Orion Innovation Strategy

Update - March 2025

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Executive summary

Our energy system must fundamentally transform to enable society's equitable transition to a low carbon, resilient future. Our increasing reliance on renewable electricity generation, the growth of distributed energy resources, and the increasing value of demand-side flexibility creates new opportunities for customer participation and community resilience.

Local electricity distribution businesses (EDBs), such as Orion, play a critical role in enabling the transition - connecting customers across our region and facilitating efficient operation of the local system for the benefit of consumers.

While the broad direction of the transition is clear, there are many challenges and opportunities to be addressed along the way. We must explore, learn and innovate together – as EDBs, as an energy sector, and as a region to co-create the energy future our community seeks.

Orion's innovation strategy uses the intersection of intelligence, curiosity and execution to rapidly explore, learn and implement new solutions that benefit consumers.

During the past year we continued to embed innovation into our business planning across our strategic focus areas and programmes such as network transformation, flexibility and market development, and operational efficiency. We initiated innovation projects based on emerging risks and opportunities, including community energy, identified through our uncertain, activities, and from stakeholders.

Orion successfully applied for Innovation Project Allowance for two projects: ViSION and Resi-Flex and have been sharing our learnings from these and other innovation projects widely at events and on our website.

We have continued trialing and adapting our innovation processes, growing collaboration – including with ENA's Future Network Forum – building on learnings and starting to monitor progress.

In the context of increased demand and costs for delivering electricity lines services, investing in innovation and non-traditional solutions projects allow us to explore and trial new processes and technologies for long-term consumer benefit.

The Commerce Commission's new Innovation and Non-Traditional Solutions Allowance (INTSA) will enable us to invest in initiatives where benefits are more uncertain, or financial benefits may not be realised within the regulatory period.

Orion is also considering an application to the Commerce Commission for a Customised Price-quality Path, which allows us to invest more in our network, including innovative solutions.

We invite our customers, communities, partners and stakeholders to join us on this innovation journey. To collaborate, explore and co-create a sustainable, equitable and resilient energy system for central-Canterbury and beyond – powering a cleaner brighter future with our community.

For more information on our innovation practices and project updates please visit **https://www.oriongroup.co.nz/your-energy-future/innovation**

Innovation context, priorities and practices at Orion

We continue to innovate in line with our purpose to power a cleaner and brighter future with our community.

Orion’s innovation context and activity overview

In June 2023 Orion published our first Innovation Strategy, updated in March 2024, outlining how our wide-ranging innovation practices support achieving our purpose ‘powering a cleaner brighter future with our community’, through The Orion Group’s strategic focus areas.

This year, our innovation practices have been concentrated on three of our five strategic Focus Areas, to meet the desired outcomes for each strategic priority.

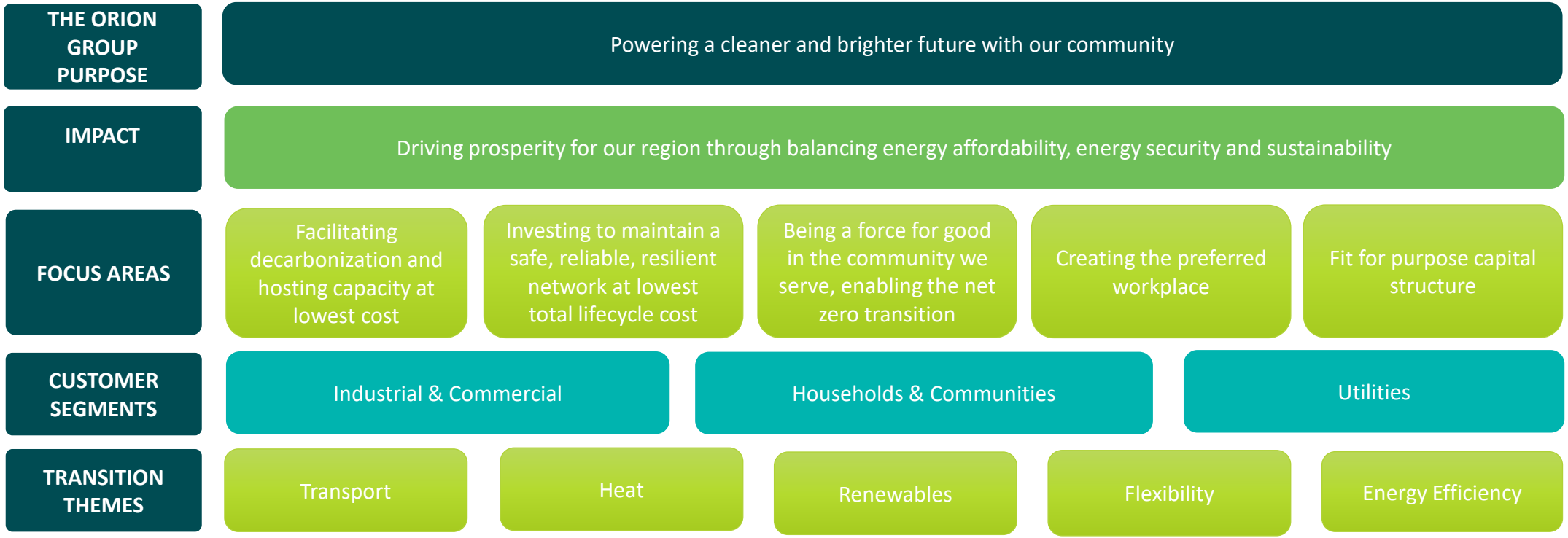
In the context of increased demand and costs for delivering electricity lines services, investing in innovation and non-traditional solutions projects allow us to explore and trial new processes and technologies for long-term consumer benefit. We are also implementing an Integrated Asset Management (IAM) programme, using many new processes and solutions, that we expect to result in significant cost savings.

This section updates and highlights some of the innovation priorities and practices underway as well as new initiatives started over the past year, and those planned. Examples of these are summarised below and expanded on in the following pages. A list of innovation initiatives are included in Appendix A.

Orion Strategic Focus Area	**Facilitating decarbonisation and hosting capacity at lowest cost**		**Investing to maintain a safe, reliable, resilient network at lowest total lifecycle cost**	**Being a force for good in the community we serve, enabling the equitable transition to a net zero, resilient future**	
Strategic Priorities	**Maximise the use of the existing network with smart technologies and better data.**	**Maximise the scope for customer participation through ‘flexibility’ and other market-based solutions.**	**Drive cost efficiency and continuous improvement across our end-to-end asset management life cycle.**	**Partnering with our communities to co-create a local energy system which reflects their current and future needs and aspirations.**	**Play a proactive role, to identify, engage and understand our C&I customers' plans and expectations, support them to efficiently access the energy services they need and to equitably participate in and benefit from the transition.**

Our sense-making framework for the energy transition

In addition to The Orion's Group purpose, impact and focus areas, Orion uses a sense-making framework to bring cohesion to our innovation activities. This captures how activities contribute to key transition themes, customer and consumer segments and outcomes and enables development of a balanced innovation portfolio. It helps us maintain oversight of our diverse set of stakeholders and their needs as the energy transition evolves. It provides a prompt for exploration in under-served and strategically important areas.



