

# FMJ



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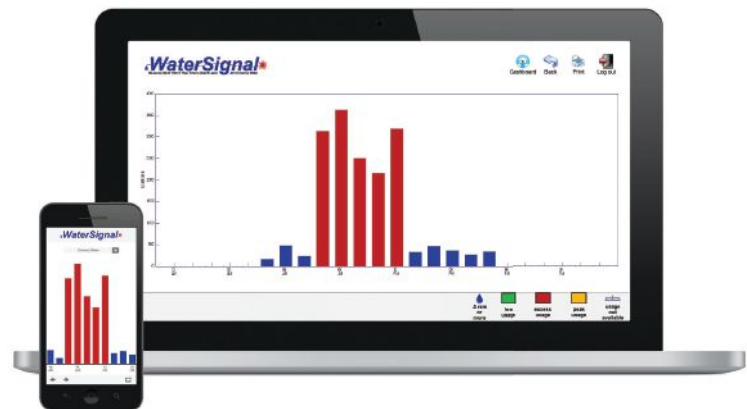
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IFMA is the world's largest, most widely recognized association for facility management professionals, supporting more than 20,000 members in 106 countries. Founded in 1980, IFMA's vision is to lead the future of the built environment to make the world a better place. A key contributor to the development of international FM standards, IFMA provides career resources, continuing education and three industry-respected credentials; maintains the largest repository of FM-related content on the web; and hosts year-round global events. Among the values that guide us, we believe in the benefit of global diversity, inclusion and social equity; and we recognize that sustainability, resilience and responsible environmental stewardship are paramount. For more information, visit ifma.org.

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A Sustainable Business Plan

[se.com/us/en/work/campaign/life-is-on/case-study/blackstone.jsp](https://www.enr.com/us/en/work/campaign/life-is-on/case-study/blackstone.jsp)

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[us.jll.com/en/trends-and-insights/research/decarbonizing-the-built-environment](https://www.enr.com/us/en/trends-and-insights/research/decarbonizing-the-built-environment)

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[greenroofs.org](https://www.greenroofs.org)

## FMJ Extended

Check out the online issue of FMJ for a special section that follows the end of the print magazine and includes additional articles not available in the print edition. Read the extra articles listed below for contributions from councils and communities, and other supplementary content.

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#### IFMA's Annual Report

#### Highlights from IFMA's World Workplace 2021



# Editor's Note Bobby Vasquez

The second half of 2021 offered a light of hope for reuniting with friends, family, coworkers and clients after a year of isolation.

While we participated in the global work-from-home experiment, FMs were on site, ensuring that when a restless, yet uneasy workforce and eager, yet cautious organizations sounded the bell to return to their facilities, they would be ready.

Thanks to FM, they were. Regardless of the differences in regional protocols, individual viewpoints and new, dangerous variants, people were able to return to a place of familiarity and camaraderie where they could safely collaborate and feel like a part of something again.

For 18 months, FMs made sure that less-used water systems remained operational with no fears of Legionella. They made sure that HVAC systems continued circulating clean air in their buildings, especially with more eyes on indoor air quality. They reimagined space, designed not just for productivity, but for safety, comfort and flexibility. They implemented technology to offer stakeholders peace-of-mind in a fast-changing environment where ever-changing mandates and new protocols were still around the next corner.

And as stakeholders reenter their facilities, a once invisible profession shined brightly in the spotlight. Whereas communication between FM teams and occupants were once limited to copies of an email taped or pinned to wall, there is now a direct line to FM. Gone are the days of cleaning workspaces after hours. Now, custodial staff members are in the mix of the day, sanitizing space in full view of the rest of the organization.

Now that FM has the attention of their stakeholders, it's time to deliver even more messaging. In our industry, sustainability is nothing new. Well before the pandemic, FMs implemented simple initiatives such as reduce, reuse and recycle and more complex activities like green retrofitting. Through the industry's constant communication and action, stakeholders are reminded to consider earth-friendly ways.

This race to leave our world a better, cleaner place than when we arrived has no finish line; but it does have elite runners, middle-of-the-packers and just-finishers. This issue of IFMA's *FMJ* focuses on FM and its role as elite runners in sustainable best practices. Governments have mandated that organizations reduce their facilities' carbon footprints. Those mandates have fallen on the capable shoulders of FM professionals.

It is up to this generation of FMs to collaborate with the next to ensure that carbon-neutral, energy and water management, preservation and conservation initiatives will not be in vain. Our industry has an opportunity, once again, to help people feel like a part of something – working to ensure the vitality of our society, economy and environment.

Cheers!

**Interested in writing for FMJ?**

Email [bobby.vasquez@ifma.org](mailto:bobby.vasquez@ifma.org) article ideas to be considered for future issues of FMJ.

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# From the **Chair**

**PETER  
ANKERSTJERNE**

MBA, COP,  
IFMA FELLOW

*Chair,  
Board of Directors*

It has been exactly one year since I wrote my column for the previous sustainability-themed issue of IFMA's FMJ. Since that time, a lot has happened on the world stage. Yes, the pandemic is still here, but we are making progress against the virus — although this still varies per region. Since the onset of the COVID-19 outbreak, we have shared a sense of urgency and decisiveness. World leaders, local governments and corporations reacted swiftly, exchanged information and joined forces to ensure the safety and well-being of our communities.

However, one public health crisis has become even more pressing. The United Nations' Intergovernmental Panel on Climate Change (IPCC) report published in August sent a shockwave through traditional and social media. It was a reality check for many, with UN Secretary-General Antonio Guterres calling it "a code red for humanity." He also stressed the climate crisis poses enormous financial risk to investment managers, asset owners and businesses and that these risks should be measured, disclosed and mitigated. "The public and private sector must work together to ensure a just and rapid transformation to a net zero global economy."

True, many governments, companies and individuals are already taking responsible steps toward sustainability, but many are still lagging behind. They are perhaps suffering from what is called present bias: people tend to place a greater weight on instant gratitude payoffs rather than future progress. Hence, we pay more attention to immediate dangers like a deadly virus and underestimate longer-term threats such as climate change.

However, the good news coming from the IPCC report is that human actions still have the potential to determine the future of the climate. The evidence clearly states that carbon dioxide and other greenhouse gases are still the main drivers

that affect the climate. Almost 40 percent of those global greenhouse emissions come from the built environment, which also accounts for around 30 percent of the global energy consumption.

Undeniably, this is where we as facility managers come in. I am convinced that we can and must be key players in addressing these issues. We must step up to the challenge even more and be instrumental in leading our companies toward a net-zero emissions future, based on green growth. Paramount in these efforts is the value we can get out of technology and data and the tools to get sometimes still reluctant executives on board. Technology and data will enable us to gain a full understanding of our organizational metrics, be it energy consumption, carbon footprint or waste management. A continuous cycle of collecting, reporting and improving will allow for actionable insights, measurable commitments and increased impact.

IFMA is pleased to see the wave of change swelling, as we observe a huge uptake in members from all around the world obtaining their Sustainability Facility Professional® (SFP®) credentials, helping FMs make data-driven decisions and understand sustainable best practices. We are also persisting in our continuous dialogue with national and regional governments on environmental stewardship, utilities and sustainability. Let's again unite in facing a critical task upon us — not only because stakeholder groups hold us accountable, or because we have to be compliant with governmental guidelines, but because of our responsibility toward future generations.



## DON GILPIN

*President & CEO  
IFMA*

# From the **President**

In the introduction to the IFMA Foundation's original Sustainability How-to Guide, sustainability is defined as "the ability to meet our needs without compromising the ability of future generations to meet theirs." Published 12 years ago, the How-to Guide series addresses the increasing awareness among FMs of buildings' impact on the environment, as well as workforce productivity.

So much has advanced and matured in the sustainability realm over the past decade, we sometimes take it for granted that our responsibility as facility managers is to drive decisions that improve the triple bottom line; but the pandemic has placed a magnifying glass on healthy buildings, and the rising threat of climate change has elevated sustainable practices to a now-or-never priority.

Not so long ago, obtaining buy-in and funding for strategic sustainability initiatives was our biggest challenge. Now, our greatest obstacle is time. This is no longer a race toward resilience. It's a race against the clock.

This would be cause for concern had we not already been prepping for it. From IFMA's Sustainability Facility Professional® (SFP®) credential program, to groundbreaking reports such as "Climate Change Fundamentals for FM," "Adapting to Climate Change" and "The Experts' Assessment," IFMA has been bringing you leading-edge training and content to help you move toward operations and practices that will inevitably, out of necessity, be the future of facilities.

Thanks to the foresight of so many IFMA thought leaders — Sheila Sheridan, Bill Conley, Dean Stanberry, Eric Teicholz, John McGee and others

— our industry has been a frontline force in efficient, productive, environmentally friendly initiatives. We've shown that measures taken have real results, saving energy, water and improving overall workplace quality. FM is already poised to hold a central role in carbon neutrality for the built environment, and that role represents another progressive step in the industry's evolution.

We recently announced the launch of IFMA's Research Advisory Committee. Consisting of academic and business-oriented researchers focused on human experience and engagement, human-machine interfaces, facility management, real estate and sustainability, this international panel of multidisciplinary subject matter experts will help create IFMA's future research agenda. Led by IFMA Director of Research Jeffrey Saunders and overseen by IFMA EMEA Managing Director Lara Paemen, this committee will help reshape the built environment through future-oriented research.

Thought leadership is — and always has been — paramount for IFMA. Whether we're helping you prepare for a new world of work, as we just did at World Workplace, or ensuring that you're approaching sustainability strategically, our job is to forecast what's coming for our industry and provide the resources to meet it head-on.

Moving toward a carbon-neutral world isn't just compulsory for future generations, but our own as well. As our new Strategic Vision states, IFMA's vision is to make the world a better place.



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# 2021 CLASS OF IFMA FELLOWS INDUCTED AT WORLD WORKPLACE

As part of the opening session at IFMA's World Workplace Conference and Expo in Kissimmee, Florida, USA, Trudy Blight, Steven Ee, Erik Jaspers, Darin Rose, Lena Thompson and Graham Tier were officially inducted as the 2021 Class of IFMA Fellows, joining an elite core of respected leaders who serve as association advisors and ambassadors.

Formally established by IFMA's board of directors on Jan. 31, 1992, the IFMA Fellows Program recognizes outstanding contributions and service to the association and the facility management profession. It is the highest honor bestowed by IFMA, and no more than .5 percent of membership may hold the title.

Having had the privilege of presenting the first class of IFMA Fellows in 1992, Past Chair of IFMA's Board of Directors

(1990-91), IFMA Distinguished Member (1993), IFMA Fellow (1995), Distinguished Author (2001) and Past Trustee of the IFMA Foundation (2016-17) Christine (Neldon) Tobin reprised her role at World Workplace introducing this year's six inductees.

*"Those who are distinguished as IFMA Fellows do not set out to attain the title," said Tobin. "They often begin by joining a chapter or council, then volunteer to serve on a committee, become teachers, mentors, authors or speakers. Most excel in their professional careers, and all serve in countless capacities to help advance an ever-changing profession. No single action qualifies a member to become an IFMA Fellow; yet they all share one thing in common — a passion for FM and a devotion to IFMA."*

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## 2021 Class of IFMA Fellows

**TRUDY BLIGHT's** passion for the built environment has driven her to earn multiple professional designations and build collaborative bridges between all industries that contribute to operational excellence. An IFMA member since 1994, Blight has volunteered at the chapter level for more than 20 years, fulfilling most board roles, including IFMA Manitoba Chapter President for 10 years. She has extended her leadership and commitment beyond the local level to include board and Tactical Advisory Group participation with IFMA's Facility Management Consulting Council, leading the FMCC's Ask the Experts column in IFMA's FMJ Magazine. She has served as a subject matter expert for Facility Management Professional™ and Sustainability Facility Professional® (SFP®) course material, participated on the SFP committee since 2014 and taught an introduction to FM as the University of Manitoba's Faculty of Architecture Professional Practice lecture.

**STEVEN EE** has been on a mission for more than 20 years to raise recognition and respect for facility management as a value-add function and business advantage. He has introduced and delivered IFMA's FMP credential program to organizations and individuals globally as an IFMA qualified instructor and served as a subject matter expert for the updated FMP program, contributing views on FM practice in Singapore and other Asian countries to ensure the revised version reflects global FM practice. He has written three books on FM within the last five years, including "Value-Based Facilities Management," adopted as a recommended textbook for FM students in Singapore. Ee has elevated interest in IFMA and the FMP among professionals via live events, in-person meetings, articles, radio interviews and as a social media influencer, with more than 30,000 followers on

LinkedIn. He helped facilitate the signing of a Memorandum of Understanding between Singapore's Building and Construction Authority, the IFMA Foundation's Accredited Degree Program and with IFMA.

**ERIK JASPERS'** major contributions lie in IFMA's international development, the development of education infrastructure for FM globally, and knowledge development for the industry in the area of technology. He has helped define the IT agenda in the field of FM and stimulated innovative thinking around practices and applications that augment the ability of FM professionals to add value to their organizations. Jaspers' support of IFMA Foundation initiatives include promoting IFMA membership and FM education to young professionals as a member of the board of trustees, co-authoring and procuring sponsorships for all three "Work on the Move" books, and improving international expansion of the Accredited Degree Program. As a member of IFMA's European Advisory Board, he provides guidance to the global board and works to establish a coherent network of European and African chapters. As a member of IFMA's Information Technology Community board, he identifies tech trends relevant to FMs, and supports content creation and delivery in EMEA, the Americas and ASIA PAC. He is a founding member of the Workplace Evolutionaries, actively driving growth outside the U.S.

A respectful facilitator with a focus on inclusion, outreach and giving back to the profession, as well as a remarkable ability to bring people together, **DARIN ROSE** is a sought-after global leader. He's known for developing programs that connect all facets of the association for the greater good of the profession.



Rose was honored as IFMA's 2020 Distinguished Member, as the IFMA Foundation's 2019 Volunteer of the Year, and as co-recipient of IFMA's 2019 FM Innovation Award for coordinating virtual SFP courses for five IFMA chapters during the COVID-19 pandemic. His service includes the IFMA Membership Task Force; IFMA's Government Affairs Committee; Committee Chair for the IFMA Foundation's Ambassador Program, successfully recruiting ambassadors for 75 components in Canada and the U.S.; and IFMA Americas Advisory Board Vice Chair and Chair, cultivating relationships that have helped create membership growth and develop the next generation of regional leaders. As President of IFMA's Public Sector Council, he reinvigorated international professional development.

**LENA THOMPSON's** stellar career has been accentuated by a commitment to encourage others to achieve their professional goals and driven by a dedication to ensure that emerging FMs from all walks of life have the opportunity to become the leaders of tomorrow. In her 14-year career at the American Psychological Association (APA), she has distinguished herself as a consummate professional. She coordinated the delivery of furniture and virtual support for employees' home offices during the COVID-19 pandemic, developed APA's post-COVID return-to-office program and serves as Chair of APA's Workplace Advisory Group. While excelling in her job at APA, she earned her FMP and SFP; then became an IFMA qualified instructor for both courses. She has mastered her craft as an instructor, adeptly communicating course material to those of all backgrounds. Her participation in IFMA's Capital Chapter includes Chapter Ambassador to the IFMA Foundation, Chapter Vice President, Executive Committee and Chair, Communications Committee and a member of the Professional Development Committee.

**GRAHAM TIER's** expertise in organizational transformation was instrumental in transitioning IFMA from a time of turbulence to a state of stability. As 2018-19 Chair of IFMA's Global Board of Directors, Tier restructured operations, introduced financial transparency, improved governance, signed strategic partnerships with allied professional associations to share educational offerings, and delivered the FM Training and Development Framework and its programs to maintain IFMA's global leadership position in education. Dedicating his full focus to the association's rebirth, he realigned IFMA's financial priorities to clear debt for the first time in 10 years and oversaw IFMA's most prosperous year ever. As 2016-17 Second Vice Chair, he introduced a global perspective on FM professional ethics standards and led formation of the Asia Advisory Board to establish presence and outreach for FM professionals throughout Asia. He expanded chapters into other areas of China and signed a strategic partnership agreement with the Macau Institute of Management, which agreed to adopt IFMA's training framework and credential programs. Tier's vast experience and business acumen brought significant change and improvement to the association resulting in a stronger IFMA for everyone.

## IFMA Fellow Emeritus established in 2021

In recognition of the IFMA Fellows Program's 30th year and appreciating that many original IFMA Fellows are either inactive and fully retired from both the profession and IFMA volunteer work, IFMA's global board of directors approved the title of IFMA Fellow Emeritus as a newly established category of IFMA Fellows.

The new designation is excluded in the calculation of the required five percent of membership permitted to become IFMA Fellows, allowing new IFMA Fellows to continue to be nominated.

The inaugural list of those named as IFMA Fellow Emeritus includes all deceased IFMA Fellows, as well as those who voluntarily submitted their intention to be designated with this esteemed title.

**Keith Alexander**, IFMA Fellow Emeritus  
**David L. Armstrong**, IFMA Fellow Emeritus  
**William W. Back, Jr.**, LEED AP, IFMA Fellow Emeritus  
**Gary P. Broersma\***, IFMA Fellow Emeritus  
**James W. Chambers\***, IFMA Fellow Emeritus  
**Oscar K.C. Chan\***, CFM, IFMA Fellow Emeritus  
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**Walther Moslener\***, CFM, IFMA Fellow Emeritus  
**Ken Owens\***, CFM, IFMA Fellow Emeritus  
**Richard D. Pierce**, IFMA Fellow Emeritus  
**Philip Roberts, RIBA**, IFMA Fellow Emeritus  
**John L. Stanley, CFM**, IFMA Fellow Emeritus  
**Carroll Thatcher, CFM**, IFMA Fellow Emeritus  
**Guy Thatcher**, FMP, CMC, IFMA Fellow Emeritus  
**George T. Trayer\***, IFMA Fellow Emeritus  
**Kit A. Tuveson\***, IFMA Fellow Emeritus  
**Bernard J. Van Der Hoeven\*\***, Ph.D., IFMA Fellow Emeritus  
**Frederick Weiss**, CFM, IFMA Fellow Emeritus  
**Sydney B. Welch**, IFMA Fellow Emeritus

\* Deceased

\*\*In Absentia

Industry News

## IFMA EMEA, EuroFM and FMN partner for the largest European FM event in 2022

The International Facility Management Association™ EMEA (IFMA EMEA), the European Facility Management Network (EuroFM) and Facility Management Netherlands (FMN) announced a partnership for World Workplace Europe 2022. By joining forces this event will cover the academic, research and practitioners side of the European facility management community. The partnership will provide increased value to each association's membership and encourage key connections to attend the high qualified hybrid World Workplace Europe event March 22-23 at the Studio's De Hallen in Amsterdam.

"Participating in this innovative and inspiring event by sharing research and educational content, contributes to the strong focus of EuroFM on promoting Facility Management across Europe and abroad," said EuroFM's Chair Pieter Le Roux. "Due to the current state of our industries, it was a no brainer to team up and provide our diverse membership base with new opportunities to get inspired with various content driven facility management topics."

Through the partnership the program will offer all components, relevant to the FM industry: a research track and facility tours, keynotes and educational sessions networking opportunities.

For more than four years, World Workplace Europe has been successfully organized by IFMA and FMN. The event has grown to be the gold standard in FM education, knowledge exchange, career development and professional networking.

World Workplace Europe is an event for professionals working in the larger built environment and workplace management services, as well as

for academics, students and young professionals. The in-person and virtual format will offer top-notch keynote speakers, education sessions, facility tours, deeper dive sessions and round tables.

"Over the past year and a half, facility managers have implemented e with new ways of working to guide and support their buildings and team members through this challenging time. We felt partnering with EuroFM was the best way to connect our membership to the latest European innovations and solutions," said Jos Duchamps, Chair of IFMA EMEA. "Both EuroFM and IFMA EMEA members benefit greatly from this partnership, and we look forward to the many opportunities ahead."

"We're excited to expand our partnership with the cooperation with EuroFM" said Michel Tobé, Chair of FMN. "By leveraging the strength of both associations and FMN, we are well positioned to scale events, experiences, and member benefits internationally."

World Workplace Europe is the largest and most well-respected conference for FM and related stakeholders in the region. Held annually, World Workplace Europe facilitates idea-sharing and knowledge-exchange between professionals who support and sustain the built environment to ensure smarter, more efficient, healthier, sustainable and safer facilities.

All educational sessions will be presented online live and will be recorded so that attendees can view them at their convenience. Depending on local COVID-19 restrictions, the World Workplace Europe physical event location in The Netherlands will stream most of the sessions.

Founded in 1980, IFMA is the world's largest association for facility management professionals, supporting over 23,000 members in more than 100 countries. IFMA EMEA maintains a strong connection with IFMA but with headquarters in Brussels, they are dedicated to serving the needs of the local chapters and regional members. The focus is on building strong FM communities by providing regional programs in Europe, the Middle East and Africa, with respect for the local differences. IFMA EMEA partners with industry-related stakeholders and associations in this region and will further develop the relations with the European Commission and relevant institutions to have impact on policy makers.

EuroFM advances FM knowledge in Europe and its application in practice, education and research.

At the start of 2011 the EuroFM association represented 100 organizations working in the €650 billion European FM sector. The open network of professionals, academics, educationalists, practitioners and researchers generates a rich mix of activity. Proceedings of EuroFM activities are disseminated through the association via the EuroFM website, an annual conference, EuroFM meetings hosted by members and through newsletters, research papers and publications.

FMN is the Dutch independent professional association within the facilities domain and connected fields such as HR, ICT, real estate and marketing/branding. For more than 25 years it has connected end users, clients, suppliers, students and teachers. The individual and organizational members of FMN work in various sectors and various facilities sectors. FMN is a partner of the international organization for facility management, IFMA EMEA.

### Have relevant FM industry news to share? —

Submit your news to be considered for inclusion in the Industry News section of the next issue of FMJ. Send us an email at [communications@ifma.org](mailto:communications@ifma.org)



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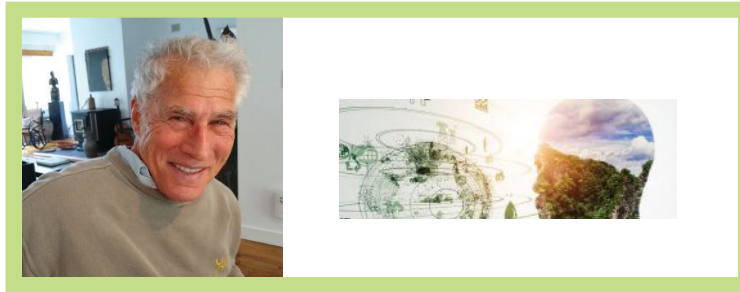
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# IFMA'S SUSTAINABILITY AWARDS

IFMA recognizes achievement and rising stars in FM sustainability through two prestigious awards — the **Eric Teicholz Sustainability Facility Professional® (SFP®) Scholarship Program** and the **Sheila Sheridan Award for Sustainable Facility Operations and Management**.



The **ERIC TEICHOLZ SFP SCHOLARSHIP PROGRAM** is housed within the IFMA Foundation and was launched in May of 2020. The program provides funds for a number of Sustainable Facility Professional® scholarships over a five-year period.

**T**eicholz, an IFMA Fellow, established the program with the IFMA Foundation to assist young professionals with a demonstrated financial need who are currently practicing FM or a related field and are interested in earning a specialty credential in sustainability.

“There is a growing sense of urgency about climate change and its impact on all aspects of our lives and the environment,” said Teicholz. “Unlike the COVID-19 pandemic, there will be no vaccine to mitigate its impact. With this in mind, the Eric Teicholz Sustainability Scholarship program has been established to provide financial support for a future generation of facility managers in their study of climate science as it relates to the built environment.

“I hope to provide support for facility managers in need of financial assistance so that they can attain the SFP® certification. It is anticipated that scholarship recipients will become more environmental-

ly responsible facility managers and will overall demonstrate enhanced leadership in the field,” he said.

IFMA’s SFP is an assessment-based certificate program that teaches FMs to take a comprehensive approach to sustainability, focusing on data-driven analytics in managing the built environment. Skill sets taught in the SFP program lead to a better understanding of climate change and how buildings can be managed to reduce negative environmental impact.

“The sustainability skills that the scholarship awardees will learn will remain essential for their careers now and in the foreseeable future,” said Joe Archie, IFMA Foundation Immediate Past Chair. “The SFP will increase their knowledge and allow them to demonstrate and apply their expertise in sustainable facility management practices to ultimately impact their organization’s economic, environmental and social bottom lines.”



**JULIA GOURLEY**  
Dayton, Ohio USA

*We only have one planet and it has finite resources. As the dominant species, humans are responsible for preserving Earth for future generations. Few things just work their way back to an acceptable status without help. Just like humans altered the Earth’s climate, we can make changes to reverse climate change.*



**LEKIA NWIIDO**  
Abuja, Nigeria

*The area of greatest interest to me is strategy and alignment; this will include identifying new ways of designing, constructing and operating the building and facilities. This will create and maintain conditions that balance the economic, social and environmental requirement of present and future generations.*



**MARTIN VACLAVIK**  
Czech Republic

*Sustainability is important because it is a way to change decision making. At the point when I realized the journey to global sustainability begins with every individual’s action on a local scale, I was committed to doing things differently. I also try to influence my family to be respectful to the environment.*





The **SHEILA SHERIDAN AWARD FOR SUSTAINABLE FACILITY OPERATIONS AND MANAGEMENT** honors the outstanding achievements of individual members, chapters, councils, communities and partners who have made exceptional contributions to the advancement of the FM profession and the association.

This award recognizes an individual or team that demonstrates an outstanding example of strategic sustainable operations and management initiatives that have led to successful tactical and operational adjustments in the management of a facility, including stakeholder engagement, overall performance, energy efficiency, innovation, audits and reporting and long-term solutions for facility management success. This category encourages, rewards and recognizes excellence, leadership and innovation for the operation of environmentally responsible and sustainably managed buildings. The recipients demonstrate how their sustainable FM program or idea has had a substantial positive effect on contributing to the success of their organization.

The award was established in 2006 as a testament to Sheridan’s passion for sustainability.

“Sheila was very passionate about facility sustainability issues, long before other FMs were even talking about sustainable facilities,” said Rich Famelli, AIA, CFM, FMP, FMP and IFMA Fellow.

“Being a former college graduate with a BS in Environmental Design, I felt that IFMA needed to create a portfolio of case studies devoted to FMs that helped create energy-efficient, sustainable environments for their organizations. I asked Alana Dunoff to team with me to create the Sheila Sheridan Award for Sustainable Facilities as a way of both honoring Sheila’s commitment and passion for sustainable facilities as well as a way to help IFMA gather case studies, examples and metrics that other FMs could use as they consider new construction and retrofit projects.”

Formerly the Sheila Sheridan Award for Sustainable Design, the award was renamed in 2013.

“The title of the award was changed to the Sheila Sheridan Award for Sustainable Facility Operations and Management and the questions posed in the application were amended to concentrate on how FMs were improving their approaches to benefit the Triple Bottom Line,” said Bill Conley CFM, SFP, ProFM, LEED AP and IFMA Fellow.

Typical of her generation, IFMA Fellow, RCFM Sheila Sheridan became a teacher with a M.Ed. and left the profession to raise her family. She returned to work in an administrative position. Within a year, she found herself in the facilities field. Sheridan retired as director of facilities and services at the Kennedy School at Harvard University.

She has more than 35 years of experience in the facilities profession. She is past faculty for IFMA and USGBC and been a guest lecturer and visiting faculty at international universities. As IFMA chair, she advocated an awareness of sustainability.

“Sheila is a pioneer in FM. When she became chair of IFMA one of her key platforms was sustainability,” said Alana F. Dunoff, ProFM, FMP and IFMA Fellow. “She guided the association and the profession to embrace and become leaders of environmental stewardship. It was only fitting that we acknowledge her vision and leadership with the AOE in sustainability achievement in her honor.”

## AWARD HISTORY

### 2006 | Tie

The GSA, Public Buildings Service, Northwest Artice Region and Interface Atlanta Showroom

### 2007

Franics X. Smith, Century Engineering

### 2008

Systems Incorporated and Cushman & Wakefield

### 2009

ProjectsCurtis Slife, CFM, AIA, CARB

### 2010

Motor Sales USA, Corporate Real Estate and Facilities

### 2012

Lawrence Berkeley National Lab

### 2013

Washington County Building Services Division

### 2014

William D. Broome, SFP, CFM, LEED

### 2015

Debbie Jaslow Shatz, CFM, LEED AP

### 2016

Compass Properties Green Team

### 2017

Global Property Team, ARM

### 2018

YMUS Cypress Facility Team

### 2019

Emaar Facilities Management

### 2020

Green Team  
United State Army, Hale Koa Hotel



# **BUILDINGS** of the **FUTURE**

Why they are  
needed now

BY JAMES MYLETT

In a world that eagerly anticipates the next version of the smartphone, imagine being forced to use 40-year-old technology to get things done. The fact is, it already occurs in today's buildings, half of which were constructed before 1980. While mobile devices, software and applications provide grounding in the digital age, the aged infrastructure that exists in physical offices (and healthcare facilities, hotels and other industries for that matter) all too often hold things back.

Work is fast and automated, wireless and personalized. In contrast, many buildings are essentially unchanged since their original design and, therefore, struggle to serve the modern needs of digitally native occupants. Aged buildings lack the sustainability, hyper-efficiency, resilience and people-centricity needed to bring the world safely and quickly into the future — a reality the pandemic has magnified.

In Gartner's top tech trends for 2021, the firm touts "anywhere operations," i.e., digital/remote first but notes, "That's not to say physical space doesn't have its place, but it should be digitally enhanced." The point is, buildings of the future are needed now.

A window has opened, compelling FMs to rethink the archetype of buildings and the need to create strategies that enable yesterday's buildings to meet today's challenges. The good news is, evolving to buildings of the future is not as big a challenge as it might seem. The tools and technology are already here.

#### 4 MUST HAVES FOR BUILDINGS OF THE FUTURE

The pandemic has exposed much about what a building of the future should be. They will encompass all facets of human health including physical, emotional, intellectual, spiritual, occupational, environmental and social well-being. Companies looking to attract and retain top talent understand their facilities must be designed with these features in mind and built to inspire and enable their employees to do their best work.

Building owners or operators who build to a future-focused spec create spaces that

benefit their building occupants, their company's bottom line and ultimately the health of the planet. The vision for buildings of the future is a balance between technology and people, built on four pillars: sustainability, hyper-efficiency, resilience and people-centricity.

**1 SUSTAINABILITY** over the long term will involve bringing together electrification and digitization by maximizing the impact of electrification through active energy management, positive energy buildings, resource-efficient design and sustainable retrofits. Plus, as renewables and IoT connections accelerate, more big data and smarter AI will generate new insights and automation to further support sustainability goals.

Creating sustainable buildings is particularly critical as buildings consume about 30 percent of the world's energy, according to the International Energy Agency, and account for almost 40 percent of annual global greenhouse gas emissions. Thus, as organizations look for ways to lead in this area, real estate has become one of the most visible ways to differentiate.

**2 HYPER-EFFICIENCY** is realized from seamlessly controlled, end-to-end, and often autonomous, digital platforms. By connecting more equipment and assets to AI, real time decisions are enabled, positively impacting people needs, space resources, asset efficiency and energy cost.

An example is the University of Pennsylvania Medicine's (Penn Medicine) efforts in this area. The new Pavilion at

Penn Medicine is designed and constructed with flexibility built in, allowing the facility to seamlessly advance with future developments in technology and medical practices.

**3 RESILIENT** buildings are less vulnerable to natural and human-made threats, backed by proven strategies such as remote monitoring, increased power reliability and resiliency. For example, a large glass manufacturer has maintained three years of uninterrupted power in its 750,000 square foot production facility through a digital power solution. Beyond power reliability, integrated, end-to-end cybersecurity strategies are also critical to the resiliency equation.

**4 PEOPLE CENTRICITY** means buildings are designed to be responsive to humans — whether occupants, owners or operators. People centric buildings are safer, healthier and enable greater productivity. Today's technology can help building owners and facility managers anticipate and resolve problems before tenants are impacted. Personalization can now be placed in the hands of occupants to deliver similar functionality and control which they have in their homes, and which they expect in their buildings.

New York's 390 Madison Avenue is the epitome of a people-centric building. The space is 100 percent leased and features technology that facilitates advanced tenant experiences and can evolve with future innovation. Full system/subsystem integration allows for complete data-driven decisions leading to better business outcomes.



## WHY WE AREN'T THERE YET

In recent years, consumer experiences have evolved dramatically, yet the way the world collectively experiences buildings have not kept pace. Why? Perhaps the scale of digitally transforming a building seems too daunting or beyond budget reach.

However, in many cases, only change is needed. It is more about connecting seemingly disparate, existing technologies as opposed to blanket replacement. FMs often do not realize how many of their facilities are already connectable. Yet, the cloud connection is missing — a connection that enables scale.

Along these lines, the University of Iowa connected 49 buildings (6.7M square feet) across its campus, integrating all major HVAC equipment, air-handling units, heating/chilled water systems, pumps, terminal units and four different legacy building management systems. During the first year, energy savings totaled US\$900K, and about 20 percent of HVAC-related work orders completed were based on predictive maintenance.

## WHAT WILL IT TAKE?

This year has brought owners and operators the opportunity to put a strategy in place to safely reopen buildings, with the future in mind. Creating healthy building spaces involves active monitoring of temperature, humidity, CO<sub>2</sub>, noise, light and volatile organic compound (VOC) levels and managing space in a way that reduces the spread of germs. It also involves transparency, so occupants are confident that spaces are well maintained and safe — transparency enabled by apps and analytics.

The first step towards building health is an assessment to reveal data quality — checking for existing sensors accuracy and calibration, density and distribution and figuring out if additional sensors are needed. A significant number of buildings contain sensors and equipment that are either



aging, not fully functional or improperly commissioned. Simple changes or updates could unlock or enable large data sets with little effort.

Determining and addressing these challenges early sets the baseline for the next step, which is analyzing all the data to get a full picture of the environment. Analytics can model the equipment performance, continuously check operations and help facilities plan proactive maintenance activities based on identified faults.

Then, it is time to take action and address any issues identified. The actions might include increasing fresh air ventilation, upgrading air filters and limiting capacity in specific rooms or arming occupants with mobile apps, such as touchless controls, building entry pre-assessments and hot desking.

## HOW WILL FMS MOVE THE INDUSTRY FORWARD?

Remote work is not going away, but people still want and need offices as they are places where careers are built, lifelong friends are made, and co-creation is elevated. Healthy buildings are only the beginning.

Recent events have put the climate crisis into the forefront. This includes the landmark climate report from the United Nations that found there is a very small window for global coordination to stop adding carbon dioxide to the atmosphere by around 2050 to prevent sustained warming above 1.5 degrees Celsius. Leaders must act swiftly to mitigate climate disaster, and ensuring facilities are “climate-ready” is a large part of this. The private sector plays a particularly large role here, and must accelerate sustainability initiatives — especially considering the age of current structures, and knowing two-thirds of them will still exist by the 2050 deadline.

It is the duty of stakeholders globally to move the buildings industry forward and FM’s responsibility to transform the experience. So, whether optimizing existing spaces and systems or creating a plan from scratch, the focus must remain on achieving the right outcomes in buildings — sustainability, hyper-efficiency, resilience, and people centricity. The technology is here. Let the world reconceive, reshape and reconstruct buildings for the future together. **FMJ**





## FMJ EXTRA Case Study

A Sustainable  
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**James Mylett** leads the U.S. digital buildings business for Schneider Electric. A recognized pioneer in field services and the building management space, he is a leader in accelerating the digital service experience for commercial buildings. With a career spanning more than 40 years and having held positions ranging from the frontline to the boardroom, Mylett brings a unique perspective to driving strategic change in the industry. Prior to joining Schneider Electric, he held leadership positions at Comfort Systems USA and Johnson Controls. Mylett earned his MBA at the University of Maryland.



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# SUSTAINABLE SOLUTIONS



*Staying Earth-friendly  
with  
hygiene products*

BY RACHEL OLSAVICKY



The shift toward sustainable solutions has grown momentum in recent years, but as of late, people are turning their focus to hygiene as a result of the pandemic, especially in public environments such as office buildings. According to Essity’s “Return to Workplace” survey in 2021, 65 percent of respondents were concerned about the cleanliness and hygiene of offices and 85 percent said increased cleaning and sanitizing would be important, in some capacity, in an office setting.<sup>1</sup>

**B**ut the pandemic has not completely derailed rising consumer expectations around sustainability. In an international survey commissioned in 2020 by Essity, 90 percent of respondents said the importance of sustainability will increase for businesses in the future, clearly marking sustainability as a top priority for companies despite the evolving needs of workplaces.<sup>2</sup> Companies will need to meet these dual expectations to build the in-person workplace of the future.

Beyond addressing employee expectations, companies’ sustainability targets must also account for government regulations, as national governments are increasingly focused on sustainable legislation. For example, countries around the world have committed to the Paris Agreement, and in Europe, the European Green Deal aims to make the EU climate neutral by 2050.

