

TECH & AI CASE STUDY - COMMERCIAL REAL ESTATE - 2026

# IoT Smart-Building Platform That Cut Energy Costs 26% Across 18 Towers

Based on a delivery engagement with Meridian Spire Properties

**-26%**

PORTFOLIO ENERGY COST

**-31%**

HVAC RUNTIME

**-40%**

COMFORT COMPLAINTS

**14 months**

PAYBACK PERIOD

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A fillable practice edition: the full story, 8 actions,  
6 reflections and a 90-day plan - work it with your team.

**Free - no email required**  
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## MAKE THIS PRACTICE BOOK YOURS

**Work it, do not just read it**

This practice book turns the Meridian Spire Properties case study into a working session for your team. Read the full story first - what happened, what was built and what it changed. Then tick the 8 actions you can commit to, write short answers to the 6 reflections, and finish with a 90-day plan. Every field in this PDF is fillable: open it in Adobe Acrobat Reader, Chrome, Edge or macOS Preview, type directly into the boxes and save.

|           |                   |
|-----------|-------------------|
| YOUR NAME | ROLE              |
|           |                   |
| COMPANY   | TEAM / DEPARTMENT |
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| DATE      | EMAIL (OPTIONAL)  |
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MY GOAL FOR THIS PRACTICE SESSION

- 01 The story** - What happened at Meridian Spire Properties - before, during and after the project.
- 02 The results** - The numbers that changed, plus industry benchmarks from public research.
- 03 The 8-action checklist** - Tick boxes as your organization completes each step. Owner and date fields included.
- 04 The 6 reflections** - Fillable questions that pressure-test your own roadmap.
- 05 My 90-day plan** - Three fillable phase cards that turn this case study into your roadmap.

## RUN IT AS A 90-MINUTE TEAM SESSION

|                                                                                                                                    |                                                                                                                                                              |                                                                                                                                                                               |
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| <p><b>25 min</b><br/><b>READ</b></p> <p>Read the story together. Ask everyone to note the one number that surprised them most.</p> | <p><b>40 min</b><br/><b>PRACTICE</b></p> <p>Work the 8-action checklist and the 6 reflections. Assign an owner and a date to every action you commit to.</p> | <p><b>25 min</b><br/><b>COMMIT</b></p> <p>Fill in the 90-day plan. One goal per phase, one number that tells you it worked. Book a review date before you leave the room.</p> |
|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## THE STORY

## What happened, and why it worked

### 01 The Company

Meridian Spire Properties is a REIT holding 18 Class-A office towers across three Sun Belt metros, with a property team measured not on square footage but on net operating income, tenant retention and the kind of institutional reporting that determines how assets trade. In Class-A office, energy is one of the few controllable line items left after taxes and debt service, and it has quietly become a leasing asset as well: corporate tenants now bring sustainability requirements to the negotiating table, and Deloitte's commercial real estate outlook reports that most corporate tenants expect landlords to provide granular energy and sustainability data when leases come up for renewal. Meridian Spire's buildings were well-located, well-leased and, by every external appearance, well-run. Their mechanical systems, however, were running on instructions a decade old.

The US Department of Energy estimates that commercial buildings waste roughly 30% of the energy they consume, much of it from HVAC systems running on stale schedules, and Meridian Spire's portfolio was a case study in how that waste accumulates invisibly. Tenants changed, floors re-leased, occupancy patterns shifted toward hybrid work — while central plants continued to follow fixed schedules written for a tenancy mix that no longer existed. The company was paying, every month, to condition space that was largely empty, and no report in its stack made that visible.

### 02 Where Things Stood

Before Emerson Technology engaged, portfolio energy spend had been climbing 7% a year to \$9.8M while after-hours occupancy sat near 60%. Central plants still ran on fixed schedules written a decade earlier, conditioning half-empty floors through evenings and weekends, and no building system could say which floors were actually occupied at any given hour. Engineering teams learned of equipment failures the way they always had — when tenants filed hot-and-cold tickets — which meant the building was being diagnosed by its occupants, after the discomfort had already been delivered. Simultaneous heating and cooling, stuck dampers and schedule drift were occurring constantly and invisibly, each one a small leak in a large tank.

