



# FlexTalk: Technically & practically starting the flexibility journey

Asset Management Forum - 12 June 2024



**eea** | Electricity Engineers'  
Association

**EECA**  
TE TARI TIAKI PŪNGAO  
ENERGY EFFICIENCY & CONSERVATION AUTHORITY

# Introduction



**Connie Dunbar**

FlexTalk - Project Lead

Assurity Consulting



**Terry Paddy**

FlexTalk - Technical  
Lead

Cortexo



**Astad Kapadia**

Product Manager &  
FlexTalk Delivery  
Partner

OpenLoop



**Eric Pyle**

Director, Public Affairs  
& Policy & FlexTalk  
Delivery Partner

SolarZero



# FlexTalk Overview

Connie Dunbar – Project Lead



# The role of flexibility

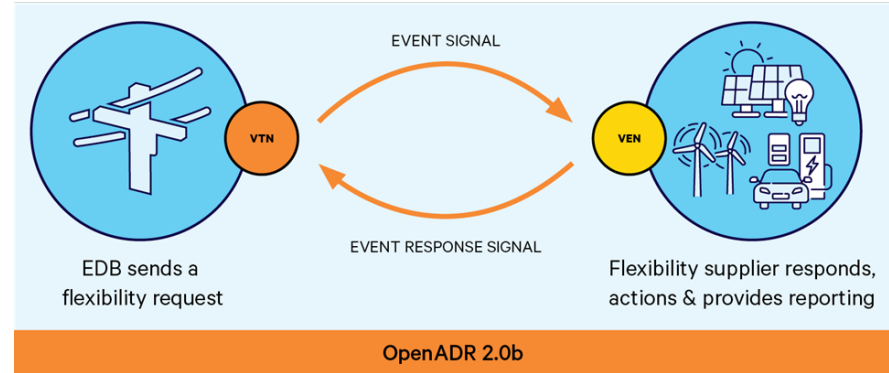
Flexibility in the energy system can contribute to resolving the key challenges

1. Avoiding the curtailment of renewables by utilising flexible demand at times of high supply.
2. Avoiding the deployment of peak generation capacity
3. Deferring grid and network infrastructure investment

# FlexTalk –

## The Demand Flexibility Common Communication Protocol Project

- Evaluation of the processes that need to be in place to apply the OpenADR 2.0 (2.0a and or 2.0b) communication protocol to achieve active managed charging of electric vehicles (EVs)
- Enabling flexibility services to be utilised in the electricity sector in New Zealand.



# FlexTalk's Assessment of Communication Protocols



# Our Findings

- › Open communication standards / protocols are a key enabler of flexibility
- › Agreed industry standardisation of protocols will provide enhanced interoperability, real-time data exchange, improved flexibility and scalability
- › The two most mature open communication protocols are OpenADR and IEEE 2030.5, each have advantages specific to their intended use case

# Our Findings

- › International adoption of standard protocols vary due to individual needs and context
- › While simple APIs allow industry to participate in flexibility, they are short-term solutions and will hinder long term participation, interoperability, scalability and security.
- › Assessment of OpenADR within FlexTalk met all defined assessment criteria for “least-regrets” functionality to enable flexibility



# Technical Insights



**flextalk**

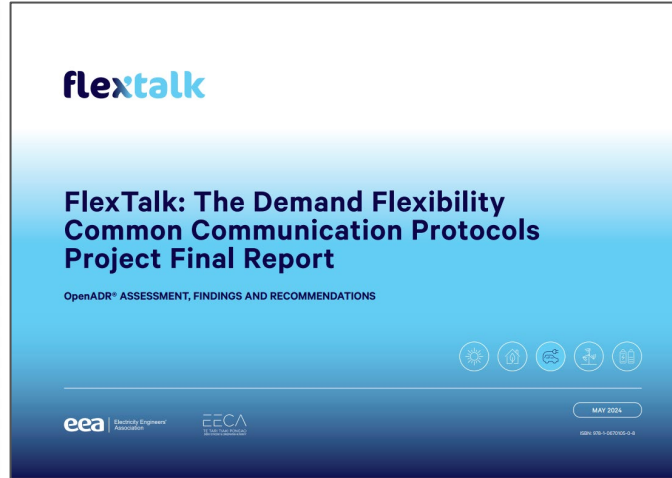
**FlexTalk: OpenADR®  
Technical Insights**

MAY 2024

eea | Electricity Engineers' Association    EECA | ELECTRICITY ENGINEERS' ASSOCIATION OF NEW ZEALAND

ISBN 978-1-0470005-1-5

The cover features a blue gradient background with the flextalk logo at the top. Below the title, there are five circular icons representing different aspects of the report: a sun, a house, a power plug, a person, and a server rack. The date 'MAY 2024' is in a rounded rectangle at the bottom right. Logos for eea and EECA are at the bottom left.



**flextalk**

**FlexTalk: The Demand Flexibility  
Common Communication Protocols  
Project Final Report**

OpenADR® ASSESSMENT, FINDINGS AND RECOMMENDATIONS

MAY 2024

eea | Electricity Engineers' Association    EECA | ELECTRICITY ENGINEERS' ASSOCIATION OF NEW ZEALAND

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**REPORT**

**International review of open  
communication/standards or  
protocols for flexibility  
management**

Private and Confidential  
Prepared for: EEA, NZ

Report No: J007380  
Document Version: Final  
Date: February 2024

ea  
technology

The cover features a photograph of a woman in a white shirt and orange safety vest pointing at a large digital screen displaying a network diagram. The background is dark with blue and green light effects. Below the photo, the word 'REPORT' is in small caps. The title is in bold. At the bottom left is the 'ea technology' logo. At the bottom right, there is text indicating confidentiality and preparation for EEA, NZ, along with report number, version, and date.