Sustainability is no longer a “feel good” initiative. It is now mission critical — and businesses must partner with likeminded organizations to achieve this new standard and elevate their sustainable hygiene management. Here are three cost-effective ways to seamlessly integrate sustainable hygiene management into business operations without compromising on cleaning quality and efficiency.

### **EVALUATE PRODUCTS AND SOURCING**

The pandemic brought hand hygiene and surface cleaning habits to the forefront, making these everyday practices a priority for all. As a result, companies are consuming more hygiene products than ever before. Therefore, facility managers scrutinizing the products used for handwashing and other cleaning practices can help companies ensure they are providing sustainable, effective and safe solutions.

Companies can determine the best sustainable solutions for their organization by assessing the life cycle of products from responsible sourcing to production and innovation, as well as managing after-use, ensuring circularity of the cycle. Decision makers can also rely on trusted third-party accreditations like Green Seal, which verify that cleaning procedures, purchasing choices and sustainability practices meet the highest industry standards. Green Seal uses the life cycle approach in this assessment to ensure that all environmental impacts are considered, from raw material extraction through manufacturing, to use and then disposal.

Similar to Green Seal, the Forest Stewardship Council (FSC) offers a third-party accreditation for responsibly sourced wood

and wood fiber materials such as pulp. Not only does FSC bear the gold standard when it comes to forest certifications, but its logo certifies that all materials used in products are derived from FSC certified forests, controlled wood and recycled products. The FSC certified forests have been audited by an independent third party to confirm they operate according to FSC’s rigorous environmental and social standards. As such, being certified by credible organizations such as the FSC signal to buyers, key organization stakeholders, employees and partners the important role sustainability plays in a business.

There are a variety of paper products available that increase restroom efficiency, while also being better for the environment. For example, some sustainably minded manufacturers now make paper towel refills that are compressed by 50 percent, reducing the carbon footprint of delivery for FMs ordering their paper products and increasing the business’ operational efficiency by making it easier for cleaners to carry and store more at a time.

In a time of crisis, demand for certain items can increase exponentially. The pandemic caused many first-time producers to quickly enter the hand sanitizer market, and, as a result, certain sanitizers were deemed unsafe by parties such as the U.S. Food and Drug Administration. While these issues have since been resolved, for companies that bought into first-time hygiene product manufacturers, this not only added stress to procurement agents, but also put employers and employees at risk. It also demonstrates the dangers associated with not properly vetting hygiene products. Partnering with credible manufacturers will help FMs secure trusted hygiene during times of crisis.

Selecting an accredited supplier will also help a business on its way to obtaining certification by Leadership in Energy and Environmental Design (LEED). This certification, achieved by selecting sustainable partners and solutions, is highly esteemed. Programs like these unlock a business’ potential by verifying sustainable leadership and encouraging others to adopt better practices.

### **LOOK FOR SUSTAINABLE PACKAGING AND REDUCE WASTE**

Sustainable packaging is an equally important factor in reducing waste and creating a more sustainable office environment. This starts with eliminating unnecessary packaging, such as the boxes products arrive in, the plastic films they are wrapped in and even the unused cores of paper hand towels or toilet paper rolls.



The recyclability of packaging is a key focus for many manufacturers now. Many forward-looking manufacturers have made already made progress on supplying renewable, recyclable packaging across product offerings and have established measurable, long-term sustainability goals focused on recyclable packaging.

Companies should also look out for fossil-free packaging options, as well as the ability to optimize packaging. For example, coreless toilet paper with twice the capacity of conventional toilet paper minimizes waste by limiting materials used both inside and outside the roll.

Innovations in dispensing can also reduce product usage by employees and visitors, resulting in less environmental impact. This includes one-at-a-time dispensing systems that only distribute one napkin or one towel at a time. Products that are deliberately designed to dispense napkins or paper hand towels in this way not only lower consumption and waste, but also increase hygiene because the user only touches what they use. Additionally, products that automatically distribute the appropriate amount of skincare solutions (e.g., soap and sanitizer) have proven to be effective in reducing waste. Choosing the right sustainable solutions will improve hygiene, and ultimately, overall business performance.

### ENSURE RESPONSIBLE ‘END OF USE’

Focusing on efforts to re-use or recycle products, including circular solutions, is a key step to ensuring waste reduction. Circular solutions are products that last, can be reused, repaired or remanufactured. As an example, companies can consider purchasing certified compostable products, which greatly contribute to responsible end of use for products. Being compostable means that the product is capable of being broken down naturally in a way that is not harmful to the environment. Oftentimes, compostable products suggest solid goods like paper, but it is equally important to find liquid products that are certified compostable. To this end, there is an assortment of biodegradable soaps on the market that help to preserve waterways.

Companies should also choose suppliers that are forward thinking and continuously looking for solutions to achieve sustainable hygiene management. A good partner demonstrates environmental responsibility through recycling as a final step. “Close the



loop” programs bring together manufacturers, recyclers, shredders and waste haulers to help companies reduce their environmental footprint. Recycling programs can divert thousands of feet of office paper from traditional recycling, where it will be reused as new tissue products down the line. Once the paper is collected and shredded, it is converted into new paper products locally and distributed once again to facilities. This demonstrates how organizations can become more sustainable them-

selves by choosing partners that prioritize these types of initiatives through the end of the life cycle.

### CONTINUE TO LEVERAGE RESOURCES FROM REPUTABLE INDUSTRY LEADERS

If anything is to be learned from the last 18 months, it is that hygiene is and will continue to be a key pillar in getting society back to pre-pandemic life. FMs should not forget about the environment and their role in protecting it. By partnering with the right industry experts, adopting sustainable hygiene practices can be easy and good for business. Implementing sustainable hygiene management practices is crucial to both protecting the planet and unlocking business potential. By following these concrete steps, businesses will elevate customer satisfaction, employee well-being, operational efficiency and demonstrate sustainability leadership. FMs can reach these goals by adhering to the guidance they receive to make informed, strategic decisions every day — proving that partnering with the right industry experts, adopting sustainable hygiene practices can be easy and good for business. **FMJ**



**Rachel Olsavicky** is the regional marketing manager, commercial and public interest for Tork, an Essity brand. As regional marketing manager, Olsavicky oversees end-customer marketing plans in offices, schools, airports and other commercial and public interest segments.

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# What If?

Sustainability  
planning &  
decision making

BY BILL CONLEY





In the last 20 years, the concept and implications of sustainability graduated from baby steps to half strides. The acceptance of green building certifications started to take hold. Facility managers, especially, started to take notice of this “better” way of running their buildings.

### PIECES OF THE PUZZLE

FMs can plan more environmentally friendly practices by looking ahead at almost certain possibilities. The volatility of energy prices is almost a given. Energy efficient equipment and lighting would be an easy fix. Researching renewable or alternate energy sources could save money, lessen the demand on the grid and cut down on emissions.

FMs should also investigate their organization’s water usage. In many parts of the world, water shortage is a critical issue, and the threats of a drought are universal as well. Applying recycled or grey water can be one option in conserving potable water. Also, FMs should investigate hidden or embedded water — water that is being used without any real visibility used for processing, HVAC systems, or in the production of goods and service. There is more to water conservation than irrigation reductions or low-flow fixtures.

Sustainability can also help in the decision-making process when dealing with exterior or hard-scape changes or installation. When repaving, re-roofing or deciding to do so, think about surface albedo measurements and if a heat island is being created. Minimizing light trespass can be accomplished through the careful utilization of outside lamps and fixtures.

### A MORE HOLISTIC VIEW

Those are all laudable efforts. However, there is more to sustainability than isolated fixes. Sustainability is an all-encompassing concept based on the principle that it is not just a part of an FM’s work; it should be a guiding influence on all aspects of FM. It takes planning and considerations of how best to integrate environmental health, social equity and economic vitality to create thriving, healthy and diverse facilities. The practice of sustainability is based on how these issues are interconnected and requires a systematic approach and acknowledgement of its complexity.

Successful FMs are always forward thinking. Anticipating the influence of activities on the overall goal or mission of an FM department is critical in providing good service and making smart choices. FMs use common sense to resolve challenges.

Sustainable practices support ecological, human, and economic health and vitality. Everything needed for survival and well-being depends, either directly or indirectly, on the natural environment. It would seem obvious that the right path to take would be to frame every decision with that in mind. Not only will the impact of an action be judged by all the actions that will follow it, but also by all the actions that engendered them.

FMs must be intentional and proactive in planning sustainability practices and procedures. Planning is a process. Ideally it is future oriented, comprehensive, systematic and integrated. It involves an extensive search for alternatives and analyzes relevant information.

Evaluating options in managing a facility entails many variables and adding sustainability to the mix just broadens the scope. There must be a balance between financial feasibility, the effects and benefits as they relate to stakeholders and any possible negative impact on the environment. Not one of these aspects should be allowed to usurp another. FMs should utilize Triple Bottom Line criteria to drive decisions and develop valuable solutions, while planning how to align, implement, review, measure and communicate sustainable strategies.

Sustainability is about the interaction between the built and natural environments. FMs must assess the overall effects of facilities on the environment at all phases of facility activities, from planning and design through acquisition, implementation, operation and decommissioning. Sustainability is a commitment to improving a facility’s impact on the environment and people, always with cost in mind. FMs should think less

about the impact just on facilities and take a broader look at all possible ramifications of any activity.

## **IMPORTANCE OF PLANNING**

Comprehensive FM planning leads to smart FM decisions. Planning provides direction and creates awareness of the organization's present state and enables FMs to see if improvements are needed and possible. It assures sustainability objectives are broadly announced so that they serve as a model for determining a course of action. If goals are well established, FM staff members will know what the department and the organization must do to achieve the desired results.

Planning also permits a manager to look forward and predict changes. By delineating the tasks to be completed, planning notes the way to deal with changes and unpredictable effects, thereby decreasing the chances of risk, duplicate efforts and wasteful activities. It works as the foundation of organizing activities aimed at sustainability. It assists in avoiding misdirection and confusion.

Sustainability planning encourages innovative ideas. As this is new territory for many FMs, different approaches to operations and efficiencies can lead to more creative solutions. It is the more intriguing aspect of sustainability as it leads all planned actions into an exploration of new routes resulting in good environmental practices.

Planning aids decision making and encourages the FM to look ahead and make decisions from several plans of action. They will need to assess each option and select the most optimum plan that supports the Triple Bottom Line.

FMs are increasingly being asked to deliver broader and deeper support services. Senior management is becoming more aware that FM is a vital function that encompasses more than the day-to-day operations of the facility, delivering solutions and implementing sustainable practices that help with a businesses' corporate social responsibility

The environmental impact of FM actions occurs throughout the life cycle of the facility and affect not only the business value of the property and the health and productivity of its occupants, but also the quality of life in the surrounding community and environment. Challenges in reducing emissions from carbon and other sources, the proper use of potable and recycled water, managing stormwater runoff; and addressing solid waste and its disposal all affect more than just facility inhabitants.

## **MONEY MATTERS**

Sustainable strategies also rely heavily on the financial implications of decisions and activities. FMs must convince organizations that a seemingly high cost for some sustainability initiatives will have a high return on investment, contributing to the bottom line and the long-term well-being of personnel and the actual facility. There are tools that can help develop the correct approach and serve as evidence to convince upper management to support these actions.

Life cycle costing is the process of compiling all costs that the owner of an asset will incur over its life. These costs include the initial investment, future additional investments, and annually

recurring costs, minus any salvage value. The concept applies to several decision areas and leads into the concept of total cost of ownership (TCO) — a deeper look at the hidden costs beyond price and places a single value on the life cycle of a capital purchase. This value includes every phase of ownership: acquisition, implementation, utilization and the softer costs of change management that flows down the purchase such as documentation and training and should include the environmental impact of an item.

Life cycle cost analysis can determine the most effective option among alternatives to purchase, own, operate, maintain and dispose of an item, all with the well-being of the environment being considered.

The procurement and use of materials and resources play a large role in sustainable activities and the decision of what to purchase is critical to those efforts. FMs can map out an Environmentally Preferred Purchasing Program (EPP) to better control the quality of purchased goods. A strong, well thought-out EPP will help reduce consumption and maximize diversion efforts. Environmentally preferred purchasing means attaining products or services that have a reduced effect on human health and the environment when compared to competing items serving the same purpose. An EPP considers both cost and the environmental impacts of a product or service.

To reinforce an EPP, FMs can implement a life cycle assessment to evaluate the environmental effects associated with any product or service from the harvest of raw materials, how it is manufactured, transported and utilized to the point at which all residuals are returned to the earth, also known as cradle-to-grave.

## **THE HUMAN FACTOR**

Not only should cost savings and efficiency be considered when developing a sustainability program, but effects on personnel, and the land, air and water must be factored. These, are intertwined, as taking care of nature invariably results in taking care of people.

FMs must illustrate good corporate citizenship by ensuring that any plans or decisions can benefit both personnel in the building, and the community at large. Stakeholders encompass anyone that will be affected by facility decisions. There are those that are internal, such as employees, managers and owners in an organization. Externally, there are suppliers, service providers, customers, society, government, creditors and shareholders that must be included in communicating decisions. All the stakeholders must understand and appreciate the incorporation of sustainability into facility operations and how it contributes to their welfare as well as that of the organization.

## **WHAT'S PAST IS PRESENT**

There is a distinct difference between challenging the status quo and reinventing the wheel. Sometimes past efforts and best practices provide insight into how challenges can be met. Sustainability is an ideal end-state. It is a lofty goal whose perfect realization is elusive. However, as is taught in total quality management (TQM), perfection may not be attainable, but that does not diminish the efforts in striving for it. FMs can customize and utilize some of



- Create constancy of purpose for mitigating harmful effects on the environment.
- Adopt the philosophy of sustainability.
- End the practice of awarding business on price alone; instead weigh the impact on the environment of each vendor.
- Improve constantly and integrate sustainability into every process of planning, production and service.
- Adopt and institute leadership with a focus on sustainable activities.
- Implement training on the job by creating a vigorous program of education and self-improvement for everyone with a focus on sustainability.
- Drive out fear of change and dilute the status quo.
- Break down barriers between staff areas. Utilize sustainability as a unifying force.
- Put everybody in the company to work accomplishing the transformation aimed at Triple Bottom Line criteria.

W. Edward Deming's 14 points to support sustainable actions in a facility and organization. They can adopt some of the precepts from those principles by customizing them to apply to sustainable actions and planning accordingly.

Planning for sustainability is the first step in ascertaining what to do and how to do it. Before taking action, an FM must form an opinion on how to best approach any initiative. Planning is an essential step firmly correlated with discovery and creativity. FMs must select a choice from alternative ways of performance based on environmental impacts. Planning bridges the gap between how operations are run in the present and how they can be improved in the future. It is anticipating possible contingencies and preparing for them to succeed.

Treating facility activities as if there is more to operations than cost savings creates a wider focus upon which an FM can plan, considering all the ramifications of activities and practices. Planning and decisions must be made with a variety of considerations in mind. Assumptions must be made and "What if?" scenarios explored. Such contingency planning is an integral part of sustainability efforts. Understanding where pitfalls may lie goes a long way in helping avoid them. It is a certainty that other hurdles will present themselves on their own. **FMJ**



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# Green Buildings

Increasing FM visibility  
in EU & beyond

BY FRÉDÉRIC AERTSENS &  
GABRIELĖ ŠIMAKAUSKAITĖ



## WHY IS THE EU UPDATING ITS CLIMATE AND ENERGY POLICY?

Over the past two years, the European Commission revised its climate and emissions reductions strategy. Such a move follows the EU's commitment to meet the Paris Agreement targets and firmly positions the EU as the global leader in climate change mitigation. To further ensure the fulfillment of the Paris Agreement, the European Green Deal was adopted by the European Commission in December 2019, to achieve carbon neutrality in the EU by 2050, with an intermediate target of 55 percent CO<sub>2</sub> emissions reduction by 2030. To meet these objectives, the European Commission has committed to revising and updating several EU climate and energy policies.

As part of the European Green Deal, the Commission planned a revision of the Energy Performance of Buildings Directive (EPBD). The directive was originally adopted in 2010 and amended in 2018, to improve the energy performance and increasing rate of renovation of commercial and residential buildings in the EU.

## DECARBONIZING BUILDINGS IN THE EYE OF THE GREEN DEAL

Buildings are responsible for 40 percent of total energy consumption and 36 percent of energy-related greenhouse gas emissions in the EU. Therefore the European Commission identified buildings as a priority area within the Green Deal initiative and front-loaded the legislative actions on buildings within the 2020-2023 timeframe as part of the roll-out of the Green Deal action plan.

Legislation is one of the most critical tools to drive this decarbonization effort, and several ambitious policies are already in place. For instance, the EPBD is the most comprehensive piece of legislation as it contains energy efficiency requirements for new buildings and following the introduction of energy performance rules in national building codes. Buildings today consume only half as much as typical buildings from the 1980s. Yet, the current level of ambition is deemed not ambitious enough to ensure the EU meet its own milestones on the pathway towards carbon-neutrality and making buildings zero-energy or even positive-energy anytime soon.

Therefore, the Commission is therefore proposing a set of measures to accelerate the decarbonization of the building stock through:

- Doubling the renovation rate of existing buildings by 2030 and promoting deep renovations;

- Improving energy efficiency performance standards to make buildings zero-energy and even energy-positive;
- Introducing a life-cycle approach for buildings and their overall emissions;
- Promoting building automation systems to accompany the renovations and making sure the renovated buildings are both sustainable and smart.

## HOW FM CAN HELP BUILDINGS BECOME SMARTER AND MORE SUSTAINABLE

Associations such as IFMA are consulting with EU decision-makers on how the Green Deal can be implemented on a day-to-day basis in the built environment. IFMA has developed and detailed its position on the following aspects:

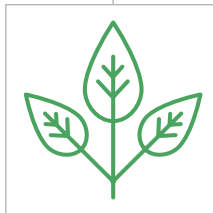
### Greening buildings with FM

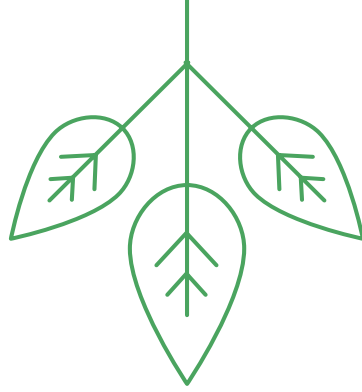
IFMA believes that EU energy legislation in buildings should not only focus on the energy efficiency of the buildings and the materials used in the construction phase, but it should look at the building's energy performance throughout the entire lifecycle. IFMA points to the fact that it is the ongoing operation of existing buildings that ensures not only protection of the initial investment but also helps achieve and sustain major energy savings.

Although the EPBD revision appears to be mainly focused on the materials used in the construction phase and their end-of-life usage in demolition phases, IFMA underlines other important aspects of a building's energy efficiency measurement. Optimized operational management of buildings plays a significant role in making the buildings more energy efficient and this is today already supported by FMs and the data that they collect, analyze and use. To that end, IFMA recommends the Commission to link minimum energy performance standards for renovation to the building's energy performance over its lifecycle, based on the recommendations and data supplied by facility managers. Furthermore, IFMA recommends that the Commission issues clear guidance that FMs are formally consulted on the building's energy performance in the preparatory phase of renovation works in existing buildings.

### Make buildings smart and people smarter

IFMA supports the Commission's ambition to increase the smartness rate of buildings. IFMA is convinced that including building automation technologies into the built environment will accelerate the existing building stock's decarbonization. To enable this, IFMA





strongly believes that the integration of digital technologies must be accompanied by fully trained facility managers to manage their integration, operation and repair. FMs are critical players for the management of smart building technologies, and IFMA therefore calls on the Commission to make the Smart Readiness Indicator scheme made mandatory at EU level before 2026.

### Increasing visibility and role of FM with EU decision-makers

IFMA strives to promote FM's crucial role in making buildings more energy efficient and sustainable with decision-makers across the globe. Specifically in Europe, this advocacy effort translates into an increasingly growing recognition by stakeholders of the FM profession, with results in EU pieces of legislation and calls for funding.

The Green Deal initiative has brought IFMA to position FM as Green Deal-makers and help the EU decision-makers to implement their ambitious objectives of making buildings zero- to even positive-energy. There are multiple pathways, such as a lifecycle approach to measure and control buildings emissions from cradle to grave, as well as consulting FM ahead of large renovation projects to identify where sustainability gaps persist.


Throughout 2021, the European Commission has launched a public consultation and organized multiple conferences to discuss the approach for the future EU energy efficiency rules in buildings. IFMA's Chapters' enthusiasts were invited to participate in five stakeholders' conferences, on different topics related to EPBD such as: minimum energy performance standards for existing buildings, strengthening buildings information tools (with focus on energy performance certificates), digitalization and data management in buildings and financing and energy poverty. This participation has provided IFMA with great visibility among the EU policy makers and informed the participants on the importance of FM in the future renovations of existing buildings as well as planning of new buildings.

During the workshops, IFMA had a chance to express its position on these topics and exchange with other stakeholders. Regarding the EPBD, IFMA representatives called for

- linking of minimum energy performance standards for renovation to the building's energy performance over its lifecycle, based on the recommendations and data supplied by facility managers;
- the Commission to issue clear guidance that facility managers are formally consulted on the building's energy performance in the preparatory phase of renovation works in existing buildings;
- the inclusion of building automation technologies into the built environment;
- the Commission to make the Smart Readiness Indicator scheme mandatory at the EU level before 2026.

### NEXT STEPS

All pieces of EU legislation, including the EPBD, become part of national law once the EU decision-making process has been concluded. However, due to the nature of EPBD (i.e. it being a directive), member states can go beyond what is prescribed by the EU. This is why the involvement of Chapter leaders and enthusiasts at national level and in the capitals is equally important to the efforts of IFMA at EU level.

While the Commission has now concluded the stakeholder consultation phase and is currently drafting the proposal for the revised EPBD which is expected for the fourth quarter of 2021, IFMA is closely monitoring the process and will continue to work with EU decision-makers to ensure the role of FM in making buildings smarter and more sustainable is duly recognized. Only with sufficient FM-friendly provisions in place, national decision-makers will understand the importance the EU has granted to FM and IFMA's EU efforts and results will be multiplied across all member states where IFMA's Chapters are active. 



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# Circularity

*CREATING FM'S NEW  
ECONOMIC MODEL*

BY MITAL HALL, ASHLEY SCHNETZER,  
ALEXA STONE & JESSICA WRIGHT





To address today's urgent climate needs, the largest countries in the world have committed to net-zero emissions by 2050. Achieving this goal requires not only a transition to renewable energy, but also a fundamental shift in the existing economic model. The prevailing economic model, the linear economy, has been in place since the Industrial Revolution and is based on the false assumption that resources are unlimited. After two centuries, the linear "take-make-waste" model has resulted in vast environmental and social consequences. By contrast, circular thinking is long-term by design. Producers are responsible for the products they manufacture throughout their entire lifecycle. Manufacturers use strategies to extend the life of products, repurpose them and capture remaining material for reuse with the goal of zero waste.

### ***Facility Managers in the Seat of Influence***

The role of procurement is heightened in a circular economy where this discipline functions as a gatekeeper filtering out products and suppliers that do not meet the established criteria. Historically, price, quality and convenience are primary considerations. In a circular economy, products are also evaluated for durability, reusability, recyclability and the circularity of the processes used in their creation. Regarding product selection, FMs have the advantage of lifecycle exposure to many products and can add value by proactively sharing product insight with the C-Suite and offering to participate in the development of procurement criteria. When needed, FMs can also build a business case for decisions that have previously been eschewed because of higher upfront costs, but that are offset by a lower Life Cycle Cost (LCC), greenhouse gas (GHG) emissions, or occupant health benefits. The iceberg principle makes it easy to understand the life-cycle cost of a product. Sometimes, the purchase represents as little as 10 percent of the total cost of the product, while the remainder consists of operations, maintenance, environmental impact and decommissioning.

### ***Corporations are Participating in Circular Concepts***

Many large corporations have shifted toward circular practices to reduce GHG emissions and slow climate change. IKEA is piloting its first furniture buyback and resale program in the United States. Customers can sell their gently used IKEA furniture in exchange for store credit. The used items will then be available for resale in the store's "as-is" section at discounted prices. Furniture buyback and resale services will become a permanent service at IKEA. IKEA has launched similar programs in other countries as it progresses toward its corporate goal to become climate positive by 2030 reducing more GHG emissions than the entire IKEA value chain emits. Circular economy principles are used as standards to guide all procurement decisions, IKEA<sup>1</sup> has committed to:

- Design all products for circularity meaning they can be reused, refurbished, remanufactured, and recycled.

- Procure and use renewable or recycled materials in all products by 2030.
- Strive towards 100 percent renewable energy.

IKEA's suppliers are expected to cascade these standards throughout their supply chain including raw material, component, or ingredient suppliers, subcontractors, and agents.

Walmart, the world's largest retailer, provides cascading procurement standards as well. The retailer aspires to "...break the link between consumption and waste as part of a movement toward a circular economy, meaning a transition from a 'take-make-dispose' approach to one that values the reuse and regeneration of materials."<sup>2</sup> Walmart is working toward eliminating waste in their operations and value chain, with a focus on:

- Achieving zero operational waste in U.S., Canada, and Mexico by 2025.
- Providing customers ways to buy gently used products.
- Investing in local infrastructure to enable adoption of recycling and reuse<sup>3</sup>.

### ***Waste Not***

One driving force behind the need to shift toward a circular economy system is the volume of waste created in a linear economy. The impact of landfill waste is multidimensional: valuable materials are buried, decomposition results GHG emissions, new raw materials are extracted from the earth and valuable energy and water are required to make new materials and products.

This massive volume of waste has overburdened municipal recycling systems. Contamination rates, commodity markets, and complex materials are straining recycling markets. Local governments and taxpayers cannot bear the growing financial burden to manage waste.

There are several frameworks and tools FMs can use to guide the creation of their organization's circular economy model. The

Ellen MacArthur Foundation offers the ReSOLVE framework to help businesses and governments generate circular strategies and growth initiatives through six action areas. See Table 1 below.



Table 1: ReSOLVE Framework<sup>3</sup>

7.5 Model	Story of the Lifecycle	REGENERATE	SHARE	OPTIMIZE	LOOP	VIRTUALIZE	EXCHANGE
<b>System</b> 	Long term stable ownership based in the third sector		Blue			Orange	
<b>Site</b> 	Site to contribute to urban regeneration To be climate change resilient To contribute to biosphere regeneration	Green					Light Green
<b>Structure</b> 	Structure design to last, facilitating flexibility and changes of use			Purple			Light Green
<b>Skin</b> 	Skin will need to be replaced several times during building life. Replacement should be simple, safe, quick			Purple	Red		
<b>Services</b> 	To remain a sustainable icon, services will need to be upgraded regularly—think 'Living lab' not 'static monument.' Net-zero strategies in specification	Green				Orange	Light Green
<b>Space Plan</b> 	Space plan to be as flexible (in terms of use and arrangement, in time and space) as possible, allowing maximum use through day and through life of building		Blue		Red		
<b>Staff</b> 	Design for flexibility in use, maximise leasing, use of low-impact materials and ability to remanufacture/replace items prone to wear		Blue		Red		

### Circular Economy in Action

The following practical examples describe the benefit of implementing Circular Economic concepts:



### NEW BUSINESS MODEL

Nesoddtangen; Akershus, Norway (ReSOLVE Action Area — Share)

The construction industry is often highly competitive and lacks collaboration. By applying the circular economy concept to share and optimize, this company turned competitors into collaborators with a united vision to reduce costs and environmental impacts. Because idle equipment does not generate revenue, owning and operating equipment with minimal down-time is a key to profitability. By establishing a business-to-business company Nesoddtangen now rents tools and equipment online through a cooperative alliance of construction companies. This collaborative consumption decreases costs, improves efficiencies and reduces emissions.



## SERVICE VERSUS PRODUCT

Schiphol Airport; North Holland, Netherlands (ReSOLVE Action Area — Exchange)

Schiphol Airport has a goal to generate zero waste by 2030. When reviewing a lighting retrofit through circular economic principles, the Schiphol team identified lighting-as-a-service. This highlights the circular economy concept of Exchange. This successful rental program means that Schiphol only pays for the light it uses and Phillips, who provides the equipment, is responsible for the performance, durability and recycling at end of life (EOL). This program saved the airport money on materials and staff management of lighting.



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## DESIGN OUT WASTE

Loop; United States (ReSOLVE Action Area — Optimize)

The group at Loop knew that recycling was not the answer to plastic pollution. Mimicking the “the milkman” model, they developed a program to sell products in reusable containers, delivered in a reusable bag, with online shopping and customer service. The concept is a person will buy shampoo from them in a metal container with a small 100 percent refundable deposit. When empty, the container is returned in the bag it was delivered in back to the distribution center. The container is cleaned, refilled, and sent back to the customer or the customer is refunded the deposit. Packaging keeps being reused through this loop program until it is at EOL, at this point the Loop program recycles the container to be made into a new container.

### Next steps

To envision circular opportunities for a facility, start by answering these questions:

1. What are the organization’s goals for energy, water, waste, and emissions?
2. Can the team improve performance toward these organizational goals?
3. What metrics are currently measured (via CMMS, BAS, EMS or manually)?
4. What additional KPIs would measure the flow of material and waste?
5. What assets are nearing EOL? How could the replacement better serve circular economy principles?

FMs are ideally positioned to support the immediate, international effort to slow climate change. FMs are critical participants in the move toward renewable energy and circular economy concepts. They will be the process flow architects, at least in part, of the circular concepts for buildings and organizations. The time for the FM industry to act is now. Leading businesses have already set ambitious circular goals, while others will quickly move in this direction. FMs are the frontline workers in the global transition to circularity. Their expertise is more valuable now than ever before. **FMJ**

1. [ikea.com/us/en/this-is-ikea/sustainable-everyday/a-circular-ikea-making-the-things-we-love-last-longer-pub9750dd90](https://www.ikea.com/us/en/this-is-ikea/sustainable-everyday/a-circular-ikea-making-the-things-we-love-last-longer-pub9750dd90)
2. [corporate.walmart.com/esgreport/esg-issues/waste-circular-economy](https://corporate.walmart.com/esgreport/esg-issues/waste-circular-economy)
3. Ellen MacArthur Foundation, SUN and McKinsey Center for Business and Environment, Growth Within: A Circular Economy Vision for a Competitive Europe (2015). Based on S. Heck, M. Rogers, P. Carroll, Resource Revolution (2015).



**Mital Hall PMP, LEED AP O+M, CC-P®** serves as *ecoPreserve’s vice president where she manages strategic growth. Her skillset is the result of more than 15 years of sustainable development experience that includes work with universities, local/state/federal governments, and businesses. Hall brings cost-effective and sustainable solutions to each project, for every client. She champions continued process improvement, develops sustainability policies, and initiates green team activities and reporting.*



**Ashley Schnetzer** joined *ecoPreserve as a recycling monitor, supporting an Orange County project to optimize recycling in the community. She now works as a Sustainability Specialist focused on growth and strategy. Her role includes research, writing, and frontline interaction. She is guiding ecoPreserve through the United Nations Sustainable Development Goal tracking process and then through B-Corp Certification. Schnetzer graduated from the University of Central Florida with a degree in biology and minors in business and environmental studies.*



**Alexa Stone, LEED AP O+M, SFP®, ENV SP,** left corporate America to found *ecoPreserve, a mission driven, certified woman-owned small business in 2009. In ecoPreserve’s first decade, she developed an organization of experienced and credentialed sustainability and resiliency professionals. Stone serves on boards of IFMA’s Environmental Stewardship, Utilities & Sustainability Community and the University of Florida College of Design, Construction and Planning. She serves as a judge for the Orange County Public Schools Green Schools Recognition Program and Practice Green Health.*



**Jessica Wright, LEED AP BD+C, Florida Water AP, TRUE Advisor,** leads the *Resource Lifecycle Division at ecoPreserve providing process and material assessments and strategic plans resulting in increased diversion rates, cost savings, and improved employee engagement. Wright’s problem-solving and change management skills were honed through years of experience leading operational, construction, and waste management projects. She was named one of the 2020 Women to Watch as part of the Women in Green Leadership program.*





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CASE STUDY

# *Achieving Data Integration through Collaboration*

BY LISA STANLEY





**D**ata was at the core of unprecedented challenges that disrupted the workforce and workplace over the last 18 months, advancing swiftly as workers moved to home-based offices in avoidance of exposure to a relentless virus. These challenges have doggedly remained as facility managers grapple with a health crisis that quickly became an economic crisis. Attention has turned to what the workplace of the future will look like and how much of the workforce is interested in returning to their previous workplace routine.

One issue was constant. Organizations struggled with data — what was collected, its accessibility, consistency and integrity to assess risk and swiftly aid decision-making. The environment created chaos and an opening for FMs to earn a seat at the table they have long sought. FMs provided valuable insight and perspective to the discussion on how to move organizations forward and demonstrated the new emphasis on safety and trust for the workforce to return to the workplace. The integration of data was critical to the process.

What is data integration? It is the process of collecting and combining data from multiple external and internal sources that often cannot communicate with each other. It enables organizations to use this information derived from the bits of data collected for a wide range of business decisions in the current environment and provides analytics to improve management of the entire asset life cycle. The information derived from data collected across the organization empowers organizations to become better stewards

of investments that loom large on the balance sheet — real estate, technology and human capital. FMs are the critical element linking these three investments.

Becoming data-driven means addressing many of the classic obstacles to integrating data from multiple sources. It also includes improving integration along the entire supply chain, across the lifecycle of an asset and in real estate portfolios. It means FMs have a unique skill set that can bring owners, occupiers and investors to the table with their external business partners. This skill set empowers organizations to become better prepared for managing the next crisis.

The real estate industry can effectively collaborate on data integration from two perspectives: industry organizations, such as OSCRE and IFMA, and key industry stakeholders including occupiers, owners, service firms, software vendors, investors and others. The primary objective for collaboration with industry stakeholders in both groups is to accelerate the advancement of a data-driven real estate industry that enables organizations to achieve better outcomes.

Leaders must be committed to implementing a digital transformation strategy, exploring new approaches to integrate their data, building new skills within teams, and finding new ways to use technology to empower team members and the entire organization.

Where to start? Collaboration is central to OSCRE's strategy for advancing digital capabilities in the real estate industry as a whole and in real estate organizations themselves. No single industry organization offers data standards for the entire real estate industry, and there can be significant hurdles in connecting functions and the data standards that each one utilizes. OSCRE is committed to working with other industry organizations to address the challenges of interoperability across platforms and to extend existing standards to meet the changing needs of the industry.

A prime example of this collaborative approach is OSCRE's working relationship with the Housing Associations' Charitable Trust (HACT) in the development of the U.K. Housing Data Standard Powered by OSCRE™. The lessons learned by both organizations represent a model for industry collaboration today and in the future. That model of engagement with industry stakeholders is highly transferable to other sectors and standards initiatives. The experience of those industry partners also highlights the solid business case for data integration based on standards.

### **Primary Objectives of Collaboration**

To set the context for collaboration, OSCRE has identified the following objectives:

- Demonstrate benefits of data integration — connecting data across multiple platforms.
- Improve results for individual organizations, their business partners and the industry as a whole.
- Address value to shareholders and other stakeholders to encourage investment.

- Build a basis for fully integrated asset lifecycle management.
- Establish a framework for effective data governance.
- Achieve industry alignment around integrated data standards.
- Provide accessible education and training to develop skills required to implement standards.
- Expand support for Environmental, Social and Governance (ESG) initiatives and reporting.

### **Collaboration Between Industry Stakeholders**

OSCRE's experience in the HACT project demonstrates that actively engaging in standards development increases the likelihood that the participating organizations will implement them. Collaboration does not require disclosure of trade secrets or information that would benefit competitors. It is a focus on developing consensus to address common challenges that arise from the extraordinary amount of real estate data being collected from many sources and its effective use in data strategies and operations.

### **Benefits from Industry Collaboration**

Data standards are critical to building a foundation for effective data management and data governance, providing the following benefits:

- Incorporate related functional standards into an overall data strategy.
- Leverage the OSCRE Industry Data Model (IDM) as a starting point.
- Increase the speed of change and advancement in the industry.
- Identify critical components in a digital transformation.
- Maximize value from emerging technologies, e.g., artificial intelligence, machine learning and digital twins.

To achieve a full asset lifecycle perspective, functional standards cannot be implemented in isolation. An integrated data model (IDM) is the critical ingredient to develop a data strategy; it defines the organization's priorities to improve digital capabilities and overall performance.

### **The HACT-OSCRE Partnership**

OSCRE has worked with HACT in the development of the U.K. Housing Data Standards Powered by OSCRE™ over the past four years. The collaboration is a model for industry organizations to build effective data governance practices as part of a larger data strategy. The partnership also included many of the key stakeholders in the social housing sector in the U.K. More than 70 partners have invested and actively participated in the project to date. This includes investors in social housing, property managers, enterprise software vendors and others who support the development and implementation of social housing data standards.



