Reduce carbon in the real world

A data-driven approach to lower carbon, reduce costs, and maximize building performance



Executive Summary

Life Is On Schneider Electric

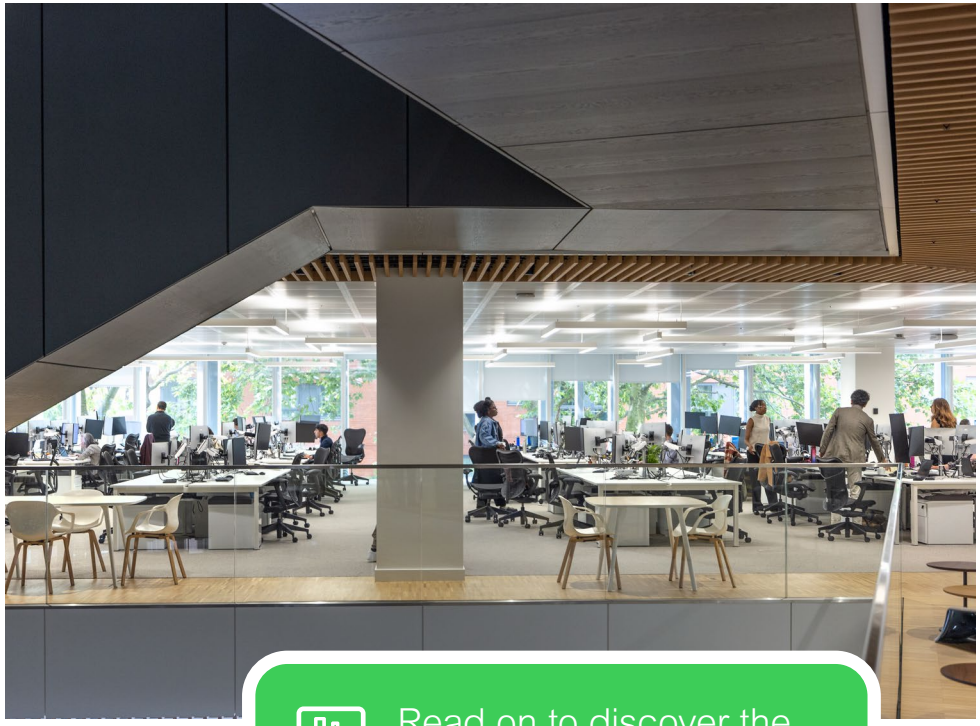
Smart, sustainable, and future-ready

Commercial office buildings must become more intelligent, resilient, and responsive to more easily adapt to the evolving needs of owners, tenants, and occupants.

Industry requirements drive owners to improve energy performance outcomes and lower carbon emissions, which building owners can achieve by optimizing operations with smart building technology and energy conservation measures (ECMs).

> **Schneider Electric™ partnered with Sidara**, a global collaborative of design, engineering, and consulting firm specialists, to conduct a technical research study at Sidara's regional headquarters, 150 Holborn in London, United Kingdom, to **quantify the impact of ECMs on operational energy use and carbon.**

The study evaluated the impact of occupancy setbacks (a type of ECM) in conference rooms to determine what energy efficiency, carbon reduction, and other benefits might be gained from occupancy-based room conditioning.



Read on to discover the **results** and key insights, and get a **link** to the white paper for a full analysis.

Project background

150 Holborn is a new construction, state-of-the-art workplace adhering to high sustainability standards in its design and operation, including supporting Sidara's net-zero goals.

> The project vision was to provide an exceptional people-centric experience for Sidara's employees, staff, and visitors, focusing on occupant well-being.

To help deliver on these objectives, the building is configured with smart building technology and infrastructure, including a modern building management system (BMS) integrated with a network of sensors and controls.

This system adapts dynamically to occupant usage patterns and environmental conditions. The technology works in concert with ECMs to deliver better energy performance outcomes.

Read the full story or watch the video to learn more about **150 Holborn**.

