Resi-Flex Project

Innovation Project Allowance Application

Common IPA Application - EXTERNAL

MAY 2024

Orion + we wellington electricity

CONTENTS

1 EXECUTIVE SUMMARY

This is Orion and Wellington Electricity's ("Orion/WELL", "we", "us", "our") application for innovation project allowance for the joint Resi-flex project. Under the Default Price-Quality Path Determination[1] (Determination) non-exempt Electricity Distribution Businesses (EDBs)[2] may seek approval from the Commerce Commission (Commission) for additional allowances to part fund innovation projects. Schedule 5.3 of the Determination provides the application criteria.

The transition towards net-zero emissions is leading to an increasing reliance on electricity. Recent reports, such as "The Future is Electric"[3] by The Boston Consulting Group, highlights the importance of increasing demand-side flexibility to support the integration of intermittent renewable generation and to improve the utilisation of electricity networks. Demand-side flexibility can be provided by Consumer Energy Resources (CER) such as EV charging, electric hot water heating or residential batteries. In response to these challenges, Orion and Wellington Electricity have partnered to deliver the Resi-Flex project. Resi-Flex is a collaborative project and aims to incentivise flexibility from residential consumers by exploring commercial mechanisms in collaboration with flexibility stakeholders.

Meeting the innovation allowance eligibility criteria

The Resi-Flex project meets the innovation allowance eligibility criteria, including meeting Input Methodologies (IM)[4] definition of an "innovation project". The Resi-Flex project is developing and trialling residential flexibility services that will allow EDBs to deliver more electricity from their existing network, deferring or avoiding expensive network reinforcement and will help to provide services at a lower cost[5]. The successful implementation of residential demand-side flexibility will also help improve network quality by providing tools to ensure that the expected rapid growth in decarbonisation-rated electricity growth remains within the network's operating limits.

As highlighted in the Boston consulting "The Future is Electric", all networks will need to develop demand-side flexibility. The flexibility offerings, user requirements and the supporting commercial framework developed by Resi-Flex will assist other networks in creating their own services and processes. The Resi-Flex project regularly shares what we have learnt with other EDBs and stakeholders including the ENA's Future Networks Forum and FlexForum.

Stephen Batstone (Wayne Manor Advisory, Whiteboard, Sapere Research, FlexForum Chair), has provided an independent report confirming that Resi-Flex meets the IM definition of an innovation project and that it will be of general application to other EDBs in Aotearoa. The report is provided in Appendix 1.

[1] Electricity Distribution Services Default Price-Quality Path Determination 2020 (Consolidated 20 May 2020) available here https://comcom.govt.nz/__data/assets/pdf_file/0025/216862/Electricity-distribution-services-default-price-quality-path-determination-2020-consolidated-20-May-2020-20-May-2020.pdf

[2] A non-exempt EDB is subject to both price-quality and information disclosure regulation https://comcom.govt.nz/regulated-industries/electricity-lines/electricity-distributor-map

[3] BCG - The Future is Electric

[4] Electricity Distribution Services Input Methodologies Determination 2012 (consolidated 20 May 2020) available https://comcom.govt.nz/__data/assets/pdf_file/0017/60542/Electricity-distribution-services-input-methodologies-determination-2012-consolidated-20-May-2020-20-May-2020.pdfv

[5] A low cost compared to distribution services without residential demand-side flexibility.

Project stages and budget

Table 1 summarises the project phases and provides a summary of actuals. This is a multi-year project and Orion and WELL will be applying to draw down from the Innovation fund at the end of the next three regulatory years.

Project phase	Phase 1: User requirements	Phase 2: Commercial mechanisms	Phase 3: Co-design and trials	Phase 3: Plan implementation at scale
Start	**Year ending 31 March 2023**	**Year ending 31 March 2023**	**Year ending 31 March 2024**	**Year ending 31 March 2026**
Completion	**Year ending 31 March 2024**	**Year ending 31 March 2024**	**Year ending 31 March 2026**	**Year ending 31 March 2027**
Progress	Completed	Completed	In progress	Not started
Results shared	EEA Conference Paper for all users (High-level summary)[6] (June 2023) Public report[7] for Consumers and Flex Stakeholders (July 2023) EOI for Network Use Cases[8] (March 2024)	EEA Conference Paper for High-level summary[9] (June 2023) EOI for Trial Commercial Mechanisms[10] (March 2024) In progress with ENA FNF[11] for Commercial Framework and Calculator (outside of the Resi-Flex project)	EOI seeking partners[12] (March 2024) Selection of partners will lead to trials specifications and trials learnings document	Not started
Actuals[13]	$59,432	$40,000	$32,700	0

Table 1: Resi-Flex project phases and actuals

The first two phases have been completed (User Requirements phase and Commercial Mechanisms). The third phase has started and will be implemented in the 31 March 2025 and 31 March 2026 regulatory years. The third phase will be finalised by defining refined offerings from trials to scalable solutions that can be provided as a standard offering.

