flextalk

BACKGROUND

Aotearoa New Zealand has committed to achieving net zero emissions by 2050 and set an aspirational goal of reaching 100 percent renewable electricity generation by 2030. Most new renewable generation will be intermittent in nature, coming from solar and wind sources, which presents challenges to those who operate our electricity system and manage intermittent supply against community demand.

The increasing uptake of electric vehicles, batteries and smart devices presents an opportunity for those who run our electricity system, to achieve greater flexibility in how demand is managed.

Energy system flexibility can help to facilitate the introduction of more intermittent renewable electricity generation and provide consumers with an opportunity to play an increasing role in the operation of the electricity network.

If left uncontrolled, increased electrification will require significant investment in electricity infrastructure and ultimately cost the consumer more via their electricity bill.
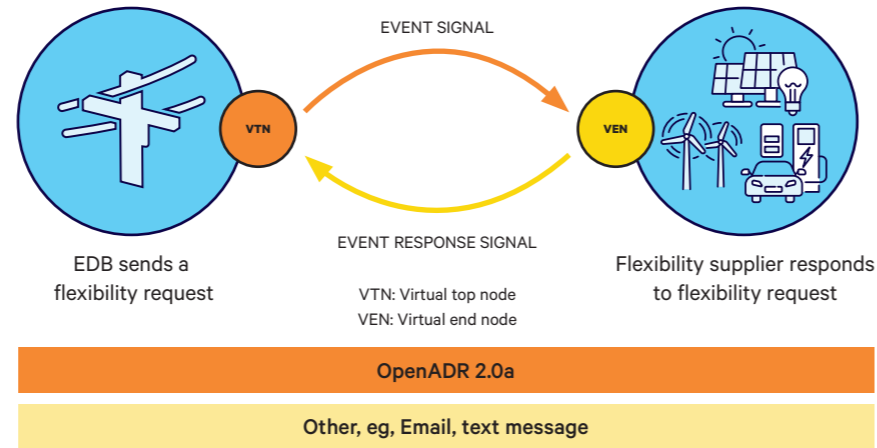
The FlexTalk project is exploring how the adoption of a common communication protocol, in this case OpenADR®, could better enable customer flexibility to be utilised by testing the interoperability of a two-way common communication protocol between an electricity distribution business (EDB) and flexibility supplier.

In addition to testing the feasibility of a common communications protocol, FlexTalk is developing the procedures needed for the active management of electric vehicle charging in near real time.
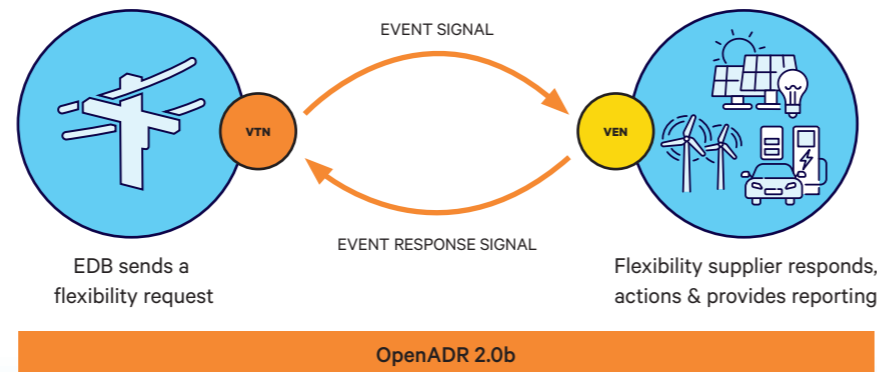
More recently the project has been able to broaden the scope of OpenADR trial, testing the active managed charging of both EVs and batteries. This is due to Aurora's participation as an EDB delivery partner in the trial and utilising their existing relationship with solarZero for the Upper Clutha virtual power plant.
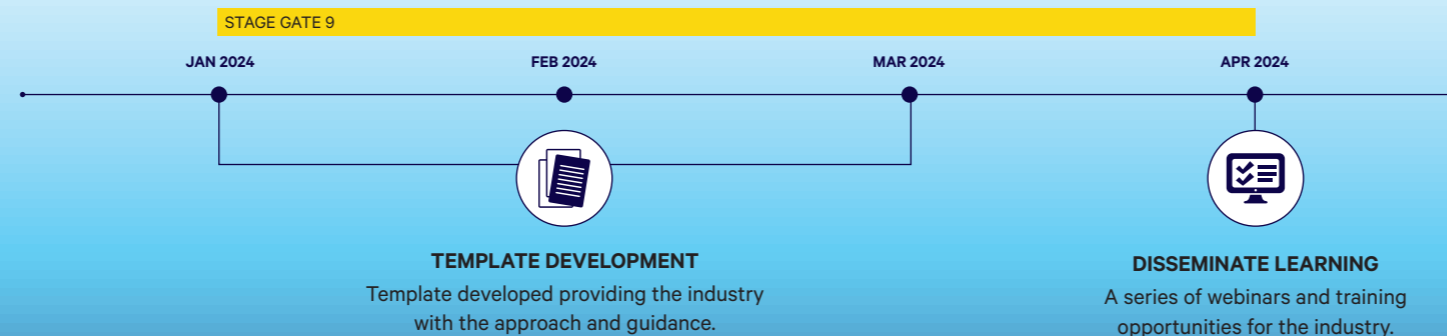
WHAT THE PROJECT IS TESTING

