REAL ESTATE OWNERS, DEVELOPERS & INVESTMENT TRUSTS

Research Brief

SASB’s Industry Brief provides evidence for the disclosure topics in the Real Estate Owners, Developers & Investment Trusts industry. The brief opens with a summary of the industry, including relevant legislative and regulatory trends and sustainability risks and opportunities. Following this, evidence for each disclosure topic (in the categories of Environment, Social Capital, Human Capital, Business Model and Innovation, and Leadership and Governance) is presented. SASB’s Industry Brief can be used to understand the data underlying SASB Sustainability Accounting Standards. For accounting metrics and disclosure guidance, please see SASB’s Sustainability Accounting Standards. For information about the legal basis for SASB and SASB’s standards development process, please see the Conceptual Framework.

SASB identifies the minimum set of disclosure topics likely to constitute material information for companies within a given industry. However, the final determination of materiality is the onus of the company.

Related Documents

- Infrastructure Sustainability Accounting Standards
- Industry Working Group Participants
- SASB Conceptual Framework

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INTRODUCTION

The Real Estate Owners, Developers & Investment Trusts (from now on simply referred to as “Real Estate”) industry provides people and businesses across many industries with the necessary buildings and structures to live, work and conduct operations. The industry’s impact extends to different sectors of the economy, as it buys, develops, manages, leases, and/or sells assets to the office, residential, retail, lodging, industrial, and health care sectors, among others.

Buildings use significant amounts of natural resources, including energy and water. Global concerns over the efficient use of these resources, as well as regulatory efforts at the global, federal and local levels, put pressure on the Real Estate industry to improve the way in which properties use these resources. However, improving the industry’s energy and water efficiency is a challenge, as incentives between industry participants and their customers traditionally have not been aligned.

Additionally, concerns surrounding the physical impacts of climate change—in particular the expected increase in the frequency and severity of adverse weather events—are rising among companies in the industry and their stakeholders.

Management (or mismanagement) of certain sustainability issues, therefore, has the potential to affect the valuation of companies in the industry through impacts on profits, assets, liabilities, and cost of capital.

Investors would obtain a more holistic and comparable view of performance with companies in the industry reporting metrics on the material sustainability risks and opportunities that could affect value in the near and long-term in their regulatory filings. This would include both positive and negative externalities, and the non-financial forms of capital that the industry relies on for value creation.

Specifically, performance on the following sustainability issues will drive competitiveness within the Real Estate industry:

- Improving the energy and water efficiency of properties;
- Effectively incentivizing tenants to reduce their environmental impacts; and
- Managing the risks that stem from the potential physical effects of climate change through novel adaptation strategies.

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<th>SUSTAINABILITY DISCLOSURE TOPICS</th>
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INDUSTRY SUMMARY

The Real Estate industry is comprised of companies that own and generally operate income-producing underlying real estate assets. Companies in this industry are commonly structured as real estate investment trusts (REITs) and may operate in a wide array of geographies and segments—including the residential, retail, office, health care, industrial, and hotel segments.

Within the U.S., the geographic distribution of REIT-owned properties is closely correlated with population distribution, and reflects the trend of concentration in the West, Southeast, and Southwest. Properties tend to appreciate faster in areas with population growth, which may ultimately provide investors with greater returns. Population growth is also beneficial to the job market, which provides growth opportunities to the office segment. Interestingly, despite its large concentration of office buildings, the New York City market has a disproportionately low number of REITs. This is due to the fact that the large financial institutions that occupy New York’s office buildings tend to own their properties for diversification purposes. Even though the larger share of the properties owned by these companies is located in the U.S., some of them have expanded their portfolios internationally. REITs continue to look outside the U.S. market to diversify their asset mix, as foreign markets provide new investment opportunities.

NOTE ON INDUSTRY STRUCTURE

In developing this briefing and determining disclosure topics and accounting metrics for Real Estate Owners, Developers & Investment Trusts, SASB used a “pure-play” definition of the industry. For the purpose of this brief and the Real Estate Owners, Developers & Investment Trusts standard, SASB considers property ownership and the generation of rental income as the primary activity of real estate companies. As many companies in the industry also generate revenue by managing their own properties and providing services to tenants, sustainability topics and metrics from other industries could also be material to them.

Property management activities are discussed in the Real Estate Services brief and industry standard (SASB standard IF0403). Real estate companies may also provide services to property occupiers, and therefore, SASB would consider them to be involved in activities described in such industries including Hotels & Lodging (SV0201) and Professional Services (SV0102). Companies that are structured as REITs but do not have direct ownership of real estate assets and instead invest in property mortgages, generating interest revenue on these loans, are considered in the Mortgage Finance industry (FN0202) of the Financials sector.

SASB treats the following industries separately: Real Estate Owners, Developers & Investment Trusts, Real Estate Services, Professional Services, Hotels & Lodging, Forestry & Paper, and Mortgage Finance. While this approach is necessary to ensure a coherent understanding of industry drivers and challenges, it does not always reflect the current structure of the industry, where some real estate companies may operate their properties as hotels or senior housing or provide property management services to their tenants. Therefore, depending on the specific activities and operations of real estate companies, disclosure topics and accounting metrics associated with the Real Estate Services, Professional Services, Hotels & Lodging, Forestry & Paper, Mortgage Finance, or other industries may also need to be considered.

Real estate companies in the U.S. often prefer to be structured as REITs because of associated tax advantages. To be classified as a REIT, a company must have most of its assets and income derived...
from real estate, and must distribute at least 90 percent of its taxable income annually as dividends to shareholders (among other requirements). Publicly traded REITs give individual investors the opportunity to include real estate exposure in their investment portfolios without the risks associated with direct property ownership. Specifically, investing in REITs provides investors with more liquidity and flexibility than does direct ownership of properties (or investments in closed-end funds).

The Real Estate industry is cyclical in nature. Periods of gradual property value appreciation can be negatively affected by periods of over-building (too much supply) or by external economic shocks (like a recession) that cause demand for property to decrease. Either scenario may also cause property values to decline. However, a market’s location and surrounding demographics can greatly mitigate or even insulate it from supply and demand shocks, and therefore preserve property values. For example, during the global financial crisis of 2007-2009, property values in major U.S. urban markets, such as New York City, generally did not decline as much as properties in suburban locations – and values in these markets generally rebounded more robustly during the tepid economic recovery.

The Real Estate industry is correlated with the overall direct property market, and its performance largely depends on the economic environment (which affects demand for property) and the availability of debt and equity capital to finance growth. The Real Estate industry is characterized by the often long-term leases between asset owners and their tenants, which provide more clarity about companies’ financial performance, including its funds from operations (FFO) – the more broadly used measurement of industry profitability. The long-term nature of leases enabled real estate companies to suffer only a modest 7.6 percent revenue decline in 2007–2008, when the industry’s asset values and market capitalization dropped by nearly 30 and 60 percent, respectively.

Economic environment and demand for different property types

Real Estate companies usually specialize in owning and operating certain types of properties, such as multifamily rental apartment buildings, office buildings, shopping centers and other retail space, hospitals, medical centers, or warehouses. Specific economic factors affect the demand for certain types of property, and, therefore, the ultimate performance of each type of company.

In the residential market, for example, demand for apartments is driven primarily by two factors: the change in non-farm payrolls and the affordability of single-family housing. Demand for apartments is high in urban markets, where job growth tends to be above the national average and where the high cost of ownership leads people to rent. Urbanization and improving job markets support higher occupancy rates in urban apartment buildings. As long as the supply of rental apartments and single-family home affordability remain low, and demand continues to rise, vacancy rates in this segment are likely to decline, which ultimately may result in a positive impact to FFO for companies that own multifamily assets.

For the office segment, the state of the economy and changes in non-farm payrolls were historically the main drivers of demand. In the last 15 years, however, two more drivers have emerged:

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III Funds from operations is the most commonly accepted and reported measure of REIT performance and it is equal to net income, excluding gains or losses from sales of property, plus real estate depreciation.
densification and urbanization. In an effort to preserve margins, employers in nearly every industry began configuring their work environments to accommodate more employees into the same—or even less—space. Before 2000, companies typically allotted 300 square feet per employee; today, employers generally allocate 200 square feet or less. Though densification has now largely played out in most markets, it generally cut demand for office space by one-third.8

The trend toward urbanization in some geographic markets is another factor affecting office property valuations. Similar to how the millennial generation of workers want to reside in the amenity-rich, transportation-served environments afforded by most cities, they also prefer to walk to work. Employers who need to recruit and retain this younger, tech-savvy generation are responding by relocating or expanding operations in urban locations. This growing level of demand, combined with the more supply-constrained nature of urban areas, has supported greater valuation expansion for urban office properties (and the companies that own them) versus suburban office properties and companies.9

Industrial property, including warehouses, is among the most stable, low-volatility asset classes in the U.S., as evidenced by the segment’s historical occupancy rates of roughly 88 to 92 percent. A fundamental reason for the segment’s stability is that the properties typically take less than a year to construct, which enables supply to generally stay in line with demand. Demand for industrial property is correlated with consumer spending and a country’s gross domestic product (GDP). Owing to the stable nature of their underlying properties, the performance of real estate companies with assets in the industrial segment tends to be steady and less volatile than that of other property types.10

Retail property values are correlated with consumer spending, which in turn is a function of the amount of consumers’ disposable income and consumer confidence levels. Retail spending affects tenants’ ability to pay their leases and determines the health of the retail real estate segment.11

Performance of companies that own and develop health care facilities is linked to a country’s health care system. An aging population and rising health care costs are likely to stimulate growth in this segment, as demand for retirement homes, nursing facilities, and medical centers continues to increase.12

**Industry size, access to capital, and valuation**

The Real Estate industry is mature, but still has a higher expected long-term growth rate than the U.S. GDP. Prior to the financial crisis of 2008–2009, the industry had gone through consolidation, as large financial institutions and equity investors acquired some public REITs. Acquisition activity from larger REITs may be higher in times when smaller companies struggle to pay their debt and may be forced to sell assets. Economic recovery and low interest rates are likely to benefit the industry, stimulating expansion.13

While the concentration of listed REITs in the U.S. is relatively low, with the top five companies accounting for close to 20 percent of industry revenue,14 the concentration within individual segments may be substantially higher. For example, the top five apartment REIT companies represent almost 55 percent of the market.15 Similarly, in the office REIT segment, the top five companies represent almost 48 percent of the market.16 And in the health care REIT segment, almost 85 percent of revenue is generated by the
five largest companies. On the other hand, the concentration within the retail REIT segment is significantly lower. Within certain geographic areas, though, the concentration may be even higher and could continue to increase, as larger firms acquire less capitalized companies.

