



Plexigrid

Reinventing electricity grids for the energy transition

THE PROBLEM

Electricity Grids are becoming the **Largest Bottleneck** of the **Energy Transition**

■ Congestions & Unstability

As millions of EVs, solar panels, heat pumps, ... unfold across the grid, operators are confronting the **largest congestions and stability challenges in decades**



European Distribution System Operators Observatory



Reinventing electricity grids for the energy transition

■ Delays & Cancellations

Grids are the **#1 cause of delays and cancellations** of new **renewable projects** and **electrification projects**



AUSTRALIAN ENERGY REGULATOR



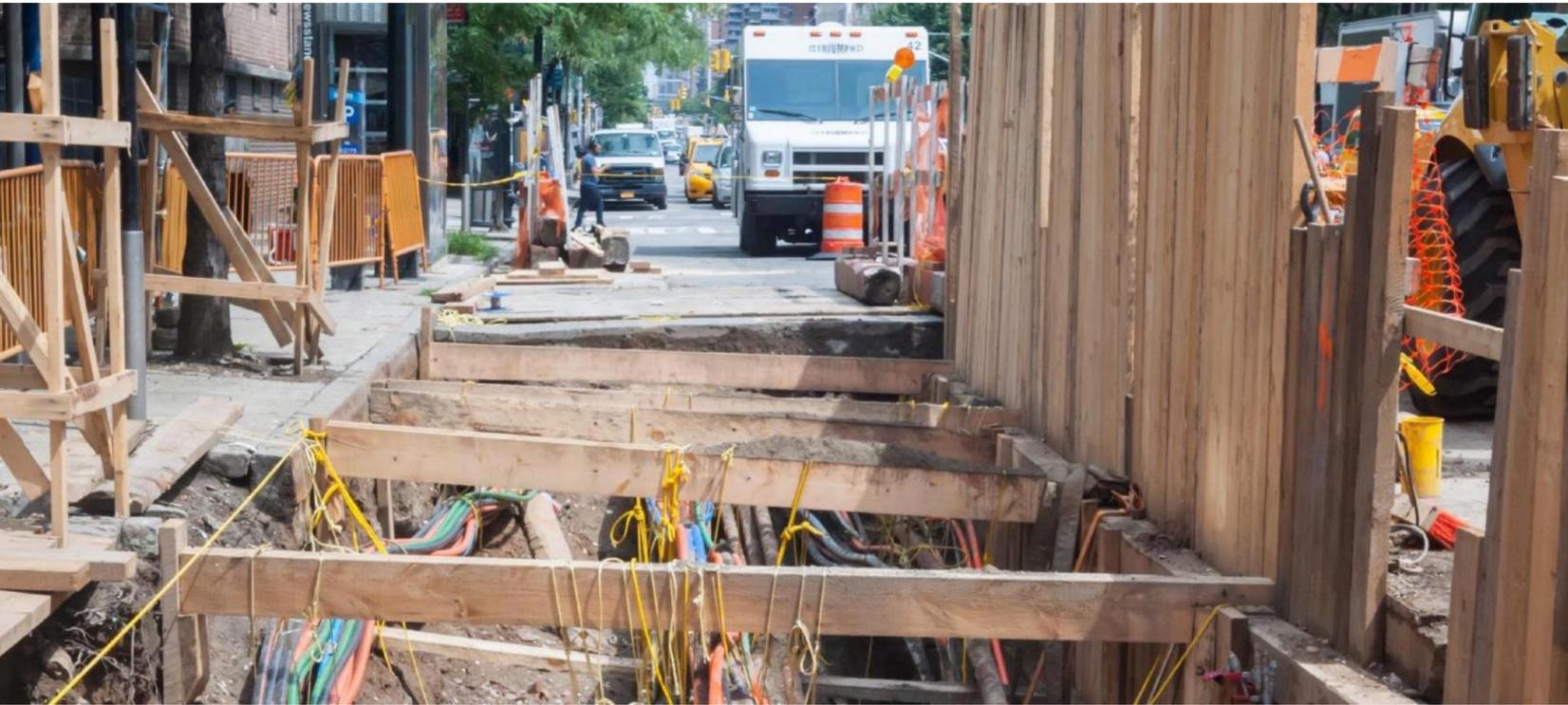
■ Rising Costs

Grid operators' approach to **de-bottlenecking is inefficient**, which has caused 40%-90% increase in grid costs per kWh last 10 years. **Grid costs set to double over the coming decade**



