

Flextalk

New Zealand's Flexibility Project using openADR

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Electricity Engineers'
Association



Agenda

- Who is Cortexo (and who am I)
- A bit about the New Zealand Electricity scene
- Flexibility is the key to electrification
- Project Flextalk and openADR
- Questions/Comments





Key statistics

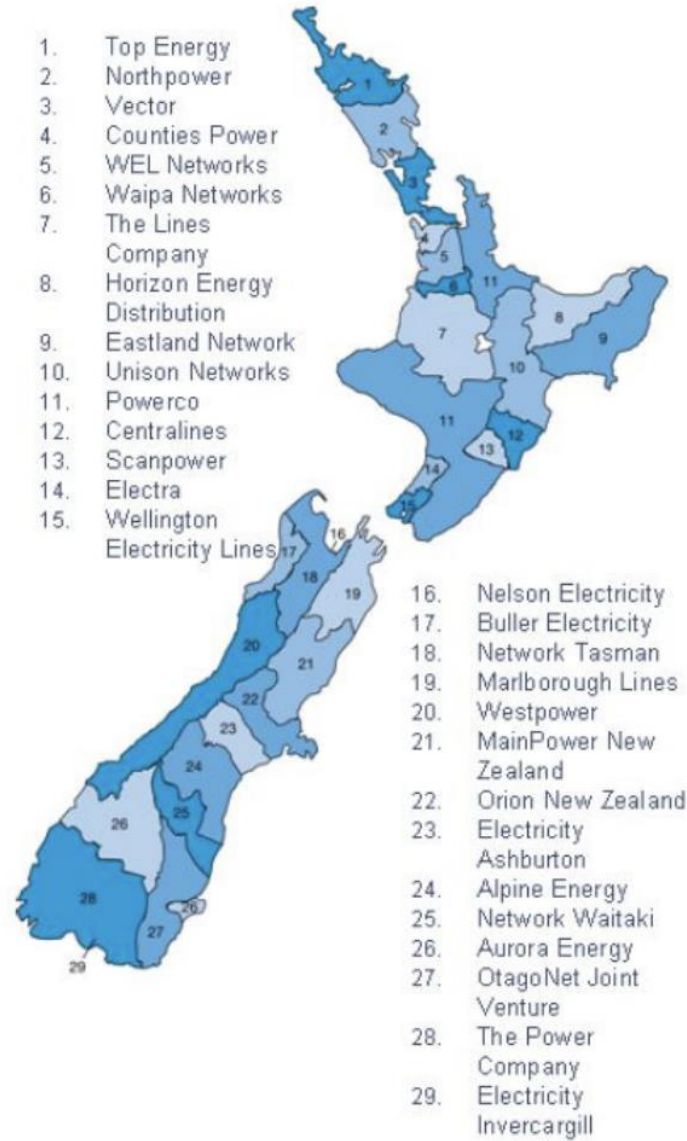
	New Zealand	United Kingdom
Area	268,021 Km ²	243,610 Km ²
Population	5.2 million	69 million
Energy supply	32.604 GW	84.7 GW
Peak demand	7.0 GW (2022)	49 GW (2021)
Total electricity connections	2.3 million ICPs	31.1 million MPAN
Solar connections	46,747 (0.271 GW)	1,178 million (14.0 GW)
EVs registered	17,000	760,000
% Renewable energy	85%	41%

