APEC Workshop - 18th November 2020
**Economic Recovery through Energy Efficiency**
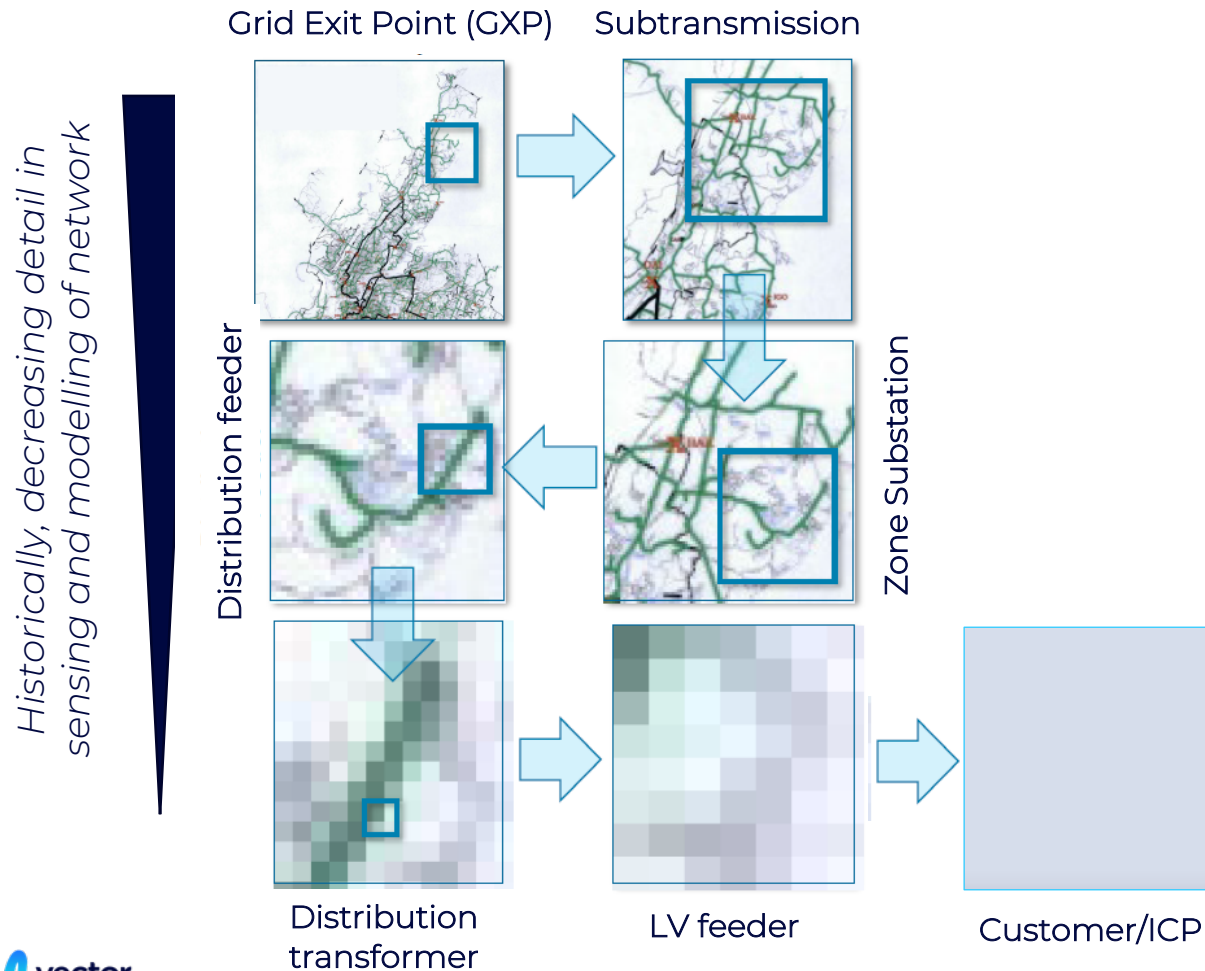Dr Steve Heinen, Vector, New Zealand

