# Create a thriving workspace through IoT & energy management

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Smart Energy Connect
powered by **CLP**

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# What is your IDEAL IoT Platform?

**One-platform** to provide automated solution for optimizing office operation and energy saving

# How to design a Smart Workspace
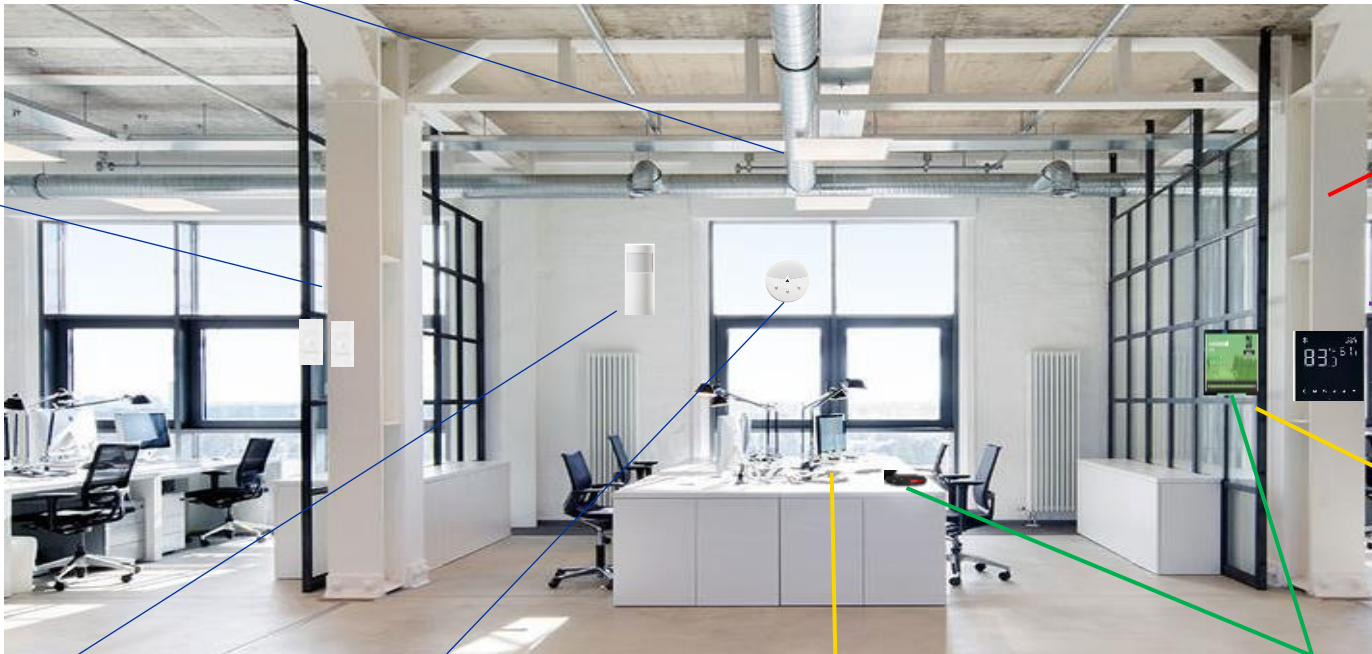
**Smart Energy Connect (IoT Platform)**

- IoT Lighting System
- IoT HVAC System
- IoT Booking System
- IoT IAQ System
- IoT Metering System

**Load Controller**

**Wireless Remote**

**Wireless metering**

**Smart IAQ Control**

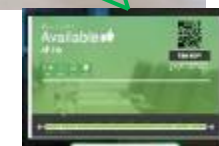**Wireless Occupancy sensor**

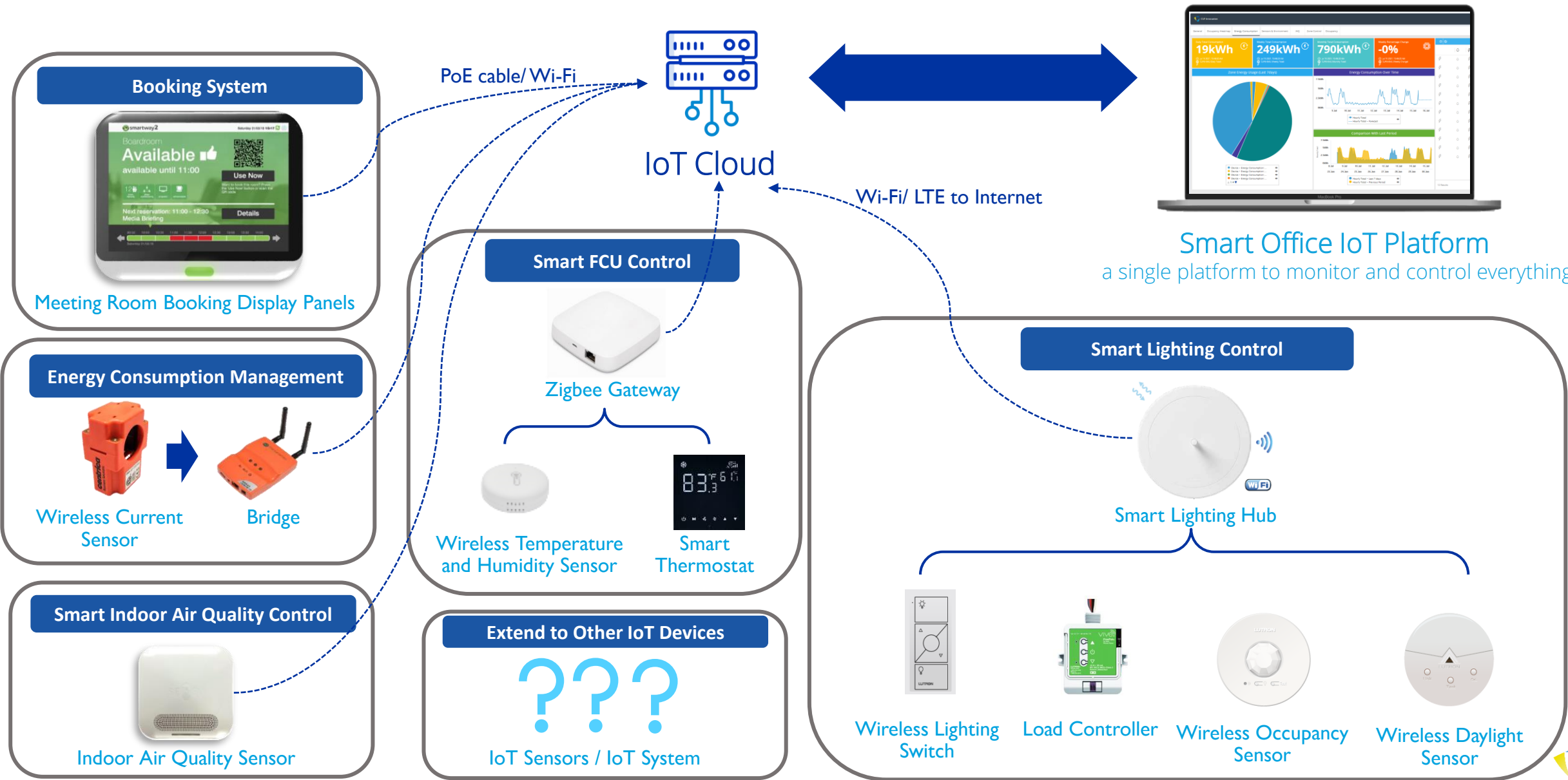**Wireless Daylight sensor**

**Wireless Temp and Humidity Sensor**

**Smart Meeting Room & Smart Hot Desk**

**Smart Thermostat**

# Wireless/wired communications and system scalability

**Booking System**

Meeting Room Booking Display Panels

**Energy Consumption Management**

Wireless Current Sensor → Bridge

**Smart Indoor Air Quality Control**

Indoor Air Quality Sensor

**Smart FCU Control**

Zigbee Gateway

Wireless Temperature and Humidity Sensor

Smart Thermostat

**Extend to Other IoT Devices**

??? 

