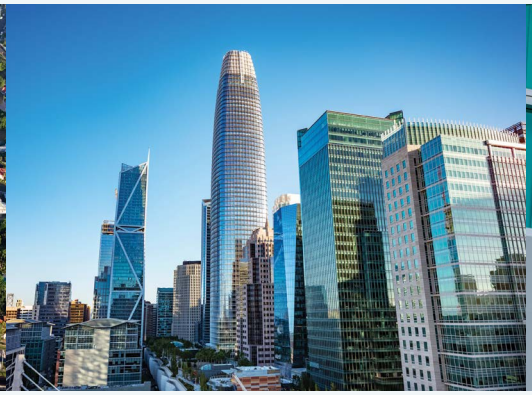




ULI Sustainability Outlook

2021


Urban Land Institute

Report Team

Project Staff

Trish Riggs
Keadle-Riggs Communications LLC

Marta Schantz
Senior Vice President
ULI Greenprint Center for Building Performance

James A. Mulligan
Senior Editor

David James Rose
Manuscript Editor

Brandon Weil
Art Director

Member Contributors

Julie Hiromoto
Principal and Director of Integration
HKS

Jocelyn Hittle
Assistant Vice Chancellor
Colorado State University System

Ken Hubbard
Senior Managing Director
Hines-U.S.

Caroline Johns
Director of Development
Pembroke

Rob Rydel
Principal
OZ Architecture

Judi Schweitzer
Founder
Schweitzer + Associates Inc.

Rives Taylor
Principal
Gensler

Owen D. Thomas
Chief Executive Officer
Boston Properties

Peter Tomai
Chief Investment Officer
Specific Performance Inc.

2001 L Street, NW | Suite 200 | Washington, DC 20036-4948

About the Urban Land Institute

The Urban Land Institute is a global, member-driven organization comprising more than 45,000 real estate and urban development professionals dedicated to advancing the Institute's mission of providing leadership in the responsible use of land and in creating and sustaining thriving communities worldwide.

ULI's interdisciplinary membership represents all aspects of the industry, including developers, property owners, investors, architects, urban planners, public officials, real estate brokers, appraisers, attorneys, engineers, financiers, and academics. Established in 1936, the Institute has a presence in the Americas, Europe, and Asia Pacific regions, with members in 81 countries.

The extraordinary impact that ULI makes on land use decision-making is based on its members sharing expertise on a variety of factors affecting the built environment, including urbanization, demographic and population changes, new economic drivers, technology advancements, and environmental concerns.

Peer-to-peer learning is achieved through the knowledge shared by members at thousands of convenings each year that reinforce ULI's position as a global authority on land use and real estate. In 2020, more than 2,600 events were held in cities around the world.

Drawing on the work of its members, the Institute recognizes and shares best practices in urban design and development for the benefit of communities around the globe.

More information is available at uli.org. Follow ULI on Twitter, Facebook, LinkedIn, and Instagram.

About the ULI Greenprint Center for Building Performance

The ULI Greenprint Center for Building Performance is a worldwide alliance of leading real estate owners, investors, and strategic partners committed to improving the environmental performance of the global real estate industry. Through measurement, benchmarking, knowledge sharing, and implementation of best practices, Greenprint and its members strive to reduce greenhouse gas emissions 50 percent by 2030 and achieve net-zero carbon operations by 2050.

About the ULI Sustainable Development Council

The Sustainable Development Council (SDC) aims to accelerate the adoption and implementation of sustainability, resilience, and health across the real estate industry. The council provides a forum for the exchange of emerging best practices including planning, financing, entitlements, design, construction, and operational aspects of projects that advance triple-bottom-line benefits while fostering more sustainable built environments.

Contents

Introduction from ULI Global Chair Owen D. Thomas

I am pleased to present the *ULI Greenprint Sustainability Outlook 2021*, the Institute's first-ever outlook on issues that are specific to environmental, social, and governance (ESG)—a broad and critically important topic that affects every aspect of our businesses, our industry, and our communities.

Many thanks are owed to members of the Sustainable Development Council and to ULI Trustee and Greenprint supporter Ken Hubbard for sharing insights to inform this outlook. I was also pleased to contribute some observations, since sustainability is a high priority for me both professionally and personally. Another high priority—also part of this overview—is resilience to climate change. In my view, these are related but separate topics.

Sustainability involves taking action to reduce portfolio energy consumption and carbon emissions; and resilience involves adapting portfolios to the climate change that is already affecting our weather, our communities, and our planet. It is important for all of us, as ULI members, to devote equal attention to these topics, because they each have major implications for how we continue to improve the built environment.

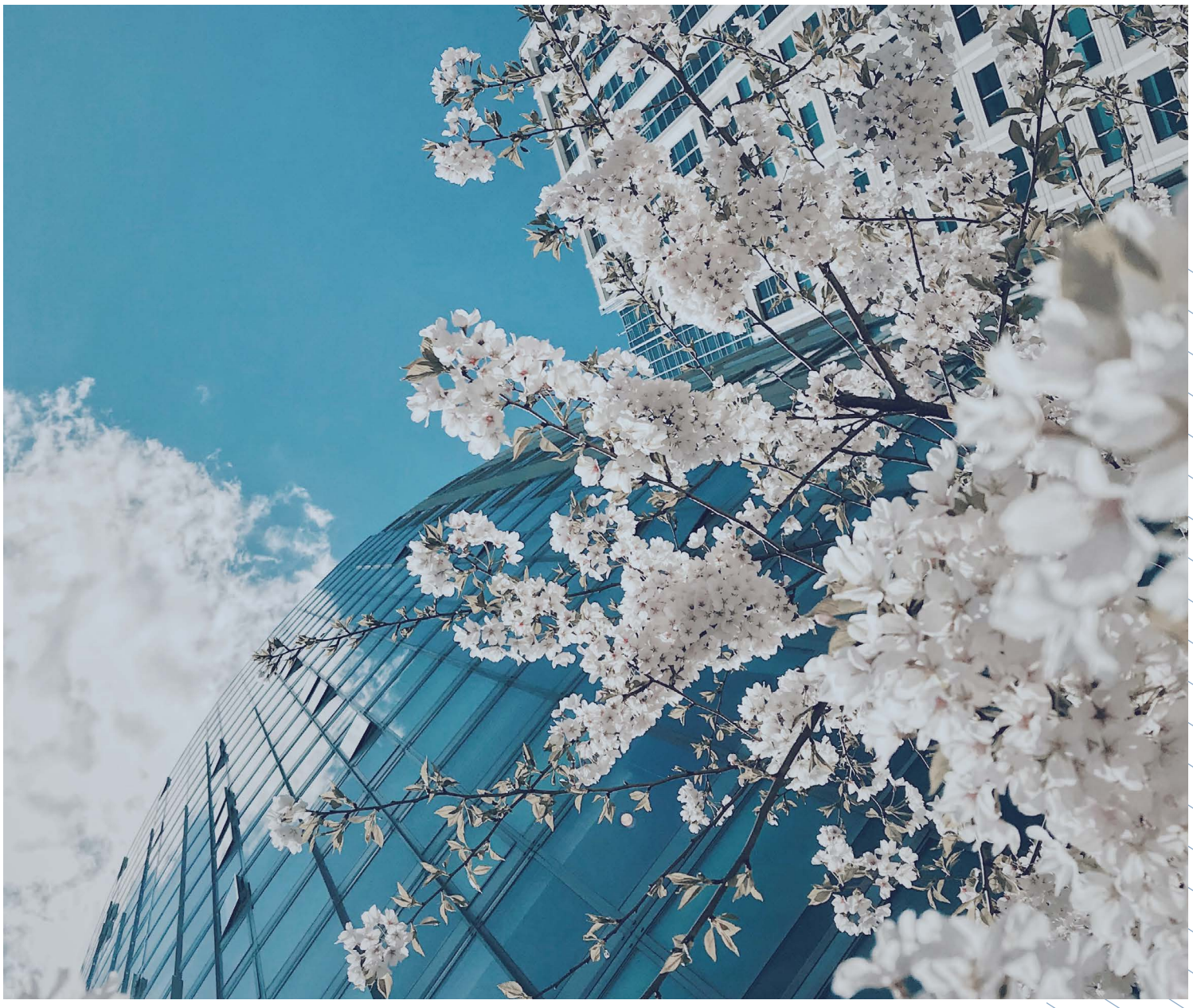
What this document suggests is that real estate interest in ESG is stronger than ever. Based on our experience at Boston Properties, we have identified four main stakeholders that prioritize sustainability and drive our emphasis on the topic. First are our tenants, who make sustainability part of the value proposition they offer employees. Second are the financial markets—we are seeing an increasing number of both equity and fixed-income investors focused on ESG. The third constituency consists of communities that are increasingly focused on climate change, and which benefit from our leadership on the issue. Fourth are our employees—they are increasingly younger and are increasingly going to feel the impacts of climate change, so it is an important topic to them.