[6] https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-EEA-Paper-Final.pdf
[7] https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-Public-Report_Release-1.pdf
[8] https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-EOI-Phase-3-Trials-Final.pdf
[9] https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-EEA-Paper-Final.pdf
[10] https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-EOI-Phase-3-Trials-Final.pdf
[11] https://www.ena.org.nz/fnf/
[12] https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-EOI-Phase-3-Trials-Final.pdf
[13] Actuals were spent before the end of this regulatory year and are included in this draw-down request.

Requested draw-down for the regulator year ending 31 March 2024

Table 2 provides the project spent to date and the requested draw-down amount for each network. The table also provides the innovation allowance for each network, net of other applications. The draw-down requests for the Resi-Flex project do not exceed the available allowances.

Network	Orion	WELL
Spent to date	$100,350	$31,782
Requested draw-down	$50,175	$15,891
Available allowance	$825,000	$310,353[14]

Table 2: Requested draw-down amounts

[14] WELL's available allowance ($376k) less other applications to draw down the allowance ($65k).

2 INTRODUCTION

This is Orion and Wellington Electricity's ("Orion/WELL", "we", "us", "our") application for innovation project allowance for the joint Resi-Flex project. Under the Default Price-Quality Path Determination[15] (Determination) non-exempt Electricity Distribution Businesses (EDBs)[16] may seek approval from the Commerce Commission (Commission) for additional allowances to part fund innovation projects. Schedule 5.3 of the Determination provides the application criteria.

Context

Historically, EDBs in Aotearoa have largely managed peak demand electricity use by managing consumers' hot water heating through ripple relays. This has enabled deferral of network investment and helped to maintain network security. Hot water management provides a useful example of the value of modifying consumption patterns while meeting consumers' needs.

Flexibility has been identified as central to decarbonisation in New Zealand through:

- The Ministry for the Environment's Emission Reduction Plan[17], which calls for more efficient use of New Zealand Transmission and Distribution infrastructure
- The Boston Consulting's 'The Future is Electric'[18], which includes high-priority actions to develop flexibility services, improve distribution peak pricing signals and smart managed tariffs to "Enable a smart electricity system".
- Transpower's Whakamana i Te Mauri Hiko[19], which identifies the development of flexibility at the grid and distribution level as key deliverables.

Research by Concept Consulting[20] found that EV charging and hot water heating will drive the majority of the increase in residential electricity demand and will provide ~90% of the potential for flexibility from consumer appliances. However, most consumers are unaware of the existing or future value of flexibility or how this impacts their power bill. This was reinforced by the Electricity Authority Market Development Advisory Group (MDAG) which recently emphasised the need for tariff and technology innovation to ensure customers have access to the information they need to make informed decisions about electricity use and demand side flexibility[21]. To unlock the value of Distributed Energy Resources (DER) and flexibility for households, businesses, communities, and the power system, a cross-sector working group called the FlexForum was established. In August 2022, they published a Flexibility Plan 1.0[22], as a starting point for coordinated and collaborative action, with an emphasis on learning-by-doing to deliver on the steps set out in the plan. Aligned with this is WELL's EV Connect Roadmap[23], which was developed through a series of industry workshops to identify the actions needed to implement flexibility.

Resi-Flex

In response to these challenges, and building up on connections through FlexForum, Orion and Wellington Electricity partnered to deliver the Resi-Flex project. This collaboration leverages shared resources and

[15] Electricity Distribution Services Default Price-Quality Path Determination 2020 (Consolidated 20 May 2020) available here https://comcom.govt.nz/__data/assets/pdf_file/0025/216862/Electricity-distribution-services-default-price-quality-path-determination-2020-consolidated-20-May-2020-20-May-2020.pdf

[16] A non-exempt EDB is subject to both price-quality and information disclosure regulation https://comcom.govt.nz/regulated-industries/electricity-lines/electricity-distributor-map

[17] https://environment.govt.nz/publications/aotearoa-new-zealands-first-emissions-reduction-plan; May 2022

[18] https://www.bcg.com/publications/2022/climate-change-in-new-zealand; Boston Consulting Group, October 2022

[19] https://www.transpower.co.nz/news/transpower-releases-its-latest-whakamana-i-te-mauri-hiko-monitoring-report; Transpower, September 2022

[20] https://www.concept.co.nz/uploads/1/2/8/3/128396759/ev_study_rept_2_v2.0.pdf

[21] https://www.ea.govt.nz/projects/all/pricing-in-a-renewables-based-electricity-system/consultation/price-discovery-under-100-renewable-electricity-supply/#:%7E:text=Consultation,to%20100%25%20renewable%20electricity%20supply

[22] https://flexforum.nz/wp-content/uploads/2024/01/FlexForum-Flexibility-Plan-1.0-31-August-2022.pdf

[23] https://www.welectricity.co.nz/about-us/major-projects/ev-connect/

expertise to drive progress and gain scalable insight. The project aims to incentivise flexibility from residential consumers by exploring commercial mechanisms in collaboration with flexibility stakeholders.