IoT Sensors / IoT System

PoE cable/ Wi-Fi

IoT Cloud

Wi-Fi/ LTE to Internet

## Smart Office IoT Platform
a single platform to monitor and control everything

19kWh   249kWh   790kWh   -0%

**Smart Lighting Control**

Smart Lighting Hub

Wireless Lighting Switch

Load Controller

Wireless Occupancy Sensor

Wireless Daylight Sensor

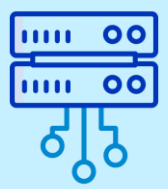# Workspace optimisation through integration

**1** **Motion Sensor**
To detect if there is anyone is the meeting room

**2** **IoT Platform Optimisation**

**3** **Smart Booking System**
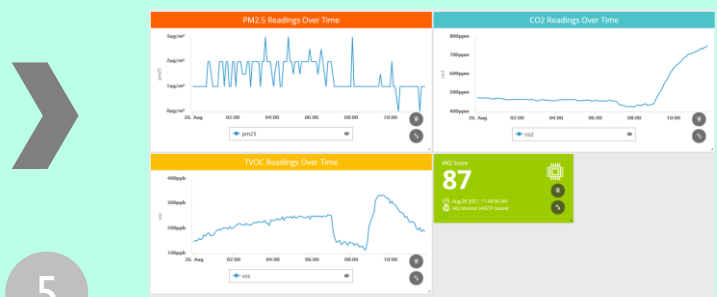Auto Check in and out according to occupancy

Asset/ Space Optimisation
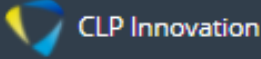
**4** IAQ Sensor

LoRa
NB-IoT

Wellness Optimisation

**5** Smart Office IoT Platform

PM2.5 Readings Over Time

CO2 Readings Over Time

TVOC Readings Over Time

87

**6** Air Purifier

# Automation autonomy

# Case Study | Office of Swire Coca-Cola Hong Kong



**Group controls for lighting, air conditioning and air ventilation**
**One-click control for all devices**

**24/7 monitoring o**n energy saving progress and consumption breakdowns

**Identified usage patterns and trends**
By charting air flow and water flow data
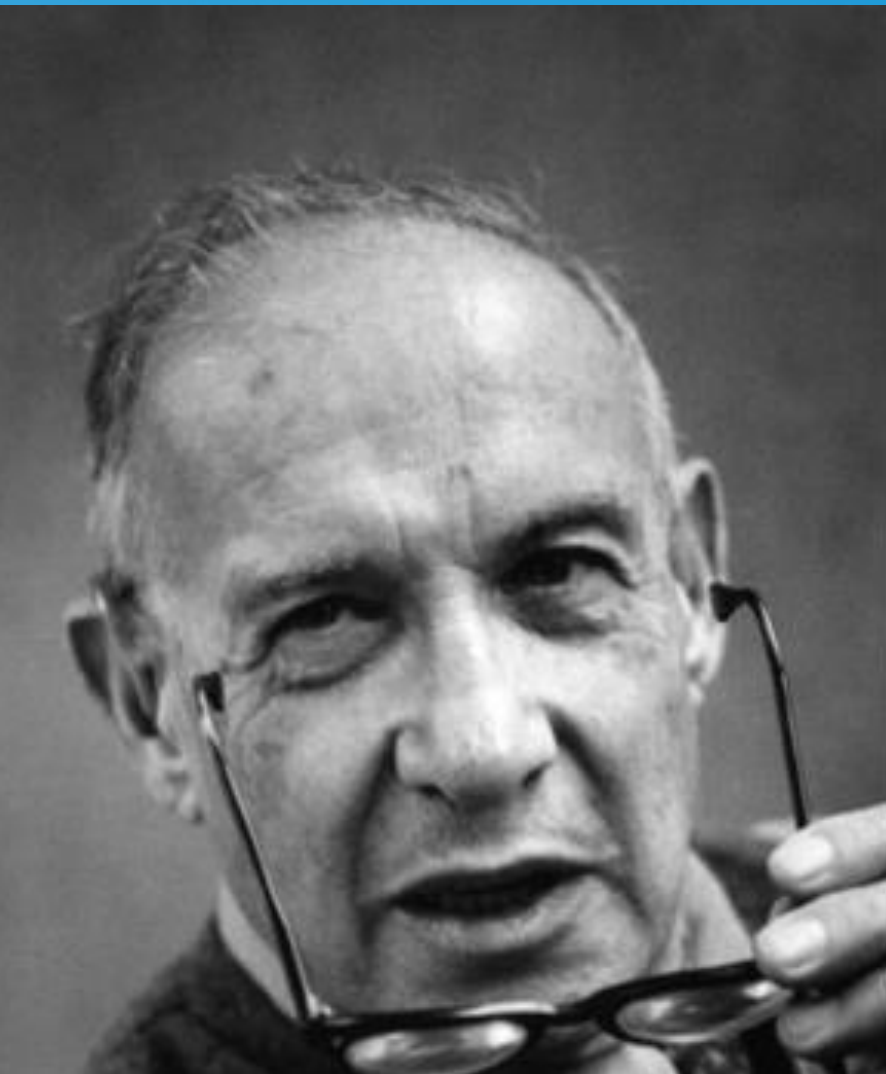


**SWIRE COCA-COLA**

**300+** IoT devices
Integrated in one platform
Smart Sensor Automation at Coca Cola HK office

- Energy consumption monitoring
- Occupancy tracking
- Lighting control
- AC control
- Air purifier toggle
- Flow meters

You can't manage what you don't measure.

