

26 September 2025

Ben Woodham

Electricity Distribution Manager
Commerce Commission
44 The Terrace
Wellington, 6140

By email: infrastructure.regulation@comcom.govt.nz

Horizon Energy Distribution Limited (Horizon Networks) INTSA application - Rhizome GridADAPT

1. Horizon Networks is writing to you to request approval to access \$65,000 of Horizon Networks DPP4 Innovation and Non-Traditional Solutions Allowance (INTSA) to support 100% of the costs associated with trialling the Rhizome GridADAPT climate modelling service.
2. In our view the Commerce Commission can approve 100% of the cost for this INTSA application because:
 - The application is consistent with Schedule 5.3 of the Default Price-Quality Path Determination.
 - The project is for a short (1-year) trial of an innovative solution to model climate change impact so that Horizon Networks can improve its long-term resilience investment decisions.
 - Without an INTSA, this project is unlikely to be funded from within Horizon Networks operational expenditure allowance.
 - 100% of the costs can be recovered via INTSA because this trial will not provide financial benefits within the next five years.
3. A completed version of the Commerce Commission's INTSA application form is attached as Appendix A.

About Rhizome GridADAPT

4. Rhizome grid asset planning and decision tool (GridADAPT) is a software as a service (SAAS) solution that uses AI and cloud technology to automate extreme weather risk assessments and can be used to inform Horizon Networks' long-term plans for resilience investment.
5. Within the context of Horizon Networks, Rhizome GridADAPT can be used to:
 - Identify asset vulnerabilities from extreme weather events.
 - Forecast financial risk and reliability metrics.
 - Measure the resilience benefits of interventions.
6. Horizon Networks would like to trial Rhizome GridADAPT to assess if this service is a viable solution to inform resilience investments.

The application is consistent with Schedule 5.3 of the Default Price-Quality Path (DPP) Determination

7. Schedule 5.3 of the Default Price-Quality Path Determination sets out the process and criteria for a non-exempt EDB to submit a proposal to access its INTSA allowance for a specific project or programme.
8. Horizon Networks can confirm the application is consistent with Schedule 5.3 of the DPP determination because:
 - The application has been made at least six months before the end of the DPP4 period (31 March 2030)¹.

¹ Schedule 5.3(3)

- The application contains sufficient information to allow the Commerce Commission to determine if the project meets the eligibility criteria².
- The specific information required in Schedule 5.3(4), and assessment against the eligibility criteria in Schedule 5.3(6) can be found in the INTSA application form in Appendix A.

The project is for a short (1-year) trial of an innovative solution

9. Rhizome GridADAPT, or similar AI-powered climate modelling and impact assessment solutions, are not widely used within New Zealand EDBs. This means investing time and money into trialling Rhizome GridADAPT is:
 - Risky – there are no New Zealand-specific experiences or expertise to draw on and no certainty of success.
 - Innovative – the Rhizome GridADAPT approach to climate modelling is not widely used and takes a different approach to modelling than traditional climate models.
10. The INTSA funding will support a 1-year trial of the Rhizome GridADAPT solution. This trial will allow Horizon Networks to evaluate this innovative solution.
11. The Rhizome GridADAPT project will be used to inform whether Horizon Networks should pursue this as a permanent solution. The 1-year trial is not in itself a permanent solution.

Without an INTSA, this project is unlikely to be funded from within Horizon Networks operational expenditure allowance

12. Without INTSA funding, the Rhizome GridADAPT pilot is unlikely to stand up against day-to-day operational requirements and would accordingly be unlikely to be funded from within Horizon Networks operational expenditure allowance.
13. The project is risky and delivers no immediate direct network benefits. The primary benefit is to inform Horizon Networks (and, by implication, New Zealand EDBs) whether Rhizome GridADAPT can provide better climate risk modelling than traditional solutions that could be used to inform our climate adaptation/resilience investments.
14. Without an INTSA allowance, Horizon Networks is not incentivised to spend the \$65,000 OPEX required to trial new and innovative ways of modelling climate change impact.