The reporting burden told the other half of the story. Two anchor tenants representing roughly \$12M in combined renewals had asked for verified carbon and ENERGY STAR data before re-signing — data the property team still assembled by hand from scattered utility invoices, a process measured in weeks of spreadsheet work per cycle. An institutional investor, meanwhile, wanted a decarbonization roadmap tied to operating cash flow, not a brochure. The company could not produce investor-grade environmental reporting because its buildings did not produce the underlying data, and it could not cut energy costs credibly because it had no weather-normalized baseline to prove savings against.

The financial framing that finally forced action was simple. Asset management needed measurable savings within the year, without major capital projects or tenant disruption — which ruled out chiller replacements, plant rebuilds and everything else that consumes a capital committee's patience. Whatever was done had to come out of operating discipline and information, not concrete and steel.

### 03 The Challenge

The challenge was to make 18 heterogeneous buildings behave like one measurable portfolio without disturbing a single tenant. The buildings ran building-management systems from five different vendors, each with its own point naming, its own data conventions and its own quirks, and the portfolio had no common data model that could compare Tower A's performance to Tower B's. Any analytics program built on top of that heterogeneity without fixing it first would produce eighteen disconnected views and no portfolio truth — which is precisely the failure mode that discredits smart-building initiatives.

The second challenge was trust, in two directions at once. Engineers had seen consultant dashboards arrive and die before, and they would not act on automated recommendations until the system proved it could find real faults; tenants, meanwhile, would not tolerate comfort experiments run blind, so any setpoint optimization had to be grounded in direct measurement of the conditions people actually feel. And the timeline compressed everything: with \$12M of anchor renewals in motion and an investor demanding a decarbonization path, the program needed visible, verifiable savings within the year.

### 04 Discovery and Diagnosis

Emerson Technology began with a four-week discovery sprint across a representative subset of towers, combining utility-data analysis, BMS audits and engineering interviews. The first deliverable was a credible baseline: 12 to 24 months of interval utility data pulled for each building and normalized for weather and occupancy, because without that foundation every future savings claim would collapse under CFO scrutiny. The analysis showed the waste was not evenly distributed — it concentrated in after-hours conditioning of under-occupied floors and in a set of recurring mechanical faults the team could already name: simultaneous heating and cooling, stuck dampers, and schedules that had drifted years out of alignment with actual tenancy. The US Department of Energy's estimate that commercial buildings waste roughly 30% of consumed energy, much of it through stale HVAC schedules, matched the pattern in Meridian Spire's own data almost exactly. The systems audit confirmed the integration problem was the project's center of gravity, not an implementation detail. Five BMS vendors meant five vocabularies for the same physical facts, and the audit found buildings where a single zone temperature was recorded under three different point names. Interviews with chief engineers surfaced the trust dynamic plainly: they would accept recommendations from a system that had proven it could find a stuck damper, and they would reject anything that smelled like remote control without local understanding. McKinsey research on smart buildings, suggesting IoT-based analytics can cut building energy consumption by 10-20% with payback periods of two years or less, set the expectation band for what a disciplined program should deliver. The diagnosis concluded with a sequence that shaped everything after: unify the data, prove fault detection read-only, and only then close the loop into control.

### 05 The Solution

Emerson Technology deployed an IoT analytics platform across all 18 towers: roughly 4,800 wireless sensors measuring temperature, CO2, occupancy and equipment vibration, plus meter-level utility data streamed to AWS. The architecture has three layers.

#### The data foundation

The hardest work was integration, and it was done first: a Python pipeline normalized BMS points from five different building-management vendors into one clean data model, translating every vendor's vocabulary into a single naming convention so a portfolio-level question returns a portfolio-level answer. Meter-level utility data streams alongside BMS telemetry, and each building was baselined against 12 months of weather-normalized utility data before any equipment was touched — the reference against which every later savings claim would be

tested. On top of the unified model, the platform auto-generates ENERGY STAR scores and greenhouse-gas reporting for the leasing and investor teams, converting what had been weeks of manual invoice assembly into a query.

