

JB&B CELEBRATES NATIONAL HEALTH CARE FACILITIES AND ENGINEERING WEEK



THE DECARBONIZATION PUSH FOR INNOVATION AND PLANNING

For many years, decarbonization in healthcare buildings was a challenge that only early adopters were willing to tackle, but now it's becoming a focus for most institutions. Although it's crucial for addressing climate change, decarbonization poses several complex challenges and complications. In new construction, there are many strategies in place for transitioning to more sustainable practices while maintaining patient care quality and operational efficiency. The inventory of existing, aged infrastructure far outweighs the quantity of new construction, though, and that's one of the largest challenges this industry is facing.

Balancing the demands of decarbonization with the primary goals of healthcare, patient safety, and well-being is complex. Sustainable practices, though environmentally friendly, can sometimes be costly, and this may impact the affordability of healthcare. The most effective way to tackle this is to put the primary focus on energy-efficiency measures and energy-recovery systems. These investments allow for the initial capital expenses to be offset by the ongoing operating expenses of the buildings. With the ever-changing landscape of grid decarbonization, overall energy cost reduction can minimize the exposure to future impacts to utility costs that are outside of the hospital's control.

Implementing energy-efficient technologies may disrupt operations during installation. When redundancy has not been considered in the original system design, phasing of a project may present an even larger challenge than cost. This is especially apparent in urban environments, where many projects require renovations to occur in place, with limited room for decanting. Unfortunately, this also means that systems operate for years at subpar conditions, making the energy impact even larger. Developing a long-term carbon reduction strategy can help ameliorate this complication. Architectural renovation and program modifications are common practice, and with a carbon reduction master plan, planned downtime can be utilized to move the facility forward with strategic enabling work to support future, more significant upgrades. It can also help to identify larger-scale upgrades that can be addressed in a more efficient way when they are part of the upfront project planning.

Decarbonization can also affect healthcare workforce dynamics for facilities operations. The introduction of new technologies and processes may require extensive training and adaptation, potentially impacting staff productivity in the short term. Engagement with the building operations teams during the design and construction process can help ease this transition through open dialogue and communication among the overall team. A multi-disciplinary team involved in the carbon master plan can address operational concerns before they're implemented and get full team buy-in and understanding of newer, more innovative concepts.

It's also important to recognize that healthcare facilities are not alone in the pursuit of decarbonization. They'll be supported by their local utility grids. While the opportunity will differ from one facility to another, the transition from onsite combustion of fossil fuels to electrified processes will allow facilities to reduce their effective carbon emissions as their local utility grids add renewable power to the grid power mixture. This transition is necessarily gradual, as facility grid connections and local power providers must be capable of supporting additional electrical load, but it provides a useful opportunity to reduce emissions generated through onsite combustion. Emergent technologies, such as geothermal and battery storage, will also aid in this process.

Facilities may also take advantage of the installation of onsite renewable power generation through solar photovoltaic arrays. While it's not anticipated that a solar array might support a healthcare facility's entire electrical load, all available onsite electricity generation will support the larger goal of decarbonization.

Decarbonization in a healthcare setting is a vital undertaking for addressing climate change. However, it presents myriad complications, so effective implementation requires extensive planning. Developing a master-planning road map with an overarching strategy can provide the guiding principles to lead an institution through the next few decades of change.



Zachery J. Wills
Senior Project Engineer
646.810.2721
willsz@jbb.com

