



Welcome

Webinar – 18th July 2024

EEA/Cortexo – The Many Layers of Flexibility

Please **mute** your mic and **turn off** your camera.

Thank you to our presenters and to you, our audience for your attendance. EEA values your support.

Please note, this webinar will be recorded and shared on the EEA website.

29th May 2024



eea | Electricity Engineers'
Association

EECA
TE TARI TIAKI PŪNGAO
ENERGY EFFICIENCY & CONSERVATION AUTHORITY

Introduction



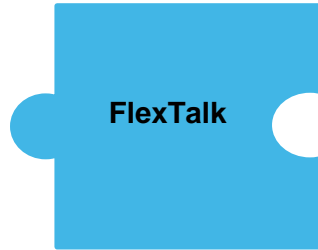
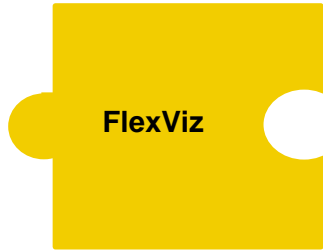
Terry Paddy
Cortexo



Connie Dunbar
FlexTalk - Project Lead
Assurity Consulting



Stuart Johnston
Principal Advisor – Engineering &
Technical
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The Flex's

FlexViz: A Cortexo / Ara Ake project to show available flexibility at every GXP across NZ

FlexTalk: EEA/EECA and industry collaboration projects to solve technical and consumer opportunities and challenges in the energy transition. Our first project concluded in May 2024 demonstrated dispatch, monitoring and reporting of flexibility between EDBs and Flexibility suppliers using the OpenADR protocol. The next project scales up orchestration and consumer participation.

FlexForum: FlexForum brings together individuals and organisations across the electricity ecosystem to work together to speed the delivery of distributed flexibility and maximise the benefits for households, businesses, and communities.

flextalk

Project Flexviz

Making Flexibility Visible



flexviz@cortexo.com



In a nutshell - the slightly scary bit

We are electrifying the economy

Transpower tells us New Zealand's electricity demand could increase by 68% to 92% by 2050. This translates to an additional 29-39 TWh of annual electricity generation.

The Boston Consulting group advised that we will **need to spend \$42 billion** to provide the necessary generation and infrastructure.

This includes **\$30.2 billion** in Transmission and distribution spending

Boston Consulting Group – The future is electric (Oct 2022)

In a nutshell - the possibly good bit

A smarter, more *flexible* electricity system will save around **\$10 billion** on an NPV basis to 2050.

Boston Consulting Group – The future is electric (Oct 2022)

The value of the *economic surplus* of deploying *flexibility* to New Zealand is around **\$380 million** NPV

Sapere, Cost-benefit analysis of distributed energy resources in New Zealand (Sep 21)

EECA found that *flexible* EV charging could create **\$4 billion** in value by 2050 by reducing total system costs.

EECA, Residential smart EV chargers and demand flexibility (Mar 2024)

What is Flexibility

Flexibility means the ability to change generation injection and/or consumption patterns, on an individual or aggregated level, often in response to an external signal, to provide a service within the energy system.

Electricity Authority - Guidance on distributor involvement in the flexibility services market

Demand-side flexibility (DSF), also known as distributed flexibility, is the voluntary adjustment of electricity consumption by DER in reaction to market signals and is primed to be a key enabler of New Zealand's future energy system

Transpower - Evolving market resource co-ordination in Aotearoa New Zealand

Flexibility is: 'modifying generation and/or consumption patterns in reaction to an external signal such as a change in price, to provide a service within the energy system'.

Ofgem- Great Britain's independent energy regulator.

Why are open standards important

- **Compatibility:** Ensures devices and systems can work together.
- **Innovation:** Encourages the development of new technologies.
- **Efficiency:** Optimizes grid operations and reduces costs.
- **Reliability:** Enhances the stability and reliability of the grid.
- **Renewable Integration:** Supports the integration of renewable energy sources.
- **Security:** Provides robust security protocols.
- **Scalability:** Allows for the growth and adaptation of the grid.
- **Regulatory Compliance:** Ensures adherence to regulatory requirements.
- **Global Cooperation:** Facilitates international collaboration and technology deployment.

FlexTalk showed we can dispatch flexibility



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

flextalk

flexviz@cortexo.com

So whats the Flexviz Project?

EECA/EEA Flextalk 1.0 Project showed that EDBs could dispatch flexibility between EDBs and flexibility suppliers using seven distinct EDB designed demand flexibility programs.

