EMBEDDING SUSTAINABILITY IN OUR BUSINESS

2018 Real Estate Sustainability Report

Manulife Real Estate

John Hancock Real Estate
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Creating value for our stakeholders for sustainable leadership

At Manulife Real Estate, sustainability in the form of environmental, social and governance (ESG) management is part of our business. Our buildings form a community for tenants, employees, visitors and local organizations. Sustainability helps us deliver high-quality services, create places where people thrive and minimize our environmental impact. Sustainability also helps us manage risks and opportunities from changing market and societal trends, technology and regulation. This provides value to our fund investors and shareholders. Effective sustainability management requires integration in all parts of our business, from investments and developments to operations and asset management. Our program is overseen by our Executive Sustainability Steering Committee, which sets annual objectives and reports on our progress.

Sustainability is not a new idea at Manulife. We have a long track record of sustainability management. For example, we have measured our energy consumption and greenhouse gas emissions since 2005.

We maintain our position among industry leaders, with all of our funds achieving Green Star ranking in the 2017 Global Real Estate Sustainability Benchmark (GRESB) assessment.

In 2017, we developed our Sustainable Building Standards. This global program advances sustainability practices in thirteen areas. We renewed environmental targets in 2017, re-setting our goals for the next five years. We also embedded sustainability into employee objectives, leasing and third-party manager contracts. Key sustainability outcomes in 2017 included training more than 200 employees on sustainability, certifying more than 12.5 million square feet to green building standards and reducing energy consumption by 4%.

In this report, we invite you to learn more about our sustainability management approach, our 2017 results and how sustainability provides value to our stakeholders.

Sincerely,

Kevin Adolphe,
President and CEO, Manulife Real Estate
### 2017 PERFORMANCE HIGHLIGHTS

In 2017, we made progress on our five Sustainable Real Estate Policy commitments.

#### MINIMIZE OUR ENVIRONMENTAL IMPACT

<table>
<thead>
<tr>
<th>9% increase in waste diversion</th>
<th>7% renewable electricity purchased</th>
<th>6% decrease in water use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achieved a 52% waste diversion rate in 2017.</td>
<td>Purchased 42,000 MWh of renewable energy.</td>
<td>138,000 m³ water savings in 2017. The equivalent to water needed to fill 55 Olympic-sized swimming pools.</td>
</tr>
<tr>
<td>4% decrease in energy use</td>
<td>4% decrease in GHG emissions</td>
<td>41.2 million square feet certified green</td>
</tr>
<tr>
<td>29,000 MWh energy savings in 2017. The equivalent to the energy used by approximately 1,000 Canadian homes.</td>
<td>Reduced greenhouse gas (GHG) emissions by 5,500 tCO₂e. The equivalent to removing 1,200 cars off the road.</td>
<td>An increase of 12.5 M SF in 2017.</td>
</tr>
</tbody>
</table>

#### SUPPORT HEALTH AND WELLNESS

<table>
<thead>
<tr>
<th>2 Pilots</th>
<th>Working Group</th>
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</thead>
<tbody>
<tr>
<td>Launched two health and wellness certification pilots.</td>
<td>Established a renewable energy working group.</td>
</tr>
</tbody>
</table>

#### ENGAGE OUR STAKEHOLDERS

<table>
<thead>
<tr>
<th>Published</th>
<th>5 Green Stars</th>
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<tbody>
<tr>
<td>Our inaugural sustainability report.</td>
<td>Achieved five GRESB² Green Star rankings.</td>
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<tr>
<td>200+ Employees</td>
<td>Launched</td>
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<tr>
<td>Trained on sustainability.</td>
<td>Sustainable Building Standards.</td>
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</tbody>
</table>

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1. Reductions are for a like-for-like set of properties from our global portfolio
2. Global Real Estate Sustainability Benchmark
SUSTAINABILITY OBJECTIVES

2017 PROGRESS TOWARDS OBJECTIVES

We met or are on track for our 2017 sustainability objectives.

- Participation in GRESB for all our funds and the General Account (GA)
  - All funds and the GA participated in the GRESB assessment

- Include sustainability information-sharing clauses in new leases
  - Integrated information sharing clauses in our standard lease

- Publish stand-alone real estate sustainability report
  - Published our first Real Estate Sustainability Report

- Improve GRESB scores for all our funds compared to their 2016 baseline
  - All five received improved scores and earned Green Star ranking

- Set five-year targets for energy, water, waste and greenhouse gas emissions
  - Set 2022 portfolio targets for energy, water, waste and a long-term greenhouse gas emissions target

- Reduce energy consumption by 2%
  - Achieved a 4% energy reduction in 2017

- Provide sustainability training to operations, asset management and investments teams
  - Trained more than 200 employees in sustainability

- Integrate sustainability procedures into new third-party manager agreements
  - Updated third-party management agreements are almost final

- Participation in GRESB for all our funds and the General Account (GA)
  - All funds and the GA participated in the GRESB assessment

- Include sustainability information-sharing clauses in new leases
  - Integrated information sharing clauses in our standard lease

- Publish stand-alone real estate sustainability report
  - Published our first Real Estate Sustainability Report

Our Executive Sustainability Steering Committee sets annual sustainability objectives, which focus our efforts and outlines key milestones in our strategy. Here are our outlined objectives for 2018.

