



# Resi-Flex Trials

BECOME OUR PARTNER IN CO-DESIGNING RESIDENTIAL  
FLEXIBILITY OFFERINGS FOR THE FUTURE

CALLING FOR EXPRESSIONS OF INTEREST

MARCH 2024

Orion + we<sup>★</sup>  
wellington electricity

## CONTENTS

1	SECTION 1: BACKGROUND.....	3
1.1	RESI-FLEX OVERVIEW .....	3
1.2	RESI-FLEX PRE-REQUISITES AND LIMITATIONS.....	4
1.3	PHASE 1 – USER REQUIREMENTS INSIGHTS .....	5
1.4	PHASE 2 - COMMERCIAL FRAMEWORK INSIGHTS .....	11
2	SECTION 2: CO-DESIGN & TRIAL .....	13
2.1	TRIALS OVERVIEW.....	13
2.2	TRIALS OBJECTIVES AND OUTCOMES .....	13
2.3	TRIALS PRINCIPLES AND PARTNERSHIP BENEFITS.....	13
2.4	TRIAL COMMERCIAL MECHANISMS.....	14
2.5	POTENTIAL CUSTOMER OFFERINGS.....	19
3	SECTION 3: EOI PROCESS AND EVALUATION .....	19
3.1	EOI PRINCIPLES AND EVALUATION APPROACH .....	19
3.2	DESIRABLE PARTNER CAPABILITIES .....	20
3.3	EOI & TRIALS PROCESS AND TIMELINE .....	21
3.4	EOI RESPONSES.....	22
4	SECTION 4: CONDITIONS .....	23

## INTRODUCTION

The transition towards net-zero emissions is leading to an increasing reliance on electricity. Recent reports, such as "The Future is Electric"<sup>1</sup> by The Boston Consulting Group, highlight the importance of more 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 partnered to deliver the Resi-Flex project, which aims to incentivise flexibility from residential consumers by exploring commercial mechanisms in collaboration with flexibility stakeholders.

In the first phase of the project, Orion and Wellington Electricity sought to understand the requirements of all users across the value chain for flexibility – from consumers to flexibility stakeholders, to distribution network companies – the insights of which were shared in the publication of Resi-Flex's first Public Report<sup>2</sup> in July 2023. We also specified the network use cases driving the need for demand-side flexibility and developed a commercial framework and commercial mechanisms, with insights summarised in this Expression of Interest.

Moving to the next stage in the project, we are looking to co-design trials with residential consumers in partnership with flexibility stakeholders (e.g., retailers, flexibility suppliers, aggregators, end-consumer integrators, or a mix of actors partnering together). Through the trials, we aim to test a range of commercial mechanisms and consumer offerings that will incentivise greater use of flexibility resources in the future and help stimulate the flexibility market.

Orion and Wellington Electricity are now calling for Expressions of Interest (EOI) from Flexibility Stakeholders (Respondents) who are interested in partnering with us in the Trial phase of the Resi-Flex project. The purpose of the EOI is to start engaging with Respondents to understand their flexibility capability as it relates to the scope of the Trial. We intend to work with the selected partner/s to co-design and develop trial requirements, including commercial mechanisms and associated customer offerings, to trial and evaluate. Through the trial phase, Orion, Wellington Electricity, and the Resi-flex Trial partners will gain insights into consumer responses to various customer offerings and the associated energy system benefits in a controlled environment. This EOI covers:

- Section 1: Background - Provides a background of the Resi-Flex project and a summary of the learnings on what we need flexibility for (network use cases) and the commercial framework we have developed;
- Section 2: Co-Design & Trial - Provides details of the Trials, the opportunity, and what we want to test with partners (Trials Commercial Mechanisms) to incentivise flexibility from residential consumers;
- Section 3: EOI principles and timeline – Identifies the considerations for partnership and sets out the process and timeline;
- Section 4: Conditions - Provides supporting Conditions of the EOI.

Following receipt of responses, Orion and Wellington Electricity will consider the alignment of Respondents to the trial objectives and select partner/s for the detailed co-design and delivery of the Trials. We are not running this as a formal procurement process, but rather as an open opportunity to understand the Respondent's alignment and approach to meet the Trial phase objectives. While Orion and Wellington Electricity will not enter a commercial payment arrangement with partner/s, we would consider contributing to rewards/incentives received by the end-consumer to reflect the commercial mechanisms.

We are seeking participants who are prepared to invest time and effort in this partnership, working alongside us to develop innovative solutions and capabilities to support the future energy system. We believe these Trials will exhibit the cross-sector, consumer focus, and share information that is needed to transform New Zealand's energy system, and we welcome your response to the EOI.

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<sup>1</sup> BCG – The Future is Electric <https://www.bcg.com/publications/2022/climate-change-in-new-zealand>

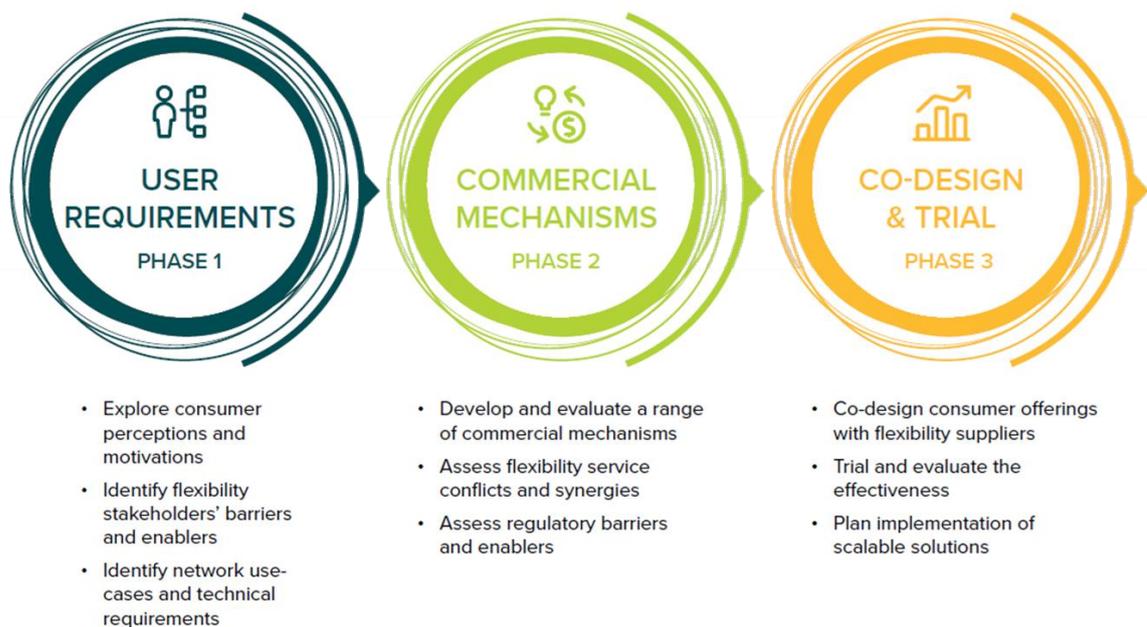
<sup>2</sup> Resi-Flex Public Report Release 1, July 2023 [https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-Public-Report\\_Release-1.pdf](https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-Public-Report_Release-1.pdf)

## 1 SECTION 1: BACKGROUND

### 1.1 RESI-FLEX OVERVIEW

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 the 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**

We have completed Phase 1, with some insights shared at the 2023 EEA conference<sup>5</sup>, and in the Resi-Flex Public Report, Release 1<sup>6</sup>. These user requirements have helped inform Phase 2, during which a commercial framework has been developed to define a range of mechanisms to incentivise flexibility, with learnings shared later in this section.

This EOI is intended to enable readiness for Phase 3 of the project. The Trials with Flexibility Stakeholders will help inform EDBs on which Commercial Mechanisms to scale and create opportunities for residential consumers to provide flexibility and test its benefits and rewards - in a way that will provide equitable outcomes for all consumers.

<sup>5</sup> Resi-Flex EEA Conference paper, June 2023 <https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-EEA-Paper-Final.pdf>

<sup>6</sup> Resi-Flex Public Report Release 1, July 2023 <https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-Public-Report-Release-1.pdf>

## 1.2 RESI-FLEX PRE-REQUISITES AND LIMITATIONS

As stated in Resi-Flex's first Public Report<sup>7</sup>, Resi-Flex has several prerequisites. There are critical regulatory and market changes needed to ensure that flexibility services can be provided while maintaining a secure and stable electricity system. While wider regulatory and market changes are outside of the scope of Resi-Flex, the project assumes that these will be in place to enable flexibility to be scaled. Orion and Wellington Electricity have other activities and projects focused on the changes needed to provide a stable electricity system that can support flexibility. The project assumes key capabilities are being developed which include (but are not limited to):

- Ensuring DER can participate in flexibility;
- Making flexibility available to EDBs for emergencies;
- Rules to ensure EDBs can maintain network security when resources connected to distribution networks are used to provide flexibility to the wider electricity system;
- Providing regulatory allowances to EDBs to develop and purchase flexibility services.

