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PWGSC Real Property Sustainability Framework

April 1, 2015



Public Works and Government Services Canada
Real Property Branch

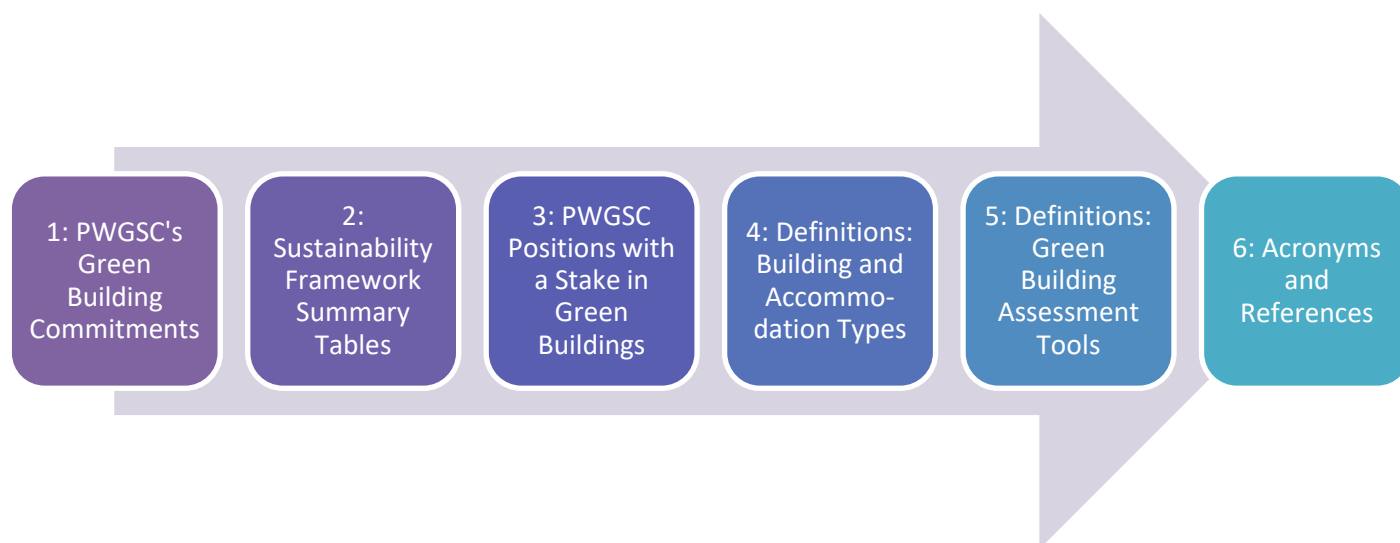
Introduction

The Government of Canada is committed to minimizing the environmental footprint of the more than 28,000 buildings it owns or leases across Canada. Public Works and Government Services Canada (PWGSC) provides accommodation to parliamentarians and more than 272,000 public servants in 1733 locations across Canada. As one of the largest custodians of federal real property and as a leader in sustainable buildings, PWGSC is committed to minimizing the environmental impact of the accommodations it provides to federal employees through the management and delivery of the department's programs and activities.

The purpose of this **Real Property Sustainability Framework** is to present PWGSC's commitments and approaches for reducing the environmental footprint of its buildings. This framework integrates and summarizes PWGSC's diverse green building commitments. The following documents encompass the scope of PWGSC's commitments: *Planning for a Sustainable Future: A Federal Sustainable Development Strategy for Canada* (FSDS), departmental Sustainable Development Strategies (SDS), departmental business plans, departmental Reports on Plans and Priorities (RPP), and the Real Property Branch (RPB) Sustainable Buildings Policy. This framework applies to all real property assets under custodianship of PWGSC, whether they are managed by the department or by a contractor under a RP-n contract.

PWGSC has also adopted a number of green building best practices, such as incorporating Green Leases into business operations, promoting an integrated design approach, fostering the use of sustainable materials, and establishing environmental performance benchmarks. Additional details for these and other best practices are provided for staff in the *Green Building Implementation Guide* (refer to Section 6 for a link to this document).

