



To: Environment and Transportation and Appropriations, General Assembly of Maryland

From: Erika Scheffer, Associate Director, Government Relations, Carrier Corporation

Date: March 7, 2023

Re: House Bill 900 – Relating to Public Building Indoor Air Quality

Dear Chairman Barve,

On behalf of Carrier, the leading global provider of healthy, safe, sustainable, and intelligent building and cold chain solutions, **we support House Bill 900 with amendments.**

HB900 requires the creation and adoption of a comprehensive indoor air quality standard for public buildings. In addition, it requires public employers to annually certify public buildings meet the air quality standard and establish an indoor air quality (IAQ) plan that outlines procedures to validate building systems, equipment, and infrastructure are functioning as intended.

Thank you to the sponsors of this bill for taking action to establish an indoor air quality standard for public buildings and to support public employers as they work to improve Maryland's public spaces. Improved IAQ can support reduced transmission of airborne illnesses, a critical benefit following the COVID-19 pandemic, which can result in reduced absenteeism.¹ In addition, greater IAQ can increase the cognitive function of occupants; for example, occupant cognitive test scores in simulated environments with higher IAQ (low VOCs, low CO₂ and higher ventilation) vs. conventional environments were over 100% higher.² Improved occupant productivity, related to enhanced IAQ, can "result in 10% improvements in organizational profitability," or per employee productivity benefits of \$6,500 each year.³ We hope that as Maryland takes this first step toward improving its building stock and increasing public accountability to provide safer and healthier environments for occupants, it will inspire additional public and private employers to take positive steps toward a healthier and safer future for all Americans.

We recommend the following amendments to improve the feasibility of meeting bill requirements and ensuring the improvement of indoor air quality in public buildings over time:

Section 5-1302.B.2.2: We recommend including the types of personnel that are approved to conduct annual assessments of building envelopes and enclosures and HVAC systems which can be complex and require specialized training to assess. For example, the following language can be included as a requirement: "assessments must be completed by qualified personnel including factory authorized certified manufacturer service technicians for air handling equipment, Testing, Adjusting, and Balancing (TAB) technicians, or persons certified to perform assessments of HVAC systems through a certification body accredited by the America National Standards Institute National Accreditation Board."

Section 5-1302.B.2.2.3.A and B: We recommend expanding the scope of air pollutants that are monitored beyond carbon dioxide. CO₂ tracking alone does not measure overall indoor air quality, but instead measures the concentration of CO₂ in the air and can be used to infer the air ventilation rate relative to CO₂ sources within an indoor space.⁴ Indoor air quality is measured by the concentration of pollutants in the air including (but not limited to) VOCs, PM_{2.5}, and radon, as well as temperature and humidity in addition to CO₂.⁵ Choosing a sensor which considers air quality metrics in addition to CO₂



better enables public employers to take the right actions to improve IAQ and realize the full scope of IAQ benefits, which can include cognitive function. In addition, while tracking indoor air quality, it is recommended to also track changes to GHG (greenhouse gas) emissions and energy consumption. Changes made to building systems to improve indoor air can change the environmental impact of building systems. Understanding the environmental impact upfront can inform the optimal selection of potential IAQ solutions.

Section 5-1302.B.2.2.3.B: We recommend specifying the minimum frequency of “routine monitoring” for air pollutants, temperature, and humidity that are required as well as approved methodologies and tools for monitoring. Best practice is continuous monitoring of all required air pollutants, humidity, and temperature and to alert operations or facilities teams when levels fall below the standard and which actions are needed to restore the system to the minimum operating standard for IAQ. Additional monitoring details that would be beneficial to include are mounting location parameters, minimum monitor capabilities including measurement ranges and accuracy, minimum monitor quantity depending on building size and design, and monitor alert or notification capabilities. We recommend using the WELL Performance Verification Guide or a similar guideline that includes science-backed best practices.⁶

Section 5-1302.B.2.2.3.E: We recommend in addition to training employees and occupants, that IAQ be made visible to them throughout the year. For example, if IAQ is continuously monitored, results can be made public through visual displays at building entrances that indicate when IAQ parameters are in or out of desired compliance ranges.

Section 5-1302.C.1.2: We recommend that solutions not only be prioritized on cost-effectiveness but also on their ability to reduce or minimize environmental effects associated to improvements in indoor air quality.

Section 5-1302.C.1.3: We recommend including a list of example standards/guidelines to improve clarity, such as the WELL, FitWel or ASHRAE standards.

Section 5-1302.C.2.5: We would like to nominate a Carrier expert to be a contributing member to the commissioner’s committee to develop the minimum IAQ standard for Maryland’s public buildings. Carrier experts are highly familiar with existing evidence-based standards, cost-effective and sustainable IAQ solutions, IAQ solution equipment, installation lead times, and best practices, as well as new IAQ technologies. We believe this bill directly supports Carrier’s mission to help people and the planet and we would appreciate any opportunity to support this bill and its execution.

For these reasons, we support HB900 with amendments.

Sincerely,

A handwritten signature in black ink that reads "Erika Lynn Scheffer".

Erika Scheffer

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Citations

- ¹. The White House - Office of Science and Technology Policy (OSTP),
[Let's Clear The Air On COVID | OSTP | The White House](#)
- ². 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
<https://ehp.niehs.nih.gov/doi/pdf/10.1289/ehp.1510037>
- ³. Designing Buildings that Are Both Well-Ventilated and Green
<https://hbr.org/2023/01/designing-buildings-that-are-both-well-ventilated-and-green>
- ⁴ What a Carbon Monoxide Detector Tells You
<https://www.energyvanguard.com/blog/what-a-carbon-dioxide-monitor-tells-you/>
- ⁵. EPA – Introduction to Indoor Air Quality
<https://www.epa.gov/indoor-air-quality-iaq/introduction-indoor-air-quality>
- ⁶. WELL Performance Verification Guide
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