Resi-Flex also presents several limitations, due to its exploratory nature and we acknowledge them for the following reasons (including, but not limited to):

- Flexibility is a new concept for Aotearoa. Therefore, it is not a mature market and will evolve with adapting strategies and solutions.
- The infancy of flexibility in New Zealand means that the views of the stakeholders, consumers, and those of Orion and Wellington Electricity are still evolving. Therefore, it is expected that user requirements will continue to be refined as the industry gains understanding and experience.
- Resi-Flex's goal is to understand user requirements - it is focused on researching, understanding, and designing future trials. Resi-Flex is not prescribing solutions or services for business-wide implementation. The recommendations from any trials as part of this project may not be implemented in the future depending on other project outcomes, regulations, and commercial constraints.
- This EOI does not represent Orion and Wellington Electricity's business strategies, and any shared insights do not supersede Orion and Wellington Electricity's existing delivery and pricing strategies. The Orion and Wellington Electricity perspectives expressed in this EOI are solely regarding what is needed to stimulate the flexibility market.

<sup>7</sup> Resi-Flex Public Report Release 1, July 2023 [https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-Public-Report\\_Release-1.pdf](https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-Public-Report_Release-1.pdf)

### 1.3 PHASE 1 – USER REQUIREMENTS INSIGHTS

#### 1.3.1 Consumers and Flexibility Stakeholders

Insights from Phase 1 - User requirements (Consumers and Flexibility Stakeholders) have been shared in the Resi-Flex Public Report, Release 1.

The feedback from Flexibility Stakeholders uncovered the high-level themes relating to the barriers they perceive are preventing or blocking greater use of flexibility (or market maturity) together with the enablers (the things they want and need for the market to grow). We have then been able to identify priorities for development that EDBs should consider when designing flexibility services or a commercial framework that would enable flexibility services, as summarised in Figure 2, and those criteria have been taken into account while designing the Trial Commercial Mechanisms ([Section 2](#)).

ENABLERS (WANTS & NEEDS)	PRIORITY AREA (FACTORS FOR EDBs TO CONSIDER)	DESCRIPTION
CUSTOMER VALUE	REDUCE UPFRONT COSTS BARRIER	Value from flexibility should support consumer investments in smart DER. In the future, standardised roll-out of 'smart devices' could contribute to lower costs.
	SIMPLE SOLUTIONS FOR THE END CONSUMER	The EDB mechanisms should allow the end consumer experience to be simple, even if industry signals are complex or data rich.
	CREATE VALUE FOR ALL CONSUMERS	The commercial mechanisms should support whole-of-system value, directly benefiting those who participate, while reducing the cost to serve all consumers.
MARKET STIMULATION	SUFFICIENT REAL VALUE	EDB value must be sufficient for flexibility suppliers to package alongside their wider offerings.
	ACCESSIBLE	Commercial mechanisms additional to distribution pricing (or priced-based flexibility) should enable open market that can attract a liquid pool of resources.
	ENABLING OTHER EDB VALUE STREAMS	DERs can provide value to EDBs other than energy injected / curtailed. Therefore, flexibility commercial mechanism design should consider the full set of value from DERs stimulated.
	COLLABORATIVE	The market is emergent. Co-design including pilots and trials will promote innovation and optimise solutions.
	SCALABLE	Pilots or first contracts should be designed with scalability in mind to maximise investment.
COMMERCIAL MECHANISMS	VALUE STACK ACCESSIBILITY	Design should optimise ability of flexibility suppliers to work across the value stack.
	PREDICTABILITY OF EVENTS	Payment structures should reflect real network needs and desired responses (e.g., "events" related to the real world and/or have good notice (hours) provided).
	USABILITY FOR PRODUCTS AND FULFILMENT	Mechanisms must be usable by flexibility suppliers. This requires listening to their needs and building complexity over time.
	PREDICTABILITY OF VALUE	Predictable long term customer value, notified to the market with early notice, allows products to be priced and positioned.
	TENURE AND FREQUENCY / VOLUME OF OFFERS	Long term (5yrs+) and a volume of offers that justifies building portfolios, customer sign ups, asset installs and drives investment.
OPERATIONAL EFFICIENCY	CONSISTENCY ACROSS EDBs	Consistent, standard processes for procurement, fulfilment, and approach to constraints/pricing.
	OPERATIONALLY EFFICIENT	Standardised interfaces and automated data exchange appropriate to need/ service.

Figure 2: Flexibility Stakeholders – Wants and Needs

#### 1.3.2 Network Use cases and Drivers for Flexibility

##### 1.3.2.1 Introduction

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.

Each EDB will have different flexibility use cases depending on their specific network and consumers’ characteristics, demand forecasts, and capacity limits. This means each EDB may require different mechanisms to elicit a flexibility response to solve their specific challenges. Figure 3 describes the different types of flexibility responses.

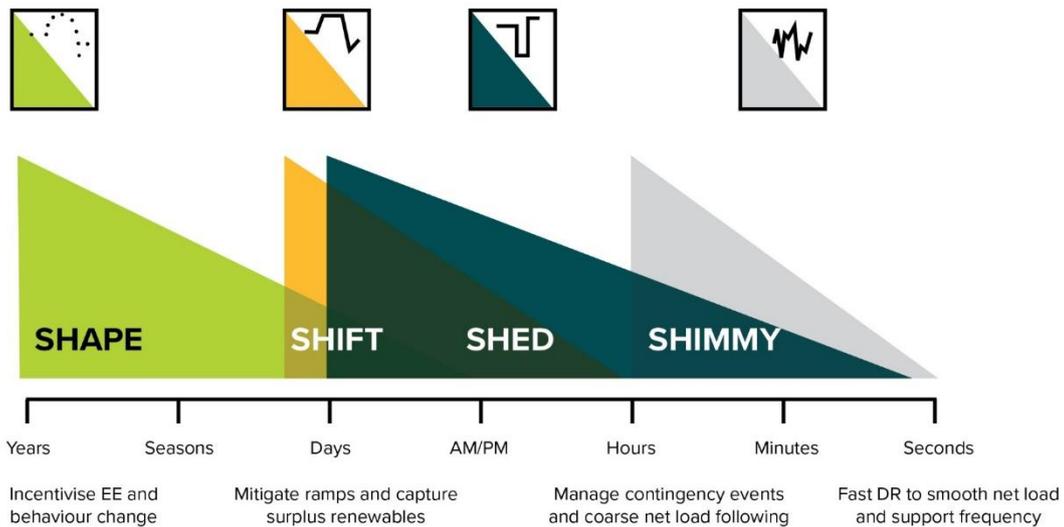


Figure 3: Types of flexibility response (adapted from Lawrence Berkeley National Laboratory study)<sup>8</sup>

Orion and Wellington Electricity have similar flexibility use cases which are driven by:

- Transport electrification, including Electric Vehicle (EV) growth;
- Uncertainty around future hot water management as consumers adopt new technologies (e.g., smart controls) or new offerings (e.g., by retailers);
- Potential transition from natural gas to electricity or other energy sources;
- Changing consumer behaviour, including demand, storage, or generation management;
- Population growth and urban plan development, leading to housing intensification.

In the following sections, we describe the key network use cases we need to address now and in the future.

### 1.3.2.2 Local network constraints

The increased adoption of Consumer Energy Resources (CER) due to decarbonization will increase peak demand on the electricity network, using up available capacity and creating network constraints (a constraint being where demand exceeds the capacity of electrical equipment or a network’s voltage operating limits). Variability in the rate of demand growth and available capacity of network assets means that the location of constraints will also vary across the networks. EDBs will need mechanisms to target a flexibility response in the specific location of a constraint, such as a low voltage (400V) network, which may peak at times different from the distribution network or grid. Examples are provided below to illustrate those local constraints for Orion and Wellington Electricity.

<sup>8</sup> Lawrence Berkeley National Lab, 2025 California Demand Response Potential Study, March 1, 2017 - <https://buildings.lbl.gov/publications/2025-california-demand-response>



1.3.2.3 Winter Morning and evening peaks

Most networks experience increasing morning and/or evening peaks, especially in winter when electricity use is the highest. We are looking for flexibility solutions that can shift demand away from these peaks while mitigating secondary peaks, in a similar way to existing ripple control.

