

# MANAGING OUR OPERATIONAL FOOTPRINT

Manulife has policies, programs and initiatives in place to improve the energy efficiency of our business operations and real estate portfolio and to minimize our impact on the environment.

## BUILDING GREEN

As a long-term real estate owner with a global portfolio of more than 64 million square feet, we are acutely aware of the environmental and economic benefits that can be realized by focusing on environmentally sustainable building design, operations and maintenance.

Manulife's new office tower developments target Leadership in Energy and Environmental Design (LEED) Gold certification as the basis for design, with a focus on reducing operational energy consumption. This is achieved by installing energy-efficient equipment and systems, implementing advanced building controls and combining them with high-performance building enclosures. Designs also specify high levels of durability for equipment in order to improve performance and reduce replacement costs and waste over a building's life cycle. This approach focuses on reducing the operational life cycle costs of our buildings and the waste they generate, reflecting our long-term approach to investing.

*We operate as John Hancock Real Estate in the US and Manulife Real Estate in other parts of the world.*

A growing number of Manulife real estate properties have been recognized for their design and energy efficiency, and our commitment to responsible business practices has been rewarded with a variety of certifications and other distinctions.

## MANAGING PERFORMANCE

We manage the environmental performance of our real estate operations by using proprietary, web-based utility consumption reporting (UCR). The UCR system tracks our energy and water use, as well as building waste collection and diversion rates. As the system relies on utility service data, we use it primarily in the commercial office properties that we have under direct management, where we have operational control over the premises. As we do not have operational control over energy use or financial control over utility bills for a number of our industrial, retail and residential properties, we currently do not include those properties in our reporting.



Many of our North American office buildings are Energy Star certified.

Our real estate portfolio grew significantly during 2015 with the acquisition of Standard Life's Canadian operations and real estate assets. While we were able to increase the space reported on from 25.1 million square feet in 2014 to 26.9 million square feet in 2015, the percentage of the total portfolio we are able to report on has declined to 42 per cent from 61 per cent last year. This decline is a result of our absorption of the Standard Life properties, for which we had incomplete utility service data that was not sufficient for reporting purposes.

Energy consumption, energy intensity and water use data has been adjusted for weather and extraordinary use in order to measure the relative performance of our properties. Greenhouse gas emissions and waste reporting is based on gross, unadjusted data.

## Energy Use and Greenhouse Gas Emissions from Energy Use

We pursue an energy consumption reduction target of at least two per cent per year in our corporate and investment real estate operations. We set annual targets for performance improvement for individual properties, and provide incentives to our property directors to achieve them.

Between 2011 and 2015, the intensity of our energy consumption declined by 14 per cent from 24.5 ekWh/ft<sup>2</sup> in 2011 to 21 ekWh/ft<sup>2</sup> in 2015. Our absolute energy consumption has increased, as we have expanded the scope of our reporting.

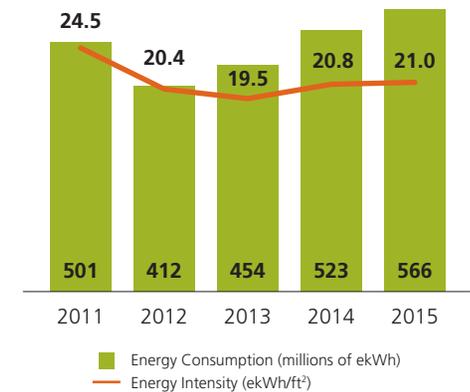
The intensity of our greenhouse gas emissions continues to decline, from 8.2 kilograms of CO<sub>2</sub>e/ft<sup>2</sup> in 2011 to 6.5 kilograms of CO<sub>2</sub>e/ft<sup>2</sup> in 2015, representing a reduction of 21 per cent over the period.

We continue to purchase renewable energy credits. In 2015, we purchased 34,906 MWh of renewable energy, representing approximately six per cent of our reported energy use.

