

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

FORM 8-K

CURRENT REPORT
PURSUANT TO SECTION 13 OR 15(d) OF THE
SECURITIES EXCHANGE ACT OF 1934

Date of Report (Date of earliest event reported):

April 8, 2019

VORNADO REALTY TRUST
(Exact Name of Registrant as Specified in Charter)

Maryland

(State or Other
Jurisdiction of Incorporation)

No. 001-11954

(Commission
File Number)

No. 22-1657560

(IRS Employer
Identification No.)

VORNADO REALTY L.P.

(Exact Name of Registrant as Specified in Charter)

Delaware

(State or Other
Jurisdiction of Incorporation)

No. 001-34482

(Commission
File Number)

No. 13-3925979

(IRS Employer
Identification No.)

888 Seventh Avenue
New York, New York

(Address of Principal Executive offices)

10019

(Zip Code)

Registrant's telephone number, including area code: (212) 894-7000

Former name or former address, if changed since last report: N/A

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instructions A.2.):

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Item 7.01. Regulation FD Disclosure.

On April 8, 2019, Vornado Realty Trust (the "Company"), the general partner of Vornado Realty L.P., issued a press release announcing that the Company released its 2018 Environmental, Social and Governance ("ESG") report. The ESG report is posted on the Company's website under the "Sustainability" page. The press release and the ESG report are attached as Exhibit 99.1 and 99.2, respectively, to this Current Report on Form 8-K and is incorporated herein solely for purposes of this Item 7.01 disclosure.

Exhibit 99.1 and 99.2 hereto shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the Exchange Act), or otherwise subject to the liabilities under that Section and shall not be deemed to be incorporated by reference into any filing of Vornado Realty Trust or Vornado Realty L.P. under the Securities Act of 1933, as amended, or the Exchange Act.

Item 9.01. Financial Statements and Exhibits.

(d)Exhibits.

The following exhibit is being furnished as part of this Current Report on Form 8-K:

<u>99.1</u>	Vornado Realty Trust Press Release dated April 8, 2019
<u>99.2</u>	2018 ESG report

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

VORNADO REALTY TRUST

(Registrant)

By: /s/ Matthew Iocco
Name: Matthew Iocco
Title: Chief Accounting Officer (duly
authorized officer and principal accounting officer)

Date: April 8, 2019

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

VORNADO REALTY L.P.

(Registrant)

By: VORNADO REALTY TRUST,
Sole General Partner

By: /s/ Matthew Iocco
Name: Matthew Iocco
Title: Chief Accounting Officer of Vornado
Realty Trust, sole General Partner of Vornado Realty
L.P. (duly authorized officer and principal accounting
officer)

Date: April 8, 2019

VORNADO

REALTY TRUST

April 8, 2019

Vornado Releases 2018 Environmental, Social, & Governance Report

NEW YORK.....VORNADO REALTY TRUST (NYSE: VNO) announced today that it released its 2018 Environmental, Social, & Governance ("ESG") report on April 5, 2019.

This report is the tenth annual report highlighting Vornado's industry-leading accomplishments in sustainability, and provides key metrics on the Company's ESG priorities. Vornado's accomplishments in 2018 include scoring in the top 6 percent of over 800 respondents to the Global Real Estate Sustainability Benchmark (GRESB); being honored for the 9th consecutive year as a Leader in the Light by the National Association for Real Estate Investment Trusts (NAREIT); earning Fitwel 2-star certification at theMART building in Chicago; and being recognized as an EPA ENERGY STAR Partner of the Year, with the Sustained Excellence distinction.

Our sustainability report, along with expanded information on Vornado's ESG programs, can be found on the company website located at www.vno.com.

Vornado Realty Trust is a fully-integrated equity real estate investment trust.

CONTACT:
JOSEPH MACNOW
(212) 894-7000

Certain statements contained herein may constitute "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. Such forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of the Company to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. For a discussion of factors that could materially affect the outcome of our forward-looking statements and our future results and financial condition, see "Risk Factors" in Part I, Item 1A, of our Annual Report on Form 10-K for the year ended December 31, 2018. Such factors include, among others, risks associated with the timing of and costs associated with property improvements, financing commitments and general competitive factors.

VORNADO
REALTY TRUST



ENVIRONMENTAL, SOCIAL, & GOVERNANCE 2018



VORNADO REALTY TRUST KEY ACHIEVEMENTS IN SUSTAINABILITY

GLOBAL REAL ESTATE SUSTAINABILITY BENCHMARK GREEN STAR RANKING 2018

6TH YEAR IN A ROW
SCORED IN TOP 6% OF OVER 800
RESPONDING COMPANIES

NAREIT LEADER IN THE LIGHT AWARD 2018

9TH YEAR IN A ROW

ENERGY STAR PARTNER OF THE YEAR SUSTAINED EXCELLENCE 2018

3RD TIME WITH THIS DISTINCTION

FITWEL CERTIFICATION AT theMART 2018

FIRST ENTIRE BUILDING,
MULTI-TENANT CERTIFICATION

**\$450 MILLION
OF GREEN BONDS ISSUED IN 2014**

2018 ENVIRONMENTAL, SOCIAL, & GOVERNANCE

We observe that sustainability is broadening to encompass Environmental, Social, and Governance (“ESG”) issues. We consider ESG to be responsible management of our business and mitigation of various forms of risk.

Vornado continues to be an industry leader in sustainability. We know it is important to our tenants and investors, as well as our communities and our employees. From energy conservation, to healthy indoor environments, to sustainable new construction, we continuously improve our environmental programs each year.

We recognize climate change as an issue to our business. We assess opportunities to fortify our properties against climate change-related risks, while actively managing and reducing our carbon footprint. We have signed on in support of the framework set forth by the Taskforce on Climate-related Financial Disclosures, and we are evaluating the risks and opportunities that various climate change scenarios present to all of our buildings.

A portfolio of our size carries a significant responsibility to manage energy, and we work hard to monitor, control, and reduce our consumption. Our energy efficiency capital projects continue to save energy and modernize our existing buildings. We are an active participant in demand response and contribute significantly to reducing electricity grid constraints in each of our markets.

We set a goal to reduce landlord-controlled carbon emissions 40% by 2026, below a 2009 base year. To stand by this commitment, we have enrolled our New York portfolio in the NYC Carbon Challenge for Commercial Landlords and Tenants. We are happy to report that as of December 31, 2018, we are more than halfway toward this goal and have a strategic plan in place to achieve our goal ahead of schedule. We also know that we must partner with our tenants to reduce their greenhouse gas emissions and encourage them to reduce their own consumption 30% by 2026. We lead a robust tenant engagement program that in 2018 included the continuation of our tenant roundtable series, which was attended by participants from over 5 million square feet of our tenant base*.

We own and operate more than 26 million square feet of LEED-certified buildings, with over 22 million square feet at LEED Gold. We are committed to LEED certifying our entire in-service office portfolio by 2020, and we are already more than 90% toward that goal*.

Our tenants and our employees spend the majority of their week working in our buildings, and we uphold our responsibility to provide

a healthy indoor environment for them. In fact, office buildings of our size often represent communities unto themselves. We are focused on delivering healthy air and water, and our cleaning company is an industry leader in least-toxic cleaning policies. In 2018, we achieved Fitwel 2-star certification at theMART. We now own and manage the largest Fitwel certified building and provide a healthy and active environment for the millions of tenants and visitors to theMART every year.

We have also incorporated sustainable design into our new buildings. Our pipeline of new office buildings will be among the greenest in the industry. Our vision for the Penn District expands our focus from the asset to the neighborhood, and we plan to apply our principles in energy innovation, resource conservation, and health and wellness to help transform the Penn District at large.

Our employees are the foundation of our human capital, and we have well-developed programs that provide training and continuing education, promote career and personal development, and encourage innovation and engagement. In addition to policies in support of shareholder rights, worker rights, diversity and equal opportunity, Vornado upholds strict policies against bribery and corruption, child labor, or forced or compulsory labor. Such policies extend to our Board and management as well as all our employees.

We understand that our social commitments must also benefit the communities that surround us. As a corporate citizen, we uphold our commitment to give back by encouraging all of our employees to volunteer. Through Vornado Volunteers, our employees give back to communities through participation in causes that support vulnerable parts of the population, protect and improve the environment, and promote a healthy lifestyle.

Sound principles of governance are critical to earning and retaining the trust of our investors and sustaining our commitment to acting with integrity. We are proud to have an esteemed and experienced Board of Trustees. Our trustees are significant investors in our Company and are committed to building shareholder value.

We have renamed this year’s Sustainability Report (our tenth) as an ESG Report. The following pages cover ESG topics deemed to be material to our various stakeholders.



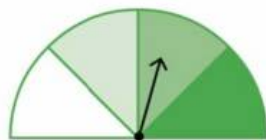
Steven Roth
Chairman of the Board
Chief Executive Officer

*Any information relating to goals and progress against goals were not subject to Deloitte & Touche LLP’s review and, accordingly, Deloitte & Touche LLP does not express a conclusion, opinion or any form of assurance on such information.

GHG EMISSIONS REDUCTION TARGETS*

TOTAL REDUCTION GOAL: 35% BY 2026 WITH SAME-STORE PORTFOLIO
2018 PROGRESS: 22%

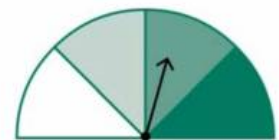
LANDLORD EMISSIONS REDUCTION PLAN



40% ▶
BY 2026

22%
2018 PROGRESS

TENANT EMISSIONS REDUCTION PLAN



30% ▶
BY 2026

22%
2018 PROGRESS

What's Working

- **Sound Operations:** Our NYC, Chicago, and San Francisco properties over 50,000 SF have undergone rigorous ASHRAE Level II Energy Audits and Retro-commissioning reports, both of which identify existing deficiencies that, when addressed, reduce energy consumption, as well as Energy Conservation Measures (ECMs) that further optimize each asset's energy performance.
- **Energy Efficiency Capital Work:** Our lists of ECMs serve as the basis of our capital projects, which reduce both operating costs and energy consumption. We remain committed to this work year after year.

- **Other Capital Work:** Our belief is that when other capital upgrades are selected responsibly, such as elevators with regenerative drives and destination dispatch technology, they yield coincidental energy reduction for the asset.

Future Opportunities

- **Future Code Compliance:** Our buildings are located in jurisdictions that adopt more stringent energy codes, which facilitate a natural evolution of energy reduction as renovation work is completed.
- **Onsite Generation, Renewable Energy:** We continue to explore opportunities that, through cogeneration and renewable production, may reduce or eliminate the GHG emissions intensity of energy consumed in our portfolio.

What's Working

- **Publicly Sponsored Commitments:** We have facilitated the commitment of more than 2 million SF of tenants to the Carbon Challenge in New York. We promote tenant participation in energy reduction events, including the World Wildlife Fund's Earth Hour and the Building Energy Exchange's Daylight Hour. After those events, we provide participating tenants with feedback on the success and impact of their actions.
- **Lease-Driven Provisions:** As standard practice, we include submetered electricity provisions in our leases, thereby creating the incentive for tenants to save electricity and realize the related cost savings. In over 64% of our leases, we have included language to capture capital costs for energy-saving projects, as long as we can

show how those projects reduce operating costs for tenants.

- **Meaningful Stakeholder Engagement:** We encourage our tenant base to commit to energy reductions and share best practices during annual in-person tenant roundtables as well as by delivering feedback about monthly changes in submetered tenant energy consumption.

Future Opportunities:

- **Future Code Compliance:** Laws like New York's Local Law 88 of 2009 and California's Title 24 contain energy requirements that will result in lower energy consumption in tenant spaces in the future.
- **Behavioral Changes:** We believe consistent engagement on energy efficiency topics will, over time, foster energy awareness within our tenant base.