Figure 6 shows an example of a winter load profile (network-wide) in Orion with a morning peak from 6 am to 11 am and a smaller evening peak from 5 pm to 9 pm. This level of network loading is typically observed 10 to 20 winter days per year. Orion currently manage peaks using hot water management (by ripple) and control period signals. The peak reduction illustrates the criticality of flexibility to Orion’s current operations and the type of flexibility response we would like to encourage through the trial.

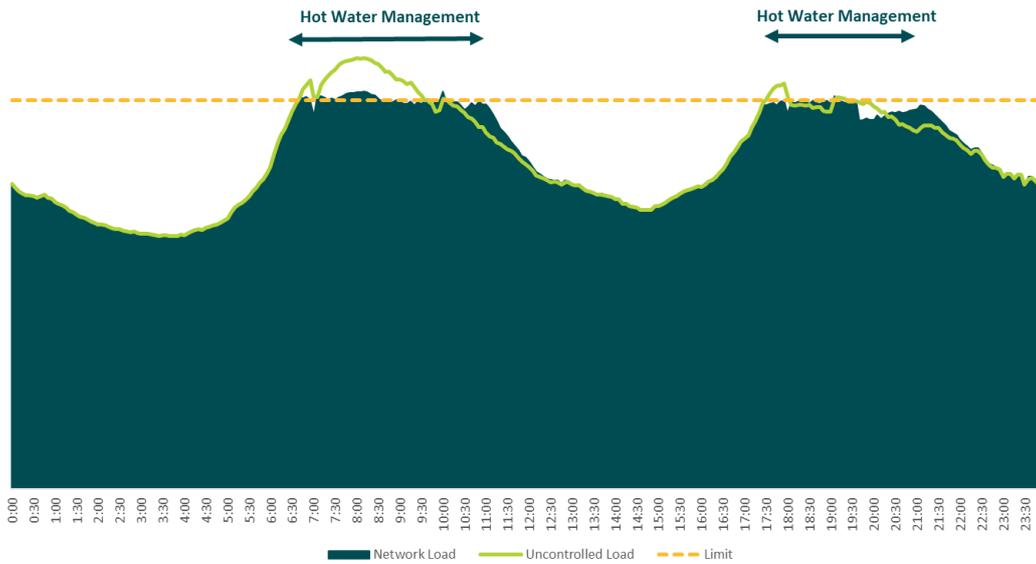


Figure 6: Orion - Typical Current Winter Load profile (Network-wide)

Figure 7 provides an example of a typical Winter Load Profile for Wellington Electricity. The load curve is for a residential GXP and illustrates the high morning and evening peaks and the significant spare capacity available in the night and day. Wellington Electricity is seeking flexibility that shifts new and existing electricity use to the off-peak periods.

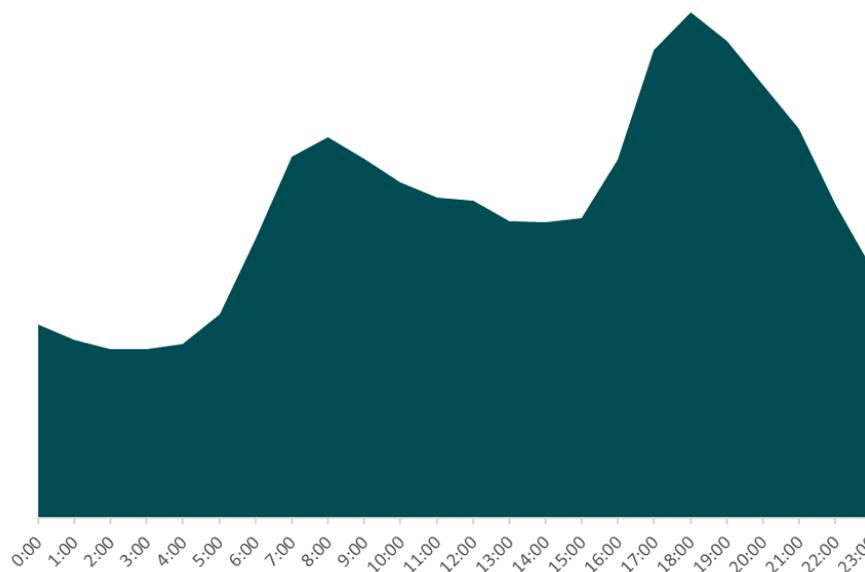
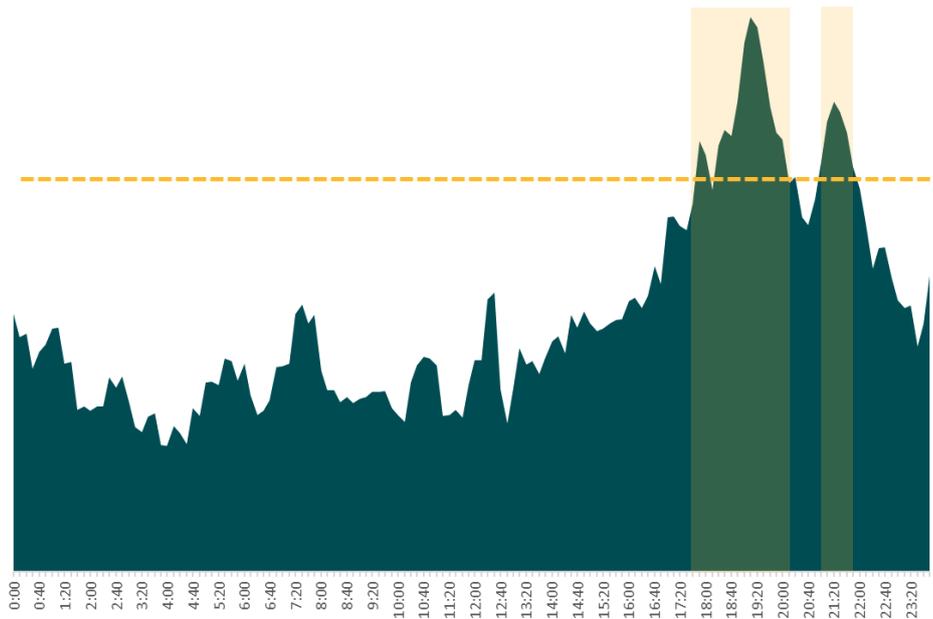


Figure 7: Wellington Electricity – Typical Current Winter Load Profile (GXP level – Residential only)

We are also cognisant of a flexibility response creating (a) secondary peak(s). For example, retail tariffs such as the ‘free hour of power’ are already driving changes in consumer behaviour and a reduction in diversity of network load, which is leading to a new peak (also called a secondary peak). Figure 8 provides an example of an emerging secondary peak at 9 pm resulting from a retailer tariff with low prices for the period immediately following the distribution peak.

We will carefully co-design with partners our commercial mechanisms and customer offerings to reduce the overall peak demand, and to avoid simply shifting the peak to another period.



**Figure 8: Current Load profile – Local network (typical example)**

#### 1.3.2.4 Electrification and Growth

New Zealand’s Emissions Reduction plan and the electrification of transportation, process heat, and home water and space heating will increase electricity demand. Figure 9 and Figure 10 forecast the growth in peak demand for both Orion and Wellington Electricity. The demand increase is significant. Orion’s and Wellington Electricity’s peak demands are forecast to increase by 16-126% and 108% respectively by 2050.

Both networks will become more constrained as capacity headroom is eroded by the demand increase. The opportunity for flexibility services to shift peak demand and defer network reinforcement will also increase.