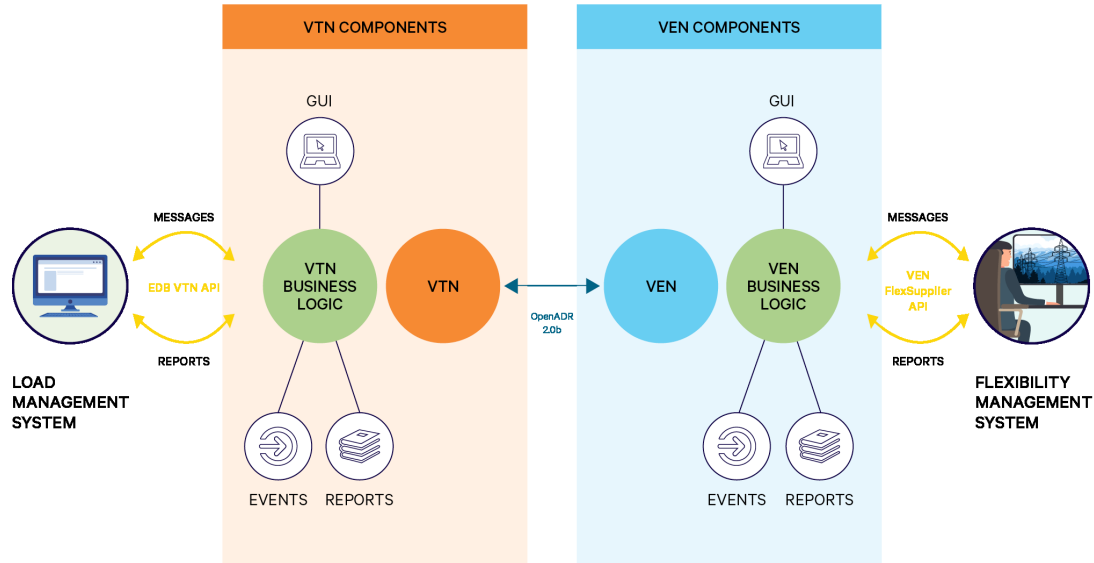


# FlexTalk Overview

Terry Paddy – Technical Lead

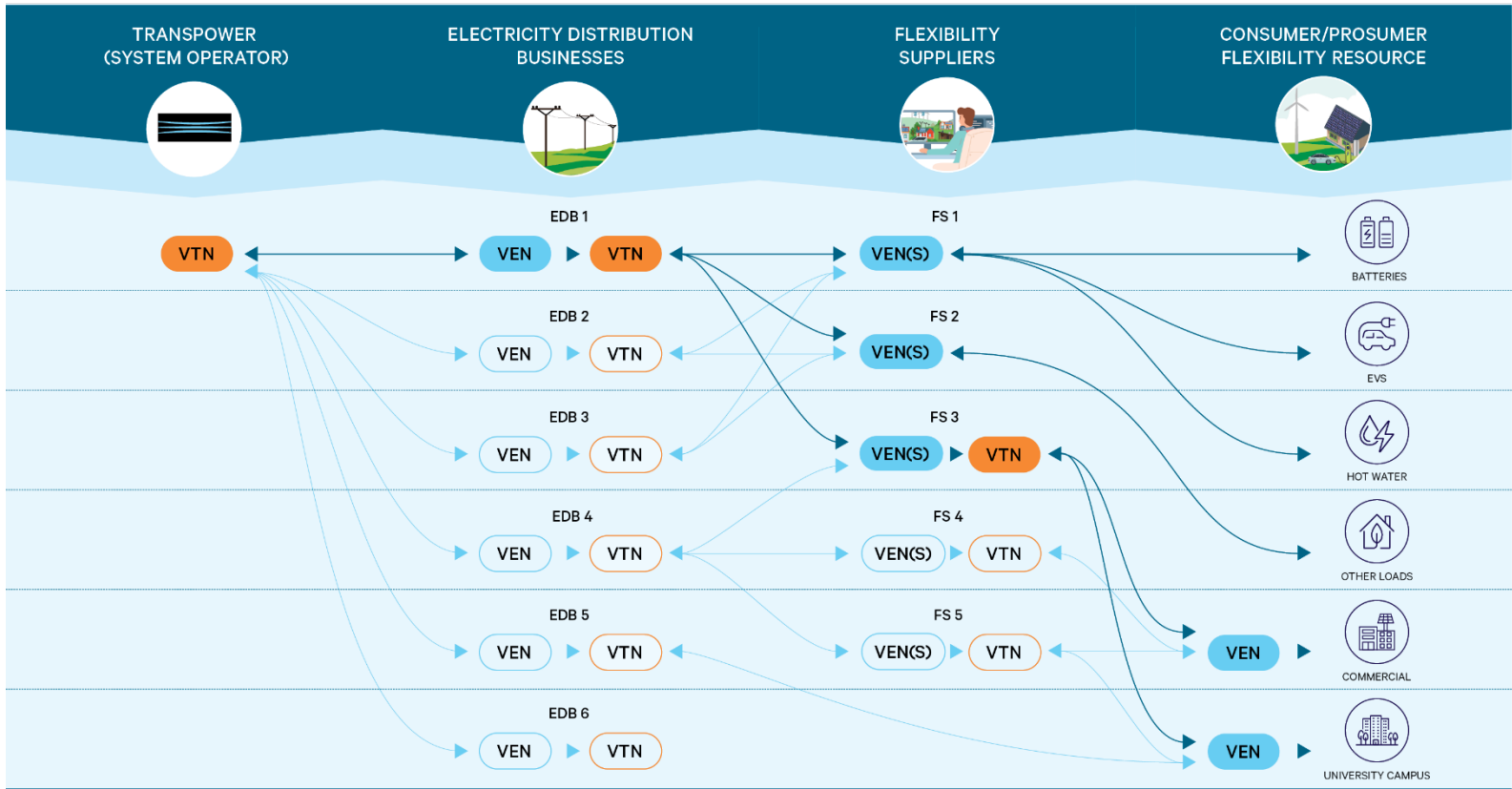


# FlexTalk Technical Solution



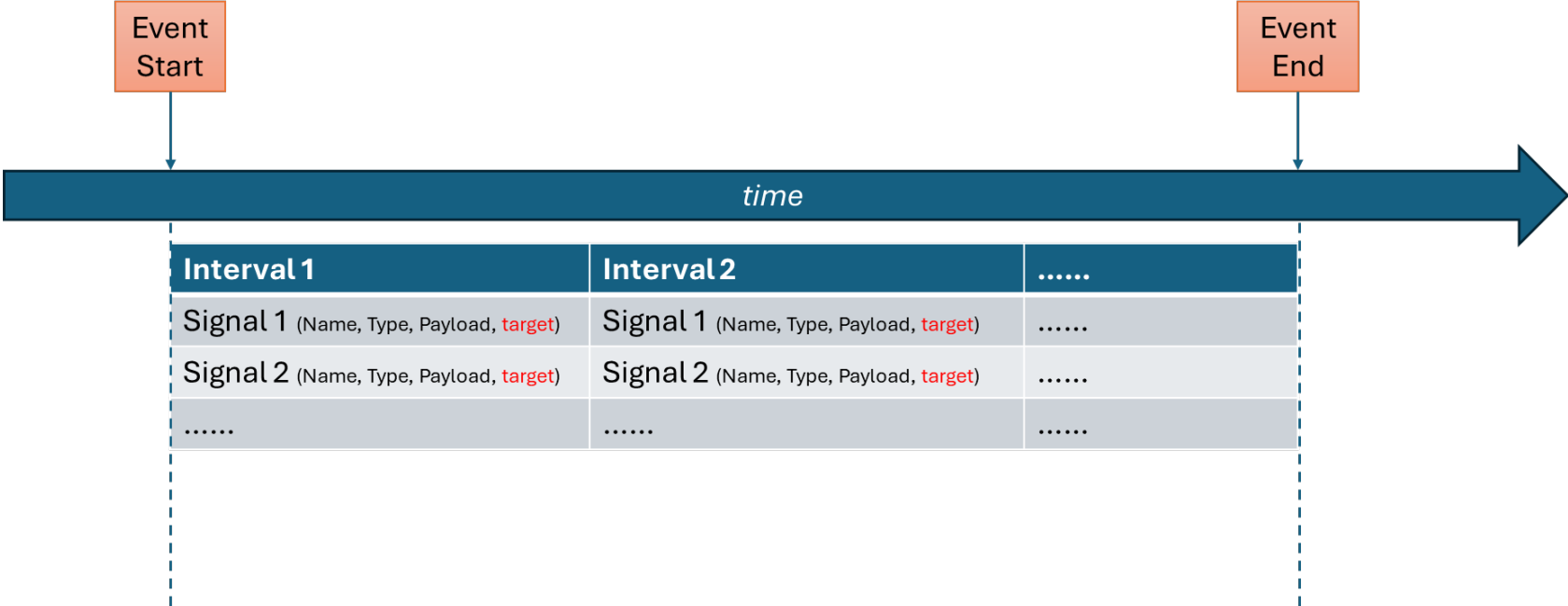
Note: Only the core VTN and VEN software must be certified by the OpenADR Alliance through conformance testing.

FlexTalk: OpenADR Technical Insights (May 2024) – Section 4, p8  
<https://www.eea.co.nz/Site/asset-management/adr-project/about-adr-project.aspx>






Flextalk: OpenADR Technical Insights (May 2024) – Section 3, p4-6  
<https://www.eea.co.nz/Site/asset-management/adr-project/about-adr-project.aspx>