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GOALS & PROGRESS*



ENERGY MANAGEMENT

GOAL 35% total energy reduction below a 2009 baseline by 2026



GOAL 40% energy reduction of landlord-controlled energy by 2026



GOAL 30% energy reduction of tenant-controlled energy by 2026



WASTE MANAGEMENT

GOAL 75% commercial waste diversion by 2026



GOAL Introduce organics recycling to 50% of portfolio by 2020



GOAL Complete in-person Demonstration and Education on Recycling Procedures for 50% of total Vornado portfolio each year



PROCUREMENT AND RESPONSIBLE CONTRACTING

GOAL Every year, purchase 75% of cleaning supplies that meet sustainability criteria. This criteria includes certifications designated by UL ECOLOGO, Green Seal, and EPA's Safer Choice Standard



WATER MANAGEMENT

GOAL 10% water consumption reduction below 2016 base year by 2020



GREEN BUILDING CERTIFICATIONS

GOAL LEED Certify 100% of all in-service office properties by 2020



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ENVIRONMENTAL RESULTS 2018



ENERGY EFFICIENCY INVESTMENT*

\$12.7 MILLION spent on Energy Efficiency Capital Projects since 2012 impacting more than

16.5 MILLION SF of our New York portfolio

Our energy efficiency projects* completed since 2012 saved more than

\$3.4 MILLION in utility costs in 2018

Our capital projects* have delivered a

27% RATE OF RETURN SINCE 2012

*This information was not subject to Deloitte & Touche LLP's review and, accordingly, Deloitte & Touche LLP does not express a conclusion, opinion or any form of assurance on such information.

VORNADO OWNS AND MANAGES

GRI 413-1

26+ MILLION SF of LEED-certified properties

74% of total Vornado Portfolio

22+ MILLION SF at LEED Gold Level

63% of total Vornado Portfolio

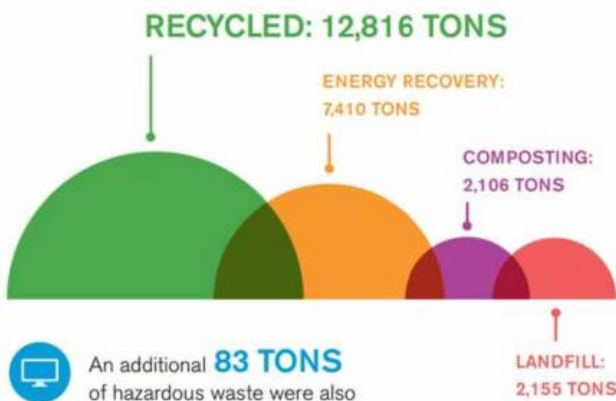
14+ MILLION SF earned the 2018 ENERGY STAR Label

46% of eligible Vornado Portfolio



2018 NONHAZARDOUS WASTE TOTAL[†]: 24,487 TONS

GRI 306-2



[†] For reporting boundaries, see endnotes, p. 25.

WATER CONSUMPTION[†]

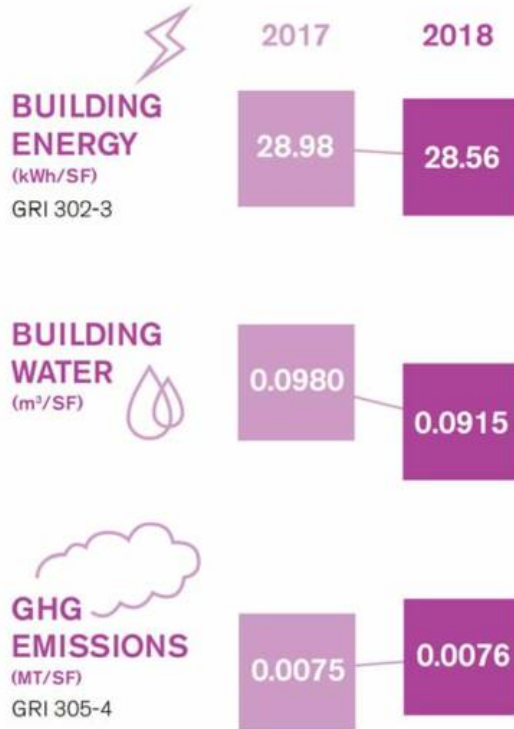
GRI 303-1

3,501,302 CUBIC METERS IN 2017

3,378,035 CUBIC METERS IN 2018

WHICH WAS A **3.5%** REDUCTION

INTENSITY MEASURES



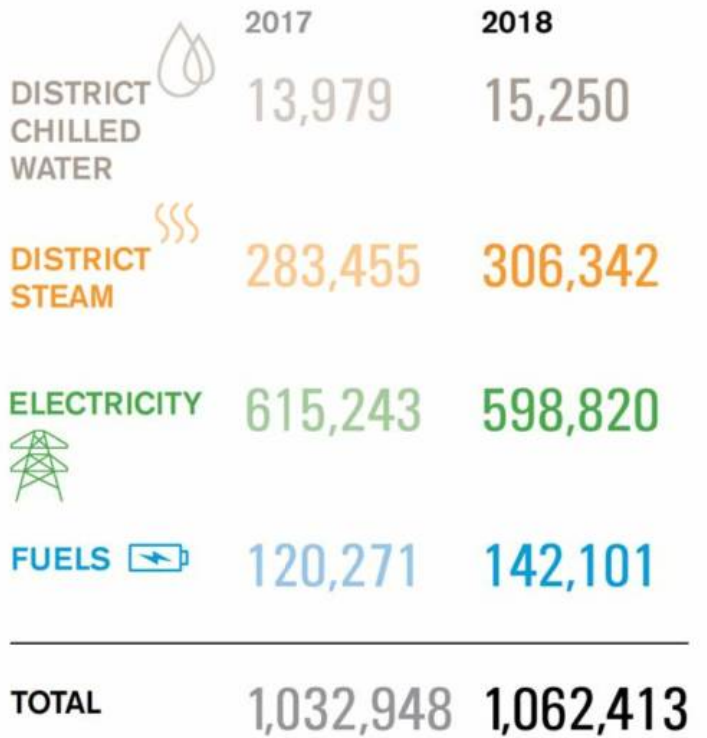
GHG EMISSIONS MT CO₂e¹



¹ For reporting boundaries, see endnotes, p. 25.

ENERGY CONSUMPTION¹

GRI 302-1 & 302-4



Energy Consumption, Water Consumption, and GHG Emissions is presented on an absolute basis.

Much of our energy consumption, in particular our district chilled water, district steam, and fuels, are the primary source of our heating and cooling needs, and is therefore impacted by changes in weather and temperature. These energy sources are also more carbon intensive than electricity. In New York, there were 12% more total degree days in 2018 than in 2017, which is indicative of greater heating and cooling needs in 2018. As a result, much of our energy and GHG emissions increase from 2017 to 2018 is attributed to weather.

Our Scope 1 emissions includes natural gas and fuels combusted onsite. Our Scope 2 emissions includes district steam, district chilled water, and all electricity consumed – both landlord and tenant controlled – at our properties.

ESG MATERIALITY ASSESSMENT

GRI 102-40, 102-42, 102-43, 102-44, 102-46, 102-47, 413-1



GRAPH DETAIL



We continued our internal and external stakeholder engagement in 2018 to reaffirm the topics most material to our organization. The assessment on the left takes into account the ESG topics and concerns most frequently raised and discussed by our stakeholder groups, as well as their economic, environmental, and social impacts. All topics require active management and engagement by Vornado and are considered significant. They serve as the priorities of our ESG strategy going forward. We consider this assessment to be a living document that will be updated to reflect evolving priorities of our stakeholders, as well societal expectations and development of regulations.

STAKEHOLDER GROUP	NATURE OF ENGAGEMENT	FREQUENCY OF ENGAGEMENT	KEY TOPICS AND CONCERNS
OUR TENANTS	Active relationship through our property management teams; meetings and discussions on tenant environmental performance; sustainability roundtable.	Daily (property management) As-needed (in-person meetings); Annually (Roundtable)	Energy, Water, and Waste Management; Carbon Emissions and Carbon Reporting; Community Impact; Health and Wellness
OUR INVESTORS	Conference calls to discuss corporate governance and ESG issues. Discussions include Vornado's Chief Financial Officer, Corporation Counsel, Lead Trustee, and SVP of Sustainability. Investors represent of at least 50% of outstanding shares.	Annually	Financial Performance; Climate Change and Risk; Board Diversity; Executive Compensation; Board Engagement on ESG; Carbon Emissions and Carbon Footprint Reporting; Diversity and Inclusion
OUR BOARD	Recurring meetings and discussions between Corporation Counsel and our CFO with the Board; ESG Update to the Board by the CFO; presentation from the SVP of Sustainability.	Annually, or more frequently as needed (from Corporation Counsel and CFO on governance; Quarterly (from CFO on ESG); Annually (From SVP of Sustainability).	Board Structure, Tenure, and Refreshment; Executive Compensation; Community Impact; Human Capital Management; Board Engagement on ESG; Management Succession Plan
OUR EMPLOYEES	Regular check-ins on environmental performance of the portfolio (energy/water/waste consumption and cost); annual meeting with each building management team to assess performance against carbon reduction goals	Weekly (informal engagement); Annually (in-person meetings, State of the Union meeting)	Energy, Water, and Waste Management; Human Capital Management; Health and Wellness; Diversity and Inclusion; Executive Compensation; Management Succession Plan
OUR COMMUNITIES	Active membership and partnerships in community and government organizations focused on civic and environmental issues	Monthly (per meeting schedule)	Energy, Water, and Waste Management; Community Impact; Climate Change Risk and Mitigation; Sustainable Development

ENVIRONMENTAL RESULTS BY REGION

SAN FRANCISCO

2018 GHG EMISSIONS (MT CO₂e)

Scope 1	30
Scope 2	10,029
Total	10,059

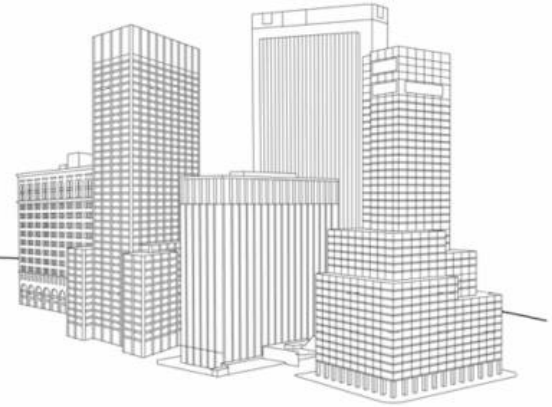
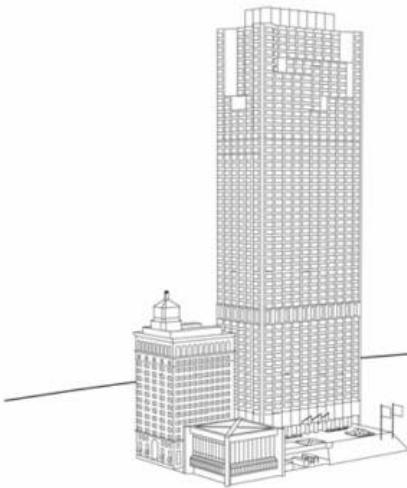
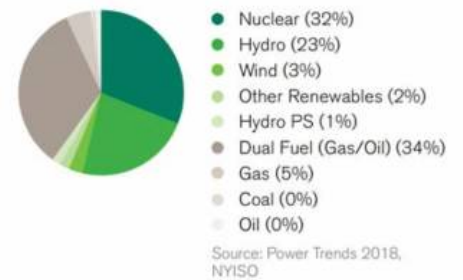
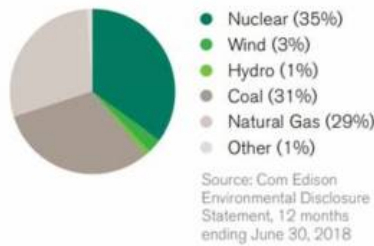
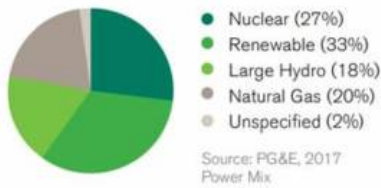
CHICAGO

Scope 1	4,625
Scope 2	23,854
Total	28,479

NEW YORK

Scope 1	19,735
Scope 2	209,600
Total	229,335

GRID ELECTRICITY MIX



LEED CERTIFICATIONS

1.8

Million SF
100% of total region
3 buildings

3.7

Million SF
Over 99% of total region
Largest LEED-certified building in the US

21.2

Million SF
74% of total region
23 buildings

VORNADO'S ENERGY MANAGEMENT PLANNING CYCLE

MAKE COMMITMENT

Vornado's dedicated energy management begins with team members who report directly to senior management, and it extends to the asset-level teams that operate and manage the properties. By identifying and executing energy solutions that are specific to each of our assets, Vornado will fulfill its commitment to reduce energy consumption 35% by 2026—below a 2009 baseline.*

ASSESS PERFORMANCE

Our team uses research and data to comprehensively evaluate each asset by taking three different approaches: assessing the physical condition and efficiency of each property's mechanical infrastructure through energy audits and retrocommissioning; assessing the property's utility costs on an absolute and per-square-foot basis; and assessing the property's ENERGY STAR score, which measures the energy performance of a building against its unique attributes and characteristics.

