



CRISIS

TALKS

How retailers can cut energy consumption in-store, in-time.



Energy costs are heading towards unprecedented levels. Governments are looking to assist but have limited levers to pull. And our reliance on fossil fuel imports have left energy markets uncomfortably exposed to external influences.

Retailers have worked tirelessly to overcome many post-pandemic challenges. But they have no influence on the geo-political events affecting energy prices.

One crisis fuels another. Running parallel is a climate change conundrum challenging retailers to meet Net Zero commitments that curb carbon emissions, of which asset electricity consumption is cited as a key contributor.

As pressure on energy supplies and conscious consumption continue to rise, the need for retailers to focus on re-evaluating energy management practices to reduce energy-wasting actions has never been greater.

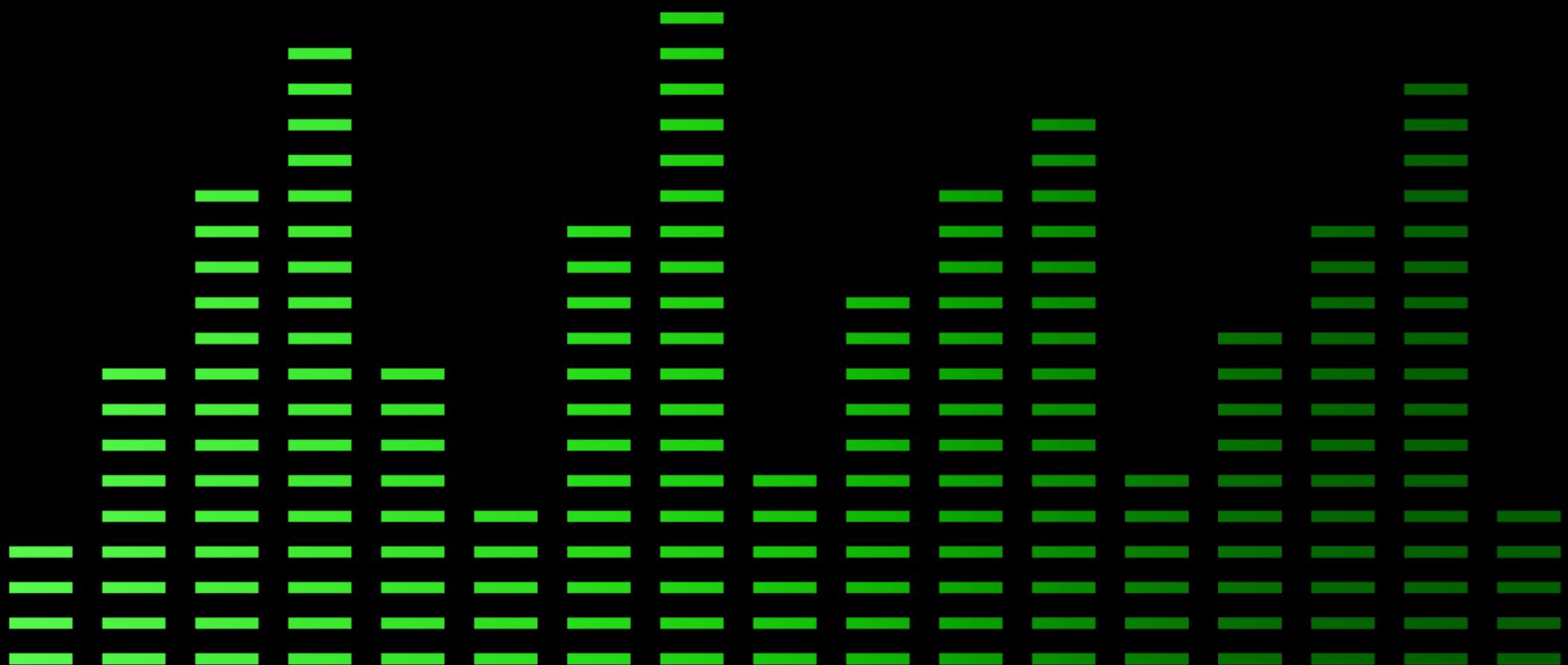


Where we are today

Retailers expected energy costs to rise in 2020 and 2021. But the spiralling increase to up to 40p kWh for large businesses in 2022 has placed energy consumption in the top 3 retailer concerns alongside wholesale goods prices and business rates.

In a late 2020 study by OnePoll for energy provider EON, 30% of retail leaders claimed energy costs directly affected business competitiveness. Yet, at the time, only 10% of retailers had upgraded their energy management systems (EMS) or integrated building control strategies to address the impact.