Orion

Orion Focus Area: Facilitating Decarbonisation and Hosting Capacity At Lowest Cost

Maximise the use of the existing network with smart technologies and better data

Our network is shifting from the traditional one-way power flow to a smart network, emphasising renewable energy integration, smart grid technology, and fault prediction through advanced analytics. Orion's Network Transformation Programme ensures our customers can take advantage of new low carbon technologies with greater freedom to manage their energy use to achieve their decarbonisation goals.

Innovation practices within this programme include improving network visibility and developing insights via monitoring, smart meter data, analytical technology and smart processes. Our opportunities to unlock existing capacity and optimise the performance of our network, without building more lines and cables, increase significantly through these innovative practices.

The desired outcome of this programme and our innovation projects and trials is to find effective solutions to support our network, delivering what our customers need at the lowest lifecycle cost.

A summary of FY25 network transformation innovation projects is outlined in Appendix A pg 24.

Maximise the scope for customer participation through 'flexibility' and other market-based solutions

Flexibility is an essential tool to enhance the overall efficiency of the network as consumers electrify their homes and businesses and more intermittent renewables are integrated.

Our Flexibility and Markets Development Programme coordinates across Orion and partners with others in the sector to support the development and integration of flexibility solutions. Activities are guided by a programme roadmap to ensure we understand stakeholder needs, improve visibility of flexibility needs and value, develop incentives and market settings, coordinate operation of flexibility and support consistent industry practices.

Through a range of innovative projects, we are working to unlock the benefits of flexibility to customers, the network, and the overall energy system. The desired outcome of these initiatives is to create better opportunities for customers to participation in flexibility, optimise use of network assets and facilitate an affordable energy transition for all network users.

A summary of FY25 flexibility innovation projects is outlined in Appendix A pg 25.

Case Study: Visibility and Systems Insights for the Orion Network (ViSION)

Utilities | Digitalisation

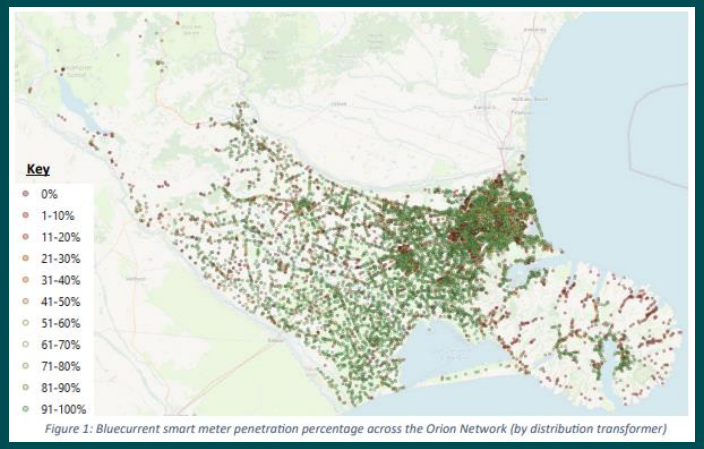


Figure 1: Bluecurrent smart meter penetration percentage across the Orion Network (by distribution transformer)

Maximising the use of the existing network with smart technologies and better data so that we can understand network demand.

The situation

Typically, an EDB's street-level low voltage network supplies more than 99% of its customers. Despite this high percentage, EDBs have traditionally not had good visibility of the condition and behaviour of their low voltage networks, which were planned for reasonably stable passive household loads with one-way power flow.

However, now more customers adopt technologies such as EVs, and solar systems and batteries, which create two-way power flows. This means developing visibility of and capability in the low voltage area is essential to efficient electricity network management and facilitating customer choice and participation in demand response.

What we explored

The Visibility and System Insights for the Orion Network (ViSION) project targets our ability to gain and use insights from a combination of existing and new, temporal and spatial data sources.

Phase 1 was focused on data gathering and integration - from a combination of existing, and new, temporal and spatial data sources - and enablement of power systems insight. We developed a data governance framework and established a modern data platform. Recognising a future of vast data inflow, we introduced new methods and techniques for data receipt, storage, cleansing and security.

During Phase 2, two platform-as-a-service companies (Gridsight and Future Grid) triangulated three separate data sources gathered during Phase 1, to provide a suite of use cases for us:

- Smart meter operational data.
- Low voltage distribution transformer monitors.
- Network topology.

After trialing these and other internal use cases, we issued an RFP in August 2024 for a LV Network Analytics Platform, and selected Future Grid as the successful vendor for the next two years.

We also trialed our first artificial intelligence (AI) solutions, including a project which segmented customers into high and lower energy demand, including spatial representation.

Outcomes

The insights developed through our ViSION project will help unlock latent capacity in Orion's LV network, thereby reducing the need for future network investment, lower costs to our customers, and deliver numerous other efficiency, quality and safety improvements.

What's next?

Phase 1 of ViSION was supported through an Innovation Project Allowance. Phase 2 of ViSION is nearly complete and a report will be published to share learnings. For more information visit our ViSION project page

Orion

Case study: Resi-Flex (Phase 2 & 3 update)

Households | Flexibility

Incentivising flexibility from residential consumers by exploring commercial mechanisms with flexibility stakeholders and considering consumer needs.

The situation

The transition towards net-zero emissions is driving an increasing reliance on electricity, and a trend toward more intermittent renewable generation. By shifting energy use in response to price signals, network demand, or renewable availability, households can lower bills while supporting system efficiency and stability.

However, most consumers lack access to incentives that encourage participation. Unlocking flexibility requires commercial models that make it simple and worthwhile for households to engage.

What we explored

Launched in 2022 through Orion's Innovation Pipeline, Resi-Flex is testing commercial models to scale residential flexibility. In partnership with Wellington Electricity and industry stakeholders, the project takes a learning-by-doing approach to identify effective incentives. Following strong interest, Octopus Energy was selected as the first implementation partner in 2024, with more partners joining since. Trials are now underway, integrating multiple commercial mechanisms with Octopus' managed EV charging service to assess consumer response and system benefits.

More information can be found here.

Desired outcomes

Resi-Flex is informing flexibility trials and advancing the FlexForum's Flexibility Plan. The project is testing three models:

- **Managed Service** – Retailers get discounted line charges for managing customer flexibility.
- **Procured Flexibility** – Retailers are paid for actual load reductions during events.
- **Consumption Bands** – Variable network pricing based on electricity consumption rate.

These trials will reveal which models drive participation and deliver the greatest value for consumers and the electricity system, shaping future industry approaches.

