce expenditure should identify the expenditure being removed and then identify the assets or activities impacted. This is necessary to understand the risks that will no longer be mitigated, the resulting impact on service, safety and resilience, and the timing of those consequences. It should then explain why the remaining allowance represents a prudent and efficient programme.

The model does not identify network risks, or the probability and consequence of particular asset failures. It does not consider proposed replacement volumes, resilience requirements, safety obligations, growth and capacity requirements, deliverability constraints, or the engineering basis for the interventions Orion proposes.

The model does not demonstrate that a dollar removed from a particular expenditure category produces a corresponding change in expected unserved energy. It does not identify the marginal reliability contribution of individual investments. It does not identify which expenditure is avoidable without creating unacceptable consequences.

The model therefore cannot translate its aggregate calculations into a coherent alternative investment programme. An implied or modelled expenditure reduction is not sufficient. The Commission must be able to state which expenditure should be removed, and why that expenditure is not prudent or efficient on the direct evidence.

We also note that the approach has no New Zealand precedent. No IPP or CPP determination has applied a top-down expenditure adjustment derived from unserved energy cost. The Powerco, Aurora and Transpower determinations each assessed expenditure by category using detailed bottom-up approaches.

Top-down assessments do not typically set allowances

Top-down expenditure models are typically used to assess whether there are material differences between the proposed expenditure of an EDB and what would be expected based on high level and

[4] See, for example, the Commission's warning letter of 12 September 2019 issued to Transpower in relation to contraventions of its quality standards, available on the Commission's case register. The Commission's expert (Strata) criticised Transpower's decision to reduce/defer asset replacement without undertaking and documenting a proper assessment of the risk of reducing asset replacement capex.

simplified modelling. Like many benchmarking approaches, care needs to be applied to their interpretation and how they are used.

By definition, top-down models must apply a simplification of complex relationships between asset classes and with network performance that must be considered by asset management and investment planning. Hence, details material to expenditure decisions are lost. They therefore require careful application and are not generally used to set allowances but to guide further assessment. Deterministic use of such models increases regulatory risk and errors.

The model appears to be attempting an output-based totex[5] approach to setting the allowance. However, the methodology applied is inconsistent as it has only used replacement capex but effectively all opex (including non-network spend). This means it is not clearly aligned to asset condition-driven expenditure. An additional discrepancy is that the calculation of expected unserved energy (EUE) costs in the Commission's model is based on asset condition only. It is not logical that this should be used to assess efficient expenditure in non-network categories (particularly business support).

The Commission has not explained how this top-down model can inform a view on prudency and efficiency. The model uses a simplistic estimate of unreliability costs, applies hypothetical condition deterioration, and compares the resulting EUE estimates with selected expenditure. That approach does not test whether Orion's proposed expenditure is required, and it does not identify which components of the proposal are prudent, efficient, or justified. The model does not provide a valid basis for reducing expenditure.

Not consistent with other jurisdictions

The approach of a top-down assessment using costs of EUE is not consistent with the approach taken by other jurisdictions, notably Australia.

While EUE is a key element in cost benefit assessment at a project level, it is not used at a programme or portfolio level. For renewals, a top-down assessment is undertaken using the AER's repex model that uses asset age as a proxy for condition. The AER considers survivor curves and asset health decline in its replacement expenditure assessments but applies them at asset class level, within a bottom-up review of planned renewal. It does not use a top-down reliability tool.

The repex model uses multiple scenarios, and it is not relied upon to set expenditure allowances. The repex model also only considers renewal capex; it is not used for opex.

Good practice forecasting and the related assessment of recurring opex utilises a base-step-trend (BST) approach. However, the proposed model includes opex and does not use the typical approach of identifying an efficient base year, with audited actuals, which is used to identify the efficient expenditure. It is then escalated as needed and step changes (justified through business cases) are added. Attempting to constrain future opex outside of this framework is not typical or good practice. This is compounded by the use of forecasted amounts in FY27 (instead of audited actuals) as a baseline.

The approach taken by the Commission has attempted to combine the assessment of capex and opex, though makes general assumptions regarding network deterioration rather than using a direct input from asset data or considering the differences between capex and opex that drive different forecasting approaches.

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5 For clarity, we recognise this is a subset of totex, for simplicity we refer to totex here.

Independent Verifier process is not considered

The model would also override an assessment the Commission has endorsed. Over several months, GHD examined Orion's expenditure forecasts using a rigorous, bottom-up assessment. This rigorous approach included detailed workshops, multiple information requests and a series of meetings with Orion subject matter experts to clarify the justification of proposed expenditure.

The Commission has described the IV's report as integral to the CPP process. The IV verified aspects of Orion's expenditure related to reliability, e.g. distribution underground cables and reliability, safety and environment (RSE) capex. The Commission has stated that it is satisfied with the rigour of the verifier's analysis. It considers the review thorough and of a high standard. A top-down model that applies neither the expenditure objective nor comparable rigour should not displace those findings.

5 Does not reflect Good Electricity Industry Practice

The Commission's approach to assessing CPPs must comply with / be determined in accordance with GEIP. GEIP is implicitly incorporated into the expenditure objective, the DDA, and informs the Commission's regulatory enforcement standard in relation to reliability. Because compliance with GEIP is a regulatory and contractual obligation on EDBs, the Commission must allow expenditure adequate to meet GEIP.

