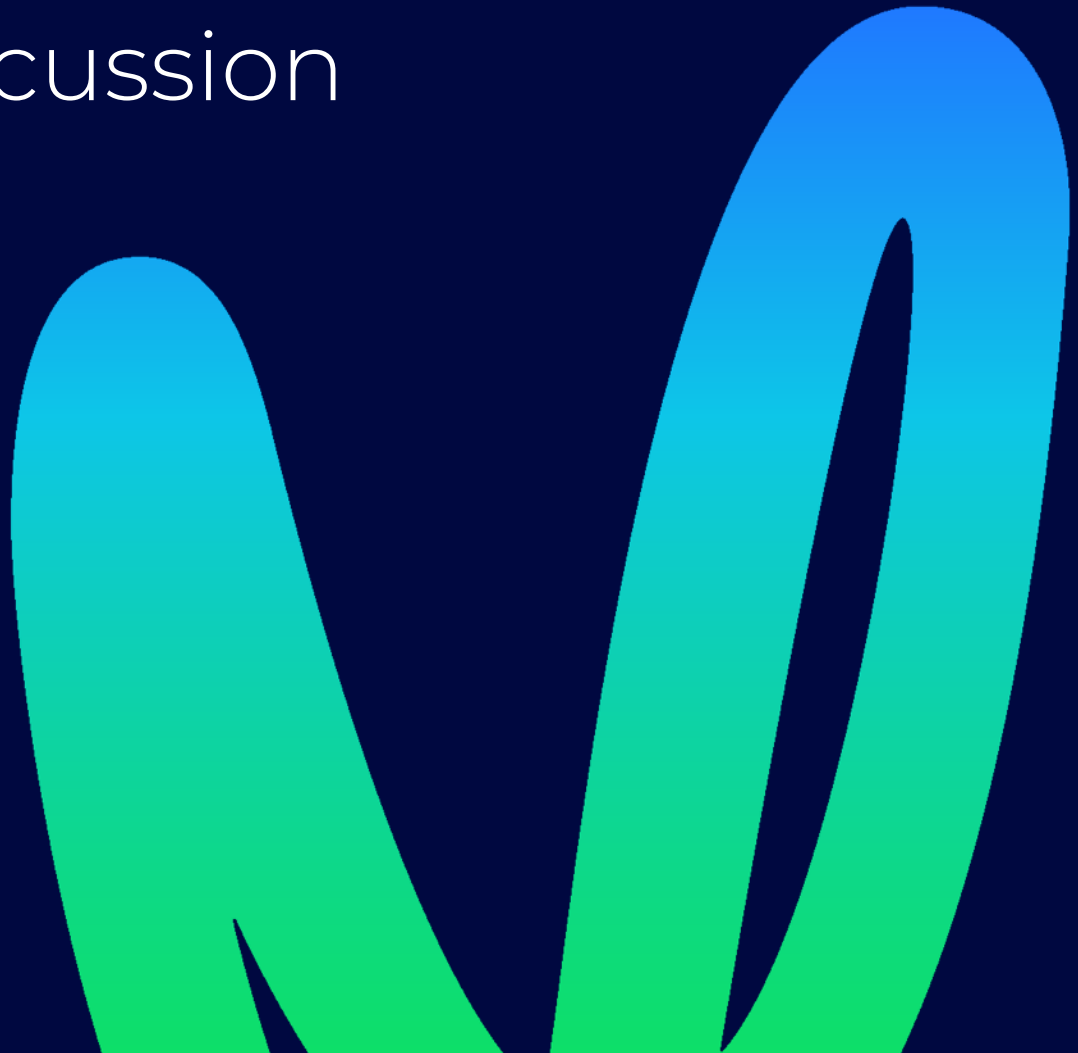
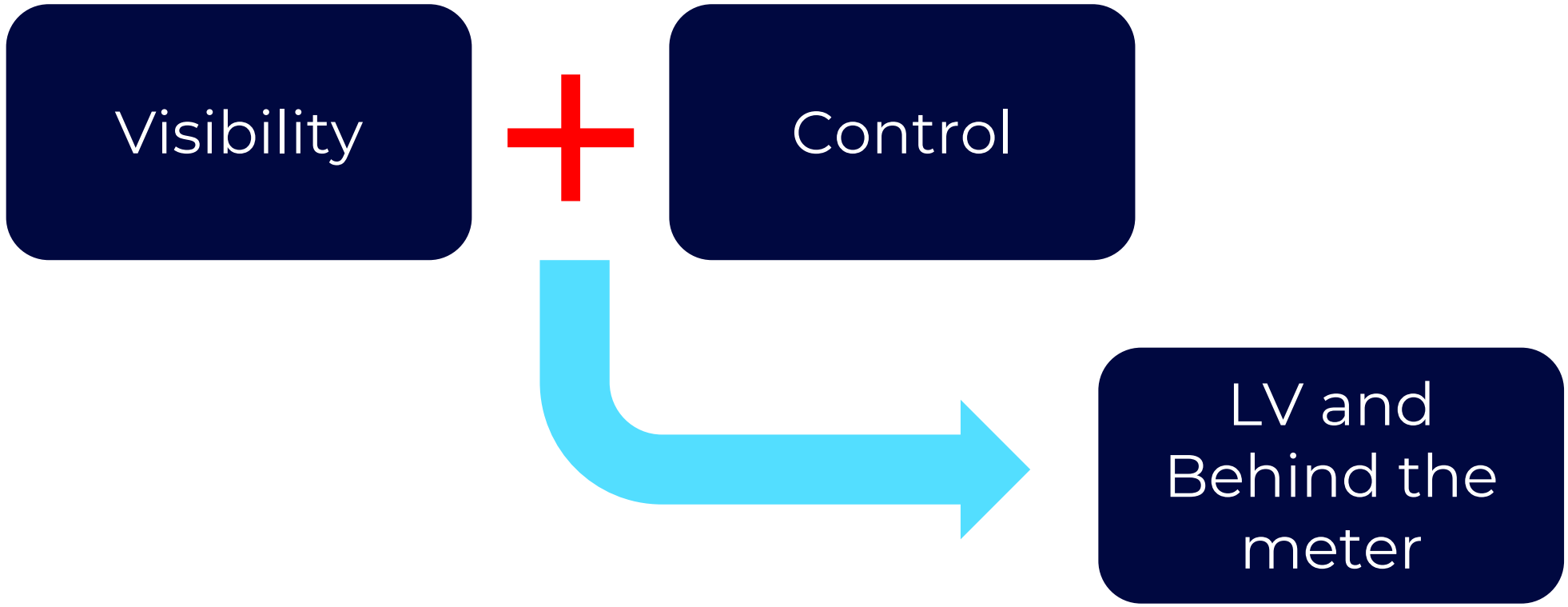
LV Data Management Discussion