The global Real Estate industry generates around $880 billion in annual revenue. Revenues from companies whose securities trade on U.S. exchanges total approximately $118 billion, with the major share coming from companies structured as REITs (92 percent). Among REITs, revenues from the Retail REIT segment account for almost 23 percent of the total, followed by Hotel REITs (almost 17 percent), Office REITs (14 percent), Housing REITs (13 percent), and Health Care REITs (12 percent). Leases paid by tenants account for the industry’s primary revenue source. As lease agreements tend to be one to five years in length, depending on the type of property, the predictability of these cash flows is higher than those in many other industries.

Because REITs must distribute 90 percent of their taxable income as dividends, they are often not able to build substantial amounts of cash to fund acquisitions or new developments to enhance their growth. Instead, most REITs issue debt and equity at fairly regular intervals. For these reasons, REITs need access to efficient, liquid capital markets. In 2007 and 2008, the global financial crisis caused both the equity and debt markets to become dislocated and effectively inaccessible. Investor concerns surrounding REITs’ abilities to refinance maturing debt with new debt or new equity was one of the primary drivers of the U.S. REIT market’s 18 percent decline in 2007, and its 38 percent drop in 2008. Real estate companies that manage their capital prudently and maintain strong cash positions can capture opportunities of distressed real estate values during recessions and expand their portfolios.

While REITs are generally not subject to corporate tax on earnings distributed to investors—and therefore, do not benefit from the tax advantages of debt financing in the same way other companies do—REITs still employ financial leverage to varying degrees. In 2013, the median debt-to-equity ratio of REITs listed on U.S. exchanges and those traded primarily over-the-counter (OTC) was almost 97 percent. REITs deleveraged their balance sheets in the aftermath of the 2007-2009 financial crisis. In 2008, REITs’ median debt-to-equity ratio was 145 percent; this ratio steadily declined until 2014, when it increased slightly to 102 percent.

Levels of debt on a REITs’ balance sheet can imply important cash outflows from financing activities in the form of interest and principal payments. Alongside property maintenance and operation costs (M&O) and capital expenditures, debt repayments can account for significant expenses for REITs. The importance of both M&O and capital expenditures depend largely on the type and age of properties, as well as on the type of contracts that real estate owners have with their tenants. These contracts can sometimes stipulate cost sharing clauses, particularly in the context of utility bills and capital expenses (see Management of Tenant Sustainability Impacts section for a more detailed discussion).

Traditional valuation methods –such as earnings per share (EPS) and price-to-earnings (PE) ratios—do not apply to the Real Estate industry, since their operations are different from traditional companies. This difference stems from the fact that net income calculations include depreciation expenses, which are often significant line items for real estate companies. However, unlike companies in other industries, property managed by real estate companies rarely loses value – and in most cases appreciates. Thus, subtracting depreciation expenses from net income is an
inferior way to measure a company’s value. As mentioned earlier, FFO is the preferred industry measure as it adds depreciation back to the mix (among other calculations). Analysts also use adjusted funds from operations (AFFO) as a valuation tool. AFFO adjusts FFO by deducting capital expenditures required to maintain and/or improve an existing portfolio of properties.\textsuperscript{25} As will become evident in the following sections, capital expenditures are important in the context of managing sustainability challenges faced by the industry.

Therefore, instead of traditional EPS and P/E ratios, REITs are often valued based on FFO and/or AFFO per share (i.e. FFO/share, AFFO/share) and price per FFO and/or AFFO ratios (i.e. P/FFO, P/AFFO). In 2014, the median P/FFO ratio of REITs listed on U.S. exchanges and those traded primarily OTC was 18.25. The ratio has steadily increased since 2008, when it was at a low of 10.14.\textsuperscript{26}

Other important valuation metrics for the Real Estate industry include: dividend yields, dividend safety, and leverage.

REITs that are able to generate increasingly higher FFO/share each year tend to garner higher valuation premiums than lower or negative growth REITs; however, analysts also take into consideration the levels of leverage to fund growth. If a REIT is generating above average FFO per share growth through unsustainable means, the investment community typically will not reward such a company with a premium valuation, as the use of higher leverage may ultimately jeopardize the company’s ability to pay its common dividend. REITs employ financial leverage to varying degrees, depending on property type. REITs that use longer term leases, such as apartments or hotels. The table, below, illustrates the different debt ratios associated with each major property type at the end of 2014:\textsuperscript{27}

<table>
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<th>Segment</th>
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<tr>
<td>Industrial/Office</td>
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<tr>
<td>Retail</td>
<td>31.9</td>
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<tr>
<td>Residential</td>
<td>30.6</td>
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<tr>
<td>Hotels/Lodging</td>
<td>29.1</td>
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<tr>
<td>Health care</td>
<td>32.7</td>
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The growth of the Real Estate industry depends on companies’ ability to raise capital and maintain long-term attractive lease agreements with tenants to ensure strong FFO. The attractiveness of real estate to potential tenants, including its energy efficiency, location, and space utilization, for example, is likely to increase property values and rental income. Companies that are able to effectively manage the issues discussed throughout this brief are likely to be more attractive to investors.

**LEGISLATIVE AND REGULATORY TRENDS IN THE REAL ESTATE OWNERS, DEVELOPERS & INVESTMENT TRUSTS INDUSTRY**

Regulations in the U.S. and abroad represent the formal boundaries of companies’ operations, and are often designed to address the social and environmental externalities that businesses can create. Beyond formal regulation, industry practices and self-regulatory efforts act as quasi-regulation and also form part of the social contract between business and society. In this section, SASB provides a brief summary of key regulations and legislative efforts related to this industry, focusing on social and environmental factors. SASB also describes self-regulatory efforts.
on the part of the industry, which could serve to pre-empt further regulation. IV

Depending on property type, companies in the Real Estate industry are subject to various federal, state, and local laws and regulations regarding building codes, environmental and health and safety matters. These laws and regulations address issues such as the use of toxic materials, wastewater discharges, energy and water management, air emissions, indoor air quality, and the treatment of different types of waste, including hazardous and medical wastes.

The Environmental Protection Agency (EPA) is in charge of enforcing the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known as Superfund. CERCLA gives the federal government authority to respond directly to releases or threatened releases of hazardous substances into the environment that have created actual or potential environmental damage. CERCLA’s primary means for addressing these releases is to impose strict liability for cleanup sites upon current and former site owners and operators, and the actual generators and/or transporters of the hazardous substances. The EPA may issue orders requiring responsible parties to remediate sites, or it may seek recovery of current and estimated future costs. 28 As owners of property, companies in the Real Estate industry must implement strong due diligence mechanisms to avoid liability from CERCLA violations; this may be of particular importance for certain industry segments, such as those dealing with industrial properties.

Evolving climate change regulations have put pressure on real estate owners and developers to increase the resource efficiency of their properties. In March and April of 2015, the U.S. Senate and House of Representatives passed the Energy Efficiency Improvement Act, which was then signed into law by the President. The new law requires the General Services Administration (GSA), in consultation with the Secretary of Energy (DOE), to develop and publish model commercial leasing provisions for use in leasing documents that designate a federal agency as a landlord or tenant. These agreements aim to encourage building owners and tenants to invest in cost-effective energy and water efficiency measures. Moreover, it requires the GSA to develop policies and practices for implementing the measures among the realty services that it provides to agencies. 29

The bill also requires the EPA to develop a voluntary Tenant Star program, within the existing Energy Star program, “to recognize tenants in commercial buildings that voluntarily achieve high levels of energy efficiency in separate spaces.” 30 Full details of the Tenant Star program are still pending, but industry associations expect the program to have a considerable impact on how tenant and building owners work together to address resource use and efficiency (see Management of Tenant Sustainability Impacts section. 31

Several jurisdictions in the U.S. mandate the disclosure of a building’s energy efficiency, and in some cases water efficiency as well, to the government agencies, buyers, lessees, lenders, and tenants. For example, commercial and multifamily building owners that exceed certain square footage thresholds in the cities of Boston, Chicago, D.C., Minneapolis, New York, Philadelphia, and San Francisco must make the energy (and sometimes water) efficiency of their properties publicly available on their websites. 32

The EPA and the U.S. Occupational Safety and
Health Administration (OSHA), with the support of organizations including the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), are creating indoor air quality standards for buildings. While OSHA does not have indoor air quality standards of its own, the administration imposes standards on ventilation and particular air contaminants and provides guidelines about the most common indoor air quality workplace complaints.

Nonetheless, employers are required to follow the General Duty Clause of the Occupational Health and Safety Act of 1970, which requires them to provide workers with a safe workplace that does not have any known hazards that can cause or are likely to cause death or serious injury. As owners and developers of different types of properties—including industrial, office, and health care facilities—real estate companies may be able to influence such health outcomes.

In 1968, the U.S. Congress created the National Flood Insurance Program (NFIP) to provide a means for property owners to protect themselves financially from flood damage. The Federal Emergency Management Agency (FEMA) is in charge of managing NFIP. Through its Risk Mapping, Assessment and Planning program (MAP), FEMA “identifies flood hazards, assesses flood risks, and partners with states and communities to provide accurate flood hazard and risk data to guide them to mitigation actions.” NFIP bases its regulations and flood insurance requirements on flood hazard mappings. The program sets standards for permit requirements and ensures that new developments do not cause increased flooding elsewhere. The NFIP works closely with nearly 90 private insurance companies to offer flood insurance to homeowners, renters, and business owners.

Since the NFIP’s creation, amendments have been added to address the increasing threat of climate change. For example, in March 2014, the Obama Administration signed the Homeowner Flood Insurance Affordability Act of 2014 into law. Among other things, the new law lowers the recent rate increases on some policies and prevents some future rate increases. Flood insurance rates are dependent on risk level, property type and location. Their levels may impact the demand for certain types of properties (including those for sale and rent), as well as insurance costs for property owners, and, depending on contractual terms, their tenants.