The Grid

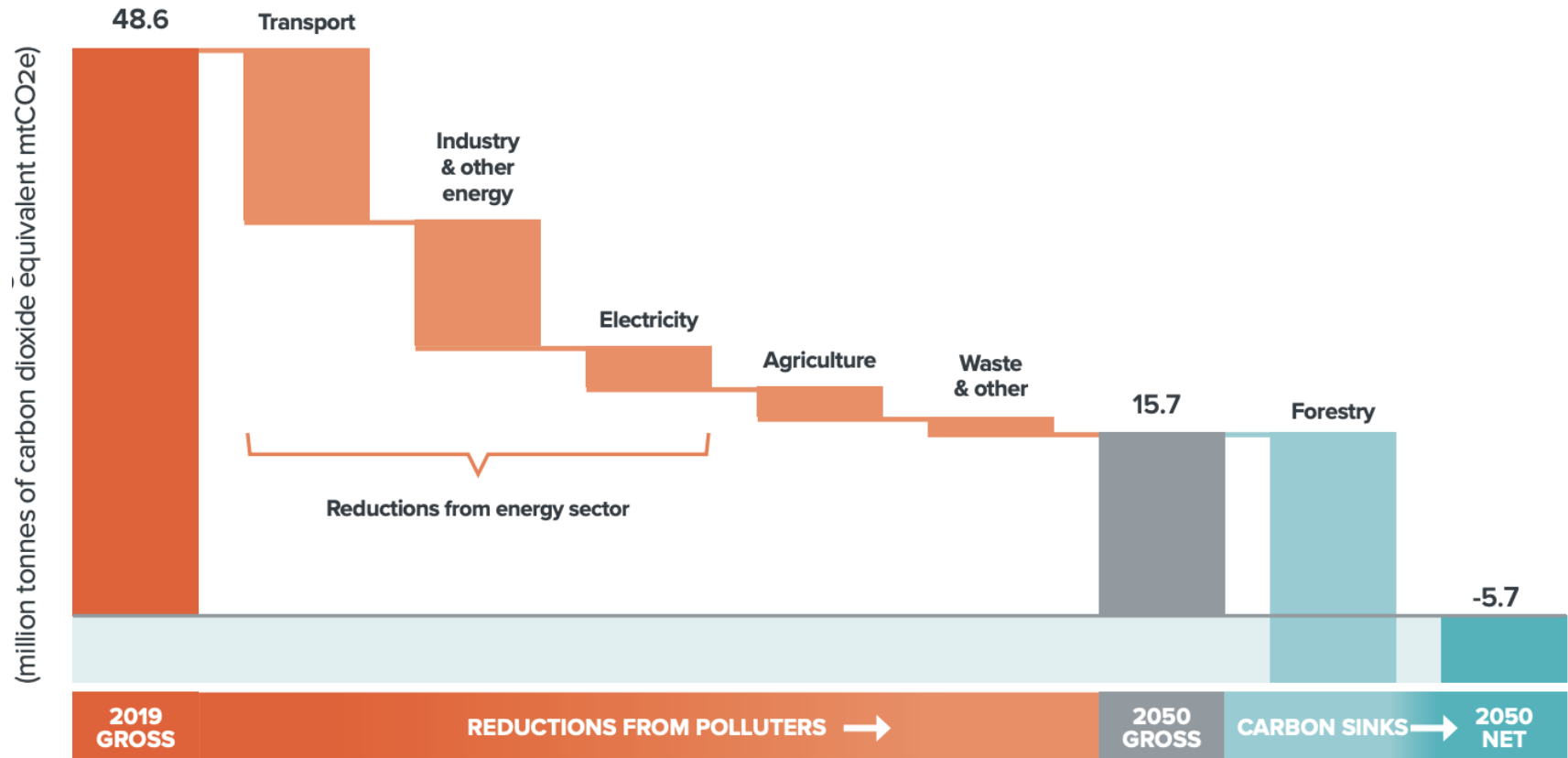
The National Grid owner
and System Operator



There are currently 29 EDBs operating in New Zealand.



We all understand the problem



Source: Te Waihangā, data from Climate Change Commission (2021)

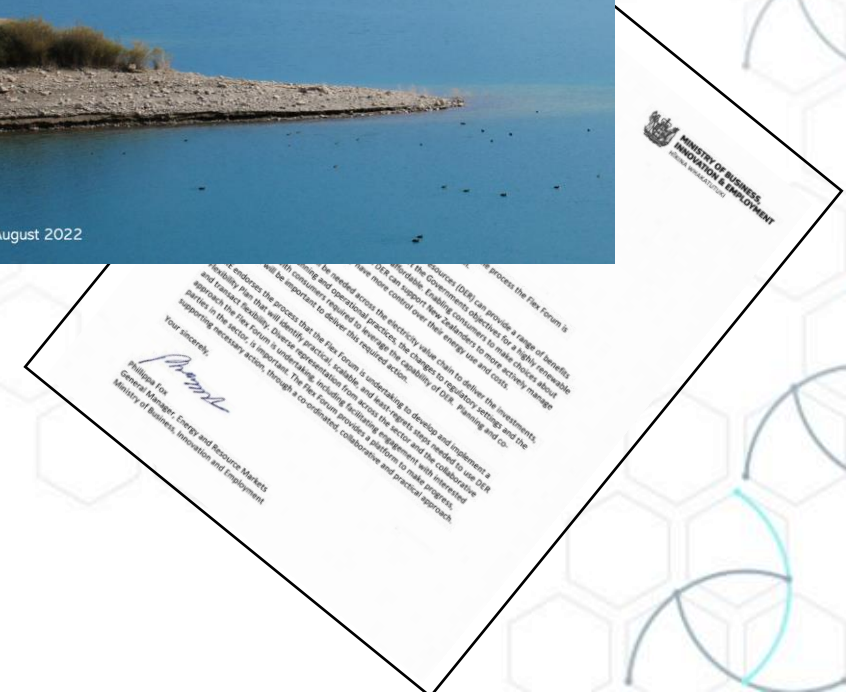
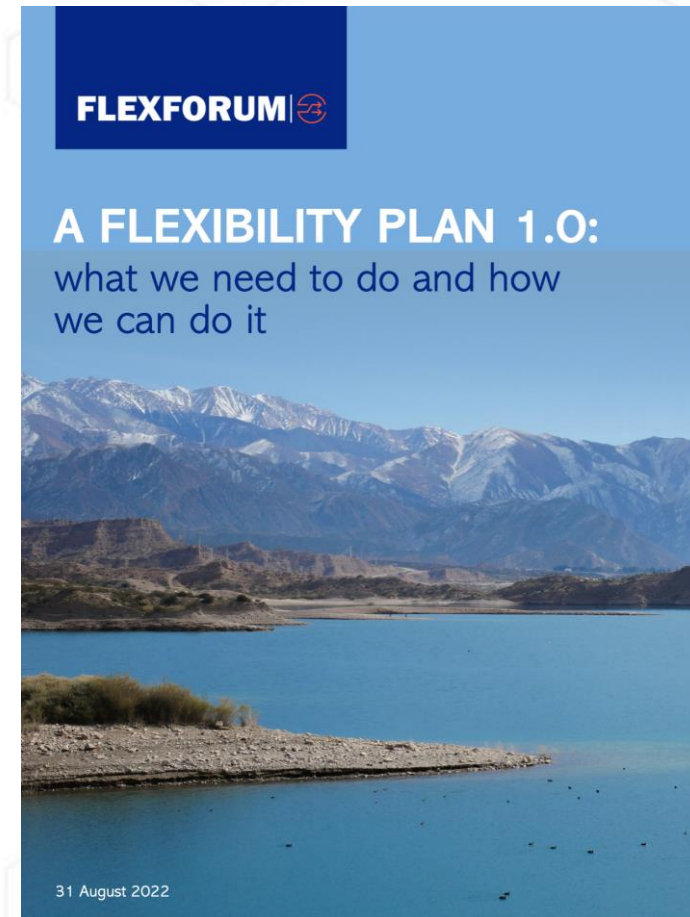
How Flexibility will help