About 150 Holborn

Opened: Early 2023

Size: 18,500 square meters (200,000 square feet)

Floors: 9

Occupant capacity: 1,000



Research scope and intent

The Schneider Electric team defined the research scope to focus on one specific meeting room as the unit of measure. This approach provides building owners with a simple and transversal example they can relate to and help drive a clearer understanding of the impact of ECMs on operational energy and carbon compared to a more complex “whole building” energy analysis.

With these parameters established, the research was structured in two parts:

Part 1: Occupancy and well-being analysis

Part 2: Operational energy and carbon analysis

The analysis used datasets collected in January and February of 2024 after the building had experienced a full year of operation and occupancy. This timing allowed for conventional system and equipment adjustments and modifications, establishing a normal operating dynamic.



Methodology highlights

Part 1: Occupancy and well-being analysis

The study focused on Room 111, which has a 14-person capacity and is located on Level 1 of the building's east wing.

The room is equipped with ceiling- and wall-mounted sensors connected to the BMS to capture data points, including occupancy sensing, people counting, and indoor air quality (IAQ) attributes such as CO_2, relative humidity (RH), and volatile organic compounds (VOCs).

- The room's setback protocols are configured to modify temperature set points within a 4-degree range based on occupancy.
- During winter, the room temperature set point "sets back" to 18°C (64°F) when unoccupied and adjusts to 22°C (72°F) when occupied. Lighting levels are also adjusted to on/off based on the occupancy state.



Methodology highlights

Part 2: Operational energy and carbon analysis

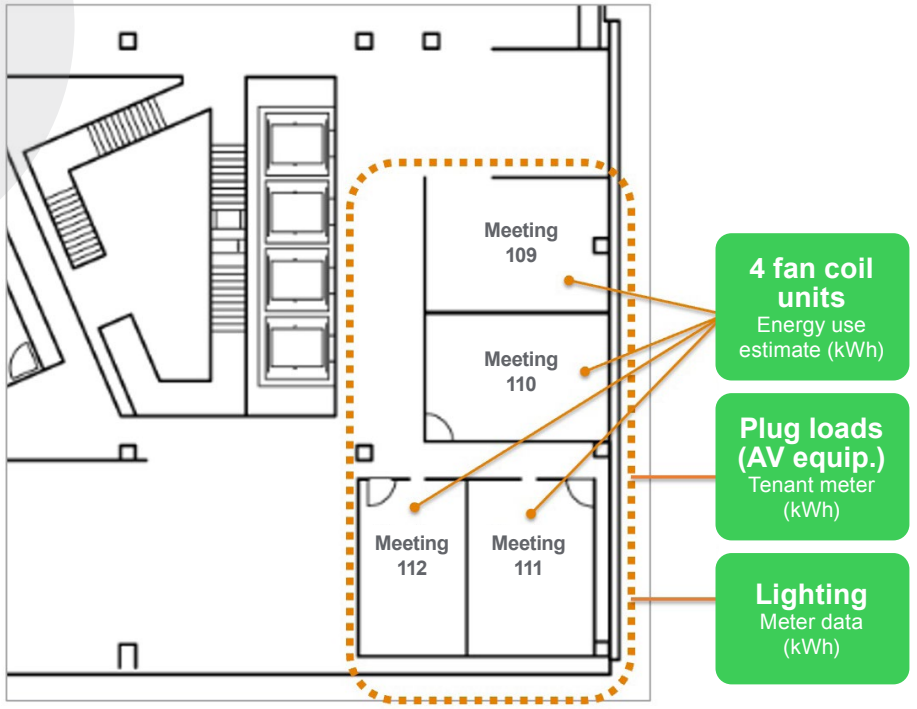
To better understand operational energy use and carbon emissions, the team expanded the area of study to include three adjacent meeting rooms.

It evaluated all four meeting rooms together as one unit and created a bottom-up estimate:

- Using meter data associated with plug loads and lighting in the east wing of the building.
- Making assumptions about the energy use of fan coil units (FCUs) based on the equipment's specifications and occupancy data in the spaces.