— *Peter Drucker* —

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powered by CLP

**Lost track of the decarbonatization target**

**Missing energy consumption data for ESG reporting**

**No granular data for analytics**

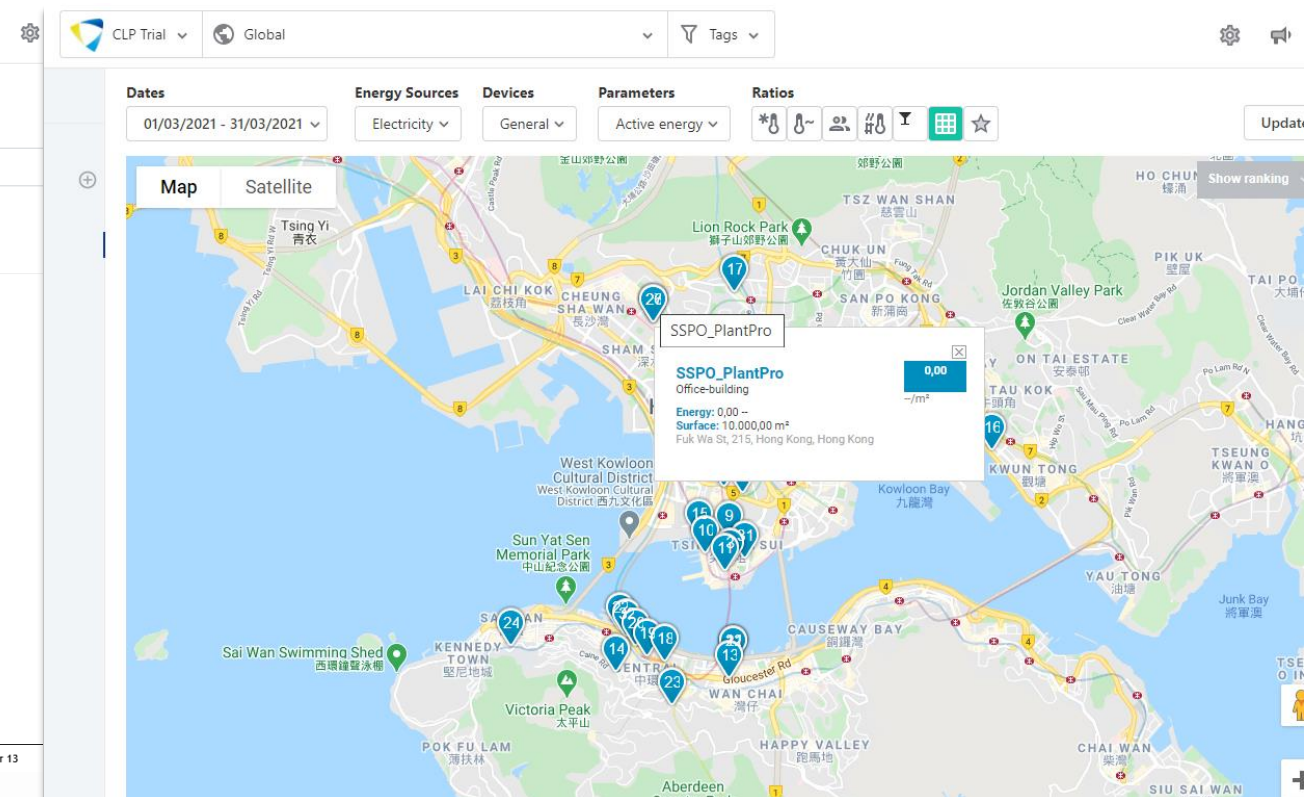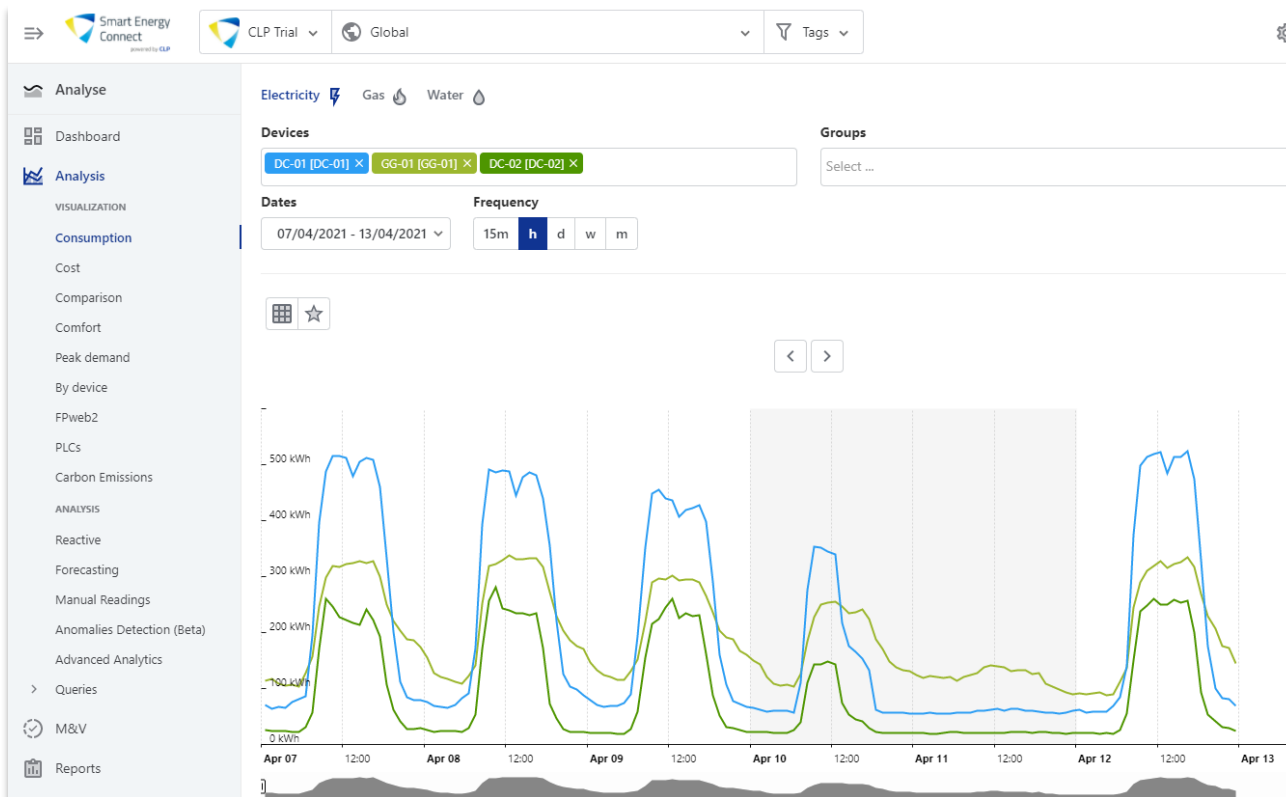# Energy management platform is needed

**An all-in-one smart energy management platform to multiple buildings/sites**

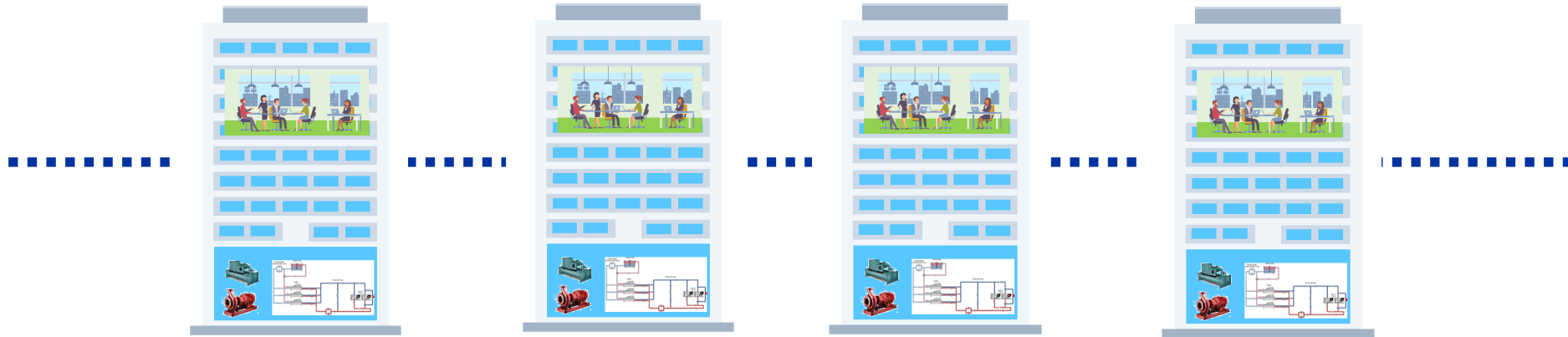- visualise, analyse, benchmark energy consumption
- track energy savings in measurement & verification (M&V) projects