100% of the costs can be recovered via INTSA because this trial will not provide financial benefits within the next five years

15. The Rhizome GridADAPT trial will provide no financial benefits within the next five years.
16. This is because the trial is limited to a 1-year evaluation period. After this time, Horizon Networks intends to be in a position to decide if to adopt this technology on an ongoing basis.
17. Any benefits would be realised through long-term use of Rhizome GridADAPT, and occur outside of the limited, 1-year trial period.

Yours Sincerely



Jonathon Staite
Regulatory Manager

HORIZON ENERGY DISTRIBUTION LIMITED

² Schedule 5.3(4)(j)

APPENDIX A: INTSA APPLICATION TEMPLATE

Voluntary administrative information	
Name of organisation:	Horizon Energy Distribution Limited
Key contact for project:	Jonathon Staite
Key contact role:	Regulatory Manager
Key contact email:	

Summary table

Financial summary	Value (\$000)
Recovery in this application	65
Allowance recovery approved in previous applications – EDB	0
Allowance recovery approved in previous applications – collaborative	0
Remaining allowance – EDB	1060
Remaining allowance – collaborative	375
Total allowance	1500

Eligibility criteria

Relates to the supply of electricity distribution services <i>Schedule 5.3(6)(a)</i>
<i>Explain how your project relates to the supply of electricity distribution services:</i> Horizon Networks is a provider of electricity distribution services under Section 54C of the Commerce Act because: 1. It conveys electricity by line in New Zealand³. 2. These line services are not provided by Transpower⁴. 3. It is not listed as an exception in clause 54C(2) of the Commerce Act. As a provider of electricity distribution services, Horizon Networks is subject to regulation by the Commerce Commission, including Information Disclosure (ID) obligations and compliance with Input Methodologies (IMs). Under the Electricity Distribution Information Disclosure Determination 2012, Horizon Networks is required to regularly prepare and publicly disclose an Asset Management Plan (AMP). The AMP must include: • Risk policies and mitigation strategies. • Assessment of high-impact, low probability (HILP) events, including extreme weather events.

³ 54C(1)(a) of the Commerce Act

⁴ Definition of *electricity distribution services* in Input Methodologies

- A description of the resilience of the network and asset management systems to such events.

The modelling of impact from extreme weather events supports Horizon Networks' ability to:

- Identify vulnerable areas of the network.
- Develop and implement risk mitigation strategies.
- Ensure resilience and reliability of supply.
- Comply with the Commerce Commission's expectations for prudent asset management and long-term planning.

Therefore, Horizon Networks' INTSA application for the Rhizome GridADAPT trial, which will model extreme weather risk, is directly related to Horizon Networks' regulated electricity distribution services.

The Rhizome GridADAPT trial directly supports compliance with the Commerce Commission's Information Disclosure requirements and contributes to the delivery of reliable, resilient electricity distribution in accordance with the objectives of Part 4 of the Commerce Act.

Promotes the Part 4 purpose of the Act

Schedule 5.3(6)(b)

Explain how your project promotes the purpose of Part 4 under s 52A(1) of the Commerce Act:

The purpose of Part 4 of the Commerce Act is to promote the long-term benefit of consumers by promoting outcomes that are consistent with outcomes produced in competitive markets, such that suppliers of regulated goods or services

- have incentives to innovate and to invest, including in replacement, upgraded, and new assets; and
- have incentives to improve efficiency and provide services at a quality that reflects consumer demands; and
- share with consumers the benefits of efficiency gains in the supply of the regulated goods or services, including through lower prices; and
- are limited in their ability to extract excessive profits.

The Rhizome GridADAPT trial supports Part 4 of the Commerce Act in the following ways:

- **Innovation and Investment incentives**
 The trial incentivises Horizon Networks to innovate by exploring the use of artificial intelligence (AI) – powered applications to enhance extreme weather risk modelling. This supports investment in smarter, more adaptive planning tools that inform long-term resilience strategies—aligned with the Commission's expectations for prudent asset management.
- **Improved Efficiency and Service Quality**
 If successful, the Rhizome GridADAPT trial will inform a decision on whether Rhizome GridADAPT can be a long-term option for enhanced extreme weather risk modelling. If successful, Rhizome GridADAPT would allow Horizon Networks to better identify areas of the network that are vulnerable to high-impact, low-probability events. This will inform future expenditure decisions and improve the quality of distribution services, particularly in response to increasing consumer expectations for reliability during extreme weather events
- **Sharing Efficiency Gains with Consumers**

Any efficiency gains resulting from using Rhizome GridADAPT as a permanent solution to improve planning and target investment will be reflected in Horizon Networks' expenditure forecasts.

