Building Atlas

The Beauty in "Boring" Buildings: The Business Case For Retrofit Beyond Flagship Assets





Contents:

Foreword 4

Introduction 5

Flagship Projects 6

- Greenhouse, Leeds 6
- 7 Air Street, London 7

The Allure and Limits of Flagship Retrofit Projects 8

- Why Flagships Aren't Templates 9
- The Hidden Cost of "Outlier" Ambition 9
- What Other Interventions Could Result in Similar Carbon Savings? 10
- From Exceptions to Rules: A Reality Check 11

The Diminishing Marginal Impact of Retrofit Investment 12

The Need for Rigorous Cost-Benefit Analysis 13

- 1. Tiered Retrofit Prioritisation 13
- 2. Context-Specific Benchmarking 14
- 3. Holistic Value Capture 15

Conclusion 16

About Building Atlas 17

Foreword

Year after year, we hear a similar story about our buildings: we are not on track to meet Paris Agreement targets. As of the UN's most recent data, energy consumed by buildings is responsible for 21% of global greenhouse gas emissions. In the race to overcome this behemoth challenge, it is the quiet, unglamorous, scalable work that will ultimately matter most.

At Building Atlas, we launched with a clear mission: to help real estate stakeholders navigate the monumental $21 trillion stranded asset risk posed by environmentally underperforming buildings. Along the way, we've come to appreciate a hard truth: most retrofit investment today flows to high-profile buildings. These "flagship" projects are valuable, yes, but they're just the tip of the iceberg.

In this report, we unpack the economic and environmental rationale for shifting focus from the awe-inspiring to the replicable. We quantify the hidden opportunity sitting across the UK's long tail of overlooked commercial assets. These are the suburban offices, the mid-century retail boxes, the regional warehouses. Unglamorous, unloved, and critically – untapped. They represent the bulk of our non-domestic building stock and, in many cases, the best bang-for-buck climate investment the real estate sector can make. For every flagship building retrofit that earns an "*Outstanding*" certification at extraordinary cost, there are thousands of "*boring" buildings* that provide superior environmental and financial returns.

We hope this research prompts real estate leaders, investors, and policymakers to reframe the conversation – from exceptional outcomes to systemic ones. From chasing perfection to funding impact.

Because the beauty in a greener built environment is hidden in some of its most boring buildings.

Nick Taylor
CEO, Building Atlas

"The beauty in a greener built environment is hidden in some of its most boring buildings."



Introduction

Energy efficiency improvements in UK commercial buildings have never been more urgent. While many of the world's countries have committed to net zero greenhouse gas emissions by 2050, it is estimated that half the world's 2050 building stock already exists.[1] Among highly developed economies such as the UK, estimates range from 72 to 80 percent of 2050's building stock already being in existence.[2] As of the end of 2024, only 22.2% of UK buildings complied with future energy efficiency standards (EPCs of B, A, and A+), resulting in 77.8% facing stranded asset risk (C and below).[3] At the current retrofit rate for the commercial building stock of approximately 1-1.5% per year,[4] it would take the remainder of the 21st century to achieve the UK's 2050 building decarbonisation targets.[5]

Retrofitting existing structures presents a significant opportunity to reduce energy consumption, lower operating costs, and contribute to key environmental and sustainability goals. However, the financial implications of such projects are critical, as is a nuanced understanding of the relationship between financial investment and energy savings.

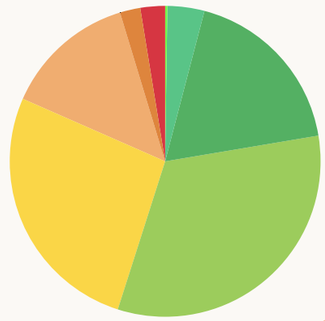
This paper discusses a common phenomenon in the industry of prioritising high-profile retrofit projects in flagship buildings. Although such projects have been vital for elevating the retrofit agenda, we argue they often result in lower environmental or financial benefits than investing equally in the 99% of non-domestic buildings we categorise as the "boring" long tail.

As an illustrative example of the "boring" long tail, a proprietary analysis by Building Atlas shared in this report identified the opportunity to reduce a real estate portfolio's carbon footprint by 351 tCO2 without disrupting occupiers, and with a payback period of just 1-2 years. **This set of non-invasive projects is equivalent to taking 250 cars off the road for a year, and represents an IRR as high as 92%.**

Reinforced by a 2023 report by the UK Green Building Council, we highlight the importance of diminishing marginal returns in the context of energy efficiency retrofits – particularly with the knowledge that 90% of a project's carbon savings can be achieved at 60-70% of the cost. This report advocates for a pragmatic, ROI-driven approach to retrofit decision making.

