



**Counties  
Energy**

**Energy  
Reimagined**

# Asset Data Required for Flexibility and CER Coordination

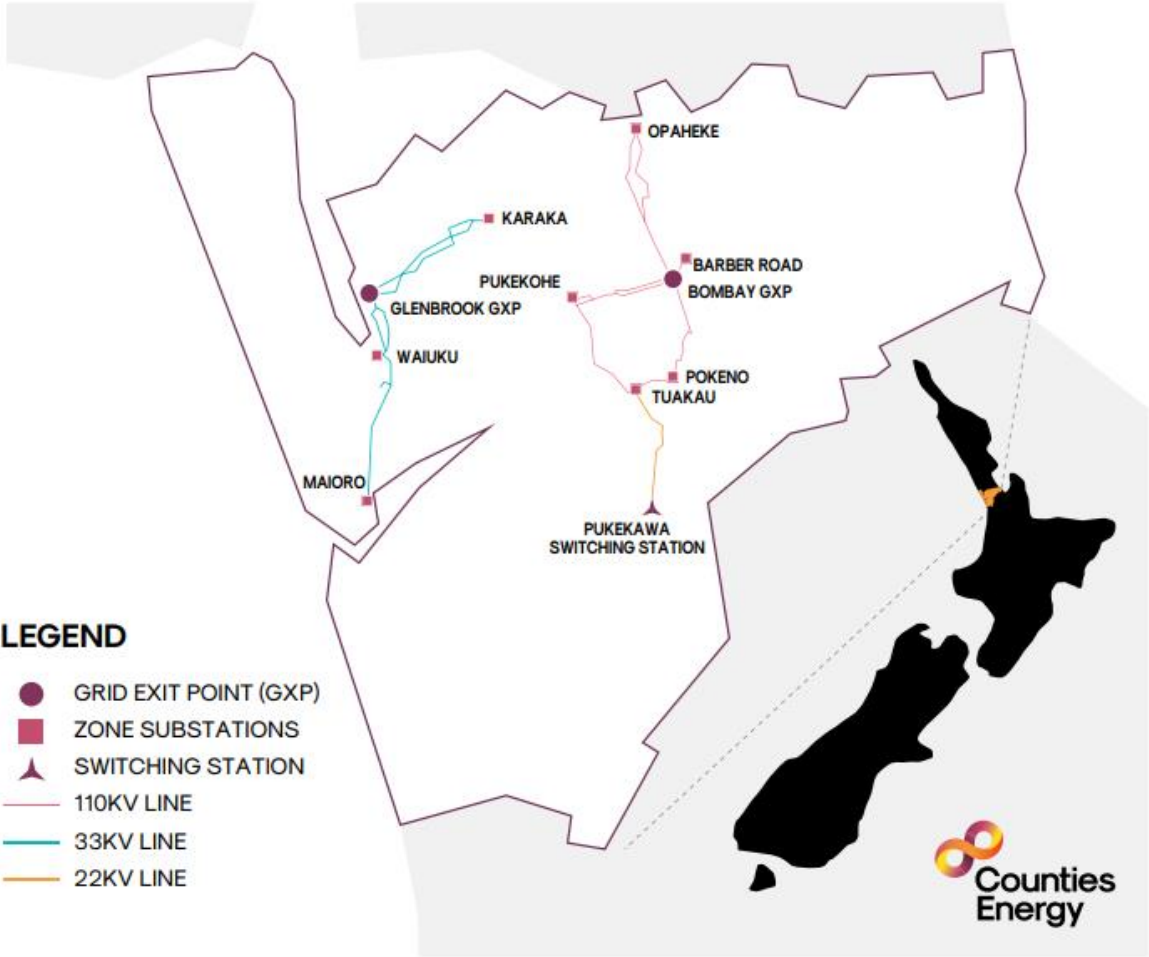
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# About Counties Energy