# FlexTalk Technical Solution



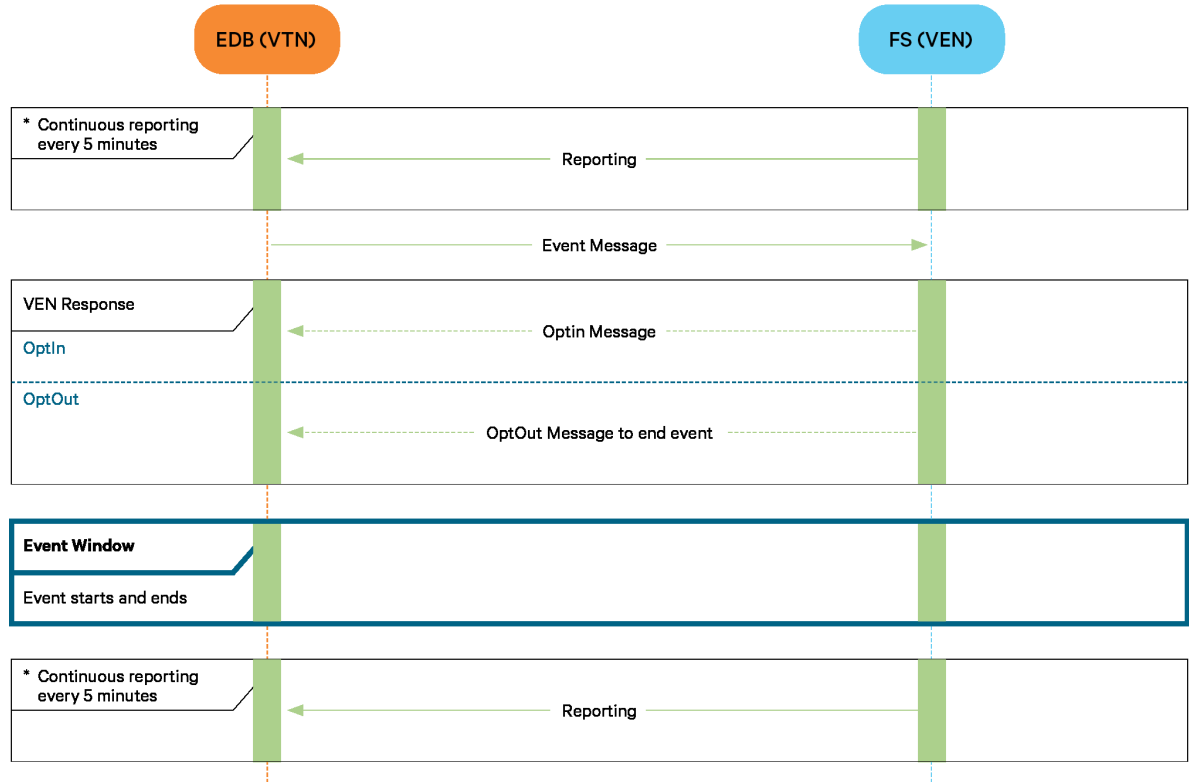
FlexTalk: OpenADR Technical Insights (May 2024) – Section 5, p10-15  
<https://www.eea.co.nz/Site/asset-management/adr-project/about-adr-project.aspx>

# Programs

Program Name	Signal Name	Signal Type	Payload
In Advance	Load_Dispatch	delta	↓↑ powerReal kW
Dynamic	Load_Dispatch	delta	↓↑ powerReal kW
Emergency	Simple	Level	 0, 1, 2, 3
PR Bid	Load_Dispatch	delta	↓↑ powerReal kW
	Electricity_Price	price	\$ /kWh
PR Discovery	Load_Dispatch	delta	↓↑ powerReal kW
	Electricity_Price	price	\$ /kWh
Dynamic Operating Envelope	Import_upper_limit		
	Export_lower_limit		
Battery	Load_dispatch	setpoint	↓↑ powerReal kW

FlexTalk: OpenADR Technical Insights (May 2024) – Section 5, p10-15  
<https://www.eea.co.nz/Site/asset-management/adr-project/about-adr-project.aspx>

# Dynamic Program



Flextalk: OpenADR Technical Insights (May 2024) – Appendix B, p18-23  
<https://www.eea.co.nz/Site/asset-management/adr-project/about-adr-project.aspx>

**ACRONYMS**

EDB	Electricity Distribution Business
VTN	Virtual Top Node
FS	Flexibility Supplier
VEN	Virtual End Node

**LEGEND**

- Represents an object/system and vertical line represents sequence of events that occurs during interaction while time progresses down the line.
- Represents an object/system and vertical line represents sequence of events that occurs during interaction while time progresses down the line.

Represents the period when object is in operation.

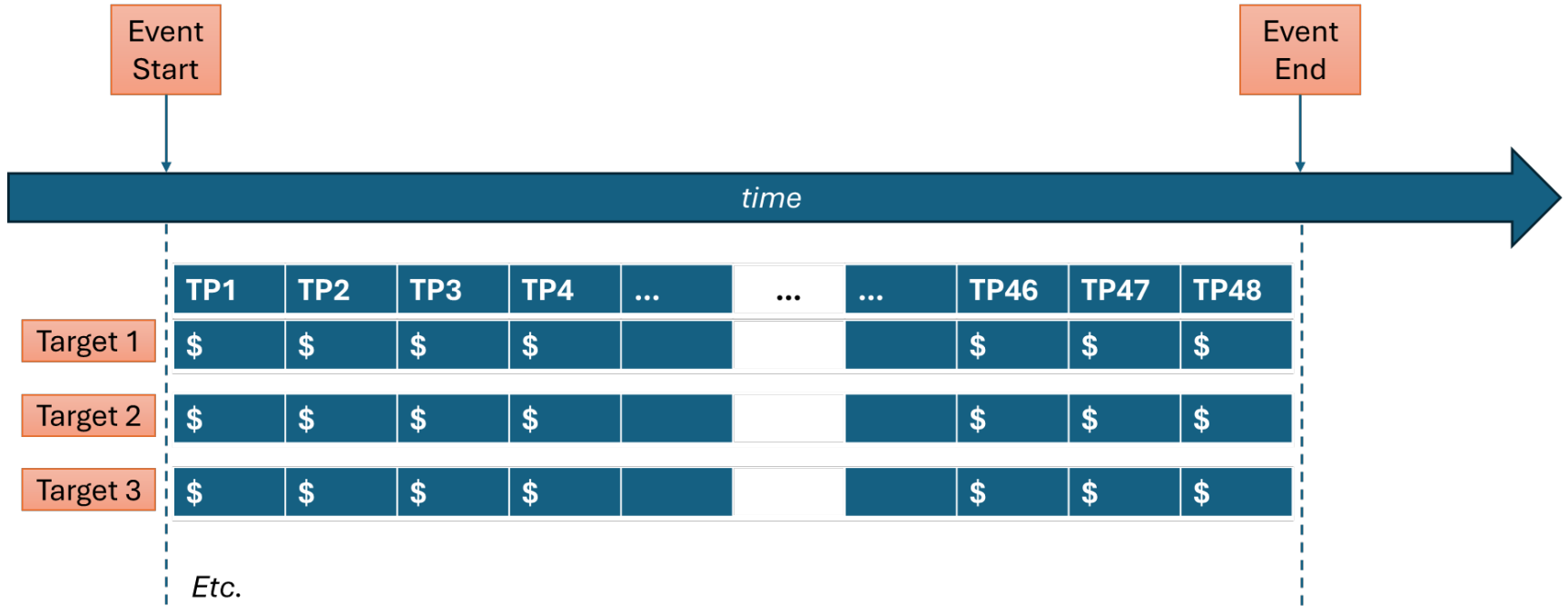
Messages show the information being sent between the objects.