In addition, in January 2015, President Obama signed an executive order that requires all federally-funded construction projects to take into consideration flood risks linked to climate-change-related events. While some of these projects may fall outside the scope of the Real Estate industry, the executive order shows the U.S. government’s increasing concern over climate change resiliency, which could drive future regulatory efforts. Companies that operate in markets where a significant share of revenue is derived from rental leases to government agencies may be at a higher risk.

Regulations are commonly implemented through the use of federal, state, and local building codes. These codes are based on standards for building design, quality of materials, and the ultimate safety of buildings. The International Code Council (ICC) endorses building codes relating to different types of buildings and construction activities.

Recent trends in building sustainability have led to the creation of industry-driven organizations—such as the Global Real Estate Sustainability Benchmark (GRESB)—that seek to assess and improve the sustainability performance of real
This trend has also spurred the creation of different sustainable building rating systems. For example, the Leadership in Energy and Environmental Design (LEED) and the Building Research Establishment Environmental Assessment Methodology (BREEAM) provide certification for new or retrofitted residential and non-residential buildings. Both of these rating systems have grown considerably over the last few decades. The U.S. Green Building Council (USGBC) reports that every day more than 1.5 million square feet of space is certified using LEED. In December 2013, the USGBC announced that it had issued its 20,000th LEED certification since its creation in 1993. The organization reports that more than 56,000 commercial and institutional projects worldwide—totaling 10.5 billion square feet of construction space and more than 47,000 residential units—currently participate in LEED. BREEAM, on the other hand, has certified more than 539,600 developments worldwide, and more than 2.2 million have registered for assessment since its creation in 1990. Real estate companies can use certifications like these to maximize the environmental (and social) outcomes from the properties in their portfolios.

SUSTAINABILITY-RELATED RISKS AND OPPORTUNITIES

Industry drivers and recent regulations suggest that traditional value drivers will continue to impact financial performance. However, intangible assets such as social, human, and environmental capitals, company leadership and governance, and the company’s ability to innovate to address these issues are likely to increasingly contribute to financial and business value. Broad industry trends and characteristics are driving the importance of sustainability performance in the Real Estate industry:

- Reliance on natural capital, in particular energy and water, in an era of resource constraints: Tenants, regulators, and other stakeholders are increasingly calling for improved building energy and water efficiency.
- Externalities created due to misaligned incentives between asset owners and their tenants: Collaboration between building owners and tenants is necessary to realize the full potential of sustainability initiatives aimed at improving buildings’ environmental (and increasingly social) impacts.
- External environmental factors not directly under Real Estate companies’ control that could affect the value of assets as well as threaten human safety: The expected increased frequency and severity of climate change related events poses physical risks to a share of the industry’s assets; certain types of coastal and low-lying properties, for example, may be exposed to increasing flooding risks.

As described above, the regulatory and legislative environment surrounding the Real Estate industry emphasizes the importance of sustainability management and performance. Specifically, recent trends suggest a regulatory emphasis on energy and water conservation, which will serve to align the interests of society with those of investors.

The following section provides a brief description of each sustainability issue that is likely to have material financial implications for companies in the Real Estate industry. This includes an explanation of how the issue could impact valuation and evidence of actual financial impact. Further information on the nature of the value
impact, based on SASB’s research and analysis, is provided in Appendix IIA and IIB.

Appendix IIA also provides a summary of the evidence of investor interest in the issues. This is based on a systematic analysis of companies’ 10-K and 20-F filings, shareholder resolutions, and other public documents, which highlights the frequency with which each topic is discussed in these documents. The evidence of interest is also based on the results of consultation with experts participating in an industry working group (IWG) convened by SASB. The IWG results represent the perspective of a balanced group of stakeholders, including corporations, investors or market participants, and public interest intermediaries.

The industry-specific sustainability disclosure topics and metrics identified in this brief are the result of a year-long standards development process, which takes into account the aforementioned evidence of interest, evidence of financial impact discussed in detail in this brief, inputs from a 90-day public comment period, and additional inputs from conversations with industry or issue experts.

A summary of the recommended disclosure framework and accounting metrics appears in Appendix III. The complete SASB standards for the industry, including technical protocols, can be downloaded from www.sasb.org. Finally, Appendix IV provides an analysis of the quality of current disclosure on these issues in SEC filings by the leading companies in the industry.

ENVIRONMENT

The environmental dimension of sustainability includes corporate impacts on the environment. This could be through the use of natural resources as inputs to the factors of production (e.g., water, minerals, ecosystems, and biodiversity) or environmental externalities and harmful releases in the environment, such as air and water pollution, waste disposal, and greenhouse gas (GHG) emissions.

Buildings and their associated operations consume significant natural resources. The environmental impacts of the built environment are large in aggregate, but at the same time diffuse across a number of properties and actors (i.e., owners, developers, tenants etc.). This poses peculiar challenges with respect to reducing these impacts, so governments step in (through codes and regulatory requirements) to address the problem.

Managing energy and water efficiency is important, not only for improving the environmental impacts of real estate, but also for increasing asset valuation and reducing owners’ operating costs and risk exposure to evolving energy regulations. In addition, residential, commercial, and industrial tenants are increasingly concerned with sustainability issues. By improving the environmental performance of their properties, companies in the Real Estate industry may see increased demand from potential tenants, leading to increased rental income and asset appreciation.

Energy Management

Real estate assets consume significant amounts of energy, primarily related to space heating, ventilating, air conditioning, water heating, lighting, equipment, and appliances. Energy consumption leads to the production of greenhouse gas emissions and other environmental and social externalities further upstream. Although real estate companies are generally not responsible for total energy consumed by any given building (or portfolio of buildings), they normally do have direct control
Type of energy used, magnitude of consumption, and strategies for energy management are highly dependent on the real estate asset class, among other factors. Generally, grid electricity consumption is the predominant form of consumed energy. In the U.S., retail electricity rates have been increasing and real electricity prices are expected to increase in the future, partly due to environmental regulations. At the same time, direct consumption of fossil fuels, to the extent it occurs on properties, carries risk due to price volatility.

Depending on contractual factors, energy costs may be borne by companies in the industry and/or the property occupants; however, energy management is a significant industry issue regardless of which party incurs the direct operating costs. To the extent that the real estate owner assumes direct responsibility for energy costs, such costs can represent significant operating expenses. Energy costs paid by occupants, in whole or in part, are likely to significantly impact companies in the industry, albeit through differing channels (see Management of Tenant Sustainability Impacts section below). For example, the energy performance of buildings can be a notable driver of demand due to tenants’ desires to control operating costs and mitigate environmental impacts of operations.

As a result, companies in the industry that effectively manage the energy performance of their assets could see increased tenant demand, rental rates, and occupancy rates, all of which drive revenue and asset value appreciation, particularly in markets where regulations mandate the transparent release of energy efficiency information.

Evidence

Buildings consume significant amounts of energy. In 2014, 41 percent of total U.S. energy consumption took place in residential and commercial buildings.
According to the most recent publicly available data from the U.S. Energy Information Administration’s (EIA) Commercial Buildings Energy Consumption Survey (CBECS), in 2003, energy consumed by commercial buildings totaled 6,523 trillion BTU, representing an energy intensity of 91,000 BTU/ft². Almost 55 percent of all energy consumed in these buildings was in the form of electricity, 32 percent was natural gas, 10 percent was district heating and the rest was fuel oil. For residential buildings, and according to the latest available data from the EIA’s Residential Energy Consumption Survey (RECS), in 2009 total energy consumption totaled almost 10.2 quadrillion Btu, representing an energy intensity of 45,500 thousand BTU/ft². The data also show that the main source of energy in residential buildings is natural gas (46 percent), followed closely by electricity (43 percent), and the remaining share comes from the use of propane/LPG, fuel oil and kerosene.

Energy consumption and intensity vary depending on the main activity of the building. For example, mercantile and service buildings—which include non-food retail properties—consumed 20 percent of all energy used by commercial buildings, followed by office buildings (17 percent), educational facilities (13 percent), health care facilities (9 percent), hotels and lodging facilities (8 percent) and food service outlets (7 percent). In terms of energy intensity, buildings dedicated to inpatient health care services have the highest level at 249,000 BTU/ft², mainly due to the round-the-clock nature of operations and use of certain types of specialized equipment. In contrast, lodging facilities and mercantile spaces have some of the lowest intensities, at 100,000 and 91,000 BTU/ft² respectively.

As noted above, electricity is the main source of energy used by most commercial buildings, and is also a major source of energy use in residential spaces. In commercial spaces, electricity is mainly used for lighting (38 percent), cooling (14 percent), ventilation (12 percent), and refrigeration (11 percent). In residential buildings, electricity is mainly used to operate different types of home appliances (55 percent) excluding air conditioning (almost 15 percent) and refrigerators (11 percent). Space and water heating both represent 9 percent of energy use.

Large consumers of electricity typically have high operating costs associated with electricity consumption. Even though these costs may not be borne entirely by real estate companies, increases in electricity prices pose a challenge for those that are directly responsible for a high portion of electricity use in the areas that they directly control. The average retail price of electricity in the U.S. increased by around 43 percent between 2001 and 2014, from 7.29 cents per kilowatt-hour (kWh) to 10.45 cents per kWh, with wide regional variations. However, retail electricity price increases have historically been lower than the general rate of inflation in the U.S. Additionally, the EIA’s long-term projections show that average end-use prices for electricity across sectors may increase by around 4.5 percent between 2013 and 2020 in 2013 cents per kWh, and by 12.5 percent between 2013 and 2035.