THE SOLUTION

There is a better way to resolve this problem



The traditional way:

- with more **hardware**, on the **supply side**
- dimensioning for **unmanaged peak loads**
- requiring **multibillion € annual network upgrades**
- **years of construction works**

The Plexigrid way:

- with **software**, on the **demand side**
- **actively managing and reducing peak loads**
- **x10 faster and x10 cheaper**, benefiting customers, grid operators and retailers



THE SOLUTION

By **mobilizing demand flexibility**, Plexigrid **resolves bottlenecks**, releases hosting capacity to connect more renewables, EVs, heat pumps... and reduces electricity distribution costs by 35%-40%

Design for peak capacity

“Reinforce the grid to guarantee capacity for peak demand”

Observation

- Peak Consumption is about to reach Max Capacity. The grid is full!

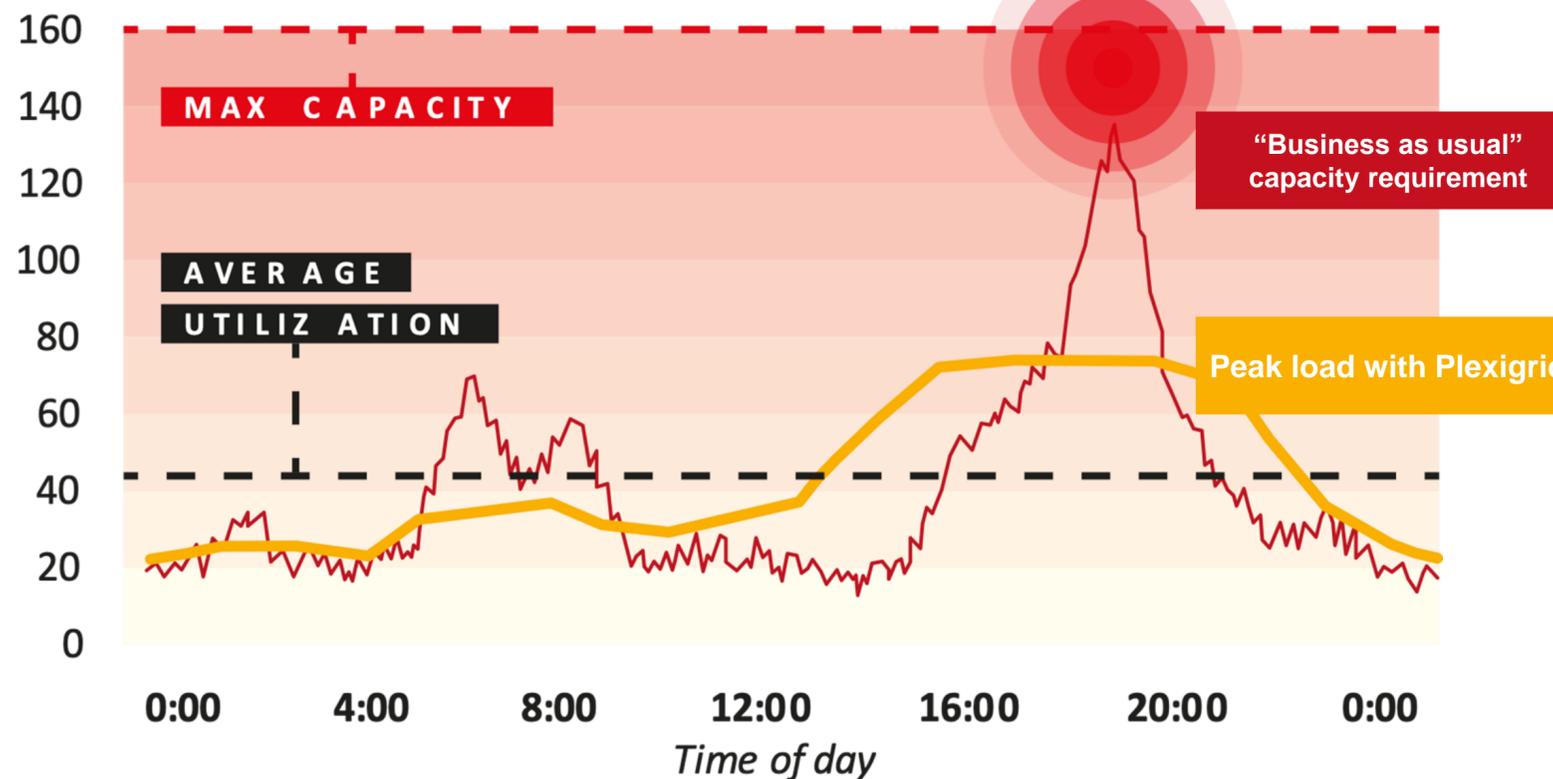
Reaction = Problem

- Increase network capacity through CAPEX investments!

Result

- Increasing consumer grid costs
- Long lead times
- Unsustainable raw material use

ELECTRICITY DEMAND THROUGHOUT THE DAY (KW)



Design for optimal utilization

“Optimize grid utilization by adapting demand to available capacity”

Observation

- Why is the average utilization so low? There is plenty of capacity available

Reaction = Opportunity

- Exploit flexibility of demand and supply to distribute load more evenly

Result

- No/minimum need for upgrades
- Reduced cost for consumers
- Fast adaption to increased demand
- Increased hosting capacity for renewables

Tom
Electrical Engineer



Sofia
Telecom Engineer



THE SOLUTION

Plexigrid next-gen network technology provides grid operators with **THREE Superpowers**, to make their grids fit for energy transition.



1 Ari

End to end Visibility

- Real time grid visibility across all voltage levels, down to 220V household level
- (Note: currently, grid operators have limited to no visibility under 20kV, where 80% of the kms of grid are located)



2 Tatari

Real Time Analytics

- Real time Grid Digital Twin
- Identifies where, when and why grid bottlenecks occur
- Optimizes grid planning and grid operations



3 Tia

Real Time Grid Flexibility

- Predicts behind-the-meter assets
- Works with Tatari to detect grid congestions in real time
- Activates flexible demand devices to resolve identified congestions