OCTOPUS 'SAVING SESSIONS' TRIAL: WHAT WE HAVE ACHIEVED ALREADY

50%
50% average reduction in customer load during Saving Sessions events

33%
One in three Octopus customers signed up to Saving Sessions trial

66%
Two out of three trial participants saved money during the trial

280MW
Demonstrated potential to provide 280 megawatts of shedable load at a national scale

wellington electricity | we | Orion

Orion Focus Area: Investing to maintain a safe, reliable, resilient network at lowest total lifecycle cost

Drive cost efficiency and continuous improvement across our end-to-end asset management life cycle

As demand for electricity continues to grow, a safe, reliable and resilient network that's cost-effective for our community remains a key focus for Orion.

We have progressed various data and efficiency improvement projects including an **Integrated Asset Management** programme which will enable Orion to sequence our network build and maintenance workplans with other local entities, resulting in significant cost savings. Some innovation projects and practices explore improving the timeliness, accuracy and management of the data that feeds into this.

Other innovation projects and trials this year aim to result in more efficient processes and improved safety, reliability and customer quality outcomes for Orion, and in some cases other EDBs, as we collaborate and share our learnings.

Where successful in reducing costs and improving quality to customers, we look to incorporate these new technologies and processes into our day-to-day operations.

See case studies on the following pages and a project summary in Appendix A pg 26.

Case study: Advance drone technology for asset management

Utilities | Security | Digitalisation

Trials show potential for Unmanned Aerial Vehicles (UAVs) to improve the cost-effectiveness and quality of asset data capture and substation inspection and monitoring.

The situation

After successfully trialling drones to assist with the location of line-faults on the network and implement this process into our operations, Orion has been exploring other use cases for advanced drone technology to improve our operational processes for **asset data capture and substation inspection and remote switching.**

What we explored and outcomes

We have been exploring how we might use Unmanned Aerial Vehicles (UAVs) to ***capture detailed asset data*** in a more cost-effective and safer way to support our Integrated Asset Management programme.

Last year we trialled using UAVs to do pole top inspections, ~~and~~ capture data on the assets condition and geolocation and in turn using AI to capture exceptions to asset condition. The trial demonstrated that the technology provided high quality images and meta data at a rate ten times faster than humans could potentially leading to cost savings, and lowered the number of vehicle rolls and therefore Orion's CO^2 emissions.

We also explored whether using autonomous UAVs for ***substation inspection and remote switching*** was feasible, and whether it would reduce the time to identify and rectify faults or security issues**,** compared to sending operators.

The use of drones at substations isn't common due to the higher complexity of the space and access restrictions. Orion worked with Ferntech and Civil Aviation Authority (CAA) to trial **autonomously operated UAV substation inspections,** using a UAV docked at our Norwood substation, a first in NZ. The team performed more than 200 successful remote flights, sending real-time data back to the control room. We also successfully trialled using a drone to remotely monitor the operation of a substation switch, and used thermal imaging to enable the team to find faults and fix them before causing outages.

In late 2024, CAA granted Orion an Unmanned Aircraft Operator Certificate**.**

Orion is sharing learnings from these trials widely.

What's next

Orion is scoping a project to use UAVs to inspect and collect imagery and meta data for a significant number of pole tops. This will enable us to trial using artificial intelligence (AI) to identify asset condition issues and targeted maintenance or repair strategies, and evaluate benefits to consumers and cost-efficiencies.

We are also scoping a demonstration project to evaluate the benefits and risks of a remotely operated UAV docked at a substation for a range of use cases. We are in discussions with Transpower and other EDBs regarding potential opportunities for collaboration.

Case study: Improved Distribution Box Design

Utilities

Security

Redesigning an asset with suppliers and contractors can lead to multiple improvements and benefits over its lifetime.

The situation

Orion has around 60,000 distribution boxes on our network, that last around 50 years on average. With increasing residential growth and electrification, we are expecting many more distribution boxes to be installed or upgraded. We recognised an opportunity to improve the design of the distribution boxes to be more easily upgradeable, with improved redesigned security and thermal properties. This could reduce costs and outage time over the life of the distribution box.

What we explored

Orion went out to market in 2022 for a supplier to develop a new distribution box that would meet current and future needs.

TransNet was the successful supplier, who worked with Orion and contractors that install and maintain the boxes, for input into the new design.

This collaborative approach identified the opportunity for additional benefits and efficiencies, for example, cabling design which makes installation and upgrades quicker and therefore more cost-effective. Also bringing the network terminations inside the box, above ground level, which would reduce the risk of faults, and therefore outages to customers.

Various new designs were prototyped, including different positioning and spacing of the internal equipment, ventilation solutions that still met security needs, and some innovative fireproofing options.

TransNet then had the final design tested, and it was certified at the end of 2024.

What we learned

We learned the value of working with suppliers and contractors to redesign a product that would result in multiple improvements and benefits over its lifetime, and will be available to all EDBs.

Outcomes and what's next?

Our desired outcomes include a lower lifecycle cost per unit due to easier and quicker installation and upgrading, and less maintenance due to faults or security issues.

We also expect that the new design will result in less disruption to households due to faults or outage time during upgrades.

Being able to upgrade rather than replace the box is also a more sustainable option. The box is 100% recyclable.

The first of these new distribution boxes, the DB-U, has been installed on Orion's network in Belfast, where it's powering a section of street lighting.

We plan to begin installing the new distribution box in new subdivisions over the next year.

Orion Focus Area: Being a force for good in the community we serve, enabling the equitable transition to a net zero, resilient future

Partnering with our communities to co-create a local energy system which reflects their current and future needs and aspirations.	**Play a proactive role, to identify, engage and understand our Commercial and Industrial customers' plans and expectations, support them to efficiently access the energy services they need and to equitably participate in and benefit from the transition.**
This year we focused on better understanding our communities' needs and aspirations and identifying opportunities to innovate for better consumer outcomes. A key innovation activity was the Community Energy Activator Pilot, in partnership with Ara Ake and Community Energy Network, where nine community groups participated in a 12-week programme to develop community energy projects that met their aspirations. A desired outcome of this for Orion is to identify possible innovation and non-traditional solution projects we can work with our communities on. We also continued to collaborate with Canterbury Energy Wellbeing Collective on energy efficiency initiatives and have completed the Ōtautahi Community Housing Trust and Home Energy Living Lab projects, sharing learnings and data on changing home energy use. See the following case studies and Appendix A pg 27.	Several innovation activities aim to support better outcomes for our commercial and industrial (C&I) customers in terms of decarbonisation, timeliness, security and affordability. (Appendix A pgs 25 & 27). Orion continues to develop new internal processes and tools in our Connections Team, engaging early with customers to provide better pre-application support. We are also leading Electricity Network Aotearoa's (ENA) Future Network Forum (FNF) Connections Journey Mapping project, aligning EDBs processes to improve the connections journey for customers, saving time and money (Pg 27). Shifting commercial and industrial usage outside of peak times can have significant benefits for customers, network, and electricity generation. Our Winter Peak project explored how to maximise demand response to avoid blackouts, and a new C&I flexibility project explores areas of value on our network and how best to engage C&I customers in flexibility initiatives (Pg 25).

Case Study: Community Energy Activator Pilot

To explore and better understand community interest, viability and impact of various community energy business models, and develop/test educational resources that could be re-used in other communities.