Our project, Resi-Flex, It is developing and trialling residual flexibility services that will allow EDBs to deliver more electricity from their existing network, avoiding expensive network reinforcement and will help to provide distribution services at a lower cost[24]. The successful implementation of residential demand-side flexibility will also help improve network quality by providing tools to ensure that the expected rapid growth in decarbonisation-rated electricity growth remains within the network's operating limits.

Resi-Flex at Orion

The concept for Resi-Flex was initiated by Orion in March 2022 through its Innovation Pipeline, as described in the Orion Innovation Strategy[25]. At Orion, we believe that "we must explore, learn and innovate together – as EDBs, as an energy sector, and as a region to cocreate the energy future our community seeks".

Resi-Flex is now part of a wider programme, called Flexibility and Markets Development (FMD) programme, contributing to Orion's Focus area "Facilitating decarbonisation and hosting capacity at lowest cost". FMD's strategic objective is to "Maximising the scope for customer participation in flexibility and other market-based solutions". The overall position on flexibility is covered in section 6.6 of the Orion Asset Management Plan (AMP) 2024[26]. Resi-Flex is one of the projects contributing to FMD, with, for instance, Lincoln Flex project, trialling, in partnership with Ecotricity, a non-network solution in Lincoln.

All Resi-Flex publications have been made available on our website[27].

Resi-Flex at WELL

In 2023, WELL incorporated the impact of New Zealand Emissions Reduction Plan and the step change in electric demand from electrification in its AMP. The AMP outlines our delivery strategy of building traditional new capacity (larger equipment) and developing flexibility services using customer devices to deliver more electricity from the existing network[28]. Using flexibility services to shift demand away from busy periods on the network will delay having to invest in building a larger network for as long as possible.

Just as importantly, flexibility services will help us manage the rapid uptake of customer devices like EV chargers. Our studies have indicated that 50% penetration of EV chargers larger than 2.5 kW would exceed what the Wellington network has been designed to accommodate. A high participation in residential flexibility services will allow us to connect customer EV's (and other devices) while continuing to provide a secure electricity supply.

Resi-flex is a progression from the 2017 EV Charging trial[29], 2018 EV TOU tariffs and the 2022 EV Connect programme[30].

Contact details and publication **of this application:**

We are happy to discuss any aspects of this application with the Commerce Commission. In the first instance, please contact:

- For Wellington Electricity: Scott Scrimgeour - [redacted]
- For Orion: Kelly Chapman - [redacted]

We have issued two applications (one External, and one for the Commission only). No parts of the external application nor of the Expert report in Appendix are confidential, and we are happy for the Commission to publish them in their entirety.

[24] A low cost compared to distribution services without residential demand-side flexibility.
[25] https://www.oriongroup.co.nz/assets/Company/Innovation/Orion-Innovation-Strategy_Update-FY24.pdf
[26] https://www.oriongroup.co.nz/assets/Company/Corporate-publications/Orion-Asset-Management-Plan-2024.pdf
[27] https://www.oriongroup.co.nz/corporate/innovation/innovation-projects/resi-flex/
[28] Chapter 4, https://www.welectricity.co.nz/disclosures/asset-management-plan/
[29] https://www.welectricity.co.nz/disclosures/pricing/evtrial/
[30] https://www.welectricity.co.nz/major-projects/ev-connect/

3 MEETING THE INNOVATION PROJECT ALLOWANCE CRITERIA

Schedule 5.3 of the Determination[31] provides the process and criteria for applying for allowances to partly fund innovation projects. Table 3 provides the application criteria and demonstrates how those criteria have been meet.

