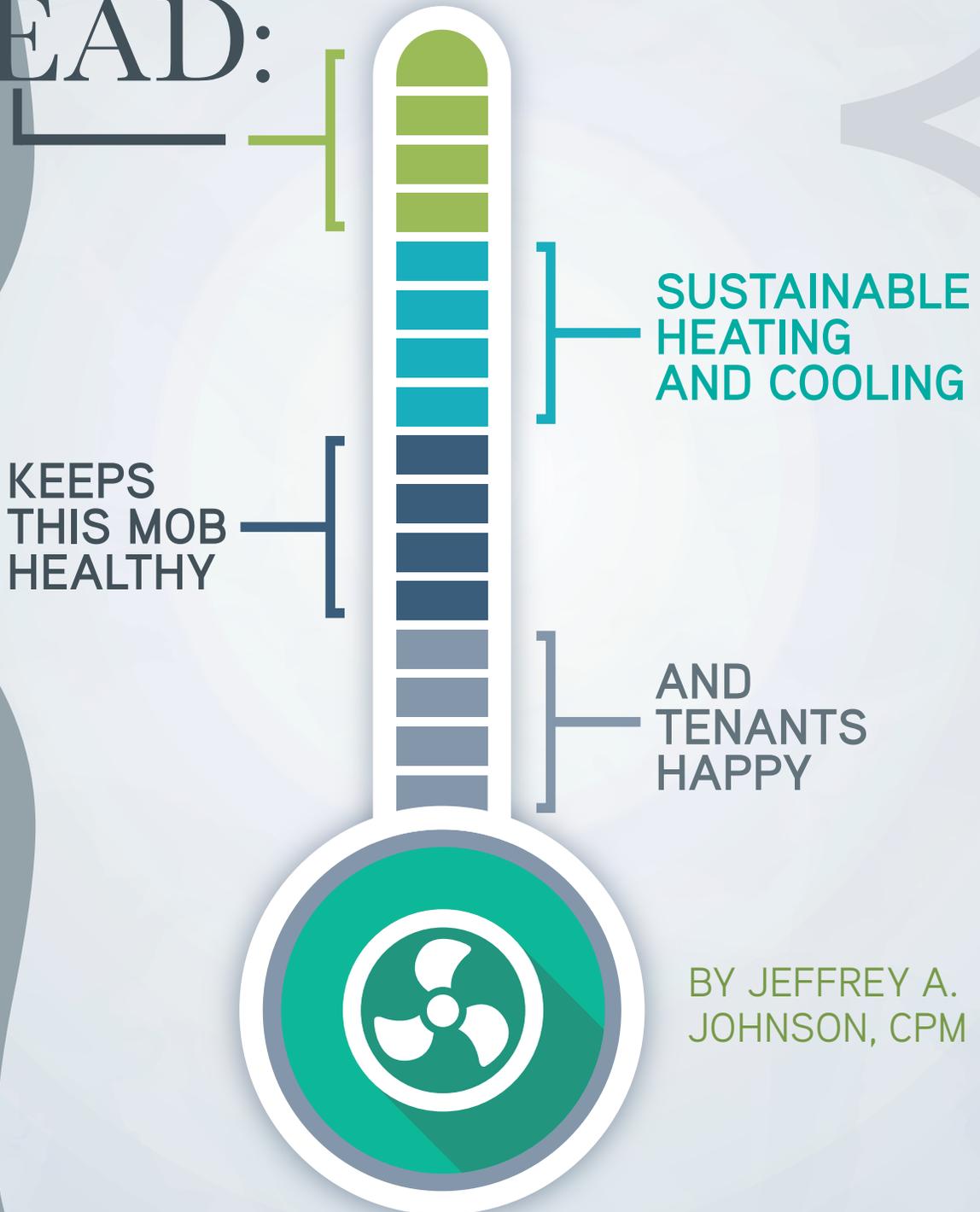


TAKING A TEMPURATURE READ:



BY JEFFREY A.
JOHNSON, CPM



When the indoor air quality and temperature inside of any facility go unnoticed by tenants, it is a strong indicator the building's heating, ventilation and air conditioning (HVAC) systems are working properly. While virtually invisible to tenants, HVAC should be top-of-mind

for every property manager and building owner. This is especially true considering energy costs continue to rise and HVAC systems are a large contributor to a building's indoor environmental quality and energy use.