### What Was Discovered

The standards development process used to build the U.K. Housing Data Standard Powered by OSCRE™ provides a framework which can be replicated in other initiatives. Rapidly developing domain-specific standards can start with the OSCRE Industry Data Model™ (IDM), and the IDM can be extended where needed. More strategically, the approach taken by OSCRE and HACT lays the foundation for a collaborative multi-enterprise operating model for the creation and implementation of real estate data standards. It also highlights OSCRE's growing role as a standards aggregator, a convener to develop data standards and publisher. The project identifies important aspects of the initiative, from the multi-party engagement, through project funding, standards development methodology and tooling, and implementation guidelines for a variety of typical project types.

### OSCRE's Standard Development Methodology

This methodology enabled project participants to quickly identify related concepts to fill gaps and build consensus. Six standards

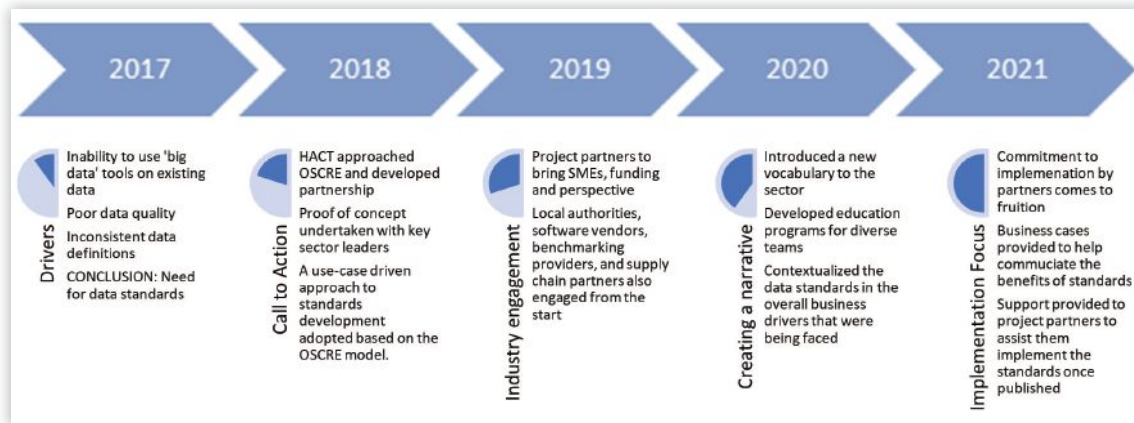
projects have been completed in a little more than three years, including:

- Reactive Repairs
- Planned Maintenance
- Customer Care and Support
- Income
- Development Handover
- Resident Feedback and Complaints

These new standards can be reviewed on the OSCRE website. The HACT Data Standards Powered by OSCRE™ and the OSCRE Industry Data Model (IDM) are free to access but do require users to register.

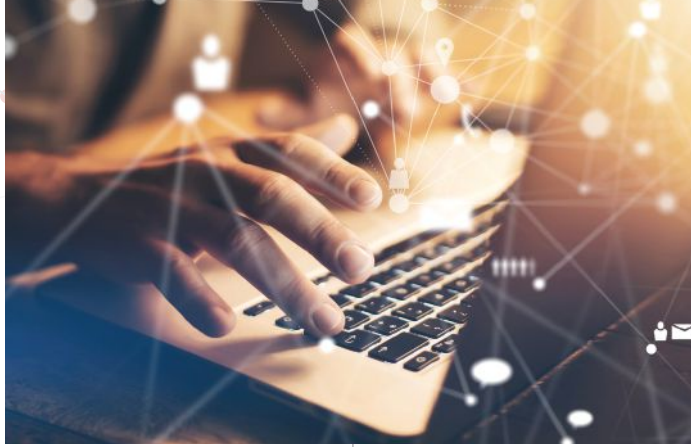
Each standards project generated a common set of deliverables, including use case definitions, a target business case, a process context, term, schemas and an implementation guide.

### Timeline for a successful collaboration and industry engagement



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### **A Continuum of Education and Training**

Successful implementation of standards starts with a commitment to ongoing education and training. OSCRE and HACT identified a critical need for increasing the skills and digital competencies across the sector and launched a series of learning labs developed and facilitated by OSCRE. The series is comprised of four learning labs specific to data governance and related foundational skills. Developing these skills within teams is critical for organizations to be effectively data-driven. The education and training options offered by the OSCRE Academy currently include:

- On-demand virtual certificate programs in Data Governance and Digital Competencies in Real Estate.
- Virtual Learning Labs open to multiple organizations.
- Applied Learning Labs for teams from a single organization in an implementation setting.

Education benefits are significant from a skills-building standpoint, including:

- Teams progress at the same pace, accelerating their ability to work together more effectively.
- Learning labs include workshops that allow for sharing experience, challenges and solutions.
- Applied Learning accelerates teams' ability to proceed directly to implementation projects.
- The connections between data governance and other strategies are clarified.
- An organization becomes much more effective in representing itself with suppliers and partners.
- Greater alignment becomes possible between leadership and operations in a digital ecosystem.

Establish a product roadmap to guide the participants through the standards development process. Using a variety of engagement techniques, HACT and OSCRE reached out to the sector to identify high-priority use cases for standards development. These were packaged into a prospectus that explained the specific intent behind each project and the overall roadmap for development. The product roadmap is a tool that both organizations use to communicate upcoming standards projects and ensure support in the project.

### **Extending the Collaboration Model**

OSCRE is working with industry organizations in other sectors and has included their standards in the OSCRE IDM. This is one of the primary methods by which OSCRE is building support for enabling data flows along the entire asset lifecycle. Examples

of these collaborations include the Construction Specifications Institute, focused on standards commonly used in construction and building operations, including

UniFormat®, MasterFormat® and OmniClass®, which are built into the OSCRE IDM.

The IDM contains use cases based on the latest BOMA Standards for space measurement for office, industrial, residential and mixed-use properties. An implementation team has the flexibility to choose the measurement method that best suits their needs and still retains the integrity of the overall data model.

OSCRE and HACT have worked closely with the U.K. BIM Alliance to ensure interoperability between the IFC and COBie models (commonly used in the construction/delivery phase) and the OSCRE models (used primarily from handover onwards in the operational phase). This also ensures that the OSCRE work is consistent with the ISO19650 framework and can be used as a data standard within that context.

### **Benefits and Lessons Learned**

Data standards are the foundation of this project. They form the basis for change that fuels collaboration with external and internal business partners and an industry advantage that includes the following benefits:

- Greater transparency, consistency and integrity of data across platforms and business partners.
- Ability to incorporate related functional standards into an overall data strategy.
- Leverage the OSCRE IDM as an integral step to effective data management and data governance.
- Increase the speed of change and advancement in the industry.
- Identify critical components (such as integrated data standards) in a digital transformation.
- Maximize value from emerging technologies, e.g., artificial intelligence, digital twins and machine learning.

### **Lessons Learned from the HACT-OSCRE Project**

- Collaboration will continue to be core to OSCRE's strategy for industry engagement.
- This approach brings the business and IT groups together effectively to achieve results.
- Participating organizations recognized common ground around the role of standards.
- Standards development enables users to maximize value from emerging technologies.
- Avoid mistakes by leveraging OSCRE's experience with large scale standards development.



- Education components are needed to build skills and enable successful implementation.
- Hold events to raise awareness and define the business case as you make progress.
- The value of the new standard and lessons learned are not limited to social housing nor the U.K.
- Solutions emerged that can be implemented to solve data challenges from the pandemic.

### Where Can We Go from Here?

A collaborative approach is critical to achieve the digital transformation the industry needs. This approach can accelerate progress, the synergy created by dedicated participants can improve results, adds significant value to stakeholders and can make significant contributions to ROI.

Grassroots support for this approach requires allocation of resources — building the skills to match the will of leadership to move forward, commitment of human capital and financial investment. OSCRE has confirmed a commitment to focus on critical industry issues and identify common ground that advances progress

for years to come. Tools already exist in OSCRE's IDM to gain a head start on high priority initiatives of interest to FMs and their internal and external business partners. **FMJ**



**Lisa Shanahan Stanley** has served as OSCRE International's CEO since 2013. She champions real estate data standards as an integral component of effective data governance and asset life cycle management, working with Fortune 500 companies, non-profit organizations, government, small businesses and even a unicorn or two. Stanley is an advocate for collaboration that enables organizations to more effectively collect and use data to meet the challenges facing the workforce, the workplace and the entire real estate asset lifecycle. She holds a Bachelor's Degree in Business Administration from the University of Central Florida, and is Prosci-certified in Change Management. Stanley also serves on the CXO Advisory Council for the Digital Value Institute.



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# going green

*Truths & Myths*

BY SUSAN SCAPPARONE



Since the pandemic, building owners and facility management teams are paying closer attention to the types of cleaning products and equipment they use while watching their bottom line. While proponents point to the benefits of a green clean, there are those who still remain skeptical. Many believe it takes “green to go green.” When comparing non-toxic or green cleaning products against conventional cleaners, there is certainly confusion in the marketplace. FMs and procurement executives question green cleaning product costs, cleaning efficiency, safety and whether these products truly are better for the environment. Consumers also are skeptical. According to a recent Mintel study (April, 2021), “The Sustainable Consumer,” just over half of the population are confused by sustainability claims, unsure of the effectiveness of their sustainable actions and are looking for brands with simple and convenient and cost-effective options.

It is also not unusual to confuse words “eco-friendly” and “sustainable.” But it is important to understand the distinctions when purchasing industrial cleaners and equipment for different cleaning and disinfecting jobs.

Eco-friendly’s definition is “anything not harmful to the environment.” Sustainability means to “maintain without the depletion of natural resources.” When it comes to eco-friendly industrial cleaners, everything from production to packaging needs to be safe for the environment. But here is where it can be tricky. Federal Trade Commission (FTC) Green Guides, which are designed to help marketers avoid making environmental claims that mislead consumers, say for a product to be properly labeled as eco-friendly, a manufacturer must explain why their product is environmentally responsible on their packaging. Otherwise, it might not be safe for the environment based on its usage.

FMs choose products based on a variety of factors, including function, safety, price, quality, aesthetics and increasingly environmental and social attributes. In response to emerging regulations and market demand for products that are safer and more sustainable, FM manufacturers are offering products that incorporate these factors.

Safe chemicals are a key element of the global economy. The introduction of new

innovative chemicals over the past few decades provided significant value to product designers and helps improve quality, efficiency and convergence in the workplace. At the same time, experts recognize that not all chemicals are created equal when it comes to their hazard traits, health and eco-toxicity endpoints or potential adverse effects on human health and the environment.

Green cleaning is far more than switching out a few chemical cleaning products. It is about systems working together and integrating chemicals, tools, procedures and equipment, while providing staff training, documentation and record keeping to ensure ongoing healthier buildings.

With all this in mind, here are eight factors to consider before putting together an industrial cleaning supplies list for effective building cleaning.

### 1. Give Green a Chance

Too often, sustainable products are met with opposition because it is perceived that following environmental best practices will be too costly. This myth could not be further from the truth. Not only have green product prices dropped to comparable or below those of traditional cleaning products, but sustainable products can save an organization money while improving a building’s environmental profile.

Chemical advances and the desire of manufacturers to rid the industry of harmful chemicals have led to this cost drop. In addition, green cleaning products are often sold in a higher chemical concentration, and therefore less product is needed, so end-use costs can be dramatically lower than traditional products. Forward-thinking companies of all sizes and sectors are acknowledging the importance of green products.

### 2. Good Planets are Hard to Find

Some organizations believe being sustainable is complex and difficult to follow. There are multiple third-party organizations and certification programs to assist in following green guidelines. Consult with local United States Green Building Council (USGBC) chapters for more information on Leadership in Energy & Environmental Design (LEED). Learn more about Green Seal to understand how cleaning products and procedures are certified green. Educate oneself on programs such as ISSA CIMS for ways to institute green facility maintenance and cleaning practices. These organizations offer certification programs that outline various categories and best practices, as well as guides on certified products to help FMs accelerate their sustainable efforts. It has never been easier to follow green guidelines and be in compliance. Additionally, look for products that are marked EcoCert, EPA Safer Choice, Design for the Environment or Green-E certified. These certifications are a great indication that the product is better for the environment.

Remember that USGBC or LEED certificates do not certify cleaning products. LEED Facility certification has a prerequisite for a Green Cleaning Program. However, there is not a “list” of products. Always consult with a third-party vendor for the certifications that may apply to a specific product. Additionally, the Carpet and Rug Institute has a rating program for the effectiveness of carpet cleaning equipment. These recommendations can assist in choosing the best equipment for a green cleaning program.

### 3. Live Life Cleaner

A common myth exists that green products will not be as effective on cleaning surfaces as their conventional cleaning counterparts. Just because a chemical cleaner is made in a more sustainable way does not mean it will not deliver on cleaning performance. Green products in most cases are just as effective as traditional cleaners that use harsh chemicals. However, because sustainable products do not always include fast-acting chemicals, allow green products to dwell a bit longer to have an effective cleaning result. Each product is different so always read the label. Many FMs believe it is worth the extra time if it means reducing exposure to toxic chemicals amongst building occupants. If questions are still raised about the effectiveness of green products, look for ones with the EcoLogo or Green Seal certifications. These are products that have undergone rigorous testing for both chemistry and performance.

### 4. Health & Wellness Impact Worker Productivity

Evidence has made it clear that the type of cleaning products can have an impact on the health and wellness of building occupants. Companies committed to sustainability frequently outperform those that do not consider the impact on their operation. In any given building, 90 percent of exposure to pollutants occurs indoors. Conventional product cleaners such as aerosol spray cans, bleach, some detergents and carpet or floor cleaners can be dangerous for employees or custodial staff to inhale. When these products are used, volatile organic compounds (VOC) are released into the air and increase the likelihood of employees or customers experiencing eye, skin and respiratory inflammation. Certified green commercial cleaning products and services eliminate harmful VOCs, allowing everyone in the building to breathe easier. Using green products also is known to increase worker productivity

rates and decrease the number of employee or customer complaints. So, consider Indoor Air Quality (IAQ) when making facility maintenance decisions. An easy way to be cleaner, improve IAQ and save significant dollars is to install quality, effective, bi-level entrance matting to stop tracked-in soils at the door.

### 5. Think Before You Act

Green products and equipment often do not cost more than conventional products. Some non-toxic products are less expensive than standard cleaning ones. Frequently, FMs see cost savings from cleaning efficiencies and reduced chemical usage. By implementing high-efficiency green cleaning programs, cleaning costs can be reduced by lowering the frequency of cleaning.

### 6. A Clean Environment Is a Safe Environment

True green products are generally believed to be much safer to use and pose less of a risk to humans and the environment. Check labels carefully. Skeptics point to a marketing trend called “greenwashing,” where a company or organization spends more time and money on marketing themselves as environmentally friendly than on minimizing their environmental impact. But evidence shows that green cleaners are safer and leave less of a carbon footprint.

### 7. Show Your Worth, Save the Earth

One of the great advantages of using sustainable products is they don't pollute the environment. Green cleaning decreases pollution, resource depletion and global climate change. Because they are often derived from renewable, biodegradable resources, their usage does not hurt the planet's ecosystem as much as many traditional cleaning products may do.

### 8. Image Is Everything

Even before the pandemic, smart FMs understood that potential employees or customers were scrutinizing regulatory and compliance reports to determine if they want to work for a particular company or conduct business with them. Now smart organizations are placing more emphasis on regulatory and compliance policies and using them in recruiting and new business efforts. Smart companies are also highlighting their green cleaning programs and training their custodial staff in the latest green certifications and using them as a competitive advantage in the marketplace.

Green cleaning is a win-win situation for all stakeholders. Science has made it clear that cleaning products can have an impact on the safety, health and cleanliness of a building. Many commonplace myths about green cleaning products versus conventional ones can now be put to rest. While it can be difficult to pinpoint exact cost savings, there is no question that savvy FM teams understand the benefits of green cleaners from increasing the longevity of their building's floors, walls and office equipment to intangible health and environmental benefits.

The next time someone says the expression “it takes green to go green,” list the above examples to dispel that myth and discuss why organizations did not consider going green sooner. **FMJ**



**Susan Scapparone** is the director of product management for the facilities category at Staples. During her tenure she has been a key contributor in launching the facilities category at Staples with a focus on chemicals and janitorial paper. Scapparone leads a cross-functional team responsible for launching new chemical solutions and cleaning tools.

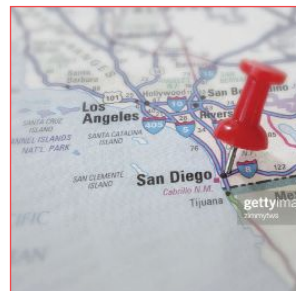


# MY FACILITY

## DIANE BAILEY

EDF Renewables – Innovation Drive  
San Diego, California, USA

Completed in 2020, the Innovation Drive Microgrid project is located at the EDF Renewables corporate campus that houses more than 450 local employees. The project consists of a 391 kilowatt (kW) solar carport and rooftop, 538 kilowatt hour (kWh) battery storage system, and 48 electric vehicle (EV) charging stations with capacity to expand to 68. The fully integrated system reduces both energy and demand charges with controllable and predictable energy costs, and flattens not only the EV charging load but manages the entire facility's energy consumption patterns to reduce utility bills. IFMA Member Diane Bailey leads the FM Team and EDF Renewable's on-site green initiatives.



Photos Courtesy of EDF Renewables



# MY FACILITY



**FMJ:** Tell us about yourself and how you got into Facility Management.

**BAILEY:** I started out in business support roles, working as an Executive Assistant, and later as an office manager. My duties soon expanded to include facilities and administration management. Since 2014, I've served as Facilities Manager for EDF Renewables North America, a market-leading independent power producer and service provider delivering wind and solar power, energy storage, EV charging solutions, and more. I am based at our company's San Diego headquarters located on Innovation Drive where we installed our own renewable energy management system on site. The system is tailored to the campus' unique characteristics and requirements, turning the rooftop and parking lot into a sustainable clean energy asset.

**FMJ:** What is day-to-day life like at your facility?

**BAILEY:** Pre-COVID-19, we hosted around 450 employees on site in about 83,000 square feet of space split between two buildings. Now, there is a big focus to adjust to a new hybrid way of working and providing hoteling workstations for those employees who telecommute or are remote, which is a continual work in progress. My department also oversees the physical security of the office, as well as about 30 field project sites.

It's hard to describe what a busy FM day is like for me because no day is the same. This is one of the reasons I like my job as much as I do; it has a lot of variety. My main focus is taking care of our internal employees so they can do their jobs most efficiently. This varies from maintain the safety and security of the facility, ensuring workspaces are ergonomically set up to making sure that coffee, espresso, or cold brew are available for their enjoyment.





**FMJ: Why is your facility unique and what kind of unique challenges do you face?**

**BAILEY:** What makes our facility unique is that it combines a variety of onsite renewable technologies into an integrated clean-energy system. After all, we are a renewable energy company, and we practice what we preach (and sell). We generate a substantial portion of the power we consume via photovoltaic solar modules. Battery storage gives us the ability to save a portion of this energy for later use, like times of day when utility prices are highest. This allows us to be strategic in terms of when we draw power from the grid, which reduces our energy costs and our carbon footprint. We also have electric vehicle charging stations on our campus which are available for use by our employees and visitors.

Perhaps our biggest current challenge is maximizing collaboration in a new hybrid workplace model and balancing the unique needs of those employees who are working at the office with the needs of those who are working remotely. Fortunately, being that our office space is spread across two buildings, we are already somewhat accustomed to providing services to employees who are not all working under the same roof.

**FMJ: How much space do you manage and how is it used?**

**BAILEY:** We have 83,000 square feet. Most of the space is used as corporate headquarters, housing the resource assessment, development, and implementation groups, as well as shared services such as accounting and IT support. We also have a operation control center staff who support our remote project sites around the clock and calendar.

**FMJ: Tell us about your FM team.**

**BAILEY:** I lead a team of three full-time staff members at our corporate headquarters: a receptionist, facilities assistant and senior facilities assistant. They are focused on a variety of tasks, including taking care of new hires (assigning seat locations, issuing access cards, and handling ergonomic requests), shipping packages, stocking break rooms, and repairing or managing the repair of plumbing, HVAC and other infrastructure. We also have a part-time security consultant who focuses on the installation of security systems at our power plant sites, including alarm systems, access control and cameras.

As FM, I manage the lease for our corporate office as well as five regional offices and two WeWork spaces. This involves negotiating new leases, building out new spaces, and keeping the leases current for the duration of their terms. I also work closely with the local administrative staff to make sure the respective property management companies take care of the buildings as needed.

**FMJ: What is the biggest FM challenge you have faced and how did you find a solution?**

**BAILEY:** While working for a previous employer, I spearheaded an extremely time-sensitive office move that had big security implications. The company provided software for the secure transmission of broadcast programming. When our parent company acquired another company that provided this same type of service, but for the DVD market, we had about three months to source a security-compliant office for them, negotiate a lease and execute the move. When we started the process, I remember the broker telling me we would never meet the deadline, but we found a new location within a couple weeks and negotiated the lease in record time. The next hurdle to clear was with the landlord, who presented their normal four-to-five-month schedule for build-out. We pressed them to speed up the process and was able to get the building done in eight weeks. The broker contacted me and asked to come see the office, as she had never seen a build-out turned around that quickly.

Another big challenge was recarpeting about 65,000 square feet of occupied office space, including a 4,500-square-foot 24/7 OCC area. We scheduled the work in the main office to be done over the course of 16 consecutive weekends, having the employees in each section pack up their office for the weekend so that the workstations could be lifted, the old carpet removed and the new carpet installed. We did the OCC area in three days straight, having the team work in an adjacent conference room.



**FMJ:** How has COVID-19 changed the way you and your team operate your facility?

**BAILEY:** Initially, the biggest challenge was figuring out how to best support our employees who were all suddenly working from home. Once it became clear that this was going to last awhile, the company decided to provide our employees with a complete set of IT equipment for their home office, and employees could borrow their office chairs and mobile Ergotron sit/stand stations so they could work at home ergonomically safe. The Facilities staff continued to come into the office to keep shipping, mailing, and check runs going. The front desk also scanned mail to save employees having to come in unnecessarily. We also established a monthly disinfecting for the first year and have contracted a company to remain on call for when there is a suspected COVID exposure in the office. We work closely with Human Resources and our Health and Safety department to run access reports so we can conduct contact tracing in these instances.

Since people have come back to the office, the biggest challenge has been managing the new hybrid work schedules and accommodating a larger variety of needs for our internal customers. Working closely with their managers, we assign seats to anyone who is in the office for three or more days a week and have created hotel workstations for those who come to the office one to two days a week.

**FMJ:** How does security shape the way you are able to perform your day-to-day duties?

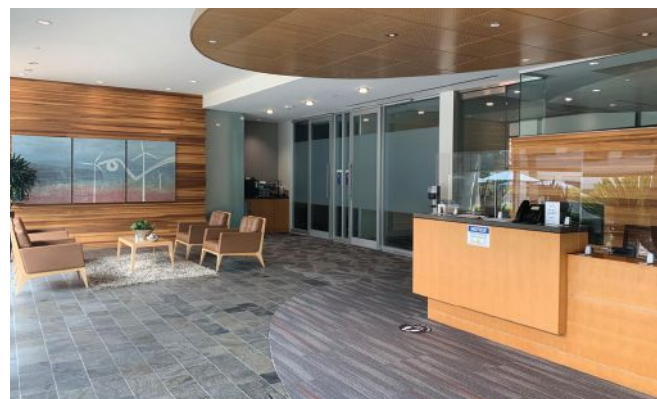
**BAILEY:** Security is inherently important to my job as an FM. Managing multiple worksites, some of which are sensitive in nature, like power plants, means being vigilant when it comes to controlling access. Electronic security systems are a huge benefit here, in that we can simply turn off a person's access card when they no longer need access to a specific site. Compare that to the days before the advent of electronic security, when you had to issue people keys and hope they'd return them when they were done. If not, you'd have to change all the locks!

**FMJ:** What are some FM challenges you face at your venue that are common across the FM industry?

**BAILEY:** The biggest challenge we all continue to face is supporting our remote employees and keeping our facilities clean and sanitized for those who are working in the office. Facilities are always going to have their own unique challenges but navigating the complexities of the COVID-19 pandemic has been universal across all types of workplaces large and small.

**FMJ:** What do you like best about what you do?

**BAILEY:** It's hard to choose any one aspect of my job that I enjoy the most, but among the most satisfying is the constant variety of tasks that have tangible, measurable outcomes. I love that I can work within multiple disciplines, from facilities management to security, to employee health and welfare. Moreover, in working at a company like EDF Renewables North America, I feel we are making a real impact as we help customers meet their sustainability goals and energy needs.

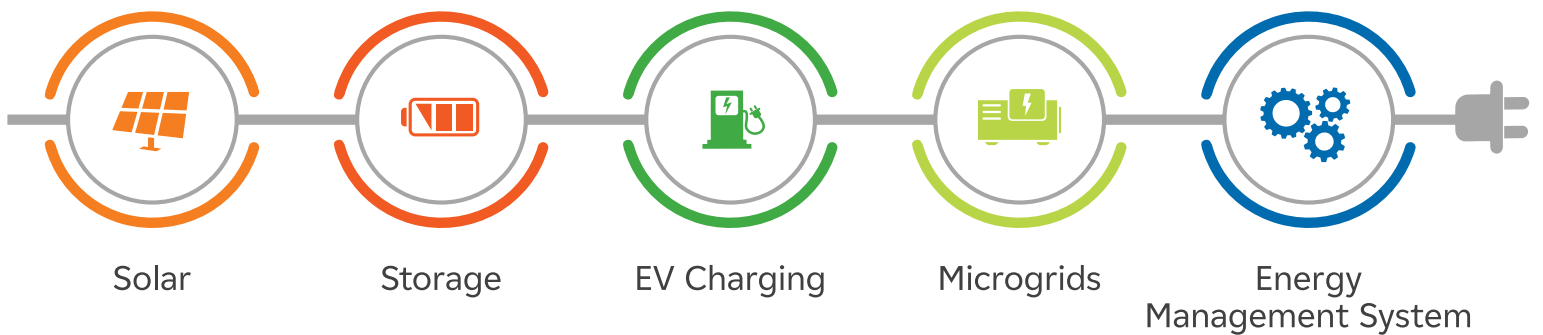






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## The following people were awarded the Sustainability Facility Professional® (SFP®) designation:

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Sajeeth Vayankara, CFM Ajman, AJ, United Arab Emirates	Russell Thompson, CFM Austin, Texas	Terrence Paschal, CFM Portland, Oregon	Veerabhadrarao Devu, CFM Kuwait	Aaron Markel, CFM Daly City	Mohammed Ibrahim, CFM Riyadh, Saudi Arabia
Carol Spencer, CFM Oak Forest, Illinois	Abdul Basith, CFM Abu Dhabi, United Arab Emirates	Gopal Palapallam K Pillai, CFM, Abu Dhabi, United Arab Emirates	Mohamed Gabir, CFM Northern, Bahrain	Cody O' Connor, CFM Mill Creek, Washington	Eddie Luchs, CFM San Diego, California
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Jeffrey Doan, SFP Mill Creek, Washington	Adron D'souza, FMP, SFP Mangalore, KA, India	Moema Neiva, FMP, SFP Regiao Metropolitana, SA, Chile	Jose Rosas Roque, FMP, SFP Houston, Texas	Diana Cordova, CFM, SFP Albuquerque, New Mexico	
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Robert Benefeld, FMP Lenexa, Kansas	Gabriel Pang, FMP Punggol, Singapore	Ka Chun Kwok, FMP Yuen Long, Hong Kong	Bradley Myers, FMP Woodbridge, Virginia	Anthony Von Dollen, FMP Brentwood, Tennessee
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# **FM's Carbon** **Footprint**

**FIRST  
COMPUTE,  
THEN  
IMPROVE**

BY DR. MARKUS KRÄMER, DR. MICHAEL MAY & PHILIPP SALZMANN

**T**he Paris Agreement's long-term goal is to strengthen the response to climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels. Climate-neutral building operation is expected within the next two decades posing an additional challenge for facility managers. While methods for the construction sector already exist, there are almost none for the service sector, especially within FM. Consequently, for facility services, such as space management, cleaning, security, catering, transport, inspection, and maintenance, a method is needed that allows CO<sub>2</sub> emissions to be determined and evaluated regarding their drivers. An additional challenge lies in the lack of key figures on carbon emissions per product used within service delivery.

## **Motivation and Challenge**

IT tools supporting carbon management in that field barely exist. This challenge was taken up by a consortium of two Berlin universities in collaboration with FM practitioners. As a result, the project "CarMa" was initiated to develop a methodology for

determining the carbon footprint of facility management. This effort is now continued with the help of the German FM Association (GEFMA) and a group of leading service providers in a project called "CarbonFM."



## Carbon Management Research

Whereas CarMa developed the carbon management method, CarbonFM builds an open IT platform to apply this method in practice, where organizations can input, analyze and compare data of their services thereby getting valuable suggestions on how to reduce their carbon footprint.

ISO 14067 defines the carbon footprint of products as the sum of greenhouse gas emissions and removals in a product system expressed as CO<sub>2</sub>e equivalents (CO<sub>2</sub>e) and based on a life cycle assessment using the single impact category of climate change. Here, services are regarded as products.

The method for determining the carbon footprint is based on the Life Cycle Assessment (LCA) approach according to ISO 14040 comprising four steps:

1. **Goal and scope definition:** The functional unit and the system boundary scope must be defined according to the objectives. This can be a cleaned area.
2. **Life Cycle Inventory (LCI):** This requires effort for data capture.
3. **Life cycle impact assessment:** The objects considered in Step 2 are assigned an impact in terms of climate change.
4. **Life cycle interpretation of the carbon footprint:** The resulting challenges are addressed and the characteristic values are to be interpreted and benchmarked.

These standards do not define how functional units or system boundaries need to be chosen. When similar products or services are compared, the framework conditions for LCA must be regulated in product category rules (PCR), according to ISO 14025. When implementing an LCI users can be assisted by several databases such as ecoinvent. Based on PCR, manufacturers must provide information on their products' carbon footprint via Environmental Product Declarations (EPD) according to ISO 14025 or EN 15804. However, information for products important for FM exist only occasionally, which also applies to the "The International EPD System."

The CarMa method considers four modules, each contributing to FM carbon emissions<sup>1,2</sup>:

- **Equipment** — equipment and materials, regularly used for one or more specific services.
- **Operating consumables** — consumables and resources, such as electricity, detergents and water, required for a service or equipment usage.
- **Transportation** — regular transportation of products and services that mainly include the arrival of the personnel and recurring deliveries.
- **Overhead** — service-specific overheads, associated e.g., with the deployment of customer advisors or property managers.

## A National Standard

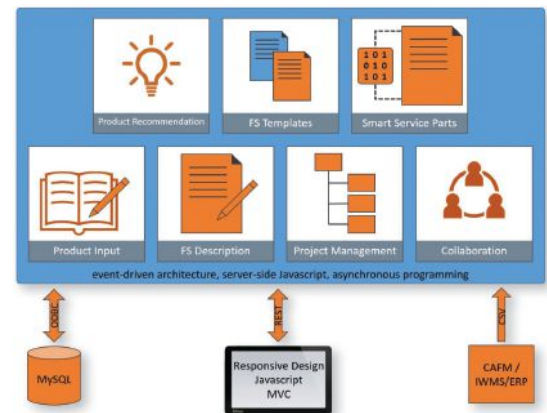
Based on CarMa research, a national standard (GEFMA guideline 162-1<sup>3</sup>) was developed and published in 2021, explaining the carbon management method for the determination and improvement of the CO<sub>2</sub>e key figures for FS. This allows service providers to gain a competitive advantage in tendering processes. Target groups are FM customers as well as FM service providers, consultants, IT companies and researchers.

The method described helps FM providers identify to what extent the activities in their value chain contribute to their carbon footprint and how they can be reduced. These facts can be used can also be used for sustainability reporting. FM customers can use the method to procure CO<sub>2</sub>e-optimized FS and to develop CO<sub>2</sub>e benchmarks.

## The Open Technology Platform CarbonFM

GEFMA 162-1 provides an Excel template to demonstrate the step-wise carbon footprint calculation for FM. However, working with Excel on a larger scale becomes cumbersome. Collaboration, data sharing or evaluation is not really supported. CarbonFM was developed to overcome these restrictions.

Fig. 1 Software architecture of the open CarbonFM platform



CarbonFM is based on a client-server architecture where the client side uses a web application to support a variety of devices. The backend uses MySQL database linked by an ODBC connection. The entire development uses the model-view-controller (MVC) paradigm and open-source software. There is also an interface to external sources, such as CAFM/IWMS, using standard file formats such as CSV.

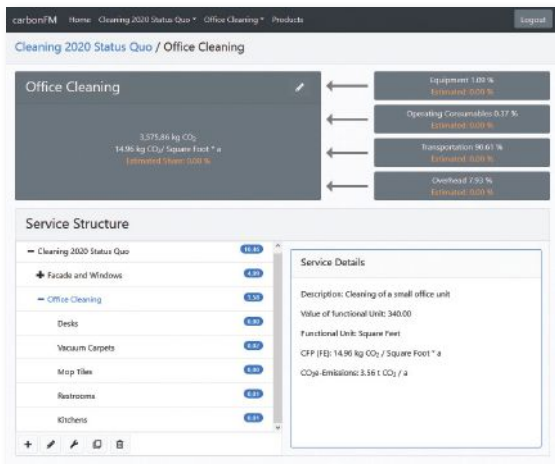
The CarbonFM platform supports various core functions:

- **Project management:** Several FM services can be structured and combined to carbon footprint projects. Multiple services can be created within one project scope and enable service hierarchies

(Fig. 2). Duplicating, merging and reorganizing projects is supported. If an FM service is completely modeled, a copy of this project can be used to develop an optimized service.

- **Collaboration:** Permissions to view, edit or manage projects can be granted to any users of *CarbonFM*. Different users can edit the same FM service or project during data acquisition. Furthermore, FM customers can be allowed to view projects and learn details about carbon footprints.
- **FM service templates and Smart Service Parts:** To determine an FM service, users can start from scratch. Alternatively, an existing FM service can be copied with all relevant products, transportation and overheads, and be adapted. For the fast entry of combined products and other aspects *CarbonFM* offers so-called smart service parts (SSP).
- **Product input:** The carbon footprint of a product within an FM service is determined either by entering product information provided by manufacturers or by estimation as described above.
- **Product recommendation:** Products are assigned to product categories. Interchangeable products belong to the same category. Based on categories, products used in FM services can be compared and recommended by *CarbonFM* when possessing a better carbon footprint.

Fig. 2 Service hierarchy of FS “Office Cleaning”



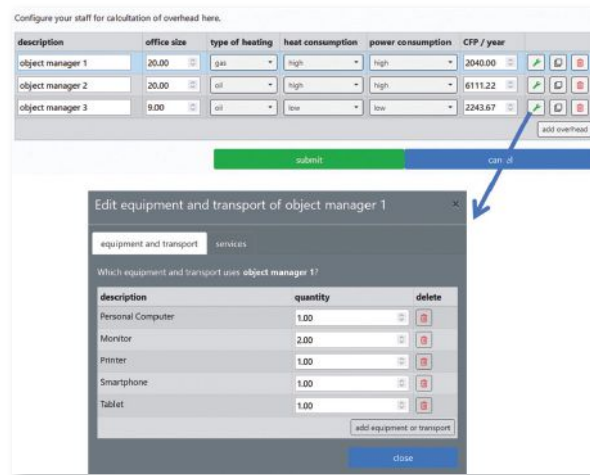
### Usability of CarbonFM and Parametric Design of Services

A key aspect of the *CarbonFM* platform is maintaining the balance between fast input of data using rough estimates and high-level accuracy by considering all aspects and their object/project-specific impact in detail. *CarbonFM* offers functions to calculate carbon footprints on a high level. Utilizing these features requires collecting basic data. Using predefined equipment from database catalogs with available EPDs simplifies the process, but there is demand for straightforward data entry.

*CarbonFM* allows using service templates including the structure of services. However, the basic data of the underlying equipment and other components must be checked manually after input.

An even easier way of setting up services is to design FS by using service parameters. In this sense, it might be conceivable to calculate the overall carbon footprint, for a service such as cleaning, by parameters like building type, cleaning area and cleaning service type. However, there is no clear idea about the parameters to use for various kinds of FM services, facility types, and FM service organizations. Therefore, *CarbonFM* uses a different approach. In contrast to finding complete sets of parameters, only small parts of the services are considered. For instance, the object manager supervising service delivery is such a service part (referring to overhead). For the carbon footprint of this service part, it is easier to identify parameters for calculation like the size of his/her office, type of the HVAC system and estimation of power consumed. Having defined the parameters allows users to reuse the service part (the specific object manager) in all related services (Fig. 3). Other resources used by the object manager (PC, monitor, printer, etc.) can be added. SSPs are defined once and are reused frequently for calculations.

Fig. 3 Smart Service Part “Overhead Staff Calculation”



### CarbonFM Perspectives

Considering future developments, a distinction must be made between *CarbonFM*'s database content and new software features.

More users are encouraged to input their case studies of services. GEFMA and the industry consortium, The Enablers are supportive by increasing the number of case studies and the validity of *CarbonFM* data. Reference services will be published as templates as well as reporting features for internal benchmarking and sustainability assessments. Finally, a set of carbon footprint projects, comprising the FM services of different building types will be available for statistical analysis.