2024 Commercial EPC ratings

- A+ - 0.2%
- A - 3.8%
- B - 18.2%
- C - 32.6%
- D - 26.8%
- E - 13.7%
- F - 2.1%
- G - 2.5%



[1] World GBC. n.d. The Problem with Net Zero: Existing Buildings. Accessed 09 May 2025.
[2] Lower range estimate: Graham, 2024. Higher-range estimate: McKinsey, 2021.
[3] According to Building Atlas' analysis of MHCLG (2025) data.
[4] UKGBC. 2024. Building the case for Net Zero: Retrofitting Office Buildings.
[5] Khroustaleva, O.; Xiong, L.; & Graham, L. 2025. Has UK CRE entered a panic retrofit era?. The Property Chronicle. Published 03 March 2025.

Flagship projects

The commercial real estate sector has for the past decade gravitated towards high-profile, flagship buildings when it comes to retrofit projects and energy efficiency technologies. We provide two illustrative examples: 7 Air Street (London) and Greenhouse (Leeds).

Undoubtedly, both of those projects are great examples of how retrofit can be undertaken cost-effectively. We have roughly estimated takeaway metrics of the projects, showcasing the cost-saving and value-creation potential of retrofitting buildings. Further project details are provided below.

Metric	Greenhouse, Leeds	7 Air Street, London
Energy savings	~60%	50-60%
Carbon reduction	~80%	~70%
Payback period	10-15 years	8-12 years
Cost per tonne CO^2 saved	£50-100	£75-120
Financial ROI	Moderate (long-term savings)	High (rental premiums)

Greenhouse, Leeds

Originally constructed in 1938, Shaftesbury House was redeveloped and reopened in 2010 as 'The Greenhouse'. This eight-story mixed-use development comprises 172 eco-apartments and approximately 13,000 sqm (136,000 sqft) of office space. The redevelopment aimed to transform the structure into a model of sustainable urban living.



Greenhouse Retrofit Project Summary:

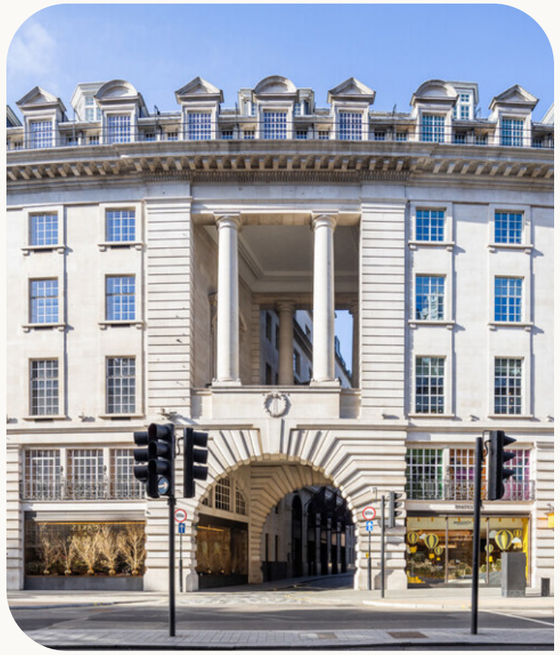
The retrofit focused on enhancing energy efficiency and sustainability through several key interventions: high-performance insulation; renewable energy integration in the form of solar water heating and ground source heating; a central heat exchange system; and sensor-controlled energy-efficient lighting.

The overall renovation cost was approximately £12.5 million.[6] The retrofit led to a 60% improvement in energy efficiency, significantly reducing operational costs. The project purportedly saves 169 tonnes of annual carbon emissions, was estimated to reduce energy costs by £30k–50k annually, and unlocked a further 10-20% increase in property value.[7] The project has been internationally recognised for its innovative approach to sustainable urban living.

[6] Barker, K. 2014. Energy independence for Leeds housing scheme. Construction News. Published 02 April 2014.
[7] Architects Journal. 2011. Greenhouse, Leeds by West and Machell Architects. Published 02 March 2011.

