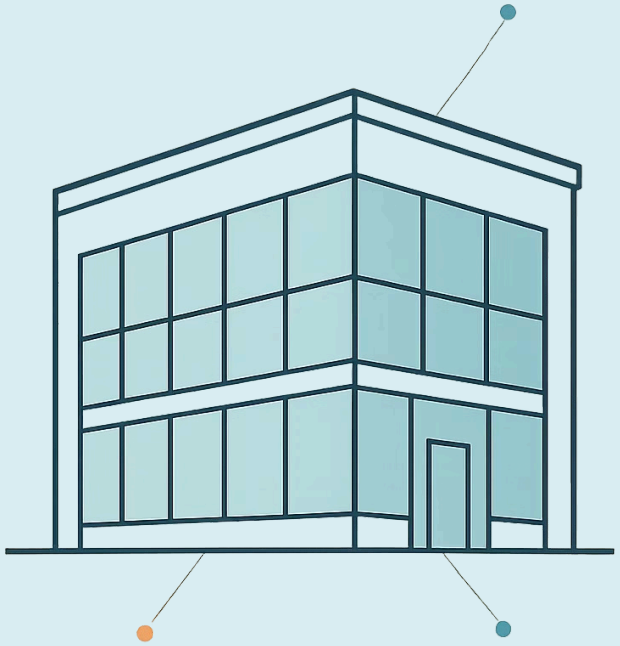
ClimaMind

AI HVAC Optimization for Commercial & Industrial Facilities

ClimaMind adds a supervisory AI optimization layer on top of existing building control systems to improve HVAC energy performance — while preserving operator authority, safety boundaries, and fallback control.

COMMERCIAL BUILDINGS | INDUSTRIAL FACILITIES | DATA CENTERS | HOSPITALS | CAMPUSES



HVAC Is Big, Controllable, and Under-Optimized

The Scale of the Opportunity

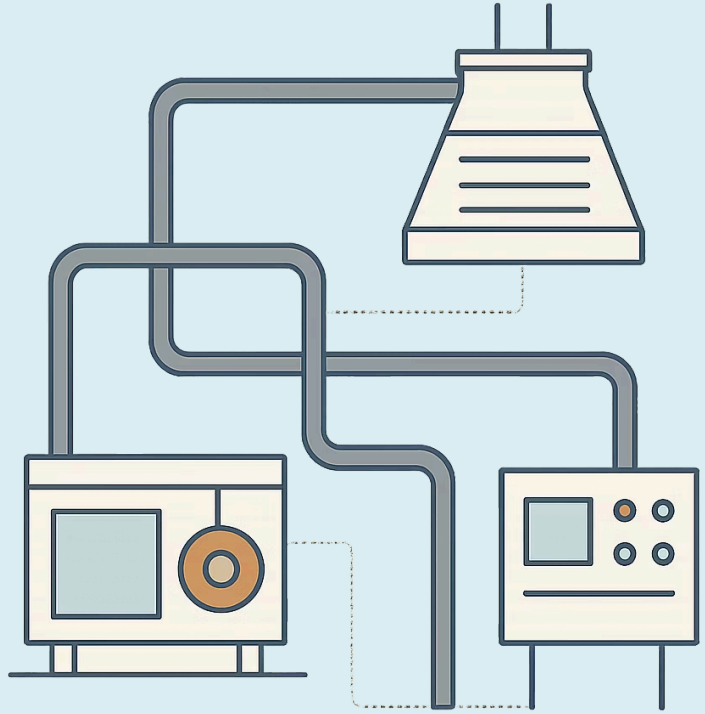
Space conditioning represents approximately **40% of U.S. commercial building energy use** — making HVAC one of the largest single controllable loads in any facility. Chillers, pumps, cooling towers, AHUs, valves, schedules, and setpoints are all adjustable assets.