**Energy Management of Your Multiple Sites**



**Easy Integration and Data Insertion**



**Multiple Energy Sources**

# Where does your data go?

**Path 1: IoT Gateway**

**Path II: API**

smartsheet

**Path III: Excel**

X

**Your Data**

**Cloud**

**Streaming**

**Web Portal**
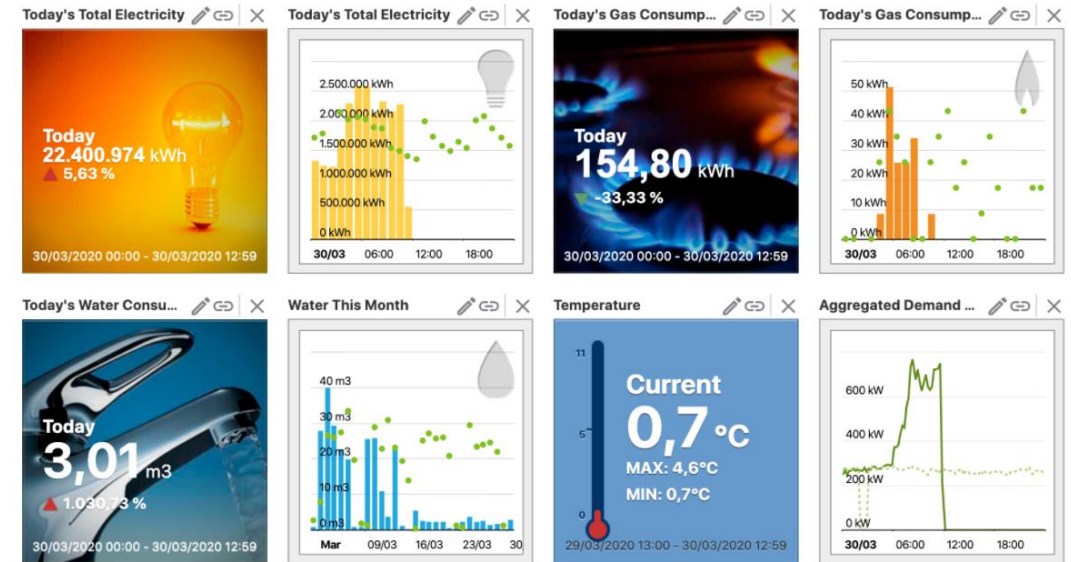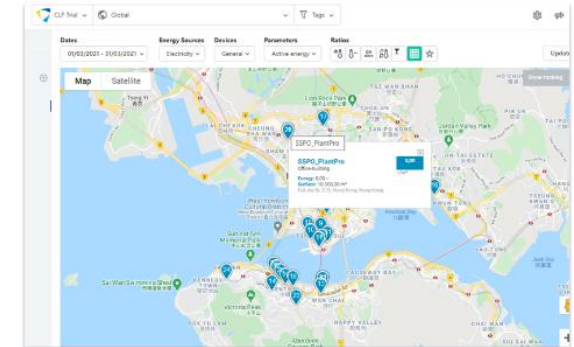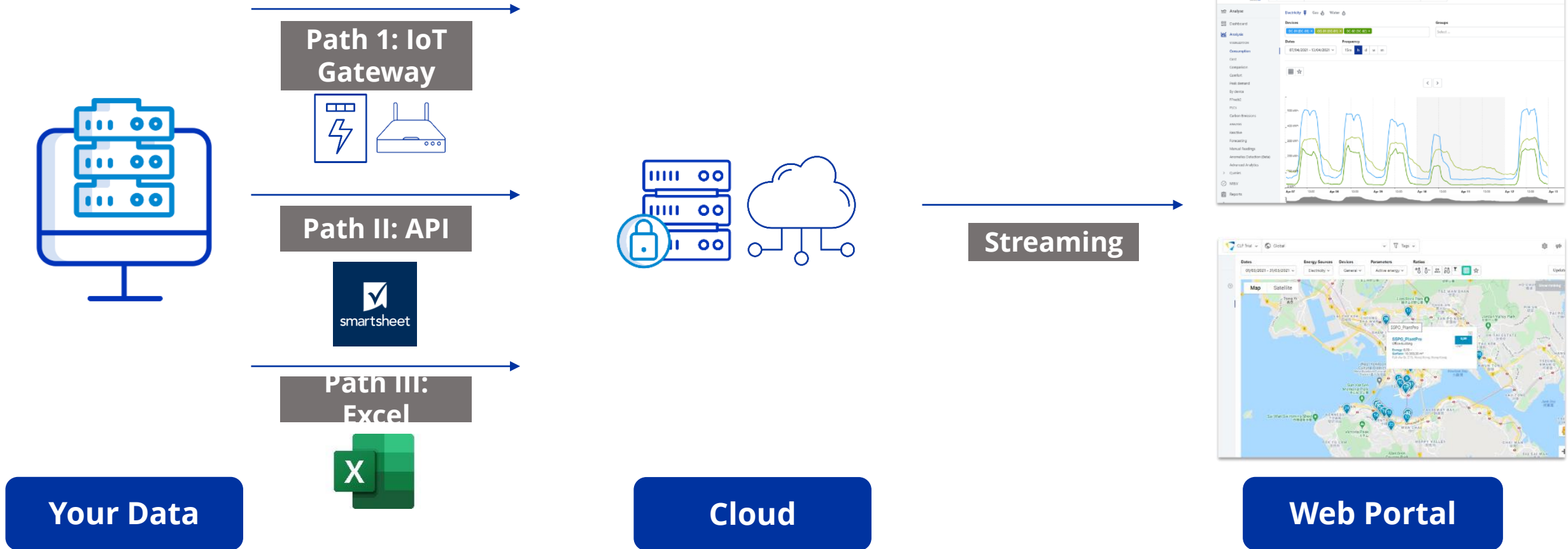
# Feature 1: 24/7 Energy data management
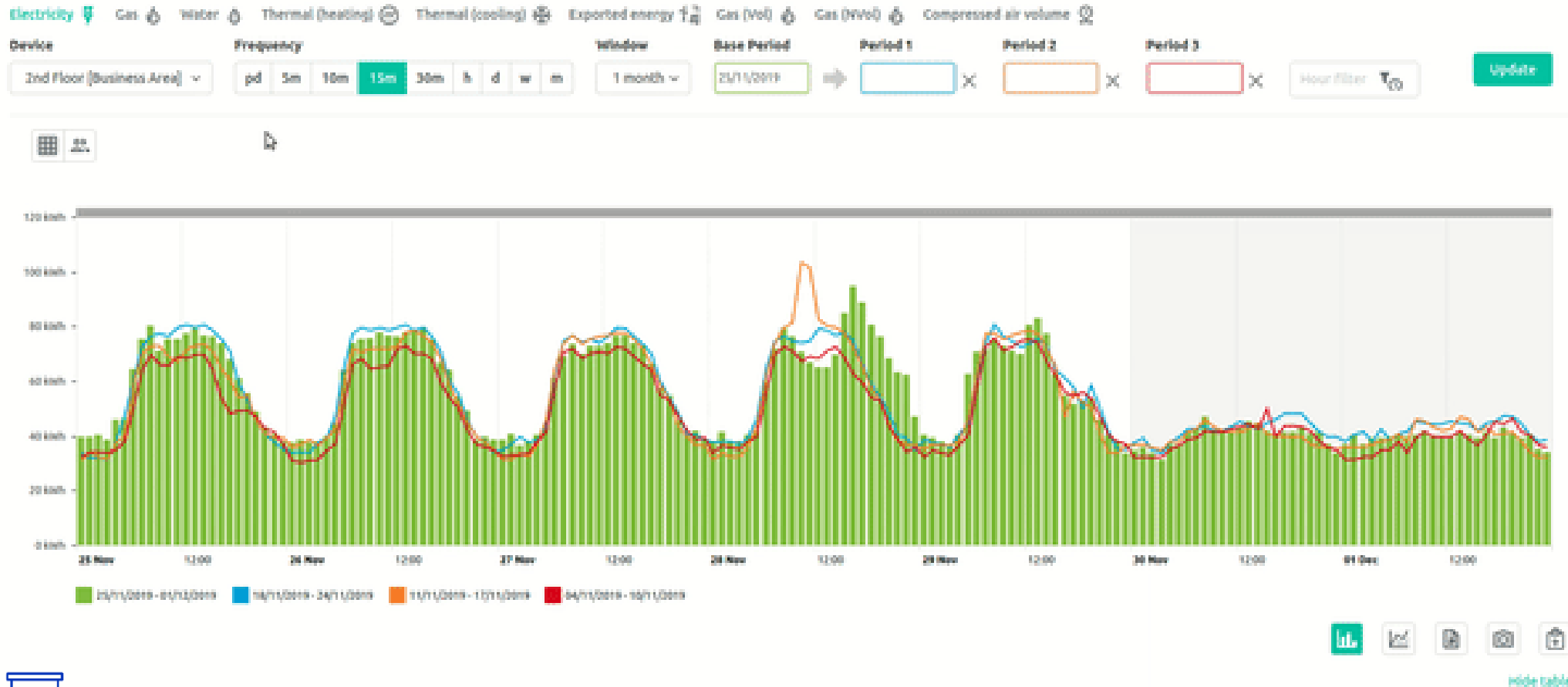