13 June 2024



vector

Our goal : Use data to enable an intelligent, dynamic network – to the edge and beyond



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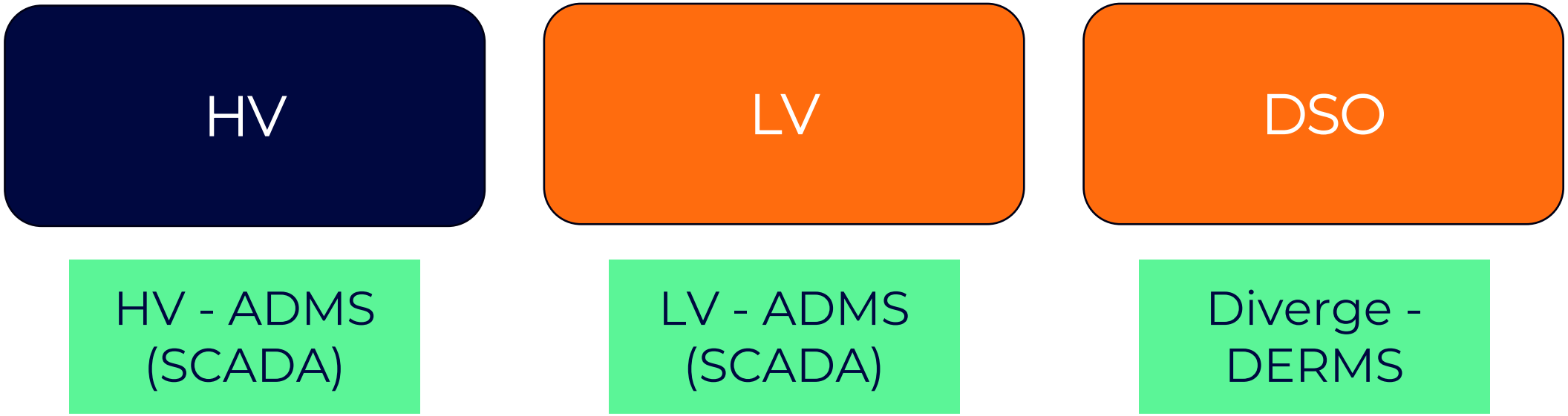
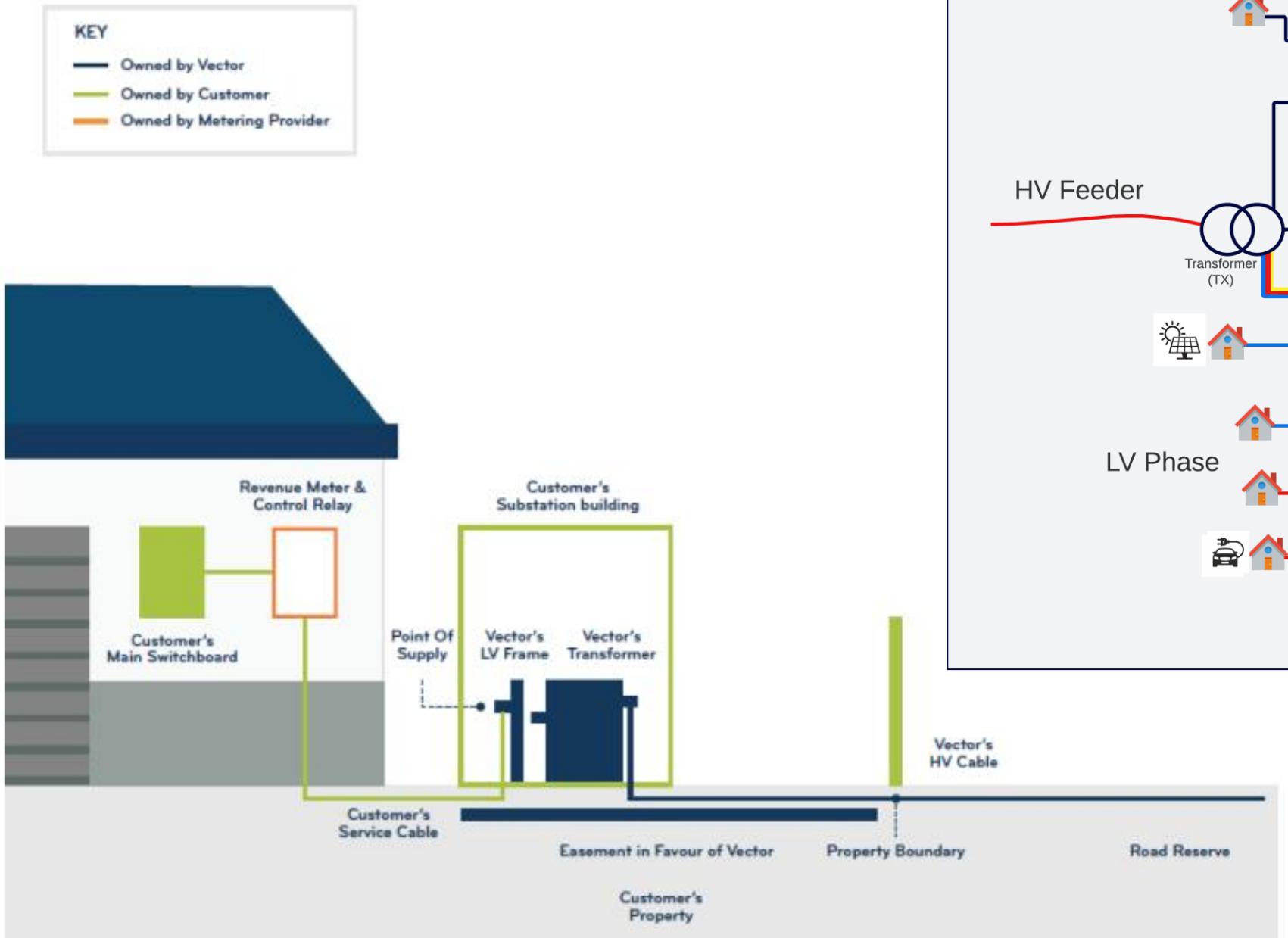
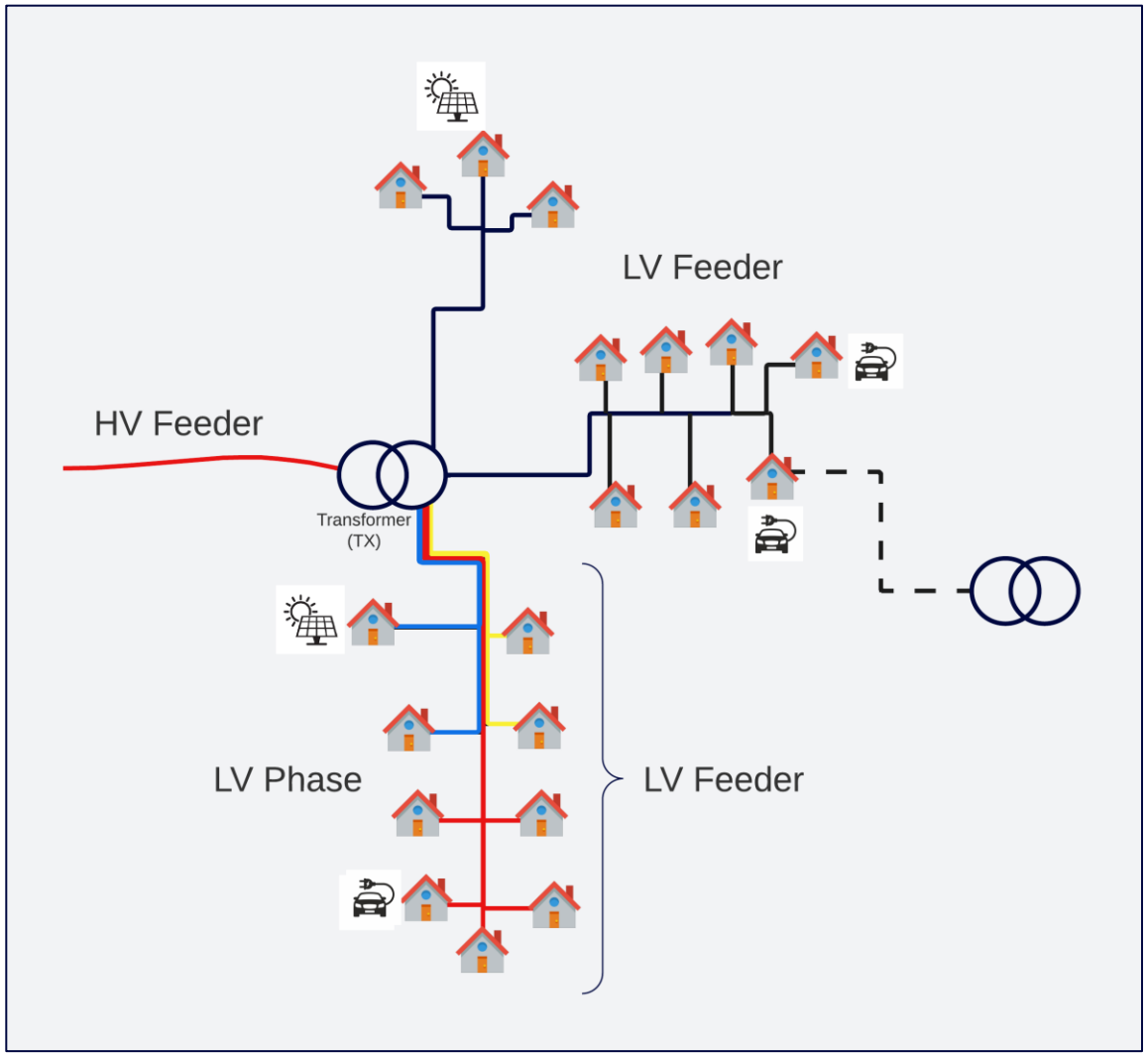
Control