Managing energy (particularly electricity) is becoming progressively important in the context of increasing electricity prices, which vary by type of building. The EIA estimates that total electricity expenditures of office, retail, health care, and warehouse buildings amounted to $46 billion in 2003. In 2014 the average retail electricity price per megawatt-hour (MWh) was $110 for commercial use, $72 for industrial use, and $127 for residential use. The EIA’s “2014 Annual Energy Outlook” forecasts the retail electricity prices for commercial, industrial, and residential
Electricity prices are driven mainly by the cost of natural resources used in electricity generation, investments in transmission and distribution infrastructure and renewable energy, and by demand-side efficiency. About 67 percent of the electricity in the U.S. is generated from coal, natural gas, and petroleum. Climate change regulations may significantly affect energy prices as well as the availability of fossil fuels for energy generation. These regulations are also likely to drive the adoption of alternative forms of energy such as wind and solar through rebates and tax breaks. In recent years, modular and distributed renewable energy technologies have become significantly more affordable. Depending on the type of property, real estate companies can offset some of their electricity consumption from the grid through on-site generation of electricity using these technologies. According to a 2015 global survey conducted by the GRESB, 35 percent of participants design their new development projects to generate energy from on-site renewable resources.

Companies in the industry have started recognizing these risks in their annual SEC filings. For example, in its fiscal year (FY) 2014 Form 10-K, CoreSite Realty, a Specialized REIT, warns investors that “we may be subject to risks and unanticipated costs associated with obtaining power from various utility companies...the price of [certain] fuels and the electricity generated from them could increase as a result of proposed legislative measures related to climate change including efforts to regulate carbon emissions and increase supply from more expensive renewable energy sources.”

Buildings’ significant energy consumption and the risk of increasing electricity costs highlight the importance of the issue to the Real Estate industry. While property owners may not have direct control over the energy sources available through the grid, they may be able to minimize exposure to these risks by investing in energy efficiency measures and relying on renewable energy sources when possible. Management of energy consumption could present opportunities for companies in the industry through cost savings, and by making their assets more attractive to tenants, potentially increasing rental premiums and occupancy rates.

Several studies show that buildings certified based on their energy performance improve tenant satisfaction and command higher rental premiums. An analysis performed by the General Services Administration (GSA) on a sample of 22 buildings found that those certified by Energy Star and/or the Leadership in Energy and Environmental Design (LEED) had 27 percent higher occupant satisfaction than the national average. Similarly, a survey conducted by the real estate services company CBRE, the University of California, San Diego, and McGraw Hill Construction, found that building managers saw a significant improvement in tenant satisfaction after “green” updates. The study also found that LEED-certified buildings have higher occupancy and rental rates.

These findings are in line with other analyses that have identified rental premiums related to Energy Star certified commercial buildings. These premiums range between four and 13 percent. Insights from such research should be formed cautiously due to issues related to correlation versus causation, and highly varied applicability of certain types of certifications based on property types, location, and building age.

Investing in energy management initiatives can not only potentially increase tenant satisfaction...
and the value of assets, it can also lower operating expenses though utility cost savings. A 2014 survey prepared for the National Association of Real Estate Investment Trusts (NAREIT) shows that total project investments in a small sample of energy efficiency initiatives amounted to $104.7 million, while the value of total savings from these projects in that same year totaled $39.5 million. Return on investment (ROI) for such projects was 40 percent. Similarly, the GSA study referenced earlier found that, compared to the national average, Energy Star and/or LEED certified buildings use 25 percent less energy, produce 36 percent lower CO₂ emissions, and have 19 percent lower operating costs than non-certified buildings.

Some companies have started providing disclosure on this front in their annual SEC filings. Simon Property Group, a retail REIT, discloses in its FY 2014 Form 10-K that “Through the continued use of energy conservation practices, energy efficiency projects, and continuous monitoring and reporting, we have reduced our energy consumption at comparable properties every year since 2003. As a result, excluding new developments and expansions, we reduced the electricity usage over which we have direct control by 280 million [kilowatt-hours] kWh since 2003. This represents a 30 percent reduction in electricity usage across a portfolio of comparable properties and reflects an annual value of over $28 million in avoided operating costs.” Some of the energy saving initiatives undertaken by the company include installing efficient lighting systems, chillers, and rooftop heating, ventilation and air conditioning (HVAC) units, and energy management systems to control mechanical and electrical systems and variable speed drives on pumps and fans.

Given the potential for increased asset values, higher revenue streams from rental premiums and occupancy rates, as well as the meaningful cost savings obtained through attractive energy capital projects, REITs that have effective energy management strategies may provide higher risk-adjusted returns to investors.

Value Impact

Effective energy management is likely to provide several benefits to companies in the Real Estate industry. First of all, reducing the amount of energy, particularly electricity, consumed by buildings results in cost savings that are either realized by owners and/or passed on to tenants. More importantly, companies that own buildings that outperform others in terms of their energy use are likely to see the value of their assets increase. Better energy performance is likely to impact revenue via higher rent premiums and occupancy rates. Therefore, companies that make capital expenditures with solid returns on investment to improve the sustainability characteristics of their properties may see higher returns and stronger balance sheets over time.

As climate change and energy efficiency regulations continue to evolve, the importance of the issue is likely to increase in the future. Information on energy consumption data coverage can help analysts adjust a company’s risk premium; for example, companies that have relatively low data coverage may be penalized with a higher risk premium resulting from uncertainty around the energy performance of their portfolio (in the near-term) and implications of tenant demand (in the medium- and long-term). While data coverage is a critical first step to energy management, disclosure on energy ratings and benchmarking (e.g., ENERGY STAR Portfolio Manager®) can also be used by analysts as a direct indication of management’s approach to energy management. Furthermore, depending on the property type and overall market, energy
performance certifications, such as ENERGY STAR® certifications, may be used to help determine the energy efficiency of assets in the portfolio, as well as the follow-on financial effects such as increased tenant demand, occupancy rates, and reduced regulatory risks.

It is important to note that real estate portfolios experience varying levels of activity (such as acquisitions, divestments and renovations) that can significantly impact aggregate portfolio energy consumption in any given year. Like-for-like energy consumption information enables more comparable and reliable analysis of energy performance and energy efficiency and it is a direct indicator of the effectiveness of energy management strategies over the near- and long-term.

**Water Management**

Buildings consume a significant amount of water during their daily operations, via water fixtures, building equipment, appliances, and irrigation systems. Operating costs resulting from water consumption may be significant, depending on property type, tenant operations, geographical locations, and other factors. As with energy costs, companies in the real estate industry are generally not entirely responsible for all water used by buildings and their occupiers; however, water use in spaces under the direct control of companies can be important both in sustainability and economic terms.

Even in arrangements were water costs are entirely or partially allocated to tenants, water management continues to play an important role for companies in this industry through demand factors; tenants may still assess the water efficiency of real estate assets in an effort to control operating costs, mitigate environmental impacts of operations and water sourcing risks, and, often just as importantly, put forward a positive public image in regards to resource conservation. Moreover, certain jurisdictions are mandating the release of building water efficiency data so that potential customers can compare the environmental footprint of properties.

Projected price increases due to overconsumption and constrained supplies indicate the heightened importance of water management. While water has typically been a freely available and abundant commodity in many parts of the world, it is becoming a scarce resource due to population growth and rapid urbanization, as well as climate change. Furthermore, water pollution can render water supplies unusable or expensive to treat.

Based on recent trends, it is estimated that by 2025, important river basins in the U.S., Mexico, Western Europe, China, India, and Africa will face severe water problems as demand overtakes renewable supplies. Many important river basins can already be considered “stressed.” Improving the water efficiency of assets is highly dependent on property type, local water availability, target tenant market, local building codes, the ability to measure consumption, and the efficiency of existing building stock, among other factors.

Generally, effective water management strategies include measuring water consumption, benchmarking performance (e.g., Energy Star Portfolio Manager, which includes water in addition to energy, and GRESB), and investing in economically attractive water efficiency capital projects.

Company performance in this area can be analyzed in a cost-beneficial way and through the following direct or indirect performance metrics (see Appendix III for metrics with their full detail):

- Water consumption data coverage as a percentage of total floor area and percentage in regions with High or Extremely...
High Baseline Water Stress, each by property subsector;
- Total water withdrawn by portfolio area with data coverage and percentage in regions with High or Extremely High Baseline Water Stress, each by property subsector;
- Like-for-like change in water withdrawn for portfolio area with water consumption data coverage, by property subsector; and
- Discussion of water management risks and description of strategies and practices to mitigate those risks.

Evidence

Buildings use significant amounts of natural resources, including water, during their day to day operations. According to the EPA’s WaterSense Program, the residential sector uses more than half of publicly supplied water in the U.S., while the commercial and institutional sector—which includes facilities such as hotels, restaurants, office buildings, schools, hospitals, and laboratories, among others—accounts for 17 percent of withdrawals from public water supplies.67

Total water use levels, as well as the end-use of such water, varies greatly based on the type of building. These variations may result from differences in building type (e.g. residential, commercial, industrial), local climate, and/or equipment operation. In the residential sector, for example, roughly 70 percent of water use occurs indoors, while the rest is used for irrigation and other outdoor activities. Indoor water is mainly used for operating toilets (almost 27 percent), washing machines (22 percent), showers (17 percent) and faucets (15 percent) 68

Hotel and lodging facilities use 15 percent of all the water used by commercial and institutional buildings in the U.S. Water is mainly used in restrooms (30 percent), laundry operations (16 percent), landscaping (16 percent), and kitchen and dishwashing activities (14 percent). Office buildings, on the other hand, use approximately nine percent of the total, with the majority of water being used for operating restrooms (37 percent), cooling and heating (28 percent) and landscaping (22 percent). Finally, hospitals and other health care facilities use seven percent of the total, mainly for operating restrooms (35 percent), cooling and heating (20 percent) and operating medical equipment (15 percent).69

Water intensity also varies greatly depending on the type of building. Data from the EPA’s Energy Star program show that senior care facilities have the highest median water use intensity, at roughly 60 gallons per square foot, followed by hotels (55 gal/ft²), hospitals (52 gal/ft²), and multifamily housing (42 gal/ft²). Offices, retail spaces, and unrefrigerated warehouses have the lowest median water use intensities.70 This highlights the fact that water management may be more important for companies operating in particular segments of the Real Estate industry, such health care, hotels and residential. However, the level of financial impact on real estate owners will also be dictated by tenant types and lease structures.