Optional fragment/container encloses sequences that might or might not happen. Conditions can be specified within the container.

Optional fragment/container encloses sequences that might or might not happen. Conditions can be specified within the container.

Optional fragment/container encloses sequences that might or might not happen. Conditions can be specified within the container.

# Demo 'Time Ahead' Pricing Program



FlexTalk: OpenADR Technical Insights (May 2024) – Section 5, p10-15  
<https://www.eea.co.nz/Site/asset-management/adr-project/about-adr-project.aspx>



# Getting started with OpenADR

- Purchase a certified OpenADR module as part of an existing ADMS or flexibility management system
- License a cloud service from a certified vendor
- Purchase or license certified VTN or VEN software to run on existing business systems
- Build your own VTN or VEN

\*Note certification requirements



# OpenLoop Overview

Astad Kapadia – Delivery Partner (Flexibility Supplier)



# Tech

- Part
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- Cha
- Full

The screenshot shows a web browser window with the URL <https://uat.orion.flextalk.cortexo.com/v1/events/create>. The page title is 'gridex-notification-app APP 15:02' and the main heading is 'OpenADR Event Dispatched'. The interface displays the following event details:

Event Id	93f03c3e-43db-45d7-a9ff-acead6bba1cd
Market Context	Emergency
Status	NEAR
Event Start/End	06/12/2023 17:00:00 NZST - 06/12/2023 18:00:00 NZST
Event Duration	0 day(s), 1 hour(s), 0 minute(s)
GXP	Openloop/Orion
Interval(s)	Start: 06/12/2023 17:00:00 NZST End: 06/12/2023 18:00:00 NZST Duration: 60 Signal Payload: 3.0 (100% of available flexibility)
Opted In	<input checked="" type="checkbox"/>

At the bottom of the form, there are three buttons: 'Publish event', 'Save as draft', and 'Exit without saving'.

## Dispatched Instructions

### Charger Instructions:

- Charge Point Id: OPL-157(connector 1)  
Calculated Limit: 25.6
- Charge Point Id: OPL-156(connector 1)  
Calculated Limit: 25.6
- Charge Point Id: OPL-316(connector 1)  
Calculated Limit: 25.6
- Charge Point Id: OPL-316(connector 2)  
Calculated Limit: 25.6
- Charge Point Id: OPL-368(connector 1)  
Calculated Limit: 25.6
- Charge Point Id: OPL-369(connector 1)  
Calculated Limit: 25.6
- Charge Point Id: OPL-317(connector 1)  
Calculated Limit: 25.6
- Charge Point Id: OPL-317(connector 2)  
Calculated Limit: 25.6
- Charge Point Id: OPL-318(connector 1)  
Calculated Limit: 25.6
- Charge Point Id: OPL-318(connector 2)  
Calculated Limit: 25.6
- Charge Point Id: OPL-299(connector 1)  
Calculated Limit: 25.6

6034-ctb1-4304-wbf-0b29558-c01

# Insights

- EV Chargers
  - Difficulties with different hardware testing early on
  - Manual actioning of events during Part A, painful
- Customer Limitations
  - Limitation of zero disturbance to Customer operations between 9am – 5pm
  - Minimum charging tolerance of 6kW (-1.5kW)
  - Material incentive when operating outside of trial offered by EDBs
  - Forecasting available flexibility is difficult (how do you predict customer behaviour?)
- Software and Integration
  - Working with Cortexo's bespoke APIs to standardise with OpenADR, removed barrier to entry, made things easier and cheaper



# SolarZero overview

Eric Pyle (Delivery Partner (Flexibility supplier))



# Creating a much more efficient power system

Coordinating consumer energy resources: The technology/communications challenges can be easily overcome; Open ADR etc