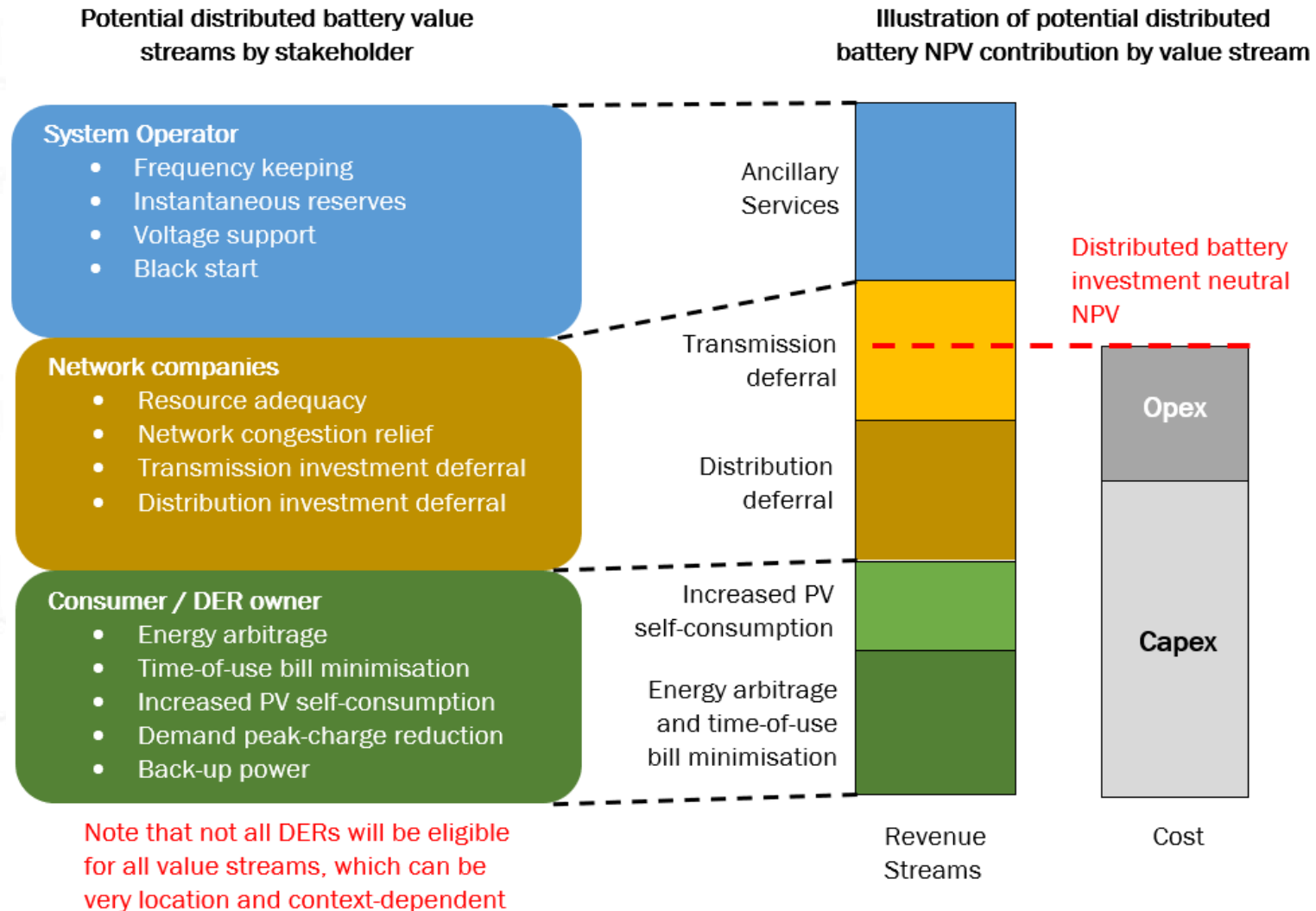
“DER can be flexible – taking the steps to make this flexibility accessible and available to more parties provides an opportunity to realise a more affordable, more reliable, and more sustainable electricity supply.”