THE SOLUTION. IMPACT

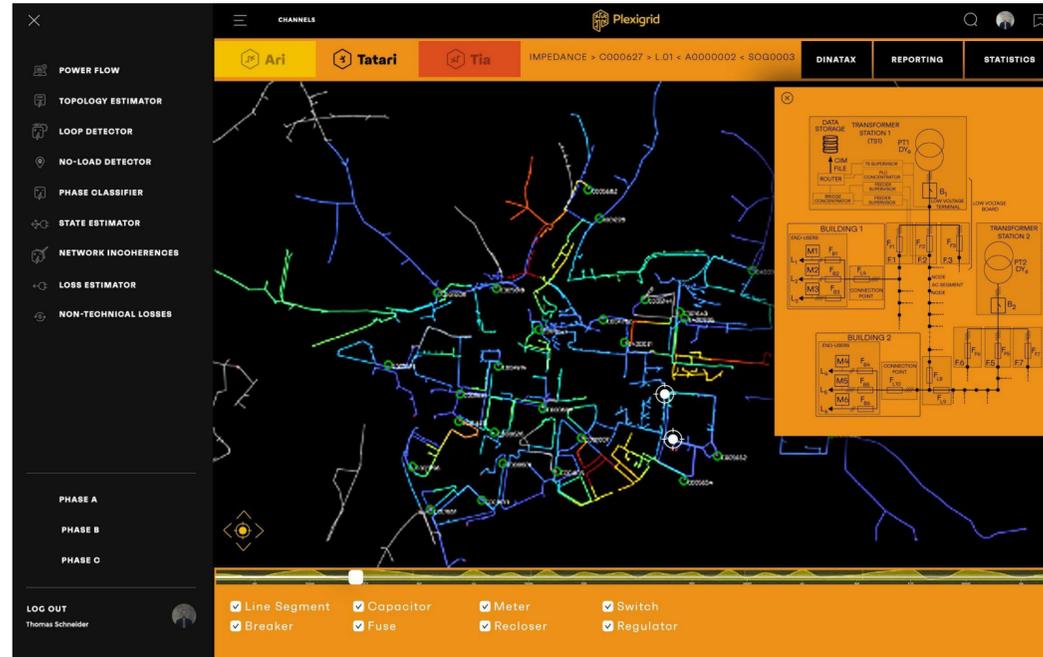
Plexigrid's superpowers drive game-changing improvements across, **planning, operations and flexibility management**

GRID OPERATIONS



Reduction of operational costs and improvements in grid performance

GRID PLANNING



Tighter, “bottleneck focused” capacity planning, reduction of electrical losses

FLEXIBILITY MANAGEMENT



Resolution of bottlenecks with flexibility instead of additional capacity

Up to 35%-40% reduction of energy and grid costs for grid operators and consumers



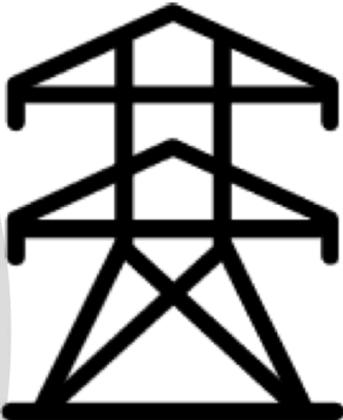
A WIN-WIN FOR EVERYBODY

At global scale, Plexigrid's next-gen network technology would save grid operators and consumers 150 B€/year until 2030 and 300 B€/year between 2030-40.

Lower
electricity bills



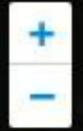
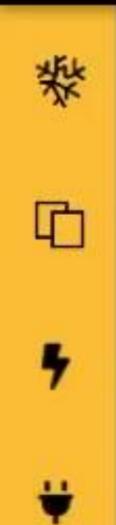
Consumer