SET GOALS

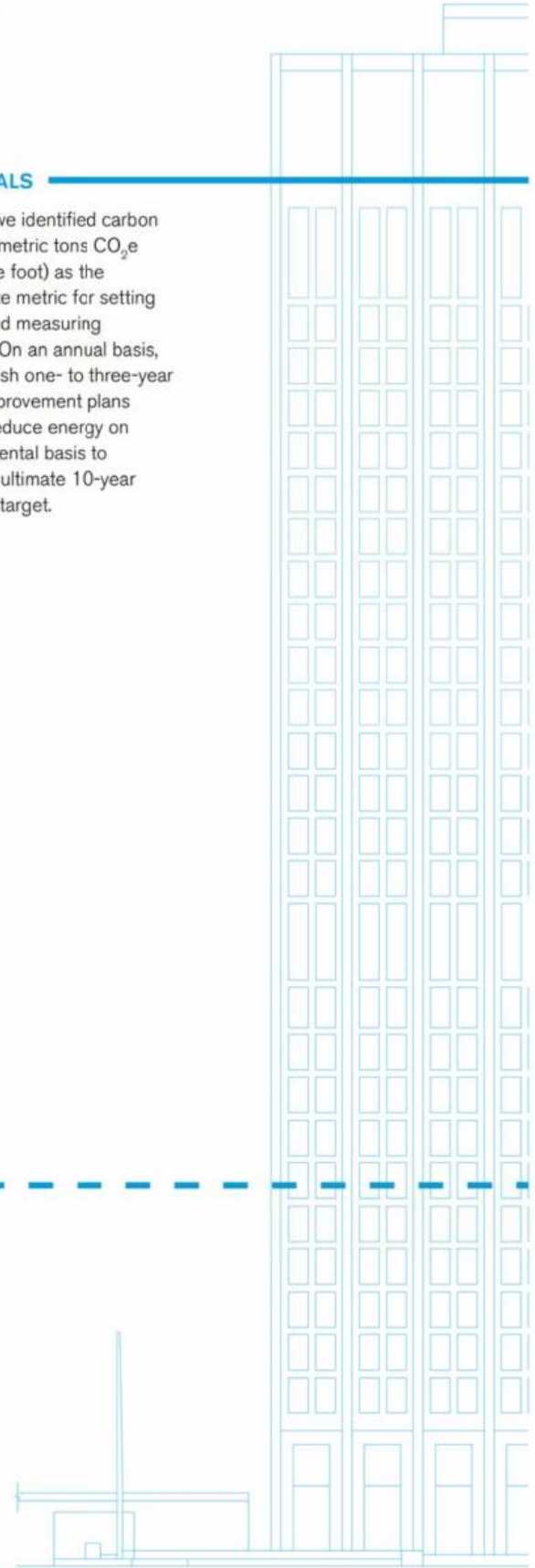
In 2016, we identified carbon intensity (metric tons CO₂e per square foot) as the appropriate metric for setting targets and measuring progress. On an annual basis, we establish one- to three-year capital improvement plans that will reduce energy on an incremental basis to reach our ultimate 10-year reduction target.



In 2018, two of our office spaces successfully participated as Charter Tenant Spaces in the ENERGY STAR for Tenants program.



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CREATE ACTION PLAN

- Define technical solutions, both small scale (low- and no-cost) and large (energy efficiency capital projects).
- Assess projected energy savings of project and measure its contribution towards property energy reduction goal.

IMPLEMENT ACTION PLAN

- Execute plan with projected energy and carbon savings with a variety of stakeholders:

Internal:

- Site-Level Management and Engineering Teams
- Accounting Group
- Senior Management
- Our Board

External:

- Utility Companies
- Vendor Partners
- Our Peers
- Our Community

EVALUATE PROGRESS

- Measure and verify energy project savings using submeters.
- Recognize energy cost savings on a utility bill. Subsidize cost of energy projects using utility rebates where available.
- Recover costs through lease-driven clauses for resource efficiency-related capital improvements.
- Troubleshoot until the project's energy reduction goals are met.
- Reflect the impacts of our energy savings to the broader environmental performance of our company, through the key performance indicators in our Environmental Management System (EMS).



★ RECOGNIZE ACHIEVEMENTS

- Annually, recognize building operators and engineers who achieve 10% or greater energy savings on a weather normalized basis.
- Apply for the ENERGY STAR Label where eligible, every year.
- Communicate energy savings and ENERGY STAR Label achievements to internal and external stakeholders.

RESILIENCE AND ADAPTATION

Our properties are located in regions with recent history of climate-related events. As we assess our exposure to climate risk under varying scenarios, we understand that measures in property resilience are measures in adaptation. We must adapt to an uncertain future that could include a higher frequency of events of extreme weather and heavy precipitation, sea level rise, and temperature volatility. Our development project at 512 West 22nd Street exemplifies how our new building design is resilient and adaptive to future climate conditions.

1 MECHANICAL EQUIPMENT

At 512 West 22nd Street, we placed all critical mechanical equipment and electrical switchgear above grade to avoid flood damage.

2 GREEN ROOFS & STORMWATER RETENTION

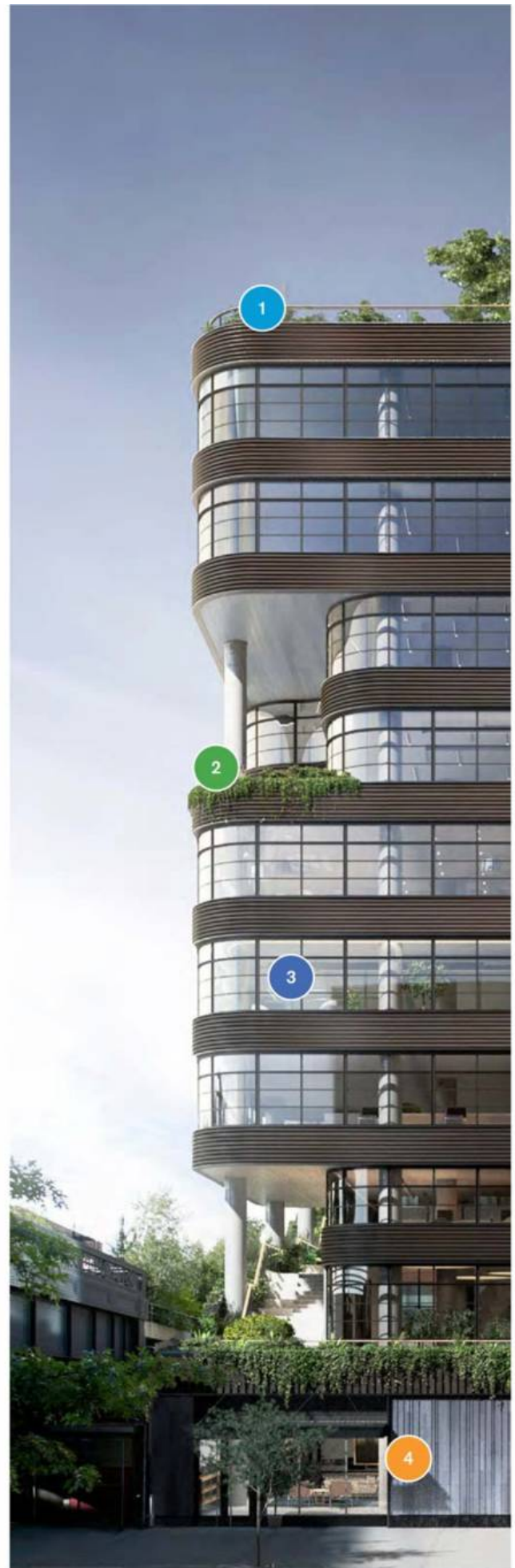
Our new roof landscape systems are designed to absorb and retain stormwater, and slow runoff into the urban landscape and surrounding infrastructure. Green and white roofs also insulate our buildings; reduce current and future demand for heating and cooling; and contribute to heat island reduction, which provides local relief to surface temperature. At 512 West 22nd Street, excess stormwater is captured in a retention tank and held for irrigation needs, and it is pumped to the rooftop terraces when needed, or to the cooling tower as make-up water.

3 GLAZING & ENVELOPE

Our new glazing and envelope systems are designed to withstand heavy wind and ice conditions. They also are designed to reduce solar heat gains and improve insulation values to minimize heating and cooling demand.

4 FLOOD BARRIERS

When a new building is located in a flood zone, we anchor temporary walls and venting systems inside our building lobbies to accommodate storm surges and floods and their associated water pressure build-up without damaging the building. At our existing buildings, we install temporary exterior barriers to prevent floodwater from touching the building envelope.





5 BACKUP GENERATION

We install backup generation to support, at minimum, fire and life safety systems, as well as critical infrastructure. At 512 West 22nd Street, we have connected to the backup

generation our elevators, lighting, and HVAC systems to ensure safe and secure evacuation in the event of an outage.

GRI 201-2: We have signed on as a corporate supporter of the Financial Stability Board's Taskforce on Climate Related Financial Disclosures (TCFD). Below is a selection of the salient risks and opportunities we have identified as we have begun our scenario analysis. This analysis is an ongoing process that will continue to evolve. The financial impacts under various warming scenarios cannot be quantified at this time. Vornado is working to identify the proper time horizon for quantifying such impact and has not yet decided whether to disclose the quantifiable financial impact once the necessary data is realized.

	SHORT-TERM (1-10 YEAR)	MEDIUM-TERM (10-40 YEAR)	LONG-TERM (40+ YEARS)
PHYSICAL RISKS (ACUTE)	Stormwater Surge / Flood Risk Localized loss of power		
PHYSICAL RISKS (SYSTEMATIC)	Increase in utility costs		
	Degradation of air quality and public health		
	Increase in temperature and humidity extremes Increase in seasonal heating and cooling demand Increase in insurance and disaster relief costs Increase in infrastructure and construction costs Increase of instances of business interruption		
			Sea Level Rise Increase in extreme weather events and heavy participation events
TRANSITIONAL RISKS	Increase in utility costs Increase in technology costs Increase in potential fines and penalties attributed to carbon legislation or a carbon tax Increase in infrastructure and construction costs		
TRANSITIONAL OPPORTUNITIES			Decrease in utility consumption Decrease on fossil fuel reliance Improved outdoor air quality and public health

TCFD | TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

SUSTAINABLE DEVELOPMENT

At Vornado, we value our employees as our greatest asset. Human capital management is critical to our success. To that end, we know that in order for our tenants to attract and retain the most innovative, collaborative, and creative people, they must be located in buildings that can propel their continued transformation and continued relevance.

We therefore focus our development and repositioning efforts on buildings that share the following characteristics:

- Near other tenants and talent, and near transportation
- Architecturally and historically significant
- Comprised of physical spaces that foster collaboration and innovation

- Able to offer a variety of spaces for different types of work
- Walkable and amenity rich

The Farley Building and our buildings throughout greater Penn District are emblematic of the above mentioned critical needs. Vornado and its development team have

embarked on a neighborhood-wide transformation, featuring the adaptive reuse of the Farley Building. We are converting this iconic Beaux Arts New York City fixture into a best-in-class creative office hub, on par with the horizontal campuses of California, which are characterized by large floor plates and abundant green spaces.