Drivers for Orion's CPP

Consistent with GEIP, Orion invests to address a range of drivers. A key focus is managing risk related to safety, compliance, resilience, capacity and reliability. During the CPP period, change in reliability is not a primary driver and only a secondary outcome of these investments. For the majority of our total expenditure (totex), it is largely irrelevant and is not a proxy for the risks the expenditure is directed at. As set out in our proposal documentation, our CPP period investments address five strategic drivers:

- **Maintain safety and reliability** by increasing asset renewal and maintenance activity.
- **Support population and demand growth** by expanding and upgrading the network at emerging constraint points and accommodating connection requests.
- **Strengthen resilience** to earthquakes and increasingly severe weather events by upgrading at-risk assets.
- **Prepare for future energy needs** by investigating, piloting and implementing new assets, systems and processes.
- **Enhance efficiency and capability** by completing the transition to a modern, resilient and fit-for-purpose ICT environment.

Several asset fleets are in degraded or deteriorating condition due to their age profile, while others face elevated risk due to known type or design issues. Asset renewal will tend to influence future reliability performance in those areas where the investments take place. This is ultimately a 'byproduct' of network investment to address other drivers, e.g. safety or resilience.

A model that relies on a single relationship between a subset of totex and unserved energy cost effectively disregards the main drivers of Orion's proposed expenditure. That does not reflect how we plan, prioritise or justify investments on our network and is not consistent with promoting GEIP.

The model does not consider all investment drivers

The model is based on a premise that changes in expenditure (including non-network opex) produce a proportional change in reliability (based on asset degradation), and that reliability is the only outcome affected. While this is a top-down model and simplification is understandable, this model oversimplifies the relationship between expenditure and reliability and incorrectly links reliability to a subset of totex. This effectively disregards the main drivers for the proposed CPP expenditure.

Other material risks and costs related to managing assets that are not considered by the model include:

- complying with legislative and statutory requirements, for example, vegetation management, asbestos remediation and red/orange tag pole remediations
- mitigating major event risk such as improving resilience to extreme weather and seismic events
- safety consequences of asset failure (proactively avoiding failures that could injure or cause fatalities is a core driver of our investments)
- financial cost of reactive asset failures that require emergency response, repair or replacement to restore supply.

These exclusions result in an underestimate of total network risk and their exclusion from the model would result in an inappropriate and unjustified reduction to Orion's expenditure requirements.

Other aspects not aligned with GEIP

Our review of the model identified a number of other areas where the model inputs, assumptions or methodology do not align with GEIP:

- The model considers a 15-year forecast horizon but truncates the benefit of mitigating unserved energy to a 5-year window. These assumptions are not explained. Fundamental issues are:
    - Orion's assets are long-lived, with service lives of 50 years or more with renewals delivering long-term reliability benefits. A 5-year window materially understates the benefits of renewal.
    - Opex, even if it were directly relevant to reliability, would not persist beyond the year in which it is spent, and so cannot be treated as delivering multi-year unserved energy benefit.
- The model does not recognise that the consequence of investment deferral is often an increase in opex costs (e.g. reactive and corrective maintenance).
- In practice, a capex programme that is primarily focussed on renewals/replacements is unlikely to materially increase measured reliability performance because electricity networks are built to a specified technical standard. Reliability performance is a function of this technical planning standard, as well as exogenous variables such as adverse weather events.
- A test based on avoided unserved energy alone rationalises deferring renewal until reliability is on the point of degrading. It effectively penalises proactive investment in advance of failure, which is considered GEIP.
- To ensure we continue to align with GEIP, Orion recognises that there is room to evolve our asset management systems and data to provide more robust quantification of benefits in our expenditure justification. This is why we have proposed significant investment in our internal capability and supporting systems. The justification for this expenditure was discussed with the IV and accepted by them as prudent.

The arbitrary reduction of the proposed expenditure implied by the model is highly likely to limit Orion's ability to not only manage the five strategic drivers, but also prevent it from implementing the necessary improvements to internal capability that are required for prudent and efficient long-term network management.

6 DEFICIENCIES IN THE MODELLING METHODOLOGY

> The matters below focus on how the model has been built and its logic (as we understand it). For the avoidance of doubt, **Orion raises these points to demonstrate that the model's underlying rationale is unsound, not to suggest that the model be refined or improved during our CPP assessment process**.

Separately, and of less consequence than the matters above, the model provided for review has a number of shortcomings in its own right. In Orion's view, the model does not meet the standard expected of an analytical tool, which we assume may be used to constrain expenditure levels.

A model intended to support a material decision should be built to follow good modelling practice. Aspects of this include being documented so that a third party can follow its logic, clear well-sourced inputs, calibrated against observed data, tested for sensitivity to its key parameters, and subjected to independent review. The model reviewed by Orion doesn't meet these conditions.

Below we provide feedback on the elements of the model.

