

Cincinnati Art Museum

Where Art Meets Sustainability



By visualizing the patterns of energy data for inefficient operations, we were able to identify cost savings for the cooling system.

**- Sai Ganesan
Lead Energy Engineer**

Big Energy Savings at Romanesque Art Museum

The Cincinnati Art Museum has been a part of Cincinnati's history since the late 1800s and is a significant source of inspiration for its people and community. As a non-profit, among other challenges, the costs of maintaining and operating this large facility need to be carefully managed. Using Ohio Energy Program grants facilitated by Graphet Data Mining, the museum identified significant savings on their cooling and HVAC systems and improved payback on a major lighting project.

Controls for Temperature and Humidity

The museum draws hundreds of thousands of visitors each year, and creates excitement through its many innovative and inspiring exhibits and collections. Temperature and humidity control is critical to protect the treasures housed in the building. Mark Crousore is the building and grounds supervisor; he actively pursues low-cost/no-cost opportunities to increase energy efficiency for the facility.

Graphet Data Mining's well-crafted process for energy data monitoring, trend data analysis, and energy accounting lays the groundwork for achieving real savings. "The challenges we encountered were significant due to the age of the building but with Mark's collaboration, things gradually started adding up", says Ganesan.

Museums find ways to reconcile the desirability of long-term preservation of collections with the need to reduce energy use. According to guidelines from the National Museum Directors' Council, a stable relative humidity of 40-60% and a stable temperature in the range 60-77°F with fluctuations of no more than $\pm 10\%$ RH per 24 hours within this range is recommended. More sensitive objects will require specific and tighter RH control, depending on the materials, condition, and history of the work of art.

<https://www.nationalmuseums.org.uk/wh-at-we-do/contributing-sector/environmental-conditions/>

CINCINNATI ART MUSEUM WHERE ART MEETS SUSTAINABILITY

Finding Savings With Data and Diligence

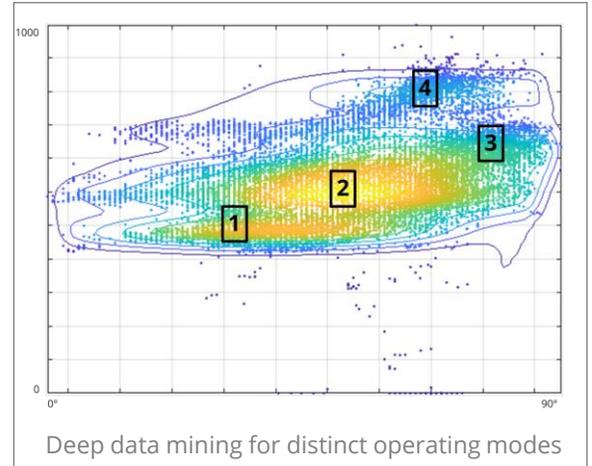
Graphet Data Mining’s methodology is consistent with the ASHRAE Level II requirements for an energy audit. The scope includes establishing an energy usage baseline and a strategic plan tagged with detailed data and cost/benefit analysis.

After a deep dive into data trends, drawings, and examining the physical system, Graphet’s engineers were able to accurately analyze the chiller system performance. A clear understanding of four distinct operating modes and a means to improve the system emerged from this effort. With Graphet’s recommendations, the museum can save energy and meet their critical temperature and humidity parameters.

Other systems that received the same careful evaluation by Graphet include the HVAC system, lighting, and general peak demand management for the electric load. With minimal cost to the Cincinnati Art Museum, the facility team now has a strategy they can implement in a one to five year time frame.

Next Steps

Based on discussions with the site, the next step is to present the strategy to the management team for review and decision-making for implementation. While the Cincinnati Art Museum showcases skillful art from times past, the facility management team can showcase their ability to deliver the requirements needed to preserve this art and the environment into the future.



PROJECT SUMMARY

Annual Energy Cost	\$583,488
Energy Savings	\$296,724 (51%)
Project Costs	\$1,715,790
Rebate Potential	\$76,836
Simple Payback	5.06 years
Chilled Water Savings	\$133,288 (23%)
HVAC Savings	\$132,655 (23%)
Utilities Savings	\$30,841 (5%)

Have questions? Contact us with your project and we will be in touch to see if your facility qualifies for the Ohio Energy Grant. You may also visit graphet.com/services/grants-rebates-incentives-support/ or call (513) 474-4870.