Grid
Operator

Improved
efficiency,
reliability and
profitability





Line Mode

base X ▾ NEW SIMULATE

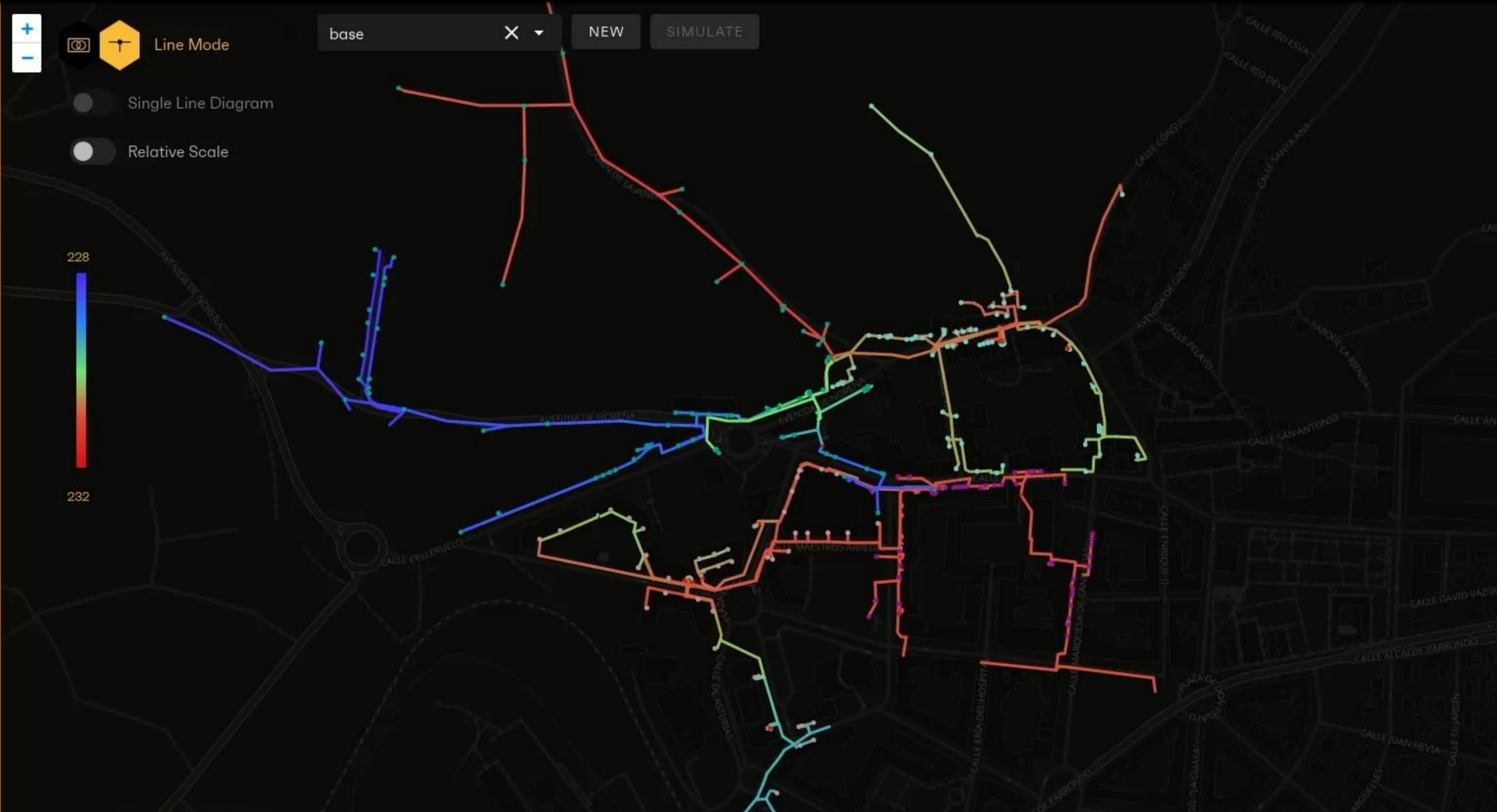
Single Line Diagram