Caring about ESG makes Boston Properties a more purposeful real estate company. It makes ULI a more purposeful real estate organization. It is the right thing to do, and it is also the smart thing to do, now and in the future. While the health crisis and social unrest dominated much of our attention in 2020, sustainability has remained at the forefront. In fact, as this sustainability outlook shows, the events of the past year have led to health and wellness as well as social equity securing themsevles as key components of sustainability. While this poses new challenges for how we in the industry will measure portfolio risk, value, and performance, it also reinforces just how intertwined our work is with so many aspects of people's lives. And that is why I am proud to be part of ULI—an organization committed to positioning real estate as integral to making our communities more sustainable.

Owen D. Thomas
Global Chairman
Urban Land Institute

ULI Sustainability Outlook: Top 10 Issues for 2021

ULI is eager to keep our members abreast of the topics and issues mounting in sustainable real estate. In late 2020, ULI's Greenprint Center for Building Performance interviewed members of the Sustainable Development Council (SDC) to inform an "outlook" for 2021: *What sustainability topics and issues are on the rise, why do they matter, and what should the industry do about it?* On the basis of the knowledge shared by these experts, Greenprint identified 10 issues that will likely affect our decision-making in the months ahead and beyond.



1 Real Estate's Increasing Role in Advancing Sustainability Throughout the Market

"As long as all of us are doing something, we are moving in the right direction. If you can commit to one additional thing and do it, then you, your project team, and your project are better than today's performance. Cumulatively, if we are all doing a little bit more, that will move the needle for industrywide adoption of sustainability, which would be exponential."

—JULIE HIROMOTO
Principal and Director of Integration, HKS
Dallas, Texas

1 Real Estate's Increasing Role in Advancing Sustainability Throughout the Market

The buildings sector currently contributes nearly 40 percent of carbon emissions globally and nearly 70 percent of emissions in urban areas. This raises the an opportunity for the industry to advance sustainability at the portfolio level and also through partnerships with local policymakers. Real estate will be spending more time focusing on the intersection of buildings and climate, given the industry's potential impact and role that can be played in being part of the solution.

Members of ULI's Greenprint Center for Building Performance, whose portfolios collectively represent over 10,200 properties, $1.8 trillion in assets under management, and more than 2.3 billion square feet in 32 countries worldwide, are leading by example. Since Greenprint was established in 2009, its members have improved energy efficiency and reduced greenhouse gas intensity by over 34 percent, and they are on track to meet Greenprint's current goal of achieving a 50 percent carbon reduction goal by 2030, and have set an even more ambitious goal to achieve carbon-neutral operations by 2050.

Building on the leading sustainability work that Greenprint member organizations have been implementing over the past decade, the center published the *ULI Blueprint for Green Real Estate* for owners and investors looking to develop or accelerate a sustainability program, and developers looking for ways to integrate sustainability into their overall development strategy.

The real estate industry's leadership in prioritizing sustainable development and operational practices can help inform sustainable policies at all levels of government—especially at the local level—optimally leading to more universal standards embraced throughout the industry. Public policies that incentivize innovation can spur the widespread adoption of best practices and the development of breakthrough technologies that are transformative.

Governments are passing climate legislation and initiatives that address existing and new buildings to help achieve their goals; these efforts are accelerating across federal, state, and local programs. More and more, real estate firms are leveraging their sustainability leadership to partner with local policymakers on climate policy. A recent Greenprint publication, *Decarbonizing the Built Environment: 10 Principles for Climate Mitigation Policies*, provides guidance for cities interested in engaging local real estate leaders during the shaping of climate mitigation policies, and for real estate organizations to increase their understanding of the potential impact of the policies and how to advance them through their work.

2 Increased Appetite for ESG Investing

> “Going forward, we are going to continue to see a lot more ESG investing. I think we will start to see indexes set up composed of companies with high ESG ratings. Investment dollars are moving away from fossil fuels and into green energy and, as a result, into companies that are on the forefront of sustainability.”
>
> **—OWEN D. THOMAS**
>
> **ULI Global Chairman and Chief Executive Officer, Boston Properties**
> New York, New York

2 Increased Appetite for ESG Investing

The appetite for environmental, social, and governance (ESG) investing continues to soar, with record inflows amid the COVID-19 pandemic. Real estate firms are now issuing more opportunities for those investors to place their capital.

A recent survey conducted by BlackRock, one of the world's largest asset managers, suggests significant global growth in ESG investments in the years ahead. Its Global Client Sustainable Investing Survey found that respondents plan to double their allocations to ESG assets under management (AUM) by 2025. The survey covered 425 investors in 27 countries, representing nearly $25 trillion in AUM. Respondents included representatives from corporate and public pension plans, asset managers, endowments, foundations, and global wealth managers.

The survey showed that COVID-19 has not slowed investor demand for sustainable investing; in fact, 20 percent of the respondents said that the pandemic would result in accelerated sustainable investment allocations. It found growth in sustainable assets to be most pronounced in Europe, while also increasing in the Americas and Asia Pacific regions.

"Green bonds" in particular have risen in popularity dramatically over the past 10 years, from what ULI considered an "emerging trend" a few years ago to a mainstream investment opportunity in 2020. Green bonds are standard bonds with specified proceeds going to fund projects that have positive environmental and/or climate benefits. Real estate firms gain value from issuing a green bond in myriad ways:

- Highlights their green assets/business;
- Provides a positive marketing story;
- Diversifies their investor base since they can now attract ESG specialist investors who are looking for more impact;
- Joins up internal teams to do an investor roadshow: environmental team with investor relations and other business lines; and
- Opens the potential for buyers to pay a premium for the "green" label on the bond.

3 Heightened Emphasis on Health and Social Equity

"We are seeing much more discussion around social equity. A lot of stakeholders are struggling to come up with metrics that are mutually agreed upon with other industry stakeholders. Social equity encompasses so much—such as education, workforce training, health, and wellness—and measuring those things [as a determinant of real estate value] is a challenge for the industry."

—**JUDI SCHWEITZER**

Founder, Schweitzer + Associates Inc.
Lake Forest, California

Professor, University of California
Irvine, California

3 Heightened Emphasis on Health and Social Equity

The real estate industry is ripe for accelerated investment in health and social equity. The COVID-19 pandemic and recent protests for racial justice in the United States and elsewhere have elevated the need for development that emphasizes health and social equity. In particular, the pandemic has highlighted inequities in access to healthy living and working environments, as evidenced by its particularly severe impact on lower-income people of color. In addition, the protests further spotlighted inequities in society, pointing to a need for far stronger focus on development that fosters diverse, equitable, and inclusive communities.

ULI's companion publications, *Health and Social Equity in Real Estate: State of the Market* and *Health and Social Equity in Real Estate: Examples from the Field*, explore the current adoption levels of health and social equity at the property level, and showcase examples of the real estate industry's response to rising demand for projects that prioritize health and social equity as "must-haves."