- **No Excessive Profit Extraction**

The trial does not provide Horizon Networks with any direct financial benefit or opportunity to extract excessive profits. It is a 1-year exploratory innovation initiative designed to understand how new technology could be used to improve long-term planning and service delivery in line with regulatory obligations.

Explain how one or both of the following applies:

Schedule 5.3(6)(c)

The project is unlikely to otherwise result in any financial benefit to the non-exempt EDB for five years following the forecast completion of the project, and/ or the benefits of the project are sufficiently uncertain, such that you would not otherwise undertake the project.

1. *The project or programme is unlikely to otherwise result in any financial benefits to the non-exempt EDB in the five disclosure years after the date by which the non-exempt EDB indicates in its INTSA proposal that it expects all of the INTSA outputs to have been delivered:*

The project will deliver no financial benefits for Horizon Networks for the next five years after the trial is complete.

The project is an evaluation trial that will inform Horizon Networks' decisions on modelling for resilience investments.

2. *The benefits of the project or programme are sufficiently uncertain that the non-exempt EDB would not carry out the project or programme if it could not recover some or all of the forecast costs of the project or programme from the non-exempt EDB's INTSA:*

Horizon Networks understands that it may be the first EDB within New Zealand and Australia to use Rhizome's GridADAPT software. Horizon Networks will be the innovation pioneers for Rhizome GridADAPT. As the innovation pioneer, Horizon Networks will be bearing the uncertainty and risk associated with trying to apply new software and systems to the New Zealand EDB context.

Areas of uncertainty and risk that Horizon Networks will be accepting by progressing this trial include:

1. **How the asset fragility modelling will apply to New Zealand's unique context.** The accuracy of Rhizome's models in predicting the probability of asset failures based on available asset data (asset health, location, material, and age) has not been tested for New Zealand's locational, environmental and asset context.
2. **The impact of data quality on modelling accuracy.** Rhizome's machine learning algorithm relies on historic asset failure data to calculate the probability of asset damage and customer impact. The granularity of information collected when an asset fails has improved over time. This means that more comprehensive information is available for recent failures than is available for historic failures. While Horizon Networks clearly has sufficient data to undertake robust modelling, the variation in granularity may influence the outcomes in ways that are not yet known.
3. **Resolution of climate projection dataset.** The default climate projection data Rhizome uses has a resolution of 9km. The publicly available climate projection published by MBIE has a resolution of 5km. Both datasets may limit the ability to identify and model

micro-climate variability in the complex terrain in which the Horizon Network operates.

Project specific information

The project's purpose and EDB's intended steps to achieve that purpose

Schedule 5.3(4)(a)

INTSA outputs and expected benefits of the project for consumers:

Purpose

The purpose of the Rhizome GridADAPT trial is to enhance Horizon Networks toolset, used to plan for and manage climate-related risks to our electricity distribution network.

As New Zealand progresses toward decarbonisation, electricity becomes increasingly critical for economic productivity and everyday life. Improvements to modelling how climate change and asset conditions affect network resilience over time will enable Horizon to better mitigate and manage the impact of extreme weather events on consumers.

There are limitations with the existing approach and toolsets that the Rhizome GridADAPT trial can help address. Existing climate risk modelling:

1. does not consider existing and forecast asset condition;
2. is assessed at the asset level and does not provide a system-level impact;
3. requires manual calculations to understand customer impact from weather events at each asset level;
4. is unable to support scenario analysis by varying climate variables or applying mitigations;

Horizon Networks' steps to achieve this purpose

Horizon Networks will:

- Contract with Rhizome for a 1-year trial of its GridADAPT service
- Identify and validate all input data and the required data quality for vulnerability modelling
- Ingest weather observation, weather reanalysis, and downscaled climate data set
- Complete implementation of econometrics and machine learning approach
- Couple the extreme weather projection model with the historic feeder segment fragility model

The outcome of this modelling is the projection of reliability metrics at 10-year increments until 2080.