98% Smart Meter penetration

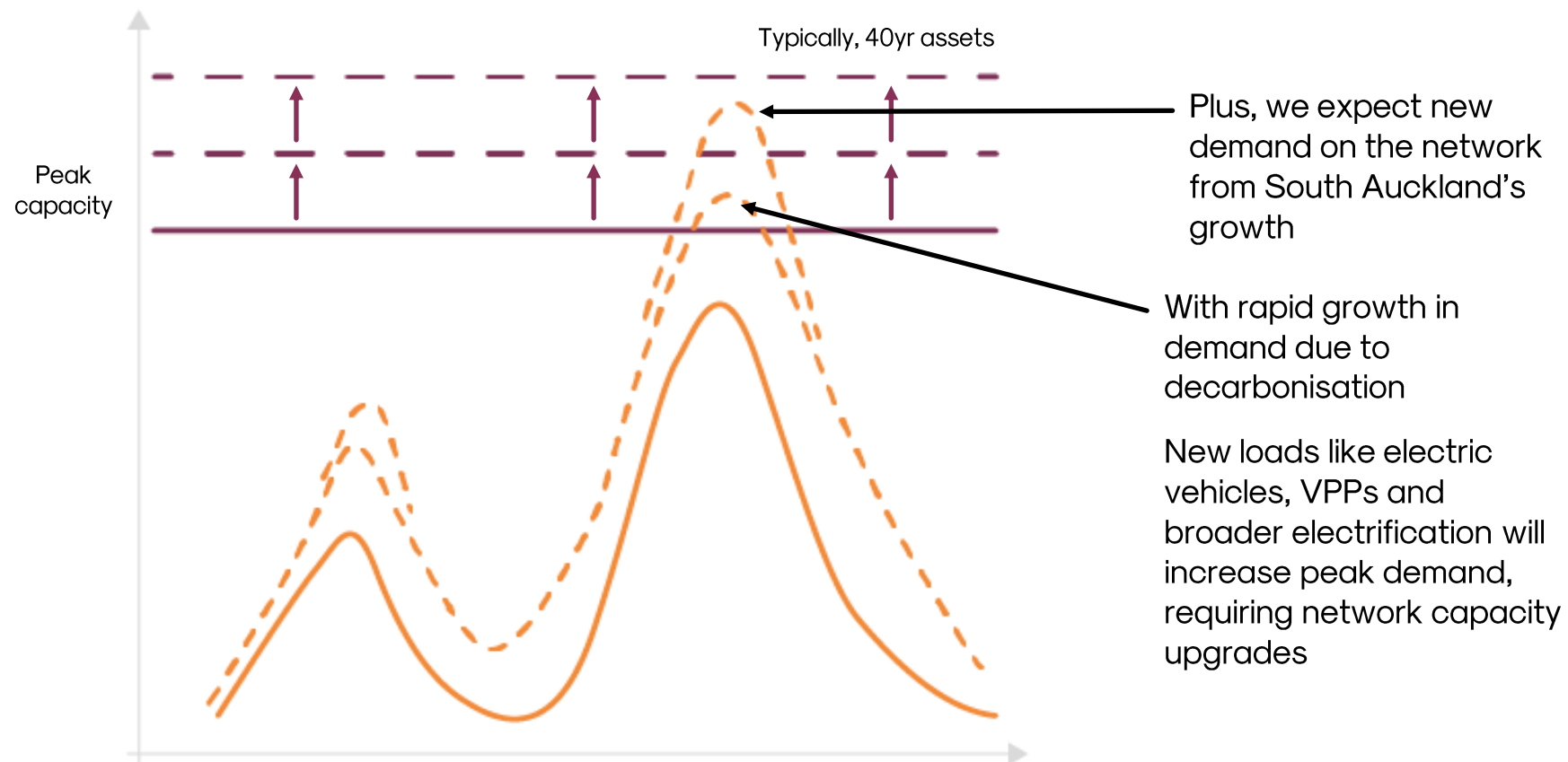


Over 49,000 ICPs



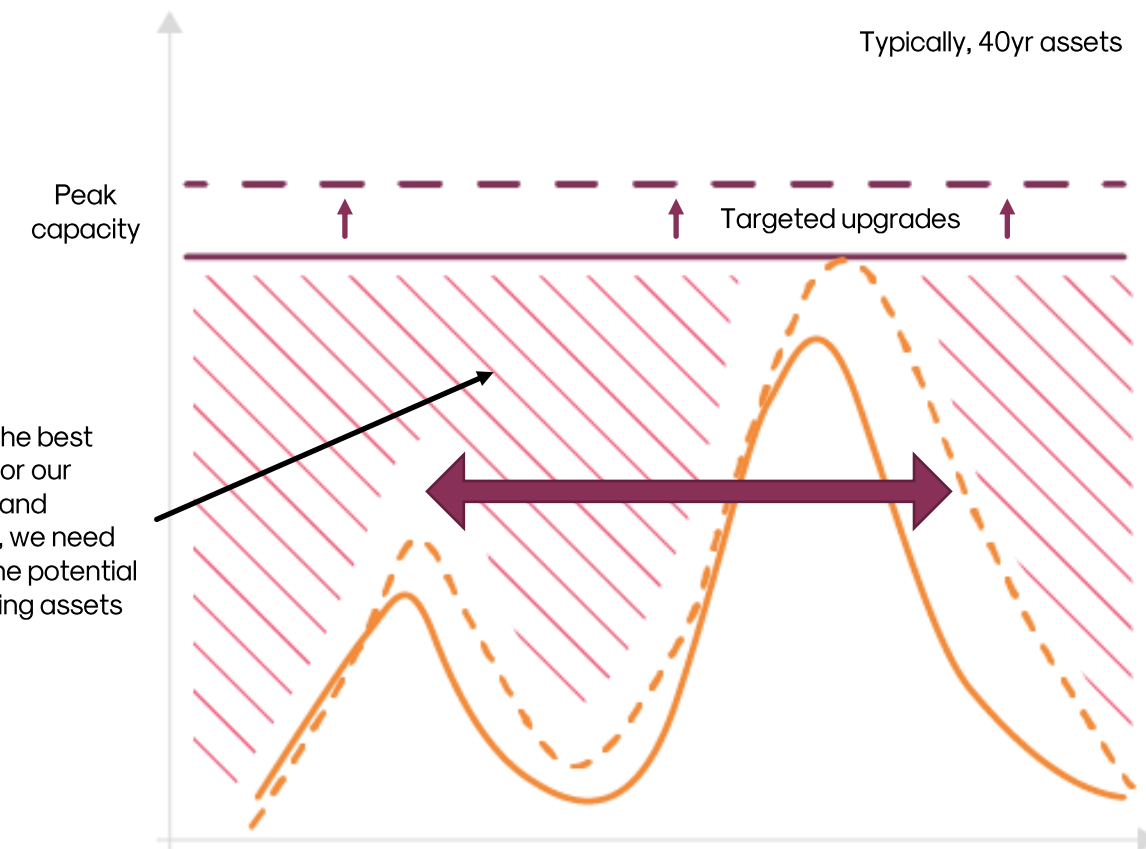
100% consumer owned;  
Operating for 100 years

# Why the strategic need to look beyond the status-quo?



# The way we operate tomorrow will be different

Strategically, creating a 'stretch' in network capacity through smart network orchestration  
e.g. dynamic voltage control using LV visibility, etc.



Also utilising spare capacity with flexible DER and commercial arrangements  
e.g. dynamic operating envelopes, flexibility tariffs, etc.

Which means our tomorrow  
will require us to

- 1 Modernise the distribution network to be more resilient
- 2 Facilitate mass adoption of CERs on the network sustainably
- 3 Cater for CERs at scale without overbuilding the network; managing capacity dynamically

# LV Network Readiness

## LV Network Strategy



- ICP – Circuit – DTx relationships
  - ICP to Phase mapping
  - ICP to Circuit mapping
  - ICP to DTx mapping
- Operational awareness
  - Managing open points, just like MV
  - Good asset labelling practices
  - Work order segmentation
- Asset ratings and design
  - Evolving to Dynamic, Shoulder and Peak ratings
  - Peak is no longer the single driver towards asset upgrades
  - Scenario-based designs and use of tools like load duration curves, observed ADMD
  - DTx loading network baseline

## Smart Metering Data Strategy



Required Data Capabilities:

Metering Requirement	Units
Real Power (Consumption)	kWh
Reactive Power	kVAr
Actual Power	kVA
Power Factor	n/a
Current Harmonics	%
Voltage	V
Frequency	Hz
Temperature	degrees C
Current	A
Heartbeat/last gasp/first breath	n/a

## CER Visibility



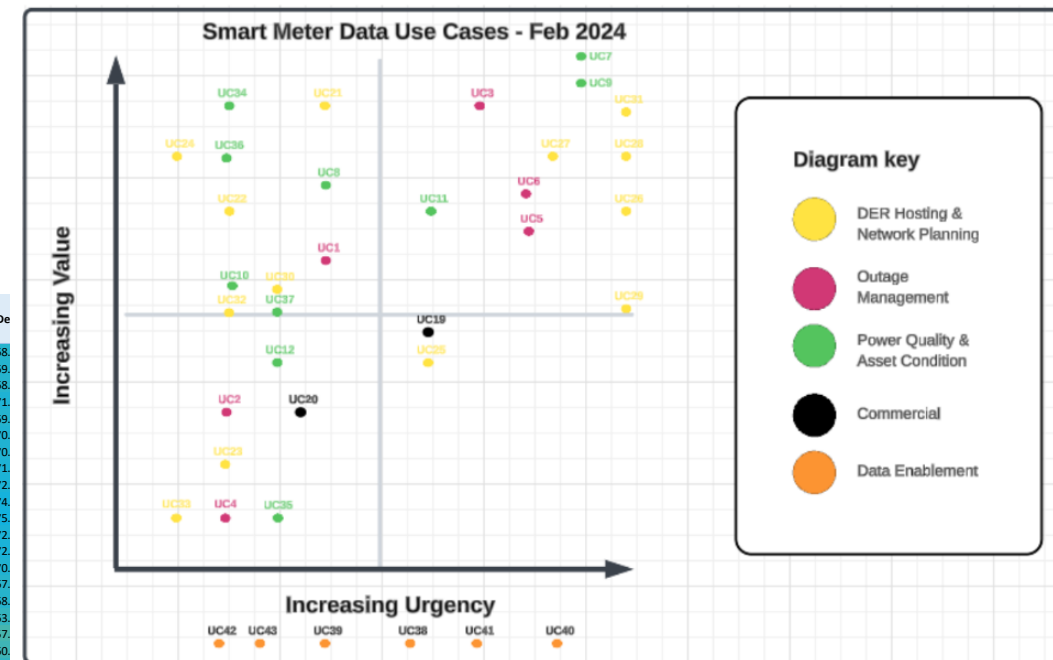
CERs

- Visibility of other CER e.g. EVs is still a challenge.
- Today we know where CER's like distributed generation is, largely due to the EIPC.
- We don't have a full picture of all Consumer Energy Resources though e.g. EV's, BESS
- Utilising LV consumption and power quality data, it's possible to identify these resources.

# Some of our current use cases

- Load detection
- Generation compliance
- ICP to phase clustering
- Hosting capacity
- Dynamic operating envelopes (import and export)
- Network planning and commercial modelling
- Network performance at the LV level e.g. DG exports
- Impedance calculations and fault prediction
- DTx tap setting assessment
- Plus Operational and Commercial use cases