Valuation of reliability

The model only links expenditure to a single type of risk. It does not consider safety, resilience or environmental risk, each of which also drives expenditure on Orion's network. The Australian businesses the Commission cites (e.g. RFI051) take a different approach. They apply multi-criteria frameworks in which each category of risk is priced against an external reference. Safety risk is valued using the value of a statistical life. Reliability is valued using the AER's value of customer reliability, and emissions using the AER's value of emissions reduction. Bushfire risk draws on settlement data and market effects on Australian Energy Market Operator (AEMO) market benefit data, with residual risk tested against ALARP or SFAIRP disproportionality criteria. The Commission's model omits these aspects.

Within the model's narrow scope, the reliability inputs are questionable. The model uses SAIDI from RY21 to RY25 and takes the worst year in that period rather than the five-year average. It excludes RY26, in which unplanned SAIDI excluding third party interference exceeded the highest year in the modelled period. Third party interference has been removed from SAIDI, but the associated costs remain in fault response operating expenditure.

The low voltage (LV) component is not appropriate. The model assumes the cost of LV unreliability equals the high voltage (HV) cost and appears to apply the HV value of lost load to LV interruptions. The assumption appears to rest on Portuguese network data, which is not comparable with Orion's. It includes 110kV assets that Orion does not own. It covers all unplanned interruptions longer than three minutes, whereas Orion's measure covers Class C interruptions longer than one minute, with third party interference removed from the model. The stated basis for selecting Portugal is questionable. The model cites completeness of data as the reason for the choice. Portugal's high voltage SAIDI data is missing for 2010 to 2013, and Denmark, Switzerland, Ukraine and Italy each hold more complete

records. The example used is neither comparable to Orion's network nor justified on the model's own criteria.

The subtransmission component is flawed conceptually and in how it is derived. The model attributes unserved energy costs to events on the 'N-1 no-break' network. Those events do not interrupt supply to customers and so impose no unserved energy cost. The N to N-1 multiplier of 1.11 is derived from circuit length, but subtransmission security affects most of the network.

The model also makes no allowance for growth in load or customer numbers. New connections are not expected to fail prematurely, but they are supplied through an ageing network. As load and customer numbers grow, each failure on that network affects more customers, and the cost of unreliability rises with it. Holding the customer base constant understates the consequence of asset failures over time.

Degradation calculation

The model's result is driven by an equation to escalate energy at risk that Orion has been unable to establish a basis for. An arbitrary rate of asset health decline (7%) is applied as a 7% decline in reliability in year one. Years two to fifteen use a different approach and compound at approximately 32% a year throughout the period. This is based on a hardcoded exponent of 4.13 used to 'reverse engineer' a fiftyfold failure ratio at year fifteen. No source or explanation has been provided for these assumptions.

Further, based on our understanding of what the model is trying to achieve, we find that the methodology has been implemented incorrectly. Only the change in EUE calculated from Year 0 to Year 1 is compounded. However, since the EUE reflects the deteriorating state of the network compared to Year 0, the whole EUE should be escalated. The increase compared to Year 0 can then be calculated by subtracting that amount from each of Year 1 to Year 15. The methodology as implemented materially understates the incremental increase in EUE from Year 0 which is used as the base year for both EUE change and forecast expenditure change.

The escalation has no link to the configuration, condition or age profile of Orion's network, which is what determines the likelihood of an outage. Asset health deterioration is normally modelled using a Weibull or exponential function derived from failure data. Instead, the model uses a compound interest-type formula without any apparent basis. Neither the settings nor the approach has been justified or validated.

The fiftyfold ratio is equally unsupported. The model includes CNAIM data points, but the reason for their inclusion is unclear. The Commission notes that the CNAIM data implies a degradation ratio of approximately 20, yet applies a ratio of 50 with no stated basis for the difference. The ratio of 20 is itself a property of the CNAIM probability of failure equations. It is not a measurement of real-world deterioration, and it cannot be lifted out and applied as a deterioration rate in a reliability forecast.

Orion has previously addressed the fiftyfold assumption through RFI051. Orion's response was that the assumption has little basis. That remains Orion's view. No single ratio of this kind could apply uniformly across asset types of differing ages and operating environments. The Commission has nonetheless retained the assumption without evidence to support it.

The construction of the model prevents these matters from being examined fully. Formulas are opaque. Inputs cannot be traced to a source, and key figures cannot be traced to either a source or a derivation. The workbook also contains data the model does not use.

As far as we are aware, the model has not been tested. No sensitivity analysis, scenario analysis or back-testing has been undertaken to establish whether it produces reasonable outcomes. A model whose central parameters are unsourced, whose formulas cannot be traced, and whose outputs have not been tested against observed performance cannot be relied on to inform an expenditure decision.

Justification calculation

The model does not explain which expenditure it tests, or why. Neither the model nor the RFI sets out a basis for including some categories and excluding others. Compliance-related vegetation management, business support, system operations and network support, and reactive maintenance are all assumed to affect unserved energy. System growth and reliability, safety and environment capital expenditure are excluded. The selection is difficult to reconcile with the purpose of the expenditure. Uplifts in vegetation management are driven by statutory obligation rather than reliability. RSE capex is partly directed at reliability by definition but is excluded.

Having selected the categories, the model treats them as interchangeable. It implies that dollar-for-dollar renewal capex expenditure, network opex expenditure and non-network opex each have the same effect on reliability performance and financial analysis. No evidence or explanation is offered for this assertion. These spends differ materially in impact, in the assets they affect, and the timeframe in which any impact might occur.