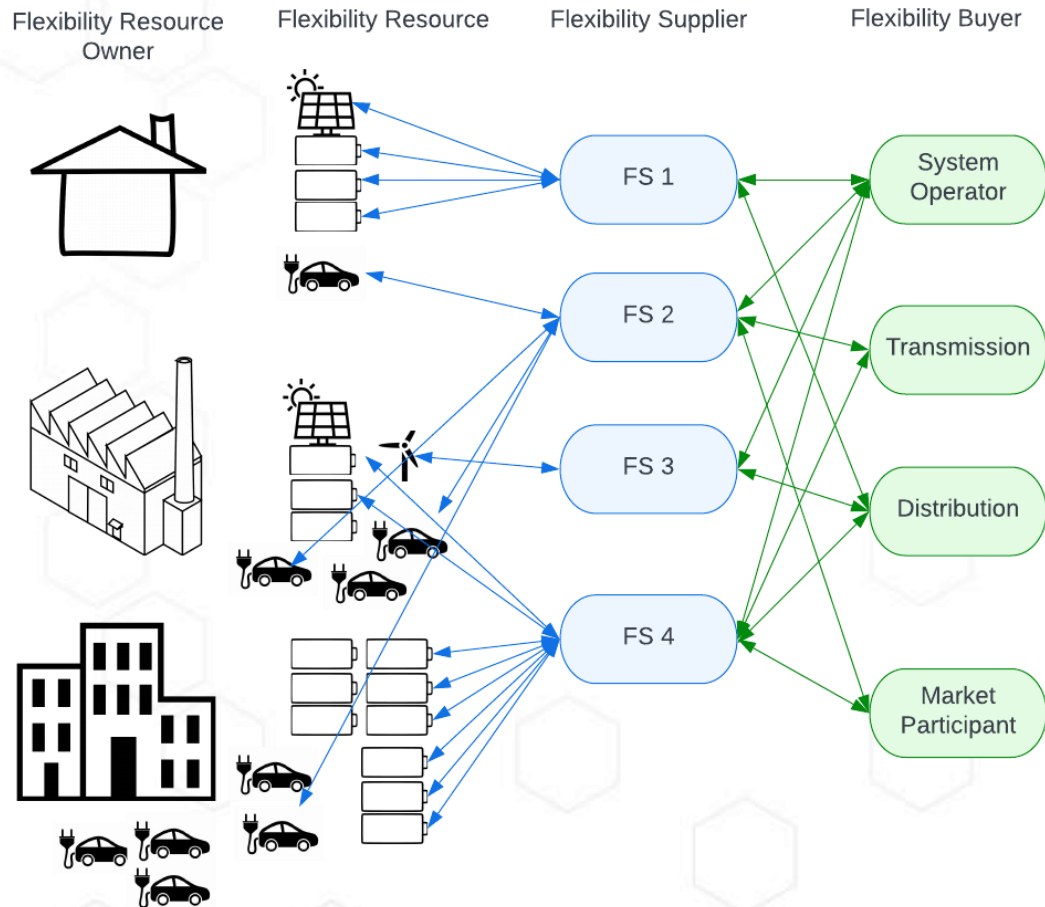
“Flexibility services enable more active participation in the power system by assets connected to distribution networks, which provides a variety of benefits to consumers, network owners, and Transpower in its grid owner and system operator roles.”



Value stacking will increase participation



Flexibility definitions



- **Flexibility resource owners**

The owner of the distributed energy resource who offers their resources to provide services for a reward (financial, service etc.)

- **Flexibility resource**

Distributed Energy Resources such as generation, storage or load that can communicate and coordinate remotely

- **Flexibility supplier**

“Aggregator” of flexibility resources that can offer value stacked flexibility services to various elements of the electricity supply chain.

- **Flexibility services**

The actual services that can be provided to achieve a specific outcome for the benefit of transmission, distribution, the market and the flexibility resource owners

- **Flexibility buyer**

The entity who buys flexibility services from a flexibility supplier for a specific use. Usually a transmission or distribution service or a market participant.

Project Flextalk

<https://www.eea.co.nz/Site/asset-management/adr-project/about-adr-project.aspx>

Sponsors & Funders



Electricity Engineers'
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Electricity Distribution
Businesses (EDBs)

Flexibility Users



Orion

EV Charge companies

Flexibility Suppliers



Technical Support



Why openADR?