Visualise real-time 24/7 granular energy consumption data of multiple buildings with intuitive load profile

# Feature 2: Normalised site comparison
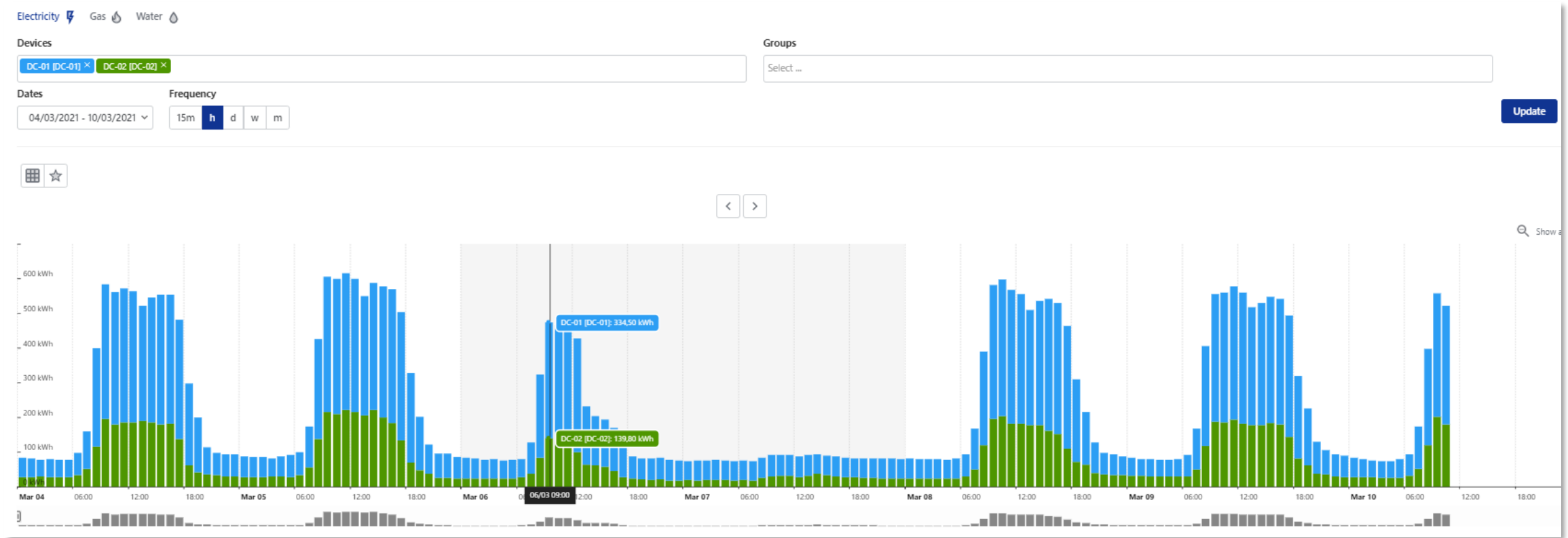


Flexibly compare energy usage among your buildings/devices, with normalisation based on GFA, weather, occupancy (API), custom fields (e.g. production output) etc.

# Feature 3: Carbon emission management



Calculate and monitor carbon emissions for your buildings to achieve the target in your decarbonisation journey

# Feature 4: Automated alerts

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CLP Trial ⌄ | 🌐 Global ⌄ | ▽ Tags ⌄ | ⚙ 📢 J

**Analyse**

- ▦ Dashboard
- 📈 Analysis
- ◎ M&V
- 📋 Reports
- 🔔 **Alerts**
  - NEW ALERT ⊕
  - › No data alert
  - › Threshold alert