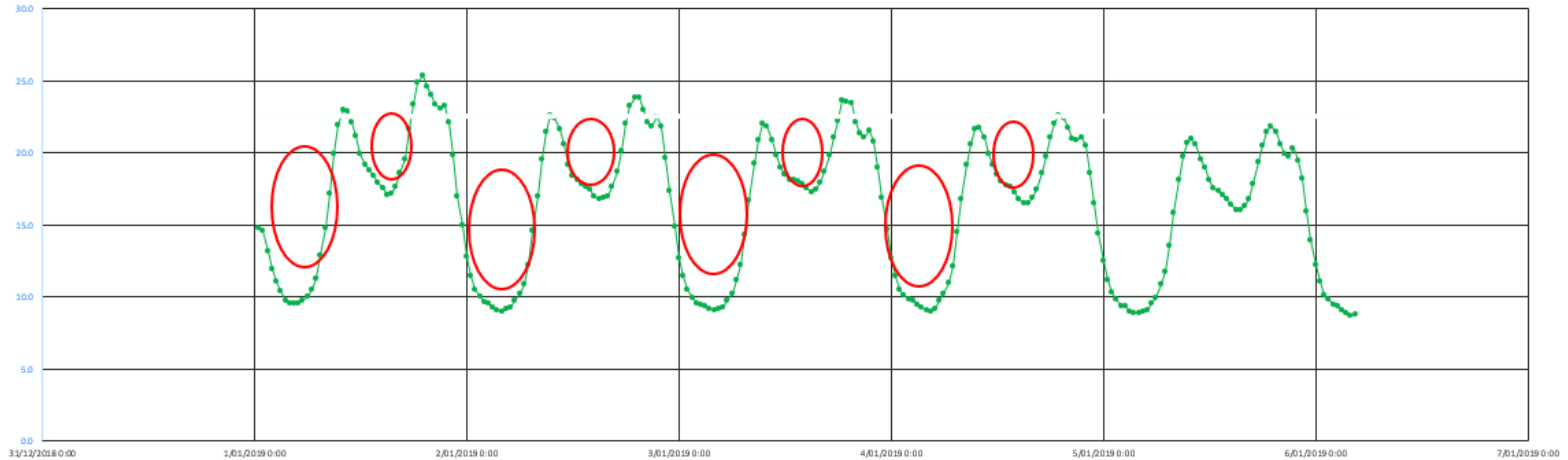
SolarZero has demonstrated that distributed energy resources can be visible and managed:

- Upper Clutha
- Reserves
- Winter peak- circa 14,000 systems via the Transpower dispatch system, 30+MW 10 May

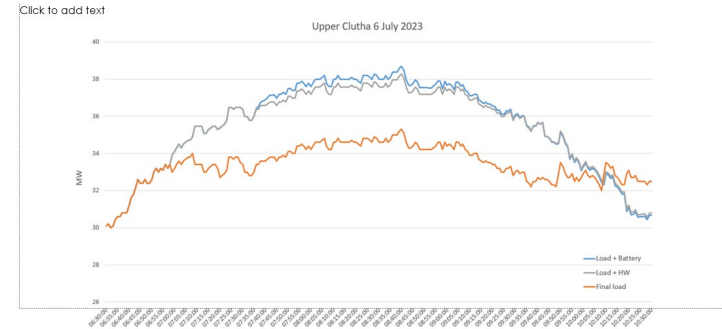
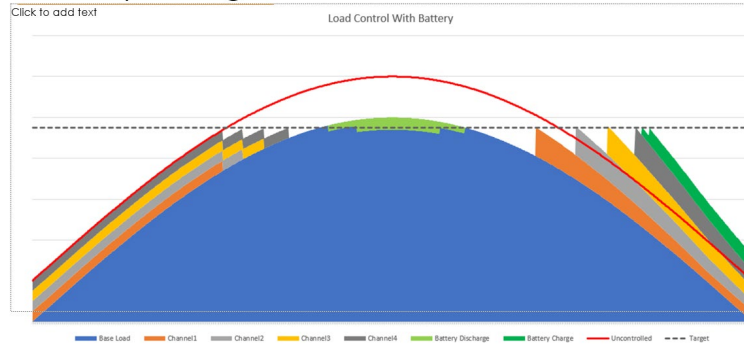
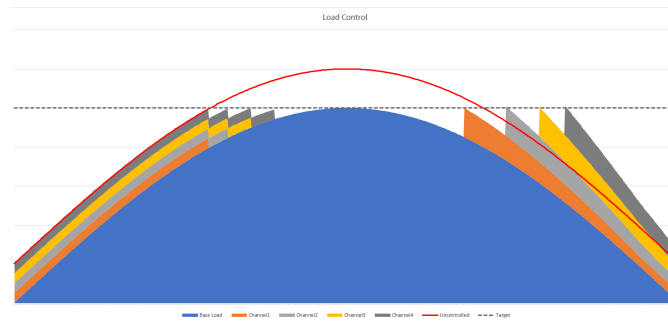
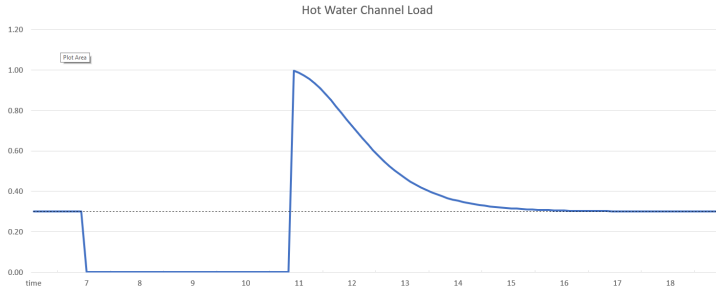
The industry has got really efficient at running a **capital inefficient** power system

The industry now needs to get on and USE this new technology, to create an efficient power system