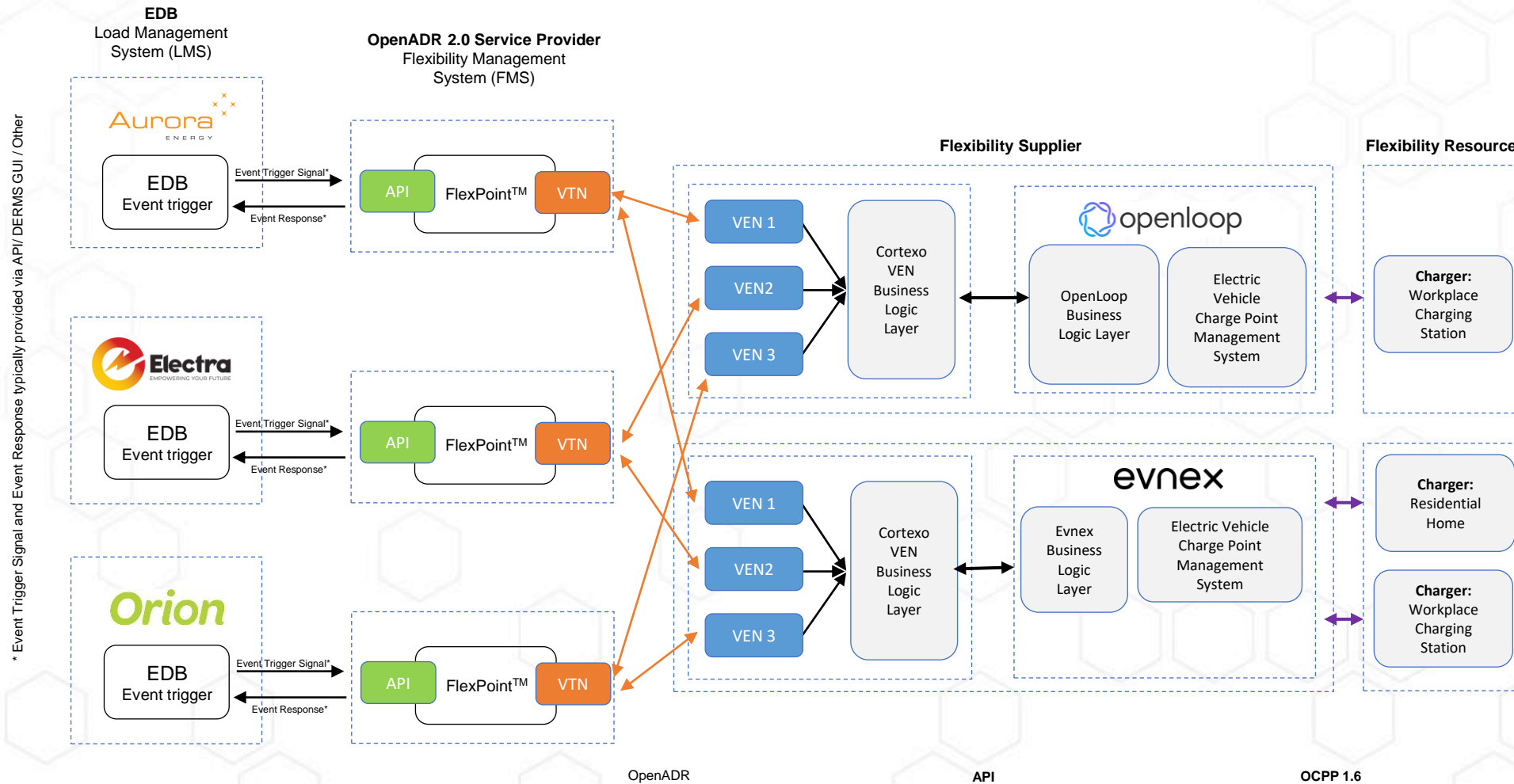
- We want DER value for the consumer to grow
 - We want Flexibility Suppliers to enter the market providing value to consumers by aggregating resources for all Flexibility Users (value stacking)
 - openADR is a coordination mechanism not a control mechanism
-
- openADR relatively simple to implement for all players
 - openADR will be in use well into the future, here and internationally
 - NZ is starting with integrating flexibility services and will no doubt move to dynamic operating envelopes utilising IEEE2030.5



Project Flextalk Strategic Goals

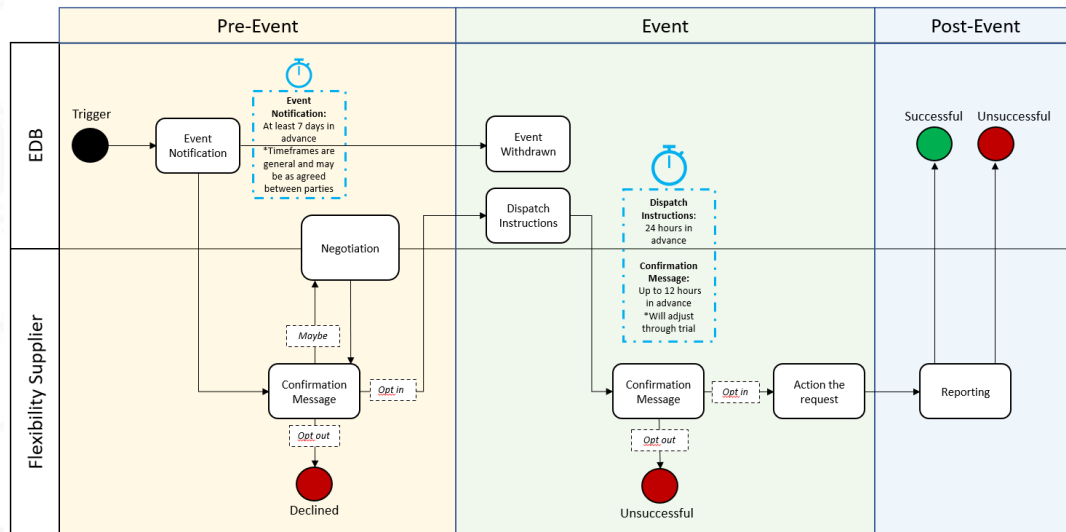
- 1 Demonstrate active managed EV smart charging through the implementation of a common communication protocol
- 2 Illustrate that this common communication protocol can be extended more generally to manage different loads and distributed generation across any platform or system (facilitating flexibility and interoperability)
- 3 Assess the suitability of OpenADR in the New Zealand context to facilitate these services
- 4 Working with the electricity industry to create a guide that achieves consistency in New Zealand and is adopted by the electricity industry
- 5 Achieving user acceptance, demonstrated by customers using and investing in smart infrastructure
- 6 Enabling intermittent renewable generation to be integrated into the electricity industry, to assist in enabling New Zealand's renewable generation targets