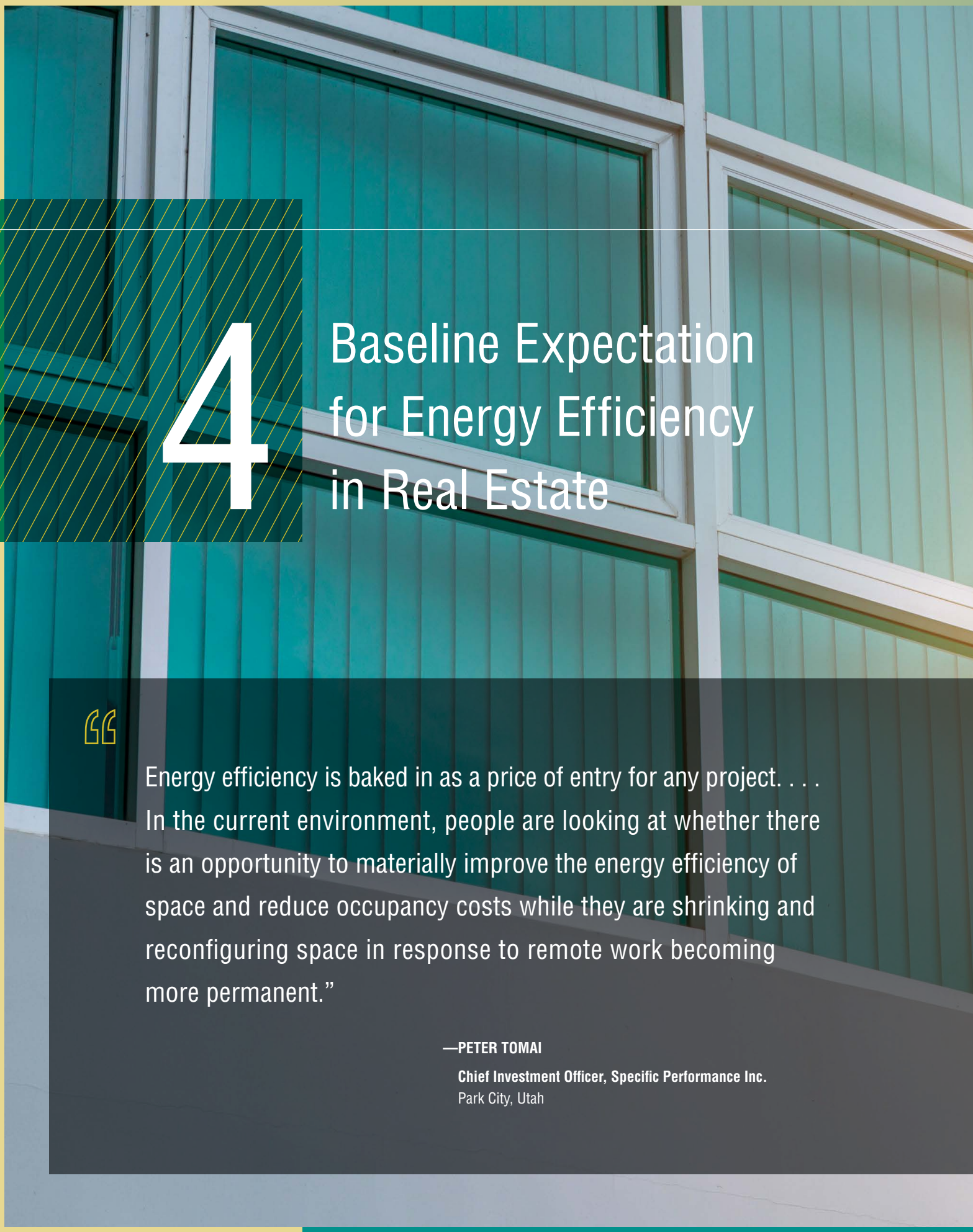
Both health and social equity are related to the issue of environmental justice, which is defined by the U.S. Environmental Protection Agency (EPA) as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. This goal, says the EPA, will be achieved "when everyone enjoys the same degree of protection from environmental and health hazards, and equal access to the decision-making process to have a healthy environment in which to live, learn, and work." Real estate practitioners can drive meaningful advances in equity by learning about, and partnering with, community-based environmental justice organizations committed to change.

Land use, zoning, and the location of public amenities are critical to better distribute equity. *The Case for Open Space,* a ULI report, highlights the benefits for developers to incorporate parks and open spaces in their developments, and showcases how mechanisms related to partnerships, funding, zoning, and local engagement have allowed developers to support project success while delivering significant community benefits. Real estate developers continue to show leadership on this front through outlets like the ULI Urban Open Space Awards, which recognize transformative open spaces that have been instrumental in promoting healthy, sustainable, and equitable outcomes in communities.

The need for third-party-verified safe and healthy indoor environments has taken on increased urgency due to the pandemic. For instance, the American Society of Heating, Refrigerating and Air-Conditioning Engineers is promoting the use of 100 percent outside air ventilation systems in commercial buildings. In addition, the Centers for Disease Control and Prevention is offering guidance on office environments' ventilation, outdoor air, water systems, and cleaning protocols to mitigate the spread of disease.

Health and well-being certifications are increasingly being sought by mixed-use and commercial building owners, managers, and tenants seeking to assure building users that their spaces are safe to enter and occupy. The advent of WELL in 2014, Fitwel in 2015, and RESET in 2019 spurred a new generation of health-focused buildings and real estate practitioners, and some early-adopter real estate companies scale these certifications across their portfolios.

This elevated focus on health in 2020 resulted in the creation of independent healthy building certification modules developed specifically in response to COVID-19. These include a new WELL Health-Safety Rating from the International WELL Building Institute; a new Fitwel Viral Safety Module from the Center for Active Design; and Safety First pilot credits from the Leadership in Energy and Environmental Design (LEED) certification program provided by the U.S. Green Building Council (USGBC). The adoption of these modules and the full healthy building certifications will continue to rise over the coming years.