# Vector Ltd is New Zealand's largest energy portfolio business

- Majority owned by our community via Entrust and operates in NZ, Australia and the Pacific
- Ownership model creates natural alignment between customer and shareholder benefits
- Listed on the New Zealand stock exchange, with a market capitalisation of $4.4b



REGULATED 60%

vector electricity

vector gas

UNREGULATED 40%

vector metering

vector ongas

vector fibre

vector powersmart

vector technology services

# Customer-side transformation requires new modelling and analytics



Grid Exit Point (GXP)    Subtransmission

*Historically, decreasing detail in sensing and modelling of network*

Distribution feeder

Zone Substation

Distribution transformer    LV feeder    Customer/ICP

Major trends are redefining the customer-side of the electricity system connected to LV networks:

- Energy efficiency (i.e. flat or decreasing demand growth)
- New technologies (EVs, solar PV, smart homes, heat pumps, etc.)
- Changing behaviour (e.g. environmental concern and decarbonisation

The LV network and customer analysis have historically been modelled and monitored with less detail, but need to be incorporated in network planning to achieve better long-term outcomes for customers in terms of cost, efficiency and decarbonisation

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# Symphony Modelling Unleashes Customer-centricity

In an era of rapid technology and behaviour change, customer-centricity should guide electricity network strategy and planning.
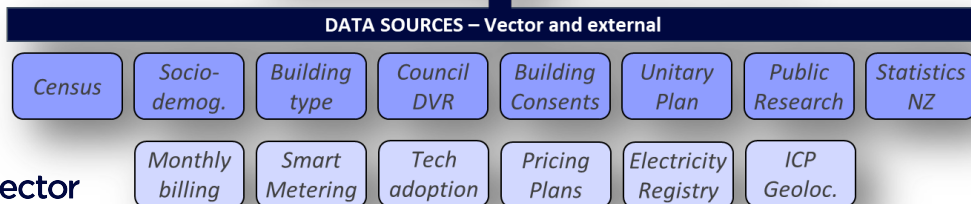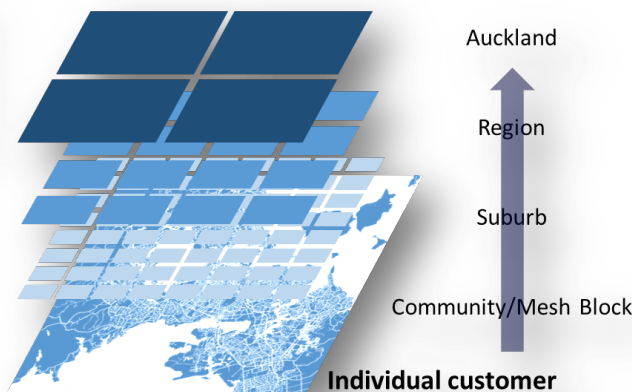
Vector's granular bottom up customer model enables a customer-centric and data-rich approach to planning and strategy

This delivers effective risk-based infrastructure planning, pricing and policies which recognise and account for diversity of customers and future uncertainty