Environmental efficiency and the functionality of heating and cooling systems is even more important in outpatient or medical office buildings (MOB) where maintaining healthy, comfortable and financially prudent conditions are crucial to the success of healthcare businesses.

"When working with healthcare tenants, building efficiency is becoming increasingly important," said Rebecca Monroe, CPM, vice president of asset management for CNL Healthcare Properties, a real estate investment trust (REIT) focused on senior housing and healthcare facilities. "From a financial perspective, costs are already high for most medical providers and reimbursements are continuously being cut. An energy-efficient building not only reduces facility costs for our tenants, but also lessens allergens and produces a healthier environment for patients with weakened immune systems."

"Additionally, it provides tenants with confidence that the building's systems will function at all times, allowing them to better serve their patients," said Monroe.

OPTIMAL INDOOR AIR QUALITY INCREASES WORKER PRODUCTIVITY

Improved cognitive function is another strong argument for improving indoor air quality. A joint peer-review study—*Associations of Cognitive Function Scores with Carbon Dioxide, Ventilation, and Volatile Organic Compound Exposures in Office Workers: A Controlled Exposure Study of Green and Conventional Office Environments*—recently conducted by researchers from Harvard University, SUNY-Upstate Medical Center and Syracuse University, shows that improved indoor environmental

quality can positively impact human cognitive function, thus optimizing conditions for health and increasing worker productivity and performance.

In the study, where 24 participants spent six full workdays in an environmentally controlled office space, researchers reported that on average, employees' cognitive function test scores improved 101 percent in green building environments with enhanced ventilation compared to a conventional building environment.

MAKING ENERGY MANAGEMENT A PRIORITY

For these reasons and more, energy management and sustainability are a primary focus of the property management and ownership team at the 62,503-square-foot Scripps Medical Building in Chula Vista, Calif. Located on the campus of Scripps Mercy Hospital, the five-story building is owned by CNL Healthcare Properties and managed by Cypress West Partners of Rancho Santa Margarita, Calif.

Originally built in 1975, the property was acquired by CNL Healthcare Properties in January 2014. The medical office building (MOB) is currently 97 percent occupied and houses two primary tenants, including Scripps Health System and Quest Diagnostics. Multiple family practice, urgent and surgical care offices occupy the remainder of the building.

As a part of the acquisition, the Property Conditions Report revealed the lifespan of the rooftop HVAC equipment was nearing its end. Furthermore, the building's two existing direct expansion (DX) HVAC units used R-22 refrigerant, a product the Environmental Protection Agency is phasing out due to its ozone depleting properties. After 2020, the production or importing of R-22 refrigerant will be banned. This environmental concern alone put the property management team on alert. However, comfort issues, energy efficiency and failing equipment challenges just months after purchasing the building made it apparent that the aging rooftop equipment needed to be replaced sooner than anticipated.

SELECTING A VIABLE SOLUTION

Due to Southern California's warm climate, it was imperative to find a reliable and efficient HVAC solution as soon as possible. The improvement effort not only had to meet CNL Healthcare Properties' commitment to sustainability, but it also needed to ensure optimal indoor temperature and



“Our goal was to decrease the quantity of refrigerant, improve the building performance and occupant comfort, as well as reduce overall energy consumption.”

air quality before, during and after installation. In order to meet this challenge, Walt Kritsky, a licensed engineer and manager for CNL Healthcare Properties’ technical services, reviewed the options and recommended the best possible solutions for the building’s HVAC system.

According to Kritsky, replacing the existing DX system (which cools the air directly from the evaporation of a refrigerant) with a similar R-134a refrigerant machine was the most economical approach. However, the solution did not provide the most energy efficient option in today’s marketplace.

“Our goal was to decrease the quantity of refrigerant, improve the building performance and occupant comfort, as well as reduce overall energy consumption,” said Kritsky.

With this in mind, a Daikin air-cooled scroll chiller offered the best solution and fit the existing footprint at a minimal cost premium. Its characteristics also provided optimal performance under part-load conditions, in which the chiller is most likely to operate under normal circumstances. Part-load efficiency refers to the ability of a system to handle part-load energy use, which must be taken into account when specifying an HVAC system.