Left: Eighth Avenue view of the Farley Post Office, designed by McKim, Mead, and White and opened in 1912. Top: Historical photo of mail sorting operation. Bottom: Historic Penn Station, Farley's "sister building."



We bring to this transformation our programs of resource conservation, healthy indoor environments, and responsible procurement, all of which define our portfolio-wide sustainable operations strategy.

The 740,000 SF office building is targeting LEED v4 Gold certification and will provide a sustainable and active workspace, including the following provisions:

- Direct access to Amtrak, Long Island Railroad, and New Jersey Transit regional train networks, in addition to multiple NYC subway lines
- Up to 70,000 SF of rooftop park space, with up to a quarter mile of continuous walkable outdoor paths

- A new 6,000 SF glass rooftop pavilion for use as programmable amenities space
- Ample stairwell access to facilitate collaboration among different floors in the building
- State-of-the-art energy management system that will contribute to demand reduction and demand response, and provide tenants with insights into their real-time energy consumption, demand, and carbon emissions
- Over 3 MW of emergency backup power to foster resilience and business continuity



Top: Aerial rendering of the renovated Farley Building. Above: Rendering of Moynihan Train Hall, with barrel-vaulted atrium ceiling. Bottom: Rendering of new skylight and stairwell to link the Farley Building's office floors.

HEALTH AND WELLNESS AT theMART



2018 was a landmark year for theMART, with the 3.7 million SF building achieving three premier sustainability awards: LEED Gold, Fitwel 2-star and RESET. The largest building to earn the prestigious Fitwel distinction, theMART is also the first to certify under the new Multi-Tenant Whole Building scorecard for workplaces.

RESET, the only certification for indoor air quality to require prolonged performance through real-time continuous monitoring of multiple parameters, reflects theMART's commitment to data-driven management. Having earned the award in two of the building's most densely occupied areas: the Food Hall and Building Management Office, theMART is now piloting the standard's first ever core and shell certification.



TVOC Data Feed from our air quality sensors in the Food Hall at theMART, which earned RESET Certification in 2018.



Long since an icon for sustainability at scale, theMART's health and wellness program focused on the deployment of centralized security, safety, and operating procedures in conjunction with the transformation of common areas into amenity-rich spaces promoting mobility, comfort, and healthy lifestyle in the work environment.

Key attractions include the Grand Stair, a 200-seat amphitheater-style staircase prominently featured at the building's front entrance, delivering tenants to the heart of theMART's interactive hub, the newly designed Marshall's landing. This 300-seat food and beverage outpost offers a collaborative environment for informal meetings, complete with expansive views of the Chicago Riverfront. Perhaps most notable is the transformation of stairwell #8 from a conventional egress passage with limited re-entry

to an actively designed open stairwell, creating a new vertical thoroughfare that connects tenants to the building's most active-use amenities.

Looking beyond its four walls, theMART transformed the surrounding campus and parking infrastructure to better reflect the values and needs of the modern work force. With two metro lines offering stops on the building's second floor and over 66% of occupants commuting via rail, theMART repurposed over 20% of its original parking capacity to active-use amenities including an 8,000 SF public park and 4,000 SF storage cage with capacity for over 350 bicycles.

Additional safety and security features include the installation of automatic external defibrillators (AEDs) on every floor and newly instated Certified First Responder (CFR) training made available to tenants and to staffed security personnel.



Newly designed secure garage bicycle parking at theMART with capacity for 350 bicycles.

OUR COMMITMENT:

Health and wellness are core tenets of Vornado's management strategy. Recognizing our role as stewards of the interior environment, we provide green cleaning services through Building Maintenance Services (BMS), active air quality testing and monitoring of tenant spaces, low impact design and construction guidelines, and educational resources and support for tenant-run programs.

We use the Fitwel Certification System as a benchmark to assess opportunities for enhancing the active design of our tenants' workspaces. We have a pipeline of additional certifications planned in 2019 and beyond. We are well versed in the WELL Building Standard and can support the landlord role for all tenants wishing to pursue WELL certification for their space.



On left: Exterior view of Art on theMART, the largest permanent digital art projection in the world. On right: Active design stairwell #8 includes painted accent walls, numbered steps, and AEDs on every floor.



RECYCLING

Vornado's waste management and recycling strategy centers on two goals: To reduce overall waste generated at our buildings and to divert waste from the landfill. We reduce waste by encouraging management and tenants to replace single-use disposable supplies with reusable materials. We divert waste by recycling, composting, and sending trash to waste-to-energy incineration plants. Most importantly, we evaluate performance and report results.

Tenant engagement
Vornado and BMS meet with tenants, both individually and through building-wide seminars, to discuss recycling policy and best practices. BMS provides nightly waste collection audits for tenants who seek to learn their individual performance and improvement.

Regulatory compliance
We proactively communicate to our tenants new requirements governing recycling and organics, and we offer

custom-designed informational recycling signage and adhesive labels approved by our municipal sanitation authorities to support local law labeling requirements.

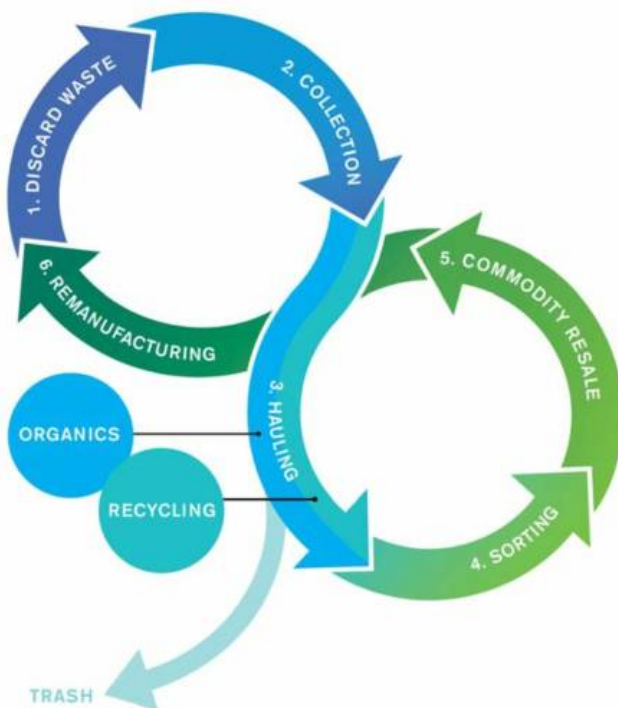
Waste stream audits
In 2018, Vornado hired a third-party waste consultant to complete waste stream audits at 27 properties, covering over 27 million SF. We presented these results to our property teams, cleaning staff, and tenants to discuss opportunities for improvement.



WATCH OUR VIDEO ON THE RECYCLING PROCESS:

www.vno.com/recycling

RECYCLING LIFE CYCLE



- 1 DISCARD WASTE**
Vornado provides its tenants with separate receptacles so they can discard items in the appropriate paper, glass/metal/plastic, or trash bin.
- 2 COLLECTION**
BMS Green Clean collects waste from tenant spaces, ensuring waste streams remain properly separated for storage and pickup by our haulers.
- 3 HAULING: ORGANICS & RECYCLING**
We've partnered with haulers that have proven compliance with local waste management requirements. The haulers remove waste from each building with two trucks: one brings garbage to a transfer station and the other delivers recyclables to their sorting facilities for further processing.
- 4 SORTING**
At the sorting facilities, recyclables are hand-sorted and baled according to material type and quality.
- 5 COMMODITY RESALE**
Baled materials are sold as commodities to factories and plants, such as paper mills and plastics manufacturers. Clean bales are more valuable and command higher purchasing prices.
- 6 REMANUFACTURING**
The baled materials become inputs for new products such as water bottles, polyester clothing, and paper towels, thereby reducing the use of virgin materials and natural resources.

GREEN CLEANING



BMS staff reviewing personal protective equipment (PPE) at the BMS safety station at Penn 11.

At Vornado, we ensure a healthy indoor environment through our industry-leading green cleaning program, led by BMS. The program supports tenant-driven LEED and WELL certification projects to keep staff trained in best practices that protect the health of everyone in our buildings. As a member of the Sustainable Purchasing Leadership Council, BMS is committed to responsible and health-centered procurement practices. Our goal: to reach 75% sustainable purchases*;

as designated by the industry's best-practices standard-bearers: UL ECOLOGO, Green Seal, Forest Stewardship Council, and the EPA's Safer Choice Standard. We have enriched our tracking of purchasing through the use of environmental management software that maintains a running inventory and informs BMS of monthly and annual purchasing levels. The result? **In 2018, BMS achieved 81% sustainable purchases.** GRI 416-1

65 BMS Supervisors and senior level staff trained in GS-42 green cleaning standards.

100% of BMS employees are trained monthly in compliance with training requirements in the OSHA standards.

The BMS Safety & Training department **completed 345 safety checks** in 2018.

BMS conducts 24 hours of training, per employee, annually. GRI 404-1

Packaging Reduction

92.8 TONS

from chemical concentrates

Water Use Reduction

531,551 GAL

from chemical-free T3 scrubber

Chemical Use Reduction

1,500 GAL

from chemical-free T3 scrubber

Purchased 106,182 cases of paper products, including 2.4 million pounds of recycled paper products, which represents more than

19,700
TREES SAVED

Revolution liners use about 50% postconsumer recycled plastic. By purchasing these bags, BMS reduced emissions by

239.7
TONS
of CO₂e in 2018.



*This cleaning service meets Green Seal™ Standard GS-42 based on waste minimization, building-specific operational procedures, effective custodial training, and use of products with limits on human and environmental toxicity. www.GreenSeal.org.

*Any information relating to goals and progress against goals were not subject to Deloitte & Touche LLP's review and, accordingly, Deloitte & Touche LLP does not express a conclusion, opinion or any form of assurance on such information.

TENANT & COMMUNITY DEVELOPMENT

GRI 413-1

Buildings the size of ours represent communities unto themselves. As a landlord, we recognize our role as a community steward. Our community development strategy focuses on two perspectives: to foster and nurture an indoor community for our tenants within our buildings; and to enrich the neighborhoods and communities that surround our buildings, tenants, and visitors. In 2018, we commenced roll-out of a tenant portal that offers a diverse set of amenities, bringing the ease of modern city life to our tenants and benefiting the businesses of our surrounding neighborhoods.

TENANT ENGAGEMENT

FOOD & BEVERAGE

We match our tenants with local businesses by presenting tenants with menus, discounts, and delivery options through our electronic tenant concierge.



CULTURAL EVENTS

We enrich the tenant experience by bringing cultural events to our properties.

- Summer Concert Series
- Gallery Exhibits and Open Houses, as part of Asia Week



HEALTH & WELLNESS

We bring a healthy and active lifestyle to the workplace.

- Modular Fitness/Exercise Spaces, including PENNF1T
- Yoga Classes
- Nutritional Information Sessions
- Wellness Education Seminars

LIFESTYLE SERVICES

We make everyday conveniences available to our tenants and visitors.

- Suit Fittings
- Shoe Shines
- Makeup Tutorials
- Seasonal Floral Boutiques

Pictured above: PENNF1T exercise studio at PENN1, summer jazz concert at 90 Park Avenue.

TENANT ENGAGEMENT



FOOD & BEVERAGE



HEALTH & WELLNESS



CULTURAL EVENTS



LIFESTYLE SERVICES

TENANTS & OUR BUILDING COMMUNITY



CLEANING



SECURITY OPERATIONS CENTER



COMFORT & SERVICE REQUESTS



BUILDING AMENITIES

OUR BUILDING COMMUNITY

CLEANING

BMS provides best-in-class green cleaning that responsibly sources supplies and uses least-toxic cleaning methods to provide a healthy indoor environment.



BUILDING AMENITIES

We recognize the needs of a growing mobile workforce and strive to include space for tenants to host meetings, enjoy meals, or simply relax from their workday.