## GRANULAR AUCKLAND CUSTOMER MODEL

Auckland

Region

Suburb

Community/Mesh Block

**Individual customer**

**DATA SOURCES – Vector and external**

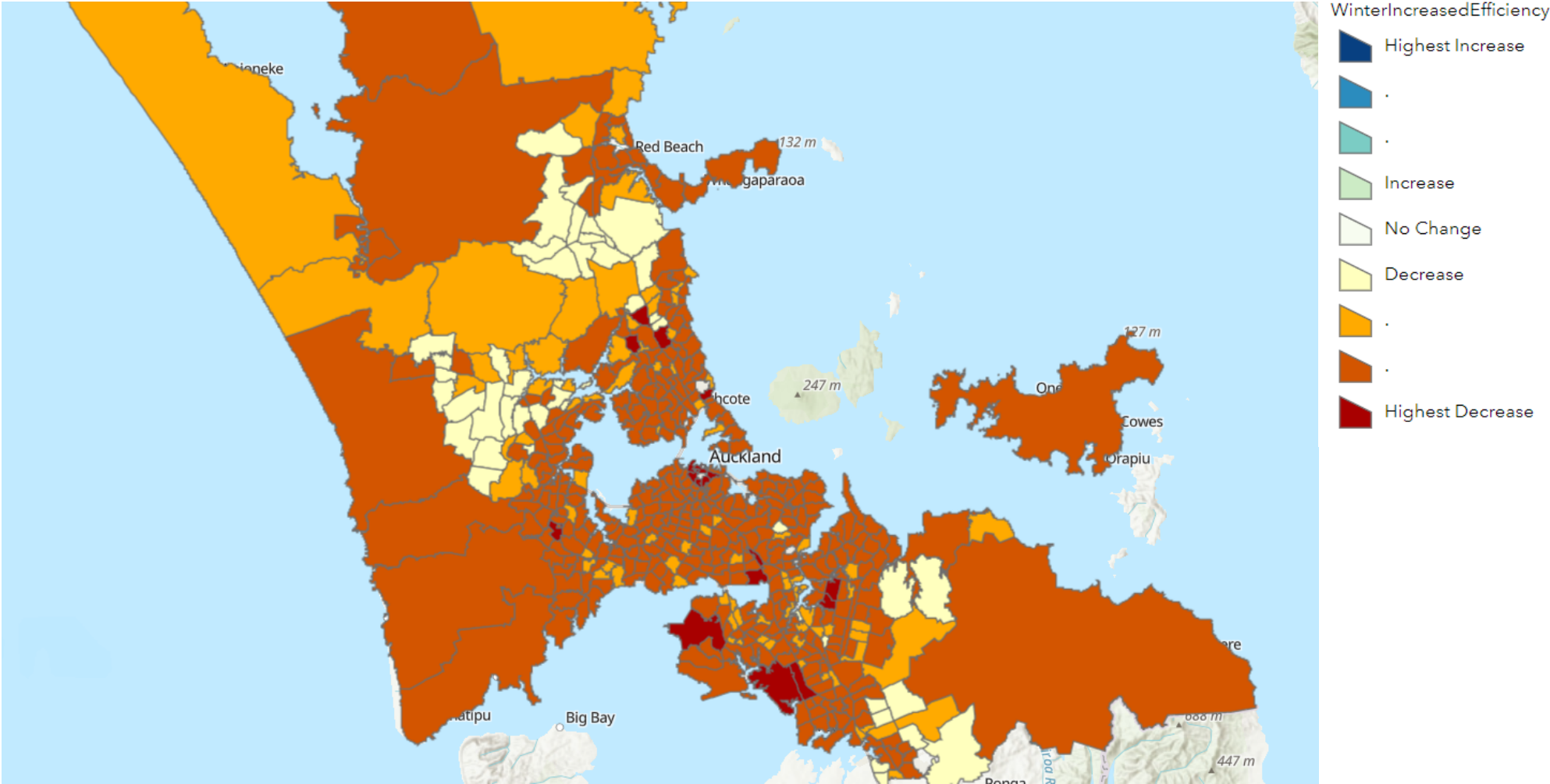| Census | Socio-demog. | Building type | Council DVR | Building Consents | Unitary Plan | Public Research | Statistics NZ |
|---|---|---|---|---|---|---|---|
| Monthly billing | Smart Metering | Tech adoption | Pricing Plans | Electricity Registry | ICP Geoloc. | | |

Vector's unique customer-centric modelling approach has been recognised internationally and recently published in 'The Electricity Journal'. The model was also nominated for network initiative of the year in the NZ Deloitte Energy Awards 2019