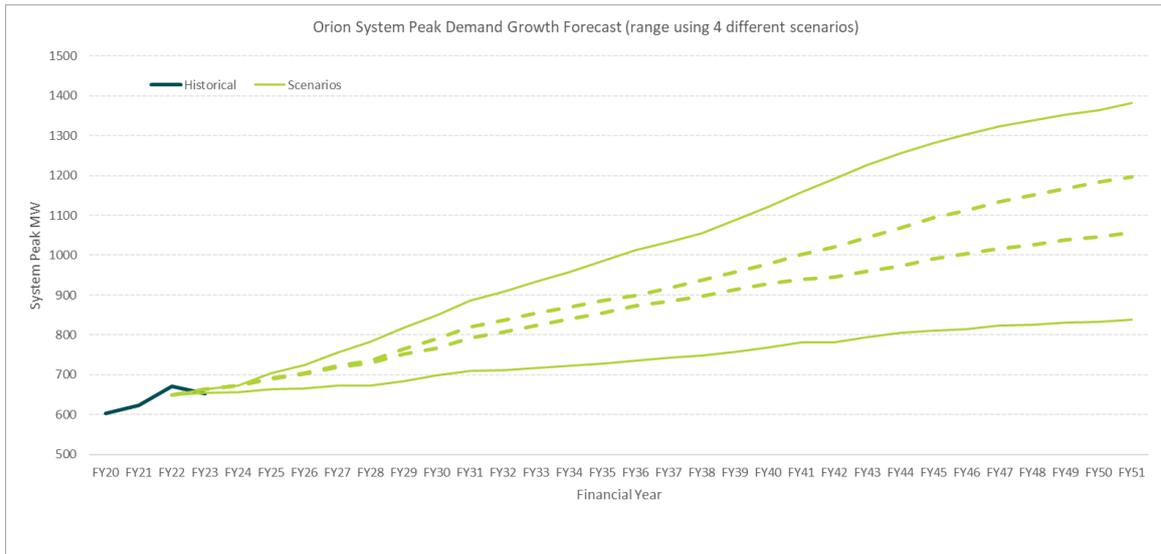


Figure 9: Orion System Peak growth – Range of scenarios

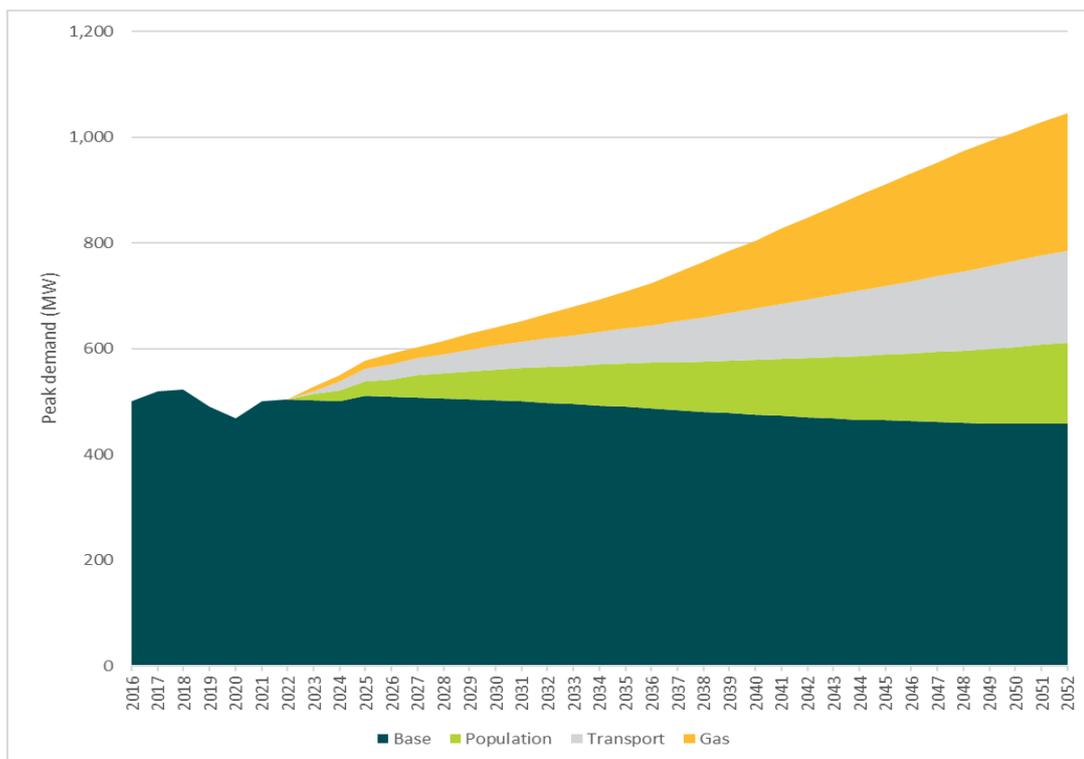


Figure 10: Wellington Electricity System Peak growth with different type of loads

At a national level, “Herding” of load is likely to increase as demand-side flexibility increases and responds to volatile wholesale markets. The transition to a renewables-based electricity system will increase the volatility of prices in the wholesale electricity market and the need for demand-side flexibility. Combined with greater automation, this can drive ‘herding’ of load in response to price signals. This is currently being investigated by UK Power Network as part of their project Shift 2.0<sup>10</sup>. The Electricity Authority’s Market Development

<sup>10</sup> UK Power Network’s Shift 2.0 Herding and Secondary Peak Exploration <https://innovation.ukpowernetworks.co.uk/projects/shift-2-0/>

Advisory Group<sup>11</sup> have recognized that without coordination, this will result in sub-optimal outcomes for the consumer and/or increased network investment. They have recommended the development, design, and trial of tools to enable the coordination of flexibility and security-constrained economic dispatch on the distribution network. Through Resi-Flex, we would like to trial mechanisms mitigating herding where it could impact security issues on the distribution network.

## 1.4 PHASE 2 - COMMERCIAL FRAMEWORK INSIGHTS

### 1.4.1 Overview

During Phase 2 of the Resi-Flex project, Orion and Wellington Electricity, with Concept Consulting support, explored the flexibility value chain and nature of relationships between EDBs, flexibility stakeholders, and residential consumers. Figure 11 illustrates how value chain and relationships vary depending on the type of flexibility stakeholder. These relationships help with considering how value is exchanged, access to incentives, interaction with other signals, and visibility of consumer needs. We identified three categories of commercial mechanisms: price signals, payment, and standards.

For more information about the commercial framework, please refer to the EEA paper published in June 2023<sup>12</sup>.

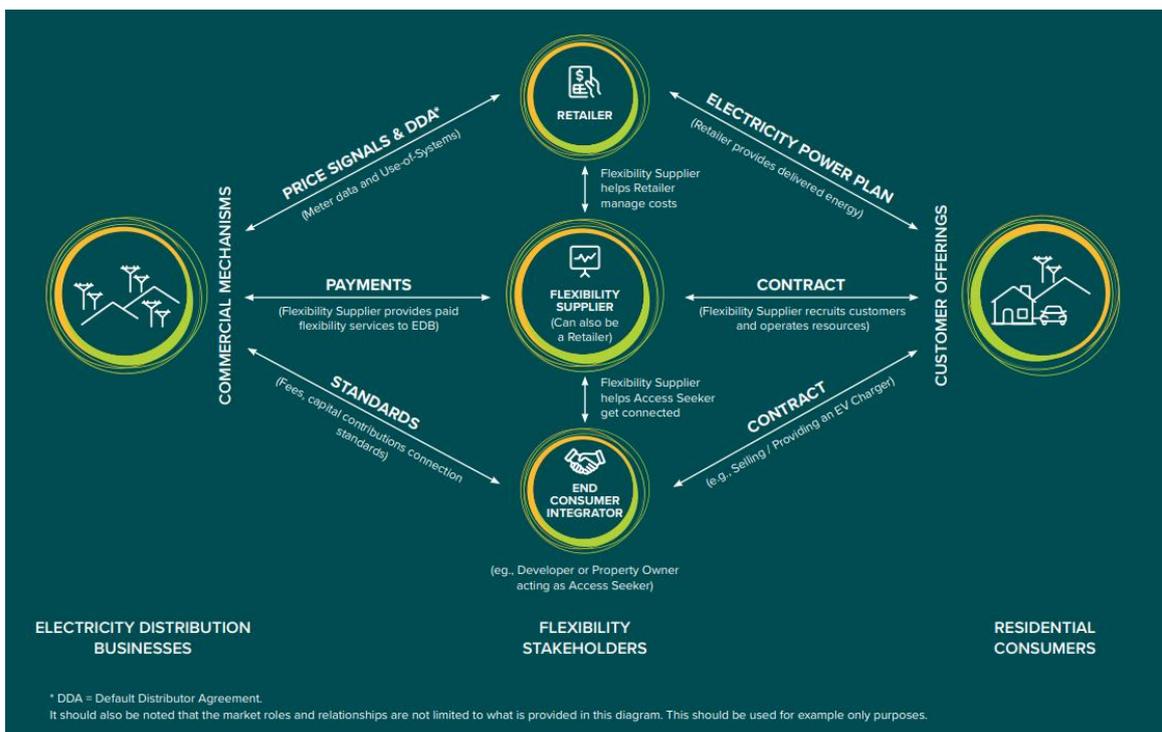


Figure 11: Main relationships between stakeholders in relation to flexibility

### 1.4.2 Commercial Mechanisms Components

Within each commercial mechanism, we identified a range of components as summarised in Figure 12 Figure 12.