SECURITY OPERATIONS CENTER (SOC)

A testament to the capabilities of the Vornado Security Services team, the SOC was connected and built by our in-house security team, who operate the facility 24x7x365, and provide the following oversight

- Monitors, assesses, and tracks security resources
- Coordinates with proper authorities and disseminates public information and warnings
- Provides information to property management

COMFORT & SERVICE REQUESTS

Our tenants have access to 24-hour service from onsite personnel or through our electronic request system.

Pictured above: SOC snapshot, PENN11; tenant amenities center, 330 West 34th Street.

OUR PEOPLE

GRI 102-20, 102-32

Sustainability at Vornado is led by Daniel Egan, SVP of Sustainability and Utilities, who reports to Vornado's senior management and operating executives. In addition to Mr. Egan, our dedicated employees include three people in New York, our Vice President of Engineering and Sustainability for theMART in Chicago, and two dedicated employees in our BMS, LLC division.

Our Board plays an active role in the oversight of Vornado's ESG program, including discussion of climate-related risks and opportunities. Mr. Egan reports formally to the Board on an annual basis, during which he updates the Board on progress towards our ESG goals and targets. Our Chief Financial Officer advises the Board of ESG program updates on a quarterly basis.

Our employees are the foundation of our Human Capital and we have a well-developed program through which we provide extensive opportunities and programs for training, to promote career and personal development for

employees and to encourage innovation and engagement. Examples of sponsored opportunities for continuing education and industry designations include the LEED GA and LEED AP designations and continuing education offered through Building Owners and Managers Association (BOMA), International Union of Operating Engineers Local 94, and Local 32-BJ.

Vornado has policies in place to support shareholder rights, worker rights, diversity, and equal opportunity. Such policies extend to our board and management as well as all our employees.

We recognize our responsibility to instill our environmental and social standards into our supply chain. To that end, we have established a vendor Code of Conduct that applies to our suppliers, as well as to our vendors and their subcontractors. Our vendor Code of Conduct addresses issues that include, but are not limited to: ethics and integrity; and all applicable laws, including those pertaining to freedom of association; human

trafficking; forced labor and child labor; discrimination (including but not limited to gender, race, disability, ethnicity, nationality, religion, and sexual orientation); health and safety; human rights;

anti-harassment; environmental impact and compliance with environmental regulations; air emissions; waste and recycling; anti-corruption and anti-bribery; and gifts and hospitality.

VORNADO VOLUNTEERS

In 2018, Vornado Volunteers continued its commitment to community activism in each of our divisions. Through a combination of employee engagement and social impact assessments, we identified the following localized community priorities: vulnerable populations, environmental restoration and protection, and health and wellness. With those priorities in mind, our 2018 campaign included the following:

- Host Sponsorship and participation in the American Lung Association's eighth annual Fight for Air Climb, PENN1. In 2018, the event raised over \$318,000 for research

and awareness programs to combat lung disease in New York. We also hosted SF Fire Department for a First Responders Stair Climb at 555 California Street in San Francisco.

- Revitalization of the Norman S. Weir Public School in Paterson, New Jersey.
- Park Cleanup Programs in Central Park, NYC; and Liberty State Park, Jersey City, New Jersey.
- Sponsorship of 2018 Construction Awards and support of the Greater Chicago Food Depository. The event donated over 100,000 lbs of food in addition to donation of over 88,000 meals throughout the year.



Vornado Sustainability Team posing with Michael Zatz from US EPA upon receiving the 2018 ENERGY STAR Partner of the Year Award; Vornado Volunteers running the zero waste challenge at 770 Broadway on Earth Day; Vornado Volunteers learning about endemic species in Central Park.

2018 VORNADO CORPORATE EMPLOYEE DEMOGRAPHICS SNAPSHOT†

GRI 102-8, 405-1

	GENDER		AGE			REGION			
	MALE	FEMALE	LESS THAN 30 YEARS OLD	30-50 YEARS OLD	MORE THAN 50 YEARS OLD	NEW YORK	NEW JERSEY	CHICAGO	SAN FRANCISCO
TOTAL NUMBER OF EMPLOYEES	271	344	100	326	189	261	283	65	6
PERMANENT	271	344	100	326	189	261	283	65	6
TEMPORARY	0	0	0	0	0	0	0	0	0
FULL-TIME	271	339	98	324	188	257	282	65	6
PART-TIME	0	5	2	2	1	4	1	0	0
RACIAL MINORITIES BY PERCENTAGE OF TOTAL NUMBER OF EMPLOYEES [§]	27%	35%	23%	38%	25%	26%	35%	26%	50%

† GRI 401-1; This table covers Vornado corporate employees only at June 30, 2018 and does not include the BMS employees detailed below, or any employees of Alexander's. In FY 2018, Vornado's corporate office made 101 new hires with an employee turnover rate of less than 18%.

2018 BMS EMPLOYEE DEMOGRAPHICS SNAPSHOT**

GRI 102-8, 405-1

	GENDER		AGE			REGION			
	MALE	FEMALE	LESS THAN 30 YEARS OLD	30-50 YEARS OLD	MORE THAN 50 YEARS OLD	NEW YORK	NEW JERSEY	CHICAGO	WASHINGTON, DC
TOTAL NUMBER OF EMPLOYEES	2487	1458	700	1531	1714	2285	69	553	1038
PERMANENT	2108	1285	491	1311	1591	2072	47	236	1038
TEMPORARY	379	173	209	220	123	213	22	317	0
FULL-TIME	1896	973	405	1106	1358	2247	14	233	375
PART-TIME	591	485	295	425	356	38	55	320	663
RACIAL MINORITIES [§]	70%	74%	76%	73%	68%	59%	96%	69%	98%

[§]These figures represent the diversity of our organization and are inclusive of the following racial minority groups: Black/African American, Hispanic/Latina, Asian/Pacific Islander, and American Indian/Alaskan Native.

**This table covers BMS employees only at December 31, 2018. BMS employees represent Vornado's technical staff.

OUR PARTNERSHIPS

GRI 102-13

Our employees engage in memberships and board positions in associations focused on furthering the conversation of Environmental, Social, and Governance priorities in real estate. Below is a selection of our involvement.

NATIONAL

- EPA ENERGY STAR Partner
- US Green Buildings Council Corporate Member, Greenbuild Program Working Group (Co-Chair)
- Urban Land Institute, Center for Sustainability and Economic Performance (Board)
- NAREIT Real Estate Sustainability Council
- Real Estate Roundtable Sustainability Policy Advisory Committee (Vice Chair)
- Global Real Estate Sustainability Benchmark (GRESB) Benchmark Committee Member
- Sustainability Accounting Standards Board (SASB) Real Estate Sector Advisory Group

REGIONAL

- New York Energy Consumers Council (Co-President)
- Real Estate Board of New York (REBNY) Sustainability Committee
- Building Energy Exchange (Board)
- Urban Green Council
- New York City Buildings Technical Working Group
- Retrofit Chicago
- Building Owners and Managers Association (BOMA) New York, Chicago, and San Francisco
- BOMA-New York Pinnacle Earth Award Sub-Committee (Chair)
- AIA Committee on the Environment (COTE) Zero Waste Design Guidelines Advisory Board

Rendering of Rooftop Glass Pavilion, Farley Building



GLOBAL REPORTING INITIATIVE (GRI) INDEX

GRI 102-55

Management of Vornado Realty Trust is responsible for the completeness, accuracy, and validity of the disclosures in the Global Reporting Initiative Index (the "sustainability disclosures") included within the Environmental, Social, and Governance 2018 Report of Vornado Realty Trust. Management is responsible for the collection, quantification, and presentation of the sustainability disclosures and for the selection of the criteria, which management believes provide an objective basis for measuring and reporting on the sustainability disclosures. Measurement of certain disclosures includes estimates and assumptions that are subject to inherent measurement uncertainty resulting for example from accuracy and precision of conversion and other factors. The selection by management of different but acceptable measurement methods, input data, or assumptions may have resulted in materially different amounts or metrics being reported. Management asserts that the sustainability disclosures in the Global Reporting Initiative Index included within the Environmental, Social, and Governance 2018 Report of Vornado Realty Trust for the year ended December 31, 2018 are presented in accordance with the Global Reporting Initiative (GRI) Sustainability Reporting Standards under its Core option. The GRI has developed an internationally recognized standard for sustainability reporting.

GRI 102: GENERAL DISCLOSURES

DISCLOSURE	DESCRIPTION	GRI DISCLOSURE
ORGANIZATIONAL PROFILE		
102-1	Name of the organization	Vornado Realty Trust
102-2	Activities, brands, products, and services	<p>We currently own all or portions of:</p> <p>New York: 19.9 million square feet of Manhattan office in 36 properties; 2.6 million square feet of Manhattan street retail in 71 properties; 1,999 units in eleven residential properties; The 1,700 room Hotel Pennsylvania located on Seventh Avenue at 33rd Street in the heart of the Penn District; and A 32.4% interest in Alexander's, Inc. ("Alexander's") (NYSE: ALX), which owns seven properties in the greater New York metropolitan area, including 731 Lexington Avenue, the 1.3 million square foot Bloomberg, L.P. headquarters building.</p> <p>Other Real Estate and Related Investments: The 3.7 million square foot theMART in Chicago; A 70% controlling interest in 555 California Street, a three-building office complex in San Francisco's financial district aggregating 1.8 million square feet, known as the Bank of America Center; A 25.0% interest in Vornado Capital Partners, our real estate fund (the "Fund"). We are the general partner and investment manager of the Fund; and Other real estate and other investments.</p>
102-3	Location of headquarters	888 Seventh Avenue, New York, NY
102-4	Location of operations	United States of America
102-5	Ownership and legal form	Publicly-traded company; fully-integrated REIT which conducts its business through, and substantially all of its interests in properties are held by, the Operating Partnership, a Delaware limited partnership. Vornado is the sole general partner of, and owns approximately 93.4% of the common limited partnership interest in the Operating Partnership as of December 31, 2018.
102-6	Markets served	Our primary property types are office and retail with geographic locations in New York, Chicago, and San Francisco.
102-7	Scale of the organization	Our People, p. 21 of this report; 35+ office properties in New York, San Francisco and Chicago and more than 70 retail properties in New York, San Francisco, Miami, Chicago and Georgetown; 2000+ rental apartments in New York City; \$2.163 billion net revenues
102-8	Information on employees and other workers	Our People, p. 21 of this report
102-9	Supply Chain	Vornado engages primarily with suppliers who provide supplies and equipment that help us manage and develop our properties. Our suppliers range in location but tend to be concentrated in our primary geographic regions of New York, Chicago, and San Francisco. Vornado considers BMS LLC, our wholly-owned subsidiary, as a supplier of janitorial supplies and equipment for our properties.
102-10	Significant changes to the organization and its supply chain	No significant changes
102-11	Precautionary Principle or approach	While Vornado has not formally adopted the Precautionary Principle, we apply a precautionary approach in our operational planning or when introducing new products to our buildings. Greenhouse gas emissions and indoor air pollutants are among many of the environmental risks that we seek to avoid and mitigate.
102-12	External initiatives	2018 Environmental, Social & Governance, p. 1 of this report
102-13	Membership of associations	Our Partnerships, p. 22 of this report
STRATEGY		
102-14	Statement from senior decision maker	p. 1 of this report

GLOBAL REPORTING INITIATIVE (GRI) INDEX

(CONTINUED 1)

GRI 102: GENERAL DISCLOSURES (CONTINUED)