PART A – Simple signal one-way flexibility requests from EDBs to flexibility suppliers.

EVENT SIGNAL

EVENT RESPONSE SIGNAL

VTN: Virtual top node
VEN: Virtual end node

EDB sends a flexibility request

Flexibility supplier responds to flexibility request

OpenADR 2.0a

Other, eg, Email, text message

PART B – Complex messages and two-way communication between EDBs and flexibility suppliers (including, actual load reduction rquests, pricing signals and reporting on load reduction, EV charger status and battery status.

EVENT SIGNAL

EVENT RESPONSE SIGNAL

EDB sends a flexibility request

Flexibility supplier responds, actions & provides reporting

OpenADR 2.0b

NEXT STEPS

STAGE GATE 9

JAN 2024 — FEB 2024 — MAR 2024 — APR 2024

TEMPLATE DEVELOPMENT
Template developed providing the industry with the approach and guidance.

DISSEMINATE LEARNING
A series of webinars and training opportunities for the industry.

PROJECT SNAPSHOT

58 EV chargers

134 events sent to date across Aurora, Electra & Orion's networks

MIX of residential and commercial customers

100% successful send/ receive of messaging from VTN to VEN

Recent inclusion of **SOLARZERO** as a delivery partner, with ability to test battery discharge during peak demand to alleviate network congestion

SIX demand flexibility programmes tested including participating in emergency events, engaging in pricing negotiation and demonstration of dynamic operating envelopes

INDEPENDANT REPORT comparing the communication protocols used internationally and the rationale for adoption

EARLY INSIGHTS

Part A has demonstrated interoperability with EDBs and flexibility suppliers' ability to send, receive and act on requests for demand flexibility using OpenADR 2.0a communications protocol. What is being exposed during deploying of events (programmes) during the trial, are other things that need to be considered to participate operationally in demand flexibility. High level insights captured during part A, are detailed below:

BUSINESS/COMMERCIAL

» The technology is working, but the end-to-end implementation of OpenADR will require effort with changes to contracts, rebates, regulations, and internal processes. Contractual considerations include; access to customer data (ICP data, charger data etc) and establishing messaging service level agreements (SLAs) between parties engaging in flexibility services.

CONSUMER

» Consumer buy-in is essential, awareness of what demand flexibility is and its tangible benefits (such as reduction to power bill) will be essential to gain social licence with customers.

» Evidence from trial customer recruitment process suggests some customer segments may be more sensitive to the impacts of demand flexibility (e.g. commercial customers)

» Customer privacy and obligations must be considered when designing data sharing approach between EDBs and flexibility suppliers. How do we balance customer data privacy with availability of data to participate in flexibility events? E.g. Sharing of ICP data

TECHNICAL

» Coordinators of flexibility will require access to smart charging functions with all charger types.

» Load management building rules may impact the ability for chargers to accept smart charging profiles and thus inhibit access to assets for demand flexibility.

» It is essential that nomenclature and intended behaviour of signals are understood between all actors participating in demand flexibility events to request and action flexibility as intended thus producing desired outcome.

MARKET

» Work is needed to understand the end-to-end impact in the energy supply chain as well as the business models and business case for investment. In particular it is crucial the customer understands the benefits and potential incentives of participating in demand flexibility.