Two common questions/statements after Flextalk were

1. (EDB) *"That works fine, but there is no flexibility to access"*

2. (Flex supplier) *"I've got flexibility, but there is ..."*

- *no way for me to show it, and*
- *no incentive for me to offer it."*

Flexviz

Flexviz is a shopfront for Flexibility

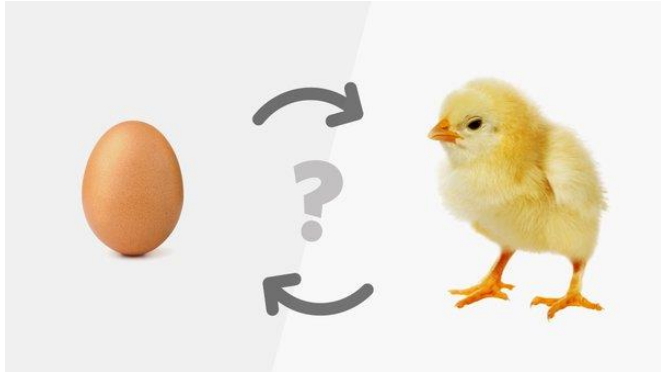
A growing number of **large and small flex** suppliers reporting available flexibility every 5 minutes

- To show an EDB what is available on its network
- To show Transpower what's available on the transmission grid

Aggregated at the GXP to protect the flex suppliers information

More specific and detailed information available on engagement with the flex suppliers

There is no flexibility to access...

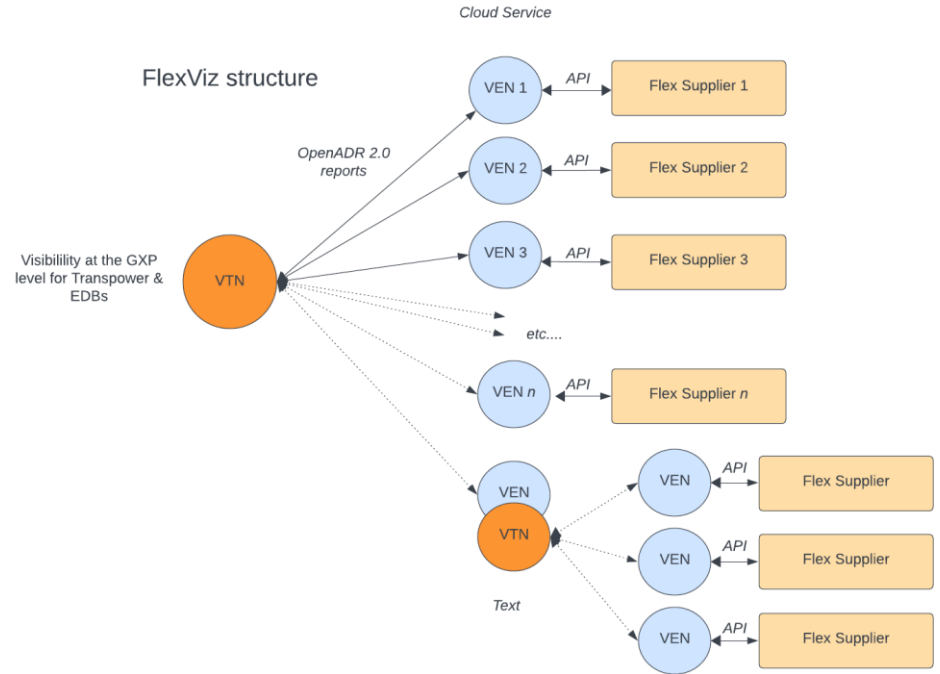


The technical 'how' of Flexviz

The shop window for Flexviz
(One top node VTN)

Flex suppliers provide 5
minute data via an API to their
VEN

The data is aggregated
at GXP level and passed to the
VTN



Flexviz Demo

Initially a small number of Flex Suppliers

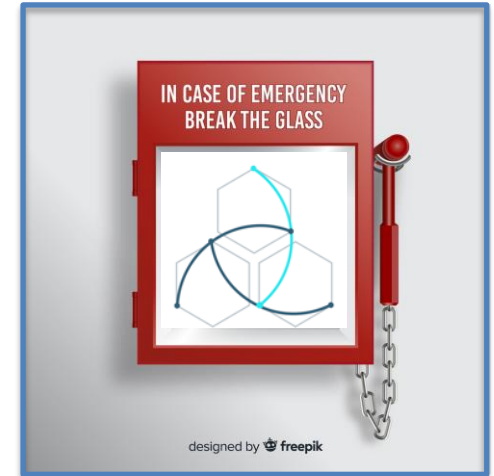
1. SolarZero (Solar/Battery)
2. Thundergrid (EV charging)
3. Revolve Energy (Residential/Commercial)

These companies are investigating connecting to Flexviz in the next round of connections

1. Meridian Energy
2. Ivory Egg (UK/AU/NZ HEMS & BMS)
3. Openloop (EV Charging)
4. Evnex (EV Charging)

We are keen to talk with others (flexviz@cortexo.com)

In case demo freezes!



What does success look like?