This Real Property Sustainability Framework is simple to navigate. The key sections of the framework include:



1. PWGSC's Green Building Commitments

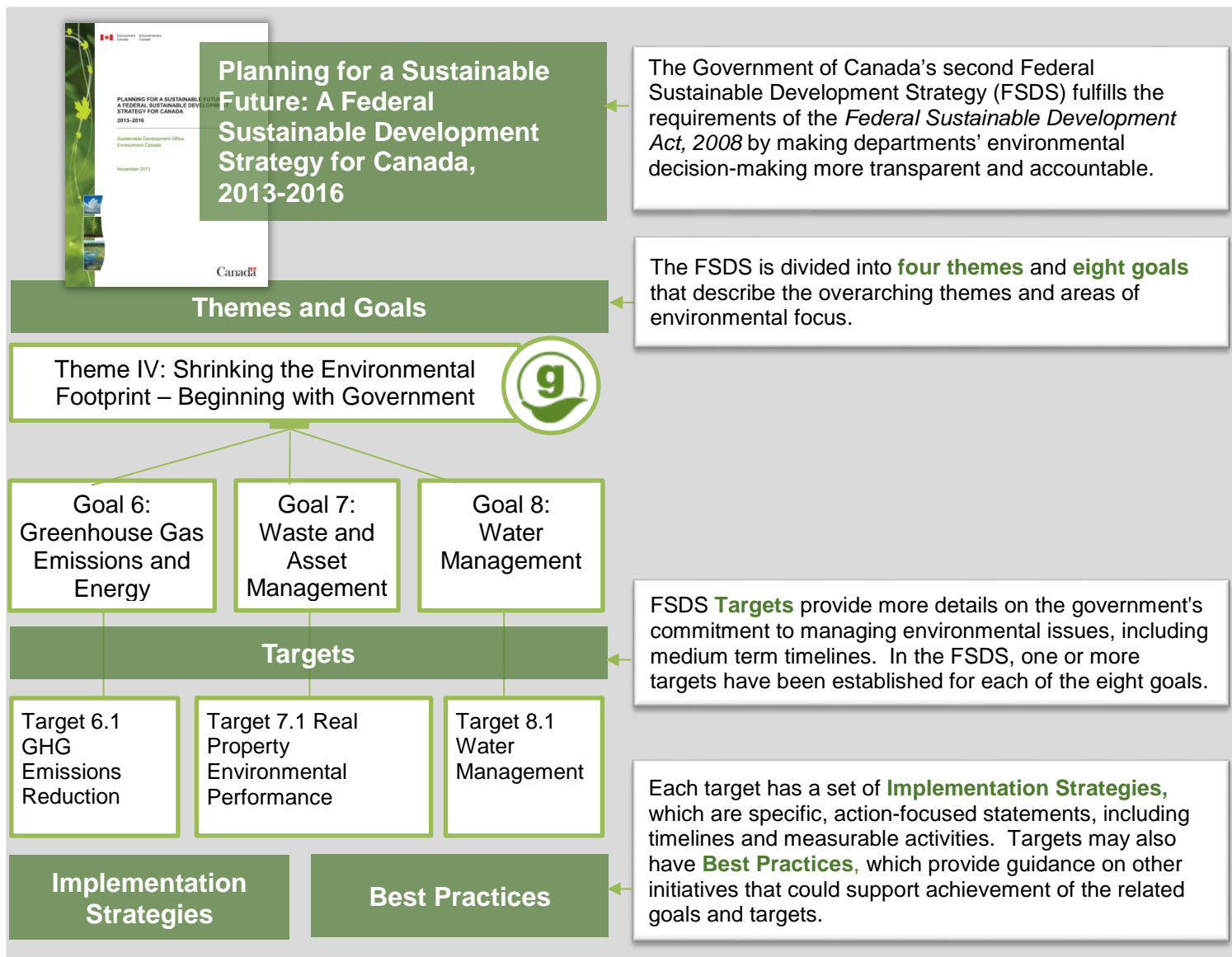


Figure 1: Overview of FSDS

Spotlight on Green Buildings: As illustrated in Figure 1, the fourth theme in the current FSDS establishes specific goals and targets aimed at “Shrinking the Environmental Footprint – Beginning with Government”, including a focus on green buildings. The FSDS requires that departments and agencies manage their real property in an environmentally responsible manner, consistent with the definition and basic principle of sustainable development. Such commitments are to be reflected in a Real Property Sustainability Framework.

