# How a National Retail Portfolio Cut Energy Use by 11.4% Optimizing Rooftop Units with Autonomous AI

## Quick Facts at a Glance

**Facility:** National Retail Chain | Nearly 1,000 locations | Over 6,000 rooftop units
**Challenge:** Managing HVAC performance across hundreds of distributed stores without increasing facilities staff workload
**Solution:** Facil.AI Advanced Supervisory Control (ASC) with autonomous RTU optimization
**Integration:** Cloud integration with existing network-controlled thermostats, no new hardware required
**Results:** 11.4% average kWh reduction | $789,414 saved in 90 days | 51% Reduction in hot/cold calls
**Estimated Annual Savings:** Over $3 million
**Environmental Impact:** 3,000+ metric tons of $CO_2$ avoided
**Measurement & Verification:** IPMVP Option C

## Overview

A national retail chain operating thousands of stores across the United States faced a familiar operational challenge: how to reduce energy costs without impacting comfort across diverse building footprints.

Each store relied on network-controlled thermostats connected to rooftop HVAC units, creating a large distributed portfolio. While the existing infrastructure provided basic control and visibility, it did not actively optimize performance.

Manual oversight of the thousands of systems was not feasible. Facilities teams were focused on maintaining operations and responding to issues rather than continuously adjusting HVAC behavior for efficiency. The retailer needed a solution that could reduce energy consumption, preserve staff bandwidth, maintain comfortable temperatures, and deliver measurable financial returns quickly.

The retailer launched Facil.AI to optimize HVAC systems for nearly 1,000 locations with over 6,000 rooftop units without requiring human oversight.

**The results demonstrated immediate impact saving the retailer $789,414 on energy bills in only 90 days while reducing hot/cold calls by 51%.**

## The Challenge: Reducing Energy Costs Without Increasing Workload

Retail chains operating hundreds of locations face a structural problem: energy management does not scale well with traditional approaches.

Each location has its own equipment, climate conditions, occupancy patterns, and operational schedules. Monitoring and optimizing these systems manually across hundreds of buildings requires significant labor and coordination.

**Operational Constraints**

- Facilities teams already operating at full capacity
- Limited ability to manually monitor HVAC performance across hundreds of sites
- Network thermostats providing control but not optimization
- Reactive response to comfort complaints and equipment issues
- Portfolio size too large for manual tuning

**Business Drivers**

Several strategic priorities drove the retailer's decision to explore autonomous optimization:

**Operational Efficiency**

- Preserve facilities staff bandwidth
- Avoid adding headcount

**Financial Responsibility**

- Reduce operating expenses across the portfolio
- Minimize expensive service calls
- Deliver fast payback on any new technology

**Customer and Employee Experience**

- Maintain consistent comfort in stores
- Avoid aggressive energy strategies that compromise the shopping environment

The retailer needed technology that could deliver measurable results quickly while operating independently of facility staff involvement.

## The Facil.AI Solution: Autonomous RTU Optimization

It took Facil.AI less than a week to deploy an AI-driven Advanced Supervisory Control (ASC) solution to nearly 1,000 stores.

Rather than generating dashboards or recommendations that require human action, the platform used prescriptive AI agents that continuously:

1. Observed building and equipment behavior
2. Planned optimal HVAC strategies
3. Executed control adjustments
4. Learned from system response

This process repeats continuously, allowing the AI to improve performance over time without requiring facility staff to intervene.