The situation

Community energy projects have the potential to benefit communities and households in terms of secure, renewable and more affordable energy. Certain community energy projects and business models may also provide non-traditional solutions to network constraints. Community energy models, including solar, storage, sharing solutions e.g., Peer to Peer (P2P) and microgrids were identified as an emerging area for Orion to explore alongside better understanding our communities' energy aspirations.

What we explored

The Community Energy Activator pilot was developed in partnership with Ara Ake and Community Energy Network to learn alongside our local communities about community energy aspirations and different business models.

Nine community groups from Selwyn and Christchurch were selected from 26 applications to participate in a 12-week part-time 'Activator' from September to November 2024. Each week the groups were supported by guest speakers, experts and their navigator to work through a chapter from Ara Ake's Community Energy 'How To' Guide and online resources. We learned from other community groups and each other about the realities of bringing projects to life through site visits and sharing experiences.

Eight of the nine groups presented their aspirations, community energy project ideas and learnings at an event to an audience of 100 people in November 2024.

What we learned

Community energy aspirations vary widely between communities and there are a range of projects and business models that can help communities achieve their goals.

The Community Energy Activator Pilot resulted in both the community groups and the Activator Pilot partners learning about the key enablers and barriers to bringing these projects to life.

What's next

A review and learnings report is being written for release in March 2025.

The Activator partners are following up with the community groups and would like to test the viability and impact of at least three community energy business models that the cohort are developing.

We are also evaluating the value of the Activator pilot itself including the design, delivery and the content (How To Guide, and workbooks), with the intent to incorporate learnings and improvements for future programmes in NZ.

For more information, please visit https://www.ceactivator.co.nz/

Case Study: Home Energy Living Lab

Providing insights on residential customers current and future energy use, and the value of household and appliance level data to support better network operation and consumer outcomes.

The situation

Residential energy use continues to change at pace, with increasing technologies available for home energy generation, storage, and control.

Gaining a better understanding of residential customers' current and future energy use, and impacts of new technologies, could help Orion derisk key assumptions. This includes the impact of changing residential profiles at Installation Control Point (ICP) level on the network.

The lack of residential household and appliance-level energy data in NZ led us to explore the potential of a Home Energy Living Lab. The Lab allows us to trial new technologies, and how we might share learnings with the participating households and other stakeholders.

What we explored

We had 16 households from The Orion Group volunteer to be part of the Living Lab trial, covering a variety of household profiles from across Selwyn and Christchurch. Participants were surveyed on their current home energy use, electricity plans, and future considerations before and after one year of monitoring and participated in surveys on hot water use and control.

Two households had existing Smappee energy management devices that we could monitor, and we installed Shelly energy monitors in the remaining 14 homes. We measured overall household use and two or three major energy appliances per households (e.g., hot water cylinder, heat pump, EV, PV). Participants were able to see their energy use through an app, and in some cases change and control the time they used certain appliances.

Orion stakeholders were able to view and interrogate anonymised data through PowerBI, for use cases including better understanding household voltage and hot water load control.

We worked with an external stakeholders including University of Canterbury, BRANZ Household Energy End Use Project (HEEP), Ara Ake and EECA to test the value of a national scale Home Energy Living Lab to provide energy datasets and customer insights, and trials of new technologies and services.

What we learned

- Diversity of residential customers' energy use, knowledge and real life set ups
- Household and appliance level energy data has value to support better network operation, and residential energy transition opportunities

What's next

Orion is discontinuing the Home Energy Living Lab. We continue to use data to gain insights and work with external stakeholders on projects to understand residential energy technology and behavioural changes impact on both the network and customers.

Our innovation approach, process, and governance

Orion’s Innovation Process and Governance Update

We are adapting the ICE (intelligence, Curiosity, Execution) approach to innovation, innovation principles, process and governance structure. These changes will also support innovation support mechanisms, such as the new Innovation and Non-Traditional Solutions Allowance (INTSA) introduced in November 2024.

Informing our Innovation Process
Orion uses a variety of information to inform and enable our innovation practices. Staff at all levels engage regularly with stakeholders in our innovation ecosystem at events including conferences and cross-sector collaborative forums. We seek staff input on emerging strategic risks, opportunities, and uncertainties, through internal Future Forums, which is added to regular insights intelligence at management and board level.

Collaboration
Orion continues to collaborate with a range of partners, including other EDBs, non-network solutions providers and customers, especially where there are common innovation challenges.

The following pages provide more information on our innovation process.

The Orion Group Futures Forum

Orion

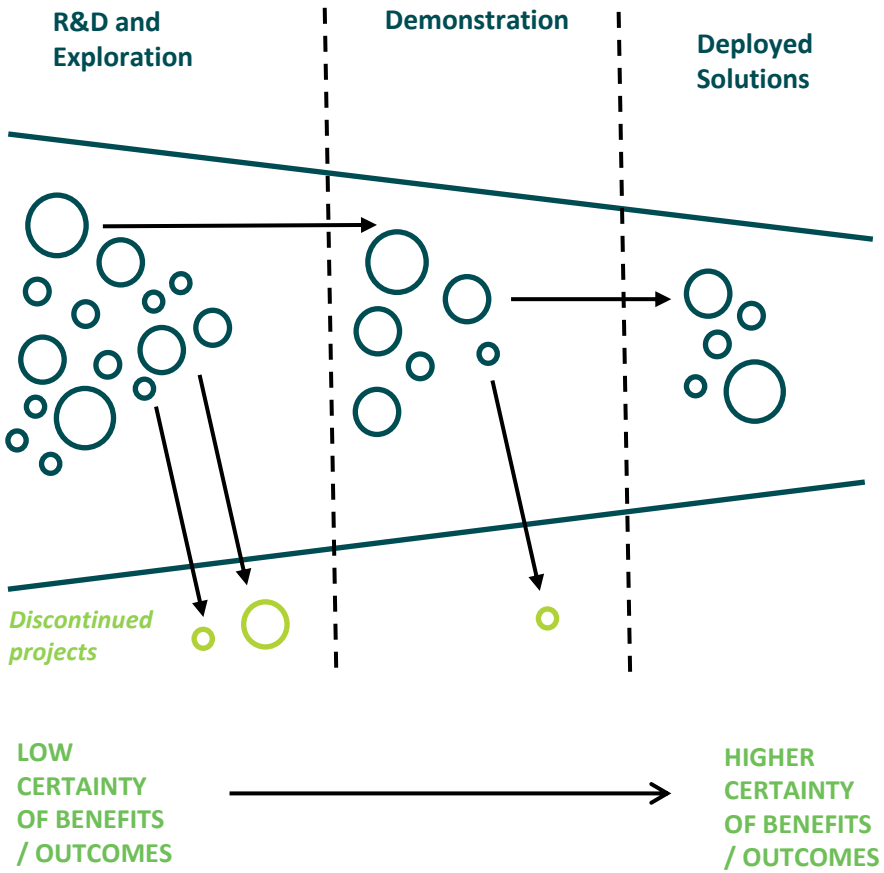
Measuring success and making decisions

INNOVATION IDEAS INFORMED BY INTERNAL 'INTELLIGENCE' & EXTERNAL STAKEHOLDERS:

- Environmental scanning
- Risks/ opportunities
- Previous project learnings
- Stakeholders
- Customer need
- Working groups e.g. FlexForum, ENA

OPTIONEERING AND PRIORITISATION WITHIN ORION STRATEGIC FOCUS AREAS

- Focus 1
- Focus 2
- Focus 3



Orion's portfolio of innovation practices are guided by our strategic focus areas which are determined by our board and Integrated Leadership Team. Orion has evolved our innovation governance model to be more agile by devolving decision-making from an Innovation Steering Group, to the relevant steering groups over these focus areas, and strategic priority programmes with specific outcomes.