### Fault detection first

Fault-detection-and-diagnostics rules run continuously across the portfolio, flagging simultaneous heating and cooling, stuck dampers and schedule drift the moment they appear rather than when a tenant complains. For the first 60 to 90 days the system operated read-only — building trust by finding real problems engineers could verify with their own hands, before asking anyone to act on an automated recommendation. Engineers received per-tower drilldowns in a Next.js dashboard that showed faults ranked by cost, in their own terminology, with the evidence attached. This ordering was a deliberate design decision: analytics that begin by changing how buildings run invite resistance, while analytics that begin by being right earn the right to change how buildings run.

### Closing the control loop

Machine-learning models learned each building's thermal response — how quickly a floor cools, how a tower's central plant behaves under partial load — and publish optimized setpoints and start-stop schedules back to BMS controllers every 15 minutes, so the loop closes in software rather than in a monthly PDF report. Sensors were deployed where tenants actually feel comfort, on tenant floors rather than only in mechanical rooms, because comfort is the constraint that determines how far setpoints and schedules can move. Comfort complaints are tracked as a first-class metric alongside savings, so optimization visibly happened without the tenant experience paying for it. Rollout proceeded tower by tower over eight months, each building sequenced around lease events and engineering bandwidth, proving value at each site before moving to the next.

## 06

## The First 90 Days

Weeks one and two were spent on baselines and integration design: interval utility data for the first six towers pulled and weather-normalized, and the BMS point-naming conventions from all five vendors mapped onto the unified data model. Weeks three through eight delivered the pipeline in production for those towers — the unglamorous, decisive work of translating heterogeneous points, reconciling meters against BMS readings, and building the validation checks that would catch bad data before it contaminated analytics. The first fault-detection rules went live read-only in week six, and within two weeks the system had flagged simultaneous heating and cooling on two floors of the same tower — a fault the chief engineer verified in the mechanical room and later described as the moment his team stopped calling it a dashboard.

Weeks nine through twelve extended the platform to the remaining towers in the first wave, trained the engineering teams on the fault workflow, and began the model-building work: learning each building's thermal response from its own history so that setpoint recommendations would come from the building's behavior, not from a template. A weekly review ritual took hold — open faults, confirmed fixes, dollars recovered — reported against the weather-normalized baseline rather than last year's unnormalized invoices, which made the results defensible to finance from the first month.

The quarter closed with proof rather than promises: dozens of verified faults, a corrected schedule here and a repaired damper there, and the first measured savings landing in the utility accounts. Just as importantly, the anchor-tenant conversations changed gear — the property team could show real interval data and a live path to verified carbon reporting instead of promising documentation they would later have to assemble by hand. The eight-month tower-by-tower rollout was now a matter of repetition, and the repetition was funded by savings the CFO had already seen.

## 07 The Results

Ten months in, the portfolio's core numbers had reset. Weather-normalized energy costs fell 26% across the portfolio — about \$2.5M annually — while HVAC runtime dropped 31% on under-occupied floors. Comfort complaints fell 40% even as setpoints tightened, the combination that proves optimization rather than rationing. Both anchor tenants renewed using the platform's verified carbon reporting, protecting the \$12M in combined renewals that had triggered the program, and the engagement paid back in 14 months. Leasing teams now demo the tenant-facing dashboard in every pitch, and engineers spend their hours fixing faults the system predicts rather than hunting for them.

| METRIC                | BEFORE | AFTER     |
|-----------------------|--------|-----------|
| Portfolio energy cost | -      | -26%      |
| HVAC runtime          | -      | -31%      |
| Comfort complaints    | -      | -40%      |
| Payback period        | -      | 14 months |

The changes behind the numbers reached further than the numbers themselves. The portfolio finally has one truth about its own energy performance, weather-normalized and reviewable monthly, instead of eighteen building dialects and a stack of invoices. The decarbonization roadmap the institutional investor requested now exists in the form the investor asked for — tied to operating cash flow and evidenced by the same platform that produces the savings. Roughly \$2.5M of annual net operating income was added without a single major capital project, and the chief engineers who began as skeptics now run their weeks from the fault queue, because the system proved it finds real problems before it asked them to trust its recommendations.