- Surpass 60% certification rate for the global portfolio (GA and funds)
- Hire a dedicated sustainability director
- Develop a business plan for tenant health and well-being and offering clean energy to tenants
- Implement sustainability clauses into the standard lease
- Apply for Green Lease Leader designation
- Achieve Green Star ranking for all GRESB submissions

- Achieve level 1 or higher on all our Sustainable Building Standards at all properties
- Meet 2% energy and 1.5% water reduction targets for the global portfolio
- Integrate utility tracking and environmental compliance into our central IT system for the global portfolio
- Complete renewable energy strategy for a portion of the global portfolio
In the real estate life cycle, sustainability makes business sense

**SUSTAINABILITY PROVIDES VALUE TO OUR STAKEHOLDERS**

At Manulife, we believe that systematically reviewing sustainability factors when we invest allows us to manage longer-term risks. Risks can include new regulations, changing tenant expectations, and increasing resource costs. A sustainability overlay allows us to get out in front of these to identify new revenue opportunities, such as health and wellness programming, and to increase operating efficiencies through technology and resource efficiency.

In addition to contributing to prudent risk management, sustainability creates shared value for our many stakeholders. It supports the well-being of our employees, tenants, the communities where we operate and the environment. Our customers and investors recognize that sustainability is important, and we have committed to being a sustainability leader.

**A LONG HISTORY OF SUSTAINABILITY INTEGRATION**

We have tracked our energy consumption and greenhouse gas emissions for our real estate portfolio since 2005. Manulife Asset Management, which includes Manulife Real Estate, has been a signatory to the Principles for Responsible Investment (PRI) since 2015. We also participate in the Global Real Estate Sustainability Benchmark (GRESB) assessment and became a member in 2017.

There are important ESG considerations at all stages of the real estate life cycle. Before we invest, our teams assess sustainability opportunities and risks. Once we own a building, sustainability considerations become an integral component of operations, asset management and leasing. A key function of this report is to show how this happens and why it is important.
Our sustainability leadership framework, from vision to reporting

Our vision is to drive leadership in sustainable real estate practices across our global organization. In collaboration with our tenants and community partners, we seek to provide healthy and efficient workplaces for our customers while enhancing our long-term returns.

To achieve our vision, we have developed eight leadership strategies that are addressed in more detail throughout this report.

One strategy, our Sustainable Building Standards program, was rolled out in 2017 and is described in detail on the next page.

Our Sustainable Real Estate Policy outlines our sustainability commitments and guides sustainability practices in our organizational processes and property portfolios:

- Minimize our environmental impact
- Support health and wellness
- Engage our stakeholders
- Promote responsible business practices
- Be accountable for our performance

For ease of reference, we have aligned the report sections with these policy commitments.

Sustainability Practices include developments, investments, operations and asset management. For example, under investment practices, we list sustainability issues that must be considered in investment due diligence and include checklists to ensure nothing is overlooked. Training for investment team members includes use of tools and checklists.

We validate practices and performance through public reporting and industry benchmarking initiatives. These inform our stakeholders of our sustainability approach and results and help advance sustainability in our industry.
**SUSTAINABLE BUILDING STANDARDS**

**STANDARDS**

<table>
<thead>
<tr>
<th><strong>LEVELS</strong></th>
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<th>2</th>
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<td><strong>MINIMIZE OUR ENVIRONMENTAL IMPACT</strong></td>
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<td>1. Energy management and assessments</td>
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<td>2. Energy measurement and analysis</td>
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<td>3. Water management and assessments</td>
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<td>4. Waste management</td>
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<td>5. Alternative transportation</td>
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<td>6. Indoor environmental quality</td>
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<td>7. Health and wellness programming</td>
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<td>8. Procurement program and tracking</td>
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<td>9. Tenant engagement</td>
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<td>12. Certifications and sustainability brand</td>
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<td>13. Sustainability management</td>
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The thirteen standards align with the commitments in our Sustainable Real Estate Policy, as well as with industry best practices, including GRESB, LEED® and BOMA BEST®, to facilitate implementation, certification and reporting.

To achieve a consistent approach across our portfolio, the standards are being rolled out to all properties including those managed by external property managers. In 2017, we piloted the standards ahead of their rollout in November.

Because sustainability expectations vary among property types and regions, each standard has five levels. For example, Tenant Engagement level one involves communicating with tenants on sustainability and providing tips to reduce their environmental footprint. Any property can implement this, even industrial buildings where tenants manage their own space. Higher levels of tenant engagement (levels two through four) involve holding events and campaigns, such as e-waste drives, at the property. Achieving level five requires forming a tenant-landlord green team to work collaboratively to implement initiatives at the property.

In 2018, all properties are expected to achieve at least level one of each standard, and properties with strong sustainability practices are expected to achieve levels four or five.

Throughout this report, we provide examples of how the Sustainable Building Standards are used to embed and improve sustainability across our global portfolio.

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**Sustainable Building Standards—key to leadership**

In 2017, we rolled out our Sustainable Building Standards, one of our eight sustainability leadership strategies. These standards apply to practices in all areas of sustainability at all properties, from energy management to tenant engagement to health and well-being. Their purpose is to:

- Build a consistent sustainability experience for tenants, employees and visitors
- Enable benchmarking of sustainability performance and understanding of business outcomes
- Provide tools and resources for property teams

All properties are committed to establishing a Sustainable Building Standards scorecard baseline in 2018 with a minimum requirement of achieving level 1 for all standards.