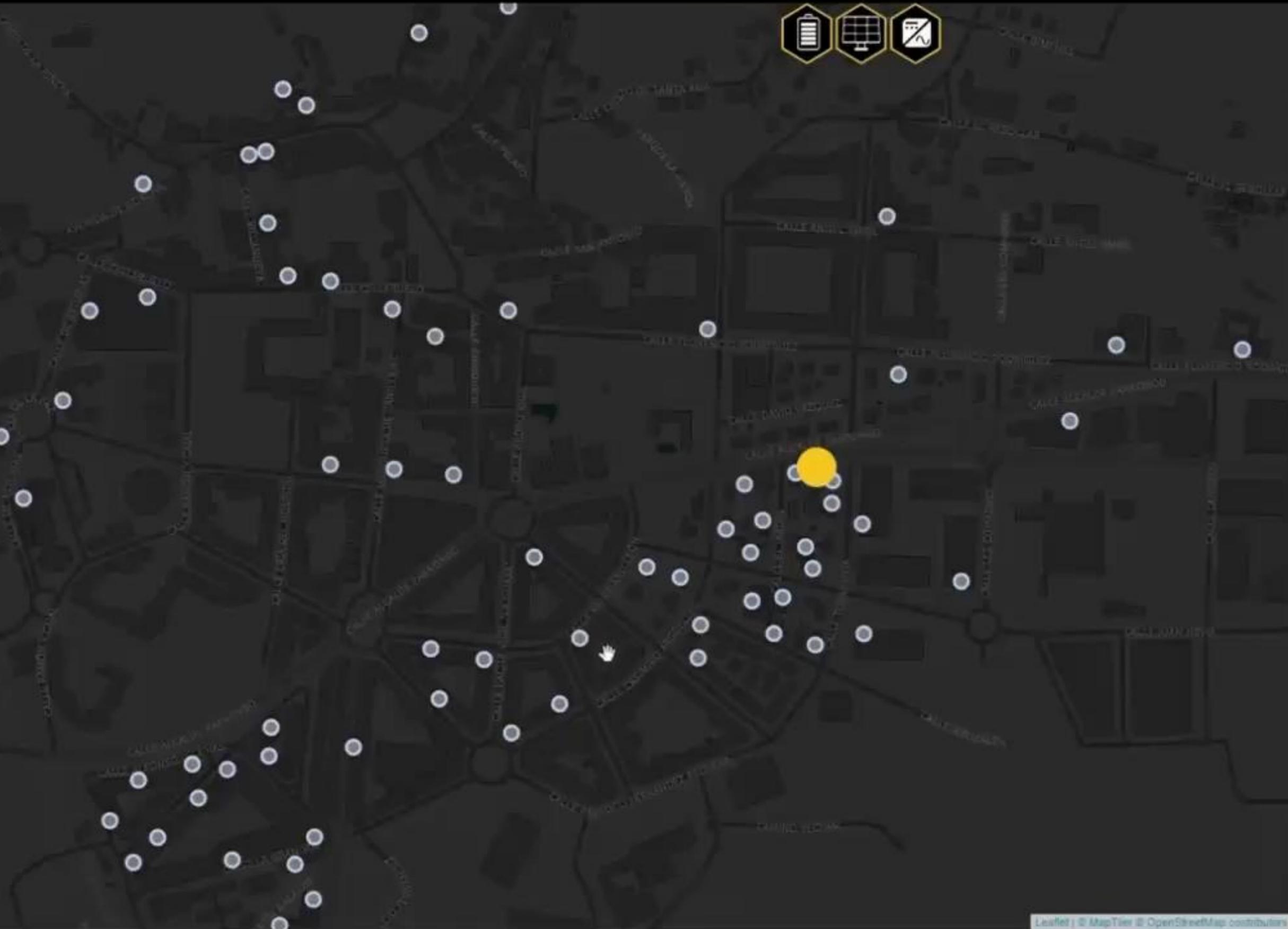
Relative Scale

228



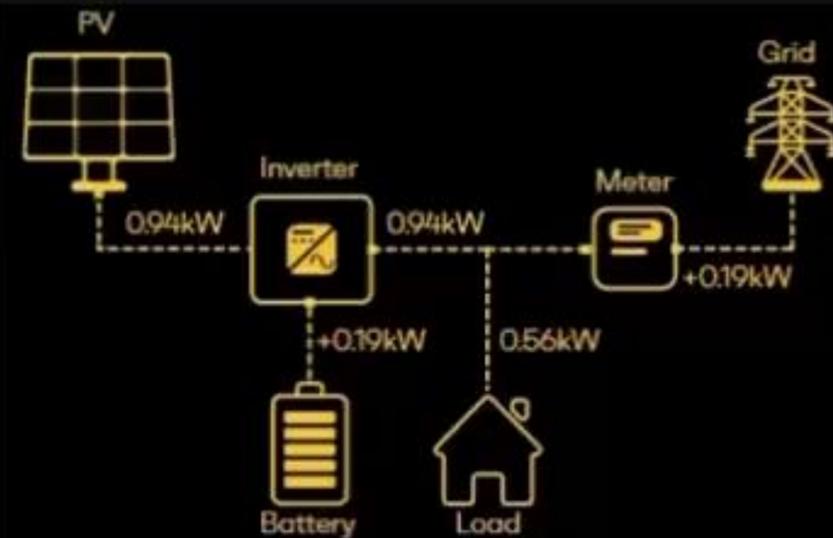
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Complex System