Project architecture



Programs – Non price responsive

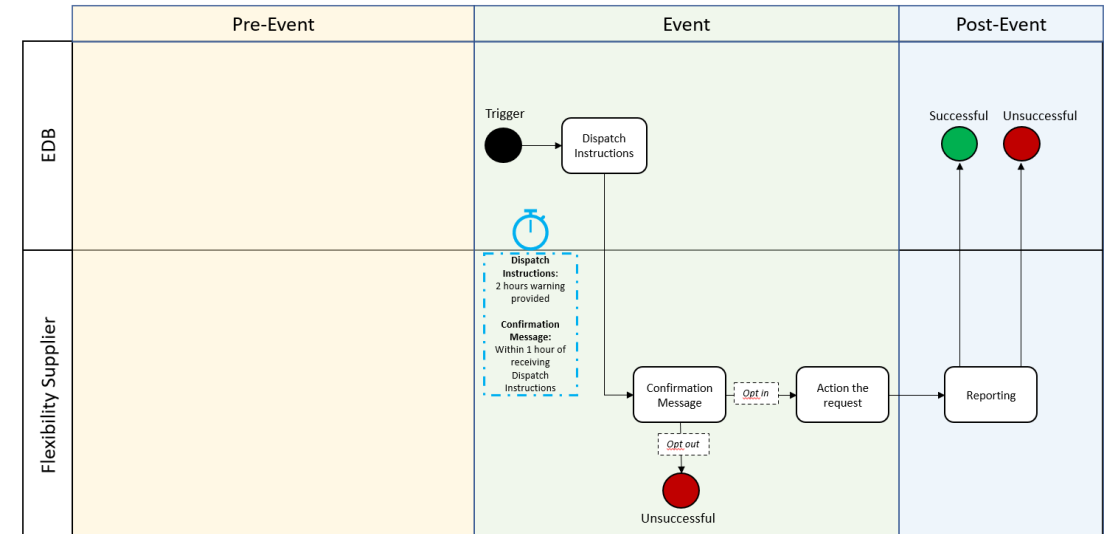
In Advance Non Price



The EDB procures, ahead of time, a pre-agreed change in capacity over a defined time period.

- This programme is used for managing lingering constraints on the network (e.g.. constraints at a GXP level).
- Requires long-term contracts to be procured in advance, including detail such as availability, utilisation, penalty fees.

Dynamic (short-term) Non Price

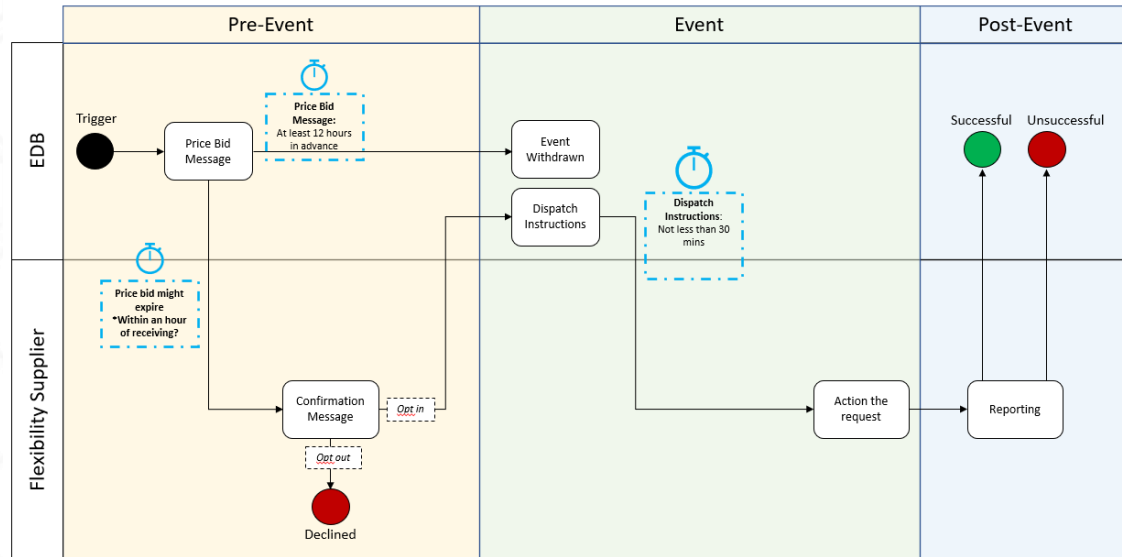


The EDB procures, in near real-time the ability to secure a pre-agreed change in capacity to reduce the impact of an unplanned event.