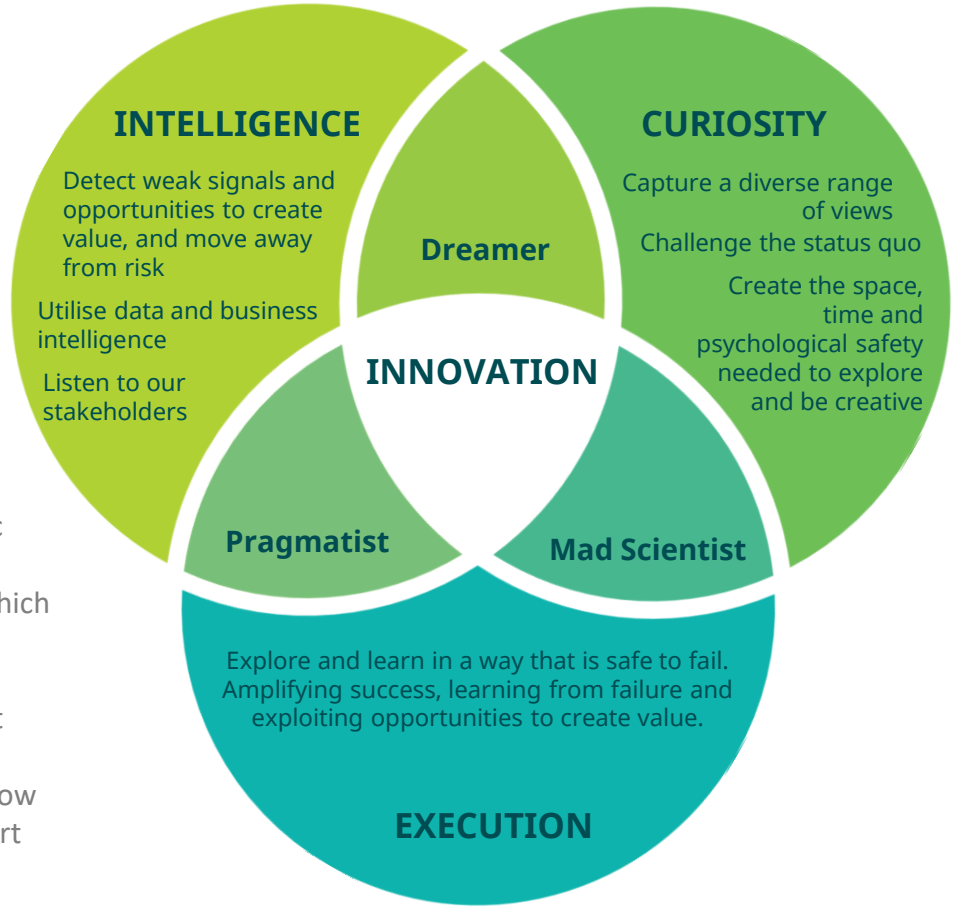
To support innovation projects, we are developing a Benefits Framework for innovation, to better inform decisions about which innovation projects to commence, adopt, or discontinue.

We are building a benefits library to define financial and non-financial benefits to both consumers and Orion, and a process for how we estimate, measure and report on them. Our intent is to develop better guidance for decision-making.

Orion

ICE Innovation® underpins our Innovation Strategy

Intelligence - We will increase our sensitivity to change opportunity and risk in our strategic environment. We will use the trends and uncertainties in our future scenarios work to attract intelligence from our stakeholders. This provides a target for our exploration.



Curiosity - Creating the space and time to think anew about the opportunity. How we will engage stakeholders to increase diversity and change perspective. We go against our natural inclination for rapid problem solving to explore a range of new possibilities.

The Orion Group strategy provides the strategic intent and enables the activity that leads to innovation. ICE Innovation® is the process by which we activate that strategic intent.

ICE Innovation® provides an enabling constraint that allows us to concentrate our effort on the things we can control. This strategy describes how Orion will allocate time and resources to support the process that leads to innovation.

Further explanation in **Appendix B**

Execution - Enabling rapid exploration activity internally and with external partners. Creating fast feedback loops for learning. Amplifying what's working and mitigating what isn't.

Orion

Guiding principles for activating innovation

Guiding principles serve as a foundation for decision-making in the context of activating the Orion Innovation Strategy. We need the following principles because innovation activities (exploration) are often characterised by a high degree of uncertainty and unpredictability, making it difficult to rely on traditional long-term plans or detailed roadmaps. Instead, a principled approach to decision making allows for more flexibility and adaptability in response to changing circumstances while remaining consistent with Orion's strategic direction.

Collaborate and co-create

We access the diversity of perspectives from our internal and external relationships to partner in exploration. We don't go it alone; we co-create value with a range of stakeholders.

Act now

We act now to maximise the evolutionary potential of our current situation to increase the probability of innovation emerging. We don't wait for certain, ideal scenarios to exist before moving forward.

Prioritise learning

We prioritise learning over solutions in the exploration. We amplify solutions as they emerge. We monitor our exploration closely for signs of success or failure to learn and adapt quickly.