Power Flow Diagram



General Information

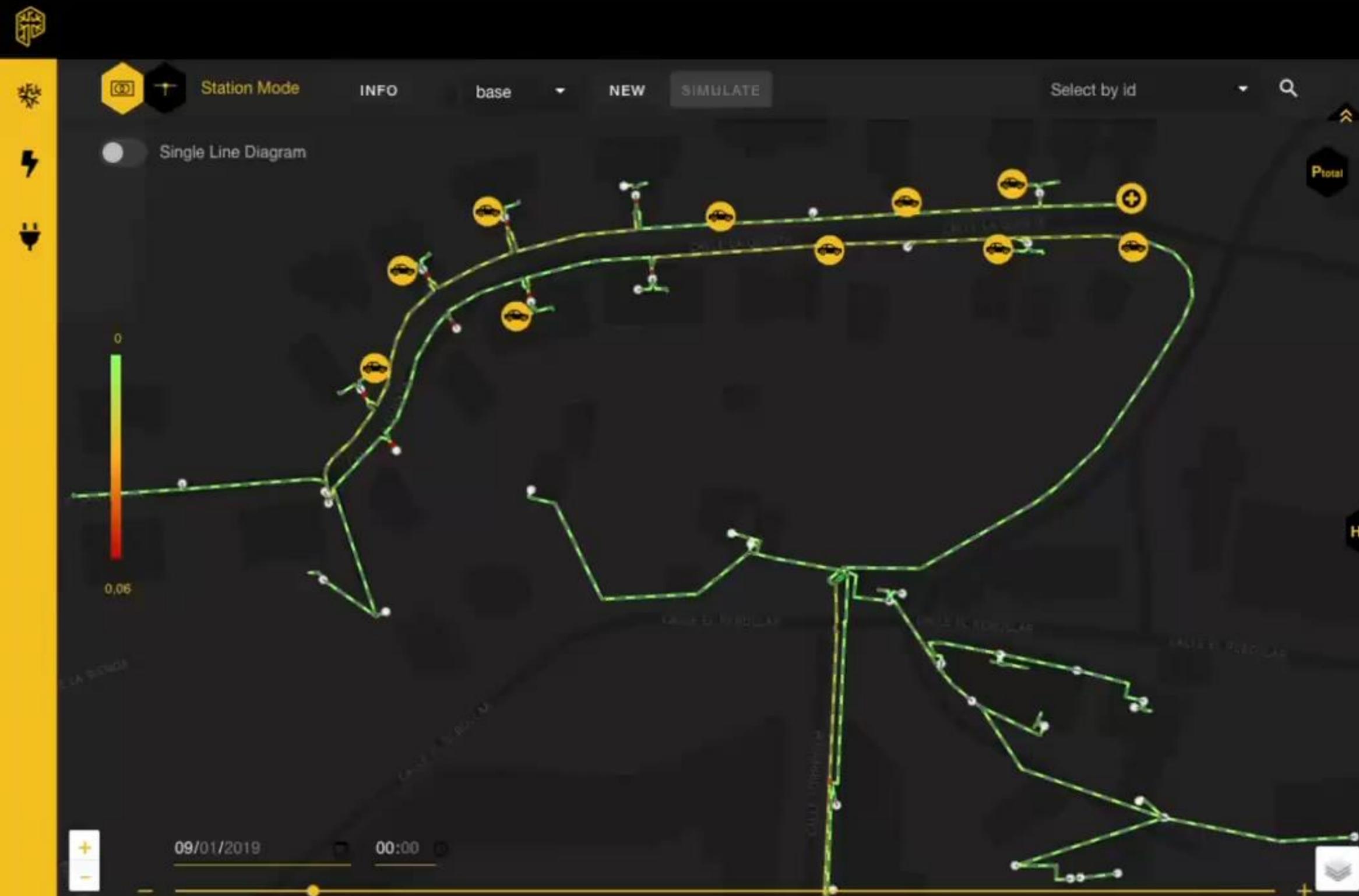
System ID: 22
 Type: Inverter-Battery-PV
 Client ID: 5658
 Latitude: 43.3919
 Longitude: -5.6576