In response, PWGSC's Real Property Branch has identified the Implementation Strategies and Best Practices (Table 1) most relevant to its operations, based on its past experience, its commitments, and its expectations for the future operations of the department. Specifically, the Branch has committed to several FSDS Implementation Strategies and Best Practices that will help achieve Targets 6.1 (GHG Emissions Reduction), 7.1 (Real Property) and 8.1 (Water). All of these commitments are presented in Table 1 of the department's framework.

Table 1: Green Building Commitments relevant to FSDS Targets 6, 7 and 8¹

FSDS Target 6.1: GHG Emissions Reduction. *The Government of Canada will reduce greenhouse gas emissions from its buildings and fleets by 17% below 2005 levels by 2020.*

The Real Property Branch, on behalf of PWGSC, has committed to reducing its greenhouse gas (GHG) emissions from its buildings and fleet of vehicles by 17% below 2005 by March 31, 2021. The strategy to address this commitment is presented in the 2014 PWGSC Greenhouse Gas Action Plan.

FSDS Target 7.1: Real Property Environmental Performance. *As of April 1, 2014, and pursuant to departmental Real Property Sustainability Frameworks, an industry recognized level of high environmental performance will be achieved in Government of Canada real property projects and operations.*

FSDS Implementation Strategies and Best Practices	Relevant PWGSC Green Building Commitments
<p>7.1.1 By March 31, 2015, each department will update as appropriate, their Real Property Sustainability Framework to define the custodian's approach to managing the environmental performance of new construction, build-to-lease projects, major renovations, operation and maintenance of existing Crown-owned buildings, and new lease or lease renewal projects over 1000 m². Key elements of the Real Property Sustainability Framework will address the scope of application and commitments to:</p>	
<p>7.1.1.1 Achieve a level of performance that meets or exceeds the custodian's current commitment(s) to sustainable buildings using industry-recognized assessment and verification tool(s).</p>	<p>As of April 1, 2012, all newly constructed federal government office buildings, including Crown-owned, leased-to-own, and build-to-lease will meet the LEED Canada-NC Gold, 4 Green Globes for Design or equivalent level of environmental performance.</p> <p>As of April 1, 2012, all major renovations of office buildings and all non-office buildings will meet the LEED Canada-NC Silver, 3 Green Globes for Design or equivalent level of environmental performance.</p> <p>From April 2004, the PWGSC building acquisition process will be updated to include environmental assessment and the requirement to meet either LEED Silver equivalent or 3 Green Globes rating. The costs to bring the building to these standards will be included in the selection process.</p> <p>As of April 1, 2012, existing crown buildings ≥1000 m² in rentable area will be assessed for environmental performance using an industry-recognized assessment tool, such as BOMA BEST, LEED EB:O&M or equivalent.</p> <p>As of April 1, 2012, leased office and non-office space ≥500 m² in rentable area and in which PWGSC is the majority leasee (> 50% of the total rentable area in the building) will be assessed using the BOMA BEST assessment method and must qualify for at least the first level of certification. This applies to leases with a term of greater than 5 years, including all option years.</p>

¹ The buildings covered in these commitments include all federal buildings that are under the custodianship of PWGSC or linked to the government through its leasing activities.