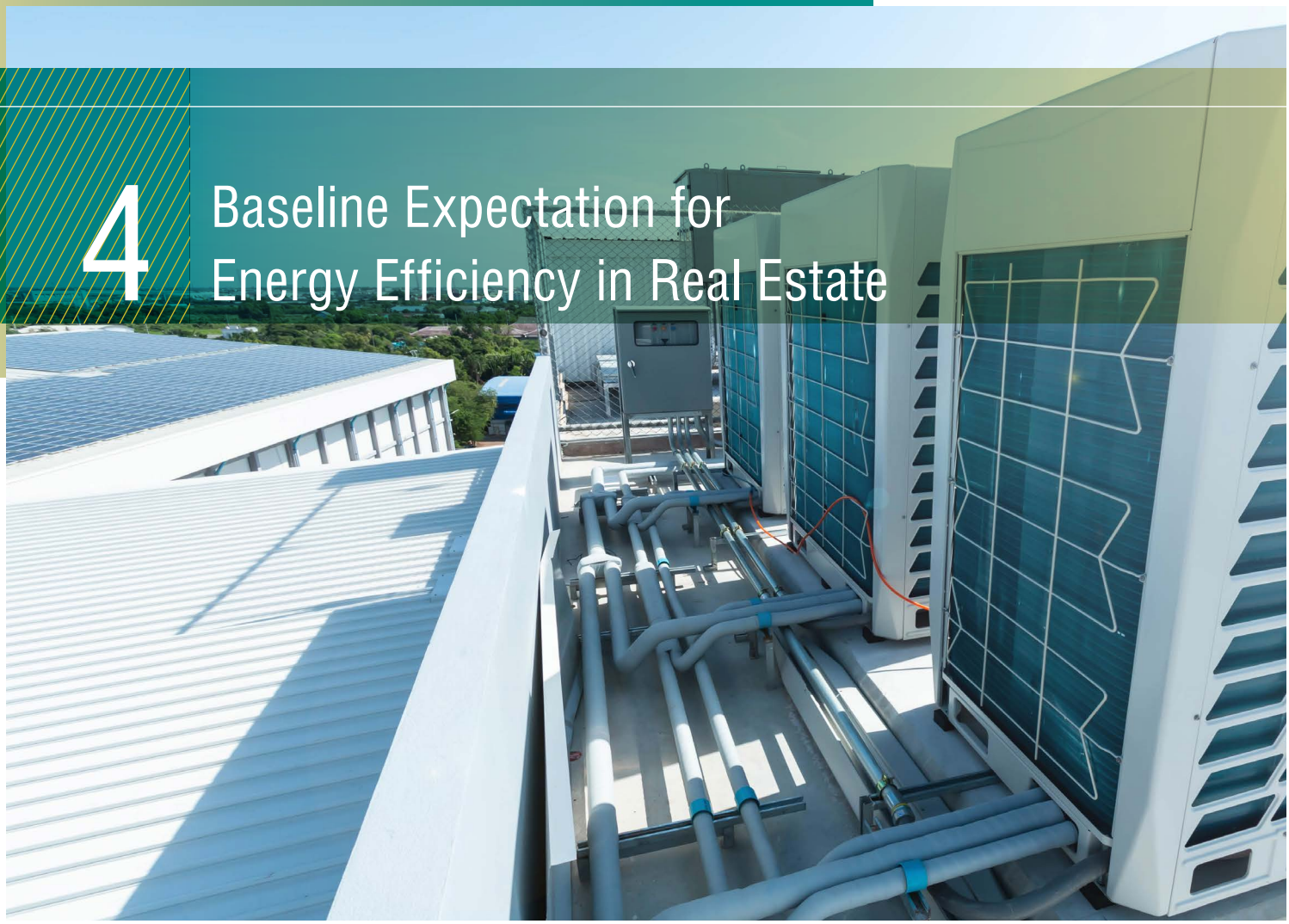


4 Baseline Expectation for Energy Efficiency in Real Estate

“Energy efficiency is baked in as a price of entry for any project. . . . In the current environment, people are looking at whether there is an opportunity to materially improve the energy efficiency of space and reduce occupancy costs while they are shrinking and reconfiguring space in response to remote work becoming more permanent.”

—**PETER TOMAI**

Chief Investment Officer, Specific Performance Inc.
Park City, Utah



4 Baseline Expectation for Energy Efficiency in Real Estate

Even as building occupants now view healthy indoor environments as a "must-have," energy efficiency remains a high priority and a feature that has become so prevalent that it is considered a "given" by tenants, owners, managers, and developers. New technologies that make buildings healthier and more energy efficient will negate the need to compromise one goal to achieve the other—both are viewed throughout the industry as key elements of sustainability.

There is now a baseline expectation for energy efficiency and high-performance operations in buildings. It is baked in as a price of entry for any project today. The business case for energy efficiency is evident: decreases in operating expenses drive increases in net operating income and overall asset value. Not only do energy efficiency technologies and operations reduce utility costs, they also reduce maintenance and operations costs and free up facility engineers' time for proactive tune-ups and improvements.

On the commercial side, real estate will continue to deliver a core-and-shell property to a certain level of energy-efficient base building specs, with the opportunity for a tenant improvement to allow for any level of sustainability customization and green building certification. Premier developers are designing buildings to allow for premier tech tenants' interests as opposed to bottom-tier code levels for any tenant.

To maintain energy efficiency throughout a building's operations, owners and operators are relying on more sophisticated building automation systems to measure the performance of the mechanical systems, track the energy use of lighting and plug loads, and optimize building schedules. Smart building technologies that rely on sensors and real-time data are allowing for automated fault detection and diagnostics in ways that were not possible just a few years ago.

5 Tenants Driving Sustainability Innovation

“Tenants are increasingly expecting a certain level of commitment to the environment from landlords of class A buildings across our global markets. Our buildings are frequently seen as extensions of their brand, as a company’s physical space reflects the values of their organization. Additionally, some tenants are increasingly interested in opportunities to help reduce energy and carbon emissions of the buildings they occupy.”

—CAROLINE JOHNS

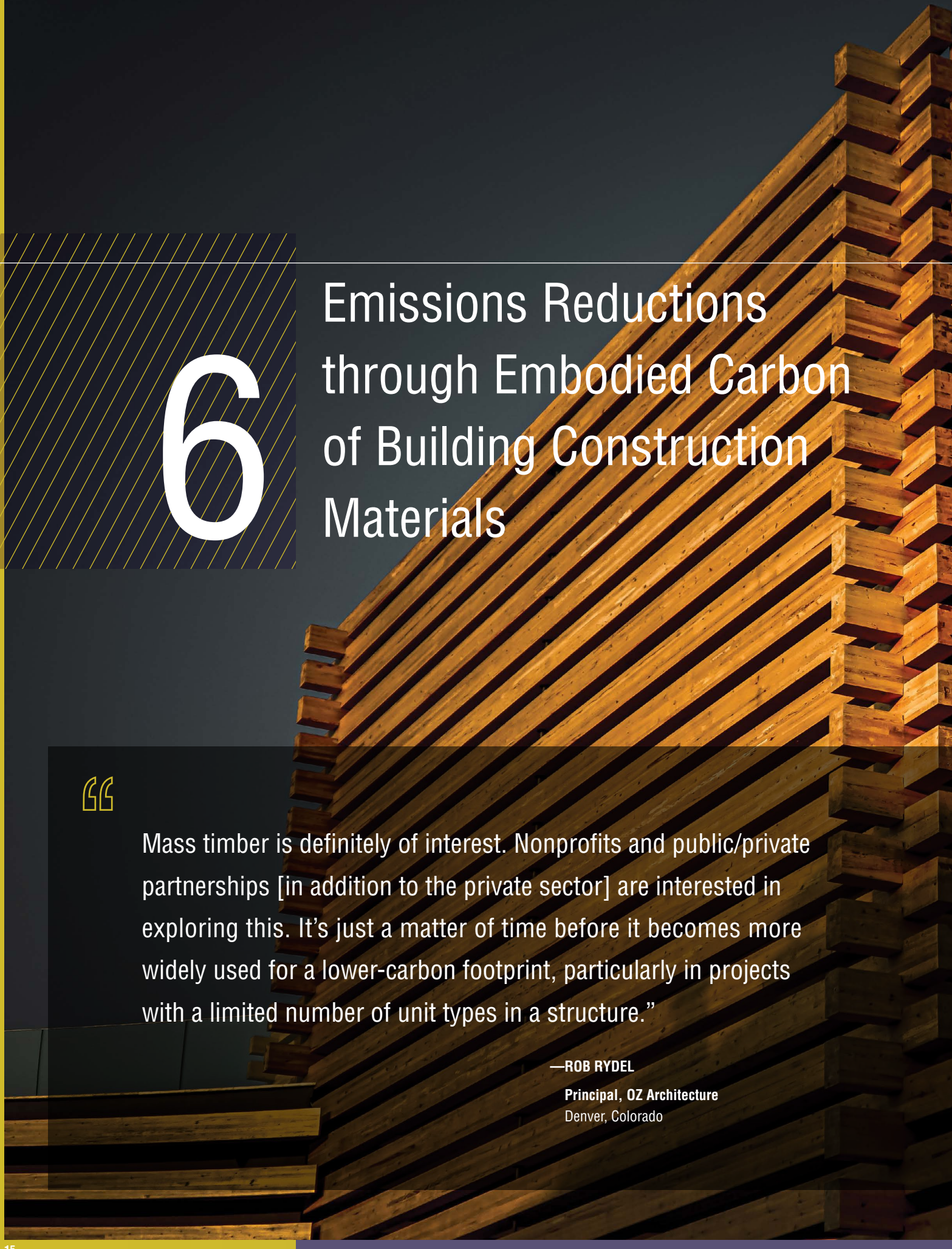
Director of Development, Pembroke
Boston, Massachusetts

5 Tenants Driving Sustainability Innovation

Premier technology tenants such as Microsoft and Google have set ambitious climate goals that directly affect their real estate choices. For instance, Microsoft has pledged to be carbon negative by 2030; and by 2050, the company is aiming to remove from the environment all the carbon that it has emitted either directly or by electrical consumption since it was founded in 1975. Google, which in 2017 became the first major company to match its energy use with 100 percent renewable energy on an annual basis, has committed to operating completely on carbon-free energy 24/7 by 2030. These ambitious goals are spurring strong demand by these organizations for workspaces that reflect state-of-the-art sustainability technologies and practices, and will likely raise the bar for overall tenant contributions to building performance.

