



# A HEALTHIER FUTURE STARTS HERE: COMMERCIAL BUILDINGS

The COVID-19 pandemic presents significant challenges for commercial buildings, as owners and operators look to protect occupants, control infection and enable the safe reopening of businesses. As we look to move forward, these challenges are increasing the focus on healthy building strategies for design, retrofit and operation, and shifting the view of commercial buildings beyond places to work and into powerful tools that drive human health and progress.

## COMMERCIAL BUILDING PRIORITIES



## THE SCIENCE OF HEALTHY COMMERCIAL BUILDINGS

While the current urgency around healthy indoor environments in commercial buildings revolves largely around stopping the spread of COVID-19, research has shown the potential impact of healthy environments to be much greater. Through the COGfx Study, research has shown that healthy buildings can significantly improve cognitive function, while the HEALTHfx Study revealed the benefits of healthy buildings on societal health and climate. All in all, we're seeing that healthy buildings can impact the bottom line for a business – from reducing energy waste and the related costs to increasing worker productivity.

**WE SPEND  
90%  
OF OUR TIME  
INDOORS**

We can use healthy building environments to:

### IMPROVE COGNITIVE FUNCTION

in enhanced green buildings

Crisis response scores

**131% HIGHER**

Information usage scores

**299% HIGHER**

Strategy scores

**288% HIGHER**

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### IMPROVE PERSONAL HEALTH

in high-performing, green-certified buildings vs. high-performing, non-certified buildings

Sick building symptoms

**30% FEWER &**  
better environmental perceptions

Sleep quality scores

**6.4% HIGHER**

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### IMPROVE SOCIETAL HEALTH

Compared to "conventional commercial buildings," the green-certified buildings studied saved

**\$7.5B** in energy costs

**\$5.8B** in combined health and climate benefits

**Total benefit of \$13.3B** for 2000-2016

**\$1.4B** from averting negative impacts of climate change

**\$4.4B** from reductions in air pollution resulting in fewer deaths, hospital visits, lost days of work and school, and more

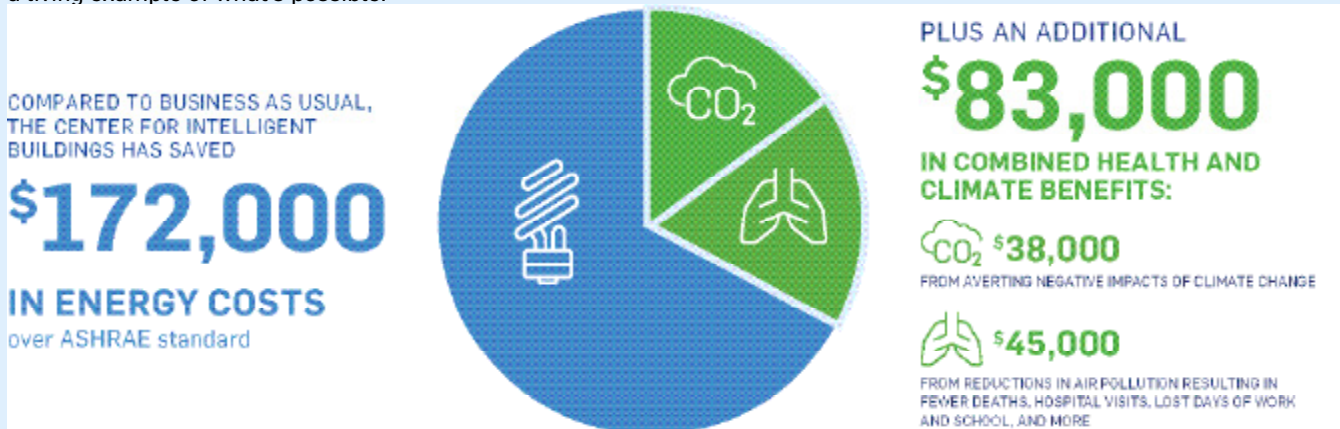
Primary support for the study came from Carrier. MacNaughton P, Allen J, Satish U, Laurent J, Flanigan S, Vallarino J, Coull B, Spengler. 2016. The Impact of Working in a Green Certified Building on Cognitive Function and Health. Building and Environment DOI: 10.1016/j.buildenv.2016.11.041

Primary support for the study came from Carrier. MacNaughton P, Cao X, Buonocore J, Cedeno-Laurent J, Spengler J, Bernstein A, and Allen J. Energy Savings, Emission Reductions, and Health Co-Benefits of the Green Building Movement. 30 January 2018. Journal of Exposure Science and Environmental Epidemiology.