## New alert

① —— ②

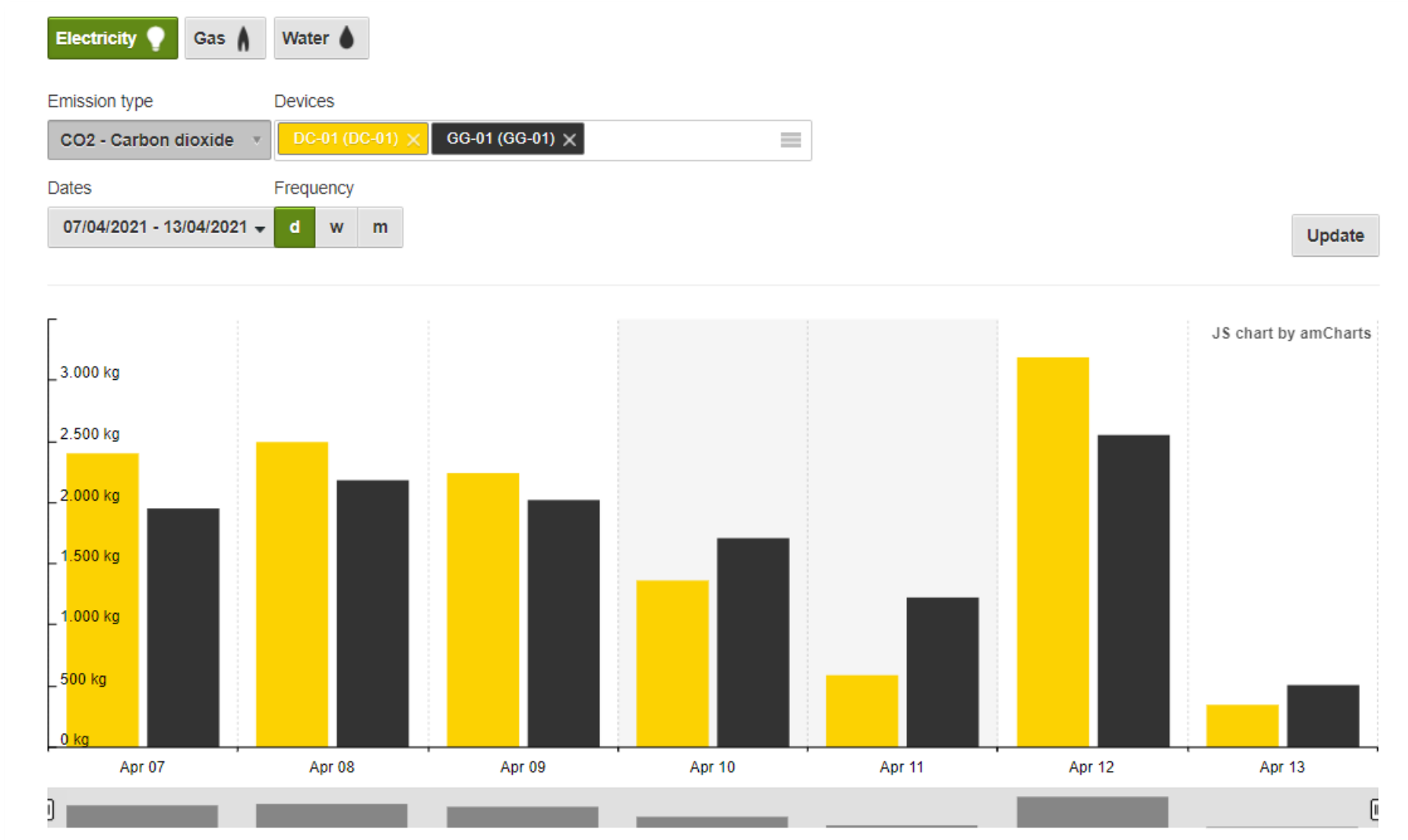| Threshold alert | No data alert | Load excess | Reactive excess | Cost | Tunnel alert |
|---|---|---|---|---|---|

Cancel | **Next**

Set **automated alerts** to keep informed of unusual situations with email notifications to facility managers and/or technical team
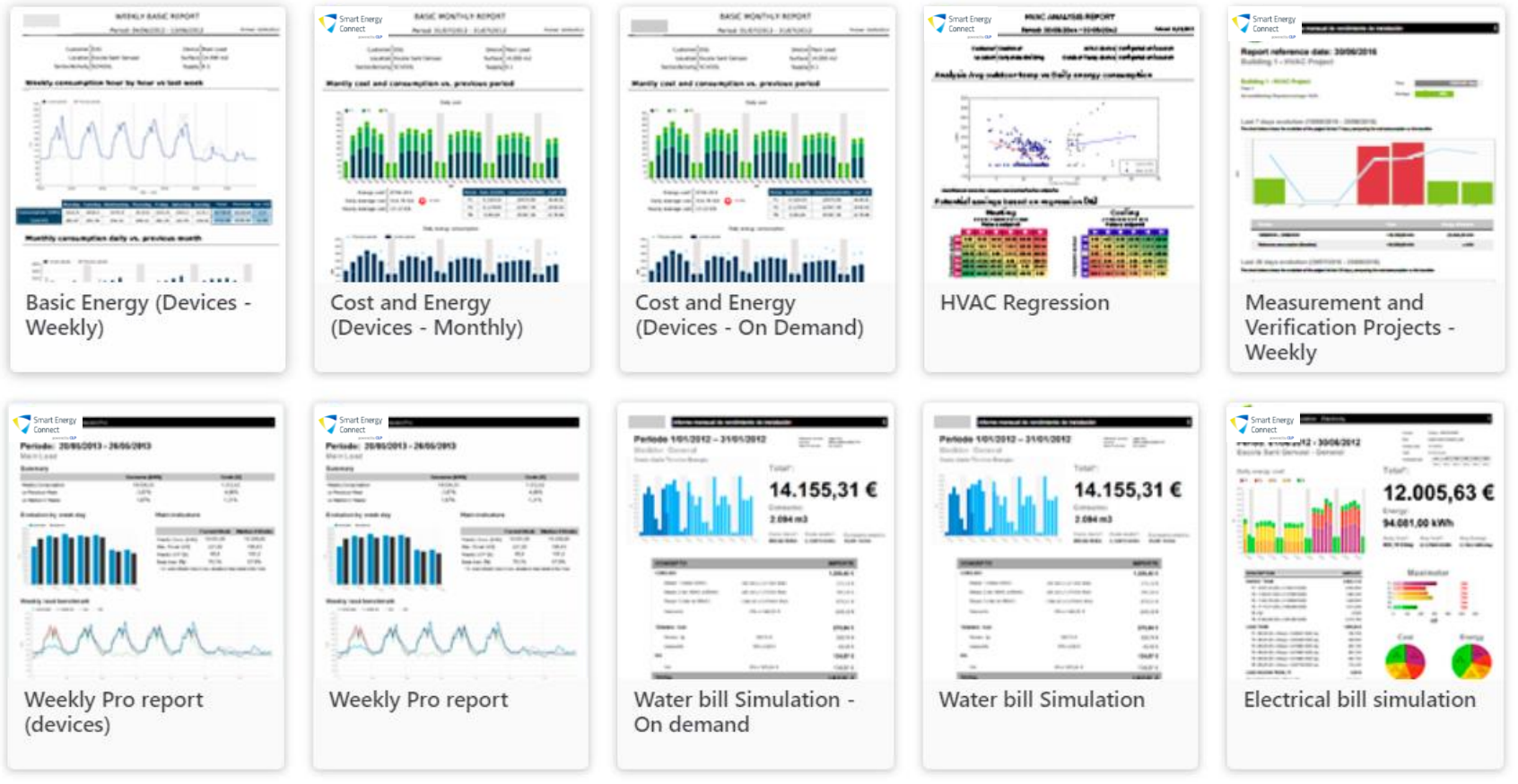
Schedule automated reports to stakeholders with 15+ templates available to reduce manual report consolidation effort