<sup>11</sup> Electricity Authority Market Development Advisory Group Price discovery in a renewables-based electricity system <https://www.ea.govt.nz/projects/all/pricing-in-a-renewables-based-electricity-system/>

<sup>12</sup> Resi-Flex EEA paper – June 2023 <https://www.oriongroup.co.nz/assets/Company/Innovation/Resi-Flex-EEA-Paper-Final.pdf>



**Figure 12: Commercial Mechanisms Components**

This is not an exhaustive list of all existing or potential components but highlights those that Orion and Wellington Electricity have identified and considered trialing in the short or the medium term. Some components could be implemented in different ways (such as operating envelopes) which could change the category of commercial mechanisms it fits with. Each Trial commercial mechanism described in [Section 2](#) is a combination of those, which we intend to test as a package.

The commercial framework also established evaluation criteria, described below, that an EDB can use to assess commercial mechanisms best suited to their use cases. These were considered when selecting the Trial commercial mechanisms described in [Section 2](#):

1. **practical** – reasonably feasible to develop and implement;
2. **scalable** – could grow and endure beyond the trial;
3. **compatible** – fits with regulatory, commercial, and asset management arrangements;
4. **attractive to suppliers** – likely to attract participation by flexibility stakeholders;
5. **attractive to households** – likely to attract participation by households;
6. **effective** – provides useful access to flexibility resources;
7. **fair** – equitable impact for all consumers.

As part of the work done by Concept Consulting on Phase 2 of the Resi-Flex project, a calculator has been developed to assist EDBs in estimating the value of flexibility for Pricing and Payments. When finalised, this could be shared with potential partners or more widely.

## 2 SECTION 2: CO-DESIGN & TRIAL

### 2.1 TRIALS OVERVIEW

For Phase 3 of Resi-Flex (Co-Design & Trial), Orion and Wellington Electricity seek to partner with several Flexibility Stakeholders to translate the commercial mechanisms into simple and attractive residential consumer offerings that incentivise flexibility. During this phase, we intend to observe the real-world residential consumer response to trial customer offerings. We aim to understand how consumers will respond to different commercial incentives and whether their response supports an efficient, secure, and reliable energy system.

The insights from the Trials will then be used to:

- inform EDBs on the potential for flexibility to help manage their networks, and which commercial mechanisms can be scaled.
- provide insights for partners on the responses by consumers to participate, and the incentives and customer offerings that appeal to them as a reward for changing their behaviour.

We are looking for partner/s to play the role of the Flexibility Stakeholder, develop a consumer offering based on the Trial commercial mechanism, recruit consumers, and trial the delivery of the flexibility offer.

### 2.2 TRIALS OBJECTIVES AND OUTCOMES

The main objectives of the Trials are to:

- Test the effectiveness of different commercial mechanisms at solving the network use cases and attracting residential consumer participation;
- Estimate the economic and financial value of flexibility on households and communities;
- Quantify the benefits of residential flexibility (including non-financial to consumers, the environment, and society at large);
- Gain insights into the needs of both consumers and flexibility stakeholders regarding flexibility incentives;
- Inform the development of fair and effective distribution pricing and flexibility services, including appropriate spatial and temporal granularity;
- Analyse the responses from real-world consumers to customer offerings that reflect the value of flexibility.

The desired outcomes are:

- Increased participation in residential flexibility and consumer value
- Optimised distribution network investment through insight into mechanisms to incentivise flexibility
- Whole of system value increased through mechanisms that enable value stacking and insight shared

### 2.3 TRIALS PRINCIPLES AND PARTNERSHIP BENEFITS

Resi-Flex takes a “learning-by-doing” approach to test how effectively commercial mechanisms can be used to incentivise flexibility and address a range of network needs. The Trials will demonstrate active collaboration across a range of sector players and create the catalyst for adaptive learning and innovation.

We expect that the design of the Trials will evolve and iterate as progress is made. To support our partnership ethos, we will be focused on a two-way information exchange between EDBs, including access to subject matters expert and network data when available, and selected flexibility stakeholder partners to ensure the learning outcomes of the Trials can be practically assessed. We intend to share the high-level learnings and insights publicly (with agreement from partner/s) for the benefit of the wider energy sector.

While the consumers will actively be part of the trials, the commercial mechanisms and “pricing or payments” will be theoretical and simulated through data gathering and analysis. Orion and Wellington Electricity will not be entering into a commercial payment arrangement with partner/s in the Trials. However, there may be options for Orion and/or Wellington Electricity to contribute to the rewards/incentives received by the end-consumers through the customer offerings to ensure the trial conditions reflect expected value, signal the desired behaviours and enable participants to test the impact of real-world value sharing and customer offerings.

We are seeking partners who are prepared to invest time and effort in this partnership, working alongside us to develop innovative solutions and capabilities to support the future energy system. We believe these Trials will exhibit the cross-sector, consumer focus, and shared information that is needed to transform New Zealand’s energy system. Benefits of participating in the trial include:

- Playing an important role in shaping the future of the flexibility landscape in New Zealand
- Providing feedback and contributing to the design of flexibility markets
- Influencing the design of future commercial mechanisms
- Accessing EDBs’ subject matter expertise, as required, including access to network data when available and in line with the objectives
- Assisting the overall Resi-Flex project (and through that, informing and influencing regulators) with recommendations for commercial mechanisms to enable flexibility
- Testing and assessing within a Trial environment consumer products and plans to be commercialised
- Providing an opportunity to gain insight into consumer needs and responses, and collect data on consumer behaviour and preferences to tailor future offerings
- Fostering collaboration among various flexibility market players that could lead to future collaborations.

## 2.4 TRIAL COMMERCIAL MECHANISMS

### 2.4.1 Overview

Through the Resi-Flex project, Orion and Wellington Electricity have worked with a range of internal and external stakeholders to evaluate which commercial mechanisms to test during the Trials. We have selected commercial mechanisms that are the best fit for the commercial framework evaluation criteria and are designed to be agnostic about the type of CERs that might participate. The details of each mechanism will need to be further refined with the selected partner/s during the co-design of the Trials. Alternative Trial commercial mechanisms can also be suggested by Partners when answering this EOI.

As stated in [1.2](#), Resi-Flex is about exploration and learn-by-doing. The following Trial commercial mechanisms have been designed for learning from them with partners and do not supersede Orion and Wellington Electricity’s existing delivery and pricing strategies.

Table 1 details the three commercial mechanisms we would like to trial, with more detail provided in subsequent sections.

Trial Commercial Mechanisms	1- Managed service	2- Procured Flexibility	3- Consumption bands
Mode	Standard-led	Market-led	Price-led
<b>Commercial Mechanisms Summary</b>	Flexibility standards with Flex Discount or Availability payments (in \$/day) - <i>with \$/kWh ToU pricing as default pricing</i>  Option for higher Flex discount or payment depending on location	Scheduled Utilisation payments (in \$/kWh or \$/event) - <i>with \$/kWh ToU pricing as default pricing</i>	Consumption bands (tiered \$/kWh charges) applied to half hour peak electricity use at GXP or Zone substation level.
<b>Description</b>	Requires the device to be managed by a party (Partners and/or EDB) in exchange for a tariff discount (to fixed daily charges or 24/7 off-peak rates for the managed device) or additional payment.  Management conditions are either static (i.e., fixed) or more dynamic (with instructions or signals submitted)	Scheduled utilisation payments for customers opting in to respond. The scheduled utilisation payment would be \$/kWh or \$/event for load reduction in comparison to a baseline. Non-performance results in non-payment.  Flexibility capacity and response time windows (e.g., all weekdays in winter from 6-10am) would be pre-agreed.	Solving network constraints in specific locations using “static price” consumption tariff bands. Pricing is set at GXP or zone substation level, based on tiered \$/kWh charges, with increasing rates for higher consumption in a given half hour. Higher charges are only levied on consumption within that band. Retailers are free to allocate/manage the charge across their customer base as they see fit.
<b>Partner(s) – Market roles</b>	There are 2 options:  - Flex Discounts applied in the form of reduced fixed daily charges or off-peak rates. These are retail tariffs based and so the financial benefits flow via retailers.  - Availability payment, which can be used by all market roles including aggregators.	Any Market role	Since this commercial mechanism is purely retail tariff based, financial benefits flow via retailers. Aggregators may need to partner with retailers.
<b>General response type</b>	Shed or Shift - responding to congestion	Shift or Shape - behavioural change (preventative)	Shape - behavioural change (preventative)
<b>Constraint</b>	Specific constraint (11KV or 400V)	Specific constraint (11KV or 400V)	GXP or 11kV
<b>Targeted load</b>	Manageable device (i.e., EV or hot water load)	Whole household load or manageable device (for aggregator)	Whole household load