Proper management of sustainability issues, including water, is likely to increase the value of real estate assets, regardless of contractual agreements that determine the share of water costs borne between asset owners and tenants. In a recent survey of U.S. property owners and investment managers, 76 percent of respondents stated that there is a value difference between a sustainable and non-sustainable property. Moreover, respondents ranked water conservation second, behind only energy efficiency, in a list of 14 sustainability factors that have an impact on the perceived value of an asset.71
Additionally, water management is increasingly a factor in risk assessments for new acquisitions. For example, 77 percent of respondents of the 2015 GRESB survey referenced earlier consider water efficiency when assessing new acquisitions, up from 68 percent in the previous year. Water scarcity may affect companies in the Real Estate industry differently, depending on the location of their assets, as well as their concentration in certain market segments. For example, consider companies that own and lease data center real estate. A mid-size 15 megawatt data center uses as much as 150 million gallons of water, mainly for cooling high-tech equipment. Companies that own data center space in drought-stricken California are feeling regulatory and social pressure to reduce their water use and improve their efficiency. To address water sourcing risks, some companies have begun to dig wells, build storage tanks, and use other sources of non-potable water to reduce their risks of running out of the valuable resource. While this example relates to a relatively small segment within the industry, it shows how water sourcing risks can affect companies in the industry. Hotel and Residential REITs are also particularly susceptible to water sourcing challenges.

Water conservation measures can also reduce the risks of increasing water costs borne by both asset owners and tenants. Water is the fastest growing utility expense, according to a recent study by the Urban Land Institute (ULI). Over the last 30 years, the cost of water has outpaced the Consumer Price Index (CPI) by more than 200 basis points, and is growing at the fastest rate of any utility.

Asset owners may bear responsibility for some water costs, particularly in building common areas. However, traditionally the majority of water costs are borne by tenants. As mentioned above, even in these cases, water management continues to play an important role through tenant demand. Tenants of certain types of buildings may assess the water efficiency of real estate assets in an effort to control operating costs and improve their sustainability credentials. As the cost of water continues to outpace nominal inflation rates, water consumption will be important to manage effectively.

The Real Estate industry has a history of managing sustainability issues, including water conservation. Data from the same GRESB survey referenced earlier show that 91 percent of survey participants have environmental policies in place that specifically address water consumption; and 69 percent of them undertake specific conservation measures, the most common of which are installing high-efficiency fixtures (67 percent), occupant sensors (33 percent), and drought tolerant and low water landscaping (11 percent). In order to evaluate the effectiveness of these measures, more companies are monitoring their performance: 87 percent of companies have systems in place to monitor water consumption (up from 81 percent a year earlier), and 68 percent perform independent checks on water data (up from 61 percent).

Some companies in the industry have started providing disclosure around water conservation efforts in their annual SEC Filings. In its FY 2014 Form 10-K, for example, Host Hotels & Resorts mentions that they have established a goal to reduce water use across its portfolio by 15 percent by 2017. The goal is to be achieved in part by "working closely with hotel managers to monitor environmental performance and to support the implementation of operational best practices, and by targeting environmental efficiency projects and equipment upgrades and replacements". While explaining its capital investment and value enhancements initiatives, the company mentions that "[t]argeted Return on Investment (ROI) projects often are... focused on
increasing space profitability or lowering net operating costs. Typical ROI projects include converting unprofitable or underutilized space into meeting space, adding guestrooms, and implementing energy and water conservation measures such as LED lighting, guestroom water efficient fixtures, and building automation systems.  

In another example, Equity Residential, an apartment REIT, says in its FY 2014 Form 10-K that “...when developing and renovating our properties, we strive to reduce energy and water usage... while positively impacting the experience of our residents and the value of our assets. We continue to implement a combination of irrigation, lighting, HVAC and renewable energy improvements at our properties that will reduce energy and water consumption.”

Finally, as mentioned above (see Evidence section in the “Energy Management” topic above) studies have shown that buildings certified based on their sustainability performance, including water and energy use, are likely to improve tenant satisfaction and command higher rental premiums.

**Value Impact**

Capital expenditures aimed at reducing the overall amount of water used by buildings and/or improving their water use efficiency are likely to provide benefits to companies in the Real Estate industry. Sustainable properties, including those that implement water conservation efforts, often command higher property values, rental rates, and occupancy rates. Also, depending on contract structures, water expenses can be borne by tenants, property owners or a combination of both, particularly in the case of buildings with common areas. Regardless of which structure is in place, water expenses may be reduced when resource efficiency measures are implemented, thereby driving down operating costs and regulatory risks and/or increasing revenue through greater tenant demand and occupancy rates.

As the trend toward improving the efficient use of resources by buildings continues to shape the industry, and as water availability becomes an increasing concern in certain regions due in part to climate change, the risk profile of companies may be impacted, affecting their cost of capital. For the same reasons, the probability and magnitude of this issue is likely to increase in the future.

As mentioned earlier, information on data coverage can help analysts adjust a company’s risk premium. Companies that have prioritized data coverage may be rewarded with lower risk premiums, as this is an indication that portfolio water performance can be better managed.

Analysts can use information on water consumption and efficiency, particularly in water scarce regions, to analyze a company’s exposure to expected long-term (progressive) water price increases and regulations mandating water efficiency.

As mentioned in the Energy Management topic above, it is important to highlight that real estate portfolios experience varying levels of activity (such as acquisitions, divestments and renovations) that can significantly impact aggregate portfolio water consumption in any given year. Like-for-like information enables more comparable and reliable analysis of performance.

**BUSINESS MODEL AND INNOVATION**

This dimension of sustainability is concerned with the impact of environmental and social factors on innovation and business models. It addresses the integration of environmental and social factors in
the value-creation process of companies, including resource efficiency and other innovation in the production process. It also includes product innovation and efficiency and responsibility in the design, use-phase, and disposal of products. It includes management of environmental and social impacts on tangible and financial assets—either a company’s own or those it manages as the fiduciary for others.

Companies in the Real Estate industry are innovating their contractual relations with tenants in order to integrate sustainability characteristics into their leases. The intention is to align the incentives between owners and tenants and to improve the environmental performance of assets, as well as to increase tenant responsibility for the environmental impacts generated by their operations.

Additionally, a significant share of income-generating properties may be located in coastal and floodplain areas, which are susceptible to the physical impacts of climate change. Companies that incorporate climate risk assessments and risk management strategies in the early stages of their investment decisions may reduce their risk exposure.

Management of Tenant Sustainability Impacts

While companies in the industry own real estate assets, it is tenants’ operations of such assets that are the dominant driver of sustainability impacts produced by the built environment. The Energy Management and Water Management topics above have focused on the use of these resources in the context of building areas directly under the control of real estate companies. However, sustainability outcomes strongly depend on the behavior of the people that occupy and use buildings, rather than solely on asset owners themselves. Nevertheless, and thanks in part to business model innovations, real estate owners have the ability to influence the sustainability behavior of tenants, and in so doing improve the overall impacts of their portfolio of assets.

Efforts to improve tenant sustainability performance generally address the “split incentive” problem faced by the Real Estate industry: the economic benefits of sustainability initiatives, such as energy and water conservation efforts, are not fully captured by the party making the investment. Aligning both parties’ financial and sustainability interests is therefore crucial to solve this problem. This can be achieved by, among other things, including “green clauses” in new and existing lease agreements, establishing systematic measurement and communication of resource consumption data, creating shared performance goals, and mandating minimum sustainability performance or design requirements.

Traditionally, standard lease agreements are inflexible and discourage cooperation between building owners and tenants, creating split incentives and leading to underperforming buildings, a lack of information sharing, and barriers to the proper implementation of resource efficiency projects. In an effort to improve this situation, companies in the industry are using “green leases” (also known as “best-practice leases”) in their contractual relationships with tenants. Depending on each company, these leases may include different types of sustainability-related clauses that stipulate the terms for utility-data sharing obligations, environmental conditions for tenant works, and cost-recovery arrangements.

Cost-recovery clauses are designed to help building owners justify sustainability-related improvements across their portfolio. Often, these improvements require large capital investments
for retrofitting or replacing equipment. Therefore, the higher the percentage of costs from such improvements that a building owner can share with its tenants, the greater the return on investment. Companies in the Real Estate industry use a variety of cost-recovery clauses in their base contracts, including amortization clauses – in which capital expenses are spread over a specific period of time – and saving pass-through clauses – which establish that a building owner should be able to recover all operating savings resulting from resource efficiency improvements, up to the point where all original capital expenditures have been repaid. It should be noted that establishing these types of clauses can be difficult for certain segments in the industry and may require lengthy negotiations with tenants; in addition, building owners may face risks if the expected savings from their capital expenditures do not materialize as initially planned.79

Tenant engagement programs on sustainability may also provide an important means to help bridge the gap between potential and actual building performance. These programs may require companies in the industry to promote transparency on resource use, develop tenant sustainability manuals, communicate progress towards shared goals, and periodically survey tenants on their sustainability practices, among other actions.

Effective management of tenant sustainability impacts, particularly related to energy and water, could drive asset value appreciation, increase tenant demand and satisfaction, decrease direct operating costs, and/or decrease risks related to building codes and evolving regulations.

Company performance in this area can be analyzed in a cost-beneficial way through the following direct or indirect performance metrics (see Appendix III for metrics with their full detail):

- Percentage of new leases that contain a cost recovery clause for resource efficiency-related capital improvements and associated leased floor area, by property subsector;
- Percentage of tenants that are separately metered or sub-metered for (1) grid electricity and (2) water consumption, by property subsector; and
- Description of approach to measuring, incentivizing, and improving sustainability impacts of tenants.

Evidence

A building’s sustainability performance strongly depends on occupant resource use. Companies in the Real Estate industry have devised several mechanisms to address this issue, including tenant engagement programs and green leases, in which incentives are created at the lease-level to encourage tenants to use a building in the most sustainable manner.

