

COMPREHENSIVE BUILDING OPTIMIZATION

A THREE STEP APPROACH



Executive Summary

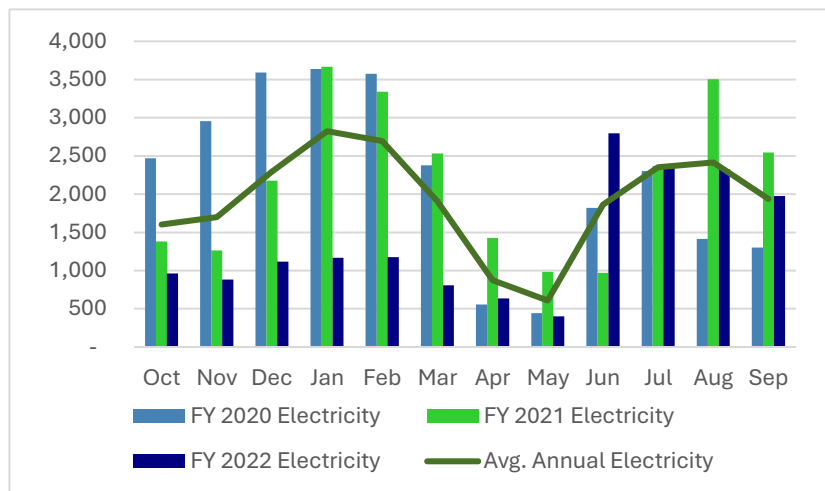
With aging building infrastructure and rising costs, businesses and property owners are seeking ways to optimize energy use, reduce operational costs, and enhance comfort. Viresco's energy auditing approach is designed to address these needs comprehensively through a structured process that involves a preliminary analysis, detailed energy audit, and robust ROI-focused engineering. This white paper outlines our approach, which starts with understanding baseline consumption, is followed by a thorough on-site inspection, and ends with an actionable report to drive informed decision-making.

Preliminary Audit Steps: Establishing a Baseline

The preliminary phase sets the foundation for a successful energy audit. This stage involves establishing a clear baseline for consumption, determining financial criteria for a successful project, and gathering key data for a comprehensive engineering analysis.

Step One: Baseline Utility Consumption Analysis

Viresco's unique approach begins by analyzing utility consumption data for the past one to three years. This historical data provides insights into patterns and trends in energy and water use, helping us identify anomalies and areas of potential improvement. By establishing a consumption baseline, we can benchmark current performance and set realistic goals for reduction.



Step Two: Building Owner Survey

To effectively assess a building, we must understand its function, occupancy patterns, and maintenance history. This insight helps us evaluate its energy needs and identify opportunities for greater efficiency. To gain this knowledge, a detailed survey with the building owner is conducted.

During the survey, our team also seeks to understand the owner's criteria for a successful project. For example, some owners focus on long-term cost savings, while others look for a quick return on investment, maintenance improvements, or building comfort. These constraints and goals guide our recommendations, ensuring they align with the owner's objectives and are practical for their situation.

Step Three: Document Collection

For a thorough engineering assessment, we gather essential documents that provide a clear picture of the building and its operations.

We start with building drawings and equipment schedules, which reveal the age, performance, and capabilities of existing equipment. We also collect trend data and sequences of operations. This data helps our team see the building as a dynamic system, identifying patterns that affect energy use. By compiling and analyzing these documents, we ensure a comprehensive and informed assessment, leading to effective recommendations.

Detailed Building Audits: Identifying Opportunities

Following the preliminary phase, Viresco's energy engineers conduct a comprehensive on-site survey. This detailed inspection focuses on evaluating various building systems to identify energy conservation opportunities, deferred maintenance items, energy efficiency improvements, and demand-limiting strategies.

System One: Building Envelope

The building envelope—comprising walls, windows, and roofs—is crucial for maintaining energy efficiency. In our audit, we evaluate each of these subcomponents, looking for ways to optimize the system.

First, we assess the condition of insulation and sealing throughout the building. By examining its performance, we identify areas where energy loss occurs. Next, we inspect the windows and doors for drafts, seal integrity, and overall efficiency. This helps us pinpoint issues that may lead to higher heating and cooling demands, allowing us to suggest effective solutions to reduce energy consumption.

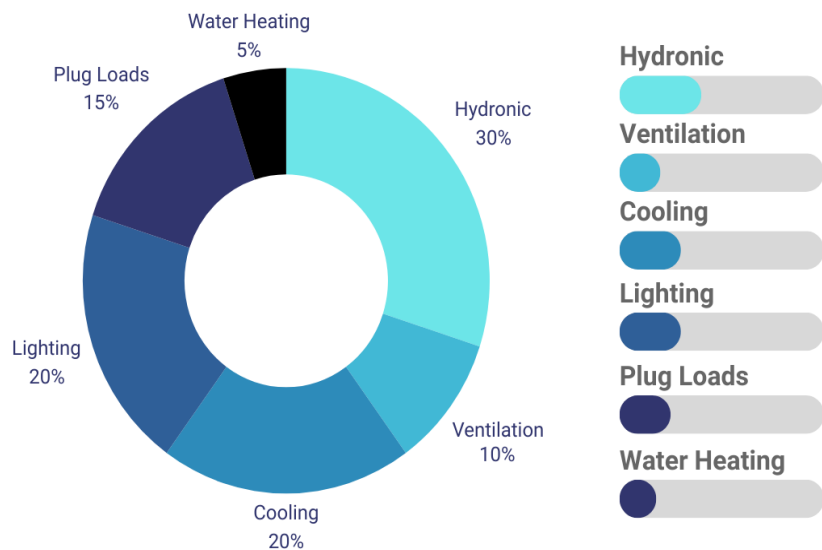
By thoroughly evaluating these elements of the building envelope, we aim to minimize energy loss and improve the building's overall efficiency.