Perceptions of upfront costs and worries about ROI hampered progress. This left LED lighting installations and *simply asking staff to be more energy efficient* as the preferred route to energy cost management.



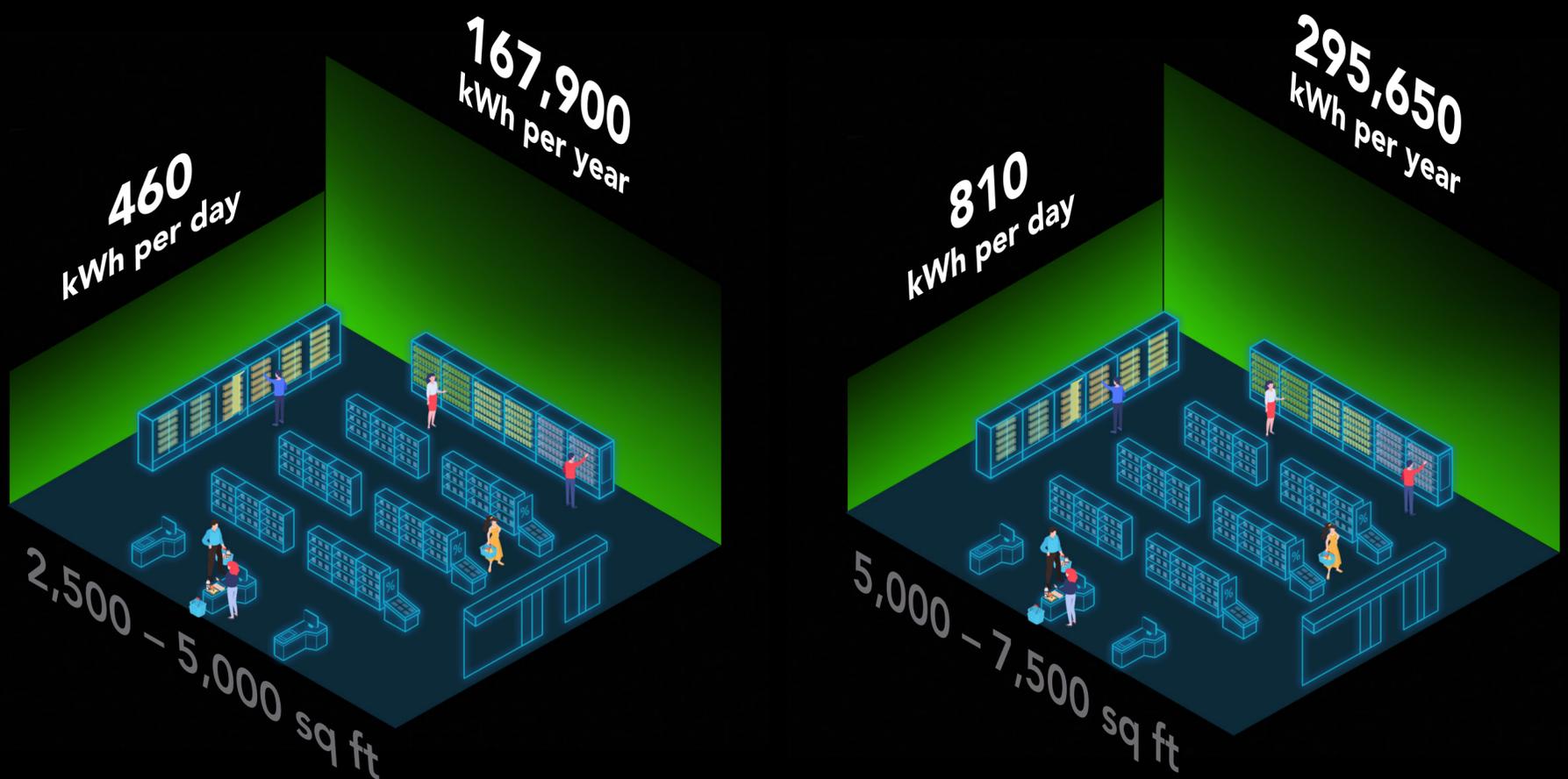


A typical convenience store uses close to 300,000kWh of electricity per year.

kWh footprint of Convenience Retail is a smoke signal for the need for conscious consumption

Overall energy costs differ by store type. But when we look at the average kWh footprint of retail's smallest store format, convenience, it's easy to see the impact energy can have as a cost centre and carbon emission contributor.