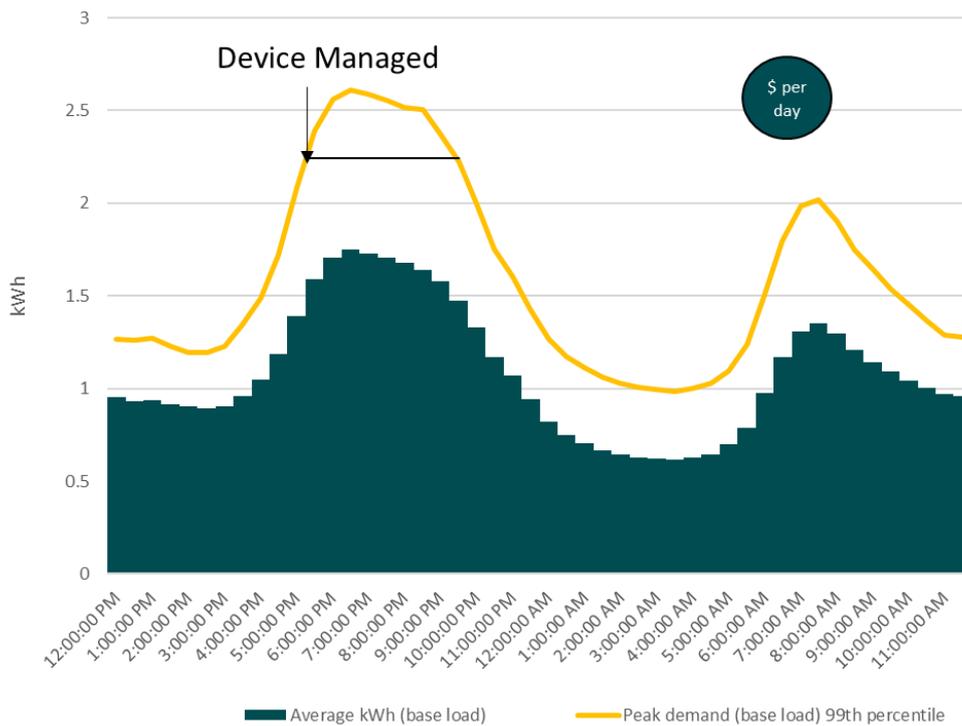
Table 1: Trial Commercial Mechanisms High level description

### 2.4.2 Trial Commercial Mechanism 1 – Managed Service

The “Managed Service” Trial Commercial Mechanism is described in Table 2 and illustrated in Figure 13Figure 13.

<b>Standard</b>	<b>Flex enabled:</b> Manageable devices are registered and participating in a managed flexibility service, ensuring a high probability of response - response only needed when the network is congested.
<b>Price Signals / Tariff</b>	<b>Network-wide Time-of-Use</b> - \$/kWh ToU pricing to encourage shifting load from peak to off peak (may include more price bands than peak/off peak) reflecting the cost of adding capacity to the network.  <b>Flex Discount (Payable to Retailers only)</b> – Registered (or Flex enabled) devices that opt in to responding to network requirements get, for instance, a \$ discount from fixed daily charges or pay the low off-peak rate all the time (for that load only).
<b>Payment</b>	<b>Scheduled Availability payment (Payable to any partners. For Retailers, to choose from Flex Discount or payment)</b> – fixed \$ per day with pre-agreed availability (days, hours) and with commitment to provide. Utilisation can be confirmed/notified closer to the time and requested with a near real-time dispatch. Trials could explore options for notifications, actual needs or utilisation, and payments timing (in advance, post events, etc).

**Table 2: Managed Service Commercial Mechanism**



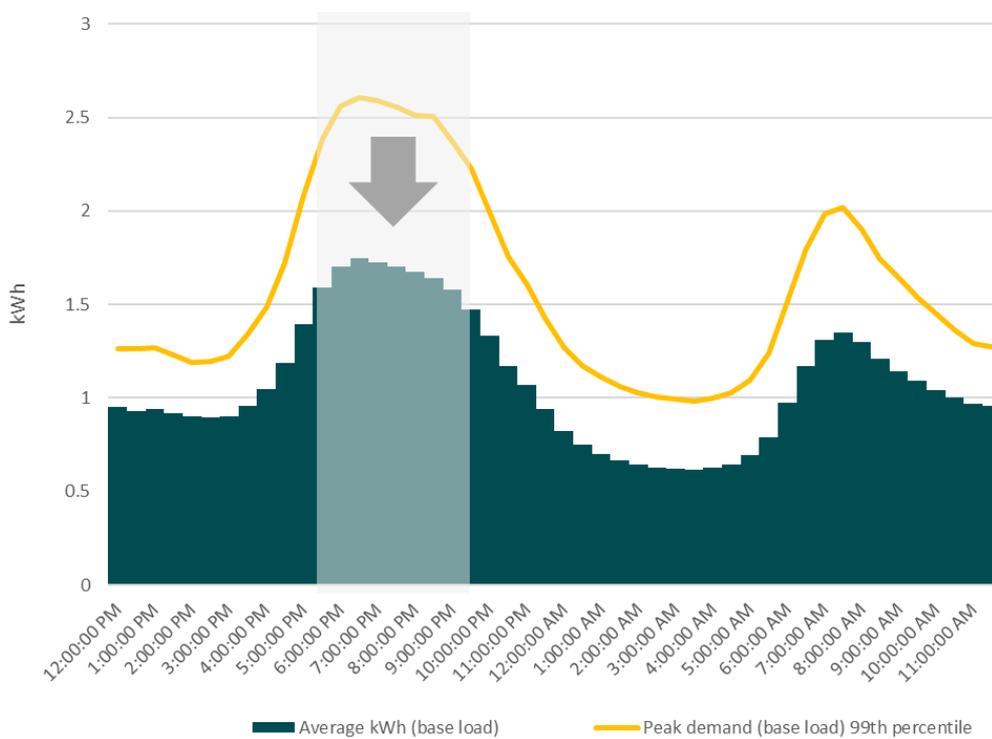
**Figure 13: Managed Service Commercial Mechanism**

### 2.4.3 Trial Commercial Mechanism 2 – Procured Flexibility

The “Procured Flexibility” Trial Commercial Mechanism is described in Table 3 and illustrated in Figure 14Figure 14.

<b>Standard</b>	<b>Flex ready:</b> Certain devices must be technically capable of receiving and acting on a signal to flex.
<b>Price Signals / Tariff</b>	<b>Network-wide Time-of-Use</b> - \$/kWh ToU pricing to encourage shifting load from peak to off peak (may include more price bands than peak/off peak) reflecting the cost of adding capacity to the network.
<b>Payment</b>	<b>Scheduled Utilisation payment</b> – \$/kWh compared to a baseline or \$ per event below a limit.  Capacity and availability fixed and agreed in the agreement. Flex time is Scheduled and there is no Dispatch (e.g. all weekdays in winter from 6-10am)

**Table 3: Procured Flexibility Commercial Mechanism**



**Figure 14: Procured Flexibility Commercial Mechanism**

2.4.4 Trial Commercial Mechanism 3 – Consumption Bands

The “Consumption bands” Trial Commercial Mechanism is described in Table 4 and illustrated in Figure 15 Figure 15.

<b>Standard</b>	None
<b>Price Signals / Tariff</b>	<b>Consumption bands (static):</b> Tiered \$/kWh charges, with increasing rates for higher consumption in a given half hour. Higher charges are only levied on consumption within that band. Charge bands may be set at GXP or zone substation level.
<b>Payment</b>	None

**Table 4: Consumption Bands Commercial Mechanism**

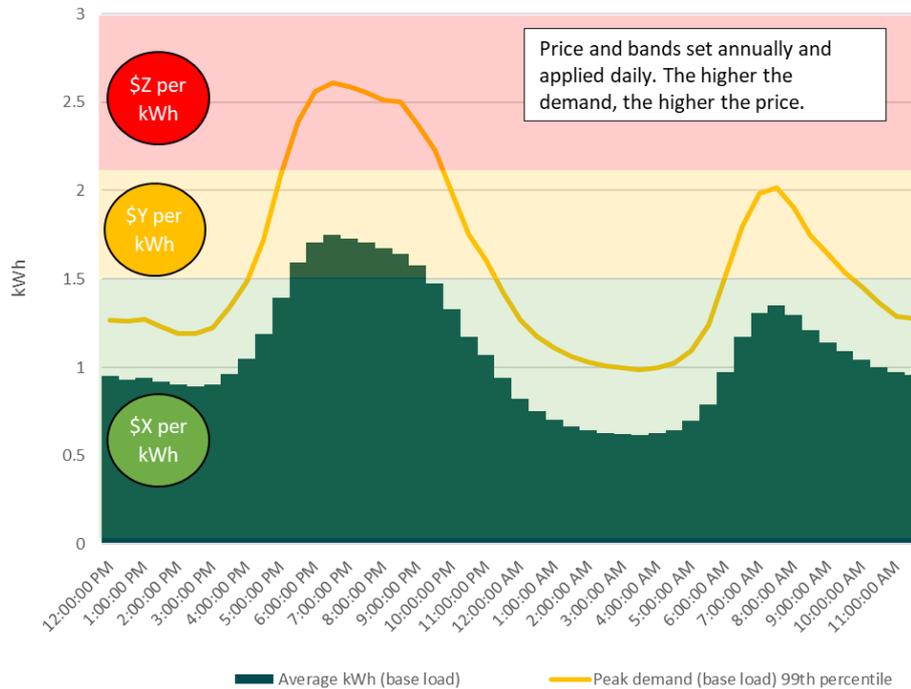


Figure 15: Consumption Bands Commercial Mechanism

2.4.5 Implementation considerations

Table 5 shows trial implementation considerations for each commercial mechanism we would like to assess.