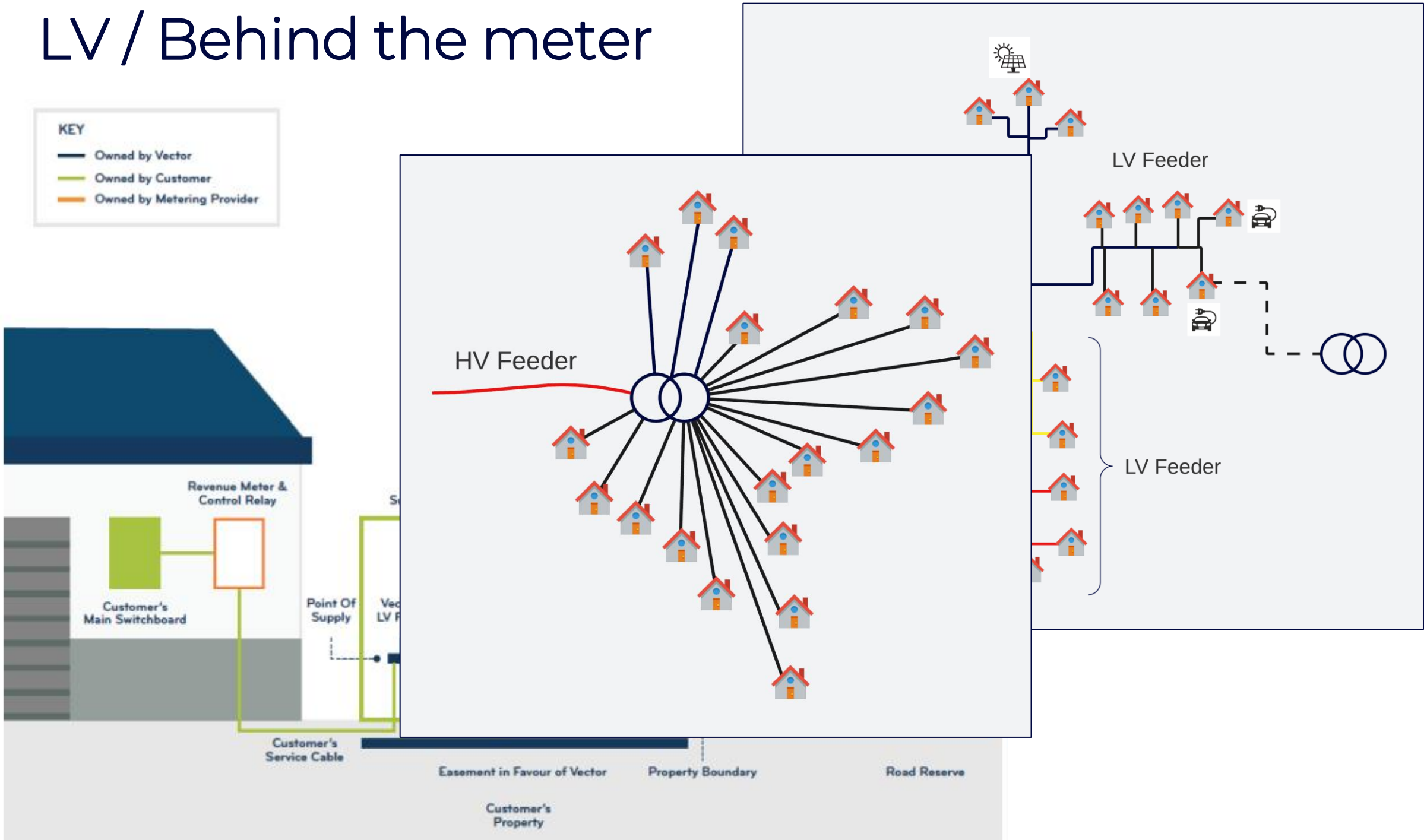


LV / Behind the meter





LV / Behind the meter



Visibility

Connectivity / Topology

1

- How are devices connected to the network.
- Electrical hierarchy.
- Essential context for all data.
- More challenging at the fringe.