**BUILDING STANDARDS LEVEL DEFINITIONS**

- **Level 1**
  - Sustainability essentials, achievable for all property types
- **Level 3**
  - Strong sustainability practices, achievable for all office and residential properties
- **Level 5**
  - Sustainability leadership applicable to A-class offices
ENVIRONMENTAL PERFORMANCE

Focusing on operational efficiency and technology is paying off

Buildings consume substantial amounts of energy and water and the design, construction, and operation of buildings accounts for nearly 40% of greenhouse gas emissions, globally.1 As building owners and managers, we minimize our environmental footprint by systematically investing in resource efficiency and embedding conservation practices throughout our operations.

RESOURCE MANAGEMENT AT MANULIFE REAL ESTATE

Resource management is particularly important because it reduces operating costs, minimizes our environmental footprint, mitigates utility price increases and maximizes cost savings for our clients.

Our building operations incorporate sustainability best practices, and our Engineering and Technical Services team provides expert guidance to support and enhance operational efficiency.

Our external utility manager tracks, analyzes and reports on energy, water and waste performance to identify conservation opportunities and support decision-making. We also work with our tenants to collect data and deepen our understanding of building performance. In 2017, we increased our energy data coverage to 96% for properties where Manulife or third-party managers pay utilities.

In 2017, we set new five-year energy, water and waste targets for our global portfolio. We believe targets encourage asset and property managers to manage sustainability as a business issue, identify cost-saving opportunities and help reduce our environmental footprint.

Four of the Sustainable Building Standards directly target energy, water and waste management. Meeting low-level standards requires basic tenant communication and identification of conservation opportunities. Higher levels require sub-metering, recommissioning and organic and e-waste recycling streams.

In 2018, we are implementing a new environmental data management system to save property managers’ time, increase efficiency and improve data quality, so that we receive actionable information sooner.

ENERGY

The energy footprint of our real estate portfolio is 828,000 equivalent megawatt hours (eMWh). When normalized for weather and extreme energy users, our annual “like-for-like” energy reduction was 4%, surpassing our target of 2%.

WATER

Water conservation is increasingly important due to rising costs, regulations and lack of fresh water supply in some regions. In California, for example, access to fresh water is a material sustainability issue.

We embed water conservation into operations and introduce technology to minimize consumption. For example, our office property at 3161 Michelson in Irvine, California employs an innovative water reuse system that uses reclaimed grey water for use in restrooms, irrigation and cooling towers. In 2017, the result was a reduction estimated at nearly 27,000 m³, equivalent to almost half of the building’s total water consumption.

In 2017, our normalized energy use intensity decreased 4% to 19.2 ekWh per square foot (sf). This is lower than both the U.S. and Canadian benchmarks for office buildings (22.8 and 25.5 ekWh/sf, respectively).

Through good operational practices and investing in innovative technology like advanced metering and diagnostic systems, we are confident that we can deliver on our five-year, 10% energy reduction target.

The rise in regional disclosure requirements is increasing the importance of energy management. Two of the Sustainable Building Standards focus on energy management and measurement and include initiatives to identify, track and improve energy performance.

MINIMIZE OUR ENVIRONMENTAL IMPACT

<table>
<thead>
<tr>
<th>5 Year Environmental Targets (2018 to 2022)</th>
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<tbody>
<tr>
<td>10% energy reduction by 2022</td>
</tr>
<tr>
<td>7.5% water reduction by 2022</td>
</tr>
<tr>
<td>65% waste diversion rate by 2022</td>
</tr>
</tbody>
</table>

Note: energy and water targets are intensity based compared to a 2017 baseline.


10% energy reduction by 2022

7.5% water reduction by 2022

65% waste diversion rate by 2022

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WATER

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Across all managed office buildings, our normalized energy use intensity decreased 4% to 19.2 ekWh per square foot (sf). This is lower than both the U.S. and Canadian benchmarks for office buildings (22.8 and 25.5 ekWh/sf, respectively).

Through good operational practices and investing in innovative technology like advanced metering and diagnostic systems, we are confident that we can deliver on our five-year, 10% energy reduction target.
In 2017, our total water consumption was 2,700,000 m³. We increased our water data coverage to 92% in 2017. The normalized water use intensity across all properties decreased 4% to 63 L/sf, lower than the Canadian and U.S. averages of 91 and 81 L/sf, respectively. Comparing the weather normalized “like-for-like” portfolio, we reduced water consumption 142,000 m³ in 2017, enough water to fill 55 Olympic-sized swimming pools.

For many organizations, given that water is relatively inexpensive, the biggest challenge in reducing water consumption is the related return on capital. In 2018, we will assess water use technologies as buildings are retrofitted.

The Water Management and Assessment standards include developing a water management plan, conducting audits and implementing sub-metering.

**WASTE**

Building operations and occupant behaviours generate significant amounts of waste. Many tenants think of our waste handling practices as an indication of our sustainability performance. In our most recent satisfaction survey, tenants ranked recycling programs as the most-demanded sustainability service. Generating less waste minimizes costs and limits the impact on landfills, greenhouse gas emissions and other environmental impacts.

Accessing accurate waste data, however, is a challenge. In some regions, haulers do not provide waste information and it is hard to improve performance without access to better data. In 2017, property managers’ efforts increased collection of accurate and comprehensive data, and our coverage for waste reporting rose from 46% to 72%.

This increase in reporting led to an increase in total waste accounted for.

In 2017, our “like-for-like” portfolio decreased waste sent to landfill by 300 tonnes. In total, our portfolio’s diversion rate increased from 44% to 52%.