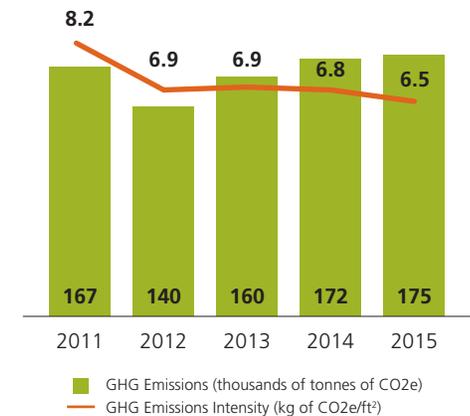
## BUILDING CERTIFICATION IN SINGAPORE

In 2015, Manulife Centre and the Tampines Grande complex earned Manulife Singapore a BCA Green Mark, awarded by the country's Building and Construction Authority and endorsed by the National Environment Agency. The award recognizes our efforts to improve energy and water efficiency, indoor air quality and sustainable office design.

### Energy



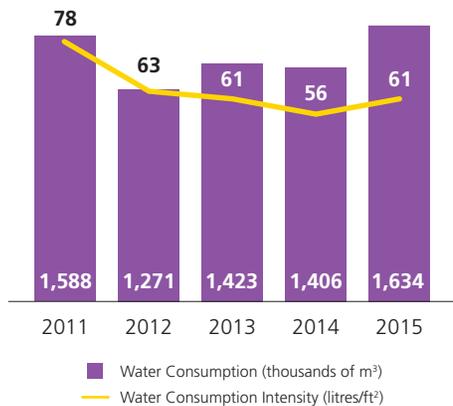
### Greenhouse Gas (GHG) Emissions





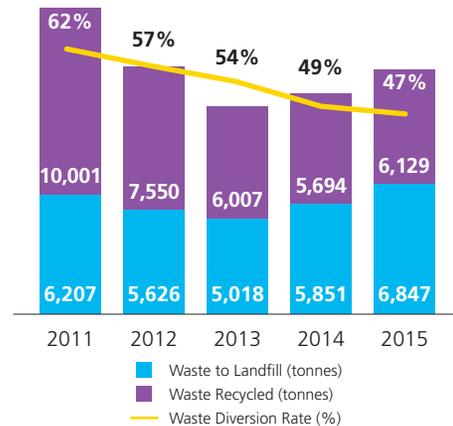
Located in Vancouver, British Columbia, and opened in 2015, 980 Howe was designed to achieve LEED Gold certification. The building features rainwater harvesting, energy-efficient triple-paned windows and electric vehicle charging stations.

### WATER



Manulife is achieving reductions in water use, with consumption per square foot down from 78 litres in 2011 to 61 litres in 2015, a decrease of 22 per cent, through the continued implementation of cost-effective measures to reduce water consumption across our portfolio of properties.

### WASTE



Our performance in diverting waste from landfill has declined from a rate of 49 per cent of total waste diverted in 2014 to 47 per cent in 2015. Waste diversion continues to be a focus and challenge across the portfolio.

# EV charging station

## take charge

Manulife Real Estate

By the end of 2015, we had installed 75 electric vehicle charging stations across our real estate portfolio.

### WIN-WIN: SMART COMMUTE

According to the U.S. Environmental Protection Agency, the transportation sector accounts for 14 per cent of greenhouse gas emissions globally and more than 25 per cent of the United States total. Put another way, the daily commute is a major driver of global warming and climate change.

Manulife has implemented numerous programs to help our thousands of employees commute in more sustainable ways. For example, John Hancock has taken steps to encourage the growth of cycling in Boston, and was named a 2015 Boston Bike Friendly Business. In the Greater Toronto Area, the regional transit agency, Metrolinx, named Manulife the Smart Commute Employer of the Year for Toronto.

Electric vehicles can play a vital role in a green future, and for consumers who might be considering making the leap to an electric vehicle, that decision may depend on whether or not they can charge their vehicle while they're at work. In fact, a network of charging stations is essential for the wide-scale adoption of electric vehicles.

With John Hancock's significant real estate holdings, we are uniquely positioned to help make electric vehicle ownership more practical and convenient by installing charging stations at our properties. We currently have 75 charging stations with a total of 123 stalls across 22 properties in Canada and the United States, and we plan to continue installing charging stations throughout our property portfolio.

“Embracing more sustainable ways of commuting pays a number of dividends – it not only helps reduce the impact of transportation on the environment, it can also help alleviate the stress associated with commuting, it can be a great way to get physical exercise and it can lower commuting costs.”

Chris Ouellette  
Head, Corporate Citizenship, Manulife