Tenant engagement programs are common in the industry and the share of companies that use them is increasing with time. According to the 2015 GRESB report, 79 percent of survey participants had a tenant engagement program in place, compared to 72 percent a year earlier. The most common methods of engagement include having tenant engagement meetings (78 percent), providing tenant sustainability guides with advice on how to operate the building in the most sustainable manner (66 percent), providing tenants with feedback on energy and water consumption levels (65 percent) and organizing events on sustainability awareness for tenants (55 percent).80

Case studies on the use of these programs point to their success in improving sustainability outcomes. GPT Group, an Australian-based diversified REIT operating in the retail, office, and industrial segments, implemented an engagement
program to try to boost occupancy rates and tenant satisfaction, as well as to improve the operational efficiency of its portfolio. The company established direct dialogues with tenants, conducted one-way surveys, established partnerships through memorandums of understanding, and created online feedback and progress communication tools, including an environmental footprint calculator. As a result, the company reduced average energy consumption by 29 percent, and increased waste diversion to 50 percent in 2010, up from 29 percent in 2005.81

Similarly, Bentall Kennedy, a Canada-based real estate advisory services provider, implemented a tenant engagement program to help its customers maintain LEED certification of properties and improve their operational efficiency. The program included periodic surveys, distribution of sustainability manuals, and face-to-face meetings with tenants and their employees. The program also included lease updates in order to include green clauses (more on this below). By 2011, the company saw the adoption of sustainability practices by 60 percent of tenants, compared to 40 percent in 2008, as well as a flat carbon footprint despite growth of 5 percent.82

Companies in the industry increasingly use green clauses in their contracts. The 2015 GRESB report referenced earlier shows that 60 percent of survey participants indicate having sustainability-specific clauses in their base leases. This is a considerably larger share than a year earlier, when only 43 percent of respondents reported including them. The types of clauses included in contracts varies, but the most common ones deal with sharing utility data (73 percent), specifying environmentally responsible conditions for tenant works (60 percent), and sharing information relevant to support green building certification (60 percent). Cost-recovery clauses for energy-efficiency-related capital improvements were included in 37 percent of contracts.83

Both owners and tenants can derive considerable financial benefits from having contracts that incorporate sustainability-related clauses. A study of the U.S. office real estate market found that between 11 and 22 percent of building energy consumption could be reduced through the implementation of best practice leases. Tenant space energy savings—the focus of this topic—would range between 7 and 12.5 percent, while those in common areas and core building systems—a part of the Energy Management topic above—would range between 1.5 and 5.8 percent. All in all, the study finds that if such leases were to be implemented in all U.S. leased office spaces, reductions in energy utility expenses per square foot would range between $0.26 and $0.51, representing an annual utility bill savings of between $1.7 billion and $3.3 billion.84

Companies in the industry do not currently report much information on the use of these incentive-aligning mechanisms in their annual SEC filings, although some have started to hint at the importance of tenant relations in the context of sustainability. Host Hotels & Resorts, for example, mentions in its FY 2014 Form 10-K, that its 2017 water conservation goal has been set in part by “working closely with hotel managers to monitor environmental performance and to support the implementation of operational best practices.”85

While lower operating expenses is the most obvious consequence of the implementation of best practice leases, asset owners can also benefit from the increased value of their more sustainable assets. As evidenced elsewhere in this brief, there are studies that show that more resource-efficient buildings may command rental premiums and drive asset value increases (see “Energy
Management” and “Water Management” disclosure topics).

**Value Impact**

Establishing relations with tenants, as well as evolving the contractual terms of lease structures to incorporate sustainability elements, can help improve building resource use and efficiency, including that of energy and water. This may have important financial impacts on property values, rental rates, and occupancy levels, which may positively influence a company’s revenues and balance sheet.

Managing tenant relations in the context of sustainability may also reduce a building’s operating expenses. These cost savings can have positive repercussions for both asset owners, who may be in charge of utility expenses in common areas, as well as tenants, who could see savings in their energy and water utility bills.

Also, management of this issue can have an impact on a company’s capital expenditures aimed at improving resource efficiency of new and/or existing buildings. Innovative contracts may help to reduce the share of expenses borne by companies as these outflows may be shared with tenants or recouped over time as operational savings materialize.

Information on cost-recovery clauses for resource efficiency-related capital improvements may indicate that such improvements are a priority in tenant selection, lease negotiation, and tenant relationship formulation. Analysis of performance on this metric in conjunction with a description of company strategies to incentivize sustainability impacts and other critical tenant-related metrics (such as rental rates) may provide transparency and help explain long-term differentiation in value creation. It may also indicate superior long-term positioning for asset appreciation (due to sustainability improvements) and company value creation (due to reduced capital investments and increased tenant demand).

As the trend toward improving the efficient use of resources by buildings continues to shape the industry, the probability and magnitude of this issue is likely to increase in the future.

**Climate Change Adaptation**

The actual and anticipated physical impacts of climate change on certain geographic areas is starting to affect companies in the Real Estate industry. This is particularly true for firms that own a significant portion of properties that lie in risky coastal and/or flood-prone areas and that are increasingly exposed to extreme weather events. Impacts on water sourcing resulting from a changing climate are also of special consideration for certain companies (see Water Management section above for a deeper discussion on water scarcity).

The increasing frequency and severity of storms in densely populated areas of the East Coast, from New York to Florida, has provided the first signs of what could result from the current concentration of GHG emissions in the atmosphere, which experts predict will lead to a temperature rise of at least two degrees Celsius with adverse consequences on weather patterns and rising sea levels. In addition, global and national political efforts to mitigate climate change are still evolving and may not succeed in abating GHG emissions enough to limit further atmospheric concentration and future warming.

Potential impacts on real estate companies can be significant, as properties are subject to a range of forces from climate change, including direct and indirect physical impacts, as well as market and regulatory effects.
Direct physical impacts include the threat of coastal inundation and the projected increase in frequency and severity of extreme weather events, such as hurricanes, which can lead to property damage. Climate change may also indirectly impact the Real Estate industry by affecting the infrastructure surrounding these properties, limiting access to clean water, sewage treatment\(^\text{v}\), and other critical services and means of transportation. These direct and indirect impacts may be more relevant for certain industry segments. The hotel REIT segment, for example, is particularly vulnerable, as approximately 80 percent of all tourism takes place in coastal areas. Similarly, Residential REIT companies with considerable assets in certain geographic regions, such as Florida, may be at a higher risk.

Market impacts include the risk resulting from anticipatory behavior of consumers (who may negatively impact rental rates and overall demand for properties in perceived and/or actual risky areas) and of institutional investors and fund managers (who are increasingly incorporating sustainability into their investment decision-making processes). Other market agents, chiefly insurance companies, may raise property insurance premiums for assets in specific geographical locations, or even deny coverage altogether, effectively making a share of portfolios uninsurable. Increased premium rates may also impact real estate companies indirectly through higher costs for tenants, which may negatively impact demand in certain locations.

Evolving regulatory actions may also present challenges. A 2015 executive order signed by President Obama requires all federally-funded construction projects (including buildings and infrastructure) to take into account flood risks linked to climate change. Although some of these projects fall outside the scope of the Real Estate industry, the move signals an increasing concern over adaptation and resiliency. This may be of particular importance for certain market segments, as the government is an important customer for leased properties, in particular office space. Moreover, state and local regulatory bodies have already begun to make changes to existing building codes to address some of these risks.

The real estate market plays a crucial role in sustaining the overall economy. A failure to recognize and incorporate climate change risk into long-term strategy and due diligence mechanisms may exacerbate environmental and social externalities. Real estate companies need to consider these risks in their decisions around developing and investing in new projects, as well as improving the resiliency of existing ones. Comprehensive climate change risk assessments will likely be increasingly critical for real estate owners to bring transparency to their risk exposures. These risk assessments may serve as the basis to implement risk mitigation strategies, including physical asset resilience, financial protection through leases and insurance, and diversification based on geography.

Company performance in this area can be analyzed in a cost-beneficial way through the following direct or indirect performance metrics (see Appendix III for metrics with their full detail):

- Area of properties located in FEMA Special Flood Hazard Areas or foreign equivalent, by property subsector; and
- Description of climate change risk exposure analysis, degree of systematic portfolio exposure, and strategies for mitigating risks.

**Evidence**

The physical effects of climate change are increasingly impacting real estate assets.

\(^\text{v}\) For more information see SASB’s Standards and Industry Brief for the Water Utilities industry (SICS: IF0103).
According to the Environmental and Energy Study Institute, seven of the costliest hurricanes in U.S. history have occurred between 2004 and 2014. Natural disasters, such as flooding and hurricanes, cause billions of dollars in property damage in coastal and floodplain areas every year. In 2012, Hurricane Sandy, caused more than $60 billion in damage to both residential and commercial properties. As the expected effects of climate change materialize in the coming decades, these costs are expected to rise.

The Real Estate industry is slowly taking these risks into consideration. The 2015 GRESB survey shows that 54 percent of respondents have some sort of policy in place to address climate risks, but only 35 percent of all participants have one specifically focusing on asset portfolio resilience.

Adverse weather events do not discriminate between new and existing buildings; although, due to their age and applicable building codes at time of construction, the latter are likely to be more vulnerable to these events. Around 68 percent of GRESB survey participants consider natural hazards (such as earthquakes, storms, and flooding) in risk assessments for new developments (up from 48 percent in 2014). However, only 42 percent of companies conduct climate-change-specific risk assessments for new projects (up from 36 percent); while 46 percent conduct them for existing properties (up from 35 percent).

These figures suggest that an important share of the industry needs to pay greater attention to adaptation and resiliency issues, but at the same time, they also show an increasing interest in understanding and accounting for climate-related risks. Studies on the financial impacts of resiliency measures are increasing. For example, a 2005 FEMA-sponsored study conducted by the National Institute of Building Sciences found that every dollar spent on mitigation would save four dollars in losses.

Institutional investors and fund managers are increasingly incorporating climate risks into investment decisions. A recent report prepared by Mercer, a consulting firm, and commissioned by the Network of the Global Investor Coalition on Climate Change, surveyed 37 asset owners and 47 asset managers with collective assets totaling more than $14 trillion. The report’s real estate asset class chapter shows that 60 percent of asset managers were likely to divest from, or elect not to invest altogether in, real estate due to climate change concerns, including physical impacts.

In the mortgage finance industry, SASB research shows that hurricanes, floods, and other natural or man-made environmental events have the potential to decrease the value of underlying assets. In 2013, CoreLogic, a mortgage services company, examined the link between mortgage default risk and natural hazard risk. The study found that the likelihood of default was twice as high for a high-natural-disaster-risk loan as it was for a low-risk loan, and that this, in turn, had the potential to affect the value of properties in risky areas. While this example comes from the mortgage finance industry, it serves to highlight the potential impacts on property values from adverse weather events. Lower asset values have a direct impact on real estate companies’ balance sheets.