# Creating a much more efficient power system

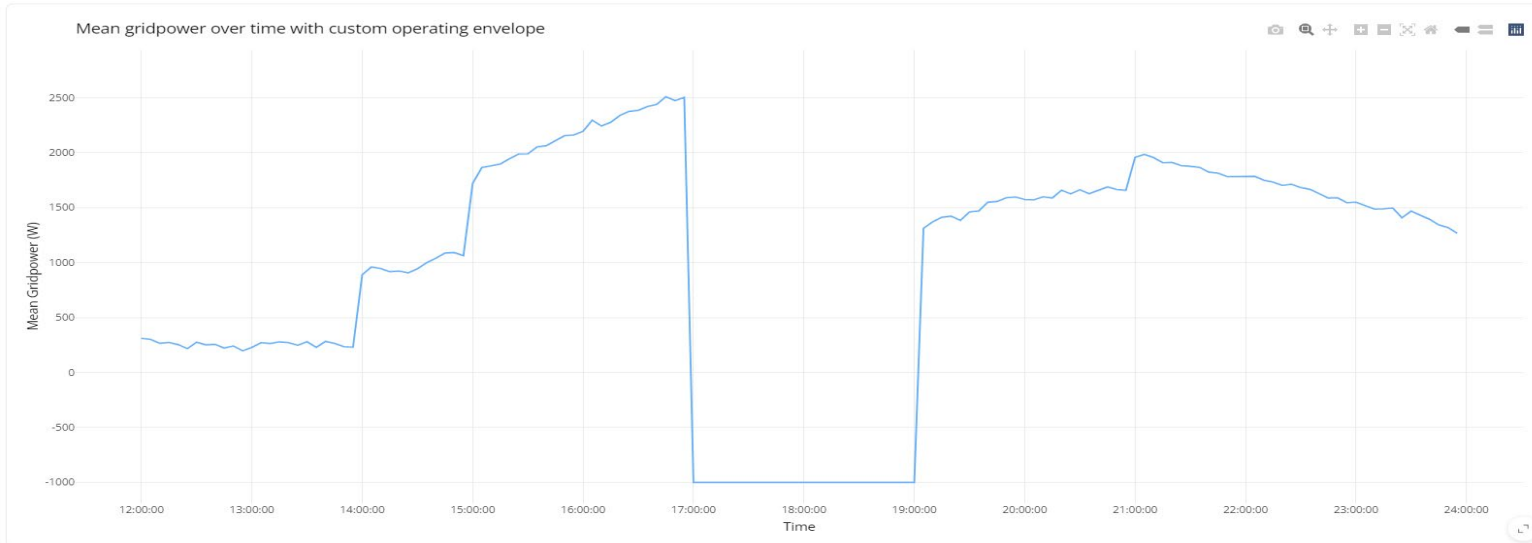


# Upper Clutha: Managing batteries & hot water together





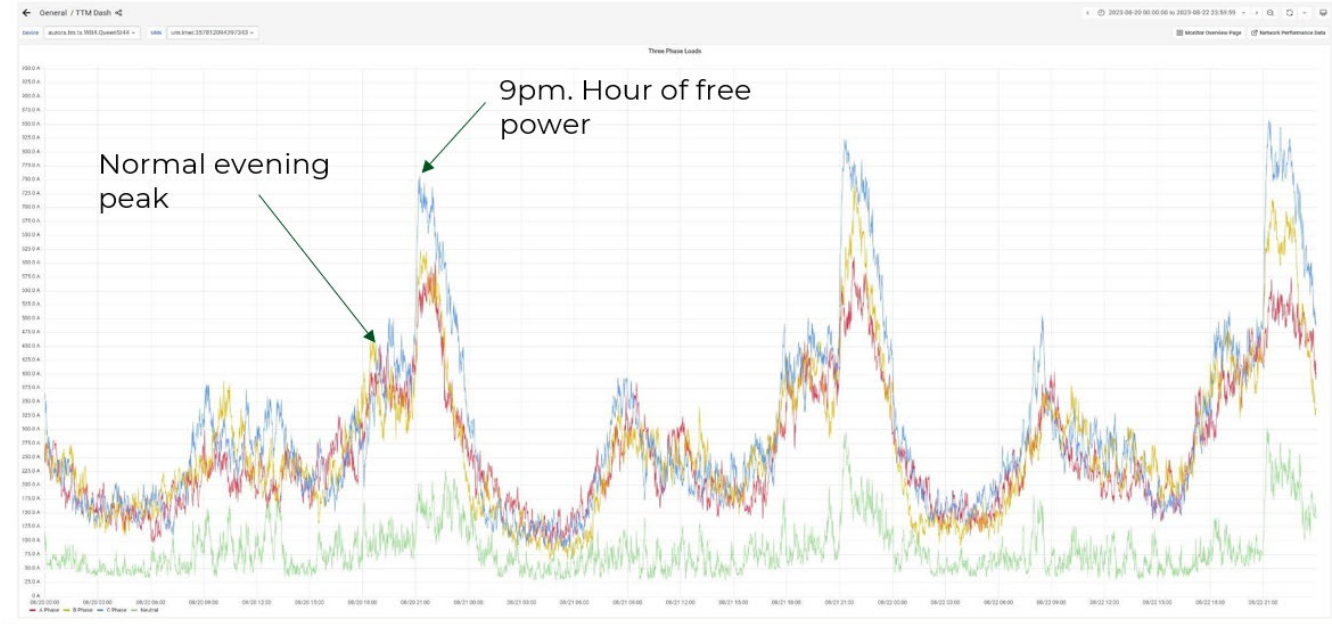
# Operating envelopes



Most pricing is about demand reduction. What does a pricing regime look like for an operating envelope?

# Otago university students

Students at Otago University have taught us that people respond to price signals!