The Electricity Journal 33 (2020) 106836

Contents lists available at ScienceDirect

## The Electricity Journal

journal homepage: www.elsevier.com/locate/tej

ELSEVIER

Check for updates

Towards customer-centric energy utilities - A granular data-driven bottom-up approach to understanding energy customer trends

Steve Heinen [*], Pieter Richards

Vector Ltd., New Zealand

Free access until mid November with following link
https://authors.elsevier.com/a/1bqoX3ic--3JFd

4

# Granular Residential Energy Efficiency Potential



WinterIncreasedEfficiency

- Highest Increase
- .
- .
- Increase
- No Change
- Decrease
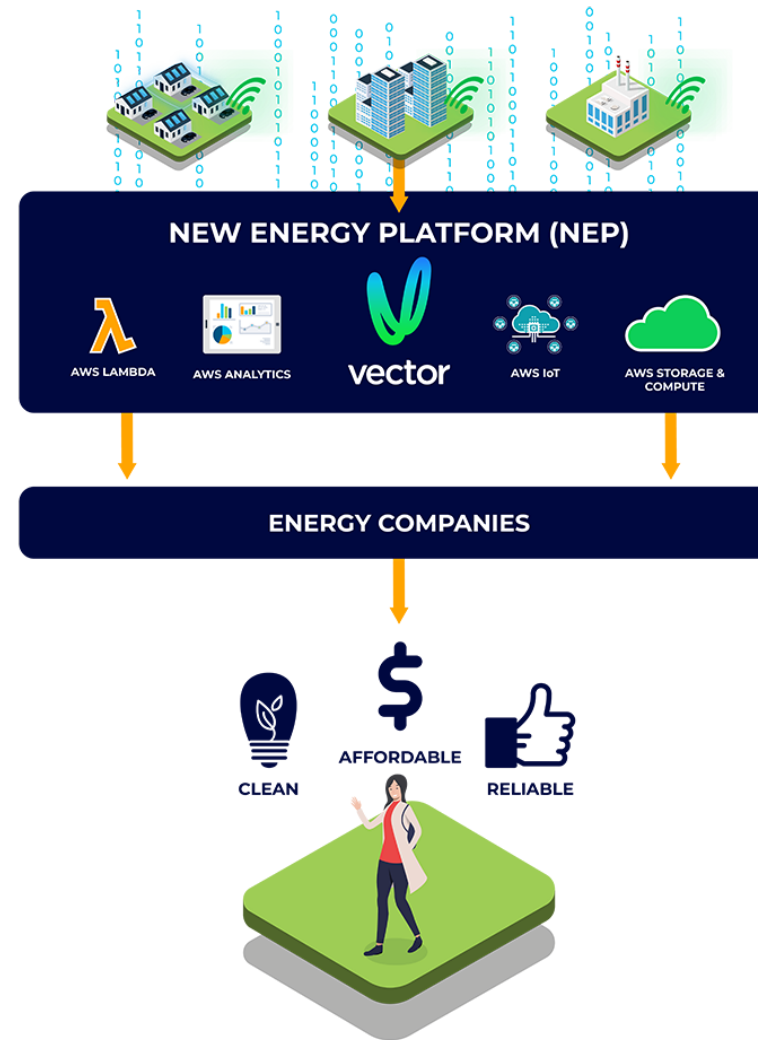- .
- .
- Highest Decrease

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*Each zone represent roughly 1000 homes*

# Vector AWS Strategic Alliance

## New Energy Platform

Next generation advanced metering and market enablement platform

# Key Messages



Network planning **needs to be flipped to a bottom-up approach** to put the customer at centre

Unprecedented energy efficiency success over last decade made that clear



Smart meter data is **essential** to understand changing demand side and provide new robust planning inputs



**Non-wire alternatives and DERMS are available** but need the right frameworks and tools

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