Criteria	Assessment	Supporting evidence
Schedule 5.3, clause (1) submitting an application to draw down from the innovation allowance		
Clause (1) (a) submit an application no later than 50 days from the end of an assessment period	This application was provided to the Commission on 15 May 2024. This date is before the 12 June 2024 deadline for submissions for the regulatory year ending 31 March 2024.	n/a
Clause (1) (a) (i) projects incurs costs we want to draw down	The project has incurred $131k in costs and Orion and WELL are applying to draw down 50% or $66k from the innovation allowance.	Section 5.3 provides a detailed cost breakdown and Section 5.2 provides the amount to draw down.
Clause (1) (a) (ii) project purpose and project plan	None of the costs have been subject to a draw down from the innovation allowance (this is both network's first application). All of the costs are operating expenditure.	Section 5.3 provides the cost details.
Clause (1) (a) (iii) project purpose and project plan	Our project, Resi-Flex, is a collaborative project between Orion and WELL and aims to incentivise flexibility from residential consumers by exploring commercial mechanisms in collaboration with flexibility stakeholders. The Resi-flex project is developing and trialing residual flexibility services that will allow EDBs to deliver more electricity from their existing network, avoiding expensive network reinforcement and will help to provide services at a lower cost. The Resi-Flex project has a project plan, a dedicated project manager and a clear governance structure with sponsors from each organization, to ensure we will achieve the projects' intended purpose.	Section 4 describes the purpose of the project and provides a high-level project plan.
Clause (1) (b) Publish this application on our websites	This application has been published on our respective websites.	Orion[32] Wellington Electricity[33]
Clause (1) (c) Commission approval to draw down	TBA	n/a
Schedule 5.3, clause (2) Assessment of an application		

[31] Electricity Distribution Services Default Price-Quality Path Determination 2020 (Consolidated 20 May 2020) available here https://comcom.govt.nz/__data/assets/pdf_file/0025/216862/Electricity-distribution-services-default-price-quality-path-determination-2020-consolidated-20-May-2020-20-May-2020.pdf

[32] https://www.oriongroup.co.nz/corporate/regulatory-disclosures/other-disclosures/

[33] https://www.welectricity.co.nz/disclosures/regulatory-applications/

Criteria	Assessment	Supporting evidence
Clause (2) (a) Draw-down amount does not exceed the available allowance	The requested draw-down amount does not exceed the available innovation allowance.	Section 5.2 compares the draw-down amounts and the available allowances.
Clause (2) (b) The networks have funded 50% of the project value	Orion and WELL have spent more than 200% of the draw down amount being requested (i.e. they are funding at least 50% of the total project cost).	Section 5.3 compares the draw-down amounts with the total amount spent on the project.
Clause (2) (c) expert report confirming the project is innovative	Stephen Batstone has provided a letter confirming the project meets the innovation definition provided in the Input Methodologies and the benefits of the innovation project will be of general application to other EDBs.	Appendix 1 provides the letter from Stephen Batstone confirming the project meets the definition of innovation.
Clause (2) (d) CV for Stephen Batstone who provided the expert report.	Stephen Batstone provided a CV demonstrating his expertise in the electricity sector and in demand-side flexibility.	The CV has been provided to the Commerce Commission.

Table 3: Innovation Application criteria and Resi-Flex project

4 THE RESI-FLEX PROJECT

4.1 Resi-Flex Phases

The purpose of Resi-Flex is to incentivise flexibility from residential consumers by exploring commercial mechanisms in collaboration with flexibility stakeholders. Resi-Flex utilises a learning-by-doing and exploratory approach and comprises three phases, described in Figure 1, covering three main objectives:

1. Understand needs, preferences, and barriers of all stakeholders across the flexibility value chain and estimate the value of flexibility from households to all;
2. Inform the development of fair and effective distribution pricing and flexibility services;
3. Observe the response from real-world residential consumers to customer offerings that reflect the value of flexibility.