FSDS Implementation Strategies and Best Practices	Relevant PWGSC Green Building Commitments
	<p>As of April 1, 2012, leased office space $\geq 10,000$ m² in rentable area and in which PWGSC is the majority leasee (> 50% of the total rentable area of the building) will be assessed using the BOMA BEST assessment method and must qualify for at least the second level of certification. This applies to leases with a term of greater than 5 years, including all option years.</p> <p>As of April 1, 2012, all office-space fit-up and retrofit projects with a project area ≥ 1000 m² in usable area that involve a complete redesign will achieve LEED Commercial Interiors Silver or 3 Green Globes for fit-up or equivalent.</p>
<p>7.1.1.2 Conduct life-cycle assessments for major construction and renovation projects using an industry recognized tool.</p>	<p>As of April 1, 2015, all new building construction and major renovation projects of > \$5M will undergo a life-cycle assessment of the major building elements (structure and envelope) using the Athena Sustainable Materials Institute's "Environmental Impact Estimator", "EcoCalculator" or equivalent.</p> <p>The commitment does not apply in remote and northern communities, as the Athena tool does not accommodate these locations well.</p> <p>The commitment does not apply to space fit-up projects.</p>
<p>7.1.1.4 Manage the collection, diversion and disposal of workplace waste in Crown-owned buildings in an environmentally responsible manner.</p>	<p>By April 2007, multi-material recycling will be implemented in PWGSC Crown-owned buildings where recycling infrastructure exists.</p> <p>Starting on March 31, 2016, PWGSC will assess all Crown-owned general purpose office buildings ≥ 5000 m² through waste audits and waste reduction work plans to baseline, track, and assess performance of non-hazardous solid waste management practices on a five-year cycle.</p> <p>By March 31, 2016, PWGSC will ensure that paper material generated in Crown-owned buildings is reused or recycled, where feasible.</p> <p>By March 31, 2017, PWGSC will have implemented composting collection services in all existing Crown-owned buildings, where feasible.</p> <p>As of April 1, 2015, all newly constructed federal government office buildings, including Crown-owned, leased-to-own, and build-to-lease will be designed to accommodate composting collection services and will implement these services, where feasible.</p> <p>As of March 31, 2016, PWGSC will have implemented a national waste diversion program such as the 3R Plus Program in Crown-owned buildings, where feasible.</p> <p>Commencing in April 2004, at the time of lease renewals and new lease agreements, cost effective multi-material recycling will be implemented in leased buildings, where the recycling infrastructure exists and where PWGSC is the majority lessee.</p>
<p>7.1.1.5 Manage construction, renovation and demolition waste in Crown-owned buildings in an environmentally responsible manner.</p>	<p>As of April 2004, in real property projects over \$1M and in communities where industrial recycling is supported, the implementation of construction and demolition waste management practices will be completed, with waste materials being reused or recycled.</p> <p>As of March 31, 2015, construction, renovation, and demolition projects of more than \$1M will achieve a minimum waste diversion target of 75%.</p>

FSDS Implementation Strategies and Best Practices	Relevant PWGSC Green Building Commitments
	By March 31, 2016, construction, renovation, and demolition waste management practices will be integrated into the National Project Management System (NPMS) and will be used for reporting, including the projects' final diversion rates.
7.1.1.6 Develop an approach to improve performance of Crown-owned buildings via automation and commissioning.	<p>As of April 1, 2015, start using only Open Protocol (BACnet) capable Building Automation Systems and building components (e.g. building envelopes) in all new construction and major renovation projects.</p> <p>By March 31, 2016, assess the status of Building Automation Systems in buildings ≥ 5000 m² under Department's custody for suitability for integration with a Smart Building/Intelligent Building system.</p> <p>By March 31, 2017, start implementing Smart/Intelligent Building technology in selected (suitable) buildings.</p>
7.1.1.9 Benchmark and report annually on the energy usage intensity of Crown-owned office buildings using an industry recognized tool.	Commencing April 1, 2015, PWGSC will register all Crown-owned office buildings for which it is the custodian, in the ENERGY STAR Portfolio Manager and maintain the information in the program thereafter.
Best Practice 7.1.2 Real property managers and functional heads responsible for new construction, leases or existing building operations will have clauses related to environmental considerations incorporated into their performance evaluations.	As of April 1, 2014, in support of the Real Property Branch Assistant Deputy Minister/Associate Assistant Deputy Minister's Performance Management Agreement, all staff at the EX-1 level and above will include a statement of support for the organization achieving results pertaining to the Greening Government Operation's priority of reducing the government's environmental footprint; and continue to lead national programs that guide and support operations that ensure compliance with environmental acts, legislation and Federal Sustainable Development Strategy commitments.

FSDS Target 8.1: Water Management. *As of April 1, 2014, the Government of Canada will take further action to improve water management within its real property portfolio.*

FSDS Implementation Strategies and Best Practices	Relevant PWGSC Commitments
8.1.1 By March 31, 2015, each department will update, as appropriate, the Real Property Sustainability Framework to define the custodian's approach to sustainable water management in Crown-owned assets. Key elements of the approach will address the scope of application and commitments to:	
8.1.1.1 Conserve potable water	As of April 1, 2015, PWGSC will examine the feasibility of reducing potable water consumption from cooling towers in existing crown-owned buildings by increasing cooling tower cycle of concentration to six or more on a case by case basis.