Why Savings Are Left on the Table

Despite this leverage, most HVAC plants still rely on static rules, fixed thresholds, local PID loops, and operator experience accumulated over years. These approaches embed unnecessary operating buffer into every hour of runtime.

The Result

Higher energy cost, overcooled spaces, over-pumped systems, and missed savings that compound across every season of operation.



DeepMind Proved the Direction. ClimaMind Makes It Deployable.

2016 — DeepMind Breakthrough

Google DeepMind reported **up to 40% reduction** in data center cooling energy using machine learning across thousands of sensor points.

ClimaMind — Deployable AI

We use existing BMS data, trend exports, and equipment metadata. Site-specific models are built within engineering boundaries. Optimization starts in **advisory mode** before any closed-loop control.

1

2

3

The Gap — Real Facilities

Most commercial and industrial sites have **messy BMS data**, inconsistent point names, limited submetering, aging sensors, and site-specific control sequences — not hyperscale infrastructure.

DeepMind proved AI can optimize cooling. ClimaMind makes it repeatable for existing BMS-controlled buildings and plants — not just one-off research environments.

What ClimaMind Does

A constraint-aware AI optimization layer above the existing BMS

Continuous Data Ingestion

Reads BMS, meter, weather, and equipment data in real time to build a live picture of facility operating state.

Site-Specific Learning

The AI learns how the facility responds under varying load, weather, schedule, and equipment conditions — generating targets from real operating data, not generic rules.

Bounded Optimization

Recommends or writes optimized HVAC targets through approved BMS pathways only. The existing BMS remains the native control and safety layer at all times.

Operator Authority Preserved

Operators keep full visibility, override capability, and local authority. Closed-loop control is introduced only after advisory-mode validation.

ClimaMind turns static HVAC operation into continuous, bounded, AI-driven optimization.

Benefits Beyond Energy Savings

Lower Utility Cost & Carbon

Reduced HVAC energy use and peak demand directly cut utility bills. Avoided electricity consumption lowers carbon emissions.

Longer Equipment Life

Reducing overcooling, over-pumping, short cycling, and excessive runtime extends asset service life and defers capital replacement decisions.

Operational Stability

Bounded optimization within comfort, uptime, and process constraints improves day-to-day stability while reducing the operator burden of manual trial-and-error.

Higher BMS ROI

Existing BMS data and control points become active savings drivers — not just monitoring infrastructure.

Deferred CapEx

Improving existing system performance postpones major equipment upgrades and capital expenditure cycles.

LEED / ENERGY STAR / ESG

Support for LEED / ENERGY STAR / ESG reporting with measured efficiency improvements.

Where We Start

Plant-Side First

For most facilities, the highest-value first target is not the whole building — it is the highest-energy HVAC plant or subsystem. This focus delivers the fastest, most credible savings with the cleanest measurement boundary.

Why Plant-Side?

- Highest energy concentration
- Cleaner M&V boundary
- Fewer tenant/comfort variables
- Faster pilot design and review
- Higher M&V credibility

Initial Optimization Scope

- Chillers
- CHW & CW Pumps
- Cooling Towers
- AHUs / PAUs

Expansion Path

Operating Modes

Start safely. Expand control only when the site is ready.

1

Mode 1 — Advisory

AI generates recommended setpoints and operating actions. Operators review every recommendation before any execution. Zero automated writes to the BMS.

2

Validation Gate

Advisory-mode results are reviewed with the operator and engineering team. Control boundaries and write-point lists are formally approved before progression.

3

Mode 2 — Closed-Loop Supervisory

AI continuously optimizes selected HVAC targets within pre-approved boundaries. Existing BMS safety logic remains fully active. Operator override is always available.

Control access is earned step by step — not assumed on day one. Every site progresses at a pace matched to its risk tolerance and data readiness.

Safety and Operator Authority

AI control must be bounded, reversible, and observable.

Hard Engineering Boundaries

Temperature, pressure, flow, frequency, and equipment limits are enforced as inviolable constraints — not suggestions.