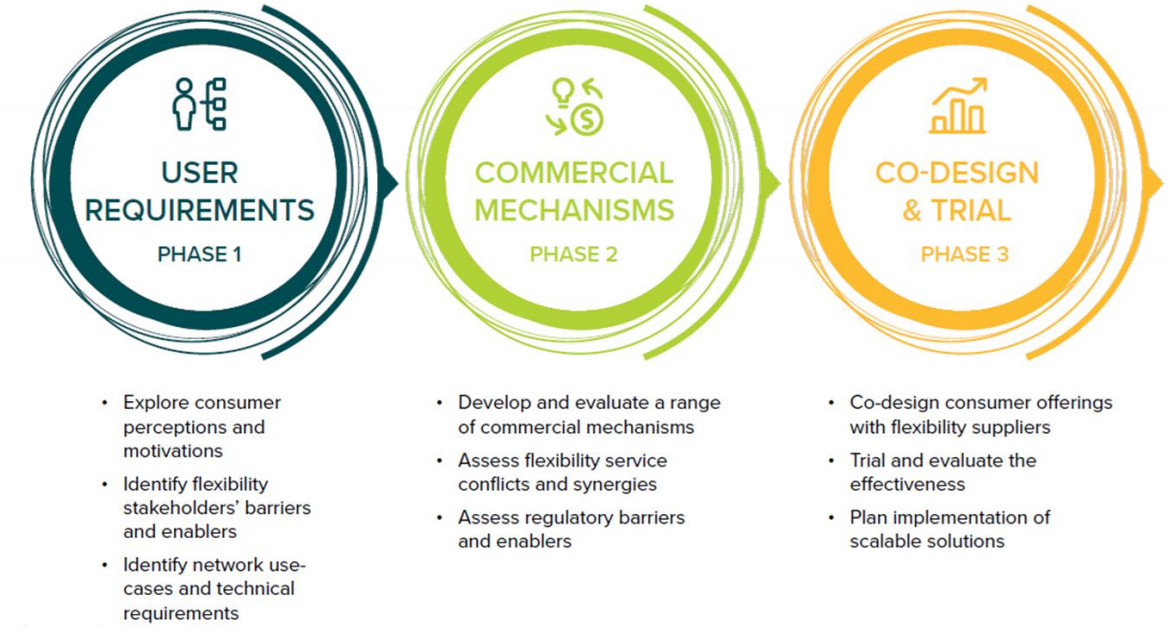

Figure 1: Resi-Flex phases

Update on projects' phases:

- We have completed Phase 1, with some insights shared at the 2023 EEA conference[34], in the Resi-Flex Public Report, Release 1[35] and in the Resi-Flex Expression of Interest (EOI)[36], published to recruit partners for Phase 3.
- Phase two has also been completed which developed a range of mechanisms to incentivise and trade flexibility and methods for calculating the value of flexibility. The resulting commercial framework and payment calculator have been shared with the Electricity Networks Aotearoa (ENA) Future Networks Forum, which will use the framework to develop an industry framework. Part of the insights have also been shared more widely in the EEA conference paper and in the Resi-Flex EOI, referenced above.
- Phase three has now commenced with the release of an Expression of Interest (EOI), referenced above, released in early March 2024 seeking trial partners. The trials will test which commercial mechanisms flexibility providers and customers will want to participate in and whether they could be offered to the market at the scale needed to provide a viable alternative to building traditional network capacity.

4.2 Project Governance and resourcing

The Resi-Flex project has a project plan, a dedicated project manager and a clear governance structure with sponsors from each organization, to ensure we will achieve the projects' intended purpose.
Resourcing is made of:

- Orion and Wellington Electricity internal staff, with key leads (respectively Evie Trolove and Scott Scrimgeour) and consulted staff in various teams (Commercial, Pricing, Network planning, Asset Management, Network Transformation, etc);
- Internal experts to support specific deliverables;
- Consultants supporting as subject matter experts. Consultants used to date include Concept Consulting (for the Commercial Framework), The Research Agency (for the customer requirements), Alex Booth (public report and design) and Jamie Silk (Stakeholder Requirements and Expression of Interest support).

[34] Resi-Flex EEA Conference paper, June 2023 https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-EEA-Paper-Final.pdf
[35] Resi-Flex Public Report Release 1, July 2023 https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-Public-Report_Release-1.pdf
[36] https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-EOI-Phase-3-Trials-Final.pdfv

4.3 Project deliverables

Each Resi-flex project stage provides learning, tools and outcomes that will be useful for the development of demand-side flexibility for other distribution networks. Table 4 summarises the deliverables for each project stage and how they will support the wider development of demand-side flexibility.

Project phase	Project step	Deliverable	Industry benefits
	Explore consumer perceptions and motivations	Consumers' requirements and personas (shared in EEA paper, Public Report)	Ensuring EDB commercial mechanisms support what consumers want to participate
	Identify flexibility stakeholders' barriers and enablers	Flexibility provider user requirements (shared in EEA paper, Public Report)	Ensuring EDB commercial mechanisms allow providers to offer attractive services
	Identify network use cases & technical requirements	EDB use cases (shared in EEA paper, EOI)	Ensuring flexibility services will provide a viable non-wire solution
	Develop and evaluate a range of commercial mechanisms	Commercial framework (high-level summary shared in EEA paper, EOI)	Common methodology for valuing and trading flexibility
	Assess flexibility service conflicts and synergies	Assessment of the customer value stack over time (shared with ENA, leading to a new collaborative project)	Highlighting when EDBs may have to compete for buying flexibility services in the future
	Assess regulatory barriers and enablers	List of regulatory changes needed	Evidence to support requests for regulatory rule changes
	Co-design customer offerings with flexibility suppliers	Trial Specifications template/checklist	Common templates for designing industry trials
	Trial and evaluate the effectiveness	Trials Design documents Trials Results/Learnings	Common templates for designing trials and assessing flexibility offerings
	Plan implementation of scalable solutions	Refined offerings shared in learning documents and plan for implementation	Flexibility solutions that customers want to participate in and can be offered to the market

Table 4: Resi-Flex project phases and deliverables

4.4 Alignment with industry roadmaps

Resi-Flex will deliver key components in developing flexibility in New Zealand. The design of the Resi-Flex project has been aligned with industry roadmaps and with the actions needed to develop flexibility services and a flexibility market. Table 5 highlights the various roadmaps' actions that Resi-flex will be contributing towards. This is not an exhaustive list, but what we have been focussing on.