To extend the functionality of *CarbonFM* the creation of new SSPs is key. A library of SSPs will be developed facilitating the description of services and achieving the aggregation of SSPs to a full parametric service design. Furthermore, the integration of digital models generated by building information modeling (BIM) will continue to improve usability. BIM models already contain useful carbon footprint data. The parametric design of building elements



within BIM models offers versatile extension of parametric SSPs within *CarbonFM*. Finally, further development of the carbon management method is a serious challenge. Future FM services may not only emit less carbon, but enable technicians to replace building equipment at the right time. It is not always adequate to replace equipment with more energy efficient devices without considering their manufacturing carbon footprint. Consequently, CarbonFM will provide a smart recommendation function, focusing on carbon footprint optimization of entire buildings.

In Germany, the first tenders of FM services have been issued where carbon management is required by GEFMA 162-1. Since the method described is not limited to FS in Germany, it could also serve as a blueprint for an international approach. **FMJ**

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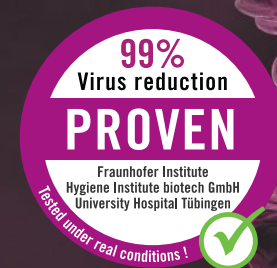
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# A New Approach

*Restoration in maintenance  
& interior design*

BY STEPHEN LEWIS



*Is a quarter-century a long time? When talking about the life span of commercial carpeting, it certainly is. Yet it is possible for carpets in busy buildings to stay in tip-top shape for decades if they are properly maintained. The secret to extending any asset's life span is not really a secret at all. It boils down to sustainable, active planning and careful, continued maintenance.*

**F**acility managers are not novices when it comes to sustainability, especially in a world where smart stewardship of natural resources is expected by their tenants, building visitors and governing bodies. Yet many FMs forget how proper cleaning and restoration of all assets — not just textile-covered floors — can promote sustainability.

Plotting out a long-term, comprehensive maintenance plan from the moment a carpet or other asset is installed can have a direct impact on how often non-recyclable items end up in landfills. On the other hand, taking a more short-haul approach almost ensures that assets must be swapped out in as few as five years. That is not good for business, the environment, or the bottom line.

#### ◇ *Understanding the Rise in Sustainability in FM*

When did this increased emphasis on sustainability in buildings begin? The interest arose many decades ago but truly gained a foothold in the 1990s as people began to weigh their everyday choices on a sustainability scale.

For instance, many FMs began with water- and energy-conservation strategies. Therefore, so many buildings have been constructed or retrofitted with amenities like automatic lights and faucets. The Lloyds Bank 2020 Commercial Banking's Business Barometer<sup>1</sup> indicates that nearly one-quarter of all small to midsize enterprises have adjusted their interiors to waste less energy.

Sustainability's rise is not limited to utilities. It has also crept into worries about indoor air quality (IAQ). During the pandemic, IAQ has become more critical than ever, especially in the minds of consumers, as have greener initiatives in general. As a 2018 Nielsen survey<sup>2</sup> noted, 81 percent of people want companies to concentrate on improving their environmental standards. With eco-conscientious Generation Z members entering the workforce, that percentage is likely to continue rising.

The good news for FMs is that they do not have to reinvent the wheel to practice sustainability or make it a primary goal. Building standards related to sustainability, not to mention the health and comfort of building occupants, are par for the course. Consider the importance of the U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) building rating system that has stood the test of time as a green building standard. On its heels have grown other standards including International WELL Building Institute's framework, and the Fitwell system.

In other words, sustainability's not a niche concern nor a passing fancy. It is so deeply ingrained that it has is expanding to all aspects of life and work — and that brings the conversation back to sustainable cleaning and maintenance practices. Do they

take longer to map out and implement? Maybe. Will they require more cash upfront? That is possible. However, sustainable cleaning solutions extend the life spans of myriad assets, from carpets to social distancing partitions. That's good, green and practical.

#### ◇ *Moving Toward Restoration and Away from Replacement*

Although it is not possible for FMs to do everything at once to bring their buildings into sustainable harmony, they can begin by focusing on restoring assets rather than buying new ones. Restoration extends any asset's useful performance while lessening the burden on landfills and taking away the demand to use resources to create replacements. Consequently, it is a proven way to get closer to being eco-responsible. But it will not happen without a proactive game plan.

Every building has its own assets, and therefore its own cleaning and maintenance needs. Nevertheless, paying attention to key sustainability facts can help reduce the need to replace assets and can positively influence any building's greenness:

#### **1. Older carpet can often be revitalized with proper deep cleaning.**

Are some older carpets too far gone to be revived? Absolutely. However, plenty of carpeting that looks dirty and seems worn can be brought back to life. Even getting an extra couple of years out of a commercial carpet will pay off in both environmental and fiscal ways. After all, Environmental Protection Agency estimates<sup>3</sup> suggest that more than 3.4 million tons of used carpet wound up in landfills just in 2018. Cutting that number by just a few percentage points would be a huge start.

A deep, restorative clean can often bring an unsightly carpet back to acceptable levels. Hot water extraction is not always recommended, because this cleaning method uses significantly more water resources and can lead to faster resoiling as well as potential mildew and bacteria buildup. If possible, use a low-moisture deep cleaning method.

Though an aging carpet will not look brand new after being professionally restored, it can serve its duty aesthetically and functionally with proper follow-up maintenance including routine vacuuming, spot cleaning, more low-moisture interim cleanings, and periodic deep cleanings. When it comes time for a replacement, FMs can work with a service building contractor to develop individualized cleaning frequencies for each section of flooring based on estimated traffic and soiling.

## 2. Upholstered furniture deserves a second look before being discarded.

It is not uncommon for FMs to feel the pressure to upgrade their space's upholstered furniture about every 10 years, if not sooner. Nonetheless, upgrading is not the most sustainable option. Does furniture become dated? Will tenants ask for something "different" or "modern?" Yes. However, there are other ways to refresh an interior other than tossing upholstered furniture that just needs a little restorative TLC.

Make no mistake: Furniture waste is not to be taken lightly. Just a few years ago, 12 million tons of it was tossed in landfills, according to EPA reporting.<sup>4</sup> As a result, FMs may need to push back against replacing furniture that can be brought back to life. Like carpets, upholstered chairs, cubicle walls, and other furnishings can be carefully treated to extract dirt, reduce stains, and look (and smell) fresher. A planned periodic maintenance program can ensure that they stay attractive and high performing for the long haul.

How can FMs get around the problem of dated furniture? Working with an innovative interior designer may be a smart method to repurpose upholstered pieces so they fit in rather than stand out. This keeps furniture waste to a minimum while still giving tenants a remodeled feel.

## 3. Resilient floors may appear deceptively beyond repair.

Many FMs have added resilient flooring like luxury vinyl tile (LVT), vinyl composite tile (VCT), and vinyl sheet goods to high traffic areas. These flooring choices work great because they are durable yet fashionable. The only problem is that once soil becomes embedded in a resilient floor's finish, regular cleaning and scrubbing will not remove it.

Upon seeing how dirty their resilient floors have become, FMs may assume they have no choice but to replace them. Yet there is a workaround: Stripping the old floor finish. Stripping the finish that is soiled offers a game-changing alternative. Once the floor has been stripped of its former finish, a new finish can be applied.

When added by a team of experts, a new finish can bring resilient floors back to like-new condition. Plenty of FMs and building occupants are surprised by the obvious pre-finish and after-finish differences. To extend the life of the flooring even more, FMs may ask their service building contractors to further protect the surface with a performance coating. This will extend the time between the need for future stripping and finishing, which in turn shortens the need for additional resources.

## 4. Tile and grout flooring rarely need to be replaced when most FMs think.

Restrooms, front lobbies and kitchens are prime spaces for tile and grout. Unfortunately, tile and grout can be one of the most frustrating surfaces to deal with from a cleaning standpoint. Over time, grout especially takes stiff abuse. And daily or weekly mopping does not help much because the infrequently changed mop water simply spreads grime from one side of the room to the other.

What is the sustainable thing to do in this situation? Again, the answer is restorative deep cleans to prolong the life of materials and forestall replacements. Attacking the fatty acids, soil, and even built-up uric acid stains with an appropriate chemical, proper agitation, and an energy-efficient rinse and reclaim process will not only breathe freshness into grout but neutralize and sanitize it, too.

Some grout has been forgotten and neglected so long that it is impossible to restore it to its original color. But even in this instance, replacement is not a necessity. A penetrating, color-filled sealer can protect grout, seal the grout joints and change the grout's overall hue. It is much more economical and greener to spend a day restoring a tiled surface than to tear everything out and start fresh.

FMs are not magicians, but they do have some sustainable tricks up their sleeves. Perhaps the most straightforward one of all is to follow a general pattern of restoration before replacement. Saving just a few assets from the garbage dump will help save a planet worth protecting. **FMJ**



**Stephen Lewis** is the technical director at milliCare, where he manages all equipment, methods, and products for the floor and textile cleaning company. Lewis, a certified senior carpet inspector and an IICRC master textile cleaner, has served milliCare for more than 30 years.

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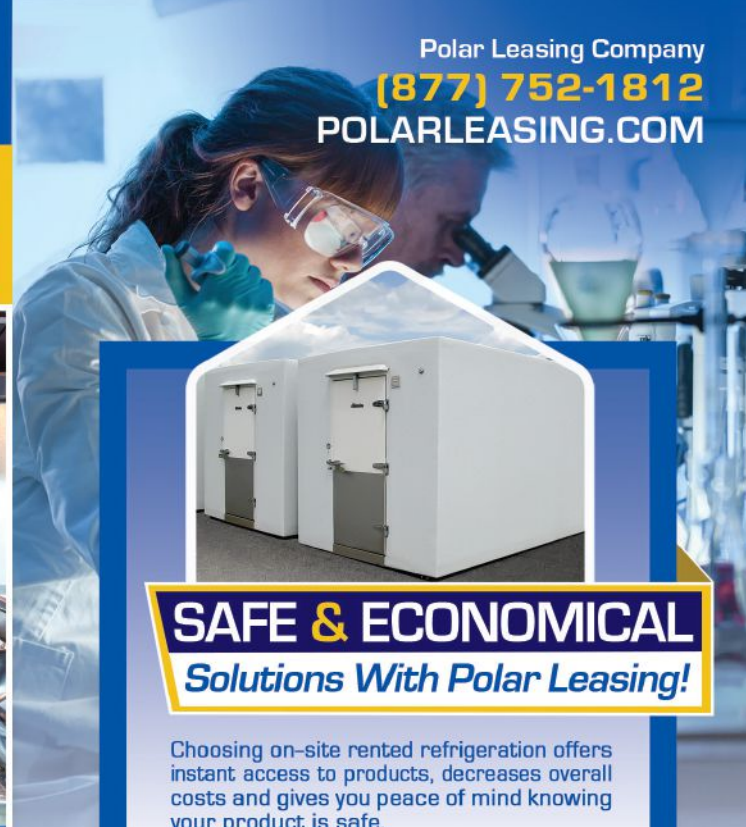
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**How Climate-Responsible Is  
the Real Estate Industry?**

BY CYNTHIA KANTOR





Welcome to the age of responsibility in real estate. Amidst ever-more extreme weather and a continuing pandemic, facility leaders are facing unprecedented pressure from employees, tenants and clients — not to mention society as a whole — to tackle collective challenges like the deepening climate crisis.

Importantly, leading investors and owners are actively rising to this challenge, albeit on different terms and timeframes. Many now see value in climate-responsible real estate strategy and are going beyond the basic carbon emissions reduction efforts of the last decade to fuel a more aggressive race to net zero.

To understand where organizations are in the journey to more responsible real estate, JLL recently surveyed 647 global real estate leaders. In addition to learning what respondents think about climate change in relation to business, the survey sought to understand what companies are doing about it now, and what they perceive are the challenges ahead.

As discussed in the new report, *Decarbonizing the Built Environment*, the results of this inquiry reveal an industry that sees its potential to contribute to a greener, more sustainable planet — as well as the risks of failing to accept responsibility. To date, a full 83 percent of real estate occupiers and 78 percent of investors think that climate risk poses a financial risk, and the majority of all respondents have set ambitious net zero goals for 2030.

Organizational leaders are responding to the growing hunger for cleaner, more resilient places — an appetite that has only been sharpened amidst COVID-19. They are seeing the inherent wisdom of investing in more sustainable spaces that can better withstand future weather extremes, whether that is fire, flooding or drought.

### The Mantra That ‘Climate Risk Is Financial Risk’ Has Gone Mainstream

Investor and occupier communities alike are seeing this decade as the tipping point in decarbonizing real estate. Both groups are making more ambitious sustainability commitments, with many organizations now setting bold net zero goals for 2030. Decarbonization is no longer a mid-century ambition.

This doubling down on climate action may come as a surprise to those skeptics who warned that the COVID-19 pandemic might weaken corporate commitment. Analysts have seen expectations increase for businesses to do the “right thing” to protect employees and their communities.

To compliment this rising market demand, many carbon reduction opportunities are readily available at no- or low cost, thanks to continuing industry investment and adoption. Quick fixes like energy-efficient lighting as well as larger-scale installations like smart building management systems are more accessible than ever and represent game-changing potential for occupiers to boost efficiency as well as financial and operational performance.

Sustainability features have even become a primary consideration when buildings are acquired, fitted out and managed. Case in point: 96 percent of leading occupiers expect to be prioritizing green building credentials in acquisition and occupation by 2025.

For investors, carbon-reduction strategies also present a clear competitive advantage to long-term portfolio viability. Nearly three-quarters of investors say that green certifications like LEED, BREEAM, and WELL fuel higher occupancy, higher rents, higher tenant retention and overall higher value.

### Decisive Action — Powered by Data — to Flatten the Climate Curve

Many real estate and FM leaders are creatively and decisively working toward net zero targets, from investing in self-generating renewable energy and purchasing carbon offsets, to including green lease clauses and reducing embodied carbon in new developments.

#### BY THE NUMBERS

- 41 percent of occupiers are self-generating renewable energy. This figure is expected to reach 64 percent by 2025.
- 38 percent of occupiers are buying carbon offsets. This figure is expected to reach 72 percent by 2025.
- 38 percent of investors are using technology to optimize building performance and maintenance. This figure is expected to reach 79 percent by 2025.
- 35 percent of investors are seeking to reduce embodied carbon in new developments. This figure is expected to reach 72 percent by 2025.
- 95 percent of leading investors already procure renewable energy (offsite). In contrast, 32 percent of “on the path” and “starting out” investors procure renewable energy, and this is projected to increase to 68 percent by 2025.
- 80 percent of leading investors already reduce embodied carbon on new developments. In contrast, 25 percent of “on the path” and “starting out” investors reduce embodied carbon on new developments, and this is projected to increase to 66 percent by 2025.
- 63 percent of leading investors already self-generate renewable energy (onsite). In contrast, 20 percent of “on the path” and “starting out” investors self-generate renewable energy, and this is projected to increase to 59 percent by 2025.



To maximize these and other relevant efforts, organizations are turning to one of the most powerful catalysts for green progress: data.

By monitoring and benchmarking energy performance, organizational sustainability leaders can pinpoint areas for improvement in real time, drive transparency, support valuable certifications and ultimately achieve decarbonization program goals faster.

Proactive sustainability teams are also ensuring carbon reduction strategy is a C-suite priority, with clear process and budget for implementation. For instance, 83 percent of investors have a dedicated sustainability person, team or committee, while 89 percent of occupiers affirm that sustainability is increasingly important to corporate strategy.

Yet translating good intentions and innovative strategies into achievable targets is easier said than done.

### **Overcoming Barriers to Decarbonized Real Estate**

The road to net zero comes with a unique set of roadblocks, from budget limitations and technology barriers to sheer overwhelm at the enormity of work required to reach and sustain decarbonization for all property types.

According to JLL research, 74 percent of investors cite insufficient technology infrastructure as a barrier to achieving environmental goals, with 25 percent calling it a major barrier. The same proportion (74 percent) also say a lack of consistent and validated data is a barrier, with 26 percent identifying it as a major one. Meanwhile 84 percent of occupiers believe that digital solutions will be critical in fulfilling sustainability goals.

Yet a wide variety of affordable, effective technology solutions do exist to support a range of green strategies. Identifying the technology barriers challenging an organization is a simple first step toward eliminating them.

Another significant barrier: The “no building left behind” clause. To truly achieve a net zero portfolio, real estate leaders will need to invest more resources in retrofitting existing stock — a far more exhaustive undertaking than limiting carbon in new developments.

Beyond supporting carbon reduction targets, retrofitting older buildings also directly supports market value, considering the volume of demand for green real estate currently risks outstripping estimated levels of supply.

One way forward: strong data and analytics can help make the case for executive buy-in for what may seem like a daunting retrofitting project — but that in reality is more than worth the investment in terms of bigger picture financial performance payoff.

The most significant barrier to date, however, may be the fact that no single organization, regardless of industry or sector, has the resources and capabilities it would take to accomplish decarbonization on its own.

Forging effective partnerships will become increasingly imperative in the transition to a low-carbon economy. According to the report, the race to net zero requires forward-looking real estate leaders to pivot toward an all-new partnership approach — one that blurs the traditional lines between public and private sector players, between industry and academia, and between investors and corporate occupiers.

A rich ecosystem of partnership will prove increasingly crucial to accelerating the complex and critical journey to decarbonization in the built environment. Effective partnership can help organizations of all sizes and sectors create scale and plug gaps in resources and expertise.

Real estate leaders resoundingly affirm this finding: the poll revealed 81 percent of occupiers and investors agree that strong partnership between cities, occupiers and investors will be instrumental in pulling off our net zero carbon ambitions.




By diligently participating in this ecosystem, governments, businesses, investors and communities alike can make greater progress as they adopt and scale innovations, together bridging the gap between good intention — and action. Looking ahead, cities' own levels of commitments to carbon reduction goals could play a more significant role in organizations' location decisions.

As diverse stakeholders come together to achieve net zero, partnership, transformative thinking, sustained investment and action will all be key to achieving and sustaining net zero, as well as managing the challenges along the way.

### What's Next on the Journey to Net Zero

Different organizations indeed have different levels of commitment and action. But the overall industry momentum toward decarbonization is consistent — and consistently improving. By working collaboratively, corporate real estate teams, real estate investors and city leaders can collectively help affect meaningful, positive change amidst the “code red for humanity” that is climate change.

Considering the built environment accounts for about 40 percent of global carbon emissions, it is clear that the real estate industry can play an outsized role in bringing about a sustainable future, especially in cities hardest hit by climate risks.

Those organizations that step up to this climate challenge will not only continue to drive business and deliver quality spaces — they will become a force for good that helps create healthy, green outcomes for people and planet alike. 



**Cynthia Kantor** is chief client value and growth officer of JLL Work Dynamics, responsible for developing and managing contemporary product offerings that blend human, digital and experiential elements to drive enhanced value from clients' workplaces and portfolios. Her deep domain expertise includes services, product management, enterprise-wide strategic plan development, portfolio management, new business growth strategies, restructuring, operations and risk management, innovation and marketing.

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# a. win-win situation

## ***FM Opportunities in Bidirectional EV Charging***

BY DAVID SLUTZKY

*Facility management is fraught with many challenges — including controlling costs and budgets, improving efficiency, analyzing data and maintaining resilience — all while meeting the baseline needs of the building occupants. Add to this list the increasing electrical loads resulting from workplace electric vehicle (EV) charging, and the path to effective facility management becomes that much more difficult to navigate.*

**P**icture for a moment, however, an EV-centric solution that helps to solve those challenges. Bidirectional electric vehicles — from light-duty passenger cars to heavy-duty trucks and buses — can benefit FMs, fleet operators and utilities by reducing the cost of building electricity and EV charging, as well as creating revenue streams by providing various services back to the electric grid.

Furthermore, EVs enabled with bidirectionality (the ability to charge and discharge) can enhance grid resilience and harden building assets against natural disasters and the effects of climate change. Bidirectional charging can also help organizations realize their goals of decarbonizing building operations and transportation.

At this point, it is worth diving into more

detail about what bidirectional charging is and what it is not. While most people are familiar with the concept of EV charging, which is most often done using a “unidirectional” (i.e., one way) charger, bidirectional charging entails precisely what it implies: the ability to both charge and discharge an EV battery using the same charger.

Generally speaking, to facilitate bidirectional charging, three key elements



are required: a bidirectionally capable EV; a compatible bidirectional charger; and software capable of managing the charging activities to ensure adequate charge in the vehicle while making it possible for the vehicle to earn money while it is parked. When operating together, this system allows FMs and fleet operators to tap into the electrical energy stored in an EV's battery at peak-load times to help reduce electricity costs and consumption from non-renewable sources.

Commonly known as vehicle-to-everything (V2X), the EV, bidirectional charger, and software collectively leverage energy stored in an EV's battery to supply power to the electric grid (vehicle-to-grid/V2G), to a building (vehicle-to-building/V2B) at specific times of the day, or even as emergency back-up power or for rate arbitrage.

To illustrate how this works, imagine a bidirectionally capable EV — which can be thought of as a swimming pool filled with electrical energy instead of water — is connected to a compatible bidirectional charger functioning as a “two-way valve” of sorts that opens and closes as needed to allow the filling and emptying of the EV's “energy reservoir” in response to electricity demand.

Serving as the brains of the operation is software that monitors, for example, a building's electricity loads in near-real time and forecasts peak loads based on a number of factors, including historical electricity usage and weather conditions. When the software determines an increase in peak load is imminent — such as when a building's chiller plant turns on — it will tell the charger to discharge the optimal amount of energy from the EV's battery to offset the peak load. Doing so in this manner has the effect of reducing costly demand charges that often result from increased demand and peak loads.

In addition to this type of “behind-the-meter” activity, V2X allows the user to participate in energy markets by engaging in utility demand response programs, monetizing an EV's battery storage and dramatically reducing the building's cost of electricity. For example, a

case study by Esource in October 2020 verified that during the first month of a V2B demonstration project in Danville, Virginia, less than half of a Nissan LEAF's battery energy was dispatched over a single 15-minute peak period, while saving the building owner almost US\$192 in utility demand charges.

Today, V2X is being successfully demonstrated in real-world environments at multiple sites across the United States.

Similarly, a number of V2B projects are supporting municipal, fleet, and general building operations.

Although Nissan's popular LEAF has garnered most of the attention regarding EVs capable of bidirectional charging, multiple vehicle OEMs are bringing bidirectionally enabled vehicles to the market next year, and several medium- and heavy-duty EVs will also be equipped with this feature soon.

An example of this can be found in electric school buses. Given that school buses of any type are generally dormant in the middle of the day and during summer breaks, periods of time when the grid can experience substantially increased demand and instability, electric school buses have the potential to unlock significant monetization, resilience and grid-stabilization opportunities. In addition, electric

school buses are simply healthier for the driver and student riders from an emissions standpoint and offer economic benefits to school districts in terms of reduced maintenance costs when compared to traditional diesel-powered buses.

One school district in Maryland took practical steps to adopt V2X-capable electric school buses by signing an agreement with an EV provider. The provider will manage the electric bus fleet, ensuring that they are charged and ready to go each day without disruption and discharge energy from those buses when they are parked during the day or over summer breaks to lower demand charges or feed power back into the grid as needs arise.

As evidenced by substantial reductions in costly demand charges and with its ability to provide energy resilience and grid stabilization, V2X is proving to be an intelligent and cost-efficient means of supporting facilities, building operations and fleet management.

In addition to pilots and growing commercial demand in the U.S., there are a number of international V2X applications underway. In Japan, for example, vehicle-to-home (V2H) has been in relatively widespread use since 2012, which to a large extent was prompted by the effects of the tsunami that disrupted the power grid in



many parts of that country the prior year. During the recovery efforts, EVs demonstrated the ability to deliver power where it was needed, so much so that many Japanese automakers now offer a V2H outlet in their EVs sold in Japan.

Other V2X activities in Japan include a joint V2G demonstration project comprised of Mitsubishi Motors Corporation, Tokyo Electric Power Company, Hitachi Systems Power Services and other key stakeholders, which was kicked off in August 2020. The key focus of this project, which was made possible by Japan's Ministry of Economy, Trade and Industry through its Sustainable Open Innovation Initiative, is to study general EV-grid interoperability and to demonstrate how battery EVs and plug-in EVs can be leveraged as Virtual Power Plants (VPP) to help stabilize the grid as the volume of renewable energy sources come online.

As with Japan, Europe is recognizing the value of V2X in a multitude of applications and, as a result, considers the technology key in helping to satisfy the continent's future energy requirements. In 2020, for example, Fiat Chrysler Automotive (FCA), initiated a V2G pilot program at its manufacturing facility in Mirafiori, Italy. According to FCA, 700 bidirectional chargers will be installed at the complex by the end of 2021, enabling up to 25MW of power to be discharged from FCA's EVs to support grid stabilization.

Similar to the V2B pilot project at its North American headquarters, Nissan is investigating the technical and commercial viability of V2G at its European Technical Center in the U.K. It is hoped that the project, which is funded in part by Innovate U.K., the "innovation arm" of the U.K. government, will prove out sustainable technologies and business models for EV fleets based in the U.K.

Reflecting the ever-growing interest that other European automakers are showing in V2X, Audi announced last year its intent to study and develop V2H capabilities. For this application, a V2H-enabled Audi EV could serve as a storage medium for solar energy generated throughout the day



by residential photovoltaic panels. Then, later in the evening, when people have come home from work and grid demand and electricity rates can remain high, the EV can power the home, thereby reducing electricity costs and alleviating some measure of demand on the grid.

In addition to the more traditional behind-the-meter or in-front-of-the-meter V2X applications, such as demand-charge management, demand response, frequency regulation and grid stabilization, V2G has been identified as an ideal complement to existing renewable energy sources. For example, if Germany's wind farms in the Baltic generate too much electricity, the energy produced can be stored in EVs until it is needed at a later time to satisfy power shortages or an increase in grid demand throughout the country.

With V2X, an EV becomes valuable beyond its initial intended use as clean transportation, and when integrated into a building's energy management system, it becomes a powerful tool in solving many of the key challenges facing FMs.

Today, V2X is being successfully demonstrated in real-world environments at multiple sites across the United States.

Similarly, a number of V2B projects are supporting municipal, fleet, and general building operations. As evidenced by substantial reductions in costly demand charges and with its ability to provide energy resilience, V2X is proving to be an intelligent and cost-efficient means of supporting facilities and building management.

With V2X, an EV becomes valuable beyond its use for mobility, and when integrated into a building's energy management system, it becomes a powerful tool in solving many of the key challenges facing today's FMs. **FMJ**





**David Slutzky** is the president and CEO of Fermata Energy, which designs, supplies, and operates pioneering vehicle-to-everything (V2X) technology that makes electric vehicles more cost effective and the electric power grid more stable, as well as providing large-scale energy storage to accelerate the transition to renewable energy.

Before Fermata Energy, Slutzky co-founded Skeo Solutions, an environmental policy consulting firm, and worked as a Senior Policy Advisor at the White House and U.S. EPA. He is also an associate professor in the Science, Technology and Society Program at the University of Virginia School of Engineering and Applied Science. Slutzky earned his bachelor of arts from the University of Chicago and his law degree from Chicago-Kent College of Law.

*Images Courtesy of Fermata Energy; The bidirectional battery of a Nissan LEAF is connected to a Fermata Energy V2X system for a pilot project with The City of Boulder to reduce building energy costs at the North Boulder Recreation Center.*





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# MEETING THE UN'S SDGs

The **GW**I Stories of the IFMA Foundation

BY DIANE LEVINE & NANCY J. SANQUIST

**T**he world has less than a decade to meet the UN's 17 Sustainable Development Goals established in 2015. In that same year, the IFMA Foundation became aware of these critical objectives and, in addition to its educational responsibilities for certification of academic programs and scholarships, created the Global Workforce Initiative (GWI) which provides enablement for nine of the other goals.

Since that time, the Foundation has developed partnerships with underserved communities and programs that assist them. Through advocacy and education, the Foundation has helped these programs meet critical goals. There is connectivity between many of the goals which not only constitute a sustainable environment, but also include social and economic objectives. This is why adoption of the SDGs are so critical to transforming FM.







## SDG 11: PARTNERSHIPS FOR SUSTAINABLE DEVELOPMENT

### The Hot Bread Kitchen

Near the training facilities of the Hot Bread Kitchen in East Harlem, New York, USA, is a group of women learning the culinary industry while nearby another education program takes place. The women in this room are learning the essentials of facility management, studying for a career they had not imagined. The partnerships between the IFMA Foundation, the HBK and IFMA's New York City Chapter are increasing the local FM workforce while helping minority women and immigrant communities obtain good jobs (see Figure 2).

"In response to disproportionate job loss in the food sector industry in 2020, Hot Bread Kitchen quickly adapted their workforce programming. In partnership with the IFMA Foundation, a facility management training program was launched," said Karen Bornarth, HBK vice president of industry partnerships and initiatives. "This field, which historically has had a lack of gender and racial diversity offers the potential for higher salaries, stability, and opportunities for professional growth." This is an example of how the Foundation is supporting multiple sustainability goals with one program.

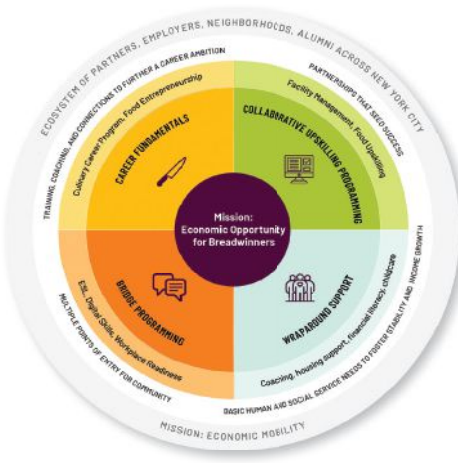


Figure 2: Hot Bread Kitchen Strategic Vision 2022-2024



## SDG 16: PEACE, JUSTICE AND STRONG INSTITUTIONS

### JUST FM

Members of the IFMA Foundation believe in the shared-value investment of a better-prepared sustainable future and workforce. The key to unleashing a company's competitive advantage and increasing corporate growth and potential lies in training today's youth and incumbent workers for tomorrow's business challenges. Partnerships work and can make a difference in social justice and FM. GWI programs like the one in Denver, Colorado, USA, the IFMA Foundation, together with its partners and major donors, Sodexo, ABM and A&A Elevated Facility Services, promote JUST FM programs to attract minorities and women to the field through education, outreach and internship programs.

Besides being a great profession, particularly when FMs are on the front lines of ensuring that buildings are safe and healthy for people to return to when it is safe to re, FM can contribute to the Corporate Social Responsibility (CSR) and Environmental and Social Governance (ESG) measures tracked by corporations. JUST FM is an industry movement promoting how good FM practices are contributing to an organization's social justice policies, as well as FM's benefits to health and well-being, productivity, cost savings and experiential, creative environments as well as contributions to the local and global communities and the planet.



## SDG 11: SUSTAINABLE CITIES AND COMMUNITIES

### RISE in the U.S. Rocky Mountains

Another FM talent development program is RISE (Rebuilding an Inclusive and Sustainable Economy), sponsored by the Denver Economic Development and Opportunity (DEDO), partnering with the IFMA Foundation, the IFMA

Denver Chapter, industry partners and the Community College of Denver. The class is composed entirely of minority students, including 50 percent women and 50 percent veterans.

The class received an IFMA certificate for completing the Essentials of FM as well as the chance to compete in an exciting challenge called "Ignite FM" sponsored by the Foundation and IFMA's Denver Chapter.

### Houston and FM Apprentices

In April of 2021, the U.S. Department of Labor named the IFMA Foundation the national sponsor for facility manager apprenticeship programs. Partnering with Goodwill Industries of Houston, Workforce Incubator, and IFMA's Houston Chapter, the Foundation was awarded a grant from the Texas Workforce Commission for an FM pre-apprenticeship program. This program, now part of the IFMA Foundation Center for Apprenticeships and Work-based Learning, will provide FM training up to 50 underserved area citizens. The team will work with local employers to provide entry-level jobs to students completing their IFMA Essentials of FM certificate and OSHA10, filling the talent gap which is expected to grow in that area by 16 percent each year for the next 10 years.



## SDG 8: DECENT WORK AND ECONOMIC GROWTH

### Google and the Workforce Intermediary

While Google needs no introduction, its reputation as a company with a strong culture and high employee engagement spilling over to the FM and corporate real estate functions may not be so well known. Google management sought the value of partnering with the Foundation to enhance its upskilling strategy as well as increase its internal talent pool.

The Foundation partnered with the San Mateo County Community College District's Contract Education unit to

design and deliver FM and high-performance leadership training to Google employees and its FM outsourcing partner, Cushman and Wakefield.

A recent article by Professor Nicola Lowe chides American companies for failing to take some of the responsibility for skill development and not leave it up to education systems. “Skill shortages are a problem of employment, not education,” she said. Lowe calls nonprofit organizations like the IFMA Foundation “workforce intermediaries” that can help companies with skill enhancing strategies.



## SDG 4: QUALITY EDUCATION

### Accredited Degree Programs (ADPs) and Scholarships

The Foundation’s GWI serves as an intermediary to the FM industry by providing academic accreditation to FM academic programs through ABET Applied and Natural Science Accreditation Commission. It sets the standards to certify quality FM education programs (ADPs-Accredited Degree Programs and RDPs-Registered Degree Programs) in higher education institutions such as Pratt institute, Hong Kong Polytechnic University, Breda University, University of Minnesota, Temple University and Singapore University of Social Sciences, amongst others. This program and scholarships initiated the Foundation’s work in 1990.

### FAMU’s early adoption of GWI

One ADP in the U.S., Florida A&M University (FAMU), a historically black college and university, was one of the first academic institutions to establish an innovative program to introduce FM to grade school students through a tennis and nutrition program. Directed by Dr. Roscoe Hightower, FAMU also used the Madden Football video game to explain FM through building a football stadium, along with creating a budget to operate and maintain it. Many of these FAMU students have also received IFMA Foundation scholarships through the years.

### Scholarships and Sustainability

The IFMA Foundation has awarded US\$1.7 million in scholarships to almost 600 students in the last 20 years. Recently, a Sustainability Facility Professional® (SFP®) Scholarship was implemented by Eric Teicholz, IFMA Fellow and a former trustee of the Foundation.

“There is a growing sense of urgency about climate change and its impact on all aspects of our lives and the environment,” said Teicholz. “Unlike the COVID-19 pandemic, there will be no vaccine to mitigate its impact. The Eric Teicholz Sustainability Scholarship program has been established to provide financial support for a future generation of facility managers in their study of climate science as it relates to the built environment.”

### Trustees meet the students

In 2016, trustees of the IFMA Foundation met FM students at Chaffey College in California, USA. This was the Foundation’s first GWI program and the trustees were excited to meet this class of young learners and older incumbent workers who were looking for a new career.

Most of the students were Hispanic or came from low-income families. One woman sat next to her son who she had convinced to learn about the FM industry, lured by the number of jobs with good salaries available in the area and the chance to be part of sustainability work. She was so enthusiastic about FM that she became president of a newly formed IFMA student chapter that earned IFMA’s Student Chapter of the Year award the next year for its accomplishments at the IFMA’s World Workplace.

During the meeting, trustees talked about their own successful careers in the FM field. One young woman was fascinated by one trustee’s story, Tony Pucci, a senior vice president at ABM. After that meeting, she was so enthusiastic and eager to jump into work, she became an intern at Tony’s company and was later hired to be an operations manager. Therefore companies like ABM, as well as JLL and Sodexo, are corporate advisors to the Foundation which acts as a talent scout for their job searches.

The Chaffey program is the result of the

faith of a local CFO who believed the GWI could take people out of poverty by providing meaningful employment. She introduced the Foundation to administrators and professors who helped start the program. Later, the region’s economic development agency joined as a partner which provided even more assistance to the GWI. Local IFMA chapters provided expertise and an IFMA Fellow as an instructor.

These are just some of the ways the IFMA Foundation supports many of the UN’s SDGs while inspiring participants.

The program “unlocked something in my brain. It brought me from a dark place and was my lifesaver. I wanted to come out of the pandemic a better person. Now I want to give back,” said Quiotta H., a graduate from the Hot Bread Kitchen.

FMs can assist in these SDG endeavors by joining the IFMA Foundation’s Virtual Summit Feb. 24-25. The event will also provide FMs an opportunity to give input to an ISO standard workgroup. For more information, visit [ifmafoundation.org](http://ifmafoundation.org).