Trial Commercial Mechanisms		1- Managed service	2- Procured Flexibility	3- Consumption bands
Mode		Standard-led	Market-led	Price-led
IMPLEMENTATION	Emergency (key feature to test)	Strong response - all devices turned off on instruction	Medium response - participating devices turned off on instruction	Weak response - controllable devices participating turned off on instruction
	Cost to participate	High - need a controllable device	Medium - customers may want to invest in controlled devices	Medium - customers may want to invest in controllable devices
	Communication	Direct congestion signal - operating envelope and/or dispatch - instructing when to respond.	Indirect congestion signal - payment signal	Indirect congestion signal - price signal

Table 5: Trial Commercial Mechanisms – Implementation considerations

## 2.5 POTENTIAL CUSTOMER OFFERINGS

An important objective of Resi-Flex is to explore how the trial commercial mechanisms could be packaged into innovative offerings for end-consumers participating in the trials. We will work with the selected partner/s to co-design customer offerings that are attractive to consumers and encourage an effective flexibility response.

Below are a few examples of customer offerings we could explore:

- Novel retail tariff for consumers to encourage flexibility
- Discount on hardware purchase and/or rental for manageable devices e.g. EV charger.
- Payments or customer rewards for customers providing flexibility services
- Peer to peer offerings to encourage local balancing e.g. optimised use of solar PV

Other non-financial benefits for participating consumers may include:

- Community engagement: Learn about how they can contribute to a secure, affordable, and sustainable energy system
- Environmental contribution: Learn how their behaviour/decision can help reduce carbon emissions or minimise carbon intensity
- Influence future solutions: Provide feedback through trials to influence the design of customer offerings and electricity networks
- Innovation and Learning: Ability to test and provide feedback on new solutions (e.g. optimised smart charging or home automation).

Relevant examples and insights from overseas projects which could be of interest include:

- UK Power Network Project Shift Reports and Learnings<sup>13</sup>;
- An article about examples of customer offerings from Kaluza<sup>14</sup> summarising the effectiveness of different types of customer offerings to incentivise smart charging either with a carrot or stick approach.
- RACE for 2030 report on Rewarding flexibility demand customer-friendly cost-reflective tariffs and incentives<sup>15</sup>
- Monash University Future Home Demand Project report<sup>16</sup>

## 3 SECTION 3: EOI PROCESS AND EVALUATION

### 3.1 EOI PRINCIPLES AND EVALUATION APPROACH

This EOI seeks partners for Phase 3 of the Resi-Flex project. A trial partner could be a single organisation or a partnership of organisations (flex supplier/aggregator and retailer, or end-consumer integrator, etc). We are not running this as a formal procurement process, but rather as an open opportunity to understand the Respondents' alignment and approach to meet the Trial objectives.

Following receipt of responses, we will identify those Respondents who best meet the objectives of the trial described in 2.2 and the desired capabilities listed in 3.2, and select partner/s for the detailed co-design and delivery of the Trials. We are planning to conduct follow-up session(s) with the Respondent(s) if necessary to better understand their solution and proposal.

<sup>13</sup> <https://innovation.ukpowernetworks.co.uk/projects/shift>

<sup>14</sup> <https://www.kaluza.com/global-lessons-in-incentivising-ev-smart-charging/>

<sup>15</sup> [https://www.racefor2030.com.au/wp-content/uploads/2021/11/H4-Report-At-a-Glance\\_17.11.12.pdf](https://www.racefor2030.com.au/wp-content/uploads/2021/11/H4-Report-At-a-Glance_17.11.12.pdf)

<sup>16</sup> [https://www.monash.edu/\\_data/assets/pdf\\_file/0012/3416889/Future-Home-Demand-Report-hi-res-1\\_compressed.pdf](https://www.monash.edu/_data/assets/pdf_file/0012/3416889/Future-Home-Demand-Report-hi-res-1_compressed.pdf)

Following the partners selection, we will engage in a close and collaborative partnership with each partner (or group of partners) to determine the detailed design of each Trial, the network use cases to be tested, and commercial mechanisms to evaluate within each use case (see [Section 2](#) for more details).

### 3.2 DESIRABLE PARTNER CAPABILITIES

As guidance for the EOI, we have outlined desirable qualities and capabilities for the Trial partner/s in Table 6. These are not criteria and we do not expect Respondents to have all the desirable capabilities. We are open to partnering with a range of market roles on the trials as we understand that the market is diverse and rapidly developing. We have an open mind about our future partner(s) and the structure of the trial.

Categories	Desirable Capabilities
<b>CONSUMER ACCESS &amp; OFFERINGS</b>	<ol style="list-style-type: none"> <li>1. Access to 50+ residential consumers with a range of CER (e.g. electric Hot water, EV, Solar and/or batteries, etc) and load profiles</li> <li>2. Ability to target consumer recruitment in constraint areas (such as LV feeder) for at least one network (Orion or Wellington Electricity)</li> <li>3. Ability and commitment to provide innovative consumer offerings for the Trial</li> <li>4. Ability to contribute to consumer-related costs on the Trials (e.g., monitoring, smart charger, or access to CER)</li> <li>5. Ability to attract a diverse range of consumer personas</li> <li>6. Ability to educate consumers and manage required consumer communications</li> </ol>
<b>PARTNER TYPE &amp; RESOURCES</b>	<ol style="list-style-type: none"> <li>1. Ability to show the organisation(s) broader outcomes in terms of following good employment practices, providing information about initiatives contributing to a low emissions economy and promoting greater environmental responsibility, and any other good corporate-citizen initiatives.</li> <li>2. Ability to develop and demonstrate relevant innovative solutions</li> <li>3. Ability to access and manage CER e.g. meters, smart chargers etc</li> <li>4. Ability to orchestrate CER via a technology platform (e.g. virtual power plant), or in-house development capabilities</li> <li>5. Ability to develop a proof-of-concept before scaling/implementing the Trial</li> </ol>
<b>TRIAL DURATION</b>	<ol style="list-style-type: none"> <li>1. Ability to have a Trial duration of at least 6 months (with a target of 12 months)</li> <li>2. Ability to extend the Trial period if agreed with Orion and/ or Wellington Electricity</li> <li>3. Willingness to adapt to Trial changes as we learn-by-doing</li> </ol>
<b>INFORMATION SHARING &amp; RESULTS</b>	<ol style="list-style-type: none"> <li>1. Ability and willingness to share (anonymised) trial data with Orion and/or Wellington Electricity.</li> <li>2. Ability and willingness to share insights (content as agreed by all participants in the trial) with Orion, Wellington Electricity and with the wider sector.</li> <li>3. Ability to access 5-30 min data for household consumption and CERs</li> <li>4. Willingness and ability to access and share anonymised consumer metadata</li> <li>5. Ability to share insights on consumer responses and related research (e.g. surveys)</li> <li>6. Ability to manage consumer approvals around data and information sharing for Trial purposes</li> </ol>

**Table 6: Desirable capabilities for trial partner(s)**

### 3.3 EOI & TRIALS PROCESS AND TIMELINE

#### 3.3.1 EOI and Trials Timeline

Our proposed timeline for the EOI and the Trials is detailed in Table 7Table 7:

