autani
building controls

# Space Optimization White Paper

# Executive Summary

**The $3 – $30 – $300 rule helps an organization estimate the costs of doing business in its physical environment. The three categories provide typical order of magnitude guides for key expenditures by any business. For a given space, the $3 represents the cost of utilities, the $30 represents the lease and tenant improvement costs and the $300 represents the cost of corporate payroll – all translated to a per square foot metric.**

**The $3 – $30 – $300 rule provides a useful guide to quantifying payback from a networked lighting control system. The cost of energy ($3) savings alone often provides the necessary payback to justify the capital expense of a networked lighting controls system. However, a singular focus on energy savings ignores much more valuable paybacks from space planning ($30) and operational efficiency ($300) that are often untapped by end users. This paper explores how Autani's EnergyCenter platform allows customers to tap into these lease and tenant improvement savings with a simple space optimization strategy.**

# Space Optimization with Autani

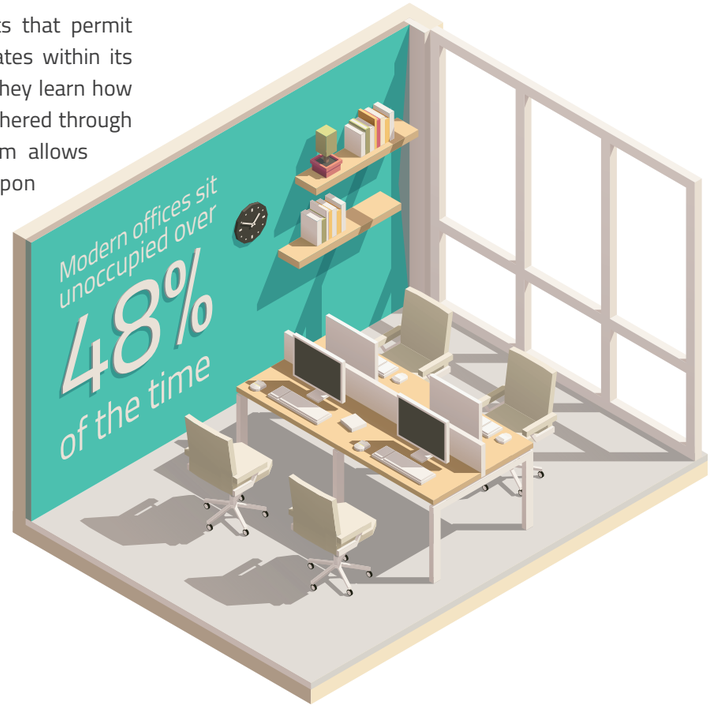
Energy savings are just one of the many possible benefits of a modern building automation system. While often used to justify the initial purchase, energy savings only scratch the surface of what a business can do to improve its operations with connected lighting. These "Non-Energy Benefits" provide customers with often overlooked ways to save on the costs of their space.

Networked lighting systems provide endpoints that permit a business to better understand how it operates within its space. Businesses tend to be surprised when they learn how their space is actually being used. The data gathered through the endpoints of a networked lighting system allows companies to make informed decisions based upon the reality of how their current space is used.

One of these endpoints, space occupancy data, is increasingly important in an age where business travel, remote work and work from home are becoming the norm. A recent study from architecture firm HOK estimates that modern offices sit unoccupied over 48% of the time while conference rooms are hardly, if ever, fully occupied.

**SOURCE** HOK

Autani offers a simple wireless solution to this problem. Autani recently partnered with LG Lighting to provide an entirely wireless lighting control system ideal for LED retrofit applications. Using light fixture-mounted, unobtrusive occupancy sensors and a powerful energy management software platform, customers can reap the energy benefits of a networked lighting system and learn how to better use their space at the same time.






Autani recently deployed networked lighting controls that manage the lights and energy use for a large state university. The networked lighting controls system then allowed the university to tap into this trove of data. The university analyzed usage data for a block of office space in its student activity center and made some cost-saving discoveries.

# University Experience

The space in question is a one part of a larger student activity center but proves to be representative of most traditional office configurations. As detailed in the drawing below, the student center has a large open office space in the center surrounded by 10 individual offices, a break room and a conference room.

First, Autani working with LG and an installer retrofitted the entire space with low power LG Simple Choice LED retrofit fixtures. This change alone produced an energy savings of over 50% from the pre-existing fluorescent fixtures. The LG fixtures have the added benefit of an integrated 'multisensor' which allows offices to take advantage of free daylighting by combining a traditional photocell with an occupancy sensor that can turn fixtures on and off. One small fixture-mountable device allows these sensors to feed into the EnergyCenter software providing fixture based networked controls.