Small-Step Tuning

Incremental adjustments prevent large system disturbances. Approved write-point lists are confirmed before any control action is executed.

Full Fallback

BMS-level safeties stay active. Operator override is always available.

Audit Trail

Every recommendation, action, and result is logged for review and accountability

The AI does not replace the operator. It gives the operator a safer, continuously learning optimization layer.

Deployment Workflow

A practical path from data review to verified savings.

01

Site Qualification

Review facility type, HVAC plant configuration, BMS access, available metering, and operating constraints.

02

Data Intake

Collect BMS trend data, equipment schedules, point lists, utility/meter data, and existing control sequences.

03

Model Training

Identify operating patterns, waste drivers, estimated savings potential, and control feasibility for the target plant.

04

Advisory Deployment

Run AI recommendations in observation or advisory mode. Operators review all suggested actions before any changes are made.

05

Approved Control Pilot

Write only selected points within pre-approved safety boundaries after formal operator and engineering sign-off.

06

M&V and Rollout

Validate measured savings against the agreed baseline. Expand to broader plant scope or portfolio when results are confirmed.

Proof Points

Field-tested foundation for AI HVAC optimization

ClimaMind is commercializing a proven AI HVAC optimization approach supported by prior deployment experience across multiple facility types and climates.

70+

Projects Deployed

Across commercial, industrial, data center, hospital, and campus environments.

50M+

Square Feet Covered

Total conditioned area optimized under AI supervisory control.

14.28M

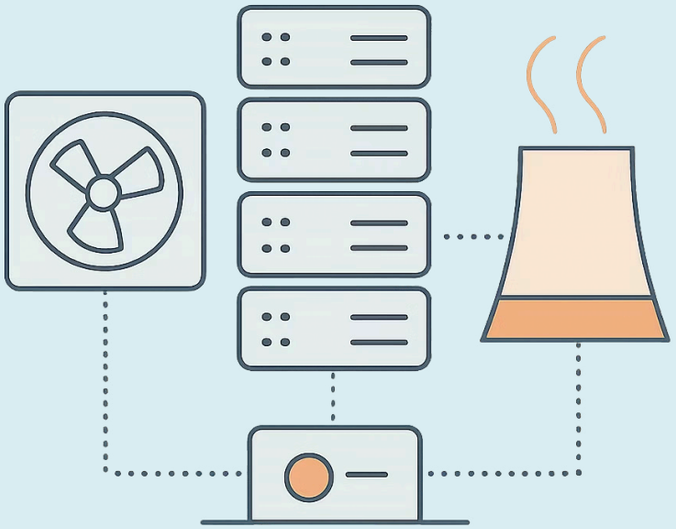
kWh Saved

Cumulative measured electricity savings across all deployments.

11,210

Tons CO_2 Reduced

Verified carbon impact from avoided electricity consumption.



Commercial Model and Next Step

Start small. Verify savings. Expand only when it works.

Performance-Based Savings

For qualified sites, fees are tied to **measured and verified savings**. ClimaMind's interests align directly with yours — we win when you save.

Subscription Model

Fixed annual cost for customers who prefer **budget predictability**, limited meter sharing, or portfolio-wide standardization across multiple facilities.

Pilot-First Path

1. Select one high-value HVAC plant
2. Share available trend data and equipment information
3. Define control boundary and M&V method
4. Run advisory-first analysis
5. Move to approved control only after review
6. Validate savings and decide on expansion

Let's identify one plant where ClimaMind can review trend data and quantify the optimization opportunity.

Start Your Review

Our initial review helps identify the most promising opportunities for HVAC optimization.

Identify High-Value Plant

Pinpoint a single HVAC plant with significant savings potential.

Review BMS Trend Data

Analyze existing data to understand operating patterns and inefficiencies.

Quantify Savings Opportunity

Receive a clear assessment of potential energy and cost reductions.

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