7 Air Street, London

Situated on the edge of London's Soho, 7 Air Street is a Grade II listed building constructed in the early 1920s. As part of The Crown Estate's Quadrant development, it was commendably redeveloped to provide modern office and retail spaces while preserving its historic façade.



7 Air Street Retrofit Project Summary[8]:

The retrofit aimed to achieve high sustainability standards through various measures: a unique energy centre powered by fuel-cell technology, saving more than 350 tonnes of carbon emissions annually while providing power to 500,000 sqft of commercial and residential accommodation along Regent Street; energy-efficient air conditioning systems; LED lighting systems; and a 23 kW rooftop solar panel array that contributes to the building's renewable energy generation.

While specific cost figures are not publicly disclosed, it's noted that the sustainable features possibly added about 3% to 5% to the overall budget.

The building achieved a BREEAM "*Outstanding*" rating with a score of 94%, making it the first listed building to attain such a rating under BREEAM New Construction 2011. Post-completion, 7 Air Street was 80% let just eight weeks after its completion, exceeding expectations, and was estimated to have increased asset value by ~15-25% post-retrofit. The project has been celebrated for integrating sustainability within a heritage context.[9]

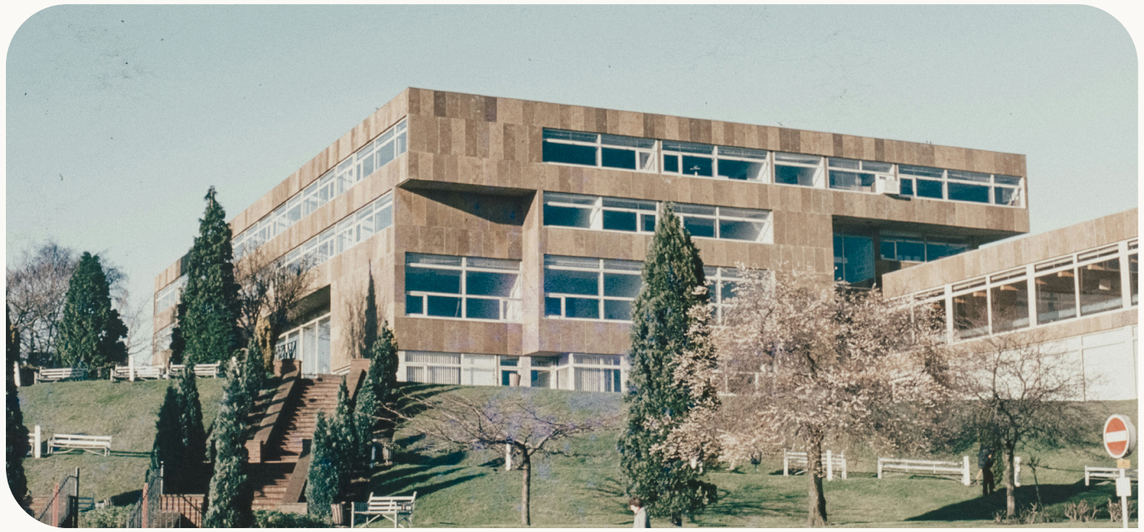
[8] Ijeh, I. 2016. 7 Air Street: A breath of fresh air. Building.co.uk. Published 10 March 2016.
[9] Better Buildings Partnership. 2016. The Crown Estate's 7 Air Street Wins Sustainable Building of the Year Energy & Environment Award. Published 27 May 2016.

The Allure and Limits of Flagship Retrofit Projects

The retrofitting industry, much like architecture and urban planning, is drawn to iconic projects that capture public imagination. Pioneering flagship developments like Greenhouse and 7 Air Street have become emblematic of sustainable retrofits – showcasing cutting-edge technologies, heritage preservation, and double-digit carbon reductions. Yet flagship projects represent just a tiny percentage of the UK's commercial real estate stock. According to ND-NEED[10] data, approximately 6% of UK non-domestic buildings are 10,000 sqft or larger. Assuming approximately 15% of these constitute "flagship" property status, less than 1% of the UK's non-domestic building stock would attract flagship status.

Their very uniqueness raises a critical question: can these ambitious projects serve as models to scale retrofits to the UK's 29 million ageing stock of "boring" non-domestic and domestic buildings? Or do they instead represent exceptions rather than blueprints?