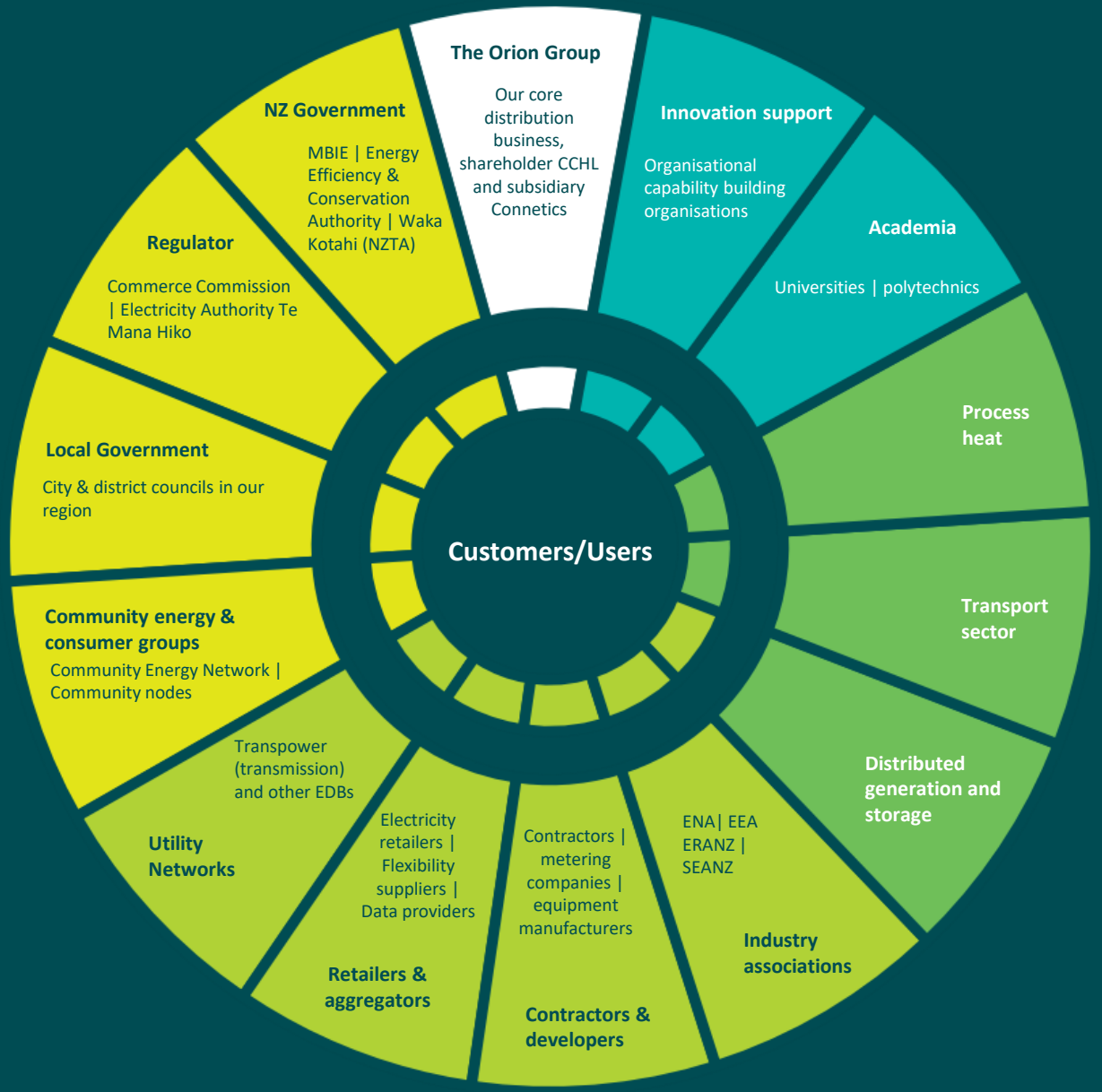
Keep options broad

We keep our options as broad as possible for as long as possible to engage collective curiosity and give us greater capacity to adapt. The purpose of innovation activity is to explore widely, not choose the one right way.

Our Innovation Ecosystem

As innovation can emerge from many situations, we maintain diversity of approaches to connecting and collaborating with stakeholders and customers.

We must work with our network of stakeholders to build shared understanding, collaboratively explore solutions and create long-term benefit for consumers.



Orion

Innovating together

A cleaner, brighter future for our communities will only be achieved though deep, authentic collaboration. We collaborate across the sector, with adjacent sectors and within our local community.

ena electricity networks aotearoa

ENA represent all 29 lines companies which operate the poles and wires delivering electricity to every region across Aotearoa.

Through working groups and forums such as the Future Network Forum, Orion supports ENA's collective efforts to help deliver a low-carbon future for New Zealanders, based on reliable, safe and affordable electricity networks.

Find out more at: https://www.ena.org.nz/about/

FLEXFORUM

The FlexForum is a cross-industry group formed to identify a set of actions to integrate distributed energy resources (DER) into the electricity system and markets to maximise the benefits for Aotearoa New Zealand.

As a member of the FlexForum, Orion is supporting coordination and collaborative action to enable a smart and flexible energy system.

Follow their progress at https://www.flexforum.nz/

Energy Hub Powered by Orion

Energy Hub is a regional space for those working on the energy transition to gather, connect, share, learn, and innovate together.

Community Energy Activator Pilot 2024 exploring community energy aspirations and innovative models

Energy Exchange events

Canterbury Energy Wellbeing Collective

Find out more at https://www.energyhub.org.nz

To contact us about innovation, visit www.oriongroup.co.nz/corporate/innovation/

Appendices

Appendix A: Orion's Innovation Activity

Strategic Focus Area	Start Date	Activity Name	Description	Status	Collaborators	Themes
Facilitating decarbonisation and hosting capacity at lowest cost **Strategic priority:** **Maximise the use of the existing network with smart technologies and better data**	FY23	**'Visibility and System Insights for the Orion Network' ViSION**	'Visibility and System Insights for the Orion Network' (ViSION) project, includes improving visibility and insights gained across the network from GXP through to behind the meter – via monitoring, smart meter data, analytical technology and smart processes. The insights developed through our ViSION project will help unlock latent capacity in Orion's LV network, thereby reducing the need for future network investment, lower costs to our customers, and deliver numerous other efficiency, quality and safety improvements. Phase 2 of this project is due to be complete by end March 2025.	Live		Utility, Digitisation
	FY23	**EDB Challenge - Gridsight**	Pilot implementation of the Gridsight platform to identify network constraints, electric vehicle locations and broken neutrals as well as validation of our network topology in the Milton Zone Substation supply area. (14,000 ICPs). The pilot identified key value streams; prioritsation and deferral of capital expenditure; improved customer safety; faster customer complaint resolution, and increased engineering efficiency. We collaborated with Gridsight to integrate data and insights into our processes to demonstrate the value of full network LV visibility.	Complete	Gridsight	Utility, Transport, Renewables
	FY23	**EDB Challenge – ANSA Holdings**	Pilot project to increase common understanding and approach to electric vehicle and solar PV hosting capacity amongst distribution businesses through the development of a dynamic dashboard for displaying ANSA hosting capacity results based on user inputs. This project will increase the useability of hosting capacity results to support Network Development and Customer Connections workflows for network optimisation or upgrade. Paired with network hosting capacity studies, it will also contribute towards making LV hosting capacity publicly available to customers.	Complete	ANSA (Advanced Network Simulation and Analysis)	Utility, Transport, Flexibility
	FY24	**Future Grid Analytics Trial**	Experiment and determine what network and customer insights are achievable with LV circuit monitoring data and household smart meter data and the accuracy of these insights across the whole of our network . Additionally, to understand Future Grid's capabilities, service offering and integration options.	Complete	Future Grid	Utility, Transport, Renewables
	FY24	**Nexans AI Synthetic Connectivity Model Trial**	Understand accuracy and data outputs of AI GIS connectivity correction.	Complete	Nexans	Utility
	FY24	**LiDAR capture of sub-transmission towers**	We have partnered with an Australian based company to capture and display our towers in urban Christchurch to check for electrical and vegetation clearances. We plan to do this periodically to check for any encroachment over time, and we'll continue to capture, via helicopter or Drone, other areas of our network.	Live		Utility
	FY25	**Predictive Fault Analytics – 11kV high impedance fault detection**	Collaboration with University of Canterbury (UC) to host current and voltage sensors. Testing and calibration of non-contact sensors. Monitoring and identification of fault precursors. Synthesize transient data to identify high impedance fault activity and testing the fault location algorithm to determine the accuracy of the predicted fault.	Live	University of Canterbury	Utility
	FY25	**Lifespan estimation of distribution transformers**	Develop a thermal model of a distribution transformer that can be used to predict the temperature distribution within the transformer under various operating conditions. The model will be used to develop methodologies for testing transformers under various scenarios and to develop data logging instrumentation which can be deployed in the field to monitor the temperature of transformers in real time.	Complete	University of Canterbury	Utility
	FY25	**Prototyping of in-house LV monitoring equipment**	Develop scalable low voltage (LV) monitoring equipment to enhance the visibility and monitoring of the LV network. This involves creating a prototype of a scalable voltage and current sensing unit, developing a functional real-time data pipeline, and creating an app for end-to-end commissioning.	Complete	University of Canterbury	Utility
	FY25	**Common Information Model (CIM) readiness assessment**	Project aims to assess Orion's datasets for suitability to adopt the IEC Common Information Model (CIM) for network modelling use cases including gap analysis, data mapping and specification of integration requirements.	Complete		Utility