This modelling can then be re-run with different investment scenarios, providing a cost-benefit metric for each investment.

Outputs of the project

The Rhizome GridADAPT trial will deliver an assessment of Rhizome GridADAPT's suitability for long-term resilience planning, focusing on:

1. the applicability of asset fragility modelling in New Zealand's context;

2. data quality requirements and the effect on modelling accuracy;
3. accuracy of identifying network vulnerability and quantifying climate resilience risks;
4. the application of the scenario analysis for planning purposes.

Consumer benefits

The Rhizome GridADAPT trial will allow Horizon Networks to make an informed decision on the use of new technology to model climate change.

This project delivers efficient decision-making and an improved toolset for climate modelling.

If the Rhizome GridADAPT is successful, Horizon Networks will invest in using Rhizome GridADAPT for a longer period. Consumers will benefit from improved long-term modelling and resilience investment decisions, which can lead to:

- **Improved Reliability:** Reduced frequency and duration of outages caused by extreme weather events.
- **Cost Efficiency:** Better-informed investment decisions that balance resilience improvements with affordability.
- **Targeted Solutions:** Identification of vulnerable areas of the network to support the exploration of both network and non-network solutions to mitigate risks.
- **Futureproofing:** A more resilient electricity network that supports New Zealand's decarbonization goals and adapts to evolving climate conditions.

If the Rhizome GridADAPT trial is not successful, Horizon Networks will have gained valuable insights into climate change impact modelling, and consumers will benefit through avoiding long-term investment in promising technology that still needs to be proven to be effective within the New Zealand context.

Outline the outputs to be delivered in the supply of electricity distribution services by the project, and the expected benefits for consumers:

The outputs to be delivered in the supply of electricity distribution services by the project

As covered in the eligibility criteria section, the Rhizome GridADAPT trial is directly related to Horizon Networks' regulated electricity distribution services.

The output of this project is to assess the suitability of GridADAPT for long-term resilience planning with a focus on assessing

1. the applicability of asset fragility modelling in New Zealand's context;
2. data quality requirements and the effect on modelling accuracy;
3. accuracy of identifying network vulnerability and quantifying climate resilience risks;
4. application of the scenario analysis for planning purposes.

Consumer benefits

As noted in response to the above question, the Rhizome GridADAPT trial will allow Horizon Networks to make an informed decision on the use of new technology to model climate change. This project delivers efficient decision-making and an improved toolset for climate modelling.

If successful, and Horizon Networks decides to implement Rhizome GridADAPT as an enduring

solution, consumers will benefit from improved long-term modelling and resilience investment decisions.	
Estimated delivery date for outputs <i>Schedule 5.3(4)(b) and (c),</i>	
Outputs:	Date:
A report outlining the pilot project outcomes, with a focus on: 1. the applicability of asset fragility modelling in New Zealand's context; 2. data quality requirements and the effect on modelling accuracy; 3. accuracy of identifying network vulnerability and quantifying climate resilience risks; 4. application of the scenario analysis for planning purposes.	November 2026
A closeout report outlining the outcomes of the project and any insights Horizon Networks has gained from undertaking the project.	January 2027
Estimated annual forecast costs of project <i>Schedule 5.3(4)(d)</i>	
<i>Set out the forecast project costs on an annual basis until the date by which you expect to have delivered the project outputs:</i> The forecast project cost is approximately \$65,000 p.a. for one year. The project outputs are expected to be delivered 12 months after engaging with Rhizome (project outputs estimated to be available around November 2026) and the closeout report provided to the Commerce Commission 50 business days after this date (closeout report estimated to be available around January 2027).	
Proportion of forecast costs that EDB wishes to recover <i>Schedule 5.3(4)(e)</i>	
<i>Set out the proportion of the forecast project costs that you wish to recover. If the proportion is greater than 75%, explain why the project is unlikely to otherwise provide any financial benefits to the EDB within 5 years of the forecast completion date in the EDB's INTSA proposal:</i> Horizon Networks requests approval to recover 100% of the project costs through this INTSA proposal. The Rhizome GridADAPT trial will provide no financial benefits within the next five years. This is because the trial is limited to a 1-year evaluation period. This evaluation will inform future decisions but will not provide a financial benefit to Horizon Networks. At the end of the trial, Horizon Networks will be in a position to decide whether to adopt this technology on an ongoing basis. Any benefits would be realised through long-term use of Rhizome GridADAPT, and occur outside of the limited, 1-year trial period.	
Any anticipated SAIDI INTSA values and SAIFI INTSA values <i>Schedule 5.3(4)(f)</i>	