For ordinary buildings – think 1970s suburban offices or mid-tier retail parks – such investments are financially untenable. Achieving systemic decarbonisation requires redirecting funds from "flagship projects" to high-volume retrofits where time-tested, replicable measures ranging from LED lighting to heat pumps and from weather-proofing to intelligent energy controls deliver greater carbon savings per pound spent.



[10] Non-domestic National Energy Efficiency Data-Framework. Gov.uk. 2024.

Why Flagships Aren't Templates

Both projects benefited from unique factors that limit mass replicability:

Greenhouse, Leeds (2010): As an early ESG trailblazer, it capitalised on post-2008 green stimulus funding and avoided today's inflated material costs. Its 60% energy savings relied on then-novel solutions (ground-source heating, sensor lighting) that are now standard – yet its £12.5M budget (≈£19M today) would be prohibitive for typical 1930s conversions.

7 Air Street (2013): Its success hinged on unique assets: a Grade II façade (avoiding costly structural overhauls), proximity to a Crown Estate energy grid, and prime West End rents justifying a sustainability premium.

The Hidden Cost of "Outlier" Ambition

While these projects achieved impressive sustainability metrics, their marginal costs reveal diminishing returns:

Greenhouse's final 10% energy savings (from 50% to 60%) likely required 40% of its budget.

7 Air Street's fuel-cell system saved 350tCO_2 annually, but demanded bespoke engineering, which translates to a £75–120 per tonne of carbon reduction – triple the UK's 2024 "market traded carbon value" of £37/tCO_2.[11]

[11] "Market traded carbon value" is used by the UK Government to model the price of carbon emissions. More information can be found at Dept for Energy Security and Net Zero. Traded carbon values used for modelling purposes, 2024. Published 17 December 2024.

What other interventions could result in similar carbon savings?

At Building Atlas we have been approached to analyse retrofit opportunities for 1,300 GP practices in Greater London. It's a whole mix of building types, ranging from large health centres to small house-like structures occupied by a single doctor. Most of them can be safely classified as "boring buildings".

Our proprietary models are able to predict cost, energy and carbon impacts of a variety of retrofit measures for any non-domestic building. When we ran the analysis to see how to reach **350tCO_2** annual savings – to match the carbon benefits of 7 Air Street retrofit – our platform suggested a series of 45 smaller interventions across multiple practices. These projects range from intelligent energy optimisation, to smart thermostats, to a BMS system, to lighting upgrades. While individually these measures shave off just a few percent of energy use for each building, together they compound to something greater: **351 tonnes** of annual CO2 savings, **2,110 MWh** of energy savings each year, and a payback period of just 1 to 2 years (or an IRR between 46% and 92%). As a result, there is only short-term cost to decarbonisation, resulting in earnings supported by energy savings, in the range of **£800 per tonne** of carbon reduction.

These retrofit measures are non-invasive and can be installed without any delay, while the buildings are occupied, compounding carbon reduction benefits far into the future.



From Exceptions to Rules: A Reality Check

Flagship buildings serve vital roles as innovation test beds and market signals, but their lessons and results must be contextualised:

Temporal Advantage

Early movers like Greenhouse benefited from lower costs and first-mover subsidies absent in today's market.

Location Premium

7 Air Street's 15–25% valuation uplift reflects its Mayfair adjacency – a perk unavailable to a Bradford office park.

Tenant Demographics

ESG-driven tenants (e.g., tech firms) cluster in hubs like London and Leeds, creating self-reinforcing demand for premium buildings.



The challenge lies not in replicating these outliers but in identifying scalable principles – such as phased implementation and systemic upgrades – that apply across portfolios. This demands a shift from chasing "*Outstanding*" to optimising "Good Enough" at scale, ensuring retrofit funds maximise carbon reduction per £1 invested. The key to success turns from bespoke engineering solutions to being able to find the right combination of well-established retrofit measures across thousands of buildings, unlocking the highest financial and carbon ROI.

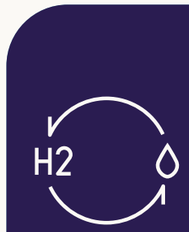
The Diminishing Marginal Impact of Retrofit Investment

The law of diminishing marginal returns is a critical economic principle often overlooked in the enthusiasm for "green premium" retrofits. In energy efficiency projects, the relationship between investment and carbon savings is rarely linear. Early-stage interventions – such as basic weather-proofing, LED lighting replacements, intelligent energy controls, or HVAC optimisations – typically deliver the highest returns per pound spent, often achieving 20–40% energy savings with relatively low upfront costs.