Commercial tenants consume an average of 40 to 60 percent of the total energy used in buildings. Tenant equipment, operations, and behavioral patterns have a significant impact on the building performance, energy use, and carbon footprint of the buildings they occupy. As a result, several programs have been designed to help tenants conserve energy and reduce energy costs, emphasizing the importance of collaboration among tenants, building owners, and service providers. These include the following:

- ULI's Tenant Energy Optimization Program, a 10-step process that integrates energy efficiency into tenant space design and construction and delivers financial returns through energy conservation. Tenant improvement projects using the step-by-step design and construction process typically demonstrate energy savings of 30 to 50 percent;
- ENERGY STAR Tenant Space, a recognition program for sustainability efforts in leased office spaces, created to increase awareness and reduce consumption of energy in tenant spaces; and
- The U.S. Department of Energy's Green Lease Leaders, a program that recognizes and supports sustainable landlord/tenant relationships through green leases with clauses that encourage sustainability, such as energy data sharing and cost-recovery of energy upgrades.



6 Emissions Reductions through Embodied Carbon of Building Construction Materials

"Mass timber is definitely of interest. Nonprofits and public/private partnerships [in addition to the private sector] are interested in exploring this. It's just a matter of time before it becomes more widely used for a lower-carbon footprint, particularly in projects with a limited number of unit types in a structure."

—ROB RYDEL

Principal, OZ Architecture
Denver, Colorado

6 Emissions Reductions through Embodied Carbon of Building Construction Materials

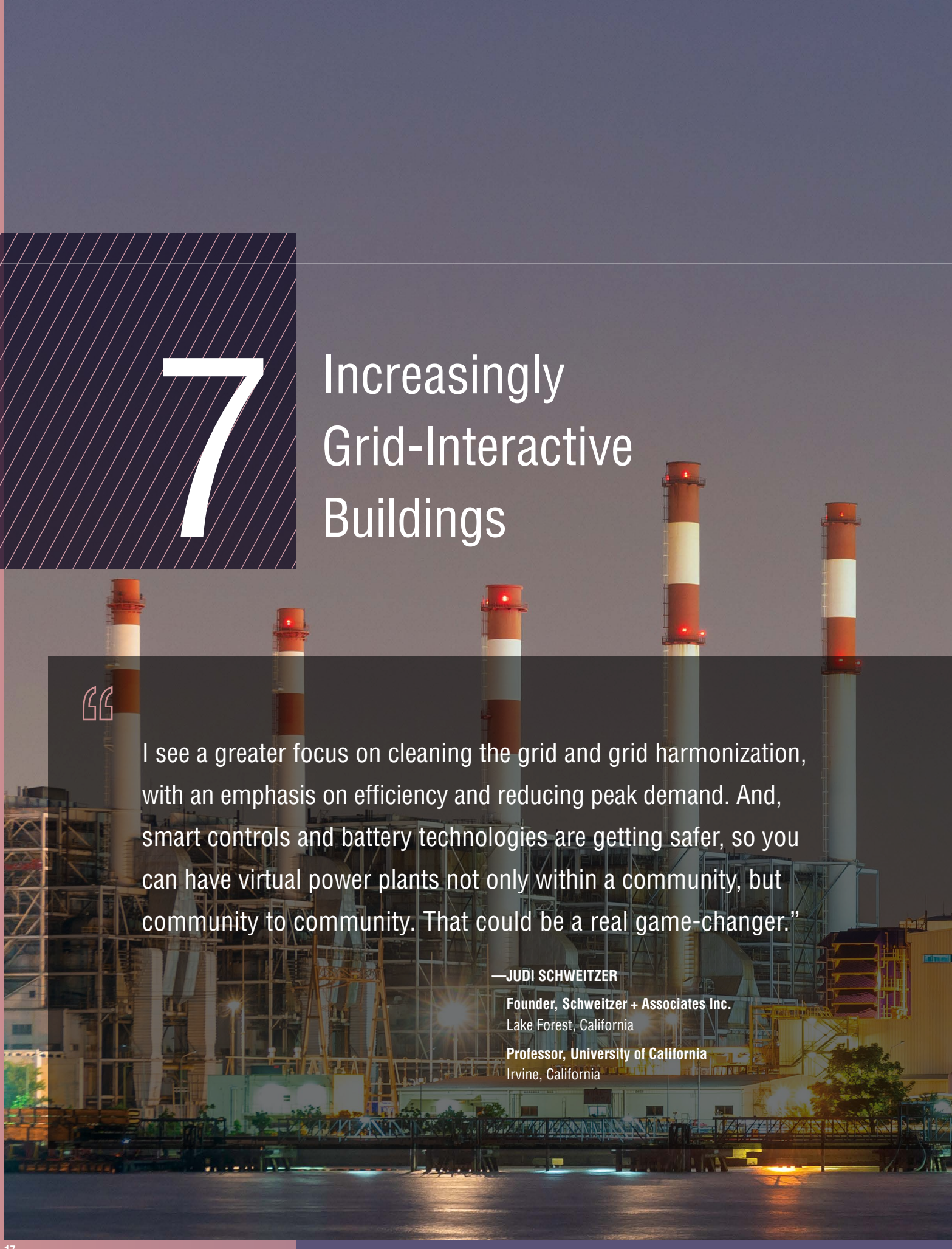
The built environment's carbon footprint is from both building operations and building materials—and lowering building emissions requires an emphasis on both. According to recent research from the Santa Fe, New Mexico–based climate-oriented nonprofit organization called Architecture 2030, the embodied carbon emissions of building products and construction represent 11 percent of annual global carbon emissions.

Unlike operational carbon emissions, which can be reduced over time with building energy efficiency renovations and the use of renewable energy, embodied carbon emissions cannot be lowered after a building is constructed. Unless the industry starts addressing the need to reduce embodied carbon in building materials, Architecture 2030 estimates that by 2050—factoring in all new construction expected over the next 30 years—emissions from embodied carbon will equal those from operational carbon emissions. *Embodied Carbon in Building Materials for Real Estate*, a ULI report, provides more details on the business case for these reductions and how real estate firms can get started. Real estate firms can join organizations like the Carbon Leadership Forum that are inspiring innovation and spurring change through collective action on reducing embodied carbon in buildings.

Mass timber is emerging as an environmentally conscious building material alternative. Research from the WoodWorks Wood Products Council shows that wood buildings can help mitigate climate change in three ways: 1) wood products require less embodied energy to manufacture than other building materials; 2) wood buildings sequester, or store, carbon for the lifetime of a building and longer if the wood is recycled when the building is demolished; and 3) as new trees are planted, the regenerating forest continues the cycle of carbon absorption.

Since 2013, nearly 1,000 mass-timber projects—including multifamily and commercial buildings—have been constructed or are in design in all 50 states in the United States; and globally, there are dozens of mass-timber buildings eight stories tall or higher, including the Carbon 12 project in Portland, Oregon. In addition, in 2019, the International Code Council approved proposals to permit construction of mass-timber buildings up to 18 stories as part of the 2021 International Code Council, opening up opportunities for more tall timber buildings to be part of cityscapes worldwide.