Inverter Information

ID: 843
 DC Power: 1500
 Connection Phase: B
 Manufacturer: LG

PV Information

ID: 1235
 Peak Power: 1500
 Connection Phase: B
 N. Panels: 1
 Manufacturer: EDP Solar

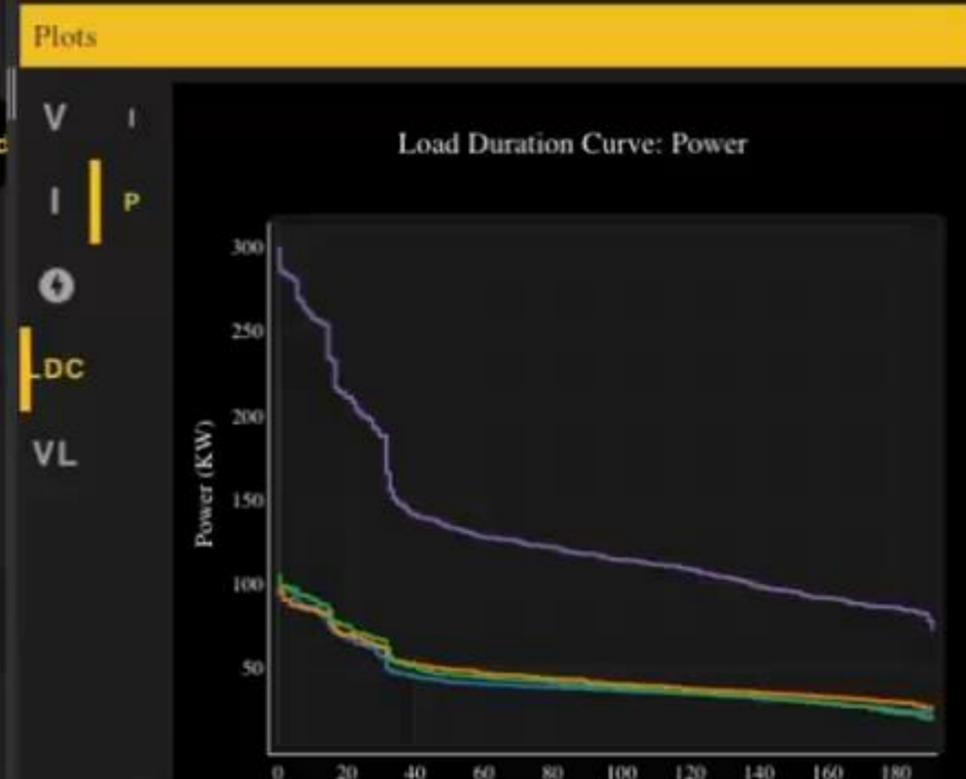


Station 65019 2019-01-08 / 2019-01-15

KPIs

Unit	Phase	Base	base21	base2flex	base22flex2	base
— KPI: Apparent Power: Avg X						
kVA	3P	113.57	133.12	197.7	182.79	162
kVA	A	35.83	42.42	62.86	57.91	51
kVA	B	39.66	46.07	68.58	63.62	56
kVA	C	38.08	44.62	66.25	61.26	54
kVA	N	0	0	0	0	0

— KPI: Apparent power: Phase Share (Avg) X





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