Looking forward, we will continue to monitor waste streams and volumes, provide recycling options and encourage tenants to support and align with our efforts to encourage recycling and waste reduction.

The Waste Management standard includes initiatives such as waste audits, occupant education and e-waste campaigns.

**GREENHOUSE GAS EMISSIONS**

Nearly 40% of global GHG emissions are attributed to the design, construction, and operation of buildings. That means they also offer substantial reduction potential through operational excellence and using alternative sources of energy.

Manulife Real Estate is committed to reducing our contribution to climate change by minimizing the GHG emissions from buildings. These derive mainly from the electricity we use to power buildings and from fuels used to heat spaces and water. Improving energy efficiency is currently the most cost-effective way to reduce our GHG footprint. To further reduce emissions, we also purchase renewable energy and pilot clean technologies. Initiatives we have implemented to advance toward a green, low-carbon economy are described on page 13.

In 2017, our total GHG footprint was 161,000 metric tonnes of carbon dioxide equivalent (tCO₂e). This is an increase from 2016, thanks to a fuller, more comprehensive energy reporting. Comparing our “like-for-like” portfolio, we decreased total emissions by 4%.

Improving carbon productivity in already efficient buildings is challenging. We continue to assess new opportunities to drive performance, pilot innovative technologies and install and purchase renewable energy to reduce GHG emissions.

**CASE STUDY**

**York Mills Centre recommissioning**

Many of our operations teams are achieving significant energy and water savings. The team at York Mills Centre, a LEED Gold certified building in Toronto, manages numerous energy, waste and tenant initiatives. As part of a $16 million revitalization project, York Mills Centre embarked on ongoing recommissioning, as well as HVAC and boiler improvements. The result has been a 25% decrease in energy use since 2014, with another 19% drop expected before 2020.
Green building certifications validate our practices

Green building certification is a critical component of our sustainability program, and the focus of one Sustainable Building Standard. Certifications assure tenants and stakeholders of a minimum building performance standard. Studies have shown that certifications not only demonstrate best-in-class sustainability management, but provide economic value through higher rents, lower vacancy and improved environmental performance.

Most large commercial tenants expect certification. Our certified spaces increase tenant satisfaction and productivity, reduce facility costs and demonstrate the tenant’s own sustainability commitment.

Manulife certifies to many standards, depending on the market, such as Leadership in Energy and Environmental Design (LEED®), Building Owners and Managers Association BOMA BEST® and the ENERGY STAR™ certification program. As of 2017, 60% of our portfolio is green building certified, an impressive 18% increase from 2016.

In 2017, we began using the BOMA BEST® Portfolio Program in our industrial and office portfolio. After an initial pilot, we certified 7 million square feet through BOMA BEST®.

We will continue to certify buildings through this program as they meet the relevant level one Sustainable Building Standards, which align with the BOMA BEST® requirements.

In 2018, we plan to expand the certification program to surpass our 2018 objective of 60% green building certification for the overall portfolio. We expect more buildings to be certified through the BOMA BEST® and LEED® programs. In addition, ENERGY STAR certification is now available in Canada and we will consider using it for buildings not suitable for LEED® or BOMA BEST®.

**Manulife green building certifications as of December 31, 2017**

<table>
<thead>
<tr>
<th>Certification</th>
<th>Square feet certified (at least 1 certification)</th>
<th>Percentage of global portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEED® certified</td>
<td>14.8 M SF¹</td>
<td></td>
</tr>
<tr>
<td>BOMA BEST™ certified</td>
<td>26.2 M SF¹</td>
<td></td>
</tr>
<tr>
<td>ENERGY STAR certified</td>
<td>10.3 M SF¹</td>
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<tr>
<td>Total</td>
<td>41.2 M SF*</td>
<td>60%</td>
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</tbody>
</table>

¹ Totals from different certification standards do not sum as properties with multiple certifications are only counted once

² Square footage for certifications based on gross floor area (GFA)

**CASE STUDY**

Creating sustainable places at 707 Fifth Avenue

707 Fifth Avenue is Manulife’s new 27-storey “AAA” LEED Gold certified office tower located in the downtown core of Calgary. The building’s innovative design is not only beautiful and resource efficient, but provides easier access, linking directly to Calgary’s +15 Skyway network and LRT plaza and offering bicycle parking and change room facilities. Its indoor, landscaped winter garden provides a sense of outdoors even on the coldest days of winter.
Building for a clean economy

Climate change impacts our business and the communities in which we operate, causing increases in both costs and regulations. Our climate change mitigation efforts help future-proof our portfolio against rising operational costs, regulation, carbon taxation, flood risks and supply chain disruption.

Manulife Real Estate does this primarily through energy and water efficiency improvements and associated reductions in greenhouse gases. In addition, we have photovoltaic solar panels on one of our building’s rooftop, and continuously look for opportunities to install more. We also purchase renewable energy credits across North America to offset our own emissions and encourage the development of clean energy. In 2017, we purchased more than 42,000 MWh of renewable energy credits, almost 7% of our total electricity consumption.

We collaborate with teams across Manulife that invest in clean energy technology and development projects on behalf of its life insurance policy holders. In 2017, we established in our real estate operations a Renewable Energy Working Group to find opportunities to use more clean power from renewable energy projects that the group finances.