Steps	Approximate timeframe(s)	Description
<b>Publication of EOI</b>	1 March 2024	Publication on GETS
<b>Briefing</b>	12 March 2024, 9am	Respondent Briefing (online)
<b>Questions deadline</b>	28 March 2024	Deadline for Questions from Respondents (on GETS)
<b>EOI Closes</b>	<b>7 April 2024</b>	Deadline to submit a Response on GETS
<b>Assessment</b>	April	Assessment including engagement with Respondents when required
<b>Partners selection</b>	Early May 2024	Select Partner(s), with the idea to move quickly to trials and scale up as it goes, including adding more customers and partners later. Execute the Memorandum of Understanding and Non-Disclosure Agreements between parties.
<b>Co-design</b>	May - June 2024	Carry out the first detailed co-design of the Trials. This would include confirming the Trial commercial mechanisms, CER to be included, how to implement for Trials, the targeted constraint areas (if applicable), the consumer offerings, delivery timelines, how data and results will be shared, and overall conditions of the Trials.
<b>Customer Recruitment</b>	From June 2024	Start recruiting Live customers, stage led by partner/s. Recruitment could be ongoing or staged.
<b>Trials delivery</b>	July 2024 - Sept 2025	Implement the Trials by starting with a proof-of-concept for each using simulators and/or a low number of end consumers. Ideally, the consumer numbers would then ramp up to meet the target numbers for the Trial and continue throughout winter 2025.
<b>Co-Design refinement</b>	October 2024 – March 2025	Review and refine the Trials co-design, if necessary, with Customer Recruitment and Trials delivery steps being repeated/expanded.
<b>Adding Partners</b>	October 2024 – Sept 2025	This option is for partners who require more time to plan/allocate resources to the project or for us to test different Trial commercial mechanisms and scenarios. Repeat Co-design, Customer recruitment, and Trials delivery steps with new partners
<b>Lessons learned</b>	December 2024 December 2025	Develop report(s) with lessons learned and insights collected from all parties (consumers, partners, and EDBs), with the intent to share with the wider industry, as agreed with partner(s).

**Table 7: EOI and Trials process and approximate timeline**

Respondents should note this timetable is indicative only and Orion and Wellington Electricity may amend this timetable as stated in the Conditions of this EOI ([Section 4](#): Conditions). All dates and times are in New Zealand.

EOI Responses must be submitted on GETS before 11.30 pm on 7 April 2024. Responses submitted earlier are more than welcome, as we will start reviewing as submissions as received. Registrations sent by email, post or fax, or hard copy delivered to Orion or Wellington Electricity offices, will not be accepted.

### 3.3.2 Support to Respondents during the EOI

All inquiries must be directed through GETS. Support will be provided as described in Table 8.

Support	Description
Questions	<p>Should potential Respondents have any questions about this trial or EOI, they should use GETS to submit them.</p> <p>Questions relevant to all respondents will be answered publicly. Questions that are sensitive to the respondent may be answered confidentially. Orion and Wellington Electricity reserve the right to determine the response sensitivity but would expect to discuss this with the Respondent if there is ambiguity.</p> <p>We will endeavour to respond promptly. Please note the deadline to submit questions, as stated in Table 7.</p>
Change	<p>If, after the release of this EOI and before the closure date for Responses, we need to change anything or provide additional information, we will let all Respondents know on GETS.</p>
Respondent Briefing	<p>The briefing will provide a presentation of the EOI and will address any questions raised on GETS before the Briefing, and any questions raised during the briefing. Please register your interest to attend via the questions in GETS. A Teams invite will then be sent to you.</p>
Meetings	<p>Meetings may be available between Orion and/or Wellington Electricity and each Respondent to discuss specific topics or if the Briefing and the answers provided on GETS have not addressed a question or concern.</p> <p>We may conduct follow-up session(s) with each Respondent if necessary (after the EOI deadline and during the selection process) to discuss their proposals</p>

**Table 8: Support to Respondents**

## 3.4 EOI RESPONSES

This EOI sets out the 5-step process that applies to Respondents:

- 1 Please take time to read and understand this EOI document. You may want to use the Support provided to Respondents as described in [3.3.2](#).
- 2 In submitting your EOI Response, you must use the EOI Response Form issued with this EOI (titled “EOI Response Form - Resi-Flex Phase 3 Trials”).
- 3 You may attach any other material to support your Response. In our Evaluation of the EOI, we may choose to consider or disregard any supporting material not specifically requested. Where attachments support a response to a specific question, we recommend you reference the attachment in that response.
- 4 Check you have provided all information requested, and that it is in the format required. Ensure your EOI Response considers relevant information, answers to most questions, and/or changes to the EOI, as notified on GETS, and meets the conditions of this EOI ([Section 4: Conditions](#)).
- 5 Submit your EOI Response Form on GETS by the deadline (as mentioned in [3.3.1](#)).

## 4 SECTION 4: CONDITIONS

### GOVERNING LAW

This EOI is governed by the law of New Zealand. It is subject to the EOI Process, Terms and Conditions described here:

[www.procurement.govt.nz/assets/procurement-property/documents/templates/terms-and-conditions-roi-government-model.pdf](http://www.procurement.govt.nz/assets/procurement-property/documents/templates/terms-and-conditions-roi-government-model.pdf)

### NO CONTRACT OR LEGAL RELATIONS

This EOI is solely an expression of interest and request for information. It does not constitute a contract, nor offer to enter into a contractual or monetary relationship, and it is not legally binding. Orion and Wellington Electricity reserve the right to:

- Cancel, alter, or postpone this EOI at any time
- Not progress with any or all Respondents
- Not proceed with any Trial.

All Respondents agree that:

- No legal or other obligations shall arise between a Respondent and Orion and Wellington Electricity about this EOI, the process, or outcome of the EOI
- This EOI, and any response to it, does not create any form of contract between Orion and Wellington Electricity and any Respondent, potential Respondent, or other party.

### CONFIDENTIALITY OF THIS EOI

This EOI, and the information, notices, comments, and documents at any time by Orion or Wellington Electricity in connection with this EOI, are confidential. The obligations of confidentiality are ongoing and will continue indefinitely. Respondents must:

- Not use the information provided by Orion or Wellington Electricity for any purpose other than preparing a response to this EOI
- Treat this EOI as confidential and do not release or disclose any of the information to any other person (other than your employees, partners, or professional advisors to prepare your response) without the prior written consent of Orion and Wellington Electricity. This includes making any public comments relating to this EOI or the Trials.

### RESPONSE COMPLETENESS

The Respondent warrants that the information they provide to Orion and Wellington Electricity, including information contained in any response, is complete and accurate and not misleading in all material respects, and that material details have not been withheld. The Respondent also warrants that the information they provide to Orion and Wellington Electricity (including in any response) and the use of such information by Orion and Wellington Electricity for this EOI (including the evaluation of the response and the implementation of any Trials) will not breach any third party intellectual property rights.

### ACCURACY OF INFORMATION

Orion and Wellington Electricity do not provide any warranty as to the accuracy or completeness of information supplied with this EOI. Orion and Wellington Electricity reserve the right to expand, amend, alter, correct, and/or clarify any information at any time.

### EVALUATION

Orion and Wellington Electricity are not bound to accept any response and will have absolute discretion to apply whatever evaluation criteria they consider appropriate to select potential Respondent/s.

### CONFLICTS OF INTEREST

Respondents are to disclose and advise Orion and Wellington Electricity of any conflicts of interest arising from the interests or duties of the Respondent or its employees, shareholders, or directors about this EOI.

### ORION AND WELLINGTON ELECTRICITY'S RESERVED RIGHTS

Orion and Wellington Electricity reserve the right to:

- Suspend, postpone, or cancel this EOI at any time before the closing date or to re-advertise for EOI responses
- Make any change to this EOI and any associated documents
- Accept, reject, or refuse any response (in whole or in part) and/or not invite any Respondent to participate in any subsequent process or service (the Trials) following completion of this EOI process
- Exclude any person or organisation from this EOI or any part of this EOI process for any reason
- Waive any irregularities or informalities in the EOI process
- Seek clarification or undertake further inquiries concerning any response
- Apply any weighting or other judgment process to information provided in response to this EOI
- Do anything else that Orion and Wellington Electricity see fit about this EOI.

### NO LIABILITY

Orion and Wellington Electricity will not be liable for any direct or indirect damage, loss, or cost (including legal costs and response preparation costs) to any Respondent or other person about this EOI and/or preparing any response to this EOI, including, to avoid doubt, where Orion and Wellington Electricity exercise any of its reserved rights above.

### ACCEPTANCE OF EOI GENERAL CONDITIONS

By submitting a response, the Respondent accepts and agrees to be bound by all the Conditions specified in this EOI and those governed by NZ law.



**Orion + we<sup>+</sup>**  
★ wellington electricity