FSDS Implementation Strategies and Best Practices	Relevant PWGSC Commitments
	<p>By March 31, 2016, PWGSC will, where feasible, install water meters in buildings that are currently not metered.</p> <p>By March 31, 2017, PWGSC will determine the department's national baseline water consumption to establish an achievable national water-reduction target in terms of litres/person or litres/m² for its existing crown-owned inventory.</p> <p>By March 31, 2016, PWGSC will eliminate the use of cooling systems that utilize single-pass cooling.</p>
8.1.1.2 Manage storm water run-off	<p>By March 31, 2016, where feasible, PWGSC will ensure that all roof drains in its existing crown-owned buildings ≥ 1000 m² are disconnected from sanitary or combined sewers, where feasible.</p> <p>By March 31, 2016, PWGSC will develop and implement a framework for assessing and installing storm water reuse options in new building constructions ≥ 1000 m².</p>
8.1.1.4 Meter the water usage in new projects	<p>As of April 1, 2015, all new construction projects will include the installation of a building level water meter.</p> <p>As of April 1, 2015, all major renovations (as defined in Table 2, Row 5.) that affect the building's plumbing system, will include the installation of a building level water meter.</p>
Best Practice 8.1.2 Conduct potable water audits in Crown-owned assets	Water audits will be conducted as part of building utility (energy and water) audits under the regular building management program of Real Property Branch's Asset Management Plan / Building Management Plan program.
Best Practice 8.1.4 Reclaimed non-potable water is used for landscape irrigation	For properties with significant landscaped features, new construction and building renovations that affect the plumbing system, the collection and use of non-potable water (rainwater and greywater) will be considered for site irrigation requirements, where feasible. A study identifying those sites with this potential will be updated to reflect current conditions.

2. Sustainability Framework Summary Tables

The tables below summarize PWGSC's commitments for each building project type, including the threshold, assessment tool(s) and energy efficiency targets. Table 2 addresses the commitments related to Project Design and Delivery; and Table 3 addresses ongoing Building Management.

How does the National Energy Code for Buildings (NECB) inform energy efficiency targets?

The NECB provides a series of design criteria (e.g. for systems and equipment for heating, lighting, and electrical power systems) that result in a building having a certain energy performance. This NECB level of energy performance is used as a baseline for the targets specified here. Most of these targets aim to make projects significantly more energy efficient than a building that meets only NECB requirements.

Table 2: Project Design and Delivery

Building Project Type	Threshold ² (\$ or m ²)	Assessment Tool & Target	Energy Efficiency Target	Lifecycle Assessment
1. New office buildings	All projects	LEED Gold or 4 Green Globes	28% more energy efficient than NECB performance and/or 35% more energy efficient than the building being replaced.	Athena EIE/EC (>\$5M, location restrictions)
2. Other types of newly constructed buildings ³	All projects	LEED Silver or 3 Green Globes	24% more energy efficient than NECB performance and/or 35% more energy efficient than the building being replaced.	Athena EIE/EC (>\$5M, location restrictions)
3. Long-term lease office buildings (including build-to-lease, lease-to-purchase, sale-leaseback)	All projects ≥500 m ²	LEED Gold or 4 Green Globes	24% more energy efficient than NECB performance and/or 35% more energy efficient than the building being replaced.	No
4. Building acquisition	All projects	LEED Silver or 3 Green Globes	24% more energy efficient than NECB performance.	No
5. Buildings undergoing Major Renovations ⁴	All projects	LEED Silver or 3 Green Globes	24% more energy efficient than NECB performance.	Athena EIE/EC (>\$5M, location restrictions)
6. Space Fit-Up and Retrofits	≥1000 m ² (Office)	LEED Silver or 3 Green Globes		No

Table 3: Building Management

Building Project Type	Threshold (\$ or m ²)	Assessment Tool and Target	Frequency
1. Existing federally-owned buildings (office and non-office)	≥1000 m ²	BOMA BEST	5 years
2. New and renewed leased office buildings	≥10,000 m ² , 5+ year lease	BOMA BEST Certified (second level)	3 years
	≥500 m ² (major lessee of 5+ year lease)	BOMA BEST Certified (first level)	3 years
3. New and renewed leased non-office buildings	≥500 m ² (major lessee of 5+ year lease)	BOMA BEST Certified (first level)	3 years

² This only includes buildings where PWGSC is the custodian or leases where PWGSC is the lease holder.

³ This does not include special purpose buildings for which no appropriate green assessment tool is available.