7 Increasingly Grid-Interactive Buildings

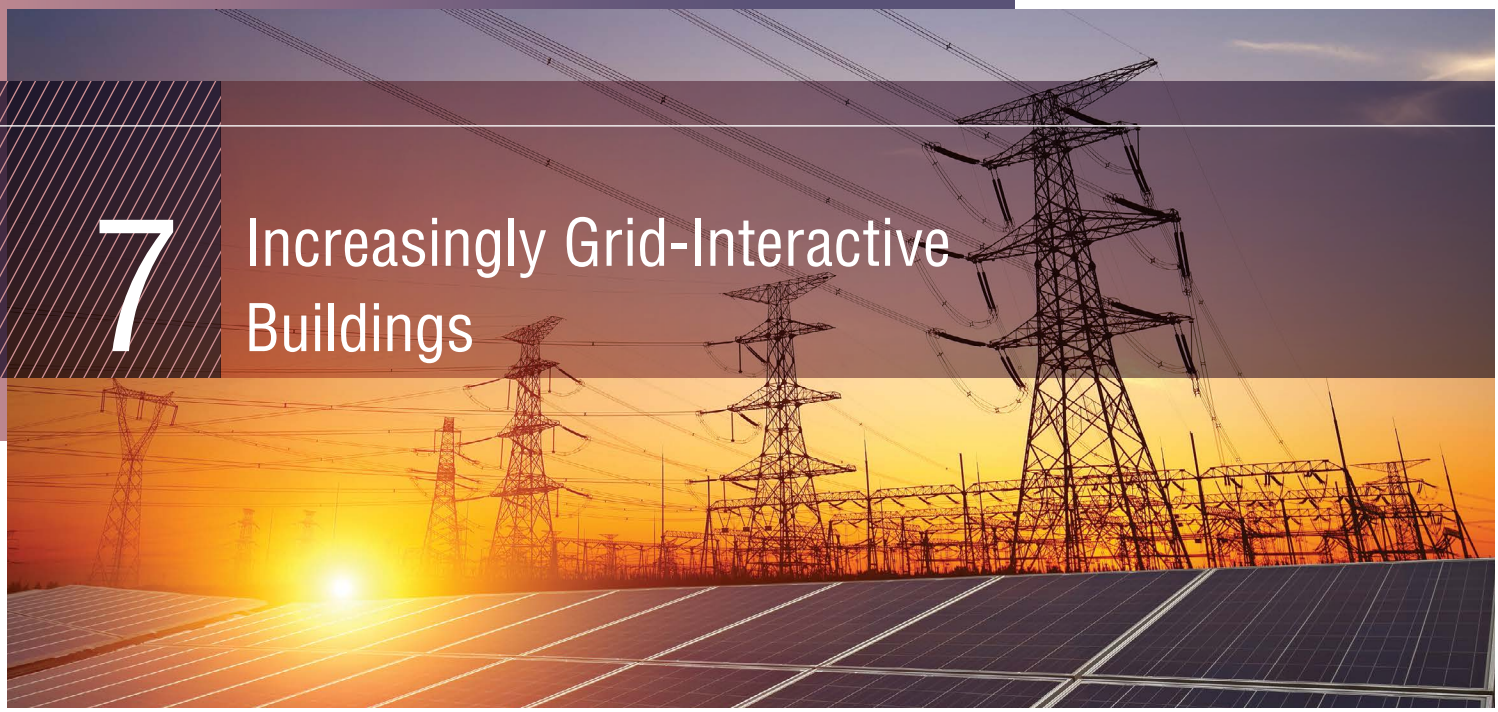


> “I see a greater focus on cleaning the grid and grid harmonization, with an emphasis on efficiency and reducing peak demand. And, smart controls and battery technologies are getting safer, so you can have virtual power plants not only within a community, but community to community. That could be a real game-changer.”

—JUDI SCHWEITZER

Founder, Schweitzer + Associates Inc.
Lake Forest, California

Professor, University of California
Irvine, California



7 Increasingly Grid-Interactive Buildings

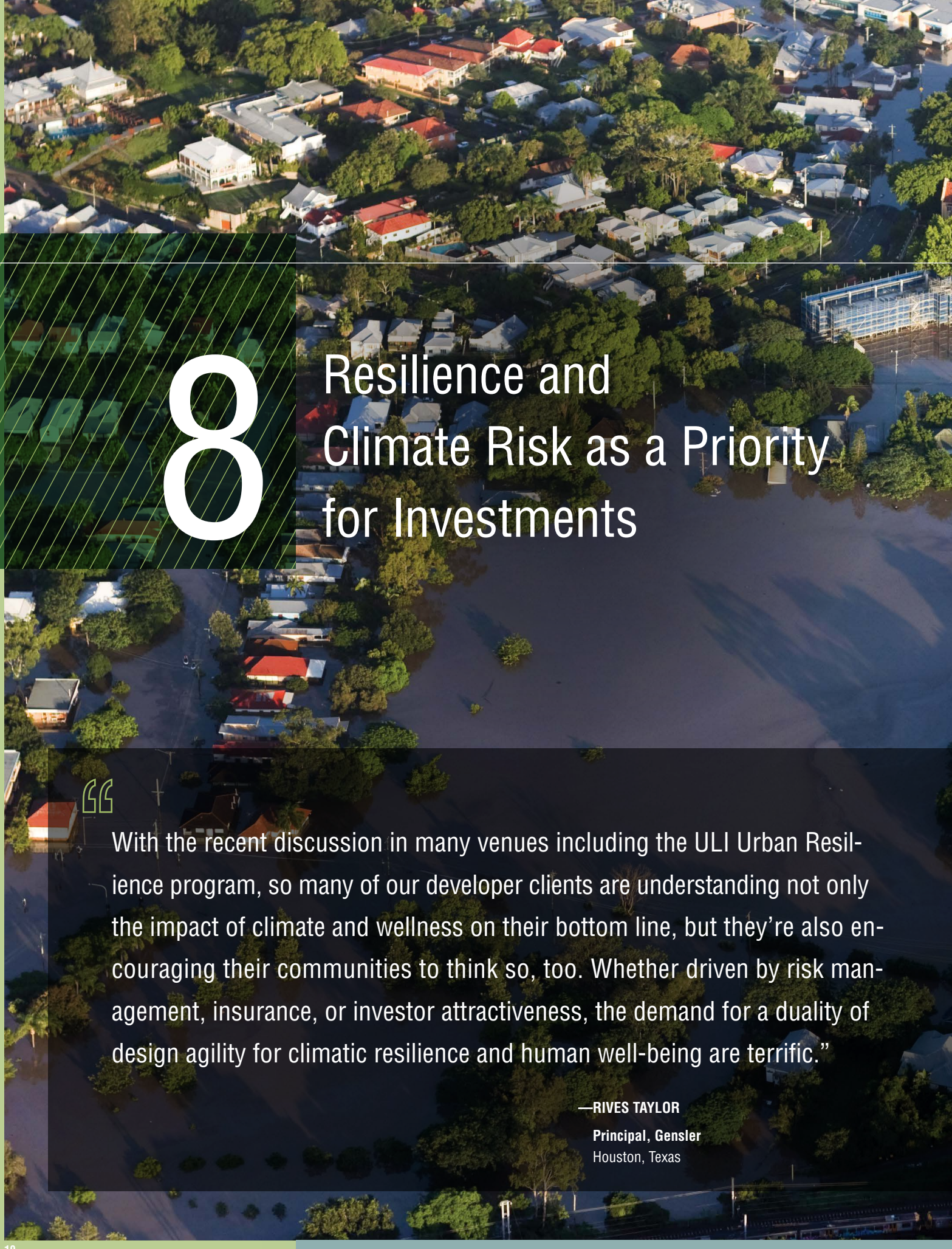
Buildings are becoming increasingly grid-interactive as a way to lower building emissions through optimized building operations, with an emphasis on alternative power, including on-site distributed energy resources, off-site renewable energy, and utility-provided green power. It is becoming increasingly common for grid-interactive buildings to have a direct connection between utility providers and building operators to decrease energy use during high-energy-demand days and alleviate stress on regional grids.

The U.S. Department of Energy's Grid-interactive Efficient Buildings (GEB) Initiative supports building owners and operators as they track and optimize the timing and amount of building energy consumption in coordination with the utility grid. In addition to improving the energy efficiency of the overall building, this concept includes the use of smart technology to give building occupants more control in managing building comfort and performance while saving money on energy bills; and it encourages greater use of renewable power sources.

While distributed energy resources on site are important for building emissions reductions, green utility power also is a key consideration. For instance, use of solar power by utilities and homeowners is rising significantly. A recent report from the Solar Energy Industries Association stated that solar power capacity added in 2020 was 43 percent higher than that added in 2019. Large solar farms operated by utilities led the growth, but residential installations also jumped between the second and third quarters of the year. This increase is expected to continue, as utilities and homeowners are finding solar power to be more cost-efficient than paying for energy from fossil fuels, the report notes.

According to the National Conference of State Legislatures (NCSL), an increasing number of states are revising their renewable portfolio standards (RPS), which is helping drive the nation's $64 billion market for wind, solar, and other renewable energy sources. These standards, which require that a specified percentage of the electricity that utilities sell comes from renewable resources, have been created by states to diversify their energy resources, promote domestic energy production, encourage economic development, and reduce greenhouse gas emissions.

With cities like San Francisco passing all-electric building codes, real estate is paying even greater attention to building electrification for new developments. Building electrification means eliminating the use of fossil fuels for functions such as heating and cooking, and replacing gas appliances with alternatives powered by clean electricity. The growing emphasis has led to the establishment of organizations such as the California-based Building Decarbonization Coalition (BDC), which unites building industry stakeholders with energy providers, environmental organizations, and local governments to help electrify residential and commercial buildings with clean energy.