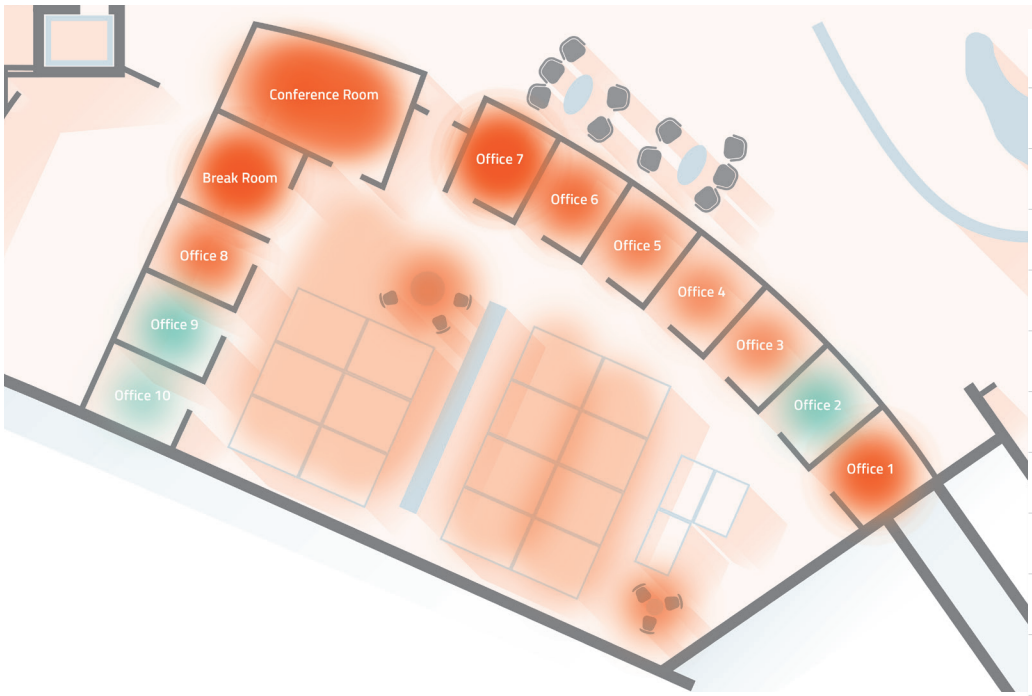
The EnergyCenter Automation software platform provides a completely networked control solution that simultaneously controls the lights and gathers valuable information about what those lights are doing. The EnergyCenter platform is a web-enabled portal that rolls up all of the relevant energy information about your space into one easily-accessible place. This platform runs exclusively on the Autani Manager device and coordinates with Zigbee radios over a wireless mesh network to manage compatible controllers and sensors. Utilizing a web-enabled system like EnergyCenter empowers users to control their system from anywhere in the world and puts the insights of the Internet of Things at their fingertips.

**ABOVE** EnergyCenter Software

**RIGHT** LG Simple Choice LED RETROFIT fixtures

**BELOW** LG multisensor combining photocell & occupancy

It is this EnergyCenter occupancy data that provides the keys to unlock the next link in the $3 – $30 – $300 chain—the potential for improved space utilization. In our sample use case, the design called for an LG multisensor (occupancy sensor) in each of the offices, the conference room and scattered about the open office. The Autani EnergyCenter platform then allows users to pull raw sensor data over a user-defined period of time. In this case, Autani worked with the university to pull data for a typical month and crunched some numbers.




| Room | Index Value |
|---|---|
| Office 1 | 0.87 |
| Office 2 | 0.18 |
| Office 3 | 0.71 |
| Office 4 | 0.72 |
| Office 5 | 0.79 |
| Office 6 | 0.91 |
| Office 7 | 1.03 |
| Office 8 | 0.85 |
| Office 9 | 0.28 |
| Office 10 | 0.01 |
| Conference | 0.84 |

# Results & Summary

After evaluating this data Autani found the following:

**Offices**

Offices could be utilized more efficiently.

- 3 of the 10 offices were occupied less than 30% of working hours. If we use the $30 link in the chain and a typical 15x15 foot office, then this means that the university had identified over $6,750 in savings opportunities from a $500 initial investment in multisensors, the cost for which had already been offset by the energy savings that they produced.

**Conference Room**

The existing conference room had additional capacity.

- Contrary to the conference room reservation data, the conference room was vacant for roughly 20% of the working hours.

**Take away**

Real-time data charts the path to a more optimal, cost effective way to use expensive space.

**Summary**

Aside from payroll, an organization's facilities are its second costliest investment. With lease (and utilities) costs on the rise in most major areas, businesses need a strategy to reduce these costs or risk further cutting into profits. Surveys for both utility and space costs shows both are likely to increase at a steady 2-5% per year on average into the near future. With networked controls payback periods already down to 3-5 years, there has never been a better time to invest in a building automation system for energy saving benefits alone. Those already attractive payback periods become even shorter when the even larger dollar benefits of space planning are included. 'Non-Energy Benefits' are overlooked too often. When harnessed effectively, these 'Non-Energy Benefits' can boost facility savings by quantum leaps. Most significantly, these 'Non-Energy Benefits' represent no additional cost to the end customer and have almost limitless potential for the motivated user. Autani's wireless building automation solution with native space utilization functionality will revolutionize the way you look at efficiency.

# About Autani

**Autani is transforming the way commercial and industrial buildings optimize energy management. With our expertise in IoT, IT and building automation, we design, engineer, manufacture and install advanced control platforms to create smart buildings that manage, monitor and reduce energy consumption and increase energy savings. And through our strategic partnerships with industry leaders, we provide a comprehensive range of energy solutions, from LED lighting to electrical design and implementation.**

autani
building controls

443.320.2233
information@autani.com
www.autani.com
7090 Columbia Gateway Drive
Suite 140, Columbia, MD 21046