HV & LV

Performance / Operation

2

- How is the network performing.
- Readings from devices over time.
- Long-term historical performance.
- Real-time

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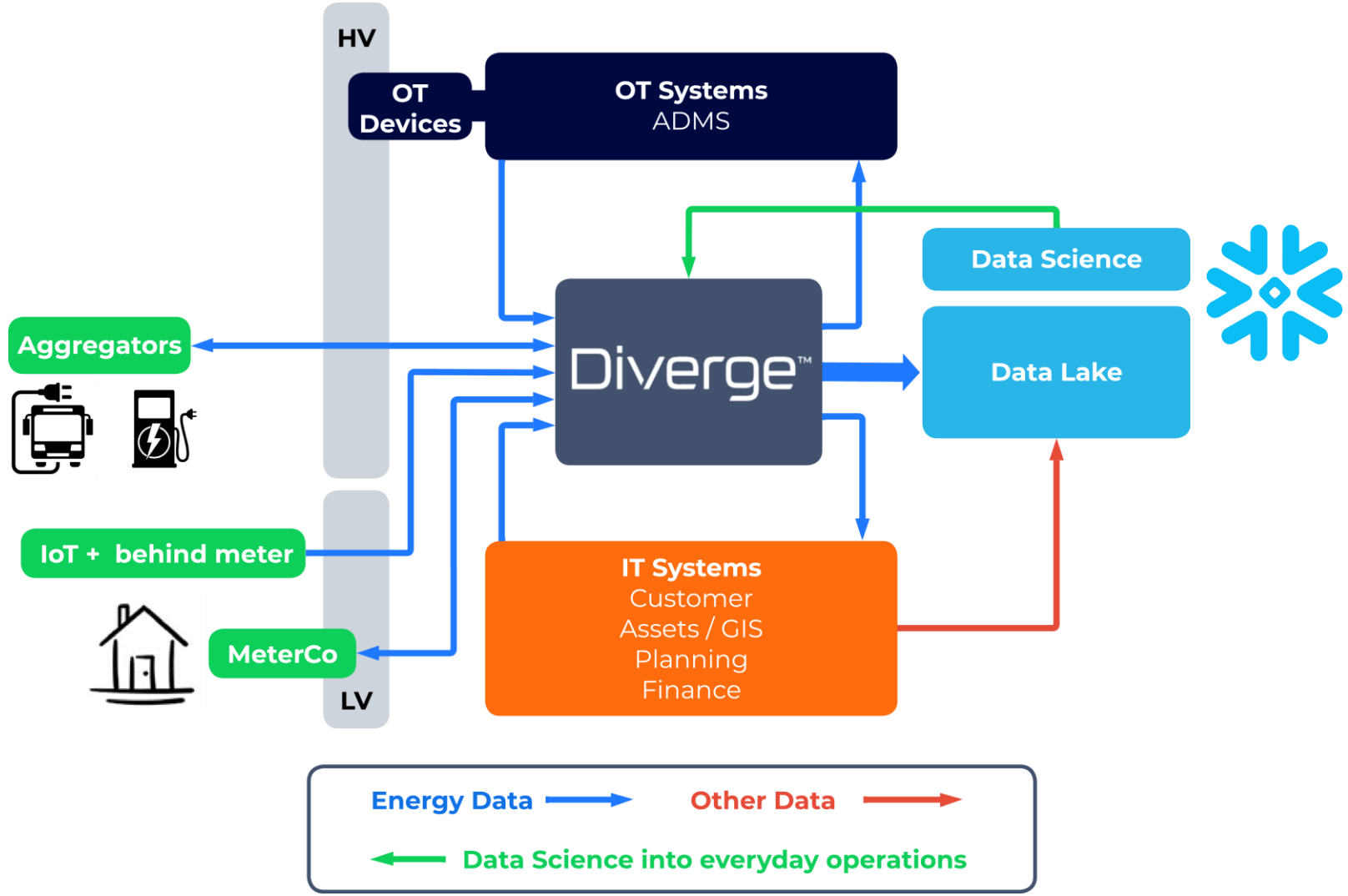
Making the data useful to achieve visibility

Focus areas	From	To
Increase Volume	30 minutes Few ICPs	5 minutes Many / all ICPs
Reduce Latency	Daily	Intra-day Near-Realtime On-Demand
Increase Variety	Vector owned	Smart Meter Data Smart Devices 3rd Parties / Aggregators
Leverage Data Science / AI	Analysis	Creation of new data AI / Machine Learning Predictive
Operationalize	Demonstrate Run Reports	Self-serve Plumbed-in Part of daily operations