Appendix A: Orion's Innovation Activity

Strategic Focus Area	Start Date	Activity Name	Description	Status	Collaborators	Themes
Facilitating decarbonisation and hosting capacity at lowest cost **Strategic priority:** **Maximise the scope for customer participation through 'flexibility' and other market-based solutions**	FY23	**Lincoln Flexibility Trial**	Trialing the use of flexibility services in Lincoln to delay network build in this area. The project's aim was to deliver 100kW of flexibility in 2024, growing to 500kW in winter 2025. During FY25 we worked with Ecotricity (project delivery partner) to onboard and incetivise adoption of household battery storage to provide flexibility during Orion-signaled winter peak events. Some of the first-year targets were exceeded and integration with Orion and Ecotricity's platforms demonstrated the ability of flexibility to help manage peak loads in the Lincoln area. However, following unanticipated challenges in scaling to 500kW for winter 2025, the decision was made by the two partners to end the trial ahead of schedule.	Complete	Ecotricity	Flexibility, Households
	FY23	**Future of hot water flexibility**	Enabling local hot water load management with retailers to maximise whole-of-system value to consumers. In FY25: we collaborated with other EDBs and retailers to develop a Load Management Protocol, to develop a consistent framework for aggregators to manage load on the network, while maintaining Orion's ability to respond to grid and network emergencies. For winter 2025, retailers will be controlling hot water on the network at scale for the first time - a comprehensive assessment is underway to address and mitigate potential risks to network and hot water service delivery.	Live	Various retailers	Flexibility, Security, Households, Heat
	FY23	**EEA FlexTalk**	Collaborative industry project led by EEA and co-funded by EECA, which seeks to demonstrate a common communication protocol for managing EV charging via flexibility providers. The project will establish best practice guidance to support the integration of smart EV chargers into a flexible energy system and inform any necessary regulation. During FY25, the final reports were produced and shared with the industry to share technical insights on the programs tested and fit of OpenADR in the New Zealand context.	Complete	EEA, EECA, Aurora, Electra, Openloop, Evnex, Cortexo, Transpower, etc.	Sustainability, Security, Households, Industrial & Commercial, Transport, Flexibility
	FY23	**Resi-Flex**	Exploring how to encourage flexibility from residential households by testing various commercial mechanisms with flexibility suppliers. This will directly benefit customers who provide flexibility through incentives and indirectly benefit all network customers by enabling decarbonisation at lowest cost. During FY2025, an expression of interest was run to select flexibility providers to partner with and co-design commenced. Initial trials with Octopus Energy included Saving Sessions and Intelligent Octopus, a managed EV charging service. Co-design and customer recruitment continues ahead of larger trials in winter 2025.	Live	Wellington Electricity, Octopus Energy, Others to be announced	Households, Flexibility
	FY24	**Winter Peak Project**	Winter Peak explored data on how to maximise demand response and support the system operator around winter peak shortages (2024 and beyond), also setting out a communications strategy to this end. Focus on increasing control period response from Orion's Major customers, reducing the risk of winter blackouts for all customers.	Complete		Flexibility, Industrial & Commercial
	FY25	**Commercial and Industrial Flexibilty (Stage 1)**	Shifting commercial and industrial usage outside of peak times can have significant benefits for customers, the network, and electricity generation. This project focuses on identifying and testing how to best engage commercial and industrial customers in flexibility initiatives. Stage 1 (Discover and Define) involves quantitative and qualitative research toward understanding of areas of value on our network and identify potential partners, ahead of applying for funding for Stage 2 (develop and deliver trials).	Live	Lumen consulting. EDB, retailer and industry partners TBC	Flexibility, Industrial & Commercial