# Feature 6: Forecasting
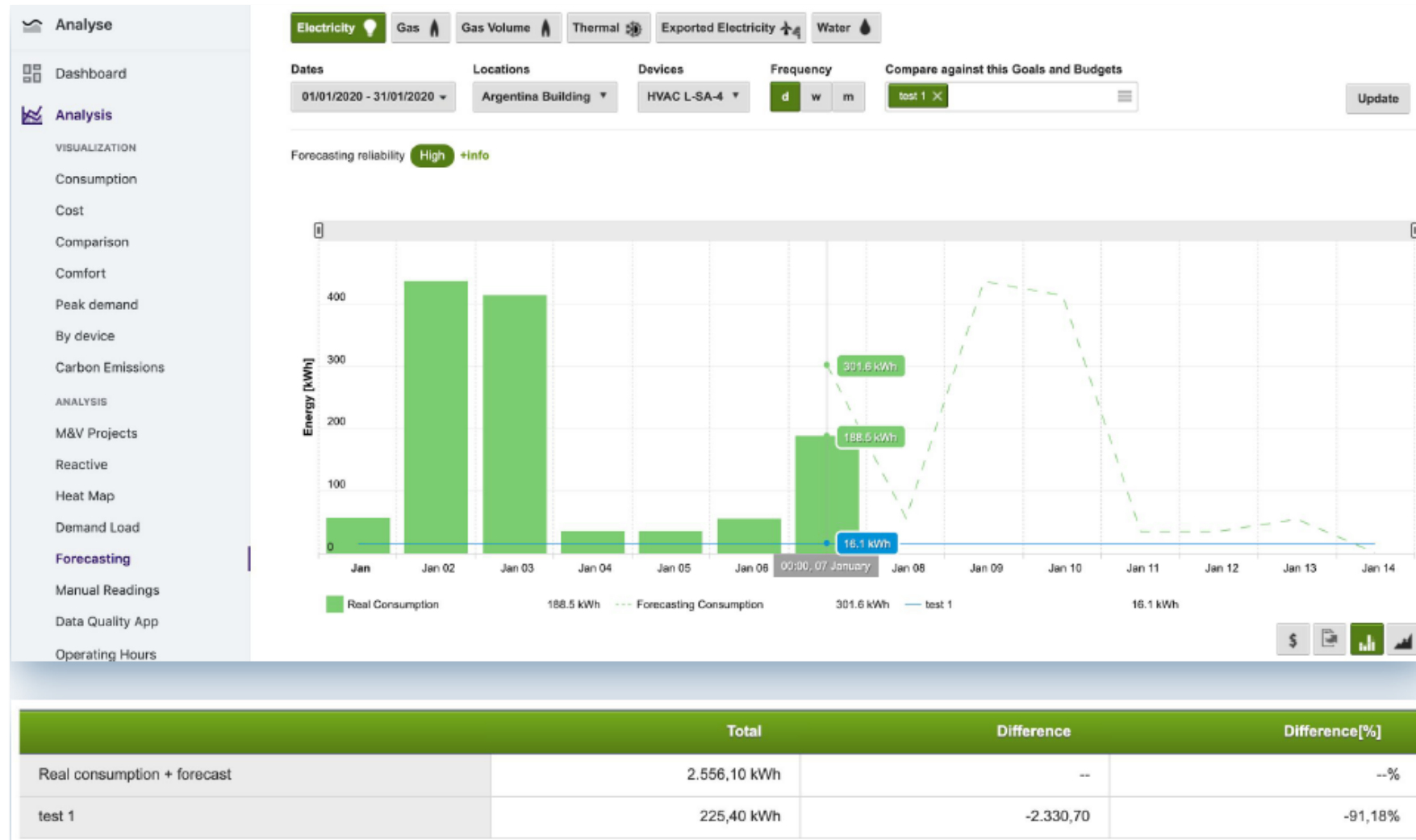


Forecast your energy consumption based on historical data

⚖ Energy Balance   🔋 Storage   ☀ Generation

**Dates**
📅 01/03/19 → 31/03/19   Last month ⌄

**Frequencies**
| 15m | h | **d** | w | m |

**Chart type**
| **STACKED** | LINE | FLOW |

**91 %**
self consumption ratio

● GRID IMPORTED    ● BATTERY DISCHARGE    ● GENERATION    ● GRID EXPORTED    ● BATTERY CHARGE    ● LOADS
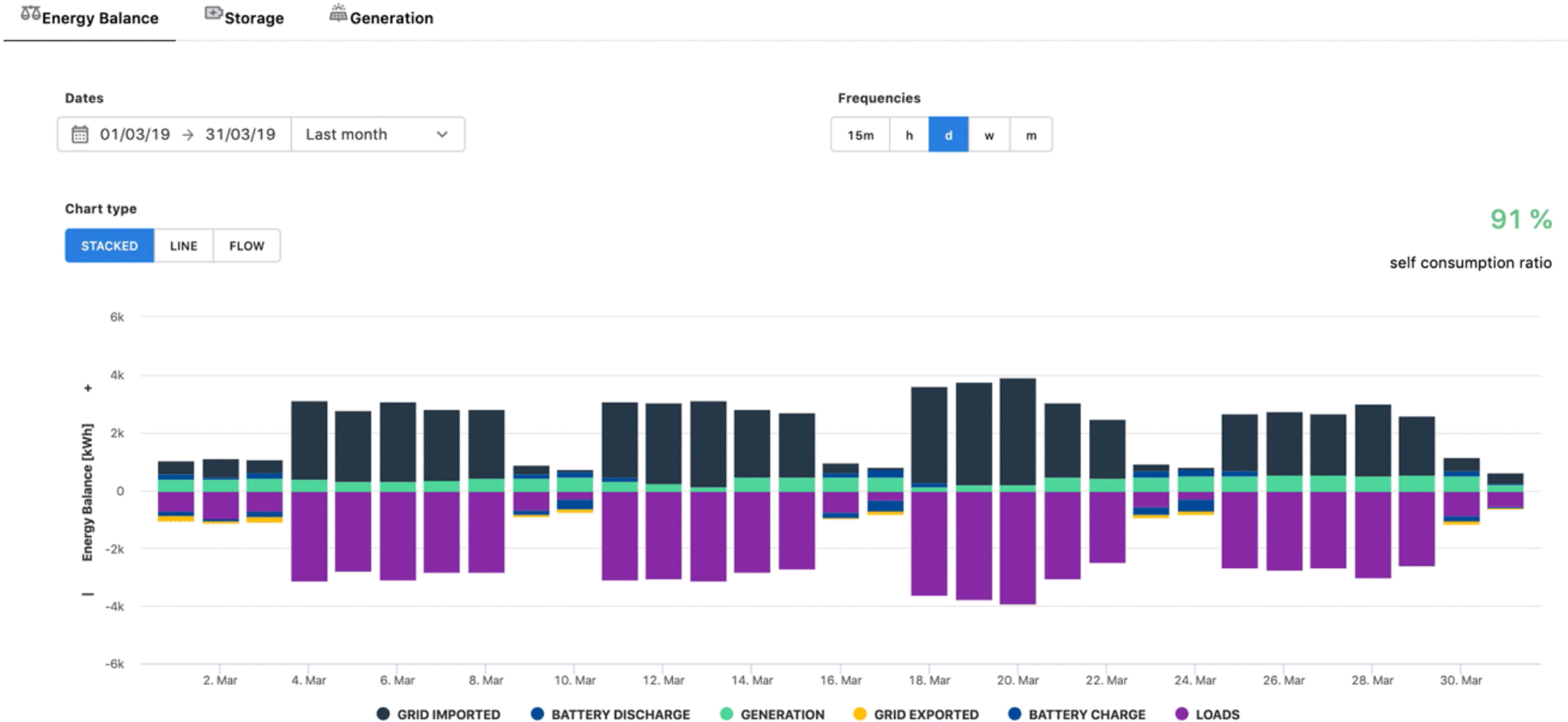
Optimise your solar assets, quantify green energy balance and visualise exported photovoltaic (PV) solar energy generation

