

Turning a Sustainability Roadmap Into Action

This case study highlights how a long-term sustainability roadmap is helping a major international airport improve the performance of its existing facilities while preparing for significant future development. Through sustainability planning, energy analysis, operational improvements, and green building strategies, Cleveland Hopkins International Airport (CLE) is moving from long-term goals to implementation.

BACKGROUND INFORMATION

■ Client Overview

Cleveland Hopkins International Airport (CLE) is operated by the City of Cleveland's Department of Port Control. CLE is working to align its sustainability efforts with the City's broader climate goals, including achieving net-zero Scope 1 and Scope 2 greenhouse gas emissions by 2050. Emerald Built Environments supports the airport as part of a sustainability consulting team led by EnviroScience, alongside RS&H.

■ Project Overview

Emerald's work began in 2024 with the development of CLE's Sustainability Management Plan (SMP), an airport-specific roadmap aligned with the City of Cleveland's Climate Action Plan. The SMP organizes the airport's efforts around six focus areas: built environment, clean energy, clean transportation, environment and nature-based solutions, waste management and circular economy, and climate resiliency and community.

The team then moved into implementation. Emerald's first year focused primarily on the built environment, helping CLE understand how its existing facilities perform and identifying practical steps to improve efficiency. Emerald is now building on that work as the airport prepares for significant modernization.



CHALLENGES

■ Key Challenges

CLE is pursuing sustainability improvements at the same time it embarks on its Terminal Modernization Development Program (TMDP), a multi-year effort that will significantly transform the airport. The challenge is improving existing facilities today while planning for infrastructure that may eventually be renovated or replaced, weighing investment in existing infrastructure against the opportunities of new construction, all while continuing normal operations.

As a large organization with many departments and outside partners, CLE must also build sustainability into everyday decisions, from capital planning and design to maintenance and procurement, rather than treat it as a standalone initiative.

■ Client's Goals

Key goals include:

- 1 CREATE** a sustainability roadmap and put it into action
- 2 ACHIEVE** net-zero Scope 1 and 2 emissions by 2050
- 3 ADVANCE** Scope 3 reductions through collaboration with tenants, vendors, and community partners
- 4 IMPROVE** efficiency and performance of existing facilities
- 5 EMBED** sustainability in future TMDP development



STRATEGIES RECOMMENDED

Emerald helped develop the Sustainability Management Plan and has continued supporting CLE as the airport moves from planning into implementation.

■ Year One: Establishing the Foundation

- 1 ASHRAE Level 2 Energy Audit**
Emerald audited the 825,662-square-foot existing terminal, including energy modeling, to understand current building performance and identify opportunities for energy savings and operational improvements.
- 2 Metering Gap Analysis and Recommendations**
Emerald assessed existing meters to identify data gaps and where submetering could add visibility, giving CLE options for phasing in metering and using better data to guide energy decisions.
- 3 Operational Policies and Procedures**
Emerald developed operational policies and procedures focused on preventive maintenance and commissioning, designed to help CLE maintain system performance, improve efficiency, extend equipment life, and support continued progress toward its emissions goals.

■ Building on Year One

- 4 Commissioning and Retro-Commissioning**
Based on first-year findings, Emerald is moving into retro-commissioning and existing building commissioning to improve how current systems operate, reduce energy use, control costs, and maintain equipment performance.
- 5 Demand Control Ventilation**
Emerald is evaluating how adjusting outdoor air to actual occupancy in spaces such as ticketing and gate areas can maintain appropriate ventilation while reducing the energy needed to heat and cool outside air.
- 6 Sustainability Strategies for Terminal Modernization**
As the TMDP moves forward, Emerald will support a LEED campus approach and Envision strategy, connecting SMP goals with individual projects and design teams and coordinating strategies across the campus rather than project by project. Emerald will also explore utility partnerships to further support CLE's energy and emissions-reduction goals.



OUTCOMES

■ Results Achieved

CLE has moved from sustainability planning into active implementation. Emerald's first-year energy audit, metering gap analysis, and operational policies and procedures established the foundation for the current phase.

■ CLE Sustainability + Modernization at a Glance

- 6** Focus areas guiding CLE's Sustainability Management Plan
- 825,662 SF** Existing terminal evaluated through an ASHRAE Level 2 energy audit and energy modeling
- 2026** Phase 2 launched, advancing energy efficiency, sustainable infrastructure, waste reduction, cleaner transportation, and climate resilience
- \$175M** In initial TMDP projects, with unanimous support from the airport's signatory airlines

■ Impact on Client's Operations

CLE now has an increasingly clear understanding of how its existing facilities are operating, where more data is needed, and what actions can improve performance today. The SMP also provides a framework for decisions about existing facilities, new construction, vendor contracts, operations, and capital projects, helping CLE weigh immediate costs against long-term operational and environmental impacts throughout the TMDP.

■ Environmental Benefits

The work gives CLE a structured path toward net-zero Scope 1 and Scope 2 greenhouse gas emissions by 2050. Energy efficiency, better building data, commissioning, improved operational practices, clean energy strategies, and sustainable design will all help reduce the airport's environmental impact while supporting long-term growth.

CONCLUSION

CLE's sustainability work demonstrates the value of a roadmap that can evolve into action. What began as a Sustainability Management Plan has progressed into energy auditing and modeling, metering recommendations, improved operations, commissioning strategies, and green building certification support. As CLE modernizes, Emerald Built Environments will continue connecting the airport's long-term goals with the decisions being made today, helping CLE improve the facilities it operates now while making sustainability fundamental to how it plans for the future.