vector

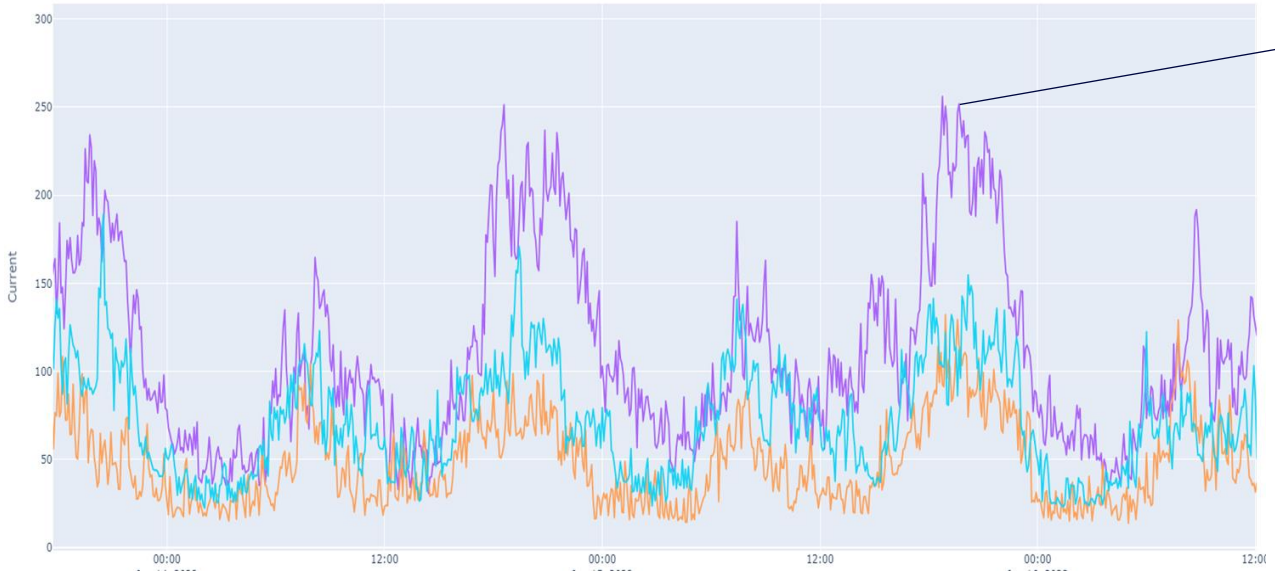
Data to Action: operationalisation



Transformer Phase Mapping

Phase Mapping 45 of 108 ICPs gave strong indication of imbalance

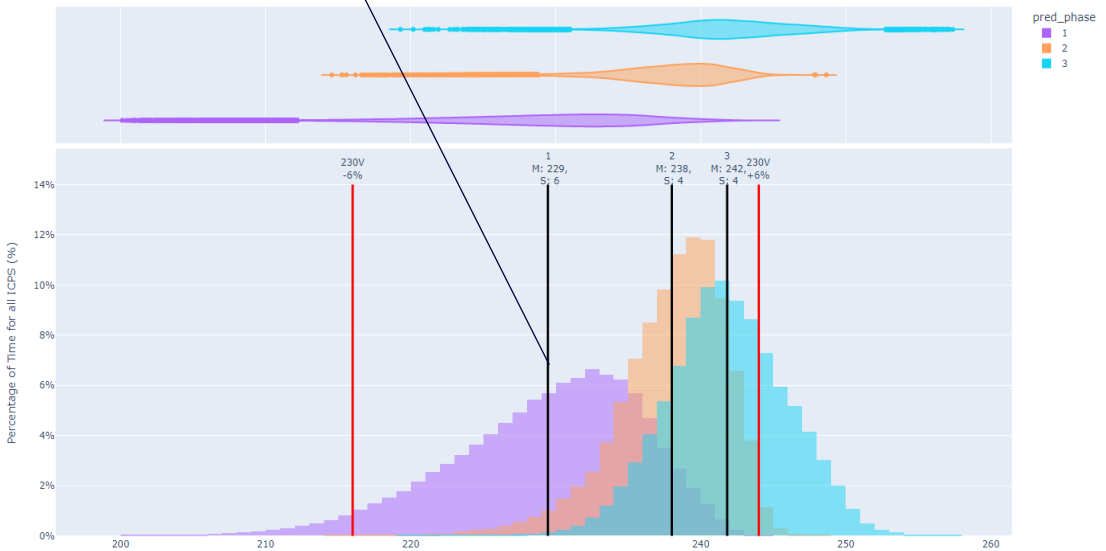
Total Current by Phase



3 days of 5-minute data

Higher current on one phase

With correspondingly lower avg. voltage and larger spread



% of time
at that voltage
All customers