The test itself rests on a further unexplained assumption. The model sets the justified expenditure uplift equal to the annual change in unserved energy cost. Neither the model nor the RFI explains why the two should be equal. Capex delivers benefits over the life of an asset, across outcomes other than reliability. An annual change in a single measure of consumer cost is not an appropriate test of whether that expenditure is justified.

Treatment of costs and benefits over time

Timing of the inputs and calculation do not align. Given time-based deterioration is meant to be modelled, the EUE and expenditure need to be selected for the correct years:

1. RY25 data is used for determining the reliability and EUE costs
2. RY27 is taken as a point in time value for expenditure – also noting that this is a forecast value and not actual
3. EUE cost is escalated by 1 year (i.e. from RY25 to the equivalent of RY26 in this methodology) then trended from RY28 as ‘Year 1’.
4. This approach also ignores the increasing trend in expenditure in certain categories that has been required to achieve the reliability outcomes observed.

The issue is that if current performance is used as the base, then it should be trended forward from this year at the assumed deterioration rates; starting the trend in RY28 avoids escalation in EUE (deterioration in the network) that should be captured for RY26 to RY28.

Totex is forced to decay by 10% a year after year 5 and by 20% after year 10, without any basis for this. It is also not used in the assessment of the expenditure allowance so the point of its inclusion is not clear. Similarly, the NPV amounts in the model are not used for anything, despite being referenced in the RFI as driving the calculation.

Future development of a risk-based model

In our view, the Commission should undertake a broader consultation and development process with EDBs and other regulated network businesses to collaboratively develop a robust, good-practice risk-based model. We would be happy to work with the Commission over the CPP period to help develop this capability and supporting tools. This would likely be a multi-year process given that tools used to monetise network risk are nascent in the New Zealand sector.

7 SPECIFIC RFI QUESTIONS

Below we respond to the specific RFI questions. For clarity we have reproduced the RFI here and included our responses in highlight boxes.

B - Cost of future network unreliability – Orion's views

From a top-down network perspective we have the following questions about Orion's future network unreliability:

B1. If Orion was to hold investment at the RY27 forecast level for the next 15 years, at an aggregate network level, is Orion able to estimate the expected network unreliability cost year-on-year over that period?

> This is not something we have attempted to do. We see no merit in this form of analysis, for the reasons set out in the main body of this response.

B2. If Orion was to hold investment at the RY27 forecast level for the next 15 years, at an aggregate network level, what would Orion expect is a reasonable estimate of network asset health to decline by per annum? Our initial estimate is that this could be in the range **of 5% to 9% per annum**.

> This analysis is not something we have attempted to do. We see no useful application for this form of analysis, for the reasons set out in the main body of this response.

C - Cost of future network unreliability – key aspects of our analysis for Orion's opportunity to comment

C1. We carried out our calculation of network unreliability costs (EUE costs) over time assuming a 7% compounded network health decline over 15 years.

C2. We have used a simple compounded interest rate formula to mimic the effect of network asset health decline compounding in a non-linear fashion like a survivor curve.

C3. We have assumed that by year 15, the failure rate on the network is 50 times when compared to year 1. The CNAIM data in the attached spreadsheet suggests this could be closer to 20, although we have no information on the timeframe of that decline.

C4. Our Totex NPV analysis assumes that the totex uplift starts reducing at 10% per annum after year 5 (CPP year 5+1), although this assumption has no bearing on the 5-year NPV analysis result.

C5. We have assumed that the optimal investment uplift is when the uplift totex NPV is equivalent to the EUE NPV over a 5-year CPP period. The assumption is that this is an investment cost vs avoided EUE cost CBA, and that no other costs or benefits (such as losses or O+M costs) significantly affect the results.

C6. The key assumption in the uplift analysis is that spending the uplift totex equivalent to the EUE over years 1-5 maintains existing asset health and defers the network asset health decline.

C1 / C2 / C3: see discussion in Section 6 of our response.

C4: we also note that totex is reduced by 20% after year 10. We do not understand the intent of these adjustments, though we do note that it should have been explained.

C5: as far as we can tell, the NPV approach described here is not used in the model for any purpose. We can confirm that we do not agree with the assumptions here, as discussed in Sections 5 and 6 of our response.

C6: we categorically disagree with the unjustified assumption. See discussion in Sections 5 and 6 of our response.

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9 October 2026

Nathan Strong
Associate Commissioner
Commerce Commission
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WELLINGTON

CC: Ben Woodham

FORECAST COST OF UNRELIABILITY MODEL

Dear Nathan

Thank you for meeting with me on 29 September to discuss the Commission's forecast cost of unreliability model. My understanding from our discussion is that the Commission believes the consumer benefits of our proposed expenditure are not adequately articulated.

At the meeting you also said that the Commission has not yet decided whether or how to deploy the unreliability model in its draft decision.

Notwithstanding this lack of clarity, my concern about the Commission's use of the model remains. We do not believe it is prudent to use the model in the Commission's decision.

While Orion's specific concerns with the model and its inputs are set out more fully in our written RFI response we have also sought and received an independent review of the model from WSP and thought it worth sharing that now for the Commission's consideration. WSP identifies several reasons why the use of the model is not appropriate. We are considering obtaining further independent expert advice on the model.