Extreme weather events can also have a significant impact on costs. One-time extraordinary expenses for restoration may be required. Plus, longer-term capital expenditures

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VI The Global Investor Coalition on Climate Change was formed in 2012 by four regional climate change investor groups, including: the Institutional Investors Group on Climate Change (Europe), the Investor Network on Climate Risk (North America), the Investor Group on Climate Change (Australia & New Zealand), and the Asia Investor Group on Climate (Asia).
may be necessary to make new and existing buildings more resilient to a changing climate. SASB Research from the Hotel & Lodging industry (SICS: SV0201) serves as an example of the potential costs that companies in the Hotel REITs segment may face: cost estimates for rebuilding tourist resorts in the Caribbean affected by coastal beach erosion from a hypothetical sea level rise of one meter range between $10 billion to $23.3 billion by the year 2050. Moreover, extreme weather events have already led to increased insurance premiums for hotel operators, particularly in coastal regions, where insurance has risen 8 to 10 percent annually on average.

As noted above, one of the key impacts of climate-related events stems from their inclusion in the risk models of property insurance providers. Insurance premiums, which cover losses from natural disasters, vary based on location and are expected to increase as the effects of climate change materialize. For flood insurance in particular, a 2013 climate change study commissioned by FEMA found that the Special Flood Hazard Area (SFHA) in riverine and coastal environments is expected to increase by about 45 and 55 percent, respectively, by 2100. According to the study, by 2100 the total number of NFIP insurance policies may increase by 80 percent, the number of riverine policies may double, and the number of coastal policies may increase by 60 percent. Moreover, the average loss cost per policy may increase by 50 percent over the same period.

Similarly, a report by the Urban Land Institute concludes that increasing storm severity and rising sea levels led to an adjustment to flood risk models, and to a higher proportion of living areas entering zones of high flooding risk. The report cites a New York University study comparing flood hazard maps in New York City from 1983 and 2013 and finds that during that time period, two-thirds of New York City’s properties at medium risk for flooding had shifted into the high-risk category. According to the study, “95,000 buildings and 397,000 housing units are at high and medium risk for flooding.”

Regulatory risks could also affect demand for specific types of properties. As mentioned earlier, the Federal government, which leased a total of 294 million square feet of real property in FY 2014, is increasingly taking the physical risks of climate change into consideration. The U.S. government can be an important customer for certain segments of the Real Estate industry. According to GSA data, the government leased 219 million ft² of office space, 23 million ft² of warehousing space, and 21 million ft² of industrial, service, data center, and health care space in 2014; this represented O&M expenses for the government (including rent) of $6.1 billion, $219 million and $364 million respectively. Companies with revenues that are highly dependent on government leasing contracts may be at a higher risk if these concerns continue to evolve.

At the state and local levels, some building codes already incorporate resiliency issues, or are in the process of doing so. Buildings code modernization is likely to increase as the benefits of such efforts become clearer. A study by the Insurance Institute for Business & Home Safety found that losses from Hurricane Andrew, would have been reduced by 50 percent for residential properties and by 40 percent for commercial properties if they were built in accordance with Florida’s 2004 statewide building code. Hurricane Andrew struck the southeastern coast of the U.S. in 1992.

Companies in different segments of the Real Estate industry already recognize the physical risks from climate change in their annual SEC filings.
and mention some of the channels of financial impact described above.

In the Office REIT segment, for example, Boston Properties mentions that “the physical effects of climate change could have a material adverse effect on our properties, operations and business. For example, many of our properties are located along the East and West coasts, particularly those in the Central Business Districts of Boston, New York, and San Francisco. To the extent climate change causes changes in weather patterns, our markets could experience increases in storm intensity and rising sea-levels. Over time, these conditions could result in declining demand for office space in our buildings or our inability to operate the buildings at all.” 102 Hines Real Estate Investment Trust and Pacific Office Properties provide similar disclosure, noting that indirect material impacts of climate change may also include increased costs of property insurance, energy, and snow removal services. 103

In the apartment REIT segment, Equity Residential informs investors that to the extent that climate change does occur, the company may experience extreme weather and changes in precipitation and temperature, all of which may result in physical damage or a decrease in demand for properties located in affected areas. The company adds that the potential impact of climate change could cause a significant increase in insurance premiums and deductibles, or a decrease in the availability of coverage, either of which may expose them to even greater uninsured losses, which may adversely affect the company’s financial condition or results of operations. 104

A final example from the hotel REIT segment shows the increasing importance of this issue in terms of business growth opportunities. When discussing its strategy for acquisitions of new property, Host Hotels & Resorts mentions that it assesses “both sustainability opportunities and climate change related risks as part of our due diligence process.” 105

**Value Impact**

Properties located in areas subject to severe weather and flooding from rising water levels are at risk of property damage, potentially leading to impacts on asset values. Impacts on the valuation of buildings (and land in general) may in turn lead to long-term reductions in demand for real estate in high-risk areas – or at least the incorporation of heightened occupancy and operating costs.

Extreme weather events linked to climate change may force companies to incur extraordinary expenditures to restore property. Implementing longer term and more comprehensive resiliency measures may also force companies to increase capital expenditures to adapt properties to a changing climate. Insurance may be used as an effective short- or medium-term risk mitigation measure for certain expenses and risks, though long-term operating costs may also be negatively affected if property insurance for weather-related damage to certain assets becomes more difficult or expensive to obtain.

Additionally, the cost of capital may increase significantly for new or existing developments with high climate change risk exposure. As the effects of climate change continue to materialize, the importance of this topic is likely to increase in the medium- to long-term.

Financial impacts to real estate owners must be assessed within the context of companies’ risk management and mitigation strategies, including physical asset resilience, financial protection through leases and insurance, and geographic diversification. Description of these strategies, alongside information on the area of properties located in SFHA provide a starting point for
investors seeking to further explore where risks have the potential to manifest.

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**SASB INDUSTRY WATCH LIST**

The following section provides a brief description of sustainability disclosure topics that are not likely to constitute material information at present but could do so in the future.

**Design for Tenant Health:** The built environment plays an important role in the health, wellbeing, and productivity of building occupants. According to some estimates, people spend approximately 90 percent of their time inside buildings. Therefore, new building designs and/or actions to retrofit and refurbish existing buildings can have considerable impacts on human health.

Increasingly, companies in the Real Estate industry, and their clients, are considering elements of the built environment that can have positive and negative effects on human health. According to the GRESB 2015 study referenced earlier, 84 percent of participants incorporate health-and-wellbeing-promoting features into their new acquisitions and major renovations. These include improvements in indoor air quality and ventilation, thermal comfort, daylight and lighting, noise, interior layouts, and biophilia (i.e. the suggestion that human beings have an instinctive bond to nature). Selection and procurement of green construction and building materials is also of considerable interest (see SASB standards for the “Construction Materials” (SICS: NR0401) and “Building Products & Furnishings” (SICS: CN0603) industries).

As with most of the disclosure topics discussed above, impacts may vary by type of building. It should also be noted that, given the emerging nature of this topic, the language and methods used to describe and analyze the built environment’s effects on human health and wellbeing are “highly variable and often ambiguous.”

In the office REIT segment, for example, several studies have analyzed the effects of the built environment on worker productivity. A 2014 study by the Harvard T.H. Chan School of Public Health’s Center for Health and the Global Environment simulated conventional and green building indoor environmental quality (IEQ) conditions, including ventilation levels and occupant exposure to indoor pollutants and carbon dioxide. The study found that cognitive scores of occupiers of green buildings were 61 percent higher than those in conventional ones.

The authors also analyzed productivity impacts from what the study dubbed “green+ buildings,” those with more enhanced ventilation rates than standard green buildings. In these simulated conditions, cognitive scores were 101 percent higher than those in conventional buildings.

Similar studies have found positive impacts on worker productivity. A 2003 report, for example, identified 15 studies that linked improved ventilation with gains in productivity up to 11 percent.

In the health care REIT segment, asset owners and health care facilities are increasingly aware of the fact that built environment elements such as access to daylight, natural ventilation, reduced exposure to toxic chemicals, a view, and the degree of privacy a patient enjoys, have a positive impact on a health and healing outcomes. For example, a 2012 study estimated the economic benefits of providing patients with views of nature to be $93 million per year.
As companies in the Real Estate industry and their clients become more aware of the impacts that buildings can have on tenant health, well-being, and productivity, the demand for buildings that integrate human health impacts into their design will likely increase, presenting opportunities for leaders in this area to increase market share and asset values.
APPENDIX I

FIVE REPRESENTATIVE REAL ESTATE OWNERS, DEVELOPERS & INVESTMENT TRUSTS COMPANIES

<table>
<thead>
<tr>
<th>COMPANY NAME (TICKER SYMBOL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host Hotels &amp; Resorts, Inc. (HST)</td>
</tr>
<tr>
<td>Simon Property Group, Inc. (SPG)</td>
</tr>
<tr>
<td>Welltower, Inc. (HCN)</td>
</tr>
<tr>
<td>Ventas, Inc. (VTR)</td>
</tr>
<tr>
<td>Equity Residential (EQR)</td>
</tr>
</tbody>
</table>

This list includes five companies representative of the Real Estate Owners, Developers & Investment Trusts industry and its activities. This includes only companies for which the Real Estate Owners, Developers & Investment Trusts industry is the primary industry, companies that are U.S.-listed but are not primarily traded over the counter, and for which at least 20 percent of revenue is generated by activities in this industry, according to the latest information available on Bloomberg Professional Services. Retrieved on March 10th, 2016.
## APPENDIX IIA:
Evidence for Sustainability Disclosure Topics

<table>
<thead>
<tr>
<th>Sustainability Disclosure Topics</th>
<th>EVIDENCE OF INTEREST</th>
<th>EVIDENCE OF FINANCIAL IMPACT</th>
<th>FORWARD-LOOKING IMPACT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HM (1-100)</td>
<td>IWGs %</td>
<td>EI Revenue &amp; Cost</td>
</tr>
<tr>
<td>Energy Management</td>
<td>78*</td>
<td>81</td>
<td>1</td>
</tr>
<tr>
<td>Water Management</td>
<td>33</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Management of Tenant Sustainability Impacts</td>
<td>33</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Climate Change Adaptation</td>
<td>42</td>
<td>74</td>
<td>2</td>
</tr>
</tbody>
</table>

HM: Heat Map, a score out of 100 indicating the relative importance of the topic among SASB’s initial list of 43 generic sustainability issues. Asterisks indicate “top issues.” The score is based on the frequency of relevant keywords in documents (i.e., 10-Ks, 20-Fs, shareholder resolutions, legal news, news articles, and corporate sustainability reports) that are available on the Bloomberg terminal for the industry’s publicly listed companies. Issues for which keyword frequency is in the top quartile are “top issues.”