Sources: <http://thecogfxstudy.com>, <http://thehealthfxstudy.com>

## A HEALTHY HEADQUARTERS

At Carrier, creating healthier, smarter, more efficient indoor environments is a part of who we are. It's why the Center for Intelligent Buildings – our global headquarters – was designed to put healthy building expertise into practice and serve as a living example of what's possible.



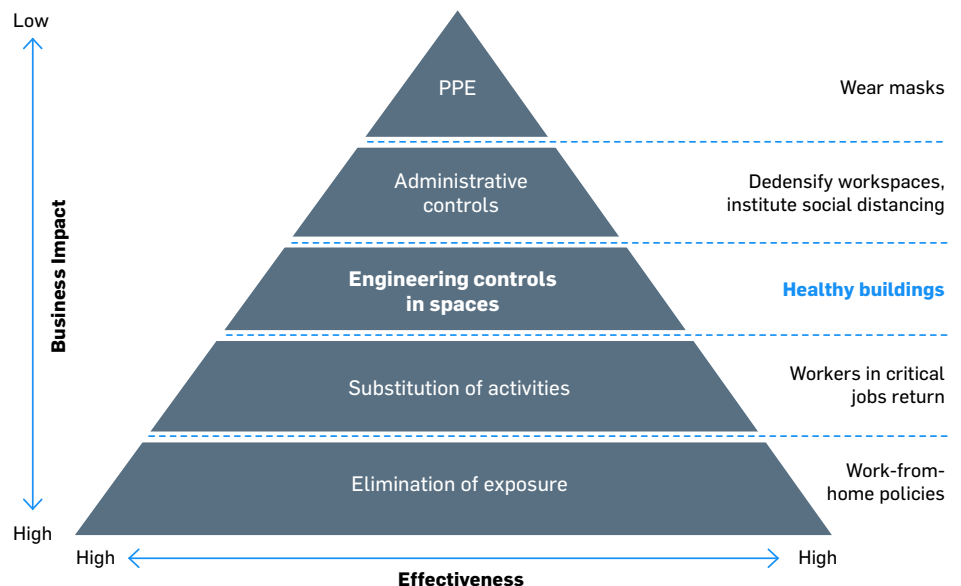
FOR A TOTAL BENEFIT OF **\$255,000** EACH YEAR

Allen, Joseph, and John D. Macomber. *Healthy Buildings: How Indoor Spaces Drive Performance and Productivity*. Cambridge, MA: Harvard University Press, 2020.

## THE ROLE OF HEALTHY BUILDINGS IN REOPENING

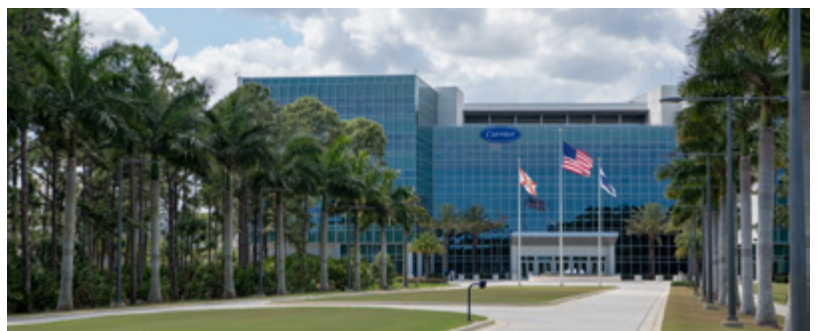
Creating a healthy building through engineering controls in spaces is a key component of combating COVID-19. It's a strategy that balances overall effectiveness with the financial impact it can have on the business.

Allen, J. G., & Macomber, J. D. (2020, April). What Makes an Office Building "Healthy." *Harvard Business Review*



## CARRIER HEALTHY BUILDINGS PROGRAM

As the inventors of modern air conditioning and a world leader in HVAC, refrigeration, and fire and security solutions, Carrier has a legacy of creating safe and comfortable buildings. Now we're building on that legacy through the launch of our Healthy Buildings Program. Our experts have in-depth knowledge and experience in commercial buildings and a holistic suite of healthy building technologies and services to address the immediate pandemic concerns and long into the future.