However, as buildings approach higher efficiency thresholds, the cost-to-benefit ratio deteriorates sharply. For example:



High-performance glazing (e.g., triple-pane windows) might reduce energy loss by an additional 10%, but often at a higher cost per kWh saved compared to basic weather-proofing.



Advanced renewable systems (e.g. geothermal boreholes or hydrogen-ready fuel cells) can push operational carbon reductions to 80–90%, but with payback periods exceeding 20 years – a timeline misaligned with typical commercial real estate investment horizons.

This phenomenon is evident in flagship projects like 7 Air Street, where the final 10–15% of carbon reductions (e.g., bespoke fuel-cell integration) likely required disproportionate investment, compared to structural upgrades like façade retention or smart HVAC controls.

Critically, the pursuit of "outlier" performance metrics (e.g., BREEAM *Outstanding* certifications) often prioritises symbolic environmentalism over systemic impact. A 2023 study by the UK Green Building Council found that retrofits targeting mid-tier BREEAM "Excellent" ratings achieved 90% of the carbon savings of "*Outstanding*" projects at just 60–70% of the cost, highlighting the steep marginal costs of chasing "best-in-class" status.[12] A 2022 report by the World Green Building Council found that retrofits targeting 50–70% carbon reductions achieved 3x better ROI than "deep green" projects aiming for 80–100% reductions.[13]

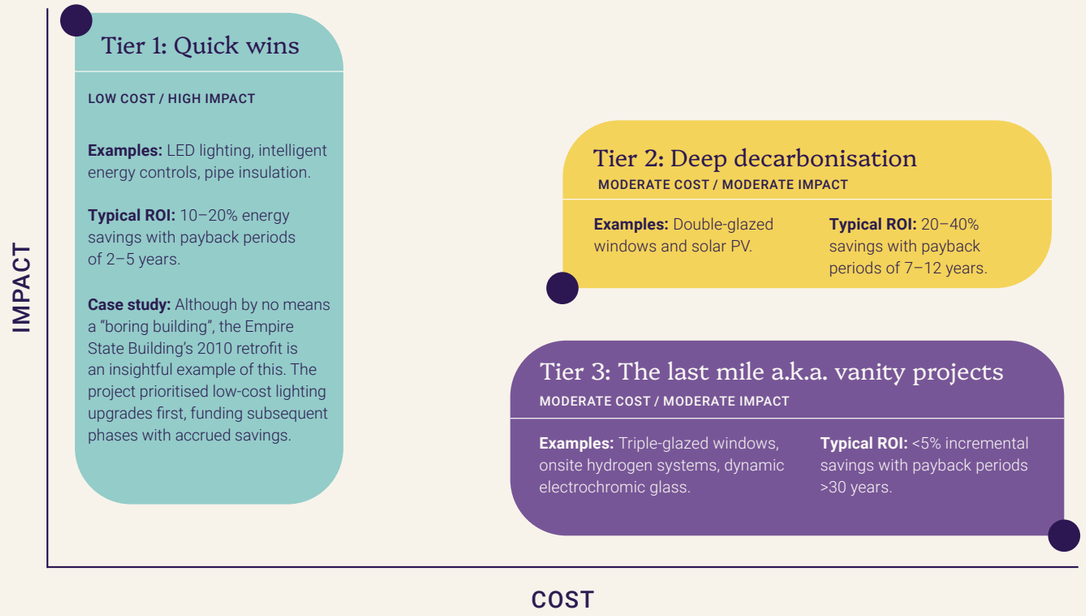
[12] UK Green Building Council (UKGBC), Net Zero Carbon Buildings: A Framework Definition, July 2023, https://www.ukgbc.org/ukgbc-work/net-zero-carbon-buildings-framework/
[13] World Green Building Council, Global Decarbonisation Accelerator (2022), https://worldgbc.org/article/global-buildings-climate-tracker-2022/.

The Need for Rigorous Cost-Benefit Analysis

To avoid the trap of diminishing returns, retrofit planning must adopt a value-engineering mindset that balances ambition with financial pragmatism. This approach maximises impact across the whole portfolio rather than focusing on maximising performance of individual assets, and covers three aspects:

1. Tiered Retrofit Prioritisation[14]

A tiered approach to retrofit prioritisation focuses the most impactful, easy to implement measures before moving to more complex projects.