DISCLOSURE	DESCRIPTION	GRI DISCLOSURE
ETHICS AND INTEGRITY		
102-16	Values, principles, standards, and norms of behavior	Code of Business Conduct and Ethics was adopted to: promote honest and ethical conduct, including fair dealing and the ethical handling of conflicts of interest; promote full, fair, accurate, timely, and understandable disclosure; promote compliance with applicable laws and governmental rules and regulations; ensure the protection of the Trust's legitimate business interests, including corporate opportunities, assets, and confidential information; and deter wrongdoing.
GOVERNANCE		
102-18	Governance structure	Our People, p. 20 of this report.
102-20	Executive-level responsibility for economic, environmental, and social topics	Our People, p. 20 of this report
102-32	Highest governance body's role in sustainability reporting	Our People, p. 20 of this report
STAKEHOLDER ENGAGEMENT		
102-40	List of stakeholder groups	ESG Materiality Assessment, p. 6 of this report
102-41	Collective bargaining agreements	82% of our Vornado corporate and BMS employees at 12/31/18 are covered by collective bargaining agreements. This figure excludes employees of Alexander's.
102-42	Identifying and selecting stakeholders	ESG Materiality Assessment, p. 6 of this report
102-43	Approach to stakeholder engagement	ESG Materiality Assessment, p. 6 of this report
102-44	Key topics and concerns raised	ESG Materiality Assessment, p. 6 of this report
REPORTING PRACTICE		
102-45	Entities included in the consolidated financial statements	Vornado Realty Trust; BMS; JBG Smith
102-46	Defining report content and topic boundaries	2018 Environmental, Social & Governance, p. 1 of this report Materiality Assessment, p. 6 of this report
102-47	List of material topics	Energy, Water, and Waste Management; Climate Change Risk and Mitigation; Human Capital Management; Diversity and Inclusion; Carbon Emissions and Carbon Footprint Reporting; Local Communities; Management Succession Plan; Executive Compensation; Health and Wellness; Sustainable Development; Board Structure, Tenure, and Refreshment; Board Engagement on ESG; Community Impact, p. 6 of this report
102-48	Restatements of information	No restatements.
102-49	Changes in reporting	No significant changes.
102-50	Reporting period	January 2018 - December 2018
102-51	Date of most recent report	2017 Sustainability Report
102-52	Reporting cycle	Annual
102-53	Contact point for questions regarding the report	Daniel Egan, SVP, Sustainability & Utilities, degan@vno.com
102-54	Claims of reporting in accordance with the GRI Standards	This report has been prepared in accordance with the GRI Standards: Core option.
102-55	GRI content index	GRI Index, pp. 23-25 of this report.
102-56	External assurance	The Independent Accountants' Review Report can be found on p. 26 of this report.

GRI 200-400: TOPIC-SPECIFIC DISCLOSURES

GRI TOPICS	DISCLOSURE	DESCRIPTION	GRI DISCLOSURE
ECONOMIC			
GRI 201: Economic Performance 2018	201-2	Financial implications and other risks and opportunities due to climate change	Resilience and Adaptation, pp. 10-11 of this report
ENVIRONMENTAL			
GRI 302: Energy 2018	302-1	Energy consumption within the organization	2018 Results, p. 5 of this report.
	302-3	Building energy intensity	2018 Results, p. 5 of this report. Our denominator is the square footage as outlined in the boundaries found in the endnotes of this report.
	302-4	Reduction of energy consumption	2018 Results, p. 5 of this report. Energy converted from source unit of measure to megawatt hours (mWH).

GLOBAL REPORTING INITIATIVE (GRI) INDEX

(CONTINUED 2)

GRI 200-400: TOPIC-SPECIFIC DISCLOSURES (CONTINUED)

GRI TOPICS	DISCLOSURE	DESCRIPTION	GRI DISCLOSURE
GRI 303: Water 2018	303-1	Water withdrawal by source	2018 Results, p. 4 of this report. All water listed is municipal water supply. No other sources of consumed water are of material quantities. Water converted from source unit of measure to cubic meters.
GRI 305: Emissions 2018	305-1	Scope 1 GHG emissions	2018 Results, p. 5 of this report. Scope 1 emissions include emissions attributable to consumption of fuel oil and natural gas. Gases included are CO ₂ , CH ₄ , and N ₂ O. We utilized the latest available emission factors for each energy type and Global Warming Potential factors from the Fifth Assessment Report (SAR) published by Intergovernmental Panel on Climate Change to calculate our GHG inventory. No significant recalculations occurred. Consolidation approach as defined in the reporting boundary endnoted in this report.
	305-2	Scope 2 GHG emissions	2018 Results, p. 5 of this report. Scope 2 emissions include emissions attributable to consumption of electricity, district steam, and district chilled water. All qualifiers for Disclosure 305-1 also apply to this disclosure.
	305-4	GHG emissions intensity	2018 Results, p. 5 of this report. Our denominator is the square footage as outlined in the boundaries found in the endnotes of this report.
	305-5	Reduction of GHG emissions	2018 Results, p. 5 of this report.
GRI 306: Effluents and Waste 2018	306-2	Waste by type and disposal method	2018 Results, p. 4 of this report. Waste disposal method has been directly confirmed by the organization through annual onsite visits to facilities. Information is provided by waste disposal contractor on a monthly basis.
SOCIAL			
GRI 401: Employment 2018	401-1	New employee hires and employee turnover	Our People, pp. 20-21 of this report. We have omitted new hire and turnover rates for the BMS division due to seasonal fluctuations. We will consider reporting these metrics in the future.
	401-2	Full-time benefits not provided to temporary/part-time employees	Medical and prescription plan at low employee cost; Dental plan at no employee cost; Tax deferred 401(k) plan; Flexible spending accounts for medical and dependant care; Life insurance at two times an employee's annual compensation and at no employee cost; Paid time off for vacations, holidays, and personal days; Employee Assistance Program; and Tuition reimbursement and professional reimbursement development plan
GRI 404: Training and Education 2018	404-1	Average hours of training per year per employee	Green Cleaning, p. 17 of this report. We have omitted hours of training per employee for our corporate staff but will plan to report on this metric in the future.
GRI 405: Diversity and Equal Opportunity 2018	405-1	Diversity of governance bodies and employees	Our People, p. 21 of this report. As of December 31, 2018, our Board consisted of 22% women; 0% under age 30; 0% between ages 30 and 50, and 100% over 50 years old.
GRI 413: Local Communities 2018	413-1	Operations with local community engagement, impact assessments, and development programs	Tenant and Community Development, pp. 18-19 of this report Materiality Assessment, p. 6 of this report.
GRI 416: Customer Health and Safety 2018	416-1	Assessment of the health and safety impacts of product and service categories	Green Cleaning, p. 17 of this report.
GRI 419: Socioeconomic Compliance 2018	419-1	Non-compliance with laws and regulations in the social and economic area	None significant. We consider fines to be 'significant' as those required to be disclosed in Vornado Form 10-K for the fiscal year ended December 31, 2018, *Note 22: Commitments and Contingencies* on pp. 153-154.

†Reporting boundaries:

Intensities: 2018 intensities were calculated by dividing the energy consumption, water consumption, and GHG emissions from the properties owned by Vornado at December 31, 2018, by the total square footage of that same list of properties.

Energy: 100% of all in-service square footage as of 12/31/2018, not listed as under development, with more than 20% VNO ownership. Consumption in Q4 2018 has been estimated. Estimates provided where actual data not readily available. Of the consumption represented in the first 3 quarters of 2018, 2.64% is estimated based on average use based on property type.

Water: 100% of all in-service square footage as of 12/31/2018, not listed as under development, with more than 20% VNO ownership. Consumption in Q4 2018 has been estimated. Estimates provided where actual data not readily available. Of the consumption represented in the first 3 quarters of 2018, 2.18% is estimated based on average use based on property type.

Waste: 76.5% of all in-service square footage as of 12/31/2018 with more than 20% VNO ownership. Waste generation in 2017 and 2018 is represented by actual data from waste haulers. Excluded from waste data are properties where waste hauling is not directly managed by Vornado, such as high street retail and residential properties.



Deloitte & Touche LLP

695 E. Main Street
Stamford, CT 06901
USA

Tel: +1 203 708 4000

Fax: +1 203 708 4797

www.deloitte.com

INDEPENDENT ACCOUNTANTS' REVIEW REPORT

**Board of Trustees
Vornado Realty Trust
New York, NY**

We have reviewed management of Vornado Realty Trust's assertion that the sustainability disclosures in the Global Reporting Initiative Index included within the accompanying Environmental, Social and Governance 2018 Report of Vornado Realty Trust (the "Company") for the year ended December 31, 2018 are presented in accordance with the Global Reporting Initiative Sustainability Reporting Standards under its Core option (the "GRI Standards – Core option"). The Company's management is responsible for its assertion. Our responsibility is to express a conclusion on management's assertion based on our review.

Our review was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants (AICPA) in AT-C section 105, *Concepts Common to All Attestation Engagements*, and AT-C section 210, *Review Engagements*. Those standards require that we plan and perform the review to obtain limited assurance about whether any material modifications should be made to management's assertion in order for it to be fairly stated. A review is substantially less in scope than an examination, the objective of which is to obtain reasonable assurance about whether management's assertion is fairly stated, in all material respects, in order to express an opinion. Accordingly, we do not express such an opinion. We believe that our review provides a reasonable basis for our conclusion.

In performing our review, we have complied with the independence and other ethical requirements of the Code of Professional Conduct issued by the AICPA. We applied the Statements on Quality Control Standards established by the AICPA and, accordingly, maintain a comprehensive system of quality control.

The preparation of the sustainability disclosures in the Global Reporting Initiative Index included within the Environmental, Social and Governance 2018 Report requires management to interpret the criteria, make determinations as to the relevancy of information to be included, and make estimates and assumptions that affect reported information. Measurement of certain disclosures includes estimates and assumptions that are subject to inherent measurement uncertainty resulting for example from accuracy and precision of greenhouse gas emission conversion factors. Obtaining sufficient, appropriate review evidence to support our conclusion does not reduce the inherent uncertainty in the amounts and metrics. The selection by management of different but acceptable measurement methods, input data, or assumptions may have resulted in materially different amounts or metrics being reported.

The Environmental, Social and Governance 2018 Report includes certain information relating to goals and progress against goals and such information is denoted by an asterisk (*). Any information relating to goals and progress against goals were not subject to our review and, accordingly, we do not express a conclusion or any form of assurance on such information. Information for periods prior to December 31, 2017 were not subject to our review and, accordingly, we do not express a conclusion or any form of assurance on such information.

Based on our review, we are not aware of any material modifications that should be made to management of Vornado Realty Trust's assertion that the sustainability disclosures in the Global Reporting Initiative Index included within the accompanying Environmental, Social and Governance 2018 Report of the Company for the year ended December 31, 2018 are presented in accordance with the GRI Standards – Core option, in order for it to be fairly stated.

April 5, 2019

APPENDIX A – SUSTAINABILITY ACCOUNTING STANDARDS BOARD (SASB)

Management of Vornado Realty Trust is responsible for the completeness, accuracy, and validity of the specified metrics included in Appendix A (the “specified metrics”) of the Environmental, Social, and Governance 2018 Report of Vornado Realty Trust. Management is responsible for the collection, quantification, and presentation of the specified metrics and for the selection of the criteria, which management believes provide an objective basis for measuring and reporting on the specified metrics. Measurement of certain metrics includes estimates and assumptions that are subject to inherent measurement uncertainty resulting for example from precision of conversion and other factors, and assumptions used for the weather and occupancy normalization of energy data. The selection by management of different but acceptable measurement methods, input data, or assumptions may have resulted in materially different amounts or metrics being reported. Management asserts that the specified metrics included in Appendix A of the Environmental, Social, and Governance 2018 Report of Vornado Realty Trust for the year ended December 31, 2018 are presented in accordance with the Sustainability Accounting Standards Board (SASB) Real Estate Sustainability Accounting Standard.