Industry roadmap	Roadmap action	Resi-Flex's contribution
ENA Future Network Forum (FNF)[37]	Workstream 2 – Strategic Context: Carry out a customer segmentation, and decarbonisation journey mapping exercise	Shared Resi-Flex methodology and learnings on consumers personas informing the FNF customer segmentation work
	Workstream 2 – Flexibility opportunities	Shared Resi-Flex Economic assessment model and framework developed by Concept consulting, informing the FNF work. Scott Scrimgeour (WELL) joining the group.
FlexForum Flexibility Plan 1.0[38]	Step C – Flexibility user and customer journey mapping to identify how households make choices and decisions about flexibility.	Developing customer personas and user requirements
	Steps 20 & 21 – Creating a common framework to understanding how flexibility is valued and the interaction between commercial mechanisms, including distribution pricing, flexibility services and the broader value stack.	Developing a commercial framework for valuing and trading residential flexibility
Wellington Electricity EV Connect Roadmap[39]	Action 17 - Research consumer preference & price points – understand consumer preferences and price points. Design flexibility services that match consumer preferences and have high levels of participation.	Developing customer personas and user requirements Developing a commercial framework for valuing and trading residential flexibility
	Action 18 - Prototype service offerings – develop trials and pilots to test different aspects of a flexibility service and possible services.	Developing and trialling residential flexibility offerings

Table 5: Resi-Flex project and alignment with industry's roadmaps

4.5 Sharing what we learn

To benefit other EDBs, and the wider industry, all learnings are published on our respective websites (all references listed above) and/or shared within the industry through different channels (Electricity Network Association (ENA), FlexForum, etc).

The project has been presented by Evie Trolove (Orion) and Scott Scrimgeour (WELL) in its early stage at the 2023 EEA conference and won the Best Paper – Member award[40]. It also has been presented more recently by Evie Trolove (Orion) at 2024 Downstream[41], marking the EOI launch.

Resi-Flex deliverables are also already being reused by the industry, informing further work:

- Resi-Flex Consumer personas has been published as a summary in Resi-Flex Public Report. It has also been shared, in its full version (detailed report) with other EDBs and has informed FlexForum and

[37] https://www.ena.org.nz/fnf/
[38] https://flexforum.nz/wp-content/uploads/2024/01/FlexForum-Flexibility-Plan-1.0-31-August-2022.pdf
[39] https://www.welectricity.co.nz/about-us/major-projects/ev-connect/
[40] https://www.oriongroup.co.nz/corporate/latest-news/best-paper-2023-eea-conference/
[41] Maximising Our Flex session - https://www.nzdownstream.co.nz/sites/default/files/uploads/page/ds24_programme_02.pdf

Electricity Network Association (ENA) Future Network Forum, for their work on customer segmentation.

- Resi-Flex Commercial Framework, developed by Concept Consulting, has been transferred to the ENA Future Network Forum project. The framework will be used as the starting point to develop an industry commercial framework and guidelines for valuing and trading EDB flexibility.

5 PROJECT COST AND APPLICATION AMOUNT

5.1 Project budget

Table 6**Error! Reference source not found.** summarises the project phases and provides a summary of actuals. Only external costs have been included in the budget and in the drawn-down calculation. This is a multi-year project and Orion and WELL will be applying to draw down from the Innovation fund at the end of the next three regulatory years.

Project phase	Phase 1: User requirements	Phase 2: Commercial mechanisms	Phase 3: Co-design and trials	Phase 3: Plan implementation at scale
Start	**Year ending 31 March 2023**	**Year ending 31 March 2023**	**Year ending 31 March 2024**	**Year ending 31 March 2026**
Completion	**Year ending 31 March 2024**	**Year ending 31 March 2024**	**Year ending 31 March 2026**	**Year ending 31 March 2027**
Progress	Completed	Completed	In progress	Not started
Results shared	EEA Conference Paper for all users (High-level summary)[42] (June 2023) Public report[43] for Consumers and Flex Stakeholders (July 2023) EOI for Network Use Cases[44] (March 2024)	EEA Conference Paper for High-level summary[45] (June 2023) EOI for Trial Commercial Mechanisms[46] (March 2024) In progress with ENA FNF[47] for Commercial Framework and Calculator (outside of the Resi-Flex project)	EOI seeking partners[48] (March 2024) Selection of partners will lead to trials specifications and trials learnings document	Not started
Actuals[49]	$59,432	$40,000	$32,700	0

Table 6: Resi-flex project phases and Actuals

The first two phases have been completed (User Requirements phase and Commercial Mechanisms). The third phase has started and will be implemented in the 31 March 2025 and 31 March 2026 regulatory years.