⁴ Heritage buildings undergoing major renovations are subject to the Sustainable Heritage Guide

3. PWGSC Positions Involved in Green Buildings

Table 4 lists the most common positions within Real Property Branch that are involved in green buildings. These stakeholders have various roles in implementing the commitments PWGSC has made in response to the FSDS 2013 – 2016 (described in Section 1). Many also have a role in reporting PWGSC's performance against meeting these commitments. A number of these position titles are generic, that is, they are meant to describe the position in a general way, recognizing that the position may be defined differently between various sectors and regions.

Table 4: Common Projects Relevant to each RPB Position

RPB Position:	Project Delivery:						Building O&M:	
	New Office Buildings	Other Types of Newly Constructed Buildings	Long-Term Lease	Building Acquisitions	Buildings Undergoing Major Renovations	Space Fit-up and Retrofits	Management of Existing Federally Owned Office and Non-Office Buildings	Management of New and Renewed Leased Office and Non-Office Buildings
Regional and Senior Directors	●	●	●	●	●	●	●	●
Owner / Investor	●	●	●	●	●	●		
Sustainable Building Coordinators ⁵	●	●	●	●	●	●	●	●
Project Leaders	●	●	●	●	●	●		
Senior Project Managers	●	●	●	●	●	●		
Project Managers	●	●	●	●	●	●		
Environmental Services Department (ESD) Technical Specialists	●	●	●	●	●	●	●	
All Other Technical Specialists (e.g. Architects, Engineers)	●	●	●	●	●	●		
Client Accommodation Service Advisor	●	●	●		●	●		
Leasing Officers	●		●			●		●
Lease Administrators, Asset and Facility Management Services	●		●			●		●
Asset / Facility Manager, Asset and Facility management Services (AFMS)						●	●	
Maintenance Management							●	

⁵ **Sustainable Building Coordinators:** Each region should have a “sustainable building coordinator” under one of a variety of position titles. Ordinarily, this coordinator will be within the Environmental Services group of Professional and Technical services, but each region is organized differently to meet its own unique requirements. For project delivery, the sustainable building coordinator is to be consulted at the outset of each project as an integral part of the project team. The sustainable buildings coordinator will be included on the project team from the initial planning stages of the project. They assist the project team to determine how the building will achieve its targets. They also provide advice for integrating sustainability design principles into projects and for operating practices to be used in building management. And, they coordinate the collection of reporting information from the project manager on the green building targets.

4. Definitions: Building and Accommodation Types

PWGSC's green building commitments vary across the types of buildings and accommodations. The following tables provide definitions for the common building and accommodation types applicable to the Department.

Table 5: Definitions of Common Building Types

Building Types	Definition
1. New office buildings	All newly constructed general-purpose office buildings owned by PWGSC.
2. Other types of newly constructed buildings	Any newly constructed building type (e.g. shops, warehouses, garages) owned by PWGSC, other than a general-purpose office building.
3. Long-term lease buildings	<p>All buildings leased for a term of 15 years or greater for any combination of the initial term plus optional extensions. This includes:</p> <p><i>Lease-to-purchase:</i> All new and existing buildings that are leased with an option to purchase the building at the end of the lease.</p> <p><i>Build-to-lease new office buildings:</i> Newly constructed office buildings that are built to the specifications of a federal government lease agreement.</p> <p><i>Sale-leaseback:</i> All new and existing buildings that are sold to a third party, with whom PWGSC subsequently enters into a lease agreement. May be short to medium term (1-10 years) or long term (20+ years) subject to the vendor's specific occupancy or capital requirements.</p>
4. Building acquisition	Existing buildings purchased by PWGSC.
5. Buildings undergoing Major Renovations	<p>Defined as a renovation to a building owned by PWGSC that may entail any one of the following set of conditions:</p> <ul style="list-style-type: none"> – The building is stripped to its structure, or it is undergoing a mid-life retrofit; – The building renovations include significant alterations to the building's envelope and heating, ventilation and air conditioning (HVAC) systems; and/or – The total renovation budget is equal to or greater than 50% of the replacement cost of the building in current dollars. <p>Buildings with heritage elements are a sub-group of this building project type.</p>
6. Space Fit-Up and Retrofits	<p>"Fit-Up" refers to the preparation of a building office space for initial federal occupancy whereas "Retrofit" (or "