

Dollar Tree unlocks major energy and emissions savings with BrainBox AI

CASE STUDY



BUILDING OVERVIEW

LOCATION

UNITED STATES

TOTAL SQUARE FOOTAGE

6.6M SQ. FT.

STORES DEPLOYED IN

616

AVERAGE SQUARE FOOTAGE PER LOCATION

11,000 SQ.FT.

HVAC EQUIPMENT CONTROLLED

ROOFTOP UNITS (RTU)

CONTEXT

Dollar Tree is a Fortune 500 company and leading retail chain, operating more than 16,000 stores across 48 US states and five Canadian provinces. With firm commitments to reduce its scope 1 and 2 emissions by 50% by 2032, Dollar Tree needed a solution that allowed for flexible, scalable energy efficiency improvements while reducing energy - all without compromising its daily operations.

"BrainBox AI helps you offset costs from day one. It's also incredibly flexible; you get new equipment, it adapts. You move to a new location, it moves with you. You grow, it grows with you." —**Charles Stark, Energy and Sustainability Manager, Dollar Tree**

With over 7,000 locations already connected to our Envoy EMS solution, Dollar Tree sought to retrofit an additional 600 stores with a focus on energy optimization. To achieve this, they piloted BrainBox AI's autonomous AI HVAC Optimization solution, covering 6.6 million square feet across diverse geographic regions—from New England to California. This approach allowed Dollar Tree to assess the solution's scalability and adaptability to varying climates while maintaining uninterrupted operations.

PROCESS

Rapid implementation across 600 stores in 18 US states

Dollar Tree's internal teams and subcontractors were instrumental in driving the successful rollout of BrainBox AI's solution. This collaboration enabled the rapid deployment of the technology across 600 locations in 18 states, highlighting the strength of our ongoing partnership with Dollar Tree.

By leveraging the seamless integration of on-premises servers with the cloud, BrainBox AI rapidly scaled its deployment without requiring additional Capex investments. This ensured compatibility with Dollar Tree's existing rooftop units (RTUs), streamlining the implementation process.

Within just two months, 400 sites were live and operating autonomously. Each piece of HVAC equipment was precisely labeled with industry-standard nomenclature, while our extensive algorithm library was virtually tested at every store to select the optimal configuration for maximum performance.

RESULTS

BrainBox AI: The solution that helped Dollar Tree save 7,980,916 kWh and \$1,028,159 in one year

Powered by the data extracted from Dollar Tree's BMS, combined with external data sets such as weather forecasts, BrainBox AI's autonomous HVAC optimization solution effectively transformed energy usage patterns across Dollar Tree's BrainBox AI-enabled stores. This resulted in reduced energy consumption, portfolio-wide visibility, and greater data-driven decision-making, reducing unnecessary technician dispatches and saving thousands per avoided trip.

"For the HVAC team, it's a matter of do they send someone or not. That's a \$750 to \$1,500 decision that could be made more accurately with validation data." —Charles Stark, Energy and Sustainability Manager, Dollar Tree

In just one year, 600 stores throughout the US achieved electricity savings of 7,980,916 kWh, helping Dollar Tree meet its interim emissions targets without large-scale equipment overhauls.

This impressive reduction, driven by BrainBox AI's advanced algorithms, translated to a total cost savings of \$1,028,159 by optimizing equipment runtimes. Additionally, the Dollar Tree team noticed less overall work orders raised at these locations.

The pilot's impressive results have driven further deployment of our AI HVAC Optimization solution across more than 2000 more Dollar Tree stores. As Dollar Tree's leaders continue to see the benefits of implementing solutions that grow with their organization, they look to renew and extend our current partnership to further reduce their energy costs and help reach their emission reduction goals.

"Our leaders are starting to see that the capabilities we have now will soon look simple as we advance. We aim to build on what we've done and push further" —Charles Stark, Energy and Sustainability Manager, Dollar Tree

↓ 7,980,916 kWh

Reduction in electricity consumption

(Equivalent to carbon sequestered by 91,358 tree seedlings grown for 10 years)

↓ \$1,028,159

Electricity cost savings

↓ 5,632 tCO₂eq

Reduction in equivalent emissions

*Based on EPA Greenhouse Gas Equivalencies

BRAINBOX AI[®]

Discover more of our success stories [here](#).