**Diane Levine, MCR, IFMA**

*Fellow, is the executive director of the IFMA Foundation. She is a former IFMA board member, and an award-winning co-editor and author of the “Work on the Move” series along with numerous FM books and articles. Levine is one of the pioneers of the Foundation’s Global Workforce Initiative (GWI).*



**Nancy Sanquist, IFMA Fellow,**

*is a professional involved in the built environment for the last few decades. She is a past chair of the IFMA Foundation and a co-founder of the Global Workforce Initiative (GWI) and Workplace Evolutionaries. Sanquist is the author of many articles and co-editor of books on FM/CRE, technology, architecture, urban planning and maintenance including the award-winning book series “Work on the Move.” Sanquist is working on a new book, “Reimagining Place in the 21st Century.”*





**Yousif Alqenai**  
Temple University



**Connor Anderson**  
University of  
Washington



**Jonathan Barba**  
Chaffey College



**Claudio Bastardo**  
New York City  
College of Technology



**Brielle Butler**  
Ferris State  
University



**Jada Cannon**  
University of  
Colorado Denver



**Man Fung Cheung**  
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**Jason Downing**  
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of Architecture and  
Urban Studies



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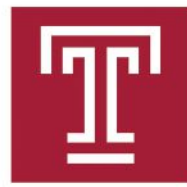
**SCHOOL NAME:** The Tyler School of Art and Architecture at Temple University, Philadelphia, Pennsylvania, USA

**FM-RELATED DEGREES OFFERED:** Bachelor of Science in Facilities Management; Master of Science in Facilities Planning and Graduate Certificate in Health Facilities Planning

**IFMA AFFILIATION:** Since 2013







# Temple University



## WHY AND WHEN WAS THE PROGRAM INSTITUTED?

While Philadelphia is one of the largest cities in the country with an established, vibrant FM community and has numerous institutions of higher learning in the metropolitan area, there was no FM Bachelor of Science degree program offered in the region when the Temple program was established in 2010. Temple has evolved over the last several decades from a commuter-oriented school to a more residential institution with a large research mission. Our history of providing opportunity to students from across the income spectrum is balanced by high aspirations.

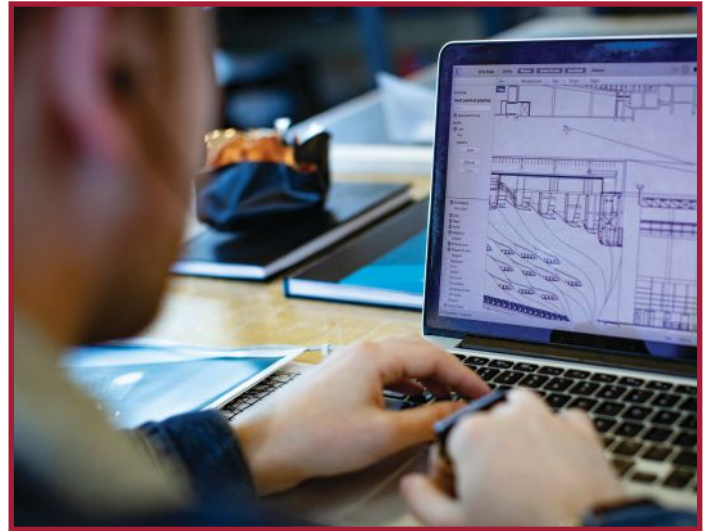
Our program started a decade ago through an initiative with the Philadelphia chapter of IFMA. One of our instructors, Alana Dunoff, IFMA Fellow, and Kevin O'Toole, global head, corporate real estate and facilities management, engineering at The Vanguard Group, were instrumental in starting the program. One of the relatively unique aspects of our program is that it is located in an architecture department. Our students are well versed in design and building technology.

### WHAT COURSES ARE OFFERED?

Some of the required courses for the bachelor's degree in facility management include Introduction to General Physics, Engineering Principles for Building Science, Visual Literacy for Architects, Architectural Design, Architectural History, Facility Management Case Study Research, Materials and Methods, Project Planning and Programming and Capstone Research Seminar.

### DOES YOUR DEPARTMENT TEACH ANY OF THE IFMA CREDENTIALS? IF SO, WHICH ONES?

Our bachelor's program is an IFMA-accredited degree, which accelerates students' eligibility to obtain professional credentials administered by IFMA. Undergraduates who choose to continue into graduate study can pursue a one-year Master of Science in Facilities Planning degree, including a health facilities concentration, or the three-year Master of Architecture program.



### WHAT TYPES OF PRACTICAL APPLICATIONS DO YOUR STUDENTS LEARN?

Our students model buildings with the Rhino program before admittance into the FM program from our Foundations curriculum. They are introduced to computer aided-design and building information modeling as part our CAFM course.

### TELL US ABOUT YOUR FORMER STUDENTS AND WHAT THEY HAVE GONE ON TO ACCOMPLISH.

We are very pleased with the career paths of our students, including working with Cushman & Wakefield, a global commercial real estate services firm, on major accounts such as Google and Vanguard. Our program has a strong relationship with the food services giant Aramark, which is headquartered in Philadelphia. One of our earliest graduates is an FMP-certified facilities manager there, while another helped establish the company's BIM team and is now a project manager with Aramark's Engineering and Asset Solutions. Another graduate is now vice president at the New York City Economic Development Corporation.

### WHAT KINDS OF RESEARCH IS YOUR DEPARTMENT CONDUCTING AND WHAT ARE YOU MOST EXCITED ABOUT?

Our main focus is teaching, although we have been researching the performative aspects of building enclosures. One of our instructors has been immersed in space planning research. We are most excited that one of our graduates is now the interim associate vice president for planning, design and construction in Temple University's Facilities Department and teaching in our program.







### WHAT ARE THE ISSUES FACING THE NEXT GENERATION OF FMS AND HOW WILL THEY BE ADDRESSED?

The next generation of FM professionals will face unprecedented challenges brought on by the climate crisis, diminished resources and global threats such as the COVID-19 pandemic. They will need to understand how to better control costs, extend the life of resources, balance and improve space usage, integrate technology and automation, and deploy predictive maintenance. In addition, tasks such as record-keeping and choosing the best vendors will require more sophisticated approaches. We encourage our students seek out the best opportunities and to be ambitious. Our graduates are well versed in software and have developed analytical abilities and communication skills to tackle these issues, and we focus on strong participation rates of our students in internships so they can get real-world experience before they graduate.



### WHAT ARE THE ACCOLADES OF YOUR ACADEMIC STAFF?

Clifton Fordham (curricular coordinator) was recently promoted to associate professor. Martin Droz was recently named Interim Associate Vice-President for Planning, Design at Temple University. Alana Dunoff is an IFMA Fellow.

### HOW WOULD YOU DESCRIBE TEMPLE FM STUDENTS?

Temple students have grit, which is a characteristic that is often associated with the city of Philadelphia. Most of our students are from modest backgrounds and many started their college experience at a community college. Perhaps grit is instilled in the spirit of Temple since it was founded as a night-school for students to gain an education while working — hence our mascot is an owl. FMJ



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**COMPANY NAME:** Wisp | by Gensler

**EXPERTISE:** FM Software

**CSP LEVEL:** Silver

**CSP SINCE:** 2020

**WEBSITE:** GenslerWisp.com



### **How has the pandemic impacted the workplace, and how is Wisp helping FMs respond?**

Since the pandemic started, workers have experienced abrupt changes and new freedoms. Through our Global Workplace Surveys, we've surveyed nearly 10,000 office workers from the U.S., U.K., France and Australia. In every country we studied, over half of workers would prefer a "hybrid model," or a mix of working from the office and working from home during the typical workweek. As companies race to keep up with worker expectations and evolving policies, FMs are being tasked with implementing and maintaining new hybrid workplace strategies and the software needed to make them successful.

Wisp is a leading space management and desk reservation software designed by Gensler to enable the hybrid workplace. For the past 20 years, we've been innovating alongside our clients to help FMs manage their evolving workplace strategies with desk reservations for employees, hoteling and neighborhood management, wayfinding capabilities and the features needed for a flexible workplace strategy. Today, many workplaces including a mix of flexible and dedicated seating. Wisp goes beyond hybrid strategies, so that you can plan for whatever type of workstyle is needed. Access to current floor plans and occupancy data enables FMs to respond to changing business needs.

### **What are some things to consider when selecting a space management solution?**

Facility managers had too much going on before the pandemic. Since then, teams have become leaner, new expectations have been layered on, and rapid change is the new normal. While successful hybrid workplaces are enabled with space management software, gaining the resources to implement and maintain software and CAD floor plans necessary for success is often a challenge. With our SaaS model, we're able to take care of all that heavy lifting and implement Wisp quickly so that companies can

meet their return-to-work timelines, instead of getting hung up on technical issues.

We work in-step with our clients' FM teams to provide the software and service needed for them to be successful in managing their workplace — that's what it's all about for us. Our account managers get to know clients' real estate portfolios, workplace strategies and become an extension of their team — from running reports to advising on the use of Wisp and making updates to CAD floor plans. We're fortunate to have formed deep relationship with our clients — some spanning decades, and we credit both our software and service for building those long-standing relationships.

### **What's on the horizon for workplace trends, and how is Wisp meeting those challenges and opportunities?**

The pandemic has accelerated many pre-COVID-19 workplace trends like mobility, choice, health and well-being. The longer we work remotely, the more it not only affects how we work, but also shapes our future expectations for the office. This is an opportunity to rethink the physical workplace. As we look to a better future and a post-pandemic world, the new workplace should support new ways of working, new technologies, and new reasons for coming into the office. This opportunity raises a series of questions that will be unique for every organization depending on their business and mission, how they work and their organizational culture.

Wisp is helping organizations glean insights on how space is used. Viewing a real estate footprint through the lens of performance and asking what spaces provide the highest ROI can help inform decision making about how much physical space to provide employees and what types of space. We are working through these considerations with our clients and continue to apply what we learn to the evolution of our Wisp software, service and strategy.



**COMPANY NAME:** FM:Systems  
**EXPERTISE:** FM Software  
**CSP LEVEL:** Silver  
**CSP SINCE:** 1998  
**WEBSITE:** fmsystems.com



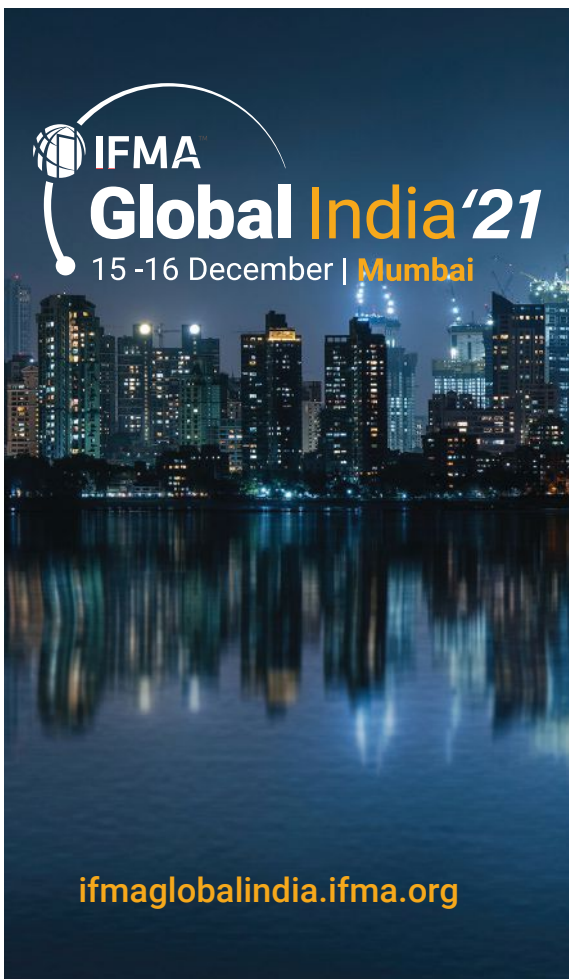
**What research or product innovations is FM:Systems working on that will help facility managers be more successful in their roles?**

Through sophisticated data science and machine learning algorithms, FM:Systems takes a unique approach of designing and building the future of intelligent Analytics solutions focused on the foundational cornerstone of being source data agnostic. This means that facilities and real estate teams who leverage our cloud based, Software-as-a-Service platform, are not limited to single sourced KPI's, but instead can garner data driven insight via IWMS, employee experience (room and space bookings) and workplace analytics (FM:Systems and third party IoT sensors) data under a single application. These data sets are presented in dynamic charts and graphs displayed in an eye catching, easily digestible format.

Historically the workplace analytics industry has relied heavily on the reporting of historical data, however this then puts the individual(s) consuming this data in the position of making assumptions on future state needs.

We see this as a huge opportunity and have, in response, invested substantial data science resources focused on the concept of "predictive analytics." By applying statistical techniques from data mining and machine learning that analyze current and historical data sets we can then make incredibly accurate predictions about the future.

These predictions are an important differentiator when you compare FMS:Analytics to competitors on the market and will provide our facilities and real estate professionals with the ability to future proof their workplace portfolios.



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**COMPANY NAME:** Cloudbooking  
**EXPERTISE:** FM Software  
**CSP LEVEL:** Silver  
**CSP SINCE:** 2021  
**WEBSITE:** cloudbooking.com



**What's on the horizon in your field/industry and how is Cloudbooking meeting those challenges and opportunities?**

The rapid shift in strategic thinking and digital transformation has created a very different workplace from what was considered the norm back in March 2020.

Workplace management tools that were once seen as a “nice to have” are now a crucial business tool to mitigate risk and ensure employee safety. This increase in business demand has driven Cloudbooking to produce easy-to-use versatile services that every department within an organization can utilize, from Facilities to HR and IT. Managing the physical and digital workspace now requires cross-departmental collaboration as the pandemic forced teams to work together in order to rethink how their business operates and deliver a hybrid way of working for everyone.

And so saw the rise of the hybrid workplace, a strategic business model rapidly adopted by organizations across the globe, but a method of working Cloudbooking has championed for many years.

Whether clients are managing a safe return to the workplace following COVID-19, consolidating real estate due to new ways of working, or improving employee experience and well-being, whatever comes next, Cloudbooking will helping them adapt.

**What has been the most positive feedback you've received from clients?**

Cloudbooking has the privilege of providing services to a wide variety of organizations, including Viacom CBS, Airbus, Anglo American, Rakuten and Fiserv. Each company we work with provides the team with a challenge for which we thrive on finding a solution. It's lovely to read positive messages sent from CEOs and heads of workplace to facility managers and employees who use our services day in, day out.

*“Cloudbooking is exactly what we needed, from project planning to delivery. It couldn't have been easier. Brilliant on every level.”*

– Daryl English-Merrick, Office Manager at Rakuten Advertising

*“We are embracing the technology of connectivity more than ever before, making investments in the right digital workplace tools is critical to ensure that our people can work productively from anywhere.”*

– Jacky Simmonds, Chief People Officer at Experian

*“Cloudbooking provided an end-to-end service with a personal approach and a deep understanding of our specific requirements. They made the system simple to understand and simple to implement for us, it's both user-friendly and visually appealing. A very successful and well-supported rollout.”*

– Melisa Samuels, Project Delivery Manager at EDF Energy

**COMPANY NAME:** Aramark  
**EXPERTISE:** CCM Consultants/Services/Providers  
**CSP LEVEL:** Silver  
**CSP SINCE:** 2002  
**WEBSITE:** aramark.com



**What research or product innovations is Aramark working on that will help facility managers be more successful in their roles?**

AIWX™ Connect, a business intelligence platform that drives efficiencies, improves planning, delivers actionable insights and enhances customer service through sensor technology.

This innovation provides real-time data for building performance, allowing for building and facility managers to reallocate staff, supplies and energy as needed. AIWX Connect works seamlessly to identify building and occupant needs based on real-time occupancy, space utilization and occupant feedback. Insights inform building performance, environmental conditions, and occupant satisfaction levels. These insights are used to proactively deliver services based on actual demand, resulting in operational efficiencies, improved productivity, and higher customer satisfaction.

**What's on the horizon in your field/industry, and how is Aramark meeting those challenges and opportunities?**

The pandemic has accelerated the need for efficient and cost-effective solutions to not only create safer environments, but completely rethink how space is used, managed and planned. Addressing these concerns with agility requires real-time building insights that are usually unavailable.

Advancements in PropTech can provide building owners with new insights into their building's performance. IoT technology is providing building owners with real-time data about space utilization, occupancy levels, environmental conditions and much more. Armed with this information, data-based decisions improve operational performance, resource allocation and capital planning.

**What has been the most positive feedback you've received from clients?**

*“A key component to our strategic partnership with Aramark is creative use of technology to improve patient experiences and to enhance efficiencies. AIWX is an example of that strategic optimization. AIWX allowed us to establish real-time responses for the cleaning and stocking of our public restrooms. And the data further allowed us to optimize staffing and cleaning schedules based on peak spikes in restroom traffic. Our strong leadership relationships with the Aramark team help us to be creative in how we continue to enhance patient experiences by use of technology.”*

– Assistant Vice President, Clinical Operations, Healthcare Organization



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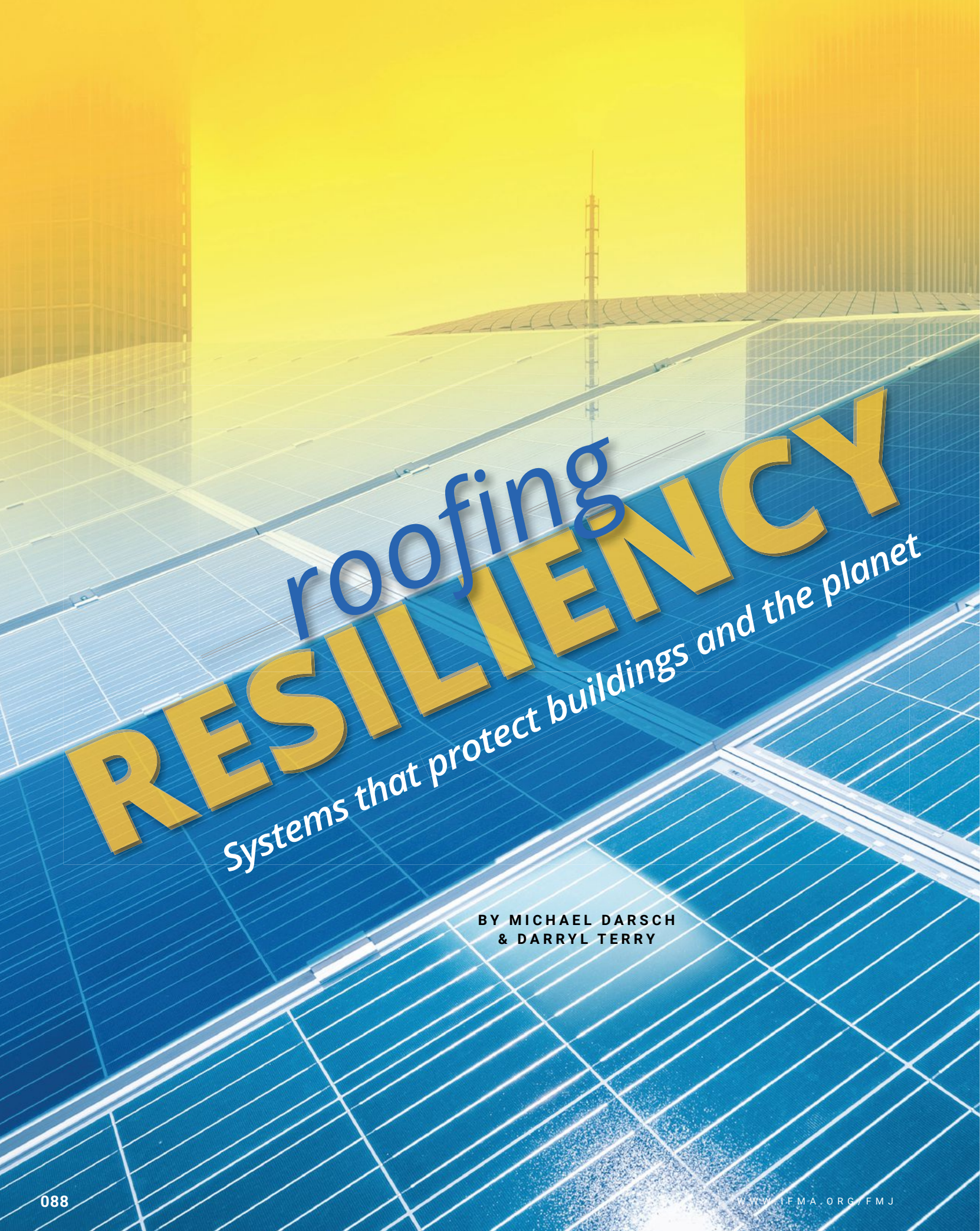
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roofing  
**RESILIENCY**  
Systems that protect buildings and the planet

BY MICHAEL DARSCH  
& DARRYL TERRY



*A roofing system's strength on Day 1 is essential. Assessing its likely performance over the long term is even more critical. With the challenges facility managers face from global climate change, steps taken today can determine success over a building's lifetime.*

**S**trength and durability have always been critical factors in evaluating roofing systems. In the age of climate change, the job has become more complex.

Asset owners, FMs, and other professionals need to think about how these broader issues affect them, what they need to do to protect their buildings and how they can outfit their facilities to make them more resilient.

### **What the World Faces Next**

Global temperatures have risen about 1 degree Celsius (1.8 degrees Fahrenheit) since the Industrial Age began. According to a series of United Nations reports, failure to limit a temperature increase to an additional a half-degree Celsius over the next three decades could deliver the planet past a point of no return, threatening ways of life in the developed and developing world alike.

Already in 2021 alone, the world witnessed wildfires in Greece and the American West; a winter storm overwhelming Texas' electrical grid; flooding in China and Germany; hurricanes in south-east U.S. and record heatwaves in parts of the U.S., Canada and Russia. Each of these events appears linked to the larger changes in climate.

"We can expect a significant jump in extreme weather over the next 20 or 30 years," said Piers Forster, a climate scientist at the University of Leeds in England and a contributor to an especially dire U.N. report this summer. As he told The New York Times, "Things are unfortunately likely to get worse than they are today."

In the face of this challenge, roofing systems must be designed with more than performance under current conditions in mind. This is, relatively speaking, the easy part. Systems should be long-lasting, of course. However, in addition to traditional view on durability, their design and installation should consider the likely changes in climate over the coming decades.

Studies conducted by building, architecture, ecological and design organizations describe how resilient roofing systems will need to be able to withstand evolving, more-severe climate and weather conditions. In their assessment, a resilient roof serves as a risk management tool, and to serve this function, they must be able to:

- Hold up to extreme events, among them high winds, hail and sharp spikes and dips in temperature.
- Be capable of accommodating and resisting changing conditions over the long term.
- Maintain its function under stress and be able to recover after being tested to the limit by harsh conditions.
- Be repairable after severe weather events, including those resulting in power outages.
- Help maintain and control a building's temperature.

### **HOW RESILIENT ROOFING PAYS OFF**

A resilient roofing system can save money over the years as it protects against, and enables buildings to recover from, extreme weather events or prolonged severe natural conditions. It can also help contain operating expenses under more routine circumstances.

A well-made, expertly installed roofing system will:

- **Endure:** Keeping a building operational after storms and high winds, allowing it to run safely and without interruption.
- **Stand up:** Needing fewer repairs and is less likely to need replacing after dangerous weather.
- **Protect:** Keeping a building's interior assets from harm.
- **Conserve:** Reducing utility usage and costs — especially in the case of cool roofs or solar roofs.
- **Power up:** With the use of solar panels, providing a source of secondary or backup power in case of an emergency.



## At the Extremes

The building envelope is the first line of defense against the elements and roofing systems are the most critical element in resisting severe weather impacts.

Take, for example, the risks presented by high winds, a major threat for improperly secured roofs. The U.S. National Weather Service defines high-wind events as occurring whenever there are sustained winds of 40 miles per hour (64 kilometers per hour) or above, or a peak gust topping 58 mph (93 kph).

Most roofs will experience numerous high wind events throughout their anticipated service lives. With that in mind, property owners and FMs should opt for highly wind-resistant roofing systems. This is particularly important for tall buildings, because their height exposes them to strong gusts, and for structures sited near any large body of water, whether on hurricane-prone coasts or adjacent to an inland lake. Increasingly, building codes require roofs to withstand winds exceeding hurricane speed (74 miles per hour, or 114 kilometers per hour).

Under high winds, edges are the most vulnerable sections of roofs. If the edge securement remains intact in the face of extreme winds, a roof has a far better chance of surviving. Edging materials that meet

strict industry or government standards, like the Florida Building Code, can prevent roof blow-offs in a storm.

Likewise, hail is a growing concern, even in regions where it has not historically been common. In the U.S. alone, there were more than 4,600 major hailstorms in 2020, and, nationwide, hail has caused as much as US\$14 billion in damage annually in this century.

Modest-sized hail particles (less than 1 inch, or 2.5 centimeters, in diameter) achieve speeds of 25 to 40 miles per hour (40 to 64 kilometers per hour), while 2-inch hailstones can drop as fast as 72 mph (116 kph). The impact of hard, irregularly shaped balls of ice at these velocities can result in significant damage to roofs and other surfaces.

The common-sense rule is that the thicker a roof's membrane, the better protected a building's contents. Equally important is the use of a high-compressive-strength cover board below the membrane, which can increase the system's wind resistance. More importantly, cover boards provide protection against all impacts such as hail and rooftop traffic. FMs should investigate whether the roofing materials they use have been independently tested and judged able to withstand the most severe hailstorms.

## Curbing Heat Islands

Resilient buildings can play an important part in reining in the Urban Heat Island Effect. As worldwide temperatures soar, some areas are impacted more than others. This is especially true in big cities. Studies show extreme heat leads to the most weather-related deaths, higher than hurricanes and tornadoes.

Temperature increases drive urban dwellers' need for additional cooling and raise their energy consumption, particularly during peak demand periods. These actions exacerbate the very problems they are intended to address, leading to a greater likelihood of unplanned power outages, scheduled brownouts and further pollution.

Resilient roofing enhances a building's energy efficiency and improves the surrounding neighborhood's livability by reducing a building's temperature. Three particular roofing solutions that can help mitigate these effects:

● **KEEPING COOL:** Cool roofs use light-colored, reflective materials that absorb less sunlight and, therefore, take in less heat than ordinary roofs. The temperature of a traditional dark-colored roof can reach a peak of 160 degrees Fahrenheit (71 degrees Celsius) in the summer months; reflective materials can cut that to about 100 degrees Fahrenheit (38 degrees Celsius). Cool roofs reduce energy costs by lowering inside temperatures and lessening a building's reliance on air conditioning. Less heat can also cut the stress on the roofing materials, (UV), thus extending the system's longevity.

● **GOING GREEN:** Green roofs have vegetation installed over the waterproofing membrane atop buildings. As more and more large structures take up what was once green space on the ground, it has become popular to turn roofs into verdant patches. Besides being aesthetically pleasing, a green roof's insulating layers of soil can help regulate a building's indoor temperature, keeping it cooler in the summer and warmer in the winter. Green roofs can also be effective in reducing the



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## CASE STUDY

Big cities are often warmer than their surrounding suburbs due to the size, composition, and proximity of buildings. An example of the Urban Heat Island Effect can be seen in the American Midwest, where the city of Chicago can be warmer by 5.5 degrees Celsius (10 degrees Fahrenheit) than its neighboring communities on a summer day.

As part of an initiative to address the heat island effect, the city of Chicago installed a green roof on its 11-story city hall. The garden, completed in 2001, houses 20,000 plants, selected for their hardiness and ability to stand up to sun exposure, rain and wind.

A green roof takes in less heat, improves air quality, needs less energy for air conditioning, and reduces stormwater runoff, soaking up 75 percent of a 1-inch rainfall.

Another effect of the project is measured by the citywide adoption of green roofing. Within a dozen years, Chicago featured more than 500 vegetated roofs, accounting for 5.6 million square feet of greenery.

burden on sewer systems by managing stormwater runoff from roof surfaces. Stormwater management is becoming increasingly critical as aged, overtaxed sewage infrastructure copes with ever more frequent and intense storms.

● **FOLLOWING THE SUN:** Solar photovoltaic (PV) panels do more than add to a building's energy self-sufficiency. By using renewable energy, they cut the consumption of nonrenewable energy, decreasing the greenhouse gas emissions that are major causes of heat islands. Solar roofs also offer a dual solution, since PV panels are most effective on cooler roofing surfaces. Care must be taken to ensure panels are designed and installed properly so as not to puncture a roof's membrane, which would leave a building at risk of water damage and leakage.

Increasingly, cities throughout the world have begun requiring cool, green, or solar roofing systems and/or offering incentives to builders and property owners. While the regulations typically apply to newly constructed buildings, they often call for these measures to be applied when the existing buildings are re-roofed. Since 2010, cities including Toronto, Copenhagen, San Francisco, and New York, as well as

Cambridge, Massachusetts and Cordoba, Argentina, have enacted measures for climate-friendly roofing. More regulations are to be expected.

### Interests Align

A U.N.-sponsored conference of 195 nations in Glasgow will deliberate about climate change and may offer prescriptions on how various actors — governments, the business sector, and individuals — can make a difference. Property owners and FMs must consider their needs and the likely climate and weather conditions they will confront — with the understanding that what is true today is likely to change, and quickly, in the coming years.

As always, they should consider the performance history, quality, and consistency of roofing materials, the track record of the manufacturer and installation professionals, and an eye to being able toward resisting whatever climate changes that can be anticipated throughout the roof's service life.

For building professionals, self-interest and the world's interests are rapidly coming into convergence. Installing and maintaining a greener, more resilient roofing system could not only improve a building's performance. It could help stabilize the planet's climate as well. **FMJ**



**Michael Darsch**, Sika Sarnafil Technical Director – East, has more than nine years of experience in the commercial roofing industry. Prior to commercial roofing, he was involved in engineering and building for the residential construction industry for 11 years. His commercial roofing background encompasses many technical and non-technical disciplines, including product development, training, compliance, codes and standards, and business development. Darsch is an active member with SPRI and the NRCA. He earned a Bachelor of Science in building materials and wood technology from the University of Massachusetts and is recognized as a PROCertification Qualified Trainer by the NRCA.



**Darryl Terry**, Sika Sarnafil Technical Director – West, has been in the roofing industry for more than 39 years. He worked at Saddleback Roofing in California, installing roofing before joining Sika Sarnafil in 1994 as a technical service representative. Promoted to technical manager for the western states' region shortly after, Terry is now technical director for the western half of the United States.

### References

1. Intergovernmental Panel on Climate Change (United Nations): [ipcc.ch/assessment-report/ar6/andipcc.ch/sr15/](http://ipcc.ch/assessment-report/ar6/andipcc.ch/sr15/)
2. Resilient Design Institute: [resilientdesigninstitute.org](http://resilientdesigninstitute.org)





# REAL TALK

## *COVID-19, Social Equity & Custodial Workers*

BY DOUG GATLIN

Facility managers may not realize the many struggles and issues cleaning workers have endured over the last half century. Even now, much of what has transpired is underreported. But the fact is, custodial workers cleaning all types of facilities, from offices and schools to convention centers, have had to fight for fairness and social equity for decades. One early battleground was Silicon Valley during the 1960s into the 1990s.



**A**t that time, computer companies were getting off the ground. They quickly built manufacturing and research centers to accommodate the hundreds and then thousands of people who wanted to get on board the “technology train.” It would later make Silicon Valley what it is today.

By 1992, it was estimated that 12,110 custodial workers were cleaning and maintaining these facilities. Interesting, virtually the same number, 12,690 computer engineers, were working in these buildings, according to the Santa Clara County Employment Development Department in 1998.

At that time, custodial workers were either in-house cleaning workers, hired directly by the building owners or FMs to provide cleaning services, or they were the employees of building service contractors (BSCs), private companies providing cleaning and maintenance services. Some were unionized, others were not.

After a while, some BSCs started replacing their employees with subcontracted janitors, now known as outsourcing. This proved to be a very lucrative move for these BSCs. It soon spread throughout California and, in time, much of the U.S.

As employees, janitors in the 1970s were paid about US\$10 per hour, plus they received benefits, including health insurance. By replacing the employees with subcontracted janitors, BSCs paid them about US\$5.50 per hour and ended most benefits, including health insurance.

Such significant savings allowed BSCs to compete more aggressively against the larger contractors who still treated their staff as employees and paid them higher wages. In time, however, these subcontracted or outsourced janitors started to complain about this new working arrangement. Among their complaints were the following:

While there were high demands on their work, the janitors were often only given rags and water to clean.

Sometimes, there were no paper towels for cleaning; managers would take napkins from office cafeterias and give them to workers to clean.

Cleaning equipment was often in poor condition; when equipment broke down, repairs were slow to happen.

Sometimes checks would bounce. Janitors were instructed to wait a few days and deposit their checks again. This put many subcontracted janitors in a precarious financial position.

Those that complained about the demands, the inadequate cleaning equipment, or the checks that bounced, were given less-desirable jobs to perform.

Cultural differences surfaced. Some cleaning workers complained that the BSC owners and managers showed little respect.

By the 1990s, many of these workers took their grievances to local unions, the media and the companies housed in the buildings they cleaned. Most were not aware of this situation until it was made public.

Soon, organizations such as Justice for Janitors, now integrated into the Service Employees International Union (SEIU), organized workers in the professional cleaning industry. While social equity for janitors is proving to be an ongoing journey, many of these early issues have been addressed and rectified.<sup>1</sup>

## GREEN CLEANING, JANITORS AND COVID-19

Over the last 30 years, the industry has learned how many of the solutions used in professional cleaning can be harmful to the cleaning worker. Early studies reported that some traditional (non-green) cleaning solutions emit harmful fumes, including volatile organic compounds (VOCs). One study from the University of Bergen in Norway reported that for women using aerosol-powered spray cleaning products, “[the] regular use of cleaning sprays — as little as once a week — may cause a decline in lung function that’s comparable to smoking 20 cigarettes per day.”

Studies like this resulted in some manufacturers re-engineering cleaning solutions so that they have a reduced impact on the user and the environment. Further, certification organizations such as Green Seal developed standards and guidelines for manufacturers to follow. These provided necessary guidance, so manufacturers knew what ingredients to use — and not use — and what manufacturing processes were needed to develop environmentally preferable cleaning products.

However, COVID-19 put a damper on some of the progress made. From the start of the crisis, most building owners, managers and cleaning professionals were not sure how to address the growing menace. The only products available in their arsenal were disinfectants — and plenty of them.

As cleaning teams inch their way through the pandemic, they now realize they have been overusing disinfectants, often using them unnecessarily. A term was even coined for this overuse: indiscriminate disinfection.

A study published in the *Journal of Allergy and Clinical Immunology*, discussing the possible overuse of disinfectants due to the coronavirus, concluded:

The increased use of disinfectant wipes and disinfecting liquids was significantly related to poorer asthma control. These findings are consistent with previous studies conducted primarily in occupational (work) settings showing increased exposure to disinfectants related to increased asthma symptoms.<sup>2</sup>



A key reason for this is traditional disinfectants contain quats, or sodium hypochlorite. While these ingredients can kill (eliminate) pathogens on surfaces, including the pathogen that triggers the coronavirus, large amounts pose a risk to human health and the environment.

Frontline cleaning workers who were tasked to use these disinfectants have the potential of harming their health. Further, custodial workers were asked to clean potentially contaminated surfaces regularly, increasing their risk of contracting the disease.

The result is that a new social equity issue has emerged.

Whereas in the 1970s, cleaning workers were subjected to low pay, inadequate cleaning tools, and not always respected, today, due to COVID, they are subjected to potentially contaminated surfaces and large amounts of disinfectants, which are known to be harmful to health, especially if overused or misused.

## ADDRESSING THIS SOCIAL EQUITY ISSUE

In the U.S., there are no “green” disinfectants. While their impact on the user and the environment is a consideration, the Environmental Protection Agency (EPA), which evaluates disinfectants marketed in the U.S., primarily looks to see that the product is effective as claimed by the manufacturer when used per the manufacturer’s instructions. If so, it then can become EPA-registered.

Building owners, FMs and custodial workers must realize there are disinfecting choices. Disinfectants with safer active ingredients are just as effective but with less impact on the cleaning worker and the environment. Among these ingredients are:

- hydrogen peroxide
- citric acid
- lactic acid
- ethyl alcohol (also called ethanol or just alcohol)
- isopropyl alcohol
- peroxyacetic acid
- sodium bisulfate
- hypochlorous acid

It is not enough to just switch to using safer disinfectants to help protect the health of cleaning workers and promote social equity. FMs should also consider:

- **SOPs:** High turnover in the professional cleaning industry means organizations often must quickly fill positions. To accomplish this, there must be up-to-date, readily available standard operating procedures (SOPs). View SOPs as written instructions that include cleaning schedules, building-specific cleaning duties, cleaning resources and where to find them, and key facility contact information. Effective SOPs help cleaning workers onboard quickly and perform their cleaning tasks properly as well as safely, protecting their own health in the process.

- **Training:** Proper and ongoing training shows cleaning workers how much their job, duties and health are valued. This includes training on the proper use of all cleaning solutions; safety training along with the proper use of PPE; instruction on how to rinse cleaning solutions off surfaces; and properly dispose of cleaning liquids, as well as their containers.
- **Ergonomics:** Cleaning is considered high-risk, with an estimated 40,000 cleaning worker injuries every year. A number of these occur because the equipment provided is not ergonomically designed. Ergonomically engineered cleaning equipment protects the health and safety of the cleaning worker using the equipment.