- Typically used for an unplanned event.
- May be deployed last minute if “in advance price responsive programme” is not actioned or doesn’t provide to the need.

Programs – Price Responsive

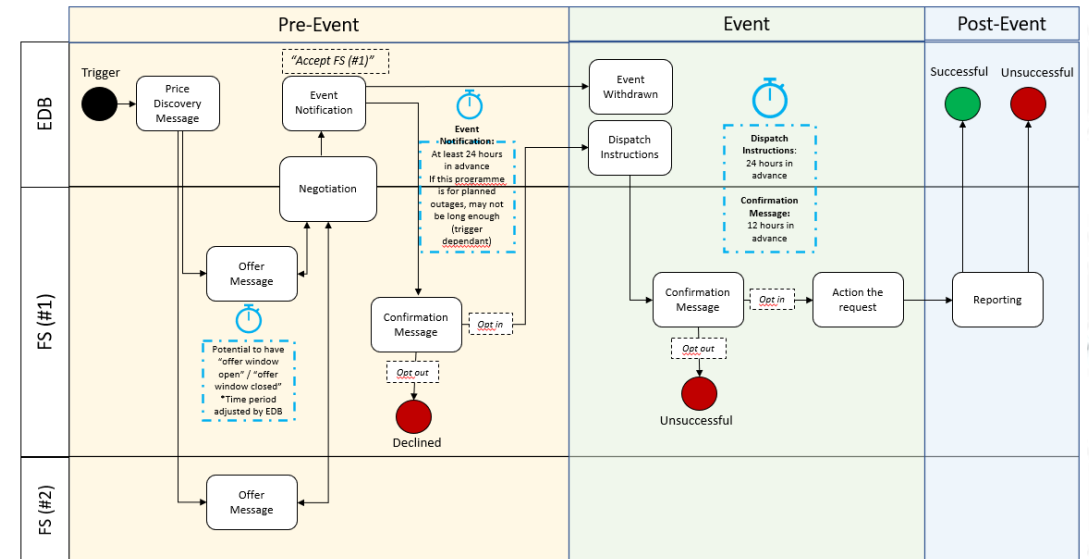
Price Responsive Bid



The EDB provides offers to Flexibility Suppliers specifying the amount they will pay for different levels of capacity. This programme is procured at short notice to provide market and system support.

- Procured at short notice i.e. day ahead

Price Responsive Discovery

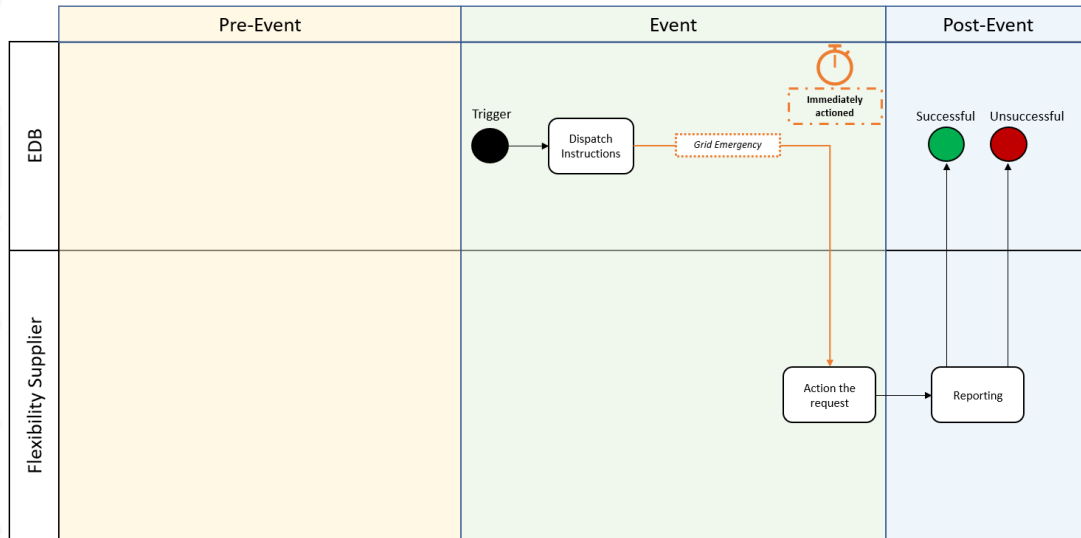


The EDB requests, ahead of time, bids to be put forward by the Flexibility Supplier detailing the load reduction they can offer at a specified price.