This cost-benefit dynamic is instrumental to the business case for Building Atlas, ensuring that across a portfolio, low-hanging fruit retrofit interventions are prioritised in a systematised way.

[14] Savills UK, Prime Office Rent Premiums for Sustainable Buildings (2023), https://www.savills.co.uk/research_articles/229800/329532-0.

2. Context-Specific Benchmarking

Unique attributes of buildings affect the viability of different interventions. For example, heat pumps require grid capacity. Solar installations require space on the roof or other areas. Heritage factors affect a building's façade.

At a portfolio level, owners and asset managers deploying a "one-size-fits-all" approach to retrofits risk neglecting geographic disparities in energy costs, carbon intensity, and tenant expectations. For instance:

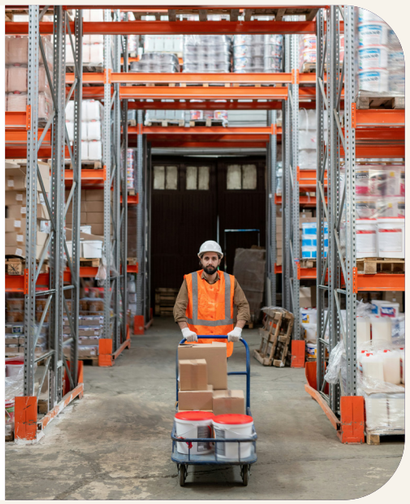
London Prime Offices

London Prime Offices: High occupancy rates and rental premiums can justify advanced retrofits. Typically retrofits happen during large-scale building renovation, whilst buildings are empty, to a high overall standard. Prime buildings often now demand extra amenities as well as energy-efficiency measures.



Regional Retail/Industrial

Lower rental yields demand a focus on Tier 1 and Tier 2 measures. The UK's Building Efficiency Accelerator found that regional warehouses achieved 35% energy savings through basic insulation and motion-sensor lighting at approximately 10% of the cost of flagship office retrofits.[15]



[15] UK Building Efficiency Accelerator (BEA), Case Study: Warehouse Retrofits in the Midlands (2021), https://www.wri.org/initiatives/building-efficiency-accelerator.

3. Holistic Value Capture

While energy savings are quantifiable, retrofits generate hidden financial and social returns that traditional ROI models often undervalue:

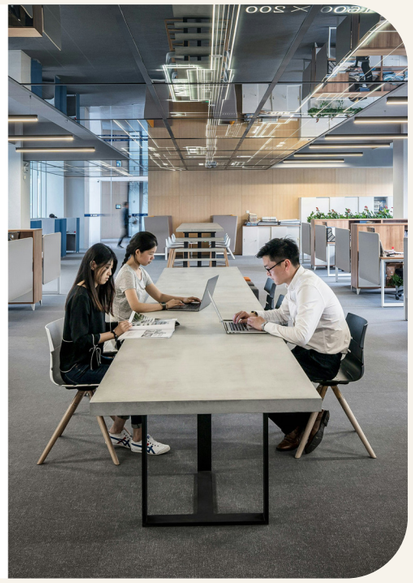
Regulatory Future-Proofing

With the UK's EPC B mandate by 2030, early movers protect their assets from stranding and avoid prohibitively expensive "panic retrofits" later.



Occupant Productivity

A 2022 Harvard study linked optimised thermal comfort and daylighting to 10–15% gains in cognitive performance.[16]



[16] Harvard T.H. Chan School of Public Health, Cognitive Function and Building Design (2021), https://forhealth.org/9_Foundations/9_Reports_and_Articles/Cognitive_Function.pdf.

Conclusion

Retrofitting commercial buildings for energy efficiency is a vital step towards a sustainable future. However, it is crucial to recognise the diminishing marginal impact of retrofit investment and adopt a sensible, cost-benefit-driven approach. By prioritising cost-effective measures and setting realistic energy-efficiency targets, building owners and operators can achieve significant energy savings while ensuring a positive return on investment.

In summary - we recommend portfolio owners examine the "Boring" buildings in their portfolios, as this is where they may find the biggest savings, for the lowest cost.



About Building Atlas

Building Atlas was founded in 2023 to tackle the built environment's $21 trillion stranded asset risk from environmentally underperforming buildings. We empower real estate professionals with actionable portfolio insights into the most financially and environmentally impactful building retrofits. Our team combines technology, sustainability and buildings engineering expertise from some of the world's leading corporations and academic institutions.



Building Atlas