	2022					
	Jul	Aug	Sep	Oct	Nov	De
12:00:00 AM	63.6	67.5	75.1	75.1	72.5	68
12:30:00 AM	68.5	69.8	75.7	77.1	70.8	69
1:00:00 AM	67.3	69.5	71.9	75.2	74.3	68
1:30:00 AM	63.0	73.6	69.4	74.2	70.5	71
2:00:00 AM	63.8	75.2	69.3	76.1	73.0	69
2:30:00 AM	66.7	71.9	71.4	75.8	73.1	70
3:00:00 AM	70.7	77.1	70.4	73.5	75.4	70
3:30:00 AM	67.1	75.4	73.3	74.6	76.1	71
4:00:00 AM	66.2	71.8	74.7	76.9	76.2	72
4:30:00 AM	69.0	76.5	72.5	76.3	77.5	74
5:00:00 AM	66.4	73.9	71.1	76.0	72.9	75
5:30:00 AM	64.3	69.1	70.3	76.7	71.9	72
6:00:00 AM	56.6	63.7	61.3	70.6	67.8	72
6:30:00 AM	62.0	62.5	63.1	72.2	68.8	70
7:00:00 AM	68.7	53.7	59.7	70.9	59.2	67
7:30:00 AM	60.6	45.3	58.6	58.3	56.6	68
8:00:00 AM	53.8	50.5	52.1	51.0	48.8	63
8:30:00 AM	53.3	54.8	58.5	46.8	56.1	57
9:00:00 AM	55.1	49.9	57.3	53.3	57.4	60
9:30:00 AM	56.0	52.1	53.3	57.0	64.0	64
10:00:00 AM	48.5	48.7	55.7	59.8	63.9	64.2
10:30:00 AM	52.2	60.0	60.1	59.8	60.3	62.3
11:00:00 AM	58.5	58.1	63.0	64.0	66.1	62.7
11:30:00 AM	53.2	58.7	67.8	60.7	62.9	66.2
12:00:00 PM	52.9	60.5	61.7	65.4	64.9	64.6
12:30:00 PM	63.5	59.4	63.9	60.8	62.4	62.5
1:00:00 PM	56.4	61.6	66.1	60.2	60.6	61.6
1:30:00 PM	59.3	61.4	62.4	62.9	63.2	59.7
2:00:00 PM	60.1	67.1	68.2	61.4	63.4	63.2
2:30:00 PM	56.3	59.4	64.8	64.6	64.9	61.2
3:00:00 PM	55.1	59.8	63.8	65.1	60.1	59.0
3:30:00 PM	52.1	62.5	63.0	65.2	66.2	59.9
4:00:00 PM	53.4	58.4	62.3	61.1	62.5	55.5
4:30:00 PM	44.2	51.8	54.3	61.8	52.5	52.4
5:00:00 PM	39.2	41.8	53.6	59.4	48.9	58.6
5:30:00 PM	15.5	33.2	52.3	47.5	54.5	57.9
6:00:00 PM	4.7	33.6	35.3	64.0	41.3	56.9
6:30:00 PM	14.8	19.2	22.0	46.9	45.2	61.5
7:00:00 PM	33.9	24.5	31.4	42.9	41.0	54.1
7:30:00 PM	29.0	25.2	34.8	37.8	51.3	45.2
8:00:00 PM	13.9	28.7	35.4	37.9	39.6	54.0
8:30:00 PM	25.7	31.6	34.2	46.6	40.4	60.1
9:00:00 PM	29.4	41.1	42.9	54.8	56.6	61.2
9:30:00 PM	34.3	44.7	54.3	60.1	49.8	62.0
10:00:00 PM	42.1	48.0	48.4	56.5	51.0	52.6
10:30:00 PM	41.8	46.9	58.7	58.2	58.9	52.6
11:00:00 PM	59.4	63.8	62.5	66.9	65.2	66.6
11:30:00 PM	58.7	66.8	74.2	71.7	71.5	65.6



# Learnings and challenges to date

## LV Network



- **ICP relationships**
  - ICP to Phase mapping isn't there always
  - ICP to DTx mapping isn't 100%
  - Physical tracing, whilst possible, isn't sustainable.
- **Operational awareness**
  - Management of the LV network isn't as well managed as MV and HV
- **Historic design practices**
  - In older builds, we are likely to have inconsistent data records, therefore more uncertainty e.g. phasing information

## Smart Metering Data



- **Consumption data**
  - Can accommodate some use cases e.g. load detection
- **Metering technology**
  - Power quality data is crucial to get advanced value from analytics platforms.
  - Not all smart metering generations can provide this. Check your fleet.
  - Understand your comms network to enable large amounts of data flow
- **Other metering technology**
  - Can DTx monitors provide much of this information that may be missing in smart meters?
  - What level of penetration is required for the use cases?

## CER Visibility



### CERs

- Access to CER data e.g. EV's is challenging
- Smart meter information is one part of the equation. Other datasets are needed.

# Thank you

## Ngā mihi nui



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