EQUIPMENT SIZING AND RETURN ON INVESTMENT

Since proper sizing of an HVAC system can maximize part-load efficiency, it was important to understand the peak heating load as well as the system’s load profile. To accomplish this, the building was modeled using DOE-2 building energy use and cost analysis software. Additionally, Kritsky performed a vendor’s Facility Improvement Measures (FIMs) calculation to determine cost savings and the return on investment.

Due to seismic regulations in California, another consideration was the weight of the chilled water system, which is nearly double that of the existing DX system. Fortunately, load calculations determined that no seismic retrofitting was required.

CONDUCTING A SEAMLESS INSTALLATION

The facility’s HVAC contractor, Greater San Diego Air Conditioning Company, completed the HVAC project within four months and is now responsible for maintaining the systems, as well as ensuring its efficiency. In addition to installing the two HVAC units, further work included



HVAC improvements have also increased comfort, improved indoor air quality, and have created a more productive and healthier environment for tenants and patients alike.

upgrades to the building's filtration system. This entailed switching from standard pleated filters to a poly filter, which better withstands the moist coastal climate and improves efficiency due to its low airflow resistance. The building team also selected E-coated coils to increase durability and operational efficiency.

"The biggest challenge was keeping the building up and running while replacing and upgrading the entire HVAC system," said Ron MacArthur, project manager for Greater San Diego Air Conditioning Company. "Proper planning and coordination was key to preventing down-time. We also replaced the main electrical on the roof without impacting the building tenants throughout the entire process."

Converting to a chilled water system allowed MacArthur and his team to use a temporary chiller in the parking lot to pump water to the roof. Next, they replaced the coils in the air handler and cooled the building with the temporary chiller. "This gave us time to remove the other system components, crane on new chillers and switch over to the on-site chillers," added MacArthur.

MONITORING PERFORMANCE THROUGH MODERN CONTROL SYSTEMS

As a part of the HVAC replacement, the existing Johnson Controls' Facility Explorer building automation system

was upgraded to digital. This cloud-based solution, which MacArthur refers to as the HVAC system's "central brain," allows property management to instantaneously review building data to monitor performance and systems operations and then make adjustments as needed from remote locations.

"With anytime, anywhere access via a computer or mobile device, the energy management team can monitor the facility on or off-site and diagnose issues that, without these modern controls, wouldn't have been found until a site visit was performed," said MacArthur.

THE VALUE PROPOSITIONS ARE MANY

Data collected from Facility Explorer shows that the energy savings due to the HVAC upgrade have been significant. From July through December of last year, the property realized an energy savings of approximately 35 percent on its monthly kW/hour usage. This equates to an annual savings of 500,000 kW-hours and \$148,000 in reduced energy costs per year. It also adds \$2.1 million in value to the building.

The building's increased sustainability resulting from the new HVAC system is notable as well. The selected equipment exceeds Title 24 energy efficiency requirements for the state of California, and the building is now eligible to receive U.S. Green Building Council Leadership in Energy & Environmental Design (LEED) points under LEED Existing Building Operations and Maintenance 4.0 for Energy and Atmosphere improvements. It may also qualify for improved environmental performance.

In addition to the substantial environmental and monetary benefits resulting in decreased energy costs for the building tenants, the HVAC improvements have also increased comfort, improved indoor air quality, and have created a more productive and healthier environment for tenants and patients alike.

"Many tenants are becoming more aware of the importance of a green workplace," said CNL Healthcare Properties' Monroe. "So, providing an environmentally efficient HVAC system combined with the other sustainability initiatives completed and planned for this facility is a nice selling point from a marketing and leasing perspective. This building improvement is a win-win all around." ■

JEFFREY A. JOHNSON, CPM, (JJOHNSON@CYPRESSWESTPARTNERS.COM) IS A MANAGING PARTNER FOR CYPRESS WEST PARTNERS, A LEADING HEALTHCARE FACILITIES PROPERTY MANAGEMENT FIRM IN RANCHO SANTA MARGARITA, CALIF., THAT PROVIDES PROPERTY MANAGEMENT AND LEASING SERVICES FOR HEALTHCARE PROPERTIES IN SOUTHERN CALIF., NEV. AND ARIZ.