IWGs: SASB Industry Working Groups

%: The percentage of IWG participants that found the disclosure topic likely to constitute material information for companies in the industry. (-) denotes that the issue was added after the IWG was convened.

Priority: Average ranking of the issue in terms of importance. 1 denotes the most important issue. (-) denotes that the issue was added after the IWG was convened.

EI: Evidence of Interest, a subjective assessment based on quantitative and qualitative findings.

EFI: Evidence of Financial Impact, a subjective assessment based on quantitative and qualitative findings.

FLI: Forward Looking Impact, a subjective assessment on the presence of a material forward-looking impact.
### APPENDIX IIB:
Evidence of Financial Impact for Sustainability Disclosure Topics

<table>
<thead>
<tr>
<th>Evidence of Financial Impact</th>
<th>Revenue</th>
<th>Operating Expenses</th>
<th>Non-operating Expenses</th>
<th>Assets</th>
<th>Liabilities</th>
<th>Cost of Capital</th>
<th>Industry Divestment Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Management</td>
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<td>•</td>
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<tr>
<td>Water Management</td>
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<td>•</td>
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<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Management of Tenant</td>
<td>•</td>
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<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Sustainability Impacts</td>
<td>•</td>
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<td>•</td>
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<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Climate Change Adaptation</td>
<td>•</td>
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<td>•</td>
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<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

- **MEDIUM IMPACT**
- **HIGH IMPACT**
### APPENDIX III

**SUSTAINABILITY ACCOUNTING METRICS—REAL ESTATE OWNERS, DEVELOPERS & INVESTMENT TRUSTS**

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>ACCOUNTING METRIC</th>
<th>CATEGORY</th>
<th>UNIT OF MEASURE</th>
<th>CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Energy Management</strong></td>
<td>Energy consumption data coverage as a percentage of floor area, by property subsector</td>
<td>Quantitative</td>
<td>Percentage (%) by floor area (ft²)</td>
<td>IF0402-01</td>
</tr>
<tr>
<td></td>
<td>Total energy consumed by portfolio area with data coverage, percentage grid electricity, and percentage renewable, each by property subsector</td>
<td>Quantitative</td>
<td>Gigajoules (GJ), Percentage (%)</td>
<td>IF0402-02</td>
</tr>
<tr>
<td></td>
<td>Like-for-like change in energy consumption of portfolio area with data coverage, by property subsector</td>
<td>Quantitative</td>
<td>Percentage (%) by gigajoules (GJ)</td>
<td>IF0402-03</td>
</tr>
<tr>
<td></td>
<td>Percentage of eligible portfolio that (1) has obtained an energy rating and (2) is certified to ENERGY STAR®, by property subsector</td>
<td>Quantitative</td>
<td>Percentage (%) by floor area (ft²)</td>
<td>IF0402-04</td>
</tr>
<tr>
<td></td>
<td>Description of how building energy management considerations are integrated into property investment analysis and operational strategy</td>
<td>Discussion and Analysis</td>
<td>n/a</td>
<td>IF0402-05</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>ACCOUNTING METRIC</th>
<th>CATEGORY</th>
<th>UNIT OF MEASURE</th>
<th>CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water Management</strong></td>
<td>Water withdrawal data coverage as a percentage of total floor area and percentage in regions with High or Extremely High Baseline Water Stress, each by property subsector</td>
<td>Quantitative</td>
<td>Percentage (%) by floor area (ft²)</td>
<td>IF0402-06</td>
</tr>
<tr>
<td></td>
<td>Total water withdrawn by portfolio area with data coverage and percentage in regions with High or Extremely High Baseline Water Stress, each by property subsector</td>
<td>Quantitative</td>
<td>Cubic meters (m³), Percentage (%)</td>
<td>IF0402-07</td>
</tr>
<tr>
<td></td>
<td>Like-for-like change in water withdrawn for portfolio area with data coverage, by property subsector</td>
<td>Quantitative</td>
<td>Percentage (%) by cubic meters (m³)</td>
<td>IF0402-08</td>
</tr>
<tr>
<td></td>
<td>Discussion of water management risks and description of strategies and practices to mitigate those risks</td>
<td>Discussion and Analysis</td>
<td>n/a</td>
<td>IF0402-09</td>
</tr>
</tbody>
</table>
# APPENDIX III (CONTINUED)

## SUSTAINABILITY ACCOUNTING METRICS—REAL ESTATE OWNERS, DEVELOPERS & INVESTMENT TRUSTS

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>ACCOUNTING METRIC</th>
<th>CATEGORY</th>
<th>UNIT OF MEASURE</th>
<th>CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Management of Tenant Sustainability Impacts</strong></td>
<td>Percentage of new leases that contain a cost recovery clause for resource efficiency-related capital improvements and associated leased floor area, by property subsector</td>
<td>Quantitative</td>
<td>Percentage (%) by floor area (ft²), Square feet (ft²)</td>
<td>IF0402-10</td>
</tr>
<tr>
<td></td>
<td>Percentage of tenants that are separately metered or submetered for (1) grid electricity consumption and (2) water withdrawals, by property subsector</td>
<td>Quantitative</td>
<td>Percentage (%) by floor area (ft²)</td>
<td>IF0402-11</td>
</tr>
<tr>
<td></td>
<td>Description of approach to measuring, incentivizing, and improving sustainability impacts of tenants</td>
<td>Discussion and Analysis</td>
<td>n/a</td>
<td>IF0402-12</td>
</tr>
<tr>
<td><strong>Climate Change Adaptation</strong></td>
<td>Area of properties located in FEMA Special Flood Hazard Areas or foreign equivalent, by property subsector</td>
<td>Quantitative</td>
<td>Square feet (ft²)</td>
<td>IF0402-13</td>
</tr>
<tr>
<td></td>
<td>Description of climate change risk exposure analysis, degree of systematic portfolio exposure, and strategies for mitigating risks</td>
<td>Discussion and Analysis</td>
<td>n/a</td>
<td>IF0402-14</td>
</tr>
</tbody>
</table>
APPENDIX IV: Analysis of SEC Disclosures | Real Estate Owners, Developers & Investment Trusts

The following graph demonstrates an aggregate assessment of how representative U.S.-listed Real Estate Owners, Developers & Investment Trusts companies are currently reporting on sustainability topics in their SEC annual filings.

<table>
<thead>
<tr>
<th>Real Estate Owners, Developers &amp; Investment Trusts</th>
<th>Type of Disclosure on Sustainability Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Management</td>
<td>![Bar Chart]</td>
</tr>
<tr>
<td>Water Management</td>
<td>![Bar Chart]</td>
</tr>
<tr>
<td>Management of Tenant Sustainability Impacts</td>
<td>![Bar Chart]</td>
</tr>
<tr>
<td>Climate Change Adaptation</td>
<td>![Bar Chart]</td>
</tr>
</tbody>
</table>

IWG Feedback* 81% 74%

*Percentage of IWG participants that agreed topic was likely to constitute material information for companies in the industry.

1 The “Water Management” and “Management of Tenant Sustainability Impacts” disclosure topics were introduced after SASB convened IWGs and per stakeholder feedback.
REFERENCES


2 Ibid.


9 Ibid.

10 Ibid.


12 Ibid.


14 Author’s calculation based on data from Bloomberg Professional service, accessed March 11, 2016, using EQS for U.S.-listed companies and those traded primarily OTC that generate at least 20 percent of revenue from their Real Estate Owners, Developers, and Investment Trusts segment and for which Real Estate Owners, Developers, and Investment Trusts is a primary SICS industry.

15 Author’s calculation based on data from Bloomberg Professional service from Market Share, Data Library, BI APTTR <GO> command, accessed March 20, 2015.

16 Ibid.

17 Ibid.

18 Ibid.


20 Bloomberg Professional service, using the BICS <GO> command, accessed January 27, 2016 The data represents global revenues of companies listed on global exchanges and traded OTC from the Real Estate Owners, Developers, and Investment Trusts industry, using Levels 3 and 4 of the Bloomberg Industry Classification System.

21 Bloomberg Professional service, using the BICS <GO> command, accessed March 14, 2016 The data represents revenues of companies listed on U.S. exchanges and traded OTC from the Real Estate Owners, Developers, and Investment Trusts industry, using Levels 3 and 4 of the Bloomberg Industry Classification System.


23 Author’s calculation based on data from Bloomberg Professional service, accessed March 19, 2015, using Equity Screen (EQS) for U.S.-listed companies and those traded primarily OTC that generate at least 20 percent of revenue from their Real Estate Owners, Developers, and Investment Trusts segment and for which Real Estate Owners, Developers, and Investment Trusts is a primary SICS industry.

26 Author’s calculation based on data from Bloomberg Professional service, accessed March 19, 2015, using EQS for U.S.-listed companies and those traded primarily OTC that generate at least 20 percent of revenue from their Real Estate Owners, Developers, and Investment Trusts segment and for which Real Estate Owners, Developers, and Investment Trusts is a primary SICS industry.
43 Ibid.


https://www.reit.com/sites/default/files/media/PDFs/2014NAREITLeaderLightAward_Trend%20Analysis_RF.pdf


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76 Ibid.


82 Ibid.


http://wwf.panda.org/about_our_earth/blue_planet/problems/tourism/.


99 Ibid.
105 Host Hotels & Resorts, Inc. FY 2014 Form 10-K. for the Fiscal Year Ending December 31, 2014. (Filed February 25th, 2015)