8 Resilience and Climate Risk as a Priority for Investments

"With the recent discussion in many venues including the ULI Urban Resilience program, so many of our developer clients are understanding not only the impact of climate and wellness on their bottom line, but they're also encouraging their communities to think so, too. Whether driven by risk management, insurance, or investor attractiveness, the demand for a duality of design agility for climatic resilience and human well-being are terrific."

—RIVES TAYLOR

Principal, Gensler
Houston, Texas

8 Resilience and Climate Risk as a Priority for Investments

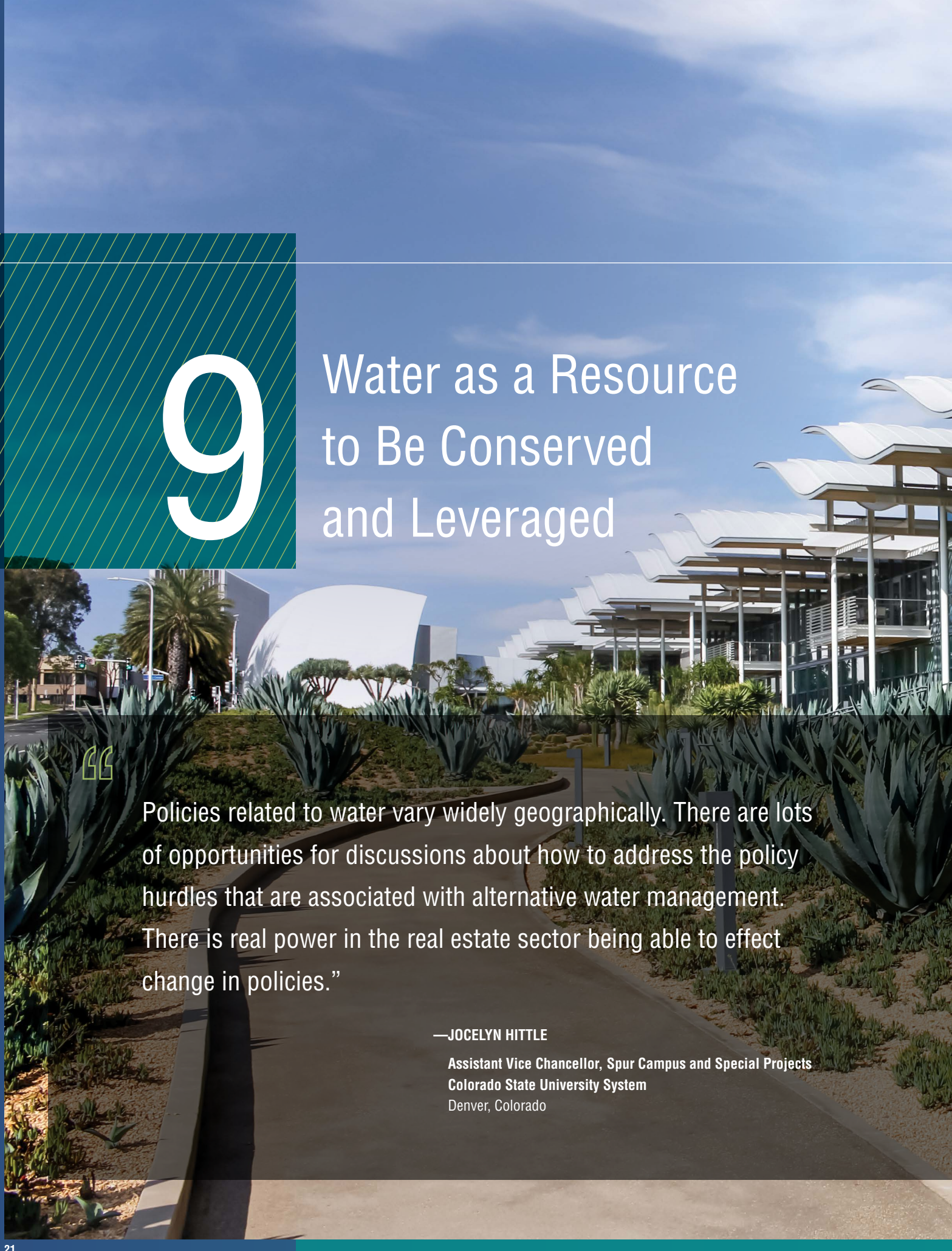
> "Resilience is one of the most important things that we have to figure out how to deal with. We all know the ultimate step, and that is mass migration [to areas less vulnerable to climate change]. We all know the interim steps, and we have to figure out which ones work, and which ones don't."
>
> **—KEN HUBBARD**
>
> **Senior Managing Director, Hines-U.S.**
> Miami Beach, Florida

Improving resilience to the impacts of climate change is a complex and evolving challenge for real estate investors. Risks such as rising seas, flooding, severe storms, and heat stress are increasingly highlighting the vulnerability of not only individual assets and locations within cities, but also entire metropolitan areas. Research conducted in 2019 and 2020 by ULI and Heitman LLC finds that leading real estate firms are increasingly prioritizing this issue with provocative approaches to gauge climate risk and develop resilience strategies—a process that involves adaptation, as opposed to sustainability practices that involve mitigation.

Whether or not their assets have already been directly affected by the impacts of climate change, investors see climate considerations as a necessary layer of fiduciary responsibility to their stakeholders, and are realizing that building for resilience, on a property, portfolio, and citywide basis, is of paramount importance to staying competitive. Information about city-scale risk—including fiscal policy constraints; critical infrastructure investment, repair, and replacement; and the level of commitment to improving resilience—is a key factor for consideration.

In addition to voluntary measures by companies to improve climate risk, an increasing number of countries are requiring companies to report on climate risk using structures such as the Task Force on Climate-Related Financial Disclosures (TCFD). It was established by the Financial Stability Board in 2015 to develop recommendations for more effective climate-related disclosures that could promote more informed investment, credit, and insurance underwriting decisions and, in turn, enable stakeholders to better understand the concentrations of carbon-related assets in the financial sector and the financial system's exposures to climate-related risks.

The TCFD has found a steady increase in the disclosure of climate-related financial information, with energy companies and materials and buildings companies leading on disclosure. By 2020, more than 1,000 public and private organizations, including national governments as well as businesses, had pledged their support for the TCFD's work.



9 Water as a Resource to Be Conserved and Leveraged

"Policies related to water vary widely geographically. There are lots of opportunities for discussions about how to address the policy hurdles that are associated with alternative water management. There is real power in the real estate sector being able to effect change in policies."

—JOCELYN HITTLE

Assistant Vice Chancellor, Spur Campus and Special Projects
Colorado State University System
Denver, Colorado