A typical convenience stores used close to 300,000kWh of electricity per year.



| Store size | kWh per day | kWh per year |
|---------------------|-------------|--------------|
| 2,500 – 5,000 sq ft | 460 | 167,900 |
| 5,000 – 7,500 sq ft | 810 | 295,650 |

*Store energy consumption is variable based on asset lifespans. Figures displayed utilise average asset lifespans of new - 15+ years.

What retailers are facing

How store behaviour affects energy consumption

Stores are rarely created equal, with retailers forced to manage differences across:

- store size, shape and building age
- regional variations in climate
- different types and ages of assets such as lighting, HVAC and refrigeration
- energy purchased from various suppliers
- different energy tariffs

However, across the variables that influence energy consumption, the often overlooked constant, regardless of retailer, is store behaviour.

Store behaviour plays an active role in energy wastage for retail environments across the industry spectrum due to the impact of manual actions on asset performance.

In one study, a national UK retailer with a 2000 store estate discovered energy wastage from store behaviour accounted for 1.4% of their energy bill. This equated to £33,000 per week and over £1.7m a year.

£1.7m

lost in 12 months
due to energy
wastage for
national retailer



**ENERGY WASTE
IS A HIDDEN COST
OVERLOOKED BY MANY
RETAILERS — BUT THE
FINANCIAL IMPACT IS
SIGNIFICANT.**

Andrew Williams, Data & Analytics Director

Top 6 Energy Wasting Store Behaviours

Here, Andrew Williams explains which in-store actions contribute to energy wastage the most:

HVAC use

HVAC units are one of the top three energy-consuming assets in retail stores. On average, HVAC wastes up to 10% of energy consumption. And this usually comes down to store behaviour.

In cooling mode, the lower the temperature setpoint selected on AC units, the higher the energy consumption of the asset as the cooling period required to achieve specified temperatures is extended.

However, when ambient temperatures increase during seasonal changes or periods of extended heat during summer months, in-store staff typically select lower setpoints than required to maintain a comfortable environment. Following a common misconception that suggests cooling rates increase and optimal temperatures are reached faster when lower setpoints are selected. Unfortunately, cooling rates remain the same and AC units work unnecessarily harder for longer, wasting energy.

Lighting

It is a common practice for consumers to switch-off lighting to save energy in their own homes but switching off lighting at every store closure, every day of the week, 365 days a year, across thousands of stores, is a difficult balance of consistency many retailers fail to achieve when managing hundreds of thousands of store employees. Leaving lighting switched on 24/7 and eroding the savings retailers realise by utilising LED alternatives.

There are also dynamic variables to consider. Periods of low footfall or increased trading during peak times, product restocks throughout the night and seasonal increases or decreases in natural light throughout the year. Each of these variables impact the level of brightness required from instore lighting and deliver energy savings if adjustments are made accordingly.

However, relying on staff preoccupied with serving customers, stock management and product merchandising to manually adjust lighting is an unachievable and ineffective energy management process for any retailer to undertake.



Andrew Williams, CEng
LoweConex Data &
Analytics Director

An Astro Physicist by trade with a masters in Data Analytics, Andrew has created a career helping businesses get data-driven results. For over a decade he has been focused on energy consumption reduction, delivering intelligent and cost-saving insights to the world's largest retailers.



Night blind usage can cut energy consumption by up to 2.3kWh per unit, per day.

Night blind use

Night blind usage is underutilised within asset energy management, with 30-50% implementation across retailers great and small.

Night blinds are used on refrigeration units to reduce the escape of cold air, minimise warmer ambient air from entering and ensure contained cold air can circulate throughout the cabinet in optimum conditions.

As a result, reducing the refrigeration load reduces energy consumption by up to 2.3kWh per unit, per day.

Overstocking cabinets and cold rooms

When refrigeration cabinets and cold rooms are overstocked with perishable products, airflow into and within the unit is restricted. These restrictions affect the effective distribution of refrigerated air and compromise the performance of refrigeration systems as they attempt to maintain specified cooling parameters.

Leading to increased energy consumption as refrigeration systems are forced to compensate for the inefficiencies introduced by running harder and longer to attempt to maintain specified temperatures.

Side effects can also be extended to stock loss as refrigeration systems are not designed to compensate for inefficient cooling caused by overstocking, which can lead to perishable products not receiving the cooling they require to maintain food safety requirements.