## THOUGHTS ON THE FUTURE

As difficult as it has been, the pandemic can be viewed as a training ground. This is one of the few benefits that has emerged for the professional cleaning industry. Cleaning teams are learning how to use cleaning products, including disinfectants, effectively without harming the health of the cleaning worker. It has also helped the industry and occupants realize how valuable cleaning workers are. They keep facilities open and operating and building occupants healthy. The industry and occupants must honor and respect their value and treat them accordingly. FMJ



**Doug Gatlin** is a recognized expert in the design, development, and deployment of voluntary market transformation programs and has held senior leadership positions with the U.S. Green Building Council’s LEED Program and the U.S. Environmental Protection Agency’s ENERGY STAR Program. He is now CEO of Green Seal, a global nonprofit organization and leading ecolabel for cleaning and facility-care products and services.

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*Recent global challenges with COVID-19 and the impact on communities and economies have pushed public health and safety into the spotlight. Not only are countries grappling with a year-long health crisis and bleak economic outlook, they must also embrace growing expectations for sustainability that require innovative solutions to ensure people, businesses, especially the facility management sector, can adapt to a new post-pandemic normal – now and in the future.*

The events of the past year have forced many around the world to change the way they work, live and play, with remote work and virtual schooling both becoming a common phenomenon around the world. Concerns over public safety have also led to a reduced amount of time spent in public areas, with people opting for new kinds of entertainment and limited social gatherings.

Now, as the world begins to venture back outside, the drive towards safe and sustainable cleaning has intensified, serving as a key factor for restoring public confidence and addressing heightened demands for cleanliness, safety and convenience in public facilities. Cleaning no longer is just about the level of hygiene in spaces. There is greater awareness around the safety of the cleaning agents and methods used for the public, the frontline cleaning staff and the planet.

According to the Asia Consumer Confidence Index conducted by Ipsos and Avalon SteriTech, 63 percent of Asian consumers admitted to worrying about the overuse of chemicals for disinfection purposes during the pandemic. Whilst cleanliness and disinfection are pivotal, there is a stronger drive to achieve this in a safe and sustainable manner. Elevating public health and safety standards through smart cleaning for public areas and businesses is the way forward to meet the increasing level of assurance and efficiency expected by consumers today.

AI and robotics are proving to be one of the most effective solutions in this space to help transition to the new normal. Smart cleaning technology is providing a new quality of cleaning by applying specified amounts of disinfectants and controlling exposure to cleaning substances. This ensures that the risks posed on humans and

the surroundings can be better mitigated, positioning FMs for success both in a community and environmental sense as markets begin to gradually open up again and industry activity resumes.

#### **MAKING THE SHIFT TO SMART CLEANING**

The pandemic has given new momentum to the adoption and trend of smart cleaning, which has continued to rise in prominence globally. The International Federation of Robotics (IFR) stated that robotics cleaning technologies, such as vacuum cleaning and disinfection functions continue to grow in popularity, with the market projected to hit US\$24.8 billion by 2026 – averaging a compound annual growth rate (CAGR) of 22.8 percent.<sup>1</sup> Looking at recent years alone, an estimated 31 million household robots were sold between 2016 and 2019, out of which 96 percent were vacuum and floor cleaning robots.<sup>2</sup>

New players continue to enter the market, responding to market demands for more efficient, customized and effective solutions. The emergence of regional and international robotics cleaning brands has also given rise to a substantial amount of investment into research and development to further the market potential and





prepare people and businesses for a future of smart cleaning.

Smart cleaning challenges both the breadth and depth of cleaning and disinfection practices, while addressing concerns for sustainability. In response to the increased use of chemical disinfectants during the COVID-19 pandemic, the names that remain on top in the smart cleaning space are those that redefine levels of quality, performance, safety and reliability, whilst maintaining a delicate balance of biocidal efficacy and responsible use of chemicals, opting for safer, more environmentally friendly alternatives whenever possible.

### **SUSTAINABLE SOLUTIONS FOR THE LONG-TERM**

The pivot to sustainability in cleaning began even before the pandemic with the 2019 Green and Sustainability Survey conducted by Facility Cleaning Decisions<sup>3</sup>. It stated that nearly 80 percent of respondents would do whatever they could to incorporate green certified products into their cleaning programs. Almost half of the facility cleaning managers interviewed also said they were planning to introduce sustainable products over the next 12 months.

Whilst environmental concerns are a big push for more sustainable products, this is also encouraged by the level of security guaranteed by using products that have safer chemical content. In the United States, poison information centers recorded a sharp increase in the number of daily calls from January to March 2020, when compared to the same period in 2018 and 2019.<sup>4</sup> Smart cleaning directly addresses public concerns surrounding the overuse of chemicals and disinfectants to make personal and public spaces safer during the pandemic. The application of robotics takes this a step further, offering greater consistency as well as a reduction in chemical footprint. This also protects the front-line cleaning workforce from direct exposure to chemicals, thereby reducing risks such as eye, respiratory or skin irritations and any resulting health effects.

As the need for more sustainable cleaning methods and approaches continues to grow, robotics cleaning technology is opening new possibilities for facility management corporations looking to jump on the trend and cater to the evolving demands

of their customers. The significant benefits brought by this technology include low costs, efficient use of workforce and alignment to corporate social responsibility (CSR) goals. For instance, some available smart cleaning solutions can decrease chemical usage by over 80 percent with the adoption of dedicated spraying technology. Application of safe and environmentally friendly disinfectants with strict cleaning protocols also tackles the issue of inventory management efficiently, eliminating the limitations and inconsistency of manual cleaning in comparison.

Some biotech companies are also putting increasing development of biosensing robots for public spaces, which can provide real-time detection of cleanliness. Only when a certain threshold of bio-contamination has been detected will disinfection and cleaning practices take place, thus reducing overall chemical usage. Technological solutions are undeniably the sustainable way to prepare the world for any potential infectious disease outbreaks, while embracing innovative means to lead a more sustainable lifestyle.

### **REDEFINING THE FUTURE OF CLEANING**

Regarding the adoption of cleaning robotics technology, Asia is the frontrunner with the market projected to record the highest growth rate in the world.<sup>5</sup> Cleaning robots in Hong Kong, for example, offer much-needed confidence to the public given that hygiene practices in public and personal areas have become a major focus as a result of the pandemic. Singapore, in turn, recorded the second-highest robot density in the world, with 658 industrial robots per 10,000 workers as of 2019.<sup>6</sup>

In the future of cleaning, collaborative robots, or “cobots,” are leading the way. Cobots place a strong emphasis on the interaction and relationship with human workforce, differing from traditional robotic solutions. They can take on monotonous, repetitive, or strenuous tasks, and perform disinfection in a consistent, efficient and sustainable manner that minimizes the overall use of disinfectants as well as human exposure to them. By taking up these tasks and freeing time for human workers to spend on more nuanced or strategic tasks, cobots are paving the way for the future of cleaning, showing how

robotics technology can change the landscape of smart cleaning.

FM corporations must do their part to find alternate solutions that meet enhanced cleanliness demands from consumers and businesses, especially in the post-pandemic era. Simply redirecting manpower to cleaning and disinfection while increasing overall use of chemical are not long-term solutions. With added economic and social pressure to pursue more sustainable and environmentally friendly solutions, our approach to cleaning and disinfection needs momentum that not only embraces advanced robotics technologies and methodologies, but also adheres to a greener way of life, ensuring that we are taking the right steps forward to safeguard public safety whilst protecting the environment and people. **FMJ**



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He earned his bachelor of laws degree from the University of Hong Kong. He was named CEO in July of 2020.

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# Ask the Experts

In each issue of FMJ, IFMA's Facility Management Consultants Council shares some commonly asked FM-related questions accompanied by advice from top FM consultants. The questions and answers presented in this section align with IFMA's core competencies following the themes outlined for the given edition of the magazine. While the following answers are intended to be helpful, these responses should not be deemed complete and are limited in context by the space allocated. Please contact the individual consultants directly for further explanation of the opinions expressed.

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The Facility Management Consultants Council (FMCC) represents more than 300 FM consultants from various countries around the globe. Its mission states, "The FMCC is the resource and voice for facility management consultants worldwide to leverage our collective expertise to benefit IFMA members, and the facility management profession."



# Sustainability:

## What is it & why does it matter to facility managers?

**A** Sustainability continues to be an emphatic theme throughout facility management. FMs are compelled to explore, develop and identify ways and practices to propel the facility operation while delivering value to the various stakeholders in the FM framework.

When considering sustainability in the built environment, it is the stakeholder that has an interest in the success and solvency of the facility and promotes FM's sustainable success.

The term stakeholders focuses on the building owners and the paying customers (in this case, tenants). Foundationally, a stakeholder is a person or entity that is directly or indirectly affected by the choices, decisions, successes and failures of an organization. This means employees, vendors, contractors, suppliers; supporting organizations and the community are all stakeholders.

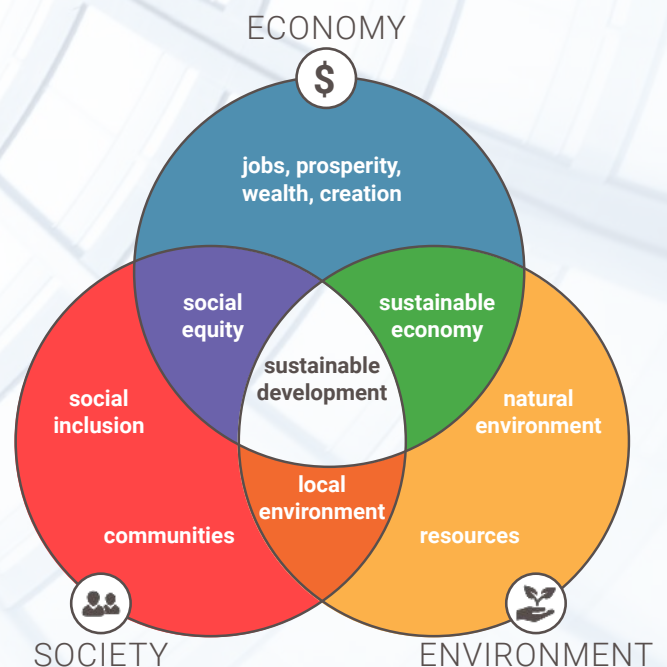
Sustainability must link the stakeholders and focus on three elements: Profits, People, Planet. Without these elements FM organizations and businesses would cease to flourish. This is particularly important while managing COVID-19 realities. The business models that were so reliable pre-pandemic raise questions of their relevance, suitability and reliability. Those business drivers may be less relevant and appropriate in this day. Considering how quickly attitudes and technologies change, the destiny of business is that much more uncertain.

**PROFIT:** Obviously, revenue and expenses are primary considerations in business. The revenue streams that historically drove business may not be as robust as expected during this pandemic era. This poses new questions:

- How do FMs discover and create new revenue streams?
- create new products and services that allow the built environment to drive new revenue opportunities? evaluate and embrace change in the way customers are using the built environment?
- manage the reality of tenants engaging more in virtual work?
- collaborate with tenants to create opportunities of innovation?

These considerations have a bearing on the sustainable financial strength of buildings and organizations.

**PEOPLE** are critical to the success of any organization – customers, communities and employees. When considering the people factor, it is imperative to consider customers. FMs must ask who the customer is and what characterizes them and what are their needs and attitudes.



FMs must keep employee and turnover and retention in mind. Many employees leave their organizations because they feel mistreated, disrespected or abused. It is important to identify and understand what makes an organization an employer of choice. Organizations must elevate their brand and reputation so that people will want to work for them because of a great work environment, competitive compensation and great work/life balance. This is critical as the environment is conducive to a multi-generational workforce.

Finally, FMs should consider how they treat contractors and vendors. Are the contracts typically a win-win scenario? Does the FM team have a reputation for being fair and honest? Does the organization pay contractors on time? These are considerations that can identify ways to improve engagement with people. Respect, dignity and civility are defining attributes of sustainability.

**PLANET:** What humans do and how they function on this planet affects today's quality of life as well as the successive generations. This reality compels more questions: Are FMs

- integrating and implementing smart, efficient, and economical green solutions and products?
- educating tenants on smart ways to dispose of trash, waste and recycling?
- providing tenants with smart building solutions that enable them to customize the delivery of their various building services?
- implementing smart industrial hygiene?
- flushing water systems to prevent Legionella?
- leveraging investment resources to deploy renewable energy and associated technologies?

Connecting profit, people and planet translates to the Triple Bottom Line. FMs can apply and contribute skills, talents and knowledge and have a responsibility to be manage the resources, people, and technologies that will deliver the highest good to stakeholders.



**Dr. Daniel Goldsmith**, an IFMA member, serves at Strayer University as adjunct faculty and as a facility management program manager in the U.S. government with responsibility for approximately 2 million square feet in Washington, D.C., USA.

## SUSTAINABILITY – FM PERSPECTIVE FROM FRANCE



Sustainability can be a disturbing word and means different things to different people. It often refers to two ideas: The first is that buildings were designed to stand for centuries. The second is that sustainability is only about energy efficiency.

Older buildings and technical installations are mostly still functional. Although life cycle analysis was a huge step for the environment, the deconstruction of the building apparently reduces their theoretical lifetime. Even if humans can recycle some materials, it's quite not a sustainable approach of real estate.

Facility consultants are not necessarily in charge of design and construction, but are witness during this phase and are key stakeholders in operations and maintenance.

In France, the pursuit of more efficient sustainability in buildings is strongly framed by laws and regulations. One known as “Décret Tertiaire” imposes an impressive effort within the next few decades on energy consumption of tertiary buildings. This new challenge will need every asset's stakeholder (landlord, tenant, technical supplier, etc.) to work together to achieve it.

Reducing costs is a high motivating factor in this sense, but not the only one. In the last decade, there has been a rise of certifications (BREEAM, LEED, HQE in France), an increase the regulations and the new generation of facilities consultants are directly concerned by the energy and wastes crisis, changed the way real estate is operated.

Beyond regulations, every FM and consultant, especially the ones with some years of experience, can bear witness to the evolution of how customers perceive sustainability in their day-to-day operations.

Instead of changing equipment that is out of order, try to repair it. When a building is released or destroyed, recover what could be re-used. This includes fixtures and equipment such as pumps, hydraulic or aeraulic items, lights and emergency lights and more. In other areas, FMs can choose equipment that is easily fixable.

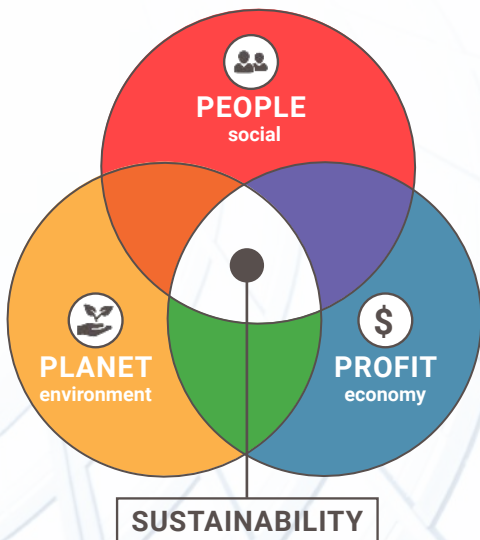
FMs and consultants must be a driving force in sustainability through audits, requests for proposal, budgets and day-to-day operations. The market demand sustainability actions, and FMs have the expertise to provide much more value for everyone today and tomorrow.



**Tristan Ragusa**, FMP, works in France as consultant in maintenance. He has a master's degree in facility management.



**A** The challenge is to become more sustainable. The FM industry is pursuing sustainability by creating healthier and more resource efficient models of construction, renovation, operation, maintenance and demolition throughout the building life cycle. This complex pursuit requires a comprehensive approach linking environmental, economic and social actions within many functions making up the building industry. This is the triple bottom line that defines sustainability and is at the core of FMs.



Many building projects target a level of Leadership in Energy and Environmental Design (LEED) using the rating system devised by the United States Green Building Council (USGBC) to evaluate the environmental performance of a completed building. Net Zero<sup>2</sup> emissions is now a frequent building project goal. Owner's projects are also pursuing the Passive House<sup>3</sup> approach or perhaps the Living Building Challenge<sup>4</sup>. The focus is reducing energy consumption in operations through design and construction elements. Super insulation, tight air/vapor barriers, and/or powering a building's energy needs through solar or geothermal heating/cooling systems are examples.

Is this working in practice?

#### FEEDBACK LOOP – ENVIRONMENTAL PERFORMANCE

FM is the feedback loop in the building industry in a changing world. This team operates, maintains and documents the performance of infrastructure elements over their service life. Benchmarks can include energy usage, cost of operations and maintenance, service life of finishes, fixtures and equipment, and space efficiency. Maintaining equipment so that it functions at peak efficiency and reducing replacement saves money

as well as being part of sustainable practice.

FMs interact with stakeholders to understand and respond to their space needs as their functions change. In his book "How Buildings Learn — What happens after they are built," Stewart Brand makes a strong case for designing buildings that last through adaptation in use. A large piece of sustainability is to reduce demolitions and renovations.

So, how are buildings performing? Feedback is an important step in improving environmental sustainability efforts.

- Is the performance in-use matching the designed or predicted performance?
- Are solar panels producing the energy predicted?
- Are interior finishes standing up to occupant activity?
- Are the building controls allowing adjustments for occupant comfort or are parts of the buildings too hot/cold?
- Are low water use washroom fixtures performing or requiring additional maintenance?
- Are occupant spaces meeting their functional requirement as they change?

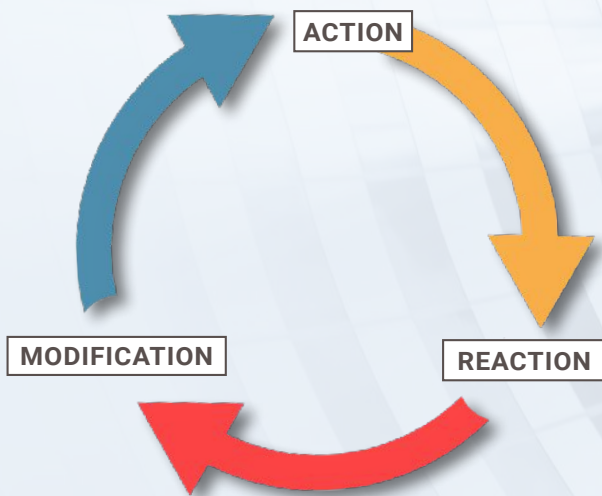
Early forms of data capture were analog — hard copy as-built drawings and maintenance manuals, analog thermostats and meters, enhanced by many anecdotal stories emanating from mechanical rooms and FM offices. It was not unusual to come upon an occupant do-it-yourself space modification to accommodate a work process change or added equipment – like occupant server rooms lacking adequate ventilation and power, or multiple punctures through fire walls to run optic fiber to support internet servers for the occupants. Changes impact building performance and capturing data is critical. FM need the data to understand and analyze the performance.

Technology is powering systems used to run building equipment while capturing and monitoring performance. The early days of this technology was proprietary. Over time, technology became more integrated, connecting the many building systems and functioning as a platform to manage all aspects of buildings and portfolios of buildings. Computerized Maintenance Management Systems (CMMS) standardize operations and maintenance routines for building systems and support easier tracking of operation functions, performance and cost. Construction as-built drawings and maintenance manuals are now digital and many are developed as part of a Building Information Modeling (BIM) effort that begins in planning and design.

There is software that contains a solid history of typical service life for all major components of a building or infrastructure,

allowing planned maintenance and replacement of components and systems in a timely fashion.<sup>5</sup> Efficient operations and extension of life of the building are sustainable practices.

While buildings are in use, new buildings and infrastructure are being planned, designed and built. Establishing an effective feedback loop strongly suggests that FM should be involved in the planning, design and construction phases of new capital projects to properly share their knowledge and experience on what worked and what can be done better next time. Engaging the FM feedback loop in capital projects improves building performance and environmental sustainability.



#### SERVICE CENTER – ECONOMIC SUSTAINABILITY

Facilities are a coherent combination of people, processes and technology that delivers value to stakeholders. A well-operated and maintained building retains its value over time.

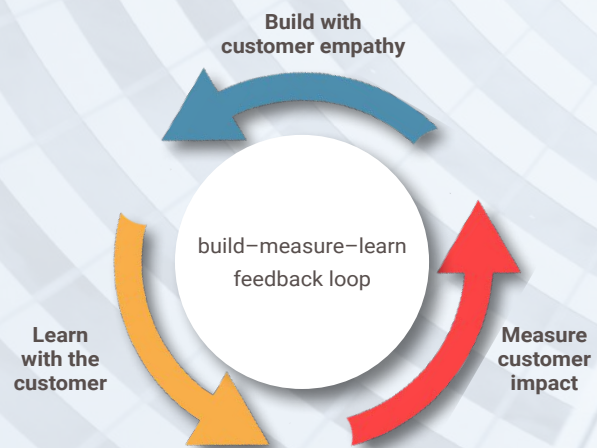
FM is a service. This function focuses on ensuring buildings are operating to occupant requirements — serving their workplace or living needs while retaining property values for the owners. FM teams clean interiors, maintain and replace building equipment to keep buildings functional. They use diagnostic tools to check system conditions before a break-down occurs. They operate building system controls to track temperature and system performance. Understanding the importance of this service mindset has been a hard lesson learned. The maxim of pay a little now or a lot later bore out with the long-held practice of deferring maintenance to save operations budgets — a practice that frequently shortened the life of a building, led to break-downs and made it less desirable for occupants.

It was not uncommon to need emergency equipment or system repair or replacement, disrupting building occupant business and FM operating budgets. Emergency repair/replacement is always more costly than planned maintenance. It is not a sustainable practice.

When FM is appreciated as an important service center rather than a cost center, there is an opportunity to influence capital and operational budgets, avoiding unplanned costs, achieving energy use targets and serving occupant needs more effectively while retaining asset value for the owner. This mindset is how FM adds value and supports economic sustainability.

#### THE FM TEAM – SOCIAL SUSTAINABILITY

Buildings are usually designed and built to function for many years — certainly more than a couple of career spans. The need an FM team with a vast array of knowledge and skills. A portfolio of buildings can range in age by decades and require past and present knowledge of multiple building systems and occupant requirements. Staying current on building portfolio knowledge can be accomplished to a large degree with technology. Therefore, it is important that the FM team is socially sustainable by embracing continuous learning and training on best practices and technology that support managing many building types.



While the FM team should know and understand occupant requirements, it is also important the occupants understand how buildings work and, how buildings attempt to improve sustainability practices.

FM teams manage recycling programs for occupants. Janitorial cleaning products are now more environmentally friendly in recognition of many chemical sensitivities for both building occupants and the cleaning staff. Heating/cooling needs are set to occupant requirements, while saving energy.




Tenant improvement projects have long been part of occupant changing space needs over time. FM requires adjustment. It is part of the sustainability factor of buildings and supporting occupants. Interacting and communicating with building occupants is important to stay current on their changing functional needs and determining how buildings can be modified to address them. The pandemic has highlighted this need as it has challenged the traditional way of work.

Buildings learn because the people who manage and operate them keep learning and pass that learned experience back to the planners and designers to influence new building designs and new capital budgets. It is a sustainable practice of continuous improvement — systems thinking rather than linear thinking. Collaboration rather than a singular viewpoint.

Some of the biggest problems facing the building industry — increasing costs, materials shortages, skills shortages, life safety and changing environmental conditions — are essentially system challenges. They cannot be solved by fixing one building piece in isolation from the others, because even seemingly minor details have enormous influence in undermining the performance of the whole. Sustainability must consider a multitude of issues — it is not linear.

Sustainable FM organizations evolve over time. They do not solely focus on an individual's technical knowledge but successfully navigate change on the organizational behavioral level allowing the whole team to focus on continuous learning and improvement. Organizational and social sustainability must have a commitment to physical, emotional and mental well-being. FM requires a diversity of skills, experience and points of view. In a global economy and supply chain, diversity keeps FM relevant and helps achieve the value and purpose of FM organizations.

The triple bottom line is an all-encompassing approach. This reality suggests that for the most part, buildings are part of a larger ecosystem — usually a neighborhood that is part of a municipality. Infrastructure systems that serve buildings — like fresh water supply, sewage treatment systems, streets and power supply grids serve other neighborhoods and other buildings. It is important that FM teams interact with municipal officials and other FM teams from other buildings and the infrastructure assets that connect them.

Responding to systemic change requires incorporating learning mechanisms into the social fabric and practice of the FM organization to sustain it and the environment. Become active in organizations like IFMA. Share experiences and learn together. The triple bottom line allows FM organizations to take the lead in meeting legislated and social sustainability targets in the building industry. 



**Kathleen Lausman**, MBA, BES is a principal at Shift2Lean and building industry professional with a background in architecture and business. Her experience is that of the public owner and leader of project and facility management teams. She is a former deputy minister for the Nunavut Territorial Government, Canada and former Co-chair and forming member of the Lean Construction Institute – Canada.



**Trudy Blight**, CFM, FMP, SFP, BID, PIDIM, PMP, IFMA Fellow, began her career as an interior design consultant which included project delivery within a FM organization. She was the Asset Manager, Government of Canada with a large portfolio in Western Canada and the Arctic. She provided facility management and project management consulting services for several years with Stantec Architecture and is manager of architectural and engineering services within Facility Management at the University of Manitoba.

1. Global Alliance for Buildings and Construction. 2018 Global Status Report
2. Net zero means achieving a balance between the greenhouse gases put into the atmosphere and those taken out
3. "A passive House (Passivhaus) is considered to be the most rigorous voluntary energy-based standard in the design and construction industry today ... Passive House (Passivhaus) buildings consume up to 90 % less heating and cooling energy than conventional buildings. [passivehousecanada.com](http://passivehousecanada.com)
4. The Living Building Challenge (LBC) is the ultimate green building standard that can be applied to any building type around the world. The goal is to create Living Buildings that incorporate regenerative design solutions that actually improve the local environment rather than simply reducing harm. [hmateriallybetter.com](http://hmateriallybetter.com) > living...
5. ReCAPP and now VFA software



A look back:

30 YEARS!

## *IFMA Fellows Program turns 30*

When IFMA Chair Christine (Neldon) Tobin's term as board chair ended in 1991, she was asked to lead a committee tasked with finding a way to honor and encourage the continued involvement of IFMA's most active and pioneering members — multifaceted leaders who were volunteering their time and expertise as teachers, authors, speakers, mentors and advisors to professionals in the facility management industry.



*“We looked at what other organizations were doing to recognize singular individuals who made significant contributions and long-term commitments to their associations and industries,” said Tobin.*

“We found that Fellowship programs carry great prestige, not only venerating a person’s prior years of service and accomplishments, but also acknowledging a proven leader’s continued counsel and active efforts to advance the goals of the organization and enrich the lives of those it represents.”

In 1992, the association bestowed the title of IFMA Fellow on seven pillars of the facility management profession, without whose dedication, vision and hard work, neither IFMA nor today’s global FM industry would exist.

In 1979, Herman Miller’s Facility Management Institute sent David L. Armstrong, IFMA Fellow to a number of major U.S. cities to educate professionals who didn’t know they were FMs. He introduced the model of people, place, process, showing where each came together to form FM. He continued promoting the industry and instructing individuals and businesses for many years.

In May 1980, IFMA’s first president George W. Graves, IFMA Fellow hosted a

meeting at his offices in Houston, Texas, USA, to discuss forming an association. Once those invited were seated around the conference table, he locked the door and said, “No one leaves until we get this done.” He and his wife JoAn were tireless IFMA supporters until his death in 2015.

IFMA’s first international member James W. Chambers, IFMA Fellow formed the first international chapter in Toronto, Canada in 1982, which not only broadened awareness of FM but also propelled the National Facility Management Association to change its name to the International Facility Management Association. Chambers was instrumental in organizing IFMA’s first international conference and exhibition held in Toronto.

Editor of Facilities and Design Management magazine Anne Fallucchi, IFMA Fellow contributed intelligent, thought-provoking articles on the industry, becoming a significant international voice on FM. At a time when the field was male dominated, Fallucchi was an early member of IFMA’s

board of directors (1984) and was the first female IFMA Fellow.

James M. Hickey, CFM, IFMA Fellow helped create IFMA sponsorships and an annual exhibition, raising the funds necessary to hire full-time IFMA staff. He educated his customers and other vendors on the value of facility management. With his encouragement, additional companies recruited members and became active in local chapters.

Active board members for many years, Edmond P. Rondeau, AIA, CFM, IFMA Fellow and David G. Cotts, P.E., CFM, IFMA Fellow both served as IFMA president. Strong educators, contributing heavily to IFMA’s first education programs, and prolific writers, they co-authored books on facility management, including their 2004 book, “The Facility Manager’s Guide to Finance and Budgeting,” used as a textbook at many U.S. universities. Cotts taught at George Mason University, and Rondeau was the IFMA Foundation’s first board of trustees chair in 1990.

“The impact of these individuals cannot be summarized in a single paragraph. Each gave years of dedicated service, making exceptional contributions to the FM profession and establishing the association that would guide and support its progress,” said Tobin.

## IFMA, EUROFOUND DEMONSTRATE SAFE PRACTICES

As organizations begin reentry to the workplace, some professionals prefer to combine teleworking and office work, with others returning to the office full-time. Both employers and employees are essential to ensuring the workplace is a safe space. Meanwhile, regulators are pondering how the future workplace should look in a post-COVID-19 reality. The EU’s agency “Eurofound” is finalizing a report on the impact of COVID-19 on European workplaces and workplace practices, to which IFMA has contributed.

As part of its EU advocacy strategy, IFMA continuously engages with EU decision-makers and research institutions to increase the visibility of IFMA and the FM profession at the EU governance level. This engagement successfully translates into FM references in pieces of legislation at both EU and national levels, and helps FM professionals move closer towards the EU and national funding streams.

Eurofound is an EU agency in charge of researching and compiling best workplace practices, recommending policy measures to the European Commission, which then integrates these recommendations into EU policy and funding initiatives such as Horizon Europe.

IFMA engaged in several meetings with Eurofound and participated in a targeted workshop to showcase how FM actively contrib-

utes to making the workplace safe. FMs cultivate the standardized workplace planning and management, arrangements for remote work, facility cleaning and observation of the social distancing rules, which enables the safe partial return to work. IFMA shared with Eurofound a selection of best practices, such as the SafeAtWork application that is managed by FMs active in the workplace, using QR codes, allowing the application to trace contact chains in case of an infection and send a warning. The digital solution supports the memory of an infected employee, who may not remember all the contacts in the office:



The Eurofound report will be published in autumn 2021 and prove to be a critical tool for FM professionals to showcase the importance of FM, not only at the EU level, but also with national regulators and stakeholders. **FMJ**



# Getting to (Net) Zero

Improving building efficiency to meet sustainability goals

BY DAN STUDER



Today's discussions about getting to net zero waste have shifted from "it's impossible" to "how can we make it possible?" For the last few years, facility managers and commercial real estate owners have taken the initiative to retrofit buildings to make them more energy efficient and to implement waste strategies that lead to less physical waste. The mantra "reduce, reuse and recycle" has gained momentum, and that includes everything from recycling paper waste to finding alternative disposal methods for food waste. These efforts, combined with LEED certifications and energy efficient renovations, are making net zero waste a distinct possibility in the coming years.

### BENEFITS OF NET ZERO BUILDINGS

To accelerate global efficiency, the World Green Building Council (WGBC) issued a recommendation that all buildings get to net zero carbon emissions by 2050. Other groups followed suit, with a collective goal of reducing global temperatures. For instance, set an ambitious goal of zero waste going to landfills by 2030, and the city is encouraging citizens to do a better job at sustainable tasks like recycling, donating and composting rather than throwing food waste away.

There are other benefits to operating a net zero building besides carbon reduction. The WGBC has stated carbon reduction is an important goal in global climate change efforts, but the production of new energy efficient construction materials and renovating existing structures also provides jobs, lowers energy costs and improves overall energy security.

When it comes to defining goals and setting standards, the U.S. Department of Energy offers a wide variety of resources for builders trying to understand what zero energy means and how to get there. "Net zero" refers to the fact that the built environment will always require some level of emissions, and there will always be some percentage of waste that goes to landfills, but any waste and emissions can be offset through building efficiencies and better waste handling.

The spirit of net zero is an "ambitious but achievable goal," according to the DOE's Office of Energy Efficiency and Renewable Energy. While building emissions regulations and goals are still being formulated in most municipalities, it's a good idea for FMs to think about ways to better manage the waste stream and implement energy efficient measures. Achieving a net zero waste balance is an ambitious goal, but most organizations can start the process now with some planning.

### THINKING BIGGER

FMs and property owners who want to start moving toward net zero waste should start by considering all the elements that go into a building's life cycle, including the renovation process as many large-scale efficiency projects begin with energy efficient redesigns. Architect magazine suggests thinking of net zero in terms of micromanagement, such as looking at the composition of building materials used in renovations and considering even tiny details such as where to place paper recycling bins for optimal usage.

At the same time, the process requires thinking holistically, including all the processes and people involved in using a building. -- from being able to adjust energy flow when there are fewer people in the building using smart devices, to how

to dispose of building materials safely and properly during renovation projects. Construction debris makes up a large portion of landfill waste, so investigate construction material recycling options early in any renovation project.

### GETTING STARTED

A full renovation may not be in the budget immediately, so the easiest way to start a net zero journey is to look at ways to improve waste disposal. This can be everything from filtering wastewater to providing opportunities to recycle food waste, standard recyclables like paper and other daily-use materials such as packing materials and cardboard boxes.

Educate cleaning staff and building tenants in proper waste management, including the importance of not contaminating recycling bins with non-recyclable materials. Food waste recycling is still a relatively new concept, so make sure there is educational signage on how to recycle or compost food waste. While companies that specialize in food waste disposal may not yet be available in all areas, it is a growing industry. Proper recycling could be initially challenging for people, so create a plan to help people understand recycling's impact on net zero waste goals.

Improving recycling efforts can also include new ways of diverting recyclables from standard garbage. Work with a waste specialist to identify the right types of equipment and diversion tactics to reduce the overall volume of waste sent to landfills. This can include new technologies, including dumpster camera technologies that use artificial intelligence to help identify contaminants in recycling bins before they're picked up. There are also compactors and augers that can reduce waste volume before being sent to a landfill. Explore the latest technology with a trusted waste partner to find out what products are available to help you reduce volume and improve diversion.



Bullitt Center, Seattle, Washington, USA

## BUILDING A MODEL

Part of getting to net zero waste successfully involves finding examples of projects that are already there or at least getting close to it. One example that has received a lot of attention is the Bullitt Center in Seattle, Washington, USA. Since 2010, the building's owners and FM team have taken steps to successfully reach net zero in an urban area.

The Bullitt Center is focused on having commercial tenants who were committed to the project and willing to modify their lifestyle with limited resources, including not using much water or electricity. Billed as "the world's largest green building," the effort started by making sure all building materials were produced within 300 miles of the site. Builders also made sure that every item used in construction was free of more than 360 common toxins in building materials. This included paint, carpet, concrete and window glass.

The six-story structure was primarily built out of sustainably harvested wood from the area. The building also received certification from the Forest Stewardship

Council for using 100 percent certified wood. It includes a variety of solar panels on its roof, which powers the building, and 26 wells and a cistern collects rainwater to provide 50,000 gallons of water for at least three months for the building.

Standard city regulations prohibited use of rainwater for private consumption or irrigation. However, Bullitt Foundation building planners worked with city and state environmental officials along with the local office of the EPA to find a solution.

Today, the Bullitt Center, besides being an innovative location for tenants, also provides information to architects, designers, builders and FMs wanting to see sustainable design principles in action. The Bullitt Center is one of the most ambitious net zero waste buildings in the world, and not every building will go to this extreme. But FMs can take lessons from the building, and other net zero waste projects, to begin implementing greener solutions at their own facilities.

When it comes to net zero waste, the building industry has reached "we can do this" status which means being open to what's possible. **FMJ**



**Dan Studer** is the commercial waste division manager at ZTERS Waste Solution and got his start in the waste and recycling industry in 2002. He spent seven years in local and regional operational roles for top-tier waste companies. As a major account executive in both the Chicago and Houston markets, Studer has worked with industrial and commercial clients to right-size waste streams for large facilities and multi-property portfolios across the country. He specializes in creating custom service plans for clients.





# Grid-Interactive Buildings

## FM's next challenge

BY ELENA BONDAREVA



The clean-energy future is interactive and grid-interactive buildings offer indisputable benefits to their owners, tenants, the utilities and the community. Because buildings tend to be passive electricity users, it is important to understand what this opportunity means.

Accountable for 40 percent of global greenhouse emissions and for three fourths of the total U.S. electricity consumption and even more at peak, buildings play a key role in the economy and in climate change action. The real estate industry has embraced this and amassed a proportional response to energy efficiency, embodied carbon and net-zero challenges. Still, buildings have remained a largely passive consumer of energy: they use the electricity they need whenever they need it, disconnected from the rhythms of renewable energy and blind to the stress inflexible loads create for the grid.

This passive approach impedes the transition to the clean-energy future and misses significant opportunities to engage customers and to align operations with organizational commitments to climate action. Moreover, it leaves money on the table: grid-interactive buildings offer both savings and new revenue streams.