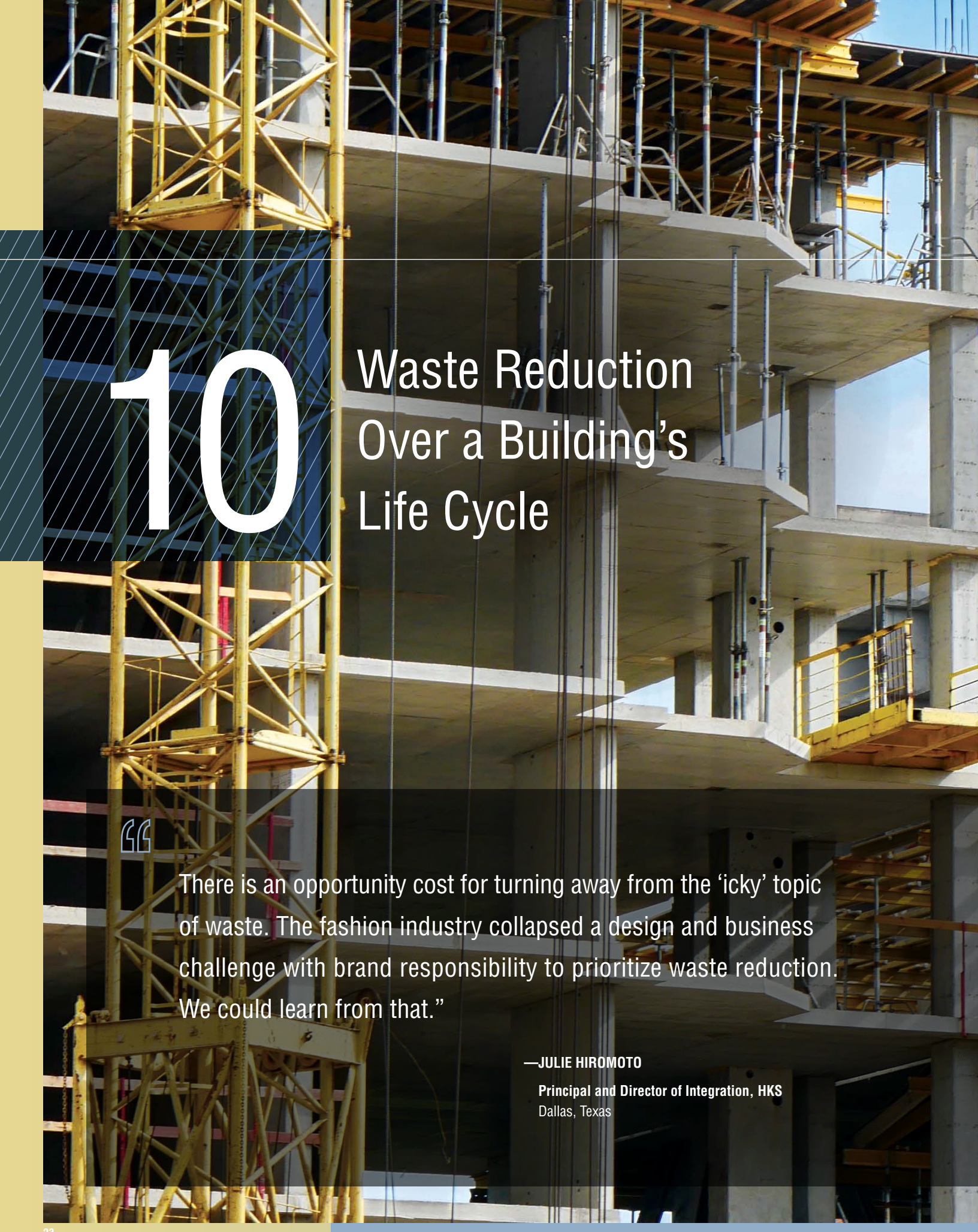
9 Water as a Resource to Be Conserved and Leveraged

In recent years, the dialogue about improving building performance to protect the environment has been dominated by reducing energy use and carbon emissions, but conserving fresh water—a finite resource—is also a critical component of building performance. Water prices are increasing at a rate higher than inflation and are rising faster than other utilities because of infrastructure costs and water scarcity or drought. Throughout the public and private sectors, there is growing awareness of the correlation between saving water and safe water; as a result, conserving water is an issue that merits attention and investment.

To mitigate these rising costs and improve the efficiency of their buildings, building owners and managers are developing water management plans that address the three primary areas for savings: 1) reducing water loss from leaks; 2) reducing overall water use through occupant education and improving the water efficiency of fixtures and cooling towers, HVAC equipment, landscaping, and irrigation systems; and 3) reusing on-site water.

In addition, water is increasingly being leveraged through the use of graywater and blackwater systems that capture and repurpose used water rather than sending it to sewers, as well as green infrastructure systems that capture stormwater through pipes-and-pumps alternatives such as rain gardens, bioswales, and green roofs. Through these innovations, buildings are now able to set and achieve net-zero water goals.

Harvesting the Value of Water, a ULI publication, looks at how water management mechanisms using green infrastructure can create value for real estate projects by improving operational efficiency as well as serving as an attractive amenity. It notes that a rising number of local governments are creating coordinated citywide green infrastructure networks that include both public and private properties. As a result, real estate developers are increasingly responding to new regulations by incorporating the requirements into their business models.



10 Waste Reduction Over a Building's Life Cycle

"There is an opportunity cost for turning away from the 'icky' topic of waste. The fashion industry collapsed a design and business challenge with brand responsibility to prioritize waste reduction. We could learn from that."

—**JULIE HIROMOTO**

Principal and Director of Integration, HKS
Dallas, Texas

10 Waste Reduction Over a Building's Life Cycle

Real estate firms are taking efforts in waste reduction more seriously than ever. For real estate owners, significant waste can be generated by construction, day-to-day operations, new tenants, and restaurants.

According to the EPA, 600 million tons of construction and demolition debris including steel, wood, concrete, drywall, asphalt, and brick were generated nationwide in 2018—more than twice the amount of municipal solid waste (trash) generated by consumers and businesses. Of that debris, 24 percent, or 144 million tons, was sent to landfills, including 71 million tons of concrete. Developers are beginning to see value in the reuse of materials for their projects, whether as part of a ground-up development or redevelopment with adaptive use.

The rising interest in waste reduction has resulted in the creation of building tools and certifications that are specific to waste. A waste audit helps building owners and managers identify inefficiencies and opportunities for both waste reduction and recycling. The EPA's ENERGY STAR Portfolio Manager database encourages benchmarking waste at the property level to enable better management and reduction over time, although data collection on bin size and weight can sometimes be patchy.

The TRUE program for zero-waste certification, administered by the Green Building Certification Institute, was developed to help building owners, operators, managers, and users define, pursue, and achieve their zero-waste goals, cutting their carbon footprint and supporting public health. Currently, more than 160 projects totaling more than 300 million total gross square feet of space in 29 states and 13 countries are registered or certified with TRUE.

A recent report from Arup and the Ellen MacArthur Foundation affirms the rising interest in minimizing waste and reusing building materials. It found that if real estate businesses adopt models based on circular economy principles, the sector can achieve significant financial returns while reducing its carbon footprint. The study tested the financial performance of five circular economy real estate business models—for flexible spaces, adaptable assets, relocatable buildings, residual value, and performance management—based on data from developments in five European cities. By delivering more flexible, adaptable, and deconstructable buildings, and by procuring services instead of products, investors' assets can become more productive, more agile, and less damaging to the environment while providing new revenue streams and greater value.

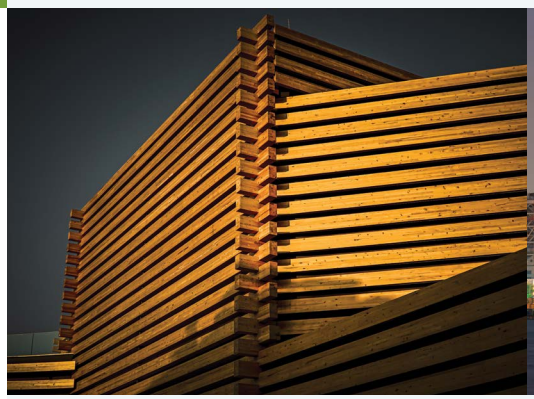
Conclusion

The strong commitment by ULI members to pursue best practices in sustainable development spans decades. While the Institute's mission has changed over time, it has continued to emphasize building in harmony with the natural environment. What began as a quest to develop communities in a way that conserves land and other resources has evolved into a sweeping, multifaceted movement that has grown exponentially as ULI's membership has expanded around the globe.

As this outlook suggests, we are entering a new era of sustainability. The market today values environmental, social, and governance (ESG) in real estate more than ever before. What constitutes ESG is ever expanding, with health and social equity now considered as fundamental as energy efficiency and lower carbon emissions. And we are learning from this holistic approach to ESG that many of the practices that make projects and communities healthier and more equitable will ultimately make them more sustainable and more resilient.

It is an exciting time for the real estate industry. Owners, investors, occupants, cities, and communities all find value in sustainable development. This presents new opportunities for ULI to lead positive change and position the built environment as part of the solution to myriad challenges related to climate change, energy conservation, health, racial injustice, and economic inequities. The Institute is uniquely positioned to do this by drawing upon the lessons learned from its global network of real estate innovators.

The current moment requires us to be steadfast in the pursuit of a future that is more inclusive, healthy, green, and resilient. ULI's Greenprint Center for Building Performance is poised to rise to the challenge and support our members as they lead the industry on increasing building value while creating truly sustainable communities that can withstand the tests of time and change.





Urban Land Institute
2001 L Street, NW
Suite 200
Washington, DC 20036-4948
uli.org