Regarding the model I would like to reiterate that:

- I continue to have serious concerns about the model, its experimental nature, and lack of assurance, and do not believe it is suitable for use in moderating Orion's CPP expenditure forecasts;
- I believe the best evidence justifying the proposed expenditure is the CPP proposal itself and the Independent Verifier's report; and
- Relying on a deficient, experimental model to moderate expenditure forecasts that have otherwise been subject to detailed 'bottom-up' assessment undermines the credibility of a CPP and is likely to damage confidence in the CPP process more broadly.

Good practice expenditure reviews involve assessing the detailed evidence justifying the proposed expenditure, the asset management documentation and models that support it, and the views of independent specialists. There should be a correspondingly high

degree of confidence in the suitability of any top-down model used to substitute for such an approach.

If a lack of a clear line of sight to benefits is the Commission's concern, in our view using the RFI process would have been a more effective method to test the bottom-up analysis. We note that the Commission said in its issues paper that it intended to "ask Orion to better demonstrate the consumer benefits that are expected to result from the increased investment". This does not appear to be the approach being used to assess our proposal. A top-down model cannot replace assessing the detailed evidence Orion has provided in our Proposal, the asset management documentation and models that support it, and the Independent Verifier's analysis of the expenditure.

The level of moderation the Commission appears to be contemplating by using a top-down model effectively displaces rigour for an experimental approach that is nowhere contemplated in the IMs or IV terms of reference. That is inconsistent with the purpose of the CPP IMs. It was also never signalled at any point during our pre-submission engagement with the Commission. We are concerned that this approach will undermine the CPP framework and the sector's confidence in it.

To illustrate our concerns, by way of example, I refer to the graphs you presented comparing Orion's proposed vegetation management opex to other EDBs and your suggestion that Orion appeared to be an outlier. We contacted other EDBs, and those we spoke to have not yet fully incorporated the requirements of the new tree regulations in their forecasts. We note that there were no related step-changes in the DPP4 process. The comparison is therefore not like-for-like and is not a sound basis for drawing conclusions about proposed CPP expenditure. More broadly, this comparison illustrates the critical weakness in relying on top-down approaches as a substitute for the rigorous, bottom-up analysis.

Appropriate assessment of a CPP against the expenditure objective supports prudent and efficient expenditure that balances affordability with the delivery of safe, reliable and future-proofed services to customers. In our view the model does not achieve this as it does not appropriately assess the prudency and efficiency of our CPP expenditure.

Yours Sincerely



Vaughan Hartland
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06-10-2026
Reference: 2026NZ685889-003

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Review of Commerce Commission assessment of Orion CPP

Orion New Zealand (Orion) submitted its customised price-quality path (CPP) application to the New Zealand Commerce Commission (Commission) on 9 June 2026. The application covers the period from 1 April 2027 to 31 March 2032. As part of the CPP process, GHD Ltd was appointed as the Independent Verifier and submitted its verification report on or around 31 March 2026.

The Commission subsequently provided Orion with a total expenditure (totex) adjustment model for review and comment. Although the Commission has not clarified how it intends to use the model, applying its outputs deterministically would result in a materially lower expenditure allowance.

WSP was engaged by Orion to independently review the Commission's totex adjustment model[1] ('the model'), identify material issues and assess its suitability as a top-down expenditure assessment tool. Our review considered:

- The model's alignment with regulatory practice, including the AER's approach, asset-management principles and relationship between expected unserved energy, reliability, risk and the expenditure included.
- Whether the model's design, assumptions, inputs, calculations and validation provide a reliable basis for the conclusions drawn.
- Our experience undertaking reviews for regulators, including the Powerco CPP for the Commission, and experience supporting EDBs through similar processes such as the Aurora CPP and regulatory determination in Australia.

Our review found five key issues with the model that lead us to the conclusion that it is not a sufficiently robust basis for adjusting Orion's total expenditure allowance:

- It differs from established regulatory approaches applied in previous CPP assessments as well as in other jurisdictions, which draw on detailed engineering assessment, asset-based analysis and multiple benchmarking techniques.
- The principal forecast parameter of EUE is not strongly related to total expenditure requirements, and the model does not consider expenditure required to address other drivers that are not related to EUE including growth, safety, resilience, compliance and environmental risk. Hence, it does not provide a sound basis for assessing non-network expenditure or the other drivers of investment.

[1] Orion CPP proposal - existing network unreliability cost calculation, received 18 September 2026

- The model uses EUE as its principal forecast parameter despite including costs with little direct relationship to reliability (ie, business support opex) and omitting relevant capital expenditure (Reliability, safety and environment capex).
- The model directly equates the cost of EUE to the efficient level of expenditure. This approach is inconsistent with asset replacement modelling in other jurisdictions. For example:
  - In Australia, the AERs asset replacement planning guideline[2] states an asset replacement is justified when the annual service cost (ie cost of maintenance plus expected risk costs such as EUE and safety) exceed the annualised (annuity) cost of the asset, not the full asset cost. The annualised (annuity) cost should be calculated based on a period appropriate for the asset and is typically the expected asset life or depreciation life.
  - In the UK, Ofgem's methodology[3] states it is "…*important to evaluate the asset risk that is forecasted for future years when considering the justification for investment decisions that are aimed at managing the condition-based risk associated with assets.*". This methodology also requires consideration of multiple consequences such as safety and the environment, not only network performance.