At many of our properties, we assist utility companies to manage peak electricity demand. At 3161 Michelson in Irvine, California, we installed Powerpack, Tesla’s 1 MW energy storage system. We plan to install similar systems at two buildings in Boston, Massachusetts.

We continue to support our tenants and visitors’ efforts to transition towards a clean economy. Many properties have secure bicycle storage and shower facilities. We have installed almost 200 electric vehicle (EV) charging stations and plan to add more. These charging stations not only support a cleaner economy, they accommodate tenant expectations.

CASE STUDY

Renewable Energy Working Group

Many companies, including many Manulife tenants, are making major renewable energy commitments, such as joining RE100, a group of companies pledging to use 100% renewable electricity. Manulife’s Renewable Energy Working Group was established to advance clean economy practices and facilitate collaboration among different Manulife business units. It consists of members from Real Estate, Project Finance and Regional Power, Manulife’s renewable energy developer.
CASE STUDY

Maison Manuvie

We prioritized health and wellness when we designed our new office in Montreal, Quebec. Built to LEED Gold standards, floor-to-ceiling windows and open floor plans maximize natural light. Active design promotes the use of stairs over escalators. In our office space, adjustable-height desks are standard and select workstations have treadmills, so that employees can walk while they work. On-site bicycle storage, locker and shower rooms are available to encourage active transportation.

An integral part of our company vision

As a progressive real estate owner, helping our tenants live better lives is a key part of our sustainability vision and is ingrained in our business. North Americans on average spend almost 90% of their time indoors, so the indoor environment and building design have major impacts on their health.

PROVIDES TENANT VALUE

Wellness is good for everyone's business. Chronic disease, work-related injuries, stress and disengagement cost businesses $2.2 trillion per year in the United States alone. Research shows that building wellness features and programs improve employee productivity, engagement and satisfaction, as well as reducing absenteeism and health care costs.

Two of our Sustainable Building Standards focus on health and wellness. The Indoor Environmental Quality standard addresses air and water quality testing and green cleaning. The Health and Wellness standard focuses on wellness programming and occupant communications to encourage healthy behaviours like good nutrition, taking the stairs and scheduling active work breaks. To achieve level five, we use the Fitwel® certification standard as a benchmark.

We also integrate wellness into new developments by specifying natural lighting, indoor climate control, and social or outdoor spaces in building designs.

INVESTING IN WELLNESS CERTIFICATIONS

Wellness certifications are an emerging real estate trend. They validate property wellness features and practices through an independent standard. Manulife Tower in Hong Kong has applied for WELL® certification and our corporate real estate teams are piloting Fitwel benchmarking and certification at four of our properties in Canada, the U.S. and Asia. Lessons learned there will inform future standards and programming in our investment portfolios.

WELLNESS MATTERS FOR EMPLOYEES

Manulife is committed to providing employee programs and benefits that promote physical, emotional, social and financial safety and well-being, as outlined in our Health and Well-Being in the Workplace Policy. Our corporate real estate team manages office space for our employees worldwide. Our WorkSmart program provides employees with more flexibility through mobile office and remote working arrangements. Wellness features like natural lighting and adjustable-height desks are included in many WorkSmart fit-outs.


EMPLOYEE ENGAGEMENT

Building a high-performance team and culture

We want to be an employer of choice. To attract and retain the best and brightest, we focus on professional development, wellness, diversity and inclusion. Providing an outstanding employee experience supports exceptional customer service.

All Manulife employees benefit from a structured performance management program, including annual reviews, goal-setting and professional development plans. Manulife provides a suite of learning programs and courses to cultivate leadership skills. Topics range from effective strategizing, creative thinking and problem-solving to coaching, building and leading teams.

Every two years we assess employee engagement, and in 2017 the response rate was 89%. Based on this employee feedback, senior and regional leaders develop action plans to improve the work environment, tools and processes.

As a company, we invest in diversity and inclusion. By embracing differences, we can understand our customers better, incorporate fresh ways of thinking and create an environment where employees can bring their whole selves to work. Our Global Head of Diversity and Inclusion oversees diversity programs, such as our employee resource groups, and fosters a culture that respects and values difference.

SUSTAINABILITY IS A PART OF EVERY EMPLOYEE’S JOB

Our employees make our sustainability vision a reality. Engaging employees on sustainability informs them of our commitments and practices, builds a sense of purpose and empowers them to build and share expertise.

In 2017, our co-heads of real estate shared our sustainability vision, policy and commitments with our employees globally. All business unit leaders then reached out to employees with guidance and training programs specific to their functions.

All Operations and asset management employees, including the Global Head of Asset Management, have a sustainability goal in their personal performance objectives. This embeds sustainability as part of everyone’s job.

Employee Engagement is one of our Sustainable Building Standards. All properties have currently achieved levels one and two, which means all Manulife offices have posted the Sustainable Real Estate Policy and every property has nominated at least one Green Champion. Green Champions form a community of sustainability leaders who act as property sustainability experts and coordinators.

CASE STUDY

Employee sustainability training

In 2017, more than 200 Manulife Real Estate employees participated in sustainability training through live webinars on our online training platform. Participants enhanced their sustainability knowledge and learned about Manulife Real Estate’s sustainability vision and commitments, including how and why we embed sustainability into our investments, asset management and building operations.