ENERGY MANAGEMENT

CODE	ACCOUNTING METRICS	TOTAL	NEW YORK	theMART	555 CALIFORNIA	OTHER	UNIT OF MEASURE
IF-RE-130a.1	Energy consumption data coverage as a percentage of floor area, by property subsector.	100%	100%	100%	100%	100%	Percentage (%) by floor area (ft2)
IF-RE-130a.2	Total energy consumed by portfolio area with data coverage.	3,824,687	3,096,385	280,540	154,362	293,399	Gigajoules (GJ)
IF-RE-130a.2	Percentage of total energy that is grid electricity, by property subsector.	100%	100%	100%	100%	100%	Percentage (%)
IF-RE-130a.2	Percentage of total energy that is renewable, by property subsector.	1.86%	0%	25.37%	0%	0%	Percentage (%)
IF-RE-130a.3	Like-for-like change in energy consumption of portfolio area with data coverage, by property subsector (see note on normalization).	0.37%	0.62%	-1.29%	5.20%	-4.89%	Gigajoules (GJ), Percentage (%)
IF-RE-130a.4	Percentage of eligible portfolio that has obtained an energy rating.	60.02%	57.21%	99.49%	0%	72.47%	Percentage (%) by floor area (ft2)
IF-RE-130a.4	Percentage of eligible portfolio that is certified to ENERGY STAR, by property subsector.	37.34%	42.79%	0%	100%	0%	Percentage (%) by floor area (ft2)

IF-RE-130A.5 DESCRIPTION OF HOW BUILDING ENERGY MANAGEMENT CONSIDERATIONS ARE INTEGRATED INTO PROPERTY INVESTMENT ANALYSIS AND OPERATIONAL STRATEGY

As a real estate company, Vornado’s Scope 1 and Scope 2 emissions come entirely from the operation of our buildings. Energy costs are often among the largest controllable expenses on a property’s balance sheet. For these reasons, we consider energy management to be an environmental and fiscal priority.

In 2016, we set an energy reduction target of 35% below a 2009 baseline, to be achieved by 2026. This 35% reduction includes energy consumed by both the landlord and the tenant. As of 12/31/2018, we have reduced 22%, leaving us with 13% remaining by 2026. Further information on our targets can be found on p. 2 of this report.

We incorporate energy management into our acquisition due diligence process. We tour properties in person and review capital and operating budgets, as well as utility bills to determine opportunities to reduce energy consumption and demand. We assess energy performance through quantifiable methods of consumption and cost on a per-square-foot basis, and we consider energy labels and benchmark values provided through ENERGY STAR. We gain an understanding of the building’s energy inventory and current energy initiatives implemented at the property.

Our building managers and operators are trained and supported by our centralized energy management team to employ sound and responsible energy management across the portfolio. Our engineers perform in-house technical assessments, akin to an ASHRAE Level I audit, as part of their ongoing preventative maintenance. We employ third-party engineering firms to complete technical assessments such as ASHRAE Level II Energy Audits and Retrocommissioning at all NYC, Chicago, and San Francisco properties over 50,000 SF, and update these assessments at least once every six years. In our NYC market, the Audits and retrocommissioning reports are part of Local Law 87 and are subject to City review to ensure that all landlord-controlled inventory is included in the scope, all low- and no-cost recommended repairs are included, and the assessments were completed by licensed professionals. Such technical assessments are the basis for our energy efficiency capital work. While total savings from these assessments is difficult to quantify, Vornado completes or seriously considers all low- and no-cost repairs and recommended measures, as well as all energy conservation measures with a simple payback of up to 5 years. More information on our technical assessments can be found on pp. 8-9 of this report.

Vornado uses Environmental Management Systems and Data Management Systems as part of our strategy. More information on these systems can be found on pp. 8-9 of this report.

We uphold energy ratings, benchmarking, and certifications as important recognition tools and performance indicators. We understand that our tenants prefer buildings that have earned green building certifications and demonstrate competitive energy ratings such as the ENERGY STAR score. We believe the benefits of such ratings and certifications outweigh the costs or resources associated with obtaining them. Because our core business is the maintenance and operation of existing assets, we believe that certifications based on ongoing performance are more relevant to us than those based on performance-modeled design objectives.

Vornado regularly evaluates opportunities to invest in renewable energy. We believe that onsite renewable energy is the most impactful in reducing carbon emissions, but we are limited in this opportunity by the lack of physical space and high construction costs that are typical for the dense urban markets where we are located. Off-site renewable energy can provide a virtual carbon offset to our Scope 1 and Scope 2 emissions. We believe off-site renewable energy investment should carry the qualities of additionality, so the investment results in the creation of new renewable power generation source and should be physically connected to the utility grids in the geographic regions where our properties are located. We have purchased renewable certificates to offset 19.8 mWh of our 2018 energy consumed at theMART property.

APPENDIX A – SASB

(CONTINUED 1)

WATER MANAGEMENT

CODE	ACCOUNTING METRICS	TOTAL		NEW YORK		theMART		555 CALIFORNIA		OTHER		UNIT OF MEASURE
IF-RE-140a.1	Water withdrawal data coverage as a percentage of total floor area, by property subsector.	100%		100%		100%		100%		100%		Percentage (%) by floor area (ft2)
IF-RE-140a.1	Percentage of floor area in regions with High or Extremely High Baseline Water Stress, each by property subsector.	97.27%		100%		100%		100%		70.95%		Percentage (%) by floor area (ft2)
IF-RE-140a.2	Total water withdrawn in 2018, (1) by portfolio area with data coverage and (2) percentage in regions with High or Extremely High Baseline Water Stress, each by property subsector.	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	Thousand cubic meters (m ³); Percentage (%)
		3,378,035	98.20%	2,968,558	100%	112,209	100%	54,365	100%	242,903	74.96%	
IF-RE-140a.3	Like-for-like change in water withdrawn for portfolio area with data coverage, by property subsector.	0.08%		0.88%		0.31%		-12.06%		-7.65%		Thousand cubic meters (m ³); Percentage (%)

IF-RE-140A.4. DESCRIPTION OF WATER MANAGEMENT RISKS AND DISCUSSION OF STRATEGIES AND PRACTICES TO MITIGATE THOSE RISKS

Vornado's portfolio is concentrated in dense urban cores such as New York City. As such, Vornado's primary water consumption includes potable water consumption for drinking across our portfolio; plumbing use; water used for specific business purposes, such as food service or showers in exercise facilities; and water use attributed to Heating, Ventilation, and Air Conditioning (HVAC). We do not consider water consumption used for landscaping or agricultural purposes to be significant and therefore do not include this consumption in our reporting boundary. Our sources for water are exclusively municipal water systems, and our discharge destinations are exclusively municipal sewer systems.

We face water-related environmental constraints and risks that are characteristic of urban places and use publicly available maps, resources, and tools to gain insights into the risks inherent to our properties. We operate in regions with high or extremely high baseline water stress. As referenced in the SASB guide, the World Resource Institute categorizes high and extremely high stress based on the level of available water withdrawn annually to support agricultural, domestic, and industrial users. Our regions are also exposed to high or extremely high return flow ratio, as well as source water from watersheds with low or extremely low percentage of protected land. We understand this to mean that these regions have a high dependency on treatment plants, and without sound infrastructure, could suffer from poor water quality. Our San Francisco location is subject to high seasonal variability and low upstream storage. Our New York and Chicago markets are subject to high flood occurrence.

We also face water-related regulatory constraints. Our water costs increase regularly to pay for developing and maintaining the infrastructure that supports our municipal water and sewer systems. We incur sewer costs to pay for the treatment of water that is discharged from our buildings. We incur additional costs to control the temperature of the water we discharge. We may incur additional costs to comply with future stormwater management regulation in our regions. We expect costs for water to continue to rise into the foreseeable future, which will increase our operating costs.

Our primary means of water risk mitigation is to reduce our water withdrawals and consumption. We have set a corporate goal of reducing our water consumption 10 percent by 2026, below a 2016 base year. As of 2018 we have achieved 6.6% towards this goal. This target is absolute in nature; our mechanisms in place for achieving this target include targeting reduction opportunities in our plumbing fixtures, our HVAC systems, our cleaning policies, and where applicable, our drip irrigation systems. Our restroom plumbing fixtures are retrofit as part of renovation efforts, which occur annually as part of our recurring capital improvement process. Our HVAC water efficiency program includes reduction efforts such as the re-circulation of steam condensate to our cooling tower, to reduce sewer discharge; retrofitting our cooling tower with more efficient mechanical systems; and ensuring our chiller systems are serviced and maintained on an ongoing basis. Our janitorial company cleans our buildings with water conservation efforts including gray water re-use for washing and cleaning, as well as purchase and use of water efficient equipment. In new construction or redevelopment projects, we also mitigate our stormwater runoff with stormwater retention tanks that reuse storm water for irrigation and cooling tower use and through the installation of green roofs and terraces to capture stormwater.

The risk of not achieving our water consumption reduction target is primarily due to our lack of control over end users. Our tenants are the main drivers of water consumption. Increases in occupancy or densification of existing spaces will cause consumption to increase. Diversity of water use – such as retail uses in food service or health and exercise facilities – could also cause an increase in consumption, despite our efforts to reduce water consumption.

We collaborate with our water and sewer authorities, city governments, and community boards when issues arise in water management or water and sewer infrastructure concerns. We observe that our water conservation efforts have achieved tradeoffs in energy reduction but have not yet quantified these tradeoffs. We continue to consider these tradeoffs and evaluate additional lifecycle impacts and tradeoffs, such as GHG emissions reduction, as potential future opportunities to be realized.

APPENDIX A – SASB

(CONTINUED 2)

CLIMATE CHANGE ADAPTATION

CODE	ACCOUNTING METRICS	TOTAL	NEW YORK	theMART	555 CALIFORNIA	OTHER	UNIT OF MEASURE
IF-RE-450a.1	Area of properties located in FEMA Special Flood Hazard Areas or foreign equivalent, by property subsector.	1,385,000	449,000	0	0	936,000	Square Feet

IF-RE-450A.2 DESCRIPTION OF CLIMATE CHANGE RISK EXPOSURE ANALYSIS, DEGREE OF SYSTEMATIC PORTFOLIO EXPOSURE, AND STRATEGIES FOR MITIGATING RISKS

We identify and assess our exposure to climate change risk based on the 1.5°, 2°, and business-as-usual scenarios discussed in the October 2018 Special Report by the Intergovernmental Panel on Climate Change (IPCC). We find these scenarios to be relevant to our properties for two reasons. The first is that they provide predictions on the physical risks each scenario presents between the present time and the year 2100. The second is that they provide a shorter-term view – that is, within a ten-year timeframe during which we would be planning and budgeting for capital work and operating expenses – of risks related to climate-related policy change that our properties could encounter. Our principal markets of New York, Chicago, and San Francisco each have executed or pending legislation that would limit carbon emissions to align with a 1.5° scenario. We consider the costs for compliance with such legislation that may have a financial impact attributable to the transition to a lower-carbon environment.

Our buildings are located in regions that have had recent history of extreme weather events, including but not limited to hurricanes and superstorms, nor'easters and ice storms, tornadoes, wildfires, temperature extremes, and heavy precipitation events. A global warming scenario could bring an increase in the frequency and severity of these events between now and 2100. Such events may impact our buildings individually, depending on a building's specific use, design, and location characteristics, or regionally, depending on the magnitude of the event. We are also aware that while less than 4% of our property square footage is in areas designated as flood zones, our coastal locations are susceptible to sea level rise (SLR). Various global warming scenarios could bring about differing amounts of SLR between now and the year 2100. Financial impacts under various warming scenarios may include, but are not limited to: increases in capital and operating costs, increases in insurance premiums, increases in energy costs, and increases in overall utility costs.

Our properties are located in urban areas, which means the vitality of our properties is reliant on sound transportation and utility infrastructure. If that infrastructure is compromised in any way by an extreme weather event, such a compromise could have an adverse impact on our local economies and populations, as well as on our tenants' ability to do business in our buildings. This risk is not unique to Vornado, but is endemic to our regions.

Our strategies for mitigating physical risks require a combination of adaptive and preventative measures with a proactive reduction of carbon emissions. Adaptive and preventative measures are executed at both the property level and regional level. We adapt our properties to be resilient against the impact of climate change, with details of our resilience measures found on pp. 10-11 of this report. We train our operators in disaster risk management and emergency operating procedures. At the regional level, our cities and utilities adapt by creating programs that improve resilience against climate-related impacts. Examples of such programs include New York City's OneNYC plan and Consolidated Edison's Storm Hardening Protection Plan in New York; Resilient Chicago and ComEd's Resilient Electric Grid system in Chicago; and Resilient SF and PG&E's Emergency Preparedness and Response program in San Francisco.