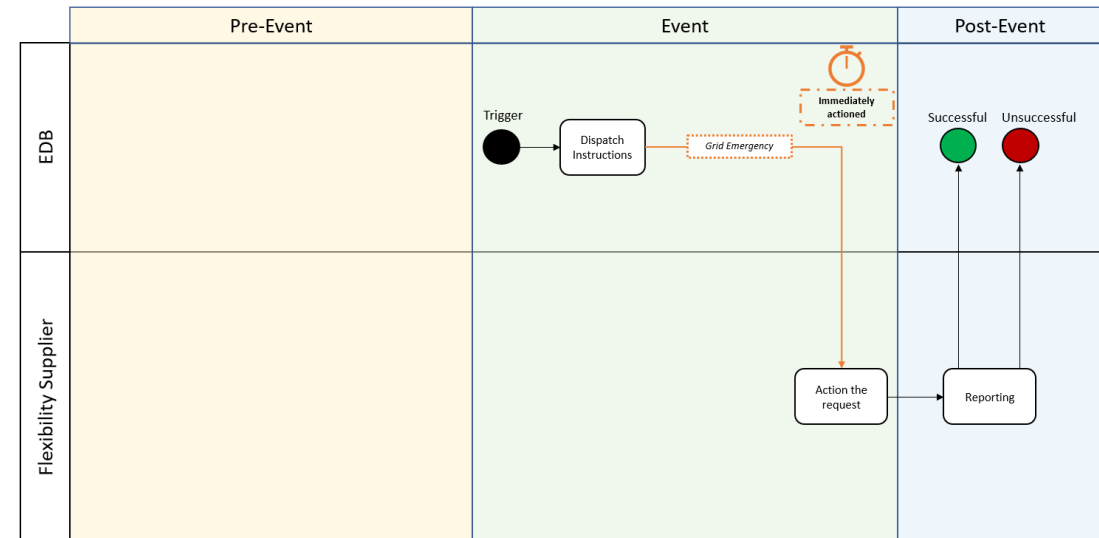
- The EDB procures while arranging an in advance service request.

Programs - Others

Immediate Emergency Response (Non-Price)



Dynamic Operating Envelope (DoE)

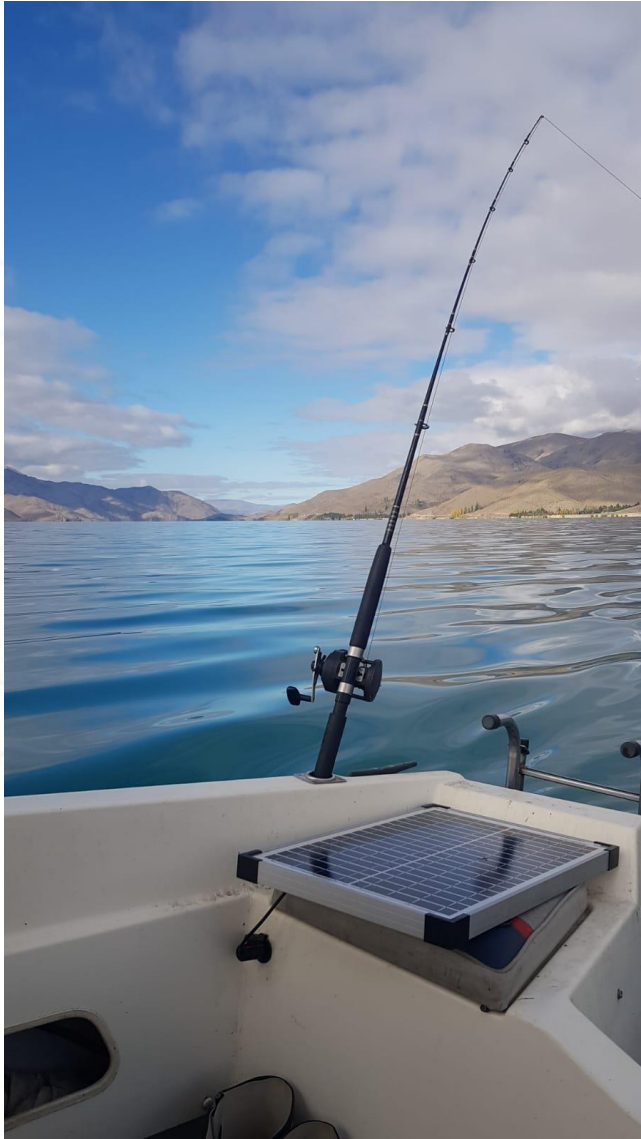


The EDB procures, in near real-time the ability to secure a pre-agreed change in capacity to reduce the impact of a grid emergency.

- In this scenario the Flexibility Supplier must action the response. For the purpose of the trial, this scenario will not be actioned with the end customer.

TBA

Where are we 'at' ...



- **Trial Part A - complete**
 - In Advance Non Price Responsive
 - Dynamic (short-term) Non Price
- **Trial Part B – Underway**
 - Price Responsive Bid
 - Price Responsive Discovery
- **Reporting – work in progress**
 - Post Event Report – standard telemetry report
 - Location Data – available flexibility, by location
 - Utilisation Data – flexibility status
 - Forecasting
 - Power Quality Data

Questions or Comments?

Are we on the right track?



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