*“Grid-Interactive buildings represent the next technological challenge for the corporate real estate (CRE) industry. Making a building energy efficient is a key element in addressing the threats posed by climate change, but in itself does not manage the demand/response flow of energy. The need for grid-interactivity has risen out of the exponential growth in distributed renewable energy generation, emerging energy storage technologies, peer-to-peer energy trading, and vehicle-to-grid energy transfer. This will become a critical knowledge and skillset requirement for the facility manager. It is vital to begin the introductory education and skill development efforts today, so the FM profession is prepared for tomorrow’s opportunities.”*

Dean Stanberry, CFM (U.S.)  
2nd Vice-Chair, IFMA Global Board of Directors

### What are grid-interactive efficient buildings?

According to the U.S. Department of Energy, grid-interactive efficient buildings (GEBs) are energy-efficient buildings with smart technologies characterized by the active use of distributed energy resources (DERs) to optimize energy use for grid services, occupant needs and preferences, and cost-reductions in a continuous and integrated way.

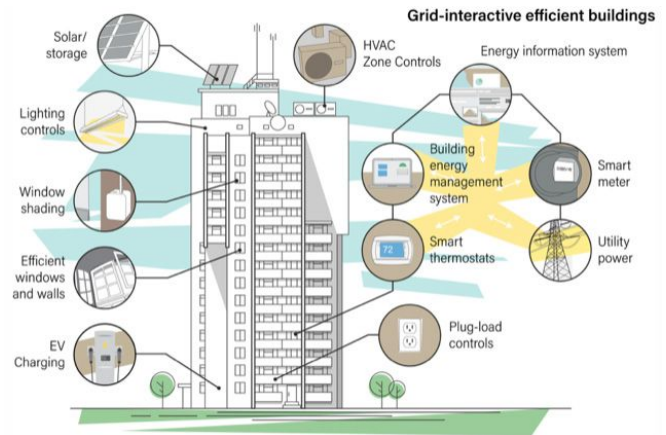


Figure by American Council for an Energy Efficient Economy.

### What is a DER?

Distributed Energy Resources (DERs) are small-scale (1-10,000 kW) power generation or storage technologies that can provide an alternative to or an enhancement of the traditional electric power system. These can be located on an electric utility’s distribution system, a subsystem of the utility’s distribution system or behind a customer meter. Examples:

- rooftop solar PV units
- natural gas turbines
- microturbines
- wind turbines
- biomass generators
- fuel cells
- tri-generation units
- battery storage
- electric vehicles (EV) and EV chargers
- demand response applications.



## Why are we here?

Energy has shifted from a “perishable” commodity to a tradable one. At first, mankind knew energy as stationary: sun, water and wind. Humans are the original dispatchable energy (that is, energy that is reliable and can send wherever it is needed), followed by domesticated animals. If one wanted to dig a mine, he used a human with a shovel and a bucket. If one wanted to move something from Point A to B, she used a horse or two. To this day, “horsepower” is a recognized unit of energy. However, dispatchable energy was limited to muscle power until the 1860s, which is when steam and coal became the preferred mode of dispatchable energy. The transition was not smooth.

If that was the first energy revolution, the second came when renewable energy — the sun, water and wind energies that had always been perishable — became dispatchable. This ability to deliver a renewably generated electron from its source to its destination has given rise to DERs.

If all of this occurred decades ago, why does it finally matter? Because once perishable, renewable energy has now become a tradable commodity just like coal, oil, gas, or gold.

## Is a battery required for a GEB?

Any building — with or without capacity to generate renewable energy and with or without a battery to store it — can participate in the energy markets. That is because precincts can be part of a solution: buildings can trade excess renewables between themselves (peer-to-peer trading via a power purchase agreement) or store this excess to use or dispatch it to the grid should it need it.

Even without a solar panel or a battery, a building can purchase verified renewable energy while saving money and reducing pressure on the grid. And a battery makes it a true collaborator for clean energy.

Moreover, imagine procuring excess solar from customers in exchange for the furniture, clothing, services, or even beer made within the facility within the portfolio. In a cashless transaction,

*“This will improve resiliency of the grid and integrate grid congestion issues with market support. The opportunity to do things in a much smarter way, and save plenty of money while doing so, is hard to resist. And perhaps it’s reassuring that far from just creating problems for the grid, renewables could help in making it more cost effective.”*

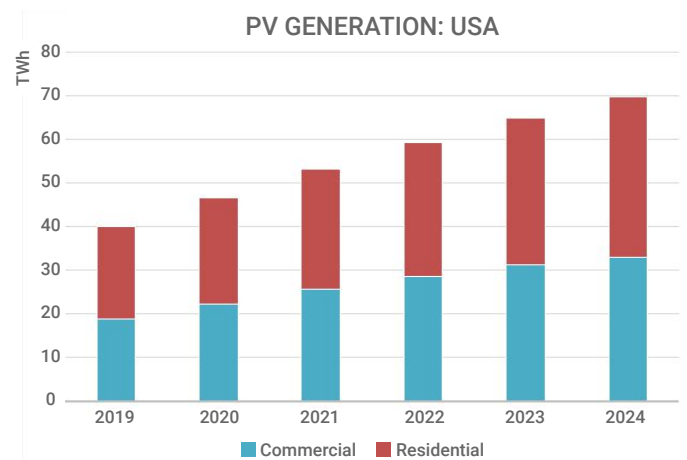
Jemma Green, Ph.D.  
Co-founder and Chair of Powerledger  
Building the New Flexibility. *Forbes.com*, February 2, 2021.

Carlton & United Breweries (Australia) is doing just that in pursuing its goal of carbon-neutral beer. A self-funding marketing initiative activating such a solar exchange has already garnered them AUS\$3M worth of free media.

## Do electric vehicles factor into GEBs?

Absolutely. Charging an electric vehicle during peak demand exacerbates grid stress but the opposite is also true: using the energy stored in EV fleets during peak solves multiple problems. That is because electric vehicles are effectively “batteries on wheels,” an asset FMs will be increasingly able to monetize. Imagine parking at an airport for a holiday and authorizing a vehicle battery to be charged and discharged to moderate the airport’s overall demand in exchange for paying to park

## Why does it matter to FMs?



Growth in renewable energy generation through photovoltaic in the U.S.

Production of renewable energy is only going up, with real estate assets contributing to that substantially. Real estate owners, FMs and tenants will increasingly engage with the energy markets in pursuit of their corporate commitments and to save and make money. However, it will be a bit chaotic for a while: which party should own the generation asset? Who manages it within the asset daily? Who gets to decide when excess energy can be on-sold or when a deficit is topped-up in real-time? Who handles the arrangement with the utility for helping the grid with balancing its load by providing what are known as flexibility services, when stored power is dispatched to the grid in the rare but lucrative event of power shortage? While uncertainty may spell risk, it also illuminates a phenomenal opportunity for those willing to embrace it.

It is anticipated that the majority of today’s FMs will retire within 10 years. Not only does it compel the profession to recruit new talent, but it offers an opportunity to redefine FM’s value to the real estate industry, leveraging the incoming tech-savvy generation to command a more influential and strategic seat at the property sector table.

## How can a real estate asset participate in energy markets?

Real estate assets can engage with the clean-energy market in any combination of the following ways (in order of increasing direct impact on climate change):

1. **Load shifting**
  - Facilitate trading within a connected community (peer-to-peer trading)
2. **Arbitrage & ancillary grid services**
  - Activate residential or EV batteries to dispatch stored renewable energy to the grid when it needs it and not when it doesn't
  - Participate in frequency control ancillary services (FCAS)
3. **Energy Demand**
  - Procure (verified) "green" energy
  - Procure Renewable Energy Certificates (RECs)
  - Procure from your customers or community
4. **Energy Generation**
  - Finance investment through pre-commitment
  - Activate every surface: roofs, parking lots, land awaiting development
  - Performance-contract, own, rent out, lease, lease-to-buy your DER
5. **Energy Storage**
  - Batteries linked to on-site generation
  - Batteries linked to off-site generation
  - EV batteries

## Is technology a barrier?

Absolutely not. Not only is there ready hardware, software, and systems integration expertise today but there are compelling use cases around the world.

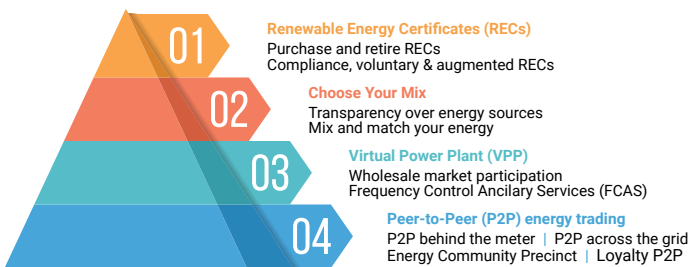


Diagram: technology solutions available in the market, from the most transactional (1) to the most transformational (4).

Awareness is the biggest obstacle to greater uptake of GEBS: even if better options exist, integrating them into current systems faces the inertia of how things have been done to date. The other major obstacle is regulation.

## What regulatory constraints exist?

While a valuable tactic in its time, net-metering is an obstacle to this future. Furthermore, consumers cannot trade energy directly with each other in most places in the world; an obstacle that can often be overcome by having their energy retailer on board. Such obstacles are expected to soon recede.

In Europe, EU directive 2018/2001 set a deadline of June 1, 2021 for all its member countries to enact regulation that allows buildings to share energy ("peer-to-peer trading"), and many are doing just that. In the U.S., GEBS are about to get a boost as FERC Order No. 2222 comes into effect because it will allow almost any DER to sell directly to the grid. In addition to the mushrooming commitments to climate action by states, municipalities, and corporations, this will help the U.S. Department of Energy to deliver on its commitment to triple the energy efficiency and demand flexibility of the building sector by 2030 relative to 2020 levels. Today, Australia offers some of the most favorable conditions for GEBS, generating a disproportionate number of world's best practice examples and it is only going to get better: a regulatory change has recently compelled utilities to procure grid services from DERs.

## In conclusion...

The real estate industry and FM profession remain largely passive in the way they consume electricity. Not only does this miss significant opportunities to advance corporate goals but it leaves money on the table: grid-interactive buildings offer both savings and new revenue streams.

It is time to understand and leverage the energy revolution heading towards us. There is good news: recent regulatory changes and technology breakthroughs now allow all real estate assets throughout some of the world – including the U.S. and the E.U. – to become grid-interactive. There is also even better news: what is vital for clean-energy markets is also good for business because it unlocks new revenue streams for real estate.

*"Facility management has the opportunity to take back its purpose of providing effective and professional support services for the organizations it serves by integrating energy trading and improving the quality of the grid — and, through grid-interactive buildings, making money at it."*

Maria Atkinson AM, global sustainability leader

FM has shown leadership time and time again, even when it meant redefining its contribution. The current energy revolution warrants attention because FM is now well positioned to transform its CapEx and OpEx business cases while slashing the costs of doing the right thing. **FMJ**



**Elena Bondareva** WELL AP, WELL PTA has a solid record of transformative innovation around persistent problems, which is the focus of her advisory practice, Vivit Worldwide.

Bondareva has held public, private, teaching and board roles in Australia, New Zealand, Russia, South Africa, India, and the United States; delivered CPD training to thousands of professionals; participated in globally significant events such as COP17, G20, and the World Green Building Council Congress; published in peer-reviewed and public journals; and presented at countless international conferences.





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# Renewable Furniture

FM's hidden superpower

BY KRISS KOKOEFER

Sustainability is taking hold as a corporate mandate — leaders and their employees want to believe that every step is being taken to be environmentally correct. As a result, facility managers face tough challenges — especially where furniture is concerned. Costly purchase cycles, lengthy production timetables, expensive delivery logistics, continuous wear and rigorous COVID-19-era cleaning procedures which lead to rapid obsolescence are the bane to an FM's workload. But dump-and-replace is rapidly becoming an unacceptable practice for many innovative and sustainability-minded FMs. While challenging, furniture re-use and renewal has begun to catch on as a preferred practice. Consider setting two goals: 20 percent re-upholstered furniture in every move/re-stack and 80 percent renewed in every refresh.

## The Key Is The “Re”

As offices go back online, workplaces face new demands from C-suites and the rank and file. They want it all. An expectation for sustainable approaches. Adherence to tight budgets. Distancing — and in sharp contrast, collaboration and the space to do it safely. The character of home with the collegiality of shared space. Comfortable, inviting upholstered furniture that can be sanitized and cleaned on a regular basis.

FMs at some of the most innovative and recognized corporate sustainability brands are taking it all in stride, creating win-win scenarios by diverting used furniture from landfills and establishing themselves — and their organizations — as sustainability superheroes.

The answer to unlocking at least part of this challenge is furniture renewal, refurbishment, re-upholstery and re-use. By embracing the “re,” FMs can help their companies reach their own corporate social responsibility goals, answer staff expectations, abide by design standards, and in many cases save time and money. Organizations have made commitments to renewable furniture programs and are diverting hundreds of pieces of furniture from landfills. New resources will also make the complicated process of managing the renewable and used furniture marketplace easier.

## Harsh, Cold, Mountainous Reality

FMs are unified in declaring their personal commitment to the environment. However, the enormities of commercial furniture waste are difficult to comprehend. According to Clear-Office founder Brandi Susewitz, “Only 1 percent of office furniture has a second life.”

For perspective:

- 9.8 million tons of furniture went into US landfills in 2017 — almost double the 1990 volume and almost five times the 1960 volume
- 70 percent to 80 percent of what the furniture industry produces goes to landfill

- In 2017, US\$9.9 billion worth of secondhand furniture was sold compared to US\$480 billion in new furniture
- Solid waste landfills are the third largest source of human-related methane emissions in the US
- Two million tons of US furniture is incinerated annually for energy — releasing carbon dioxide (CO<sub>2</sub>) and nitrous oxide (N<sub>2</sub>) into the atmosphere
- Waste furniture has a direct link to climate change; landfills emit methane when organic wastes such as food scraps, wood and fabric decompose — thus furniture in a landfill leads to increased production of methane, a leading cause of climate change

## Challenges are Many ... But so are Opportunities

Renewing existing furniture in a commercial setting is tough. While some challenges have been longer term, as the pandemic continues and workplaces evolve, new issues are arising.

### DESIGNER DEMAND

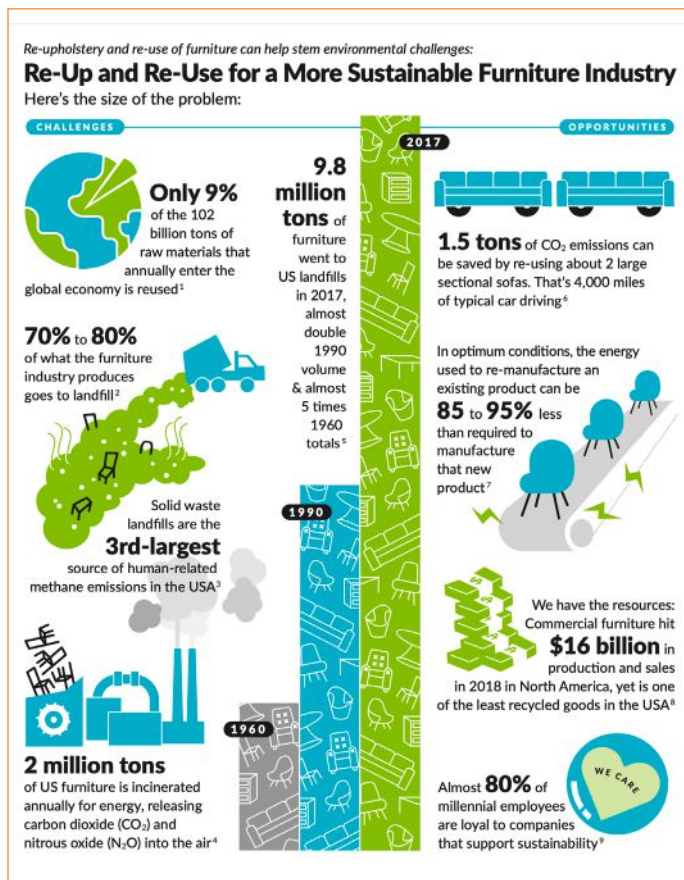
Designers usually want fresh and innovative. User groups involved in moves, re-stacks and updates expect “current.” Designers can insist on “all new” and relish the chance to spec the latest collections. Re-using existing furniture pieces, models and designs require a higher degree of creativity and innovation but can still be visually and functionally powerful. FMs should tell design teams and their furniture dealerships to get creative early in the process by designating a percentage of the project as renewed, re-used or re-upholstered. Use these goals: 20 percent renewed furniture in every move/re-stack and 80 percent renewed in every refresh.

### MONEY MYOPIA

In the end money talks. Budgets demand the lowest cost, and cost evaluations are frequently limited to purchase costs rather than life cycle costs. Lifespan extensions — like re-upholstery, are



seldom considered in determining an amortization timeframe. Also, environmental benefits and reputational impact costs are rarely considered. For example, making and shipping a single piece of furniture emits an estimated 90 kilograms of carbon, the equivalent of flying a Boeing 747 for an hour. Measure these costs as well.



Kay Chesterfield Inc.

## LOGISTICS LOG JAMS

There is a common perception that it is sometimes easier to buy new: just place an order and fill a dumpster. One small upside from the pandemic — renew/re-upholstery lead times and logistics are comparably easier and take less time than buying new — where some manufacturers are delivering new orders on six- or eight-month timetables. Dealerships or large-scale re-upholstery firms can help facilitate and project manage a renewal project from beginning to end. There are many furniture renewal and re-upholstery resources that can keep projects local and minimize turnaround times. Logistics and delivery timetables — and their considerable carbon footprints — should be taken into consideration.

## CORPORATE CONFUSION

Many companies' corporate sustainability goals do not go deep or specific enough to cover furniture. No CSR manager or FM would ever declare they are against the environment. Most vehemently claim to be green champions. Corporate environmental mandates should extend to facility furniture, and be measurable (e.g., 20 percent of the furniture in every move/re-stack should be renewed or re-upholstered, with an 80 percent renewed furniture goal for every refresh). Setting furniture renewal standards and expectations from the highest managerial levels would give FMs new measures to weigh in their planning processes — and the support they need to set and adhere to these goals.

## ECO EDUCATION

Understanding the circular economy — especially in the furniture space — is incredibly difficult. With so many pieces, styles, raw materials and sources, manufacturing processes, cleaning approaches, wear and durability expectations, and waste processes, understanding the life cycle of any single piece of furniture is tough to discover and compare. But new resources are in development.

## PANDEMIC PRESSURES

FMs are facing a massive upheaval in expectations during and after the pandemic. How are FMs getting people back in offices after the peak of the pandemic and making the office worth the commute? Striking a balance between distancing and collaboration in office layouts will present a difficult balance and impact furniture planning. Re-upholsterers can help by designating fabrics and seam location recommendations that can withstand traffic and stand up to the rigors of COVID-19 cleaning.

## HEALTH EXPECTATIONS

Keeping all surfaces, including fabrics, sanitary will put furniture and FMs to the test. Cleaning chemicals designed to prevent viruses may not be as surface- and fabric-friendly as those originally specified.

## INVISIBLE WASTE STREAM

Finally, the end-of-life furniture waste stream has been invisible or at best, deniable. Alternatives to landfills are tougher to find. Many donation avenues are closed due to the pandemic, and once sofas, chairs or cubicles are off the loading dock, even with the best of intentions, they are out of mind.

In contrast to first-use furniture entering the waste stream, the process of re-upholstery requires much less production and transportation. Thus, it produces significantly fewer emissions. For example, the Carbon Footprint Analysis by Carbon Footprint Ltd. found that refinishing the furniture in 100 hotel rooms produced 1.245 tons of carbon dioxide, compared to 125.33 tons created in the replacement of all the furniture.

## What Can FMs Do?

No one suggests this problem is an FM's to manage alone. However, each FMs is in an excellent position to make several meaningful impacts. When magnified to an industry-wide sustainable furniture mandate, FMs can lead the way to a reduction in the waste stream:

1. Commit to 10 to 20 percent re-upholstery and renewed furniture for every move, refurb and re-stack
2. For each five- to seven-year refresh cycle, commit to 80 percent re-upholstery and renewed furniture

But FMs should not stop with setting goals alone.

FMs can work across companies and industries. Share best practices and resources. Carry the message to upper management by showcasing how each of these renew commitments impacts timetables, lifecycle budgets, employee pride and appreciation, and dramatically impacts corporate/financial community reputation.

FMs should also consider showcasing work with the employee base by sharing the impact renewed furniture is making on the environment — a commitment that almost 80 percent of all millennial employees' support — which as a result, improves company loyalty. By educating constituents and showcasing not only the results of a renewed furniture project, but also the impact of the waste savings and impact on the business and the planet, FMs will build value and appreciation for their efforts.

## Helpful Resources

FMs should work in close partnership with their dealerships as strong resources in helping to include renewed and re-upholstered furniture in inventories. FMs and their dealerships can access a variety of newer tools, certifications, standards and resources to have quantified comparative data to make more informed deci-



sions. LEED certification already exists, while the Well Health-Safety seal is improving health-focused confidence in the spaces created by FMs. Other new tools are available from:

- The Plastic Industry Association — the Resin Identification Code (RIC) can identify the specific type of resin used in plastic products
- National Upholstery Association — [nationalupholsteryassociation.org](http://nationalupholsteryassociation.org)
- The REMADE Institute — A research, development and investment organization helping to eliminate and/or mitigate the barriers to greater material recycling, recovery, remanufacturing and re-use.
- The Office Furniture Recyclers Forum (OFRF) — a trade association for office furniture recycling, refurbishing and remanufacturing sponsored by the Office Furniture Dealers Alliance of The Business Products Industry.

Another emerging tool is the Environmental Product Declaration (EPD), based on standards set by the International Organization for Standardization, are transparent, objective reports that communicate what a product is made of and how it impacts the environment across its entire life cycle. A verified EPD can earn credits for LEED v4 and other green building rating systems. EPDs enable comparisons between products fulfilling the same function. Companies implement EPDs to improve their sustainability goals, and to demonstrate an environmental commitment to constituents.

## FM's Furniture Renewal Super Power

Spiderman's Uncle Ben once wisely shared with Peter Parker, "With great power comes great responsibility." FMs have it within the framework of their roles to take on this level of great responsibility. Working within and across industries to raise the renewable furniture banner to improve reputation and morale, celebrate design, save time and money — all while being better planetary citizens is within FM's reach.

**Key areas for FMs to focus their efforts:**

### GOAL SETTING

Make intentional choices to renew, refurbish and re-upholster — start with 20 percent re-upholstery on moves and restacks, and 80 percent for cyclical refreshes. Raise renewable furniture as a solution and resource for reaching a company's sustainability goals. Reach out to the company's sustainability managers to establish goals and measure outcome. Share those numbers and apply them to corporate sustainability goals. Delivering news about vastly reducing its carbon footprint will be considered heroic.





## PLANNING/SCHEDULING

Managing the full life cycle of a furniture portfolio requires long-term planning and preparation. Planning for the end of a piece of furniture's life at the beginning will pay dividends throughout. Test fabrics for wear and cleaning protocols before an order. Match fabrics to use ... and abuse. Most commercial furniture is high-end. By scheduling and building in a re-upholstery phase, FMs can double the life of that piece and amortize its value over more than a decade. Building in regular maintenance and periodic deep cleaning will also extend furniture's lifetime.

## BUDGET

Take the long view of the cost of a piece of furniture. Do not limit the budget to purchase price. Understand all its costs — from purchase to maintenance and sanitation, to renewal and disposal. At least consider intangible values, as well as renewal and recycling of materials which have impacts on morale and company reputation.

## INVENTORY DOCUMENTATION AND TRACKING

Inventory the furniture portfolio. Establish a trackable system with bar codes or labels. Use that database to understand the performance and needs of each piece and the entire inventory. Recognize its vulnerabilities to cleaning, wear and performance. Use it to set cleaning and repair protocols. Establish renewal windows and even recognize its end-of-life timeframe — leading to donation, sale or recycling. Use information about its carbon footprint to understand its deeper value and cost — FMs can both justify and maximize those costs over the lifetime of the piece.

## COMMUNICATIONS

FMs have a great opportunity to use communications as a powerful tool to demonstrate the value of a renewable furniture commitment. Leverage allies in the sustainability department. If senior management is skeptical, demonstrate cost and time savings and showcase larger intangible values. Create a story for the sustainability annual report documenting the cost savings, time savings and diversion of materials from the waste stream. Celebrate wins with the staff. Use intranets, newsletters and bulletin boards to tell the story. Apply for sustainability grants or awards. Create a tent card to sit on the coffee table of a newly re-upholstered collaboration nook to showcase the renewable assets of the furniture in the room. Take pride in the renewable furniture commitment.

## HANDLING PRESSURES

A renewable furniture commitment may not be a popular idea with some audiences — particularly at the start, forcing FMs to defend the decision. Master the rationale. Rally allies in the company's



sustainability commitment. Use facts and measurements to defend the commitment. Quickly, even adversaries will see its value.

Making the 20 percent/80 percent commitments for re-upholstered/renewable furniture is not the easy path, but it carries many benefits. While there will always be naysayers, there will also be more allies, especially the more they understand the facts. These facts will make FMs into superheroes. **FMJ**



**Kriss Kokofer** is president and owner of Kay Chesterfield, Inc., a 100-year-old commercial re-upholstery company in Oakland California. It is a woman-owned business and a Certified B Corporation, working toward a healthier environment, stronger communities, and the creation of more high-quality jobs with dignity and purpose. Kokofer has a passion for meaningful and achievable sustainability in workplace design. She has more than 20 years of expertise in the contract furniture, architecture and design businesses. She maintains longtime involvement in IIDA and is a contributing member of the National Association of Upholsterers.


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# Back to class

How LLCs transform schools

BY PETER FRENCH



On clear mornings  
in Western Washington,  
the sunrise illuminates  
Mount Rainier's glacial peak  
with soft pinks, blues and yellows.



## CASE STUDY

In years past, students could see the mountain outside some classroom windows, but they didn't experience any of that natural light while at their desks. Instead, they sat under old flickering fluorescent lamps.

That changed when a small team of facility managers retrofitted the school's lighting fixtures with a long-term, adaptable solution. They installed LEDs with sensor-based Luminaire Level Lighting Controls (LLLC) in each fixture. The technology offers innovative settings that allows facility managers (FM) to simply walk around in the classroom with a tablet and adjust the lighting levels as needed.

Across the campus of 1,700 students and staff, people are choosing less bright lighting for something more ambient. Not only is it creating more comfortable learning environments, but it's saving energy — now and for years to come.

It's particularly been a game changer for counseling centers and special education classrooms, where students are sensitive to light. Teachers and staff can turn down brightness of the light and choose to bring in the natural daylight to create a more calming setting.

Enumclaw School District anticipates approximately 137,000 kWh in energy savings annually, reducing costs by US\$13,000 each year. Many think that for results that impressive, a complex installation process must have preceded it. But the opposite is true.

The installation was so easy that it's already expanding across two elementary and two middle schools in the district. Let's take a few steps back to how the team determined that LLLC was the right fit for

Enumclaw High School, how instrumental partnerships played a part and how this is sustainably equipping schools.

### STUDYING UP

The FM team at Enumclaw School District is small but mighty. These skilled custodians and facility technicians clean, maintain and repair facilities throughout district to support education by providing a clean, safe and comfortable learning environment.

Despite many aging buildings, the team maintains a very high standard for the general appearance and condition of their buildings.

So, when a retrofit came along as part of a three-year, large construction project at the high school that sought modern design and greater energy efficiency, the FM team hit the books to achieve the same aesthetic and lighting performance in all buildings.

Lighting needs varied from administrative offices to science labs, and they wanted a system that was customizable with the modernized campus. Many schools go with T-LEDs because of the affordable cost. But T-LEDs are not designed for most existing light fixtures. The output results in low quality and reflective lighting. Also, it oftentimes creates more reflection from above than the fluorescent bulbs. The FMs knew they needed a retrofit that was designed to pump light to the floor in a better way.

Additionally, reduced wattage fluorescent lamps (25 watt) weren't working with existing ballasts, so they needed to pursue a better option.

The FM team started learning about LLLC — a type of networked lighting control systems, utilizing networkable, individually addressable sensors that are factory-integrated into each luminaire.

LLLC describes lighting systems in which each LED fixture can independently modulate light intensity, apparent color, and sometimes even spectral distribution, often through on-board controllers and sensor packages. This typically includes a single multitype sensor for occupancy and daylight harvesting, with some also including air temperature sensors. These systems enable high-resolution, responsive lighting control and facilitate nuanced automated approaches. LLLC systems are typically deployed in commercial settings. Because each fixture is capable of sensing and responding to ambient conditions, LLLC systems provide light only where it is needed, saving significant amounts of energy while maintaining high levels of occupant comfort.

The technology was also a competitive choice for existing fixtures. A recent study was conducted comparing LLLC one-for-one retrofits to a full lighting redesign approach. The findings showed that LLLC 1:1 retrofits provided similar energy and light quality performance at roughly one-third of the cost of a full lighting retrofit.

Also, as opposed to piecing together separate lighting and control system parts as in historical practice, components used in LLLC are typically mated by the manufacturer with partner devices — drivers, sensors and switches — for operational compatibility.



## THE BIG TEST

The FM team’s interest in LLLC piqued at the intersection of savings potentials and local utility incentives. When they learned about the easy installation, no maintenance costs and flexibility in space utilization — it was time to put the system capabilities to the test.

The school district worked with Washington’s Pacific Lamp & Supply Company to install a sample of several fixtures with LLLCs in an old mid-century building with unused kindergarten classrooms. This relationship was instrumental to finding the right fixture. According to Pacific Lamp’s Paul Rasmussen, lighting expert and account manager for the school district project, it’s critical to have the right lighting fixture in order to deliver maximum benefits

“You can usually tell with just five or six fixtures if you don’t like something,” Rasmussen said. “Rather than finding out down the road after you’ve installed 500+ fixtures.”

Together, Pacific Lamp and the FM team conducted tests over a six-month period. The FMs experimented with the fixtures. Also, school leaders and staff used the system during the trial period.

They immediately discovered an unanticipated benefit: flexibility. The color temperature was a lot nicer than with the fluorescent, and it lacked high frequency flickering.

Everyone had nothing but positive feedback.

The result? An out-of-the-box product with wireless programming capabilities and 4000K LED bulbs.

## CLASS IN SESSION

To get LLLC in the classrooms, the costs needed to fit in the US\$68 million renovation budget, which was already spread thin over many priorities. So, the School District and Pacific Lamp applied for an energy efficiency grant of \$35,800 through their local utility, Puget Sound Energy. Since the technology met certain requirements — like

lights automatically turning off if rooms are unoccupied, among other things — then they were eligible for the grant. After factoring in the Puget Sound Energy grant, they would be able to pay back the installation cost after four years.

Hundreds of fixtures were ordered.

When the boxes arrived, the in-house team rolled up their sleeves. Installing the retrofit kit was a no brainer.

The LLLC-enable fixtures simply connected to existing power leads. No control wiring involved. Just a simple wireless configuration setup. The team could easily walk away from one classroom and onto the next.

One person stripped the old fixtures and installed the new retrofit, while the others handled packaging and disposal of old troffers. It’s the latter — recycling the cardboard from boxes and getting rid of the old fixture parts — that was the most time-consuming part of the installation.

Once the lights were first powered up, the team discovered the light was too bright. By placing a light meter on the desks, they







dimmed the fixtures to about 70 percent of their output and maintained good light intensity at the desk with 50 lumens. It was the biggest surprise of post-installation because the team anticipated having them at full bright. Not only did this save energy, but it also prevented over lighting the space for the occupants.

LLC speed up installation dramatically. Fewer components shortened construction schedules and reduced errors during configuration. They completed the retrofit in three weeks

Since the installation, the team hasn't had to manually switch off anything or monitor a central control. The lights just do their job as they were programmed, while also giving maximum control granularity to the people in the classroom. Additionally, it offers the FMs an easily reconfigurable backbone for future expansion.

## LESSONS LEARNED

Updating lighting systems in schools is usually a once-in-a-decade decision, and that's



why Enumclaw School District invested in the most valuable long-term solution. Many of the lighting control systems out there are overly complex and poorly supported.

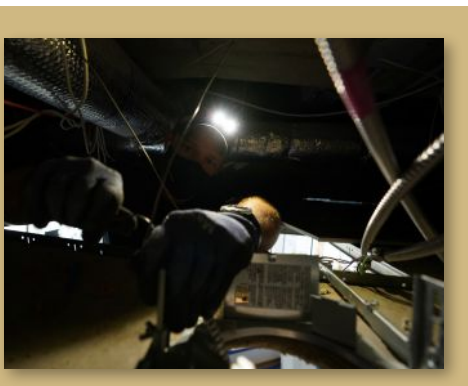
For the Enumclaw School District, the LLC system is intuitive, but there are the three big takeaways for any FM considering an LLC system.

- See how the product works in person, try out different fixtures and install a sample.
- Contact your local utility now to learn about incentives to offset fixture costs.
- Make sure the FM team has local support when choosing a more complex system.

Since implementing LLC at the high school — as well as six additional facilities in the district — the FM team has seen over 500,000 KWH of savings. They've had no maintenance costs or failures since the installation.

One of the largest benefits of LLC — of course — is the energy savings. It also meets the challenge of different needs between hallways, classrooms, libraries, gyms, auditoriums, and more importantly, the people who use them. People in our schools experience improved lighting quality while adjusting lighting levels to fit their classroom, and that is invaluable. **FMJ**

**Peter French** has worked in facility management for more than 10 years. He is responsible for safe and efficient operation and maintenance of the Enumclaw School District's sites. He also oversees construction projects, and often specifies, purchases and installs new equipment.







# Sustainable Upgrades

Leveraging Big Data for success

BY DAN ARANT



## With health and safety concerns leading the infrastructure charge in 2021 and beyond, facility managers are facing new challenges regarding capital planning and updating infrastructure assets. An anticipated increase in energy usage — stemming from concerns over outdated ventilation and HVAC systems — has made it especially vital that FM's address these urgent infrastructure needs from a sustainability perspective.

With existing, aging infrastructure and constrained budgets already impacting economic development, health, and safety for the public, FM's must be more strategic about how they are approaching these upgrades, from balancing short-term needs with long-term investments to effectively communicating these decisions with stakeholders. The infrastructure built today must have safer occupants and lower emissions in mind.

But there is good news. FM's are figuring out how to meet these challenges head-on and regain control with a modern, data-driven approach. Those in charge of the infrastructure of the future are increasingly realizing the need to diagnose the underlying challenges at hand by looking at the data sets available before funding a quick-fix solution. By implementing strategic asset management, guardians of assets can stretch the dollar further, and more importantly, efficiently manage all infrastructure and sustainability needs. Leveraging Big Data will ultimately save time, money and stress when it comes to asset repairs down the line.

In 2020, FM's saved millions on electric, natural gas and water costs by being able to quickly and strategically shut down their facilities. However, industry data also shows that, though energy was saved broadly due to lower consumption as facilities sat empty or underutilized during the pandemic, there was much left on the table by managers who were unprepared for the abrupt exit.

An external survey conducted by Johnson Controls revealed that only 10 percent of participants saw a savings increase of 20 percent or higher from reduced occupancy alone. Experts now realize that more insightful use of data and better preparation can promise facilities much more advanced energy savings and sustainability before, during, and following the next big crisis.

There are a few pertinent examples of facilities within the education sector that saw success with this method well before COVID-19 hit in the U.S., including the largest public school district in Iowa, and another in Kentucky. Since 2008, Des Moines (Iowa) Public Schools saved more than US\$20.2 million and prevented 40,600 metric tons of CO<sub>2</sub> emissions by keeping a close eye on their data to manage energy usage. Similarly, Kenton County (Kentucky) School

District has over US\$17 million in avoided energy costs since 2005 and almost US\$2 million in avoided energy costs in 2020 alone.

There has always been a clear relationship between consistent data collection and savings, but COVID-19 further emphasized this trend. Making public facilities more energy efficient promises to lower emissions, create jobs, and greatly extend the life of building assets. With much-needed repairs to aging ventilation and HVAC systems on the horizon, these savings will prove invaluable. There will be a greater emphasis placed on building occupant health, which could impact policies around ventilation and water requirements, resulting in more use and higher cost for utilities. This will lead to questions like, how is this going to affect utility spending and impact the long-term life of assets? These health design issues will be an infrastructure investment priority for all facilities in 2021 and beyond, and those in the industry will need to account for this in their maintenance and capital plans.

How can FM's start making infrastructure more resilient to structural threats and ensuring greater occupant health, all while keeping costs and emissions low? The answer here is strategic energy management. Just like pouring a solid foundation for a facility is a must, the consistent tracking of utility data is what any realistic energy management plan must be built on, because without a plan of action for the next global emergency, professionals are at risk of wasting the savings and learnings stemming from it.

The first step will be to align organizational goals and look to those goals to help prioritize the next steps in the creation of an energy management plan. For starters, begin evaluating and tracking:

- Infrastructure (facilities/sites, accounts and meters)
- Major utility services (electric, gas, water)
- Utility billing data (consumption, demand, cost, billing days, rates)
- Advanced meter data (15, 30, 60-minute interval data)
- KPI data (weather, occupancy, square foot/meter, production values, school days, etc.)