Note: The analysis intentionally excludes larger HVAC elements, focusing only on specific meter data and equipment associated with these rooms.





The results

The study persuasively shows that building owners have an opportunity to make their commercial office buildings more energy and carbon-efficient and more responsive to occupant needs by integrating smart building technology in concert with ECMs:

Occupancy setbacks delivered double-digit savings of 22% on average, for operational energy use and carbon across the four meeting rooms during business hours and when comparing high vs. low occupancy days.

Occupancy analysis showed that 76% of the time Room 111 remained in an energy-efficient state during business hours, on average, due to setbacks during the period of study. This saves energy and extends equipment lifespan in the space, lowering embodied carbon by delaying equipment replacement.

Occupant-centric building management can align with energy efficiency and carbon objectives. Setbacks enabled the meeting rooms to respond to occupant demand while maintaining healthy ranges for IAQ attributes like CO_2, RH, and VOC, creating a comfortable occupant experience.

The payback period for the four meeting rooms is about two years.

More fundamentally, a building owner and manager should recognize the economic value of having access to more detailed data on occupancy, people count, and indoor air quality. The insights from these data are essential to driving better operational and occupant-centric outcomes.

Note: These findings are specific to the study's limited scope and cannot be generalized to the entire building. Instead, they demonstrate the potential impact of applying similar solutions to larger areas or additional use cases.

The EcoStruxure™ ecosystem behind the success

150 Holborn's success is powered by the **Schneider Electric EcoStruxure platform**, a robust, IoT-enabled system that seamlessly integrates connected devices, edge control, and analytics.

Key components in the research project include:

- **EcoStruxure Building Operation**: Modern BMS collects data from all interconnected subsystems (BMS, power monitoring, lighting, fire, security, etc.).
- **EcoStruxure Building Data Platform**: Orchestrates smart building technology and systems to enable the application of setbacks.
- **EcoStruxure Connected Room Solutions**: SpaceLogic Insight-Sensor (ceiling) and SpaceLogic Living Space (wall) sensors monitor occupancy and IAQ attributes (CO_2, RH, VOCs).
- **Planon Room Booking**: Combines building data with user activity for space optimization and improved occupant experiences.

> These solutions work together to create a responsive, energy-efficient building that advances sustainability goals while enhancing occupant comfort.



Full EcoStruxure solution at 150 Holborn

Unlock your building's potential with Schneider Electric

These real-world results prove that reducing carbon emissions can go hand-in-hand with enhanced occupant comfort and operational efficiency and that smart building technologies are necessary for achieving sustainability and efficiency goals.

Schneider Electric's **EcoStruxure platform** empowers businesses to:

- **Lower carbon emissions** through energy-efficient operations
- **Enhance occupant comfort** with responsive, data-driven systems
- **Achieve a rapid ROI** to increase building value

Learn more about how Schneider Electric can help decarbonize your commercial building

- **Download the white paper**: Reduce carbon in the real world: Occupancy setbacks deliver big impact for commercial offices. **Download**
- **Learn more about Sidara and 150 Holborn**: Read the story and watch the video. **Learn more**
- **Contact us:** Get personalized recommendations for your building. **Contact us**



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About Schneider Electric

Schneider's purpose is to create Impact by empowering all to make the most of our energy and resources, bridging progress and sustainability for all. At Schneider, we call this Life Is On.

Our mission is to be the trusted partner in Sustainability and Efficiency.

We are a global industrial technology leader bringing world-leading expertise in electrification, automation, and digitization to smart industries, resilient infrastructure, future-proof data centers, intelligent buildings, and intuitive homes. Anchored by our deep domain expertise, we provide integrated end-to-end lifecycle AI-enabled Industrial IoT solutions with connected products, automation, software, and services, delivering digital twins to enable profitable growth for our customers.

We are a people company with an ecosystem of 150,000 colleagues and more than a million partners operating in over 100 countries to ensure proximity to our customers and stakeholders. We embrace diversity and inclusion in everything we do, guided by our meaningful purpose of a sustainable future for all.

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