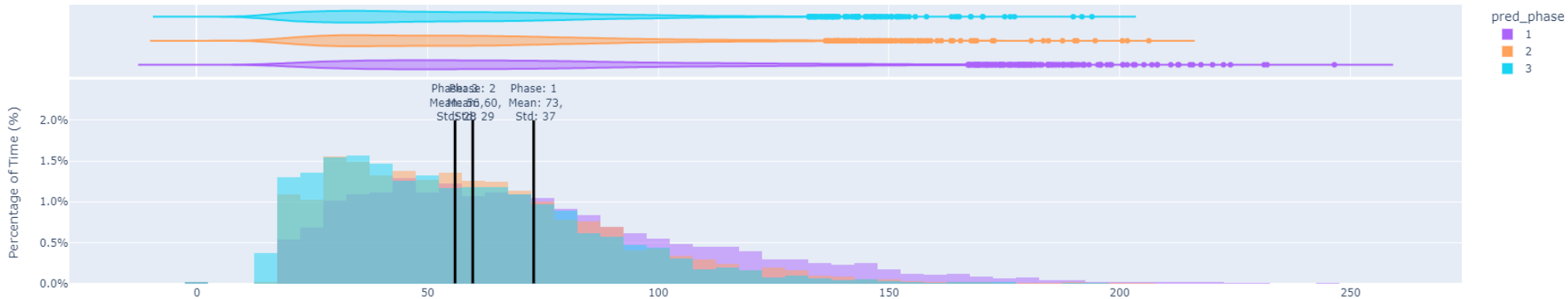
Voltage

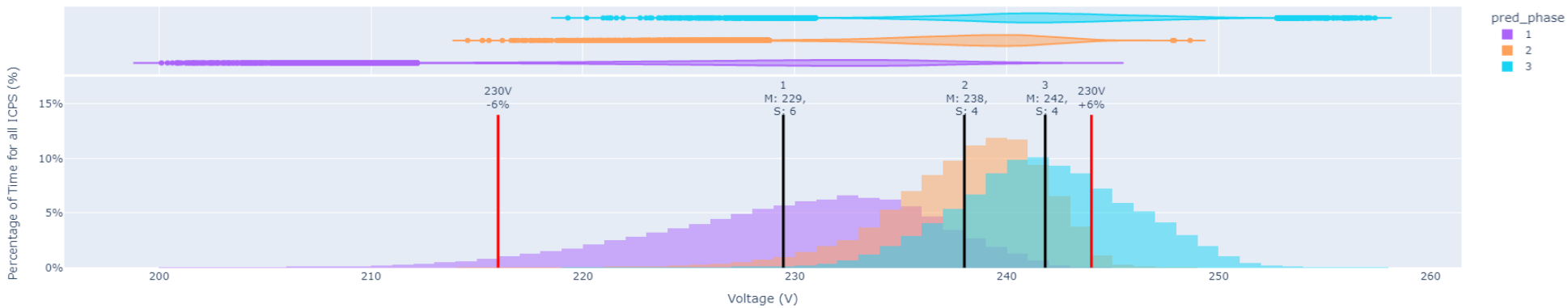
vector

Results charts

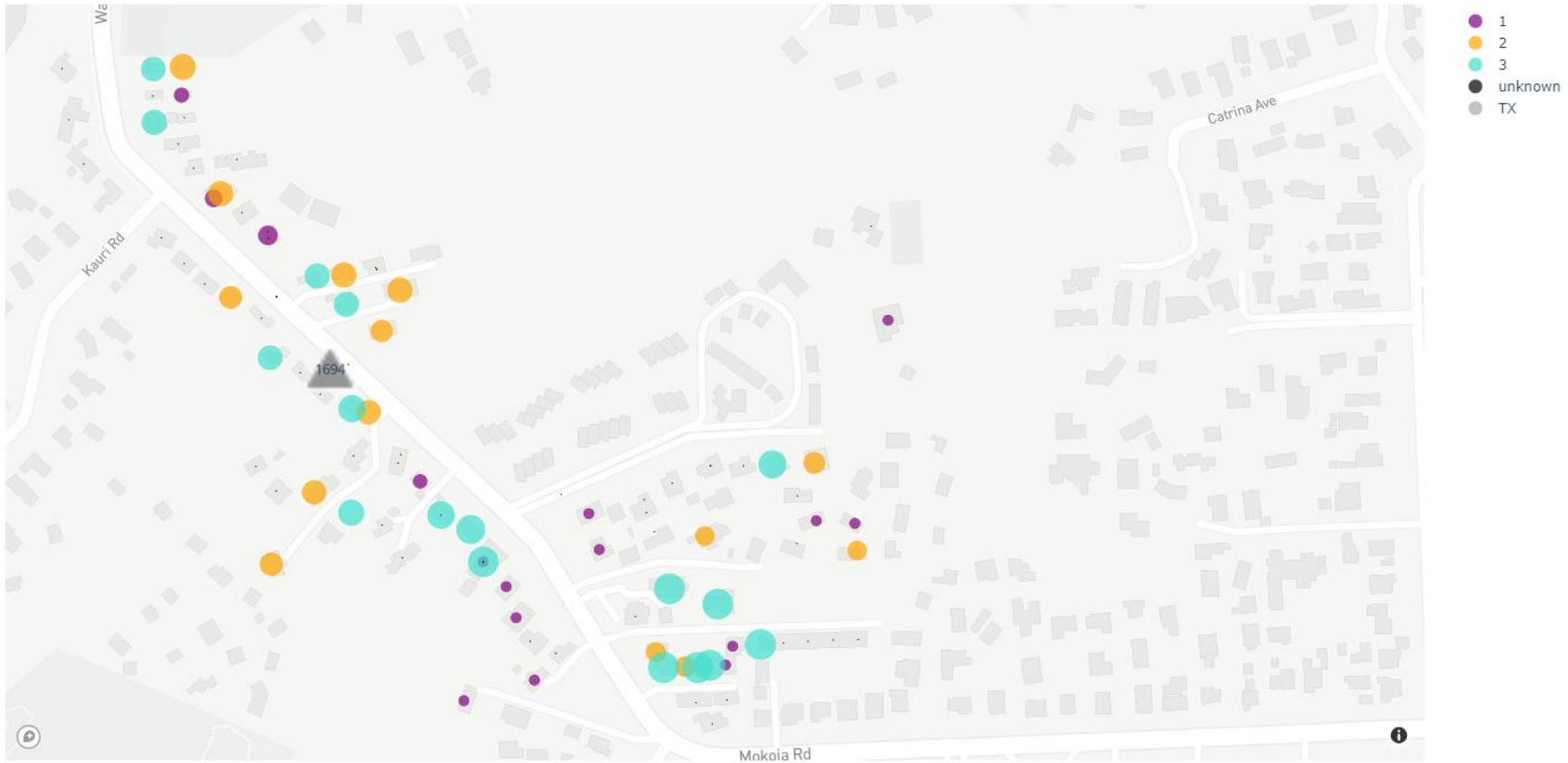
vector

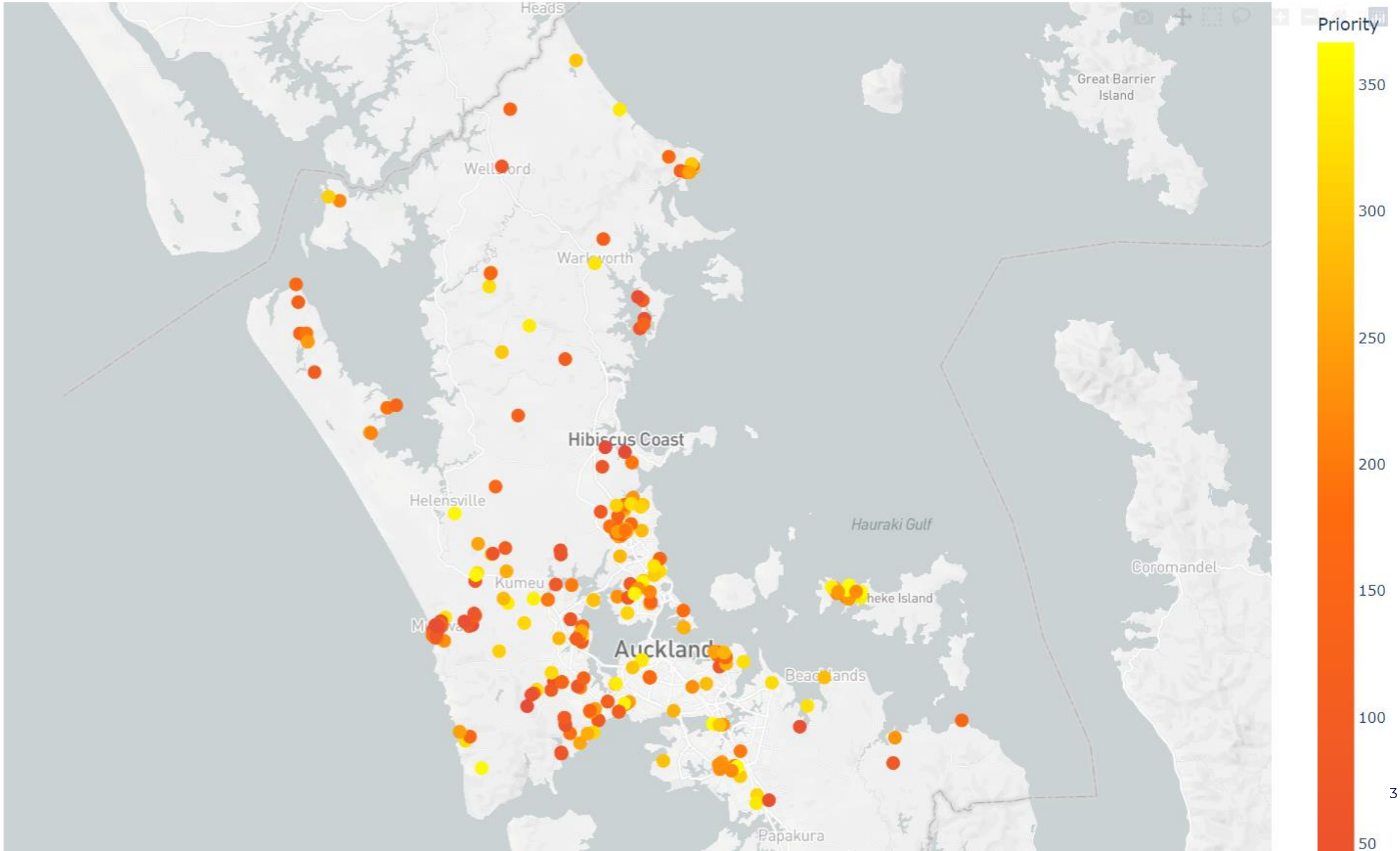

pred_phase
1
2
3
kVA
50
40
30
20
10
0
10:00
May 20, 2024
12:00
14:00
16:00
18:00
20:00
22:00
00:00
May 21, 2024
ReadingTime


pred_phase
1
2
3
Phase: 2
Mean: 56,
Std: 28
Phase: 1
Mean: 73,
Std: 37
Percentage of Time (%)
2.0%
1.5%
1.0%
0.5%
0.0%
0
50
100
150
200
250


pred_phase
1
2
3
230V
-6%
1
M: 229,
S: 6
2
M: 238,
S: 4
3
M: 242,
S: 4
230V
+6%
Percentage of Time for all ICPS (%)
15%
10%
5%
0%
200
210
220
230
240
250
260
Voltage (V)

TX 1694 - Voltage (Month average) and phases




Heads
Great Barrier Island
Wellsford
Warkworth
Hibiscus Coast
Helensville
Hauraki Gulf
Coromandel
Kumeu
Auckland
Papakura
Priority
350
300
250
200
150
100
50