Appendix A: Orion's Innovation Activity

Strategic Focus Area	Start Date	Activity Name	Description	Status	Collaborators	Themes
Investing to maintain a safe, reliable, resilient network at lowest total lifecycle cost	FY23	**Technology Driven Asset Location Capture**	Development and implementation of a digital field capture standard that conforms to the Surveyor General's Underground Utility Standard - leveraging technology, so far saving 8 x in time, increases in accuracy, timeliness and improved operational safety. Real-time kinematic positioning technology providing sub 10cm accuracy in Greenfields application. Capability of accurate imagery has been applicable to solving other issues such as surveying errors etc.	Complete		Security, affordability, Utility, Digitalisation
	FY23	**Mobile Switching iPad app (Peek) for electronic Permits and other enhancements**	Enhancements to our mobile app for gathering field incident data and improving the safety and efficiency of field switching work. This is innovative as we are contributing to the design and specification of new and enhanced features in this product that are possibly world leading. Design and specification with OEM (Synerty) to bring electronic permits and other enhancements into the mobile switching app. Testing is still underway, including User Acceptance Testing (UAT) by Orion, which is expected to be completed end of FY25.	Live	Synerty	Digitalisation
	FY23	**Automatic power restoration**	Implemented an automated switching algorithm on around 170 feeders across the network. When an 11 kV network fault occurs, the system looks at indications from line fault indicators in the field, does some power flow calculations and then automatically reconfigures the network to restore power to as many customers as possible. Project is now live on around 190 feeders. All feeders that can benefit from APRS are now enabled, and further feeders will be added as network development or upgrades occur.	Complete		Regional Prosperity, Security, Community, Utilities
	FY24	**Artificial Intelligence/ Machine Learning /advanced analytics**	Exploring artificial intelligence and machine learning methods and processes and tooling to provide advanced analytics for visibility (maintenance &infra planning), forecasting (infra planning) and flex applications. Trialing analytics with smart meter and LV monitoring data to identify use cases and insights.	Live		Digitalisation
	FY24	**Digitisation of Storage Facilities**	We have worked with Connetics to digitise our various storage locations to facilitate almost real time visibility and movements of what we've got in stock and where it is. Orion staff have visibility, via a Connetics portal, of all stock.	Live	Connetics	Digitalisation
	FY23	**Improved Distribution Box Design**	Worked with suppliers and contractors to redesign a distribution box with the desired outcome of improving security, decreasing outages and reducing cost over its lifetime.	Complete	TransNet and suppliers	Utility, Security
	FY25	**Advance drone technology – Substation trial**	Trialed an automated unmanned aerial vehicle (UAV) to monitor the Norwood GXP. This enables the team to find faults and fix them before they cause outages. Over 200 trial flights were conducted to ensure its suitability for substation sites, with minimal risk to people and infrastructure, while eliminating a repetitive task and freeing up our people for more valuable work. With successful trials completed, we are now looking to use the UAV to regularly monitor the site.	Live		Security, Utility, Digitalisation
	FY25	**Advance drone technology – Pole Top Inspection trial**	Our Advanced Drone Technology programme this year trialled using unmanned aerial vehicles (UAVs) to do Pole Top Inspections. We are also exploring how artificial intelligence (AI) can make this process more effective and ultimately reduce staff time and costs, and improve asset management outcomes.	Live		Security, Utility, Digitalisation
	FY25	**Primary Outage Restoration Tool (PORT) trial**	Building on our Automatic Power Restoration System (APRS) work, this year we trialed a new Primary Outage Restoration Tool (PORT) at our Barnett Park substation. This demonstrated that, if we lose the sub-transmission supply to a substation, more than 3500 customers power supply could be restored in a matter of seconds. We are in the final stages of testing PORT for rollout at more substations in the coming year.	Complete		Security, Utility, Digitalisation

Appendix A: Orion's Innovation Activity

Strategic Focus Area	Start Date	Activity Name	Description	Status	Collaborators	Themes
Being a force for good in the community we serve, enabling the equitable transition to a net zero, resilient future	FY23	**Customer Connections Journey - Orion**	We ran several workshops with major customers and their consultants to understand their decarbonisation journeys and opportunities for Orion to develop new processes and tools to support proactive engagement, increase investment certainty and enable decarbonisation. This led to the development of a Connection Futures team to provide pre-application consultative support for complex commercial and industrial customers. We have stood down Orion Energy Services and incorporated some of this support into our Connections Team.	Complete	Various including engagement with EECA, DETA and CIAL.	Regional Prosperity, Utilities, Industrial & Commercial, Transport, Heat
	FY25	**Connections Journey Mapping – aligning EDB processes**	Orion has been leading the Electricity Network Aotearoa (ENA) Future Network Forum (FNF)'s 'Connections Journey Mapping' project - aligning EDBs' processes to improve the connections journey for customers. The project team engaged with charge point operators, large distributed generation customers and lines companies to fully understand their pain points and discuss potential solutions. The team has a list of 13 action points to improve the customer journey, from pre-application right through to delivery. The plan is to deliver the 'quick win' solutions first and the first output has been completed; a glossary that will help all lines companies to use standard terminology when it comes to the connection process.	Live	Major customers and the ENA Future Network Forum.	Industrial & Commercial
	FY23	**Home Energy Living Lab**	Orion is developing a Home Energy Living Lab to better understand the implications of changing household energy profiles and knowledge needs of our residential customers, and trial products or services that support the low-carbon energy transition. As we gather insights and learnings, we are exploring expanding the project in collaboration with partners.	Complete		Households
	FY23	**Otautahi Community Housing Trust**	Orion are working with Otautahi Community Housing Trust (OCHT) on a project to understand energy consumption and environmental factors to explore how this could help OCHT improve their decision making on building portfolios. It provides tenants involved the opportunity to improve their energy efficiency while maintaining a healthy home.	Complete	Otautahi Community Housing Trust	Households
	FY24	**Canterbury Energy Wellbeing Collective**	We have established a new 'Community Energy Services' function and progressed several energy equity and wellbeing initiatives over the past year in partnership with the newly formed 'Canterbury Energy Wellbeing Collective'. This group has started collaborating on local energy advisory 'pop ups' and referring services.	Complete	Various	Community, Households, Equity
	FY24	**Energy Transition Modelling Toolkit**	Developed an innovative energy transition modelling toolkit to convert future energy scenarios into energy demand, to inform local energy planning, network investment and flexibility opportunities.	Complete		
	FY24	**Community Energy - discovery**	Orion is exploring opportunities with our communities to enhance resilience and trial innovative ways to store and distribute locally generated electricity. A study on community energy needs and conversations with community groups has resulted in collaboration with Ara Ake, Community Energy Network and others to explore a Community Energy incubator to bring the Community Energy Guidelines to life. We are also exploring business models for community energy and batteries that could benefit both the network and communities.	Complete	Ara Ake, Community Energy Network	Community, Households, Equity, Renewables
	FY25	**Community Energy Activator pilot**	Orion collaborated with Ara Ake, Community Energy Network and others to pilot a Community Energy Activator in Canterbury. The twelve week programme covering the topics in the Community Energy How To Guide was piloted with nine community groups. We are exploring business models for community energy and batteries that could benefit both the network and communities. A learnings report is due byApril 2025.	Complete	Ara Ake, Community Energy Network	Community, Households, Equity, Renewables

Appendix B: Innovation Practices

Commerce Commission Information Disclosure Requirements

In November 2022 (reviewed February 2024), the Commerce Commission introduced information disclosure requirements for EDBs to describe their innovation practices. The objective of these requirements are to ensure stakeholders have better understanding of how EDBs are adapting to the changing environment and technical settings in which they operate, which is especially important given the impact decarbonisation will have on EDBs.

We define innovation as the amplification of successful exploration. Reflecting this, we have shared a broad set of practices, including activity related to the supply of electricity lines services and Orion's strategic purpose in support of and with our customers and communities.

17.6	a description of the following:	Covered in section page
17.6.1	any innovation practices the EDB has planned or undertaken since the last AMP or AMP update was publicly disclosed, including case studies and trials;	7-16, 24-27
17.6.2	the EDB's desired outcomes of any innovation practices, and how they may improve outcomes for consumers;	7-16, 24-27
17.6.3	how the EDB measures success and makes decisions regarding any innovation practices, including how the EDB decides whether to commence, commercially adopt, or discontinue these practices;	18
17.6.4	how the EDB's decision-making and innovation practices depend on the work of other companies, including other EDBs and providers of non-network solutions; and	17, 21, 23
17.6.5	the types of information the EDB uses to inform or enable any innovation practices, and the EDB's approach to seeking that information.	17-19, 21-22

Orion

https://www.oriongroup.co.nz/your-energy-future/innovation

innovate@oriongroup.co.nz