**Deployment Architecture**

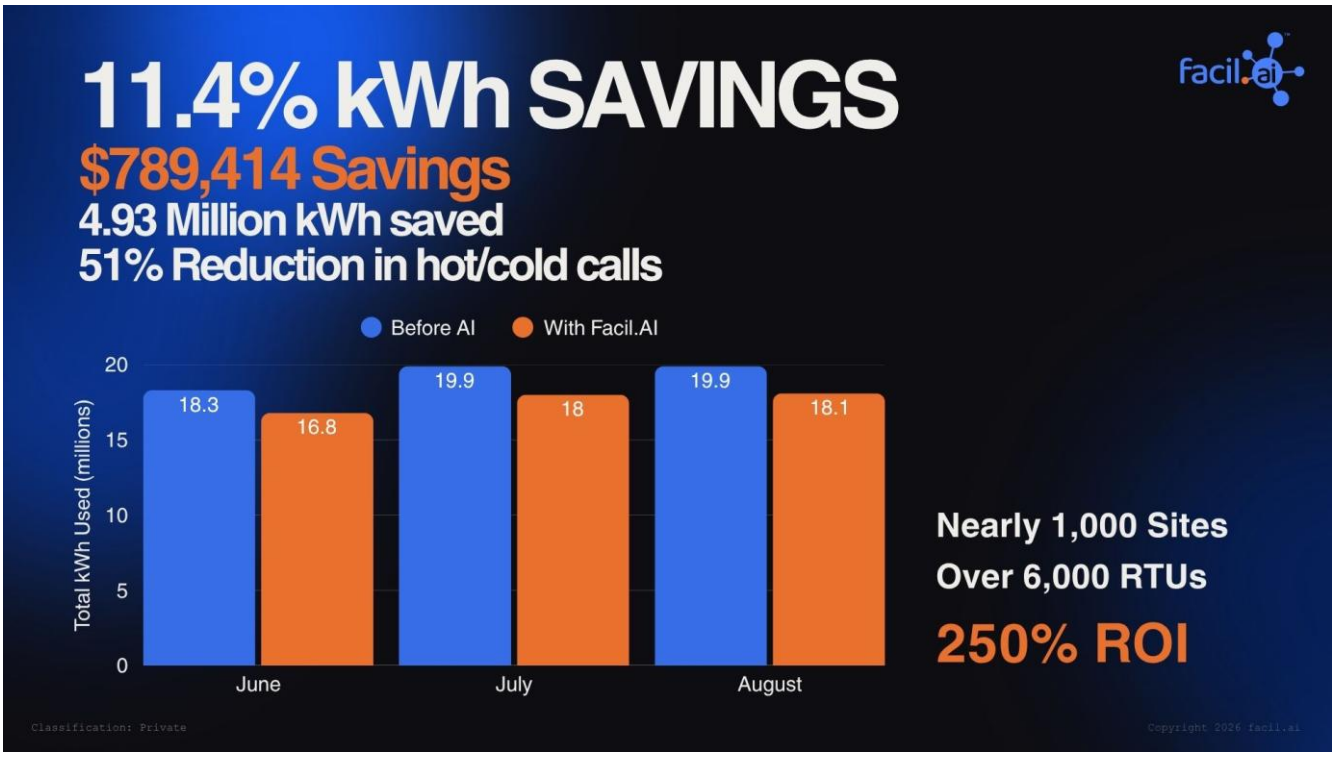
The pilot leveraged the retailer's existing infrastructure:

- Network-controlled thermostats already installed
- Cloud-based integration

Because the platform operates through a software gateway into the existing control network, the deployment required no operational disruption and was implemented in less than a week.

**Autonomous Optimization**

The AI agents continuously evaluate system behavior and environmental conditions, and adjust HVAC operation to reduce runtime while maintaining comfort.




## The Results: Measurable Savings in Just 90 Days

Autonomous AI can deliver meaningful operational improvements at scale without increasing workload for facility teams.

**Key Outcomes**

**Energy Savings**

- 11.4% average reduction in electricity consumption

**Financial Impact**

- $789,414 saved in 90 days
- Estimated annual savings to exceed $3 million

**Environmental Impact**

- Over 3,000 metric tons of $CO_2$ emissions avoided

**Comfort Improvements**

- 51% Reduction in hot/cold calls
- Store temperatures remained tightly controlled
- No AI-controlled zone exceeded 72.3°F

These results proved that energy savings could be achieved without sacrificing customer experience. Energy performance was validated using IPMVP Option C, a widely accepted methodology for evaluating whole-facility energy performance

## Additional Operational Benefits

Beyond direct energy savings, the portfolio benefits from several secondary advantages.

**Improved Comfort Stability**

AI-controlled systems maintain tighter temperature ranges than manual control approaches.

**Operational Simplicity**

Facilities teams are not required to review dashboards or implement recommendations.

**Portfolio Scalability**

The system can manage HVAC performance across hundreds of sites simultaneously without additional staff involvement.

## Implementation Challenges

While the deployment was successful overall, implementation also highlighted important operational realities.

**Equipment Limitations**

AI optimization depends on equipment being functional and connected. AI solutions cannot optimize units that have mechanical failures or communication loss with the control network. However less than 20% of units have these limitations at any time.

**Organizational Considerations**

Introducing autonomous technology can create internal questions. Clear communication and transparency helped the facilities staff understand that the technology was designed to support their operational expertise, not replace them.

## Conclusion: Autonomous Energy Management at Scale is a Reality

Large retail portfolios can significantly reduce energy consumption without increasing operational complexity. By deploying autonomous prescriptive AI, the retailer achieved:

- Rapid financial returns

- Measurable sustainability improvements
- Improved comfort stability
- Zero increase in facilities workload

As retail portfolios continue to expand, solutions that rely on manual adjustments become increasingly unsustainable.

Autonomous optimization offers a new model for managing energy performance at scale. Buildings continuously improve their own efficiency without demanding attention from already busy facility teams.

## Explore a Pilot for Your Portfolio

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