2017 employee engagement statistics

<table>
<thead>
<tr>
<th>Employees surveyed for engagement</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees response rate</td>
<td>89%</td>
</tr>
<tr>
<td>Employees trained on sustainability</td>
<td>203</td>
</tr>
<tr>
<td>Manulife Real Estate Green Champions</td>
<td>78</td>
</tr>
</tbody>
</table>
Building strong relationships with our tenants

We aspire to provide our tenants with best-in-class services and high-quality, healthy, sustainable workspaces. We continuously engage with our tenants to ensure high customer satisfaction and long-lasting relationships. We believe sustainability and the sense of being part of a community are important to our tenants’ businesses.

In our biannual tenant satisfaction surveys, we assess our tenants’ attitudes and needs related to a sustainable workspace and building, and then create action plans to address the results in our operations. In 2016, we surveyed more than 1,000 tenants from almost half of our properties.

In 2017, we began to integrate sustainability into our standard lease and revamped our tenant sustainability fit-out guide. The updated green standard lease will be rolled out in 2018. We hope the new lease and fit-out guide make information sharing and collaboration easier, and result in more efficient buildings and higher occupant satisfaction.

Level one of the Tenant Engagement standard is communicating sustainability objectives and tips, while intermediate levels involve hosting sustainability-themed events and campaigns. Level 5 requires forming tenant-landlord green teams to work together in achieving mutual sustainability goals. The standard includes a tenant sustainability toolkit, communication templates, posters and campaign materials. This enables properties to participate in events such as Earth Week and hold educational lobby events on topics such as waste management.

CASE STUDY
Chicago Earth Week sustainability fairs

Our Chicago office portfolio showcases leadership in tenant sustainability engagement. Teams publish newsletters to inform tenants of upcoming events and provide tips to improve sustainability. In addition, buildings host green vendor fairs during Earth Week, which showcase how service providers like cleaners and waste haulers support the sustainability program, and also educate tenants on environmental issues and building sustainability features. Tenants have access to electronic waste and used clothing recycling drop-offs. Events like this get tenants involved and build a sense of community at the properties.
COMMUNITY ENGAGEMENT

We support our local communities

Manulife is an active member of the communities where we operate. We support local charities, community organizations and non-profits. In 2017, Manulife donated $43.7 million to community partnerships and philanthropy. Manulife employee volunteer programs increase our community impact and provide opportunities for employees to give back at work. For example, MatchBoard, a joint initiative of Manulife and Capacity Canada, trains and connects employees with board-level opportunities at community non-profit organizations. In 2017, Manulife employees volunteered 80,400 hours through corporate supported programs.

We play an important role in local communities and economies. Our buildings provide space for community programming and fundraising for local organizations, and host blood donation drives and farmers’ markets. In 2017, 66% of our office portfolio held at least one community event.

Our Community Engagement standard provides resources to plan and host community events including communications materials and posters and a planning guide. In 2018, we plan to introduce more opportunities for our employees and tenants to partner and support our local communities. We will also release a Sustainable Event Guide with tips on minimizing the environmental impact of events and maximizing their social benefits.

CASE STUDY
Supporting bees and plants in our communities

Honeybees are a vital part of the ecosystem: 88% of plant fertilization depends on bees. In 2017, Manulife Real Estate partnered with Alvéole, an urban beekeeping company, and welcomed two hives at our Toronto head office and eight hives at four Montreal properties. Alvéole provides the hives, bees and beekeeping expertise, while Manulife provides funding and a home on our rooftops. By hosting honeybees, we’re giving them a chance to flourish, and supporting food sources and biodiversity in the communities we serve.

CASE STUDY
Blood donor clinic partnership

Our partnership with Canadian Blood Services aligns our commitment to community with our focus on health. In 2017, we strengthened our commitment by becoming an official Give Life Partner with Canadian Blood Services, which made November its official Manulife Month. However, our commitment is year-round, and in 2017 our properties hosted more than 50 blood donation clinics across Canada.
WORKING WITH PARTNERS, SUPPLIERS AND INDUSTRY

PROMOTE RESPONSIBLE BUSINESS PRACTICES

Promoting sustainable and ethical business practices

Achieving real impact company-wide requires cooperation with our suppliers, business partners and peers. As a signatory to the Principles for Responsible Investment (PRI), we are committed to promoting responsible business practices within our industry. We work with suppliers and partners to manage risks and ensure that Manulife’s high ethical standards are adhered to.

Although we manage most of the buildings we own, we contract third-party managers at select properties, and incorporate sustainability requirements in to their contracts.

We also encourage third-party managers to adopt our Sustainable Building Standards, and to date have 49 third-party Green Champions. While some third-party managers have internal sustainability programs and resources, others benefit significantly from our program’s tools and resources.

At level one of our Sustainable Procurement standard, all suppliers learn about Manulife’s Vendor Code of Conduct. At higher levels, the standard provides guidance on analyzing procurement needs, engaging suppliers on sustainable options, and increasing sustainable procurement spending and impact.

PROMOTING SUSTAINABILITY IN OUR INDUSTRY

As a member of and a participant in the Global Real Estate Sustainability Benchmark (GRESB), Manulife Real Estate helps to advance sustainability in the real estate industry. GRESB advances industry knowledge, spreads best practices and promotes leadership.

We also play an active role in regional industry initiatives. For example, we are part of A Better City, a group of Boston business leaders that collaborate on sustainability. In the Toronto region, we participate in the Race to Reduce, an industry challenge that has collectively reduced energy use by more than 12% in its first four years.

Many of our employees are members of sustainability organizations and promote sustainability at events and conferences. In 2017, the head of our Engineering and Technical Services team spoke about Manulife Real Estate’s sustainability program at two conferences.