Outline any anticipated SAIDI and SAIFI values for interruptions directly associated with the project ('SAIDI/ SAIFI INTSA values'):

The project is not anticipated to directly impact SAIDI and SAIFI performance.

Cause or causes of the anticipated interruptions on SAIDI or SAIFI values

Schedule 5.3(4)(g)

Outline the cause or causes of the interruptions for any anticipated SAIDI INTSA values and SAIFI INTSA values, where the cause of each such interruption is directly associated with the project or programme for the INTSA proposal:

The project is not anticipated to directly impact SAIDI and SAIFI performance.

Steps taken, or proposing to take, to reduce likelihood or impact on consumers of interruptions

Schedule 5.3(4)(h)

Outline the steps you've taken, or are proposing to take, to reduce the likelihood or impact on consumers of interruptions for any anticipated SAIDI INTSA values and SAIFI INTSA values:

The project is not anticipated to directly impact SAIDI and SAIFI performance.
As a result, no steps have been taken to reduce the likelihood or impact on consumers.

Indication of whether project is collaborative

Schedule 5.3(4)(i)

Indicate whether the EDB intends to work together with one or more other EDBs to carry out the project and, if so, how it intends to work together with the other EDBs:

This is not a collaborative application.
The small scale and short trial period does not support collaboration; however, Horizon Networks will engage with and share our experience with other EDBs who may decide to consider how Rhizome GridADAPT may be used in their network.

Other supplementary information)

Space for the EDB to provide supplementary information the EDB wants to provide that does not fit under any of the previous headings:

Rhizome's GridADAPT's platform is designed to use machine learning using multiple datasets to identify vulnerable assets under various climate projections. It enables Horizon Networks to develop mitigation strategies and analyse risk reduction to cost across multiple mitigation plans over a set time period.

The Rhizome GridADAPT trial will include the following stages:

1. Distribution network input data preparation:

- a. Identify and validate all input data and the required data quality for vulnerability modelling. The dataset could include network topology, connectivity, customer impact, historical outage, asset failures, and asset

health. The dataset will be transformed into the platform's internal domain model within the model staging environment.

2. Model implementation:

- a. Ingest weather observation, weather reanalysis, and downscaled climate data sets for the selected service area to forecast the return period of extreme weather variables such as temperatures, humidity, precipitation, and wind for 10-year increments.
- b. Complete implementation of econometrics and machine learning approach to understand the likelihood and consequence of failure to feeder segments from various types of extreme weather physical hazards. The model results will produce annual outage/reliability metrics as a result of hazards that are observed in the Horizon service area.
- c. Couple the extreme weather projection model with the historic feeder segment fragility model to generate the likelihood and consequence of future failure of each segment within the pilot. The end of this modelling will result in the projection of reliability metrics at 10-year increments until 2080.
- d. Model the change in projected outages for each investment selected for evaluation for each feeder segment for the selected feeders. The result of this model will be a cost-benefit metric for each investment-segment location.

3. Validation, Closeout, and gridADAPT Evaluation

- a. Complete validation and develop validation metrics related to extreme weather projection analysis and asset fragility analysis.
- b. Incorporate the outputs into climate risk and cost-benefit analysis.
- c. Evaluate Rhizome GridADAPT and complete the project outcomes report.
- d. Complete and submit the project closeout report.