Like adaptive and preventative measures, proactive reduction of carbon emissions requires property-specific and regional efforts. We have developed property-specific carbon reduction goals that address both landlord- and tenant-controlled energy consumption. These property-specific goals contribute to Vornado's company-wide reduction goal of 35% reduction of Scope 1 and 2 emissions by 2026, below a 2009 baseline*. Our carbon reduction strategy prioritizes energy efficiency, while evaluating opportunities to incorporate renewable power into our energy sourcing as a secondary measure. More details of our carbon emissions reduction can be found on p. 5 of this report. Our regions of New York, Chicago, and San Francisco each have municipally-driven carbon emissions reduction programs in place. These programs combine strategies of absolute energy reduction, through efficiency mandates, as well as fossil fuel intensity reduction of utility-delivered energy. We discuss the intent and requirements of these programs with our property managers and engineers, as well as our tenants. The programs provide important framework to the GHG reduction goals we set with our properties.

All carbon emission reduction strategies, whether property-specific or regional, present different risks and opportunities. Risks include unsuccessful investment in new technologies; costs to transition to lower emissions technology; increased pricing on GHG emissions; and uncertainty in market signals, such as utility costs or carbon taxes. Financial impacts of such risks could include increased capital and operating costs, as well as increased or unexpected shifts in energy costs. Opportunities, on the other hand, include reduction of energy and resource consumption; use of public-sector incentives, such as utility rebates; diversification of energy resources; and adaptation of new technologies. Financial impacts of such opportunities include reduction of energy and/or operating costs, increased value of fixed assets, reduced exposure to fossil fuel price increases, reduction of utility costs for our tenants, and various benefits to workforce management and planning.

Our New York, Chicago and San Francisco regions also have emissions-reporting obligations, which require us to publicly disclose our properties' carbon emissions via ENERGY STAR Portfolio Manager. We consider this requirement as an opportunity to measure the carbon emissions from our properties and manage the reduction of those emissions on an ongoing basis.

In February 2019, Vornado Realty Trust signed on as a supporter of the framework recommended by the Financial Stability Board's Taskforce on Climate Related Financial Disclosures (TCFD). We believe this framework will guide the real estate industry towards well-informed disclosure of climate change risks and opportunities. As our internal and external discussions on climate risk and disclosure evolve, we plan to provide expanded public disclosure.

APPENDIX A – SASB

(CONTINUED 3)



MANAGEMENT OF TENANT SUSTAINABILITY IMPACTS

CODE	ACCOUNTING METRICS	TOTAL	NEW YORK	theMART	555 CALIFORNIA	OTHER	UNIT OF MEASURE
IF-RE-410a.1	Percentage of new leases that contain a cost recovery clause for resource efficiency-related capital improvements and associated leased floor area, by property subsector.	63.04%	63.72%	79.59%	95.65%	23.58%	Percentage (%) by floor area (ft2)
IF-RE-410a.2	Percentage of tenants that are separately metered or submetered for grid electricity consumption, by property subsector.	91.81%	95.34%	100%	99.00%	51.11%	Percentage (%) by floor area (ft2)
IF-RE-410a.2	Percentage of tenants that are separately metered or submetered for water withdrawals, by property subsector.	12.89%	13.03%	3.05%	0%	28.60%	Percentage (%) by floor area (ft2)

IF-RE-410A.3. DISCUSSION OF APPROACH TO MEASURING, INCENTIVIZING, AND IMPROVING SUSTAINABILITY IMPACTS OF TENANTS

At Vornado, we understand that much of the electricity consumed in our properties is from our tenants, as is evidenced by the submetered electricity we record throughout our portfolio. Because so much of our energy consumption is under tenant control, it is essential to engage with our tenants as partners in reducing our energy consumption and resulting carbon footprint. We have a responsibility to communicate to our tenants their energy and water consumption, when known, and to encourage them to improve their practices in resource conservation.

While Vornado does not explicitly endorse third-party initiatives concerning green leases, our standard, modified gross lease agreement includes several components that encourage tenant energy conservation. Across our portfolio, we promote submetered or separately metered electricity consumption for all tenants over 5,000 SF. We require this arrangement in our New York and San Francisco properties. We also require submetered or separately metered water consumption for all tenants whose predicted use is expected to exceed normal business practice. The submetered arrangement enables Vornado to share energy and water consumption with our tenants on a monthly basis through the generation of the submeter bill. Tenants are billed based on their actual and exclusive consumption as recorded on the submeter. Included on the submeter bill are Vornado's energy reduction targets and links to Vornado's corporate sustainability page, where our broader strategy on energy and water management is found. Elsewhere in the lease, we include a clause to recover capital costs that reduce operating expenses – whether utility costs or another cost reduction benefit – and we may amortize that recovery over the useful life of the project.

Where there are economic or environmental benefits, such as operating cost or GHG savings, our company will prioritize sustainability requirements in a tenant fit-out. Our tenant fit-out guidelines and boilerplate drawings include requirements for energy-efficient lighting and HVAC equipment and water-efficient plumbing fixtures. These requirements are also outlined in our rules and regulations which are included in the lease. We believe that our lease establishes expectations for a sustainably designed tenant space, as well as an ongoing environment that encourages the tenant to actively manage and measure their own carbon footprint.

Beyond the lease, we distinguish ourselves from our peers with in-person engagement with our tenants on sustainability. We host an annual tenant sustainability roundtable, where we share solutions on energy, water, and waste reduction, and discuss corporate ESG trends and regulatory updates. From our tenants, we collect information such as employee head count, number of computers, and operating hours; these data contribute to mandatory energy rating schemes, such as ENERGY STAR Portfolio Manager profiles. We meet with tenants onsite to survey opportunities to save energy and water. We train our tenants on recycling programs. We host energy reduction competitions with tenants to promote awareness and foster their participation.

We hold ourselves accountable and measure the success of our tenant engagement. Success is measured in the observed reduction of energy from submetered tenant spaces, or from the square footage of space that our team reaches through our engagement program.

*Any information relating to goals and progress against goals were not subject to Deloitte & Touche LLP's examination and, accordingly, Deloitte & Touche LLP does not express a conclusion, opinion or any form of assurance on such information.

Normalization Note:

2017 and 2018 Like-for-Like energy consumption data has been normalized to adjust for fluctuations in weather and occupancy.

Weather normalization uses inputs of total degree days (TDD), a fixed portion of energy consumption, known as a Base Load, and a variable portion of energy consumption, known as a Seasonal Load.

Occupancy is normalized based on the following assumptions: 1.) 50% of the Weather Normalized Energy's Baseload is adjusted for Occupancy based on field research that demonstrates that roughly half of the baseload is occupancy dependent. 2.) 33% of the Weather Normalized Energy's Seasonal Load is adjusted for Occupancy based on field research that demonstrates that a third of the seasonal load is occupancy dependent. 3.) Quarterly occupancy rates are averaged for the year to calculate the current year and prior year annual occupancy rates.

Q4 Estimation:

Q4 2018 energy and water data has been estimated using the following calculation:

Electricity and water were estimated using Q4 2017 data and adjusted for occupancy.

Natural gas, steam and oil were estimated using Q4 2017 data and adjusted for occupancy and weather.

INDEPENDENT ACCOUNTANTS' REPORT

**Board of Trustees
Vornado Realty Trust
New York, NY**

We have examined management of Vornado Realty Trust's assertion that the following specified metrics included in Appendix A of the accompanying Environmental, Social and Governance 2018 Report (the "specified metrics") of Vornado Realty Trust (the "Company" or "Vornado") for the year ended December 31, 2018 are presented in accordance with the Sustainability Accounting Standards Board (SASB) Real estate Sustainability Accounting Standard:

Energy management:

- IF-RE-130a.1: Energy consumption data coverage as a percentage of floor area, by property subsector
- IF-RE-130a.2: (1) Total energy consumed by portfolio area with data coverage, (2) percentage of total energy that is grid electricity, by property subsector, and (3) percentage of total energy that is renewable, by property subsector
- IF-RE-130a.3: Like-for-like change in energy consumption of portfolio area with data coverage, by property subsector
- IF-RE-130a.4: Percentage of eligible portfolio that (1) has an energy rating and (2) is certified to ENERGY STAR, by property subsector
- IF-RE-130a.5: Description of how building energy management considerations are integrated into property investment analysis and operational strategy

Water management:

- IF-RE-140a.1: Water withdrawal data coverage as a percentage of (1) total floor area and, by property subsector, (2) percentage of floor area in regions with High or Extremely High Baseline Water Stress, each by property subsector
- IF-RE-140a.2: Total water withdrawn in 2018 (1) by portfolio area with data coverage and (2) percentage in regions with High or Extremely High Baseline Water Stress, each by property subsector
- IF-RE-140a.3: Like-for-like percentage change in water withdrawn for portfolio area with data coverage, by property subsector
- IF-RE-140a.4: Description of water management risks and discussion of strategies and practices to mitigate those risks

Climate change adaptation:

- IF-RE-450a.1: Area of properties located in FEMA Special Flood Hazard Areas or foreign equivalent, by property subsector
- IF-RE-450a.2: Description of climate change risk exposure analysis, degree of systematic portfolio exposure, and strategies for mitigating risks.

Management of Tenant Sustainability Impacts:

- IF-RE-410a.1: Percentage of new leases that contain a cost recovery clause for resource efficiency related capital improvements and associated leased floor area, by property subsector
- IF-RE-410a.2: Percentage of tenants that are separately metered or sub metered for grid electricity consumption and water withdrawals, by property subsector
- IF-RE-410a.3: Discussion of approach of measuring, incentivizing, and improving sustainability impacts of tenants

The Company's management is responsible for its assertion. Our responsibility is to express an opinion on management's assertion based on our examination.

Our examination was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants (AICPA) in AT-C section 105, *Concepts Common to All Attestation Engagements*, and AT-C section 205, *Examination Engagements*. Those standards require that we plan and perform the examination to obtain reasonable assurance about whether management's assertion is fairly stated, in all material respects. An examination involves performing procedures to obtain evidence about management's assertion. The nature, timing, and extent of the procedures selected depend on our judgment, including an assessment of the risks of material misstatement of management's assertion, whether due to fraud or error. We believe that the evidence we obtained is sufficient and appropriate to provide a reasonable basis for our opinion.

In performing our examination, we have complied with the independence and other ethical requirements of the Code of Professional Conduct issued by the AICPA. We applied the Statements on Quality Control Standards established by the AICPA and, accordingly, maintain a comprehensive system of quality control.

The preparation of the specified metrics in Appendix A of the Environmental, Social and Governance 2018 Report requires management to interpret the criteria, make determinations as to the relevancy of information to be included, and make estimates and assumptions that affect reported information. Measurement of certain metrics includes estimates and assumptions that are subject to inherent measurement uncertainty resulting for example from precision of greenhouse gas emission conversion factors, and assumptions used for the weather and occupancy normalization of energy data. Obtaining sufficient, appropriate evidence to support our opinion does not reduce the inherent uncertainty in the metrics. The selection by management of different but acceptable measurement methods, input data, or assumptions may have resulted in materially different amounts or metrics being reported.

Our examination was limited to those SASB Real Estate Sustainability Accounting Standard metrics specified by management in Appendix A of the Environmental, Social and Governance 2018 Report. All other information presented within the Environmental, Social and Governance 2018 Report was not examined by us and, accordingly, we do not express an opinion on such information.

Appendix A of the Environmental, Social and Governance 2018 Report includes certain information relating to goals and progress against goals and such information is denoted by an asterisk (*) in Appendix A of the Environmental, Social and Governance 2018 Report. Any information relating to goals and progress against goals were not subject to our examination and, accordingly, we do not express an opinion or any form of assurance on such information.

In our opinion, management's assertion that the specified metrics included in Appendix A of the accompanying Environmental, Social and Governance 2018 Report for the year ended December 31, 2018 are presented in accordance with SASB Real Estate Sustainability Accounting Standard is fairly stated, in all material respects.

Deloitte & Touche LLP

April 5, 2019



VORNADO

REALTY TRUST

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