Carrier's Center for Intelligent Buildings is located in Jupiter, Florida, USA.

## HEALTHY BUILDINGS ASSESSMENTS FOR COMMERCIAL BUILDINGS

At Carrier, we understand that many of our commercial building customers are facing uncertainty with how to move forward in developing a healthy building strategy. Our experts are here to help – starting with assessments across various aspects of a building.

 <h3>SAFE START SERVICES</h3> <p>Ensure building is ready for occupancy</p> <p>Rigorous recommissioning of HVAC equipment</p> <p>Implement best practices (possibly remotely)</p>	 <h3>EMERGENCY ASSETS</h3> <p>HVAC equipment on demand to reopen quickly and safely</p> <p>Detailed site evaluations</p> <p>Ensure system is able to meet your new ventilation and IAQ requirements</p>	 <h3>IAQ ASSESSMENT</h3> <p>Test air quality</p> <p>Develop and implement upgrades for optimal filtration, ventilation, airflow, controls, etc.</p> <p>Develop corporate-wide IAQ engineering standards</p>	 <h3>VENTILATION UPGRADE</h3> <p>Increases ventilation rate to reduce indoor pollutants</p> <p>Increases effective dilution ventilation per person</p> <p>Improves IAQ and occupant comfort</p>	 <h3>SECURITY ASSESSMENT</h3> <p>Provide security solutions and upgrades</p> <p>Contactless access management, body temp screening and video analytics</p> <p>Remote monitoring and diagnostics</p>
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## HEALTHY BUILDINGS SOLUTIONS FOR COMMERCIAL BUILDINGS

Carrier offers a full suite of products and services designed to help create safe and healthy environments for commercial building occupants. The following are just a few highlights of our offering.

### CARRIER HEALTHY BUILDINGS TECHNOLOGIES

Carrier's Healthy Buildings Program offers customers comprehensive, building-wide technology solutions for today's reimagined environments. In addition to Carrier's comprehensive HVAC, fire, security and controls product offering, the Healthy Buildings offering includes:



**OptiClean™ Air Scrubber and Negative Air Machine** helps clean contaminated air and prevent it from spreading to different sections of a building, which is critical for infection control.



**BlueDiamond™ Touchless Access** eliminate a significant number of access touch points through industry-leading mobile credentialing technology.



**Advanced Airside Equipment** offers air-handling units and fan coil units equipped with advanced filtration designs and germicidal UVC light that provide excellent microbial control and enhanced IAQ features, presenting the perfect balance between a safe and healthy environment, performance and eco-efficiency.



**MyWay™ Building Services Mobile Platform** integrates HVAC, lighting, elevator and other system controls, touchless access, indoor location and other services for a safer and personalized occupant experience.



**Air Purifiers** are filtration technologies including various HEPA filters for particulate matter, activated carbon filters for removal of bad odors and volatile organic compounds, photocatalyst filters and UV lamps (with an elimination rate of  $\geq 99.999\%$  for pathogens such as E. coli and influenza, tested in Kitasato Institute, Medical Environment Research Center, Japan) to target viruses and bacteria and improve IAQ for an area of up to 4,500 square feet.



**DirectKey™ Mobile Access Solution** has empowered millions of hotel guests to safely access their hotel rooms without contact by bypassing the front desk check-in and eliminating many traditional touch points in the process.

## HEALTHY BUILDING SERVICES FOR COMMERCIAL BUILDINGS

Healthy buildings are about more than design and solutions. Ongoing management and operation are essential to optimizing indoor environments for efficiency, safety and occupant health and performance. Here are a few examples of Carrier remote services available to help.