  Both of these guidelines require a long term view for replacement planning and consider future risks, not only the immediate and short term risk. This indicates that the model is highly likely to underestimate the totex required to maintain network performance and safety.
- The model also relies on unsupported deterioration and compounding assumptions, misaligned data periods and insufficient validation, reducing confidence in its forecast.

While the Commission has not specified how it intends to use the model, we do not consider it to be suitable, in its current form, for calculating an alternative expenditure forecast. Attachment A sets out our detailed findings.

Sincerely,



Dave Maslin
Director, Power & Energy
WSP New Zealand Limited

[2] Refer to the AER guideline for asset replacement planning for guidance on modelling asset failures and establishing benefits for replacement: AER - Industry practice application note Asset replacement planning - July 2024, page 36
[3] DNO Common Network Asset Indices Methodology

Attachment A – detailed findings

This attachment sets out the detailed scope of our review and our findings.

1. Purpose and scope

Orion engaged WSP, supported by Energy Networks Consulting, to independently review the model, identify material issues and comment on its suitability as a top-down expenditure assessment tool. This review has considered whether:

- the approach implemented by the model is sufficiently robust and validated, aligns with relevant regulatory practice, including the AER's approach, and is suitable as a replacement for detailed expenditure assessment;
- the underlying asset management principles assumed by the model are sound and consistent with good electricity industry practice, including the relationships between reliability and risk, the use of expected unserved energy (EUE) to scale expenditure forecasts, the scope of expenditure included, and
- the model design, assumptions, inputs and calculations are appropriate, and the results are sufficiently reliable to support the (apparent) conclusions drawn.

The following sections summarise WSP's findings on the model's alignment with regulatory and industry practice, its underlying logic, the reasonableness of its key inputs and assumptions, and its suitability for regulatory decision-making.

2. Summary of findings

WSP's review identified material limitations in the Commission's proposed model. The issues relate to its divergence from established regulatory practice, the narrow relationship between expected unserved energy (EUE) and the expenditure included, weaknesses in the model's methodology and implementation, and unsupported or inconsistent key assumptions.

- **Misalignment with regulatory practice.** The model relies on EUE to adjust a total expenditure allowance, unlike established approaches that separately assess opex and capex using bottom-up review, asset-based modelling and multi-factor benchmarking.
- **Incomplete expenditure and outcome coverage.** The model includes expenditure with limited connection to EUE, excludes relevant capex, and does not capture material expenditure drivers such as growth, safety, resilience and environmental risk.
- **Weak methodology and asset logic.** EUE is treated as an input without adequately modelling the underlying asset condition, operating environment and asset-management drivers of reliability risk or supporting the analysis with historical and forecast evidence.

- **Unsupported assumptions and calculations.** Key deterioration, compounding, reliability-cost and CNAIM assumptions are unsupported, inconsistently applied or potentially erroneous, and may materially distort the model's outputs.
- **Insufficiently aligned and validated inputs.** The model combines inconsistent data periods and baselines and has not been adequately tested through sensitivity analysis, scenario modelling or back-testing, limiting confidence in its outputs.

Overall, WSP does not consider the model suitable in its current form for calculating alternative expenditure forecasts or informing Orion's expenditure allowance. Without an appropriate totex model being available, regulatory decisions related to expenditure allowances should continue to rely on detailed bottom-up assessment, engineering evidence and appropriately validated benchmarking.

3. Detailed findings

Our review of this model considered three main aspects:

- The extent to which the model aligns with previous reviews undertaken in New Zealand, practices in other jurisdictions, including its use of EUE to assess expenditure versus other methods for top-down expenditure assessment.
- Whether the methodology and logic of the model are sound and rely on established economic and engineering principles and causal drivers of expenditure.
- Whether the model has been implemented effectively and its inputs and assumptions are sound.

The following sections describe our findings and assess whether they support using the model in its current form as a top-down expenditure assessment tool.

3.1 Alignment to industry practice and precedent

The Commission's proposed use of EUE to adjust expenditure is not consistent with established electricity industry practice or the approaches observed by WSP in comparable jurisdictions. In Australia, the Australian Energy Regulator (AER) applies different forecasting methodologies to operating expenditure (opex) and capital expenditure (capex), reflecting their different drivers, while the UK's Office of Gas and Electricity Markets' (Ofgem) applies several models and detailed engineering review to derive totex.

Opex is assessed by the AER using a base-step-trend (BST) approach. An efficient base year is established. This is usually the penultimate regulatory year so it is supported by audited accounts. The expenditure is then adjusted by removing non-recurrent or inefficient costs. Appropriate escalation factors are then applied and justified step changes, which are supported by business cases, are added in. Economic benchmarking is used to assess the efficiency of the base year and can be used to set efficiency factors, but is not used to explicitly set the annual opex amounts.

The Commission's apparent inclusion of opex within an EUE-based model is inconsistent with this established approach, particularly for non-network and business support expenditure that does not have a direct relationship with network reliability.

Electricity distribution businesses generally develop capex forecasts from a bottom-up assessment of identified network needs, supported by evidence of prudency and efficiency. Regulators then undertake detailed reviews of the supporting asset management practices and expenditure justifications, complemented, where appropriate, by top-down modelling and benchmarking. In New Zealand, the Independent Verifier performs an important part of this detailed assessment.