## 08 What Your Business Should Do

Meridian Spire's playbook works for any landlord, and it begins with evidence rather than equipment. Baseline with weather-normalized utility data: pull 12 to 24 months of interval utility data and normalize for weather and occupancy before touching any equipment, because without a credible baseline, savings claims collapse under CFO scrutiny. Unify BMS data before adding sensors — translate every building-management vendor's points into one naming convention and data model, since heterogeneous integrations routinely consume more project hours than the sensors or analytics themselves. Start with fault detection, not control: run read-only fault detection and diagnostics for 60 to 90 days to build engineer trust, because teams accept automated recommendations once the system proves it finds real problems. Deploy sensors where tenants feel comfort, on tenant floors rather than only in mechanical rooms, since comfort is the constraint that determines how far setpoints and schedules can actually move.

Then convert analytics into money and leases. Close the loop into controllers by pushing optimized schedules back into BMS equipment on an automated cadence — analytics that end in a monthly PDF produce insight, not dollar savings. Engineer savings into lease conversations by packaging verified energy and carbon data for tenant renewals, lender reporting and ESG disclosures, because sustainability proof points now influence leasing outcomes, not just utility bills. Roll out tower by tower, sequencing deployments around lease events and capital plans and proving value at each site before moving on, which keeps engineering bandwidth and tenant goodwill intact. Report monthly against the baseline, publishing weather-normalized savings, comfort complaints and open faults in one scorecard per building — what asset managers review monthly is what site engineers keep improving quarter after quarter. The direction of the market reinforces the math: the US Department of Energy estimates commercial buildings waste roughly 30% of the energy they consume, and Deloitte reports that most corporate

tenants now expect granular energy and sustainability data at renewal — the buildings that cannot produce it are already negotiating from behind.

Before the first sensor is placed, sit with the questions Meridian Spire's leadership had to answer honestly. How much of your portfolio's energy spend goes to conditioning space that is mostly empty after 7 p.m.? Could your engineering teams name the five costliest faults in your buildings right now, or only the loudest tenant complaints? If an anchor tenant demanded verified carbon data before renewing, could you produce it this quarter? Which of your buildings still run on schedules written years before their current tenancy mix existed? What would a 25% energy reduction do to your net operating income and asset valuations? Are you measuring tenant comfort directly, or inferring it from complaint volume after problems have escalated? Bring these questions to your next asset-management meeting with the action checklist in this practice book, and repeat the review each quarter as your tenancy mix, your leases and your investor requirements evolve.

#### REAL-WORLD PROOF & BENCHMARKS

**The US Department of Energy estimates that commercial buildings waste roughly 30% of the energy they consume, much of it from HVAC systems running on stale schedules.** - US Department of Energy

**McKinsey research on smart buildings suggests IoT-based analytics can cut building energy consumption by 10-20%, often with payback periods of two years or less.** - McKinsey & Company

**Deloitte's commercial real estate outlook reports that most corporate tenants now expect landlords to provide granular energy and sustainability data when leases come up for renewal.** - Deloitte, 2024

## THE PRACTICE PAGES

## The 8-action checklist

Work through the list with your team. Tick each box as your organization completes the step, and fill in an owner and a target date so every action has a name and a deadline.

☐

### 1. Baseline with weather-normalized utility data

Pull 12-24 months of interval utility data and normalize for weather and occupancy before touching any equipment. Without a credible baseline, savings claims collapse under CFO scrutiny.

OWNER

TARGET DATE

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### 2. Unify BMS data before adding sensors

Translate every building-management vendor's points into one naming convention and data model. Heterogeneous BMS integrations routinely consume more project hours than sensors or analytics themselves.

OWNER

TARGET DATE

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### 3. Start with fault detection, not control

Run read-only fault detection and diagnostics for 60-90 days to build engineer trust. Teams accept automated recommendations once the system proves it finds real problems.

OWNER

TARGET DATE

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### 4. Deploy sensors where tenants feel comfort

Add temperature, CO2 and occupancy sensors on tenant floors, not just mechanical rooms. Comfort is the constraint that determines how far setpoints and schedules can actually move.