Closure of refrigeration and cold room doors

In an average retail store, refrigeration and cold room doors can open between 4,000 - 5,000 times per day. With cold room doors left open on average 1-2 hours at a time.

Refrigeration and cold room doors work similarly to night blinds by keeping cool air in and warm ambient air out. By maintaining a constant circulation of cold air within the unit, closed doors enable continual compressor run time to be reduced and energy savings to be achieved.

However, cooling is not maintained when doors are left open and warm ambient air enters. If doors are not closed in a timely manner, temperatures inside refrigeration units and cold rooms will rise rapidly. And besides the risks of temperatures exceeding the food safe range, refrigeration systems once again need to work harder for longer to cool ingressed warm ambient air, increasing energy consumption.

Breakdown and maintenance procedures

Implementing asset running parameters that minimise energy consumption is a key energy management practice retailers can employ to drive efficiencies.

However, third-party contractors or engineers entering stores to perform breakdown maintenance are often unaware of these measures and adjust parameters to offer fixes at the cost of efficient energy consumption. This is especially true if engineers are under pressure to implement quick fixes.

Eroding the energy performance of retail estates over increasingly shortened periods of time via asset setting inconsistencies across fleets of 1000s of assets, across 1000s of stores.



Technology's role in mitigating the challenges of instore environments

While the tasks needed to save energy across retail estates may seem overwhelming, advances in internet of things (IoT) technology can help to mitigate the challenges presented by instore behaviour.

Thanks to groundbreaking developments at LoweConex, IoT software is now empowering retailers to tackle wasted energy using:

- accessible and real-time data
- centralised visibility and control
- personalised automation at scale
- smart efficiency protocols

Cutting-edge technology delivering cost saving energy reductions

Unified data platform

A visually reactive IoT software platform that enables retailers to easily access data from every asset, system and device in a centralised location. Held in a patented 360° data sphere and collected every 60 seconds, your data analysis is enriched via intuitive dashboards and overlay graphing tools that highlight previously unrealised impacts on energy usage by connecting previously unrelated data points. Allowing retailers to understand meaningful insights in real-time, 24/7/365.

Smart automation & dynamic control

Informed by real-time data and instantly implemented remotely using two-way communication technology, smart automation rules turn manual tasks into mass automated actions. Choose from a regularly reviewed library and activate or deactivate automation triggers based on changes in store behaviour or environmental conditions for dynamic remote control that ensures continually optimised energy efficiency.

Energy saving initiatives

Choose from a suite of IoT powered initiatives that simplify achieving energy savings at scale. From setpoint standardisation to setpoint lockdown, remote switch-offs to triad avoidance and virtual battery, each program is designed to impact in isolation or complement in combination.

Live energy consumption dashboards

Feature-rich and intuitive in-system dashboards help retailers track live energy consumption 24/7/365, benchmark consumption by asset type, understand asset energy consumption patterns and detect anomalies on first occurrence

Real-time reporting

A suite of automated energy reports enable retailers to easily obtain formatted data for further analysis, meet department or sustainability compliance requirements and demonstrate delivered energy savings.

Setpoint lockdown

Once asset setpoints are approved and allocated, lockdown functionality ensures alterations cannot be implemented without granted permissions. Protecting energy and cost savings achieved through ongoing optimisation or setpoint adjustments until asset decommissioning.



Retailers who use this time to transform their in-store sustainability strategies can turn crisis talks into success stories.

Retail stores are complex environments, that are subject to constantly changing variables. While in-store staff behaviours may seem less significant than the unprecedented challenges retailers are facing in the form of rapidly escalating energy costs and pivotal pressures on sustainability strategies, they have overlooked influence on the factor contributing to each of these crisis points – energy wastage.

By focusing on in-store behaviours and their impact on energy wastage, retailers will understand how to minimise unnecessary consumption and maximise cost savings that also deliver carbon reductions. And today's advancements in IoT technology are giving retailers the intelligent insights and technical tools needed to make it happen.

Despite current uncertainties, retailers who use this time to reshape and truly transform their in-store sustainability strategies can turn crisis talks into success stories that are reshared for years to come.

Who to talk to

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This insight is brought to you by LoweConex

We are technology innovators leading the development of a new generation of IoT systems and streamlined processes created to help retailers make significant energy savings and carbon emission reductions.

We make sustainability achievable at pace and scale, leading to substantial cost savings for our clients.

Our flagship LoweConex system is an advanced energy optimisation software and hardware suite supported by a dedicated Bureau of retail specialists, energy management experts and data scientists.



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