- Asset-based modelling: Replacement expenditure forecasting models commonly use asset age as a proxy for condition, together with conditional probability curves based on normal or Weibull distributions. Model parameters are derived from historical performance or engineering estimates and calibrated against observed expenditure and asset outcomes.
- Economic benchmarking: Normalised comparisons across electricity distribution businesses can identify potential inefficiencies and direct further investigation. However, benchmarking results generally require supporting analysis and should not be applied mechanically to determine expenditure allowances.[4]

Important precedents include the AER's Replacement Expenditure (Repex) Model and Ofgem's Common Network Asset Indices Methodology (CNAIM). These approaches demonstrate that probabilistic models are a common approach to forecasting future expenditure needs. Both models assess asset replacement expenditure forecasts by applying failure curves to asset fleet age profiles where asset age is used as a proxy for asset condition. The CNAIM goes further and allows greater adjustment for asset condition and consequences.

These approaches demonstrate that other jurisdictions use more asset-centric methods to assess expenditure requirements and efficiency. Further, the principles and methodologies applied by these jurisdictions are well documented in publicly available guidelines and evidence of how they have been used is documented in publicly available determination documentation, including:

- RIIO-ED2 Final Determinations Core Methodology Document
- RIIO-ED2 Regulatory Instructions and Guidance – Interruptions
- Annual Benchmarking Report, Electricity distribution network service providers, No 2025
- Final Decision, Ergon Energy Electricity Distribution Determination 2025 to 2030, (1 July 2025 to 30 June 2030), Attachment 6 Operating expenditure, April 2025
- AER - Industry practice application note Asset replacement planning - July 2024

These jurisdictions also rely on detailed engineering review of the EDB's asset management practices and capital justification documents and do not rely solely on the replacement modelling to make a determination on expenditure allowances.

The Table 1 below summarises the approaches used by Ofgem in the UK, the AER in Australia and how reviews have been undertaken for Powerco and Aurora in New Zealand.

[4] Australian Competition and Consumer Commission (ACCC), Benchmarking Opex and Capex in Energy Networks, Working Paper no.6, May 2012

Table 1 Overview of approaches applied in past CPPs and in other jurisdictions

Topic	Ofgem	AER	Previous NZ CPPs [NOTE]
Asset replacement forecasts	CNAIM asset health and risk methodology, engineering assessment	Repex model and asset replacement planning principles, engineering assessment	Repex model and asset replacement planning principles, engineering assessment
Expenditure assessment	Two part approach: ■ Top down totex benchmarking based on multiple modelling approaches. ■ Detailed bottom up assessment and engineering review of business practices, business cases and other supporting materials.	Capex: detailed assessment of business practices, business cases and other supporting materials with some use of benchmarking and the Repex model. Opex: using the BST approach with inputs from benchmarking and econometric models to establish the base year.	Capex: detailed assessment of business practices, business cases and other supporting materials with some use of benchmarking and the Repex model. Opex: based on trends and step changes supported by business cases. Benchmarking completed but not used to directly adjust expenditure allowances.
Primary expenditure drivers tested	Asset condition, risk, growth and performance	Asset condition, risk, growth and performance	Asset condition, risk, growth and performance
Direct use of unserved energy to forecast expenditure	Not used as a sole parameter for top-down benchmarking.	Not used as a sole parameter for top-down benchmarking. Commonly used as part of individual project analysis by EDBs	Included in some capital expenditure justifications. Not used as a sole parameter for top-down benchmarking.

NOTE: Based on WSP's and Energy Network Consulting's experience as Independent Verifier and supporting other EDBs with CPP preparation or response to the Commission.

3.2 Assessment methodology and logic

We identified several issues that may affect the model's suitability for adjusting expenditure allowances. Our key concerns are that the model relies on a single metric, expected unserved energy, that is not strongly linked to all expenditure drivers, and it uses an incomplete set of forecast expenditure.

- The modelled expenditure adjustment does not comprehensively represent network outcomes because the model uses only one parameter and ignores other relevant outcomes, such as network growth and safety.
- The analysis incorporates asset replacement capex but excludes all other capex categories. We consider that the Reliability, Safety and Environmental (RSE) capex category is clearly linked to the EUE so would have expected this category to be included.
- The model includes all opex categories without considering how strongly each category influences EUE. For example, it includes the full forecasts for non-network and business support opex, although these categories do not have a clear, direct relationship with expected unserved energy.

As discussed in section 3.1, other jurisdictions develop top-down assessments of efficient expenditure using benchmarking techniques that combine multiple models, inputs and outputs. Therefore, in its current form the model does not appear to be suitable for setting expenditure allowances.