1. A continually growing amount of flexibility visible
 - Anyone interested in connecting, get in touch (flexviz@cortexo.com)
2. Transpower/EDB having a commercial conversation with flex suppliers about
 - Different data
 - Different location information (relative to network assets)
 - Access
 - Dispatch

Key takeaways

1. Flexviz is made up of large and small flexibility suppliers (because the future is high volume small scale flex)
2. Flexviz shows available flexibility at each GXP (but could show it at a network asset point)
3. Flexibility can be dispatched using the same methods proven in Flextalk 1.0
4. If we want available flexibility to grow, EDBs must engage with is now even though it is small scale and not currently the total solution
5. **If you want access, email flexviz@cortexo.com**

Thanks

If you have flexible load you want to make visible

Of you're an EDB and want access

Contact flexviz@cortexo.com



Terry Paddy
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FlexTalk Update

Connie Dunbar



What next?



FlexTalk

“Making real stuff happen in kiwi homes”

Vision:

Delivering seamless integration of consumer smart devices and homes into NZ’s energy system to ensure safety, affordability and resilience for the future.

Purpose:

Collaboratively trial the active management of smart appliances (consumer energy resources - CER) with participants in the electricity industry and consumers to understand how CER is best integrated into the energy system with maximum benefit to the consumer.

FlexTalk 2.0 is project aimed at testing and developing strategies for effectively integrating smart devices (such as solar panels, battery storage, EV chargers, water heating, HEMs, space heating, microgrids and other renewable energy sources) into the broader electricity grid. The goal is to maximize benefits for consumers and industry by trialling non-network solutions, ensuring stability, resilience and efficiency of the energy system

Join us...

Date: 9am – 1pm Tuesday 10th September

Title: Developing Practical Transition Pathways for Aotearoa

Description:

- Interactive workshop focused on influencing the design of the FlexTalk consumer smart home smart device integration project.
- Insights from Bill Lilley on Australia's energy transition, highlighting successes and failures and how New Zealand can learn from them.
- A presentation on the EA Tech international scan, commissioned by EEA and EECA, which provides a snapshot of locally and globally energy transition projects, their key objectives, challenges they address, and how these insights can be leveraged in the New Zealand context.





Streamlining Connections Programme

Dr Stuart Johnston



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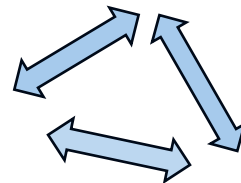
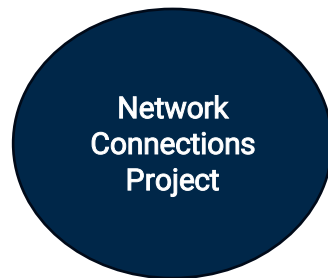
STREAMLINING CONNECTIONS PROGRAMME



Regulatory Requirements

Aim: Improve the efficiency of network connections by addressing the non-price barriers to the connection of DER and load with either changes to regulations, the code or the establishment of informed industry guidelines.

National Connections Technical Group (NCTG)



Standardisation of Technical Requirements

Aim: Establish a suite of national guidelines that set out the technical settings and requirements for the connection of DER and load to the grid.



Best practice processes

Aim: To undertake customer journey mapping, capturing and co-designing customer service and commercial improvements for connections to be used by all EDBs.

The objectives of the guidelines

1. To provide clear, complete and accessible technical requirements for grid connection for each EDB
2. Provide for a level of consistency between EDBs' technical requirements for grid connection in terms of both structure of presentation and the requirements themselves
3. Ensure that EDBs' technical requirements give regard to the long-term interest of consumers by appropriately balancing the economic benefits, costs and risks that the requirements impose upon their network, proponents and New Zealand's electricity system more generally
4. Establish a platform for EDBs' to develop common standards and protocols for future management of active DER and load.

Proposed Technical Guides

CER micro applications (household)	DG applications \leq 10kW Small	DG applications $>$ 10kW $<$ 300kW Medium	DG applications \geq 300kW Large
Cookie Cutter	Process 1 / Process 1A	Process 2	Process 3

Proposed Inclusions in the Guides

System requirements	Earthing
Labelling and signage	Metering
Generation control	Power quality
Fault levels and protection impacts	Communications systems
Means of isolation	Communication and data protocols
Operating voltage and frequency	Cybersecurity
Inverter Energy Systems	Technical studies
Non inverter systems	Commissioning and testing
Protection	Operations and maintenance

Join us...

Date: 1.30pm – 5pm Tuesday 10th September

Title: Streamlining Connections (EA, ENA and EEA)

Description:

- Interactive workshop focused on Streamlining the connection process for DER and Load across Aotearoa's Distribution Networks.
- ***The Electricity Authority*** – Engage with the Authority regarding their Consultation paper to be released in August 2024, that outlines their proposal to improve the efficiency of network application processes. The Authority is proposing changes to Part 6 *Connection of distributed generation* of the Electricity Industry Participation Code (the Code).
- ***ENA*** – Engage with ENA regarding their work program to deliver process improvements (eg, pre-application processes, queueing and managing policies) for distributors and access seekers to adopt.
- ***EEA*** – Engage with EEA on our work that will set out the framework, principles, approach, and technical settings for distributors and EDBs to best connect and manage power quality.

Questions?



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Thank you

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