## What should your community prioritize?

GEN Z

**47%**  
sustainability

BABY BOOMERS

**59%**  
cost-effective  
infrastructure upgrades

Simply put, start tracking data. The world cannot credibly operate without it. Start with critical infrastructure first, and ask the following questions:

- What are the raw facts of the organization's utility consumption today?
- At what facility or site is the organization pending and/or using the most utility resources?
- What utility services cost the organization the most to use?
- What is normal?

Arguably the simplest step conceptually, the planning and execution phase puts action to the energy management strategy. FMs are implementing stakeholder communication methods, coordinating contractors and project timelines, and ensuring occupant comfort is maintained and interruption is minimized. In this phase, it is important to take note of low-hanging fruit in addition to some of those large, eye-grabbing capital projects. Planning for, and executing on, things like consistent preventive maintenance schedules are some of the best energy conservation measures FMs can implement.

In the next phase, it is important to prepare for measurement and verification of the project. If applicable, consider if sub-metering infrastructure was included during the retrofit planning. Has billing data been collected (and is there a process in place for its continual collection) to report on impact? Often, the post-measurement of a project is neglected, or delegated to the contractor at best. It is important to ensure an organization has an industry standard, third-party process for measurement and verification documented and prepared before project completion.

Work to establish, or revisit, the organization's energy, conservation and sustainability goals. Make simple, achievable goals for year one — goals that you're the organization will hit barring complete disregard for big conservation efforts. Energy management requires buy-in and commitment from building occupants and stakeholders and achieving early wins for the organization is one of the best ways to build long-term momentum. Ask questions like, did the project

meet guaranteed savings? Did the savings from that project overperform? Whatever the outcome, calculating and reporting these findings to stakeholders effectively will be key.


Without setting clearly defined goals, and aligning priorities to those goals, organizations tend to prioritize based on public image, impact, or pure cost-savings. Of note, a recent study found there still exists a clear generational divide around what to prioritize in 2021 and beyond, with younger Americans (47 percent of Gen Z) wanting their communities to continue prioritizing sustainability and older Americans (59 percent of Baby Boomers) wanting to prioritize cost-effective infrastructure upgrades. As this debate comes to a head, it is important that energy and facility managers realize their influence in communicating this balance is not an all-or-nothing issue and that cost-effective and sustainable infrastructure upgrades can and should go hand-in-hand.

While most FMs have access to data that can illuminate the savings available via energy management, many still have a long way to go in effectively leveraging it. Without data as the foundation of any modernization initiative, future upgrades are not set up to succeed in our current climate. Without increased education and communication around the many benefits provided by sustainability efforts — from decreased costs to safer occupants — FMs continue to run into the same, avoidable challenges. **FMJ**



**Dan Arant** is a solutions consultant manager of energy at Dude Solutions. Arant joined Dude Solutions in 2013 and is a Certified Energy Manager through both the Association of Energy Engineers and the Institute of Energy Professionals. He graduated with a bachelor's in science from the University of North Alabama in 2010. Arant is passionate about empowering the public and private sectors to reduce utility waste in their facilities and operations.





# What's the Link?

## Sustainability, FM & digital twins

BY ELIZABETH KOZMAN, TOBEY WOOD  
KENDALL PAIX & CAMILLA NEWMAN

Sustainability has become a global priority. As temperatures rise and cases of extreme weather become more frequent, there is a growing urgency for carbon neutrality and sustainability.

Countries in the Organization for Economic Co-operation and Development (OECD), and groupings such as the G20 and European Union (EU) aim to be climate neutral by 2050. Countries such as Germany, France, and the U.K. have already made net-zero pledges legally binding, and according to the United Nations, over 110 countries, including the U.S., Japan, and the Republic of Korea, are pledging zero carbon emissions by 2050, with China aiming for 2060.

Large multinational and blue chip companies are following suit. For example, Microsoft has been carbon neutral since 2012 and plans to be carbon negative by 2030. They are not alone, Apple has pledged neutrality by 2030, Amazon by 2040, and even BP by 2050. As more organizations make similar pledges, the need for corporate transparency and Environmental, Social and Governance (ESG) reporting becomes increasingly necessary.

The world is embracing the concept of sustainability, and the pressure to lower emissions is only going to increase. Industries like commercial real estate are heeding the call, and the role of facility manager is continuing to evolve to serve the changing requirements of the industry.

### Regulations are driving the need for sustainability

When it comes to lowering emissions, the media focuses on issues such as the number of cars or coal plants. But numerous studies and reports have shown building and construction are responsible for almost 40 percent of all global carbon emissions. Only 11 percent of that is the construction process, with the remainder being operational emissions like heating, cooling, lighting and maintenance.

Newly constructed buildings tend to be more efficient, but most structures that will be around in 2050 already exist. Western European countries estimate 80 percent of buildings 30 years from now have already been built. Consequently, the priority must be increasing efficiency and decarbonizing existing stock.

For example, in the EU, more than 35 percent of buildings are more than 50 years old, and around 75 percent are considered energy inefficient. To overhaul 220 million structures by 2050, the EU has established a social climate fund worth €70 billion.

In the U.S., various states and cities are driving their own initiatives and regulatory frameworks to decrease emissions. For example, in New York City, buildings with more than 25,000 square feet — of which there are around 50,000 — must cut emissions by 40 percent by 2030 and 80 percent by 2050. Washington D.C. has created an energy intensity standard, applied to both public and private buildings more than a certain size.

As demands for sustainability and social responsibility grow stronger, more companies are providing ESG analysis. The increased transparency provided by the reports helps assess the impact an organization may be having on the environment and provides value for long-term stakeholders. ESG reporting is mostly voluntary, but increasing numbers are seeing the benefits. In 2020, 90 percent of companies in the S&P published annual corporate sustainability/ESG reports.

Similar regulations and reporting structures are being employed worldwide. Whilst both governments and consumers alike are pushing for better sustainability practices and transparency in reporting, the undertaking of this journey is not straightforward. Organizations and key stakeholders (such as FMs) must be able to understand their assets' performance and have accurate and timely reporting structures in place.

### Challenges for Facility Managers:

Due to technological advances, the rise of smart buildings, and the demand for increased sustainability and efficiency practices, one role that is undergoing a significant transformation is that of the FM.

There is a massive shift in workplace expectations as a result of the ongoing global pandemic and growing adoption of sustainability regulation worldwide. This creates a massive opportunity for FMs to emerge as leaders and influencers across the industry."

One major challenge FMs face is having a single source of truth of their buildings systems/data to understand performance. Traditionally, IoT devices (such as sensors, cameras etc.) that have been incorporated into the infrastructure of commercial buildings



for decades have been popular with building owners as they drive efficiency and consequently decrease costs. As most of these costs come from heating, cooling lighting, or maintenance, they are also closely tied to sustainability and are crucial in meeting regulatory targets.

However, the challenge is that a lot of these IoT devices, and their accompanying systems and components, are proprietary software packages. They are frequently provided and maintained by vendors who purposefully exclude external parties from accessing data to protect maintenance contracts.

Having multiple vendors and proprietary systems makes facilities and operations management increasingly problematic as things scale up. The data, differing software languages and schematics can result in siloed information and a massive headache to organize and assess. Connecting, controlling, and monitoring assets and systems is challenging, and it grows increasingly difficult to aggregate data to obtain a bigger picture.

Another major issue is that some systems still rely on static methods such as paper files or PDFs rather than real-time data. Sometimes this information is inaccessible or out of date. It is not just about sustainability — for safety reasons, FMs and engineers must possess a complete and accurate understanding of fire systems, plumbing, air quality, energy use and maintenance levels.

Similarly, sometimes problems can be difficult to understand or access from afar, leading to further inefficiencies and waste as a site visit may be required. Issues within buildings are often dealt with reactively and having FM staff fixing problems instead of proactively preventing them is hugely wasteful.

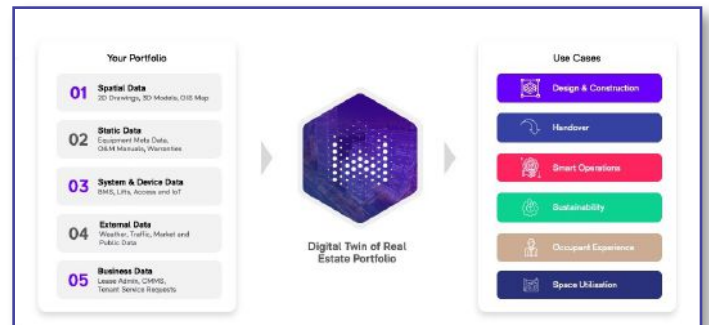
One emerging technology that has recently seen a surge in popularity is implementing a digital twin to help owners and operators gain a real-time understanding of asset performance, assist with forecasting and reporting and use data to drive decision making.

## What is a digital twin?

A digital twin is a virtual real-time representation of a physical object. They can be used in various ways, but when applied to real estate, it allows for a digital 3D model that encompasses all aspects of a structure and its data in one place.

The digital twin adds an extra dimension to traditional 3D Building Information Modelling (BIM) functionality. Early digital twins were primarily applied to BIM models but over the last couple of decades, thanks to technologies like IoT devices, buildings have linked systems and monitoring capabilities. As they became more connected, the benefits were soon realized in operations. Now, numerous devices can link to a central interface where all aspects and processes of a building can be monitored and analyzed.

Digital twins are an intuitive way to store, organize and access the huge amount of static information and data generated by buildings that can be harnessed and applied to several high-value use cases. (refer to Figure 2).



## Using digital twins to help improve sustainability practices

By combining disparate data sets into a single source of truth, digital twins are proving to be a powerful tool for FMs, which is continuing to evolve into a multi-channel position, incorporating aspects such as IT and HR. It is estimated that implementing IoT devices and digital twins can lead to a 20 percent reduction in energy and maintenance costs. Digital twins can help improve sustainability practices by:

### 1. Combining data into one source of truth to understand performance

A well-implemented digital twin with a unifying software language can bring together all the disparate information silos to a single point of access. This provides a level of oversight that was not possible before, allowing operators and managers to analyze every aspect of a structure and its systems (including BIM models, asset registers, IoT devices, occupancy data, etc.). Digital twins provide a clear view of the asset's performance in real time, that can help cut down time spent on problem analysis, and makes system management more straightforward. Not only are all a building's assets monitored live, related data and records are immediately at hand, minimizing potential downtime.

### 2. Improving maintenance practices

Spotting issues quickly and fixing them improves efficiency but a digital twin also allows for improved predictive maintenance. For example, automated warnings can inform when an asset is due for servicing or if it has started to behave problematically. The software can also learn to recognize when an asset is becoming worn down and flag the issue. This often cuts down the need for FM staff to travel to problem spots, identify the issue, and then source the required equipment, as they will be better informed and prepared in advance. Over a year, in a large structure like a sports stadium or skyscraper, this can substantially cut emissions and costs.

### 3. Optimizing energy usage based on Occupancy data

FMs can help reduce energy usage (and subsequently costs) by understanding the data within their asset. For example, a smart building filled with sensors and monitors can learn the behavioral patterns of its occupants. This will allow for vastly more efficient

energy use as the insights result in more accurate adjustments to things like lighting, water management and heating preferences. This is significant when increasingly stringent sustainability targets need to be met, and emissions must be cut. Further efficiencies are achieved by the automation of mundane routine tasks and demand-driven operations.

#### 4. Supporting sustainability reporting

Digital twins provide a single source of truth for reporting energy consumption across assets within a building and across portfolios; a single data model for sustainability KPIs, and the ability to normalize and aggregate all energy consumption and emissions data sources. The sustainability reporting made possible by the twin goes beyond utilities and energy consumption. It can also be tied in with strategies for renewable energy or micro-grid capability, waste management, recycling targets and other efficiency strategies.

#### 5. Understanding asset performance at scale

In addition to monitoring a single asset, a digital twin allows for improved efficiency across a range of operations and assets. For example, by having digital twins of a building portfolio, owners can understand and benchmark performance such as energy consumption across several assets and understand trends in order to improve underperforming assets.

What is becoming clear is that the FM role is no longer about operations, data and performance of equipment, but instead becoming increasingly more dynamic. By harnessing tools such as digital twins, FMs can act as a conduit between utilization, tenant satisfaction and building performance. This relationship can turn cost centers into profit centers via a more efficient and productive employee experience or generating higher net operating income for building owners via higher tenant retention, lower operating costs, and beyond.

The global drive for more sustainable environments and infrastructure cannot be ignored. However, advances in technology like

IoT devices and digital twins are making regulatory targets more achievable. The traditional role of FM is evolving and becoming integrated with IT as changes and demands of the modern world elevate the importance and responsibilities of the position. Digital twins and related technologies are invaluable tools in helping to meet and overcome these challenges. **FMJ**



**Elizabeth Kozman** is director of product strategy at Willow Technologies. Kozman has nearly 20 years of experience in corporate and product strategy roles with high growth technology companies, with a focus on industrial IoT. Her education background includes bachelor of science in Mechanical Engineering from Rose-Hulman Institute of Technology and MBA from Harvard Business School.



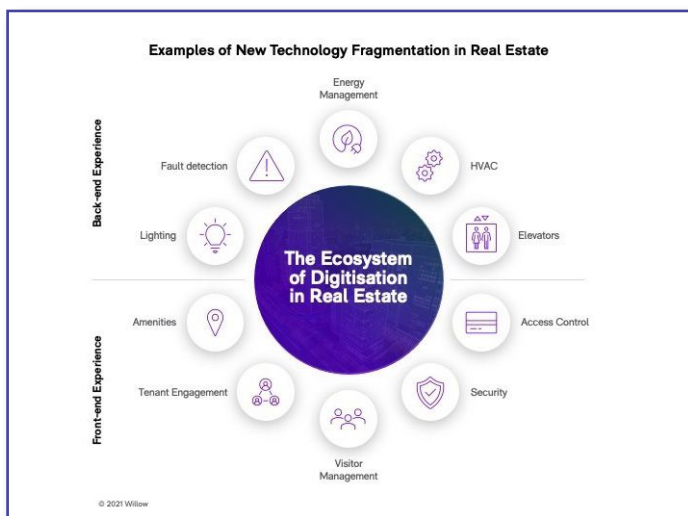
**Tobey Wood** started his career at Goldman Sachs, and has spent the last 10 years working with C-Suite executives across Fortune 500 companies, helping them navigate the market and advising them on their investment and innovation strategies. Wood has extensive transaction and capital markets experience that spans, early-stage venture companies all the way through IPO, and has worked with some of the world's largest institutional investors.



**Kendall Paix** has more than 25 years in software, hardware and product development specifically for the built world. Starting his career at Honeywell from commissioning building and energy management systems through to serving as chief technology officer for Honeywell Building Management Systems worldwide, he has extensive knowledge of the breadth and diversity of technology and systems used today for smart and intelligent buildings. With Willow, Paix is focused on high impact outcomes for owners and operators.



**Camilla Newman** is a marketing technologist, who is passionate about communicating the possibilities and value of technology products. Having started her career in brand management and then in management consulting at Deloitte, she has several years' experience helping major organisations along their digital transformation journeys, from strategy and inception through to delivery. She is particularly passionate about her role at Willow where she gets to combine her passion for technology products with marketing.





READ NOW



2021





# IFMA WORLD WORKPLACE

OCTOBER 26 - 28, 2021

GAYLORD PALMS RESORT | KISSIMMEE, FLORIDA | USA

## IFMA's World Workplace 2021 hybrid event reflects FM industry's focus on seamlessly bridging in-person and remote work

Following last year's first-ever virtual World Workplace experience, IFMA pledged to bring its annual conference and expo back as a live event in 2021 — as long as it was safe to do so. As COVID-19 vaccines became more widely available, IFMA solidified plans to reunite the built environment community in Kissimmee, Florida, USA.



"As an organization built on and sustained by an active, collaborative community, we need these opportunities to come together," said IFMA President and CEO Don Gilpin. "While proving that we can be just as productive and engaged at home, we've also missed out on things that are meaningful to us as colleagues and friends – a pat on the back, a shake of the hand, a hug, a smile.

Sometimes, to see eye-to-eye, we need to be face-to-face."

Appreciating that not everyone could make the trip, IFMA produced a hybrid event, offering virtual registration that included livestreamed sessions, the Experts' Assessment panel discussion, a 360° virtual facility tour and live regional discussion groups.



## A year of resilience and growth



IFMA's annual House of Delegates is an opportunity for volunteer leaders to hear from the global board of directors' Executive Committee on the state of the association. In conjunction with the Oct. 25 meeting, IFMA released its 2021 Annual Review, reporting on activities from the 2021-22 fiscal year. Read the review at [bit.ly/IFMAFY21](https://bit.ly/IFMAFY21).

*"We have emerged from a time of crisis stronger, more focused and more adaptive. I believe these virtues will help us further grow the association, providing even more leadership and resources as our profession enters a new and exciting next stage."*

– IFMA Board Chair Peter Ankerstjerne, MBA, COP, IFMA Fellow, Message From the Chair, 2021 Annual Review





## Creating a safe, comfortable space



Updating its health and safety protocols to reflect the latest recommendations for large gatherings, IFMA also worked with state and local health officials, as well as the Gaylord Palms Resort and Convention Center event venue, to ensure a safe and comfortable environment.

All World Workplace participants were asked to show proof of full vaccination or a negative PCR test within 72 hours of arriving at the event using the CLEAR mobile app pre-screening process. Attendees were required to complete a health survey on the app each morning before gaining admission to the event. Face-coverings/masks were required in all indoor public spaces; and color-coded wristbands were available for attendees to indicate their physical contact comfort level: red/no contact, yellow/open to elbow-bumps, green/open to handshakes, high-fives.



## At the forefront of a reimagined workplace

Officially opening the conference on the morning of Oct. 26, IFMA Chair Peter Ankerstjerne shared that he was cleared by the U.S. Embassy in Copenhagen to travel from Denmark to the U.S. just 10 days before the conference.

“Many of us were in doubt if we should or could attend; but this year’s hybrid World Workplace is a reflection of the ongoing return-to-occupancy plans and roll-outs we’re all managing right now,” said Ankerstjerne. “We are on the verge of a work revolution. Hybrid models are a part of our new reality — it heralds a complete rethink of the way we work, and how to provide a new purpose for the workplace that goes beyond productivity. Innovative businesses will reinvent themselves, following in the paths of sustainability, digitalization and workplace experience.”



Following a special presentation on Osceola County’s efforts toward building a sustainable future by District One Commissioner Peggy Choudhry, 1990-91 Chair of IFMA’s Board of Directors Christine (Neldon) Tobin introduced the 2021 Class of IFMA Fellows (see page 010). Then opening keynote speaker Simon T. Bailey, former sales director for the Disney Institute, took the stage to speak on “Leading With Spark.”



*“How are you creating the conditions for individuals to bring their best selves to work?”*

– Simon T. Bailey





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“As we move into another year, the number-one concern and focus of the C-suite is the human experience,” said Bailey. “Seven out of 10 employees in the workplace are stressed out and suffering. Leaders need to provide an environment that is psychologically safe. The job of a leader is not to care about the results, but to care about the people who care about the results.”

Day one breakout sessions available to both on-site and virtual attendees included presentations and discussions on how PropTech impacts CRE/FM, building better workplaces post-pandemic, how to make a business case for a facilities master plan, designing workplaces for well-being, smart buildings, the hybrid workplace and more.

Held Tuesday night in the Gaylord Palms’ St. Augustine atrium — featuring a replica of the famously haunted Castillo de San Marcos fort — the “Spookeasy” Halloween welcome reception brought attendees together for spirits of the distilled variety and encounters both genial and ghostly. Attendees were decked out in costumes ranging from HazMat and Homeland Security to Minnie Mouse and Sasquatch.



## Innovative solutions for a new world of work



On Wednesday, Oct. 27, the Expo Grand Opening commenced with a special ribbon-cutting in honor of CORT’s 30-year anniversary as a World Workplace exhibitor.

“It’s been two years since we last gathered in person; so, exhibitors were eager to share information with those responsible for sourcing products and services to manage new normals,” said IFMA Director, Expo and Advertising T.J. Mendieta, CEM. “Our exhibitors are in the business of solving facility professionals’ biggest setbacks. No current industry challenge is bigger than adapting to a new world of work.”

Attendees had a chance to win prizes both Wednesday and Thursday playing the new touchless Expo Scavenger Hunt via mobile app. They could also take advantage of free professional headshots and share video testimonials at the Gather Voices kiosk at the IFMA Central booth.

As the gold standard in FM education, World Workplace provides learning opportunities around every corner — that includes the expo hall. Featuring presentations by exhibiting companies, Education Arenas provided solutions to workplace challenges such as planning for today’s unknowns, tips for heightening efficiencies like improving IAQ, and tech how-to’s for system integration, automation and hybrid transformation.





## Sustainability takes center stage

On the last day of the conference, First Vice Chair of IFMA’s Board Laurie A. Gilmer, P.E., CFM, FMP, SFP, LEED AP welcomed attendees to the plenary session, featuring Dr. Joseph G. Allen, Associate Professor of the Harvard T.H. Chan School of Public Health and co-author of “Healthy Buildings: How Indoor Spaces Drive Performance and Productivity.”

“The pandemic has brought a number of lingering issues to the forefront, requiring a rapid shift, and in some cases a complete reversal, of organizational priorities,” said Gilmer. “Mitigating the circulation and inhalation of pollutants, toxins, allergens and pathogens such as the SARS CoV-2 virus is an urgent and potentially life-saving undertaking. Workplace wellness is no longer a brand-building or employee-recruitment tactic; it is a fundamental strategy for safeguarding lives and the business itself.”



*“The people who manage our buildings have more impact on our health and well-being than our doctor.”* — Dr. Joseph G. Allen

After attendees enjoyed their final hours in the expo hall, they gathered to celebrate colleagues honored with the 2021 Awards of Excellence. Ankerstjerne closed the ceremony by announcing the location of next year’s World Workplace: Nashville, Tennessee, USA, to be held Sept. 28-30, 2022.

Second Vice Chair of IFMA’s Board Dean Stanberry, CFM, LEED-AP O+M took the stage to introduce closing keynote speaker Robert Glennon, a preeminent expert on water policy and law, the recipient of two National Science Foundation grants, and an advisor to governments, corporations and think tanks looking to solve serious challenges around water sustainability and planning.

“The facilities we manage consume significant resources; however, mindsets around eco-friendly initiatives have shifted dramatically in Earth’s favor,” said Stanberry. “Sustainable practices have become hardwired into daily FM operations and strategies. Many of you are already taking actions to reduce water consumption. But



much like our efforts to increase energy efficiency and reduce our carbon footprint, innovation, new technologies and legislation will be required to successfully achieve necessary goals.”

Glennon shared that individuals’ contribution to water conservation can be as easy as turning off the lights, using LEDs and turning off the garbage disposal.

“Climate change is having disastrous effects on the quality and quantity of our water — 1.1 billion people lack access to safe water, and 2.6 billion people lack adequate sanitation,” said Glennon. “What we need now is the moral courage and the political will to act.”





# IFMA WORLD WORKPLACE

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## 2021 Awards of Excellence winners recognized

On Oct. 28, recipients of the 2021 Awards of Excellence were recognized in 17 categories. Past IFMA Board Chair (2009-10) Thomas L. Mitchell, Jr., CFM, IFMA Fellow emceed the award ceremony.

“Taking this opportunity to spotlight excellence in no way diminishes the enormity of our world’s ongoing struggles. In fact, it’s necessary. To be uplifted by stories of creativity and triumph, bravery and compassion, effort and enterprise is vital to reviving the human spirit,” said Mitchell. “What our industry, and our association, have seen throughout the pandemic are amazing examples of innovation,

resourcefulness, new ways of thinking and a renewed passion for ingenuity.”

Current IFMA Board Chair (2021-22) Peter Ankerstjerne, MBA, COP, IFMA Fellow congratulated recipients on stage. “Every one of our nominees set out to accomplish something worthwhile in a year fraught with challenge,” said Ankerstjerne. “They had the determination to realize an idea, reach a goal, or solve a problem for the benefit of others. Passion drove them; skill and talent rewarded them with success.”

### IFMA'S 2021 AWARDS OF EXCELLENCE

#### Distinguished Author Award: Article Carolyn McGary

*“Cultivating Next-Gen FM”*

#### Distinguished Author Award: Web-based/Social Media Wayne Whitzell

*“What FMs Need to Know About COVID-19:  
Lessons From the Front Lines in the  
War Against Coronavirus”*

#### Distinguished Author Award: Book or Instructional Materials SONARE — The Environmental Acoustics Magazine

*Sabina Moeller, Editor*



#### Council Award of Excellence for Programs and Professional Development Public Sector Council of IFMA

#### Chapter Award of Excellence in Professional Development Denver Chapter of IFMA

#### Council Award of Excellence in Communications Legal Industry Council of IFMA

#### Chapter Award of Excellence in Web Communications New York City Chapter of IFMA

#### Chapter Award of Excellence in Government Affairs Hong Kong Chapter of IFMA



#### Emerging Professional Award Neelofer Khan

*Noha Global Services Pvt. Ltd.*

#### Associate Member Award Mindy Williams-McElearney Turner & Townsend

#### Facility Management Innovation Award FM Pipeline Team — Facilithon Program

#### George Graves Award for Facility Management Achievement IBM Global Real Estate

#### The Sheila Sheridan Award for Sustainable Facility Operations and Management Ayala Property Management Corp.



#### Distinguished Educator Award Christian Pellecchia

#### Distinguished Member Award Kathryn Lopez, CFM

#### Council of the Year Legal Industry Council of IFMA



#### Chapter of the Year New York City Chapter of IFMA





## WE's Workplace Strategy and Leadership Program graduating class recognized

The first class of graduates from IFMA's Workplace Evolutionaries' (WE) Workplace Strategy and Leadership Program (WSLP) were asked to stand for a round of applause at IFMA's Awards of Excellence ceremony.

The WE Community launched the WSLP in 2019 to support the emerging discipline of workplace management, which designs and delivers an organization's unique workplace experience, aligning it to strategic drivers and business goals. As the workplace evolves, business leaders are realizing that workplace experience is a strategic asset critical to enterprise success, shaping culture, attracting and retaining talent, energizing employees to perform at higher levels and supporting healthier work environments.

Taught by workplace management pioneers Andrew Mawson and Chris Hood, as well as Arnold Levin, WSLP is the world's first workplace strategy curriculum and the first Certificate of Completion program for workplace strategy and leadership in the FM industry.

### WSLP FIRST CLASS

- ~ Cynthia Milota, FMP
- ~ Alice Hogueisson, CFM, SFP
- ~ Rebecca Rice
- ~ Kate North
- ~ Pat Turnbull, MA, LEED AP, IFMA Fellow
- ~ DeeAnna Wohlgamuth
- ~ Ellie Moody
- ~ Melodee Wagen, MCR
- ~ Laura Chovelon
- ~ Todd Bickel
- ~ Jomal McNeal
- ~ Wayne Collins, CFM, RPA, FMA

## IFMA FOUNDATION PRESENTS 2021 student scholarships, Trustees Awards and IgniteFM! competition winners

On Oct. 28, the IFMA Foundation and sponsoring organizations presented 29 scholarships to undergraduate and graduate students enrolled in FM or FM-related programs. "These scholarships change lives and are a principal strategy in creating the next generation of FM professionals," said IFMA Foundation Chair Bob Dills.

Through Accredited Degree Programs (ADPs), the Global Workforce Initiative (GWI), internships, scholarships and student competitions, the foundation creates career pathways for qualified FM professionals.

As part of IFMA's Awards of Excellence ceremony, the foundation also presented its annual Trustees' Awards to individuals and groups making a difference to students, professionals and local communities through inspired projects and programs.

### 2021 IFMA FOUNDATION TRUSTEES AWARDS

**GWI Visionary Award:** Jones Lang LaSalle for promoting diversity and supporting employment opportunities for ADP graduates, establishing the U.S. Department of Labor-approved FM Registered Apprenticeship program, and for instituting the foundation's new Center for Apprenticeships and Work-based Learning.

**GWI Distinguished Partner Award:** A non-profit organization providing workforce development programs in the food service industry to minority and immigrant women, New York's Hot Bread Kitchen partnered with the foundation to introduce an FM workforce development program in response to disproportionate job loss in this sector during the pandemic.

**GWI Distinguished Partner Award:** Setting the standard for other chapters to follow, members of IFMA's New York City Chapter stepped up to work with the foundation and Hot Bread Kitchen to embrace and mentor immigrant and minority women, helping them find gainful employment and providing IFMA membership.

**Distinguished Leadership Award:** Providing substantial support and leadership to the foundation's board, FM:Systems founder Michael Schley, IFMA Fellow led a team of 19 authors to produce "Work on the Move 3," a groundbreaking book on building better workplaces after the pandemic. He created and leads the annual IgniteFM! student competition, which is generously sponsored by FM:Systems.

Schley presented the winning IgniteFM! team with a US\$1,000 prize. The day prior, student teams worked to solve a real-world FM problem and were scored on their creativity, critical thinking, and the quality of their verbal and visual presentations. The winning **Orange Team** included Ph.D. student **Mahnaz Ensafi** of Virginia Tech; master's degree student **Priyanka Kathiresan** of Pratt Institute; bachelor's degree student **Shyann LaFay** of Ferris State; and master's degree student **Dan Nguyen** of Georgia Tech.

## Vendor Profiles

The following product and service providers offer solutions for your everyday and specialized facility management needs.

### CEILING/CEILING CARE



#### Armstrong Ceilings

Armstrong World Industries provides ceiling & wall solutions to help in the design and construction of commercial buildings and residential spaces.

 [armstrongceilings.com](http://armstrongceilings.com)

### EDUCATION/PROFESSIONAL DEVELOPMENT



#### Urban Green Council

The mission of Urban Green Council is to transform buildings for a sustainable future in New York City and around the world.

 [urbangreencouncil.org/](http://urbangreencouncil.org/)

 [@GPRO\\_UGC](https://twitter.com/GPRO_UGC)

 [linkedin.com/company/urban-green-council](https://www.linkedin.com/company/urban-green-council)



#### Vector Solutions

Making You Safer, Smarter, Better. We connect content and technology to deliver knowledge that helps our clients achieve better outcomes and safeguard lives.

 [vectorsolutions.com](http://vectorsolutions.com)

 [@VectorPerform](https://twitter.com/VectorPerform)

 [linkedin.com/company/vectorsolutions/](https://www.linkedin.com/company/vectorsolutions/)



ENERGY MANAGEMENT



Fuji Electric


Fuji Electric's UPS7400WX-T3U UPS Series utilizes expandable architecture to deliver any size unit from 225-1000kVA using 330 kVA modules, the ideal choice for data centers and other commercial applications. UPS7300WX-T3U is an innovative transformer-less UPS designed for data centers and commercial applications, utilizing our patented RB-IGBT Technology and AT-NPC 3-Level Circuit Topology to deliver up to 97.5% efficiency. UPS7000HX-T3U UPS Series includes 300, 400, and 500kVA, 480V 3-phase 3-wire transformer-less systems for critical applications such as data centers and medical facilities.

-  [americas.fujielectric.com/products/ups/](https://americas.fujielectric.com/products/ups/)
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-  [linkedin.com/company/fuji-electric-corp-of-america](https://linkedin.com/company/fuji-electric-corp-of-america)



PowerFlex

PowerFlex is a national provider of renewable energy infrastructure with a comprehensive suite of flexible, turnkey solutions designed to transform any organization into a clean-energy facility. Our scalable offerings include onsite solar, battery storage, electric vehicle charging, microgrids, and energy management systems. Whether standalone or working in concert as a bundled system, these technologies bring clean, reliable, and affordable carbon-free power when and where it is needed.

-  [powerflex.com](https://powerflex.com)
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FACILITY MANAGEMENT SERVICE PROVIDERS



ABM

ABM is a leading provider of facility solutions, including janitorial, electrical, lighting, energy solutions, facilities engineering, HVAC, mechanical, landscape, turf, mission critical solutions, and parking. Developed by experts in infectious disease and industrial hygiene, ABM's EnhancedClean™ and EnhancedFacility™ programs help foster healthier spaces. For more information, visit [www.abm.com](http://www.abm.com).

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HVAC/IAQ



Heraeus Noblelight's UV devices disinfect air, surfaces, water treatment, and industrial air emissions. Soluva UVGI disinfection devices use long-life UVC lights that produce no ozone. UV disinfection experts advise facility managers, often performing simulations to determine the most effective solution. Office buildings, schools, senior care centers and other facilities already use their proven Soluva air disinfection devices to reduce infection risk by improving indoor air quality.

-  [soluva.com](https://soluva.com)
-  [linkedin.com/company/heraeus-noblelight](https://linkedin.com/company/heraeus-noblelight)

## Vendor Profiles

### HVAC/IAQ



## Sanalife

At Sanalife, we strive to provide solutions that help improve health and wellness throughout our community. We offer solutions that protect against harmful contaminants such as mold, bacteria, and viruses in the air and surfaces, which can lead to disease and illness. Our dedicated team uses a collaborative approach to analyze the unique needs of every space. We aim to exceed our client's expectations by delivering cutting-edge air purification technologies on time and within budget.



[sanalifewellness.com](http://sanalifewellness.com)



[@livesanalife](https://twitter.com/livesanalife)



[linkedin.com/company/sanalifewellness](https://www.linkedin.com/company/sanalifewellness)



## Thermostat Recycling Corporation (TRC)

The Thermostat Recycling Corporation facilitates and manages the collection and proper disposal of mercury-containing thermostats. Originally founded in 1998 as a voluntary venture, our mission is to promote the safe collection and proper disposal of mercury-containing thermostats. Our network of collection sites consists of HVAC wholesale distributors and HVAC contractors. Our program also includes household hazardous waste collection sites and thermostat retailers.



[thermostat-recycle.org/](http://thermostat-recycle.org/)



[@tstat\\_recycle](https://twitter.com/tstat_recycle)



[linkedin.com/company/thermostat-recycling-corporation](https://www.linkedin.com/company/thermostat-recycling-corporation)

### JANITORIAL PRODUCTS/SERVICES



## NanoSeptic

NanoTouch Materials is the maker of NanoSeptic, a line of self-cleaning surfaces that cover heavily used touchpoints – from door handles to counters and elevator buttons. Our products continuously oxidize all organic materials using nanotechnology and the power of light. They are free of toxins, heavy metals or diluted poisons and work 24/7. Purposely visible, NanoSeptic products show people know where the cleaner places are to touch or rest, creating an immediate sense of safety and security.



[nanoseptic.com](http://nanoseptic.com)



[@nanoseptic](https://twitter.com/nanoseptic)



[linkedin.com/company/NanoSeptic Self-Cleaning Surfaces](https://www.linkedin.com/company/NanoSeptic Self-Cleaning Surfaces)

### MODULAR BUILDINGS/ON-SITE STORAGE



## PODS® For Business

PODS offers moving and storage solutions to meet your business needs large and small. Use our portable containers for remodeling projects, inventory management, opening new locations and more. These high-security, easy-to-access containers even fit in a single parking space.



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[linkedin.com/company/pods/](https://www.linkedin.com/company/pods/)





## Polar Leasing

Polar Leasing offers a national rental fleet of walk-in refrigeration units with operating temperatures ranging from -10 degrees Fahrenheit to +40 degrees Fahrenheit. Units are constructed of seamless fiberglass, ensuring a sanitary storage environment. Shipped from more than 75 US locations, units are available for short and long term applications.

Units are more logically sized in 8'x10' and 8'x20' models and arrive on a tilt bed truck for quick and easy delivery.

 [polarleasing.com](http://polarleasing.com)

 [@Polar\\_Leasing](https://twitter.com/Polar_Leasing)

 [linkedin.com/company/polar-leasing](https://linkedin.com/company/polar-leasing)

## SECURITY



## Iron Aegis LLC

Physical and cyber security solutions.

 [ironaegis.com](http://ironaegis.com)



films + graphics

## NGS Films and Graphics

NGS Films and Graphics is the nationwide leader in window films, graphics and signage for commercial, government, medical, retail, transit & hospitality buildings.

 [filmsandgraphics.com](http://filmsandgraphics.com)

 [@films\\_graphics](https://twitter.com/films_graphics)

 [linkedin.com/company/national-glazing-solutions/](https://linkedin.com/company/national-glazing-solutions/)

## SOFTWARE SOLUTIONS



The best Way

## Greenplan GmbH

Greenplan — a 100% subsidiary of Deutsche Post DHL Group — offers an algorithm for cost efficient tour planning and smart logistics in the B2B-sector. With Greenplan customers benefit from more sustainable shipment and service tours. The algorithm was developed together with the University of Bonn. Greenplan is winner of the PostEurop Innovation Award 2020 and Champion Project at WSIS Prizes 2021.

 [greenplan.de/en-us](http://greenplan.de/en-us)

 [linkedin.com/company/greenplan/](https://linkedin.com/company/greenplan/)

## WATER MANAGEMENT SERVICES



## WaterSignal.com

WaterSignal's intelligent, non-invasive device accurately measures water usage and reports the data in real time to a secure dashboard. While dramatically reducing water costs and footprint, WaterSignal saves valuable time and provides unique insight on our most precious resource, water.

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