We also identified the following issues with the methodology applied:

- Unserved energy (an outcome of network reliability) is a lagging indicator of network condition, operating environment and asset management (including historical replacement programmes), however these aspects are not accounted for in the model. The model relies on point-in-time forecast costs (RY27) and does not consider historical or forward expenditure trends. It therefore does not demonstrate whether the selected baseline is representative of efficient long-term requirements or the impact of increasing expenditure in maintaining reliability (and therefore EUE).
- Reduced or deferred asset replacement will result in higher corrective and reactive maintenance to keep the assets in service for a longer period of time. It is not evident whether the model considers this trade off between capex and opex, the likely need for increasing network opex, or how expenditure is allocated between the categories.
- The model derives a constant exponent by back-solving so that the risk of failure in Year 15 is 50 times that in Year 1[5]. It then applies the following formula for EUE growth:

  EUE cost = EUE cost year n-1 x(1+7%)^Factor

  Since the 'Factor' is a constant calculated to be 4.13, this equation effectively applies a 32% growth rate year to year. This is not a true compounding growth calculation as there is no time component in the compounding factor.
- The model assumes that asset health declines uniformly at 7% per year and that failure risk in Year 15 is 50 times the Year 1 level. A fixed factor of 4.13 is back-solved to produce this outcome. These assumptions are not differentiated by asset class, expected life, age profile, condition or observed failure performance.

[5] Explained to be derived from the CNAIM guidelines.

- Given variations among asset categories, subcategories, age profiles and expected lives, we do not consider that the Commission has adequately demonstrated that the assumptions that are applied at a total expenditure level are prudent or produce an EUE forecast representative of Orion's network.
- The model does not test key assumptions and inputs through sensitivity analysis, scenario modelling or back-testing. Without this validation, there is insufficient evidence that the results are robust or suitable for determining an expenditure allowance.
- The model focuses on reliability and does not account for other material investment drivers, including safety, resilience and environmental risk. It therefore cannot provide a comprehensive assessment of prudent expenditure requirements and does not provide a sound basis for assessing non-network expenditure or other drivers of investment.
- The Commission appears to have interpreted CNAIM health-index thresholds as deterioration rates. This is incorrect because deterioration rates are derived separately from other inputs and equations within the guideline. The interpretation may have affected the model's construction and outcomes.

Although the Commission's intended use of the model is unclear, we do not consider the methodology suitable for assessing expenditure forecasts of an Electricity Distribution Business.

3.3 Key inputs and assumptions

In this section we identify each of the key assumptions and provide our assessment.

Asset deterioration assumptions

- The compound growth in EUE calculation considers only growth in the incremental increase in EUE between Year 0 and Year 1, rather than growth in the total EUE value. This is inconsistent with the Commission's stated assumption that network health declines by 7% per year on a compounded, non-linear basis. If that assumption is applied, the deterioration factor should be applied consistently to the full EUE baseline. The rationale for using the factor as an exponent and changing its treatment after Year 1 is not evident.

Reliability-cost assumptions

- The SAIDI and Value of Lost Load assumptions appear broadly reasonable. However, these inputs demonstrate that the model is primarily focussed on asset failure and it does not provide a sound basis for assessing non-network expenditure or other investment drivers (ie growth, safety or compliance). This reinforces that the model should not be used as a total expenditure model.
- In New Zealand, SAIDI is only calculated for outages on the HV network. Outages on the LV network only are not included, hence the reported SAIDI will understate the actual impact on EUE and the number of assets that fail. In addition, there will be asset failure that don't result in outages in areas of the network where there is adequate redundancy. The model attempts to address this by:
  - Scaling the EUE based on the proportion of network that has redundancy. This is calculated as a ratio of sub transmission plus distribution network length compared to the distribution network length. This likely understates the amount of network with redundancy as generally the distribution network in urban areas and close to zone substations will have some degree of redundancy.

- Allowing for additional EUE based on the assumption that contribution of EUE from outages on the LV network are the same as EUE from outages on the HV network. However, this is likely an overstatement as fewer customers would be affected per outage so the amount of EUE per outage would be lower and there are typically fewer LV network assets. For example, the LV conductor length is approximately 40% of the distribution conductor length.
- The Commission undertook analysis of network performance in European countries to support their assumptions. However, the appropriateness of the method of assessment (using a 'ratio' of LV to HV SAIDI) is not justified or proven to be a valid relationship. Further, there is no evidence that the networks have a similar topology to Orion's, there are significant gaps in the data, and the 'ratio' approach applied does not account for investment that could affect performance between networks or over time, if major or regional events impacted networks, or if there are single or multiple networks in the country. Hence, we do not consider that the data can be directly applied to Orion without further understanding of how it has been developed.

We consider that, given the criticality of this parameter to the outcome of the model, there is too much uncertainty and further rigour is required to establish the base value of EUE. The model does not consider differences in switching time for network with redundancy versus repair time for network without redundancy in the calculation of EUE.

Alignment and consistency of timing assumptions

- The model treats source years inconsistently:
  - RY24 reliability data and RY25 total energy supplied are used to calculate the base EUE.
  - The base EUE is escalated by one year to RY26 at 7% and the difference (EUE in RY26 minus EUE in RY25) is used as the starting value in the model's EUE forecast. This approach understates the actual incremental increase each year, refer to the discussion in the section above.
  - RY27 is used for setting the base costs for assessing the incremental uplift that should be allowed. However, this is forecast expenditure not actual expenditure.
  - The model then starts trending EUE in RY28 based on the incremental increase in EUE from RY25 to RY26 without adjusting for the time change which would impact network condition and growth in demand.

This misalignment between the reliability baseline and cost inputs is likely to understate EUE and therefore the expenditure allowance calculated by this model.