System Two: Lighting Systems

Lighting represents a substantial part of a building's energy consumption, so we pay close attention to it during our assessment.

We start by examining the current lighting technologies in use. This involves determining whether existing systems could be replaced with more energy-efficient options, such as LEDs.

TYPICAL ENERGY UTILIZATION



Next, we evaluate the lighting controls in place. This includes reviewing the use of sensors, timers, and daylight harvesting strategies to ensure that lighting is optimized and used only when necessary.

By scrutinizing these aspects, we aim to enhance lighting efficiency and reduce overall energy usage.

Step Three: HVAC Equipment

Heating, ventilation, and air conditioning (HVAC) systems are significant energy consumers and often hold many opportunities for improvement, so our audit places a strong emphasis on evaluating these systems.

First, we look for maintenance issues. By identifying signs of wear and tear, we can pinpoint factors that might affect the system's performance and comfort, and potentially lead to increased energy use. Next, we analyze the sequencing strategies and pinpoint wasteful practices that could be altered for immediate savings.

Finally, we evaluate the efficiency major HVAC equipment. This involves assessing their performance versus the latest technology to ensure they are operating at a reasonable level of efficiency.

Through this detailed evaluation, we aim to enhance the overall efficiency of the HVAC systems and reduce their energy footprint.

Step Four: Electrical Systems and Plug Loads

Electrical systems and plug loads play a crucial role in both energy efficiency and safety, so we conduct a thorough evaluation in these areas.

We begin by assessing the electricity distribution throughout the building and identifying opportunities for improvements that could enhance overall efficiency. Next, we review the electrical equipment for outdated or inefficiencies that may benefit from upgrades. Upgrading to more modern, efficient equipment can significantly improve energy performance and reduce operational costs.

Through this evaluation, we aim to enhance both the efficiency and safety of the building's electrical systems.

Step Five: Domestic Water and Irrigation

Water usage significantly impacts both operational costs and sustainability goals.

During our water-focused survey, we evaluate water fixtures throughout the building. Additionally, we inspect the irrigation systems. By assessing these systems, we look for opportunities to improve water conservation, ensuring that irrigation practices are optimized to reduce waste.

Cost Savings and ROI Analysis: Informing Decision-Making

The final phase involves analyzing the data collected during the audit to estimate potential cost savings and ROI. This phase provides actionable insights and recommendations to guide decision making.

Step One: Estimating Cost Savings

In our assessment, we calculate the potential cost savings from various identified opportunities to help you make informed decisions. This involves pinpointing opportunities for savings through zero-cost or low-cost or capital upgrades. By estimating the financial benefits of these measures, we provide a clear picture of how both small and large changes can lead to significant savings.

Next, we address deferred maintenance. We quantify and prioritize both existing and newly discovered maintenance issues. Tackling these deferred maintenance concerns not only prevents future costly repairs but also improves equipment performance, contributing to long-term savings.

Finally, we project the benefits of replacing outdated equipment with more efficient models, we provide insights into how these upgrades can reduce energy consumption and operational costs. Overall, our goal is to provide clarity and maximize potential savings through targeted improvements and strategic upgrades.

Step Two: Estimate Implementation Costs

Our analysis continues with a rough-order-of-magnitude cost estimate for implementing the recommended improvements to ensure you have a general understanding of the financial aspects involved. In some cases, this process also involves collaborating with industry partners to gather more-accurate cost estimates for the proposed upgrade.

In addition, we explore financing options, such as incentives or rebates, that could help offset the initial capital expenditure. This way, we hope to make the implementation of improvements more financially feasible for our clients. Through these steps, we ensure that you are well-informed about both the costs and the financial resources available to support the recommended enhancements.

Step Three: Generate Comprehensive Reporting

We provide a comprehensive report that offers a thorough overview of our findings and recommendations. It begins with a building health assessment, delivering a detailed evaluation of the building's current performance. This section covers aspects such as energy consumption, maintenance conditions, and system efficiencies, giving you a clear picture of how the building operates.

Next, we summarize the opportunities identified during our assessment. This includes potential energy conservation measures, efficiency improvements, and strategies to limit demand. We highlight these opportunities to show where improvements can be made. We also include an analysis of cost savings and return on investment (ROI), helping you understand the economic impact.

Finally, our report provides a prioritized list of recommendations to guide the implementation process, ensuring that you can effectively address the most important areas for improvement.

Overall, our report is designed to equip you with the insights and tools needed to make informed decisions and enhance the building's performance.

Conclusion

Our energy auditing approach provides a thorough and structured methodology for optimizing building performance and achieving significant cost savings. By starting with a detailed preliminary audit, conducting comprehensive system evaluations, and delivering robust cost savings and ROI analysis, we ensure that building owners and businesses receive actionable insights to drive change.

Partnering with Viresco offers a strategic advantage in enhancing energy efficiency, reducing operational costs, and improving overall building performance. Our approach not only identifies opportunities for immediate savings but also lays the groundwork for long-term financial and operational benefits.