# Determine and keep track of your energy saving

## Analyse

- Dashboard
- Analysis
- **M&V**
  - **Projects**
  - Groups
- Reports
- Alerts

## M&V Projects ⊕

🔍 Search

| Name | Type | Target | Saved % | Saved | | |
|------|------|--------|---------|-------|---|---|
| Change to LED Lighting: Formula | Lighting | 10,00% | 30,54 | 8.607,56 kWh | | **441** / 654 Days  **30,54%** / 10,00 % |
| Change to LED lighting: Temporal ranks | Lighting | 10,00% | 15,79 | 3.672,87 kWh | | **441** / 654 Days  **15,79%** / 10,00 % |
| Electricity management | Energy Management | 5,00% | 34,74 | 2.024,20 kWh | | **153** / 366 Days  **34,74%** / 5,00 % |
| Géstion de l'énergie du bureau 2020 | Energy Management | 20,00% | 14,24 | 631,39 kWh | | **153** / 366 Days  **14,24%** / 20,00 % |
| Office Energy Management 2018-2019 | Energy Management | 10,00% | 1,57 | 62,34 kWh | | **256** / 256 Days  **1,57%** / 10,00 % |
| Behavioral energy improvements | Energy Management | 5,00% | -0,98 | -31,15 kWh | | **62** / 62 Days  **-0,98%** / 5,00 % |

< **1** >

# Things you need to know about IPMVP

- International Performance Measurement and Verification Protocol

- Use adjusted baseline to measure energy saving, i.e. telling how much less energy you have used than you would have without implementing your energy conservation measure (ECM)
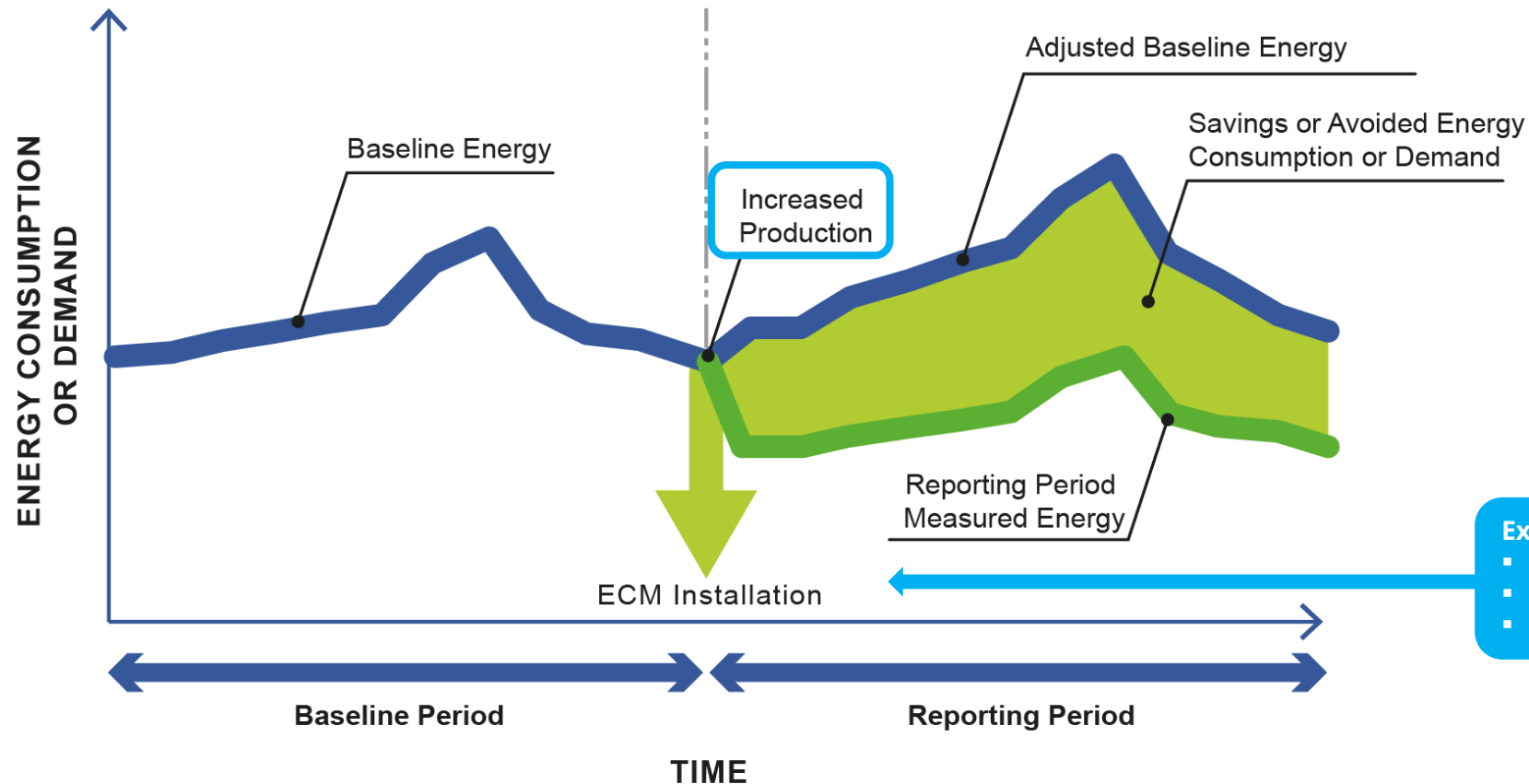


**Examples of Energy Conservation Measures:**
- **LED lighting**
- **Retro-commissioning works**
- **Solar systems and battery storage**

# More than Energy Management System



**SSPO PlantPRO Saving**
M&V Projects
15/07/2020 - 31/12/2021 — Energy Management

Electricity (kWh) ∨  Reference ∨

15,00% Target savings — 306.901,95 kWh Savings to date

Time: 288 / 535 Days
Savings: 24,81% / 15,00 %

15/07/20 → 31/12/21  Select... ∨  d w m

Real vs reference consumption - Electricity

Compare target savings to actual savings

Baseline energy consumption

Actual energy consumption *lower* than baseline energy consumption

Actual energy consumption *equal* to baseline energy consumption

Actual energy consumption *higher* than baseline energy consumption

Track the progress of M&V projects

# Thank You

## Contact Us

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in Smart Energy Connect

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