[42] https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-EEA-Paper-Final.pdf
[43] https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-Public-Report_Release-1.pdf
[44] https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-EOI-Phase-3-Trials-Final.pdf
[45] https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-EEA-Paper-Final.pdf
[46] https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-EOI-Phase-3-Trials-Final.pdf
[47] https://www.ena.org.nz/fnf/
[48] https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-EOI-Phase-3-Trials-Final.pdf
[49] Actuals were spent before the end of this regulatory year and are included in this draw-down request.

The third phase will be finalised by defining refined offerings from trials to scalable solutions that can be provided as a standard offering.

5.2 Requested draw-down for the regulator – Regulatory year ending 31 March 2024

Table 7 provides the project spent to date and the requested draw-down amount for each network. The figure also provides the innovation allowance for each network, net of other applications. The project values do not exceed the available allowances.

Network	Orion	WELL
Spent to date	$100,350	$31,782
Requested draw-down for this project	$50,175	$15,891
Other draw-down requests (including previously approved and yet-to-be-approved draw-down requests)	$0[50]	$65,647[51]
Total drawdowns	$50,175	$81,538
Total innovation project allowance (from Determination schedule 5.3)	$825,000	$376,000
Allowance available for other projects and future drawdowns	$774,825	$294,462

Table 7: Requested drawdown amounts

5.3 Expenditure details

Table 8 provides the details of the expenditure to date, including the type of expenditure (i.e. capex or opex).

Workstreams	CAPEX or OPEX	Orion Actuals	WELL Actuals	TOTAL
User requirements - Phase 1	OPEX	$52,650	$6,782	**$59,432**
Commercial Mechanisms - Phase 2	OPEX	$15,000	$25,000	**$40,000**
Co-Design & Trial - Phase 3 (EOI only)	OPEX	$32,700	$0	**$32,700**
	Total	**$100,350**	**$31,782**	**$132,132**
	Application	**$50,175**	**$15,891**	**$66,066**

Table 8: Resi-Flex project – Expenditure details

[50] None as of now but upcoming applications will take into account Resi-Flex Application.
[51] The ANSA LV model and capex project submitted in a separate application.

6 APPENDIX 1: EXPERT LETTER

Wayne Manor Advisory Ltd

Report in respect of application to the Commerce Commission for innovation funding by Orion New Zealand Ltd and Wellington Electricity Lines Ltd.

14 October 2023

Background

Orion and Wellington Electricity Lines Limited (WELL) have undertaken two phases of a 3-phase process which culminates in phase 3 - the design and implementation of a trial of different ways of engaging with residential customers in respect of flexibility. This project is known as "Resi-Flex".

Orion and WELL intend to apply for innovation project funding as a recoverable cost under Schedule 2.1 of the Default Price-Quality Path Determination 2020. They have asked me to provide a signed report, as required under Schedule 5.3 cl(2) of the Default Price-Quality Path Determination 2020, stating my opinion that:

(i) Resi-Flex is an innovation project;

(ii) the purpose of Resi-Flex is either:

A. delivering electricity lines services at a lower cost to consumers; or

B. delivering electricity line services at a higher quality of supply to consumers; or

C. delivering electricity lines services at a lower cost to consumers and at a higher quality of supply to consumers; and

(iii) the benefits of Resi-Flex will be of general application to the activities of that non-exempt EDB or of other EDBs.

I have reviewed Orion and WELL's plans for the Resi-Flex Trial. Below I set out my opinion per the requirements above.

I also attach my current CV.

Is the proposed project an innovation project?

The IMs define an innovation project as "*a project that is focussed on the creation, development or application of a new or improved technology, process, or approach in respect of the provision of electricity lines services in New Zealand.*"

It is widely understood in New Zealand that optimising the use of flexibility in consumer demand is a valid alternative to investing in supply side resources (either electricity generation and/or transmission and distribution networks). As an example, for the last 50 years, utilising the flexibility inherent in consumer hot water storage has allowed network owners to defer investment in network upgrades[1], by limiting demand during peak periods. Where this has occurred, it has improved the provision of electricity lines services in New

[1] As well as other purposes, e.g., avoiding historical regional coincident peak-based transmission charges, noting these no longer apply.

Zealand, by delivering electricity lines services at a lower cost (through the deferral of investment).

Other than a small number of isolated industrial examples, hot water control remains the only material and regular use of demand flexibility deployed in the modern history of the electricity industry in New Zealand[2]. Today, though, consumers are purchasing or installing significant numbers of new equipment with inherent storage (heat pumps and electric vehicles, for example[3]) which offer new opportunities to deploy flexibility. Further, modern control technologies are emerging as alternatives to ripple control systems for existing hot water control and will allow more targeted management and better visibility of response.

