THE NEWSLETTER OF THE BUILDING OWNERS & MANAGERS ASSOCIATION OF NEW JERSEY

PROGRESS

# Why Benchmark ENERGY USAGE?

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*Energy is one of the highest expenses in building operations. With today's fluctuating and ever-increasing energy costs, it is financially crucial to track usage and attempt to lower energy costs whenever and wherever possible.*

Energy Benchmarking is not a difficult process and once begun, will bring both financial and environmental rewards. To assist in the process, the Environmental Protection Agency and US Department of Energy have joined together to build the *"Energy Star Program."* This program is a user friendly method of recording and tracking total energy usage.

*Energy Star* is a plan to track and improve a building's energy performance. The first step is to benchmark the building's total energy use using online software tools provided by *Energy Star*. By benchmarking, you will determine how a building is performing in com-

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*BOMA NJ CHAPTER MISSION STATEMENT*
*The Building Owners & Managers Association of New Jersey shall promote the interests of those engaged in ownership and/or operation of real property through leadership, advocacy, research, education, information and professional development.*

*Has the efficiency of your facility's heating, ventilation, and air conditioning (HVAC) degraded with age? Evaluation by a certified HVAC specialist, especially during peak cooling season, can determine if capacity has diminished or energy cost increased.*

# RENEW *or* REPLACE?

By Rich Halley
Vice President
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If your building's efficiency performance has declined significantly, your HVAC provider may suggest a total retrofit. But if that would break your budget, there may be a more cost-effective solution.

## Renew Building Systems to Return to Optimal Efficiency

Renewing the system's primary components can restore it close to designed performance without capital investments in new equipment. The project can include factory or onsite reconditioning of chillers, controls, cooling towers, pumps, fans, and motors.

Funded by your facility's operating and maintenance budget, a renewal project can total less than half the cost of complete equipment replacement. Yet it can prolong equipment life, reduce energy consumption, lower risk of failure, improve indoor environments, meet environmental standards, and improve your building's operating efficiency.

## Renewing or Replacing?

Balance the benefits of renewal versus retrofit. Analyze life-cycle costs based on access to your building's primary equipment; available capital; equipment age, condition, and efficiency; and long-term objectives.

## Planning and Scheduling

Ask your HVAC specialist to conduct a system restoration analysis of the chiller. This should include oil and refrigerant analyses, leak testing, evaluation of energy consumption, run-hours, number of equipment starts, system load stress, and fluctuating cooling loads. Advance planning can significantly accelerate the task of getting equipment reinstalled and running.

Large-scope projects involving added components and restoration work can take a few weeks, and require system shutdowns. When possible, plan to restore during the off-season, or consider a temporary cooling solution for the project's duration.

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## Saving Significant Costs

***Prolonged chiller life***

Operating as the heart of your HVAC system, the chiller consumes up to 40% of your facility's electrical usage. A typical air-cooled chiller operates 12 to 15 years for a reciprocating compressor, and 20 to 30 years for a rotary screw or centrifugal chiller. However, actual lifespan and efficiency depend on design life, operating hours, equipment loads and stress, and operation and maintenance history.

Restoration can significantly increase a degraded chiller's efficiency. It also restores system reliability, minimizes repairs, and reestablishes equipment lifespan. Renewing the chiller might include replacement or reconditioning of the compressor, parts replacement, adjustments to other components and perhaps most important, upgrading it to the latest factory specifications.

***Reconditioned cooling tower***

Cooling towers should be well-maintained to maximize heat rejection efficiency, avoid structural degradation, prevent system-wide efficiency loss, and avoid health risks. A poorly maintained tower cannot properly reject system heat, causing higher condenser temperatures. This lowers system efficiency and can lessen the ability to maintain indoor comfort levels in several locations. For every added degree in condenser temperature, the overall system consumes 2.5% to 3.5% more energy.

Restoration of a primary cooling tower significantly improves system performance and cuts operating cost increases. Restoration includes total cleaning, fill replacement, and drive and bearing lubrication, as well as sealing water leaks, replacing bearings and belts, shoring up structural elements, and validating fan control sequencing.

***Total components overhaul***

HVAC system components interactively impact each other's operation and efficiency. In addition to refurbishing major equipment, restoration should ensure all components — including building controls, fans, motors, and pumps — are in the best possible condition.

## Optimizing BAS

To ensure that restored equipment including HVAC elements, fans, pumps, terminal units, and sensors is integrated and functioning efficiently, adjust the building automation system (BAS) to optimize operating sequences. Control schedules, set points, and time clocks should be validated for occupancy schedules, season, and building performance objectives. Gauges and pneumatic tubing should be inspected and repaired as required, and sensors checked and calibrated under load conditions. Where an outdated BAS is unable to meet current facility requirements, consider an upgrade.

## Achieving Fast, Lasting Payback

Reconditioned building systems can save significant energy for rapid payback. They also restore the indoor comfort control of your facility to design specifications, for continued occupant satisfaction and productivity. Some system renewal programs offer new, long-term warrantees as well.

High-performing HVAC systems lower health risks associated with air quality deterioration, and help address environmental standards, improving energy consumption and eliminating refrigerant leakage.

In facilities such as manufacturing plants with process cooling, computing centers, and hospitals, system renewal can also lower the risks of process failures or unplanned downtime.

## Sustaining Optimal Outcomes

Implement a predictive maintenance program to maximize performance benefits. Include a systematic schedule of inspections, testing, repairs, and updates to avert degradation of building system. This prevents premature equipment failure, avoids downtime and emergency service calls, and ensures that the system operates at optimal efficiency.

Finally, a daily log provides an operating conditions record that can be compared to baseline data on restored chiller performance. This allows you to spot trends before any detectable deterioration in performance can occur. ■