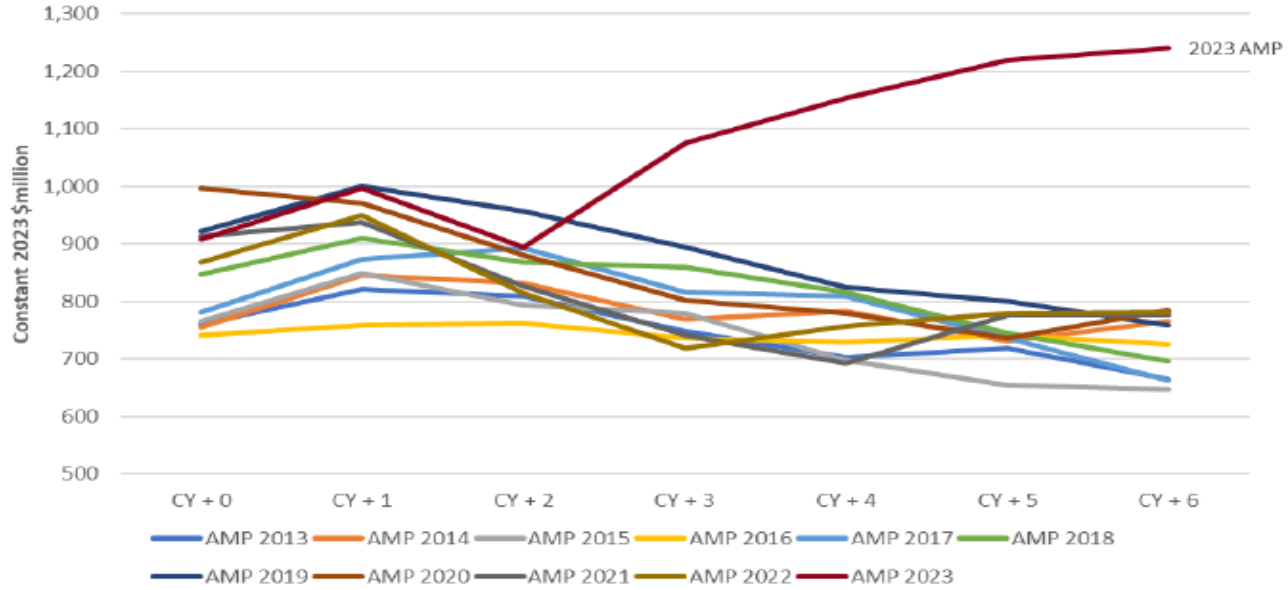


# We need to do things differently, otherwise...

Large investment in poles, wires, and transformers or...

...smarter investment in pricing, operating envelopes, and the like.

Figure E2 Comparison of capital expenditure forecasts from EDB AMPs forecasts



**The technology exists and pricing provides communication...how do we get a whole industry to do things differently, when no one really knows how?**

# Questions?



**Terry Paddy**

FlexTalk - Technical  
Lead  
Cortexo



**Russell Watson**

Principal Engineer &  
FlexTalk Industry  
Design Team  
Northpower



**Astad Kapadia**

Product Manager &  
FlexTalk Delivery  
Partner  
OpenLoop



**Eric Pyle**

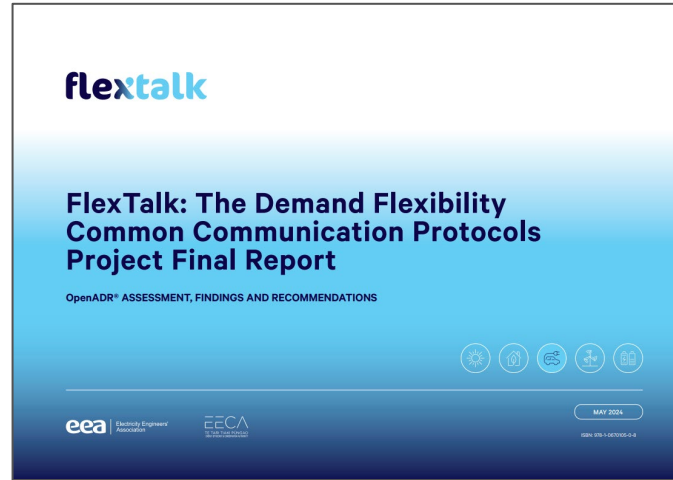
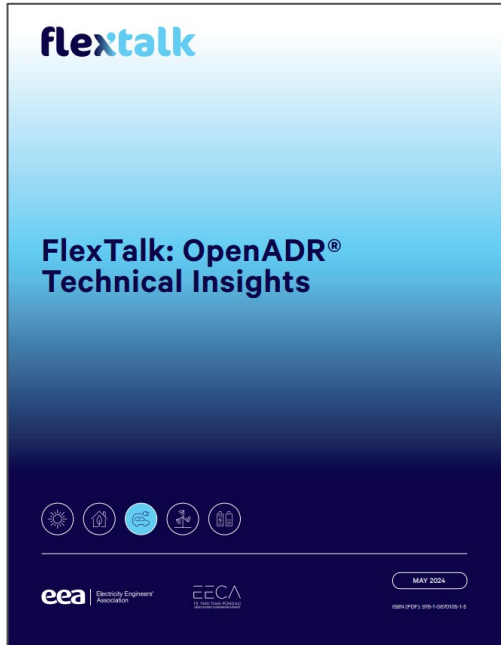
Director, Public Affairs  
& Policy & FlexTalk  
Delivery Partner  
SolarZero



**Ron Beatty**

Consultant – Market &  
Regulation & FlexTalk  
Industry Design Team  
Independent Contractor

# Thank you



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