Finally, the historical use of hot water control to deliver electricity lines services at a lower cost has happened largely in isolation of other parties in the electricity supply chain who may be able to deliver benefits to the consumer.

The Resi-Flex trial is focused on the creation, development and application of a process and approach to delivering lines services that is new or improved in the following respects:

- It will test the management of wider range of consumer devices (beyond the existing flexibility tools).
- It will trial novel combinations of network standards, pricing and payments to demonstrate their effect on flexibility delivery and outcomes for the consumer.
- It may involve new or improved technology.
- It will involve other members of the electricity supply chain (e.g., retailers, flexibility service providers).
- It is seeking customer feedback to inform the design of customer offerings and underlying standards, prices and payments

I also note that these actions are closely aligned with the following high-priority recommendations from independent advisory groups:

- Boston Consulting Group's 'The Future is Electric' report had high priority actions to develop flexibility services, improve distribution peak pricing signals and smart managed tariffs to "Enable a smart electricity system"[4]; and
- The Market Development Advisory Group's 'Price discovery in a renewables-based system' Options paper recommends that, in order to see efficient uptake of flexibility, EDBs should 'ensure distribution pricing reflects network needs'[5] so that flexibility services can deliver value to EDBs and therefore customers.

In making these recommendations, both BCG and MDAG are clear that, today, New Zealand is not as advanced as it needs to be in respect of the way distribution services are priced, and flexibility services are contracted, and that these need to be improved. The design of Resi-Flex phase 3 delivers to these needs.

In these respects, it is my firm opinion that the Resi-Flex trial meets the definition of innovation.

What is the purpose of the innovation project?

[2] The electricity conservation campaigns during the occasional years of low hydro inflows (1992, 2001, 2003 and 2008) used flexibility in consumption; while it was material in some of those years, it was (thankfully) not anywhere near as regular as the use of hot water control.

[3] As at August 2023, there are 88,865 vehicles on the road in New Zealand which plug in to the electricity network in some way, an increase of 29,000 from the same time last year. In 2022, 271,893 heat pumps were sold, the highest number since records began. Over the past 15 years, 2.16M heat pumps have been sold; assuming a 15 year appliance life, it is reasonable to assume that this is a plausible proxy for the number of heatpumps connected to the electricity network today.

[4] BCG (2022), "The Future is Electric", page 181

[5] MDAG (2022), "Price discovery in a renewables-based system", Option C11, page 23

The project purpose is to incentivise flexibility from residential consumers by exploring commercial mechanisms in collaboration with flexibility stakeholders.

As outlined above, this project is being pursued with the intention of delivering electricity lines services at a lower cost to consumers, as the optimal use of residential flexibility can defer upgrades in network capacity at a lower cost. Further, flexibility in consumer demand could be deployed to manage scarcity, network outage or emergency situations in a way that reduces the likelihood of service interruption. This would therefore improve the quality of supply to consumers.

Will the benefits be of general application to the activities of Orion and WELL, or of other EDBs?

By focusing the trial on residential customers, it is my understanding that the results will inform standards, distribution pricing and flexibility arrangements that will be made available to residential customers in Orion and Wellington Electricity networks more broadly. Some of the insights and results, while tested on residential customers, will potentially have broader application to business customers as well. These aspects include the compatibility with regulatory, commercial and asset management arrangements, and the attractiveness to upstream flexibility suppliers, technology OEMs and retailers, who serve these broader customer segments. Optimised use of flexibility across any customer grouping has the potential to deliver the common benefit outlined above - delivering electricity lines services at a lower cost to consumers, and potentially an improved quality of supply.

It is my understanding that the results of the trial will be shared with the wider EDB community, via Orion and WELL's public websites, as well as through Energy Networks Aotearoa, and the FlexForum. Indeed, FlexForum's purpose is to support coordination and collaboration around the deployment of distributed flexibility - including the sharing of expertise and insights. Developing new arrangements with customers to harness and deploy flexibility in a way that lowers the cost of electricity aligns with core tasks in FlexForum's Flexibility Plan[6], and is being actively considered by a number of EDBs. By sharing the results, the benefits potentially scale well beyond Orion and Wellington Electricity.

Hence it is my opinion that the benefits will be of general application to the activities of Orion and WELL, and of other EDBs.

[redacted]

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[6] Resi-Flex will support the following steps in the Flexibility Plan (which phase 1-2 of the project started to address): **Step C** (Customer journey mapping exercise for residential segment); **Step 20** (Understand the interaction between price-led and market-led flexibility) and **Step 21** (Develop a common method for valuing flexibility used for network services and making investment decisions).

Orion + WE

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