### REMOTE AIRSIDE MANAGEMENT

- Manage IAQ and ventilation in line with best practices
- Make changes and fix issues remotely
- Optimize maintenance and operational costs
- 24x7 command center



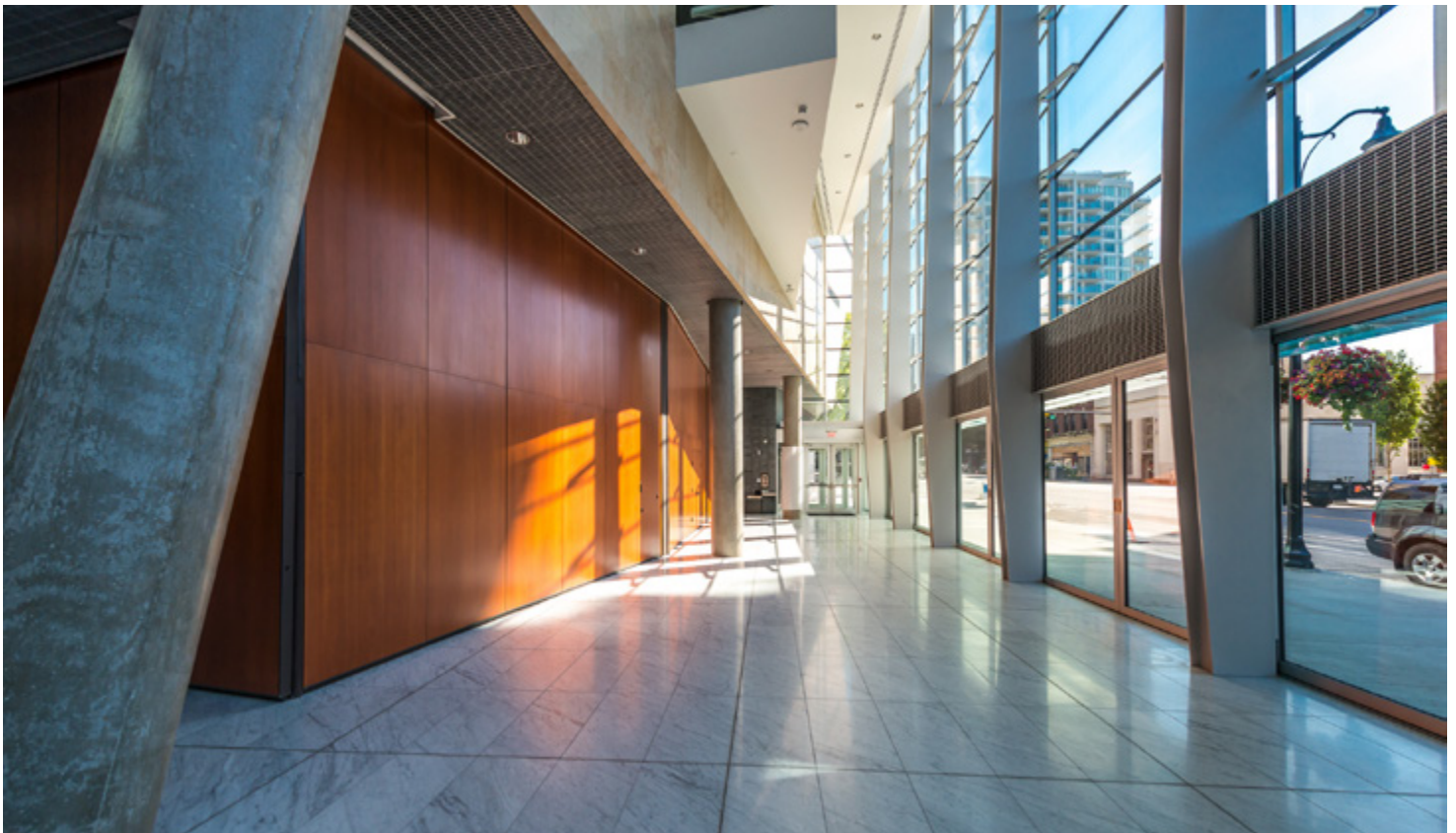
### REMOTE ENERGY MANAGEMENT

- Provide advanced cloud-based analytics
- Optimize energy efficiency, equipment uptime, occupant comfort and operational productivity
- Actionable insights by CORTIX™ building IoT platform
- Optimize autonomously or through a mobile application



### REMOTE HVAC SERVICES

- Maximize performance and efficiency
- Increase uptime
- Improve budgeting and scheduling
- Fault detection and diagnostics



### GET STARTED WITH AN EXPERT

From safe business reopenings to ongoing enhancements to worker health and performance, a healthier future starts indoors. Let's work together to unlock the enormous potential of healthy commercial buildings. Visit us at [carrier.com/healthybuildings](https://carrier.com/healthybuildings) to learn more about our Healthy Buildings Program and connect with one of our experts.



HEALTHYBUILDINGS

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