CASE STUDY
Employee industry participation spotlight

Stephen Smith, the Regional Managing Director of Manulife’s Western Canada real estate portfolio, has experience in developing corporate sustainability programs and advancing sustainability at the property level. He uses his experience and influence to affect change in the commercial real estate industry. He was a member of the working group that developed our Sustainable Building Standards, and is Chair of the Canada Green Building Council board.
Drive continuous improvement through sustainability management and transparency

As a large, global organization with a track record of excellence, integrity and ethical business conduct, Manulife makes governance a priority. To learn more about Manulife’s governance practices, visit our website: http://manulife.com/corporate-governance.

We apply the same high standards to managing sustainability. Manulife Real Estate’s sustainability governance structure spans our organization and links to corporate operations. It addresses both regulatory obligations and voluntary commitments to sustainability.

The Global Head of Real Estate Asset Management chairs our Executive Sustainability Steering Committee, which consists of senior real estate representatives from key departments and regions. The Committee oversees progress toward achieving our sustainability vision and ensures we meet our commitments and adhere to corporate policies and practices.

### Manulife Executive Sustainability Steering Committee

- Asset and Property Management
- Engineering and Technical Services
- Developments
- Corporate Real Estate
- Leasing
- Investments
- Marketing and Communications
- Human Resources
- Manulife Corporate Citizenship

The Vice-President of Engineering and Technical Services acts as the Environmental Officer for Manulife Real Estate, reporting to Manulife’s Enterprise Risk and Global Citizenship functions on matters related to environmental risks and impacts.

Our Sustainable Real Estate Policy sets out our commitment to integrate sustainability principles into our processes and property portfolio across the real estate life cycle, from development and investment to operations and asset management.

### OUR REPORTING VALIDATES OUR PRACTICES

To validate our practices, monitor progress, and support transparency and responsible business practices, we report on our sustainability management approach and performance.

We report annually to the Global Real Estate Sustainability Benchmark (GRESB). We use GRESB to evaluate our performance, identify gaps, inform decision-making and communicate to investors. In 2017, we improved our score and earned Green Star ranking for all five submissions.

As a signatory to the Principles for Responsible Investment (PRI), we report annually on our responsible investment practices.

Manulife Real Estate also contributes to Manulife corporate reporting, including:

- Manulife’s Public Accountability Statement
- CDP (formerly the Carbon Disclosure Project) reporting
- Dow Jones Sustainability Index reporting
We own, develop and manage real estate across the globe on behalf of our clients and Manulife’s general account.

ABOUT MANULIFE

Manulife Real Estate is a business unit of Manulife Financial Corporation (Manulife), a leading international financial services group that helps people achieve their dreams and aspirations by putting customers’ needs first and providing the right advice and solutions. We operate as John Hancock in the United States and as Manulife elsewhere. We provide financial advice, insurance, as well as wealth and asset management solutions for individuals, groups and institutions. At the end of 2017, we had approximately 34,000 employees, 73,000 agents and thousands of distribution partners, serving more than 26 million customers.

ABOUT MANULIFE REAL ESTATE AND JOHN HANCOCK REAL ESTATE

At Manulife Real Estate, we manage a portfolio of properties across North America and Asia with more than 62.5 million square feet of floor space. Our expertise includes real estate investment and development, asset management, property management and leasing. Our assets include office, industrial, residential and select retail properties.

REAL ESTATE PORTFOLIO INFORMATION
(As of Dec. 31, 2017)

C$21.9 B
Value of assets under management

62.5 M SF
Area in square feet

420 Properties
Properties owned, operated and/or managed

8 Countries
Including Canada, China, Japan, Malaysia, Thailand, United States, Vietnam and Singapore

4 Property Types
Office, industrial, residential and select retail

To learn more about Manulife and our commitment to social responsibility, environmental sustainability, and excellence in business conduct and corporate governance, visit our website (www.manulife.com) or read our Public Accountability Statement.
ABOUT THIS REPORT

REPORT SCOPE AND BOUNDARIES

This report details sustainability practices and performance of all real estate holdings owned or managed by Manulife Real Estate and John Hancock Real Estate. This includes third-party real estate assets managed by us and properties that are held in our life insurance investment portfolios. This also includes properties we manage for investors in our real estate funds and the Singapore based Manulife US REIT. Our approach to sustainability governance and management is consistent across all portfolios, and our strategy and programs apply to all properties we own or manage.

The content of this report was informed by the Global Real Estate Sustainability Benchmark (GRESB) and references the Global Reporting Initiative Standards summarized in the table below:

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<thead>
<tr>
<th>STANDARD (2016)</th>
<th>DISCLOSURE</th>
<th>CONTENT APPLIED</th>
<th>PAGE</th>
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<tbody>
<tr>
<td>102: General Disclosures</td>
<td>102-1: Name of the organization</td>
<td>Name of the organization</td>
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<tr>
<td></td>
<td>102-2: Activities, brands, products and services</td>
<td>Description of the organization’s activities</td>
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<td></td>
<td>102-3: Location of headquarters</td>
<td>Location of the organization’s headquarters</td>
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<tr>
<td></td>
<td>102-4: Location of operations</td>
<td>Regions in which the organization operates</td>
<td>20</td>
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<tr>
<td></td>
<td>102-7: Scale of organization</td>
<td>Total number of employees</td>
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<td>102-14: Statement from senior decision-maker</td>
<td>Statement from the senior decision-maker of the organization</td>
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<td></td>
<td>102-50: Reporting period</td>
<td>Reporting period</td>
<td>22</td>
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<tr>
<td></td>
<td>102-50: Reporting cycle</td>
<td>Reporting cycle</td>
<td>22</td>
</tr>
<tr>
<td>302: Energy</td>
<td>302-1: Energy consumption within the organization</td>
<td>Total energy consumption</td>
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<td></td>
<td>302-3: Energy intensity</td>
<td>Energy intensity</td>
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</tr>
<tr>
<td>303: Water</td>
<td>303-1: Water withdrawal by source</td>
<td>Total volume of water withdrawn by source</td>
<td>10 - 11</td>
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<tr>
<td>305: Emissions</td>
<td>305-1: Direct GHG emissions</td>
<td>Gross direct GHG emissions (MtCO₂e)</td>
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<tr>
<td></td>
<td>305-2: Energy indirect GHG emissions</td>
<td>Gross location-based energy indirect GHG emissions (MtCO₂e)</td>
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<tr>
<td></td>
<td>305-4: GHG emissions intensity</td>
<td>GHG intensity ratio for organization</td>
<td>11</td>
</tr>
<tr>
<td>306: Effluent and Waste</td>
<td>306-2: Waste by type and disposal method</td>
<td>Total weight of waste Indication of disposal method</td>
<td>11</td>
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</tbody>
</table>
ABOUT THIS REPORT AND ITS ALIGNMENT WITH REPORTING STANDARDS

REPORTING CYCLE
Annual

REPORTING PERIOD
January 1, 2017 to December 31, 2017

DATA

Data coverage: Data coverage for performance data is outlined where it is presented. If no data coverage is noted, data represents all Manulife Real Estate and John Hancock Real Estate owned.

Energy: Energy data includes electricity, natural gas, heating oil and steam consumption for base buildings, common areas and tenanted spaces. Energy use intensity has been adjusted for weather and extraordinary usage in the 2017 reporting year.


DEFINITIONS

BOMA BEST: Building Owners and Managers Association Building Environmental Standards. This Canadian certification program evaluates properties based on energy, water, waste, greenhouse gas emissions, indoor environment and environmental management systems.

CaGBC: The Canada Green Building Council. The CaGBC is a national not-for-profit organization that has been working since 2002 to advance green building and sustainable community development practices in Canada.

CDP: Formerly the Carbon Disclosure Project, the CDP is an organization that works to disclose the greenhouse gas emissions of major corporations. CDP’s climate change program collects information on the risks and opportunities of climate and aims to drive companies to reduce companies’ greenhouse gas emissions and mitigate climate change risk.

CO₂e: Carbon dioxide equivalent. This metric converts different greenhouse gases with different global warming impacts into a standard measure of carbon dioxide so that their impact can be compared. It is often displayed in metric tonnes (1,000 kilograms) or tCO₂e. Greenhouse gas emissions intensity is expressed in kgCO₂e per square foot.

ENERGY STAR™: An international standard for energy efficiency. It was created in 1992 by the U.S. Environmental Protection Agency and the Department of Energy to provide an energy performance rating system for commercial building types. The ratings, on a scale from 1 to 100, benchmark the energy efficiency of specific buildings against similar facilities. Australia, Canada, Japan, New Zealand, Taiwan and the European Union have adopted the program.

ekWh: Equivalent kilowatt hours. This metric is the standard unit of energy consumption used to aggregate and compare different energy sources (e.g., natural gas to electricity).

Greenhouse gas emissions: Gases that trap heat in the atmosphere, raising the average temperature of the planet. They are produced by fossil fuel combustion and industrial, agricultural and waste management processes. They are measured in tonnes of carbon dioxide equivalent (tCO₂e), hence they are also known as carbon emissions.

GRESB: Global Real Estate Sustainability Benchmark. This institutional investor-sponsored assessment is the global standard for assessing the sustainability performance of real estate companies and funds. In 2017, the assessment had 850 participants from 62 countries, representing $3.7 trillion in gross asset value.

LEED: Leadership in Energy and Environmental Design. This internationally recognized, third-party certification system rates a building’s site, water and energy efficiency, waste management, material selection and indoor air quality. There are different certification programs:

NC: New Construction. This rating program applies to new construction and major renovations of commercial and institutional buildings.

CS: Core and Shell. This rating program is a derivative of NC and applies to buildings where the owner controls 50% or less of the building area that will be built to NC requirements.

EB: O&M: Existing Buildings: Operations and Maintenance. This rating program evaluates the sustainability of ongoing operations of existing commercial and institutional buildings.

L/sf: Litres per square foot

PRI: The United Nations supported Principles for Responsible Investment. This organization works to understand the investment implications of environmental, social and governance factors and to support its international network of investor signatories in incorporating these factors into their investment and ownership decisions.

Scope 1 emissions: Direct greenhouse gas emissions from activities at company-owned properties, including combustion of natural gas in boilers and furnaces, the use of gasoline in generators and vehicles and refrigerant losses.

Scope 2 emissions: Greenhouse gas emissions from the generation of electricity, steam and chilled water purchased by the company.

Scope 3 emissions: Greenhouse gas emissions due to company operations from sources not owned or controlled by the company, e.g., landfill waste, water transportation and data centres.

Waste diversion rate: The percentage of total waste that is diverted away from landfill disposal through recycling or composting.
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