OWNER

TARGET DATE

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### 5. Close the loop into controllers

Push optimized schedules back into BMS controllers on an automated cadence. Analytics that end in a monthly PDF report produce insight, not actual dollar savings.

OWNER

TARGET DATE

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**6. Engineer savings into lease conversations**

Package verified energy and carbon data for tenant renewals, lender reporting and ESG disclosures. Sustainability proof points now influence leasing outcomes, not just utility bills.

OWNER

TARGET DATE

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**7. Roll out tower by tower**

Sequence deployments around lease events and capital plans, proving value at each site before moving on. A staged rollout keeps engineering bandwidth and tenant goodwill intact.

OWNER

TARGET DATE

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**8. Report monthly against the baseline**

Publish weather-normalized savings, comfort complaints and open faults in one scorecard per building. What asset managers review monthly is what site engineers keep improving quarter after quarter.

OWNER

TARGET DATE

STATUS

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**AFTER THE CHECKLIST: OUR TOP 3 PRIORITIES**

From the eight actions above, write down the three you will start first - and the single number you expect each one to move. Three priorities with owners beat eight without any.

|                                                                        |                                                                        |                                                                        |
|------------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|
| <p>PRIORITY 1</p> <div></div> <p>NUMBER IT SHOULD MOVE</p> <div></div> | <p>PRIORITY 2</p> <div></div> <p>NUMBER IT SHOULD MOVE</p> <div></div> | <p>PRIORITY 3</p> <div></div> <p>NUMBER IT SHOULD MOVE</p> <div></div> |
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## THE PRACTICE PAGES

## Reflections for your team

Use these questions in your next planning session and type short answers into the boxes. The gaps you find are usually the fastest wins.

**Q1. How much of your portfolio's energy spend goes to conditioning space that is mostly empty after 7 p.m.?**

**Q2. Could your engineering teams name the five costliest faults in your buildings right now, or only the loudest tenant complaints?**

**Q3. If an anchor tenant demanded verified carbon data before renewing, could you produce it this quarter?**

**Q4. Which of your buildings still run on schedules written years before their current tenancy mix existed?**

**Q5. What would a 25% energy reduction do to your net operating income and asset valuations?**

**Q6. Are you measuring tenant comfort directly, or inferring it from complaint volume after problems have escalated?**

## THE PRACTICE PAGES

## My 90-day plan

Finish the session by committing to a plan. Three phases, one goal each, one number that tells you it worked. Bring this page to your next leadership review - or to a free consultation with Emerson Technology, and we will pressure-test it with you.

### Days 1-30 Focus: audit and alignment

**PRIMARY GOAL****KEY ACTIONS****HOW WE MEASURE SUCCESS****OWNER**

### Days 31-60 Focus: build and prove

**PRIMARY GOAL****KEY ACTIONS****HOW WE MEASURE SUCCESS****OWNER**

Days 61-90 Focus: scale and measure

PRIMARY GOAL

KEY ACTIONS

HOW WE MEASURE SUCCESS

OWNER

Tip: save a copy per team so each group keeps its own answers. Revisit the reflections every quarter - the questions stay the same even as the numbers move.

BOOK THE REVIEW BEFORE YOU CLOSE THE BOOK

Plans without a review date drift. Before you close this practice book, agree on when you will come back to these pages, who will run that session, and when you will check the numbers again. If you want an outside pair of eyes, bring this page to a free consultation with Emerson Technology and we will pressure-test the plan with you.

|                                    |                                    |                                      |
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| <div>REVIEW DATE</div> <div></div> | <div>REVIEWED BY</div> <div></div> | <div>NEXT CHECK-IN</div> <div></div> |
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# Ready for a transformation like Meridian Spire Properties's?

Emerson Technology designs and builds the data, AI, cloud and automation systems behind results like these. On a free consultation call we will map this exact playbook to your business - your data, your constraints, your numbers.

**Book a free consultation**

**[support@emersontechnology.com](mailto:support@emersontechnology.com)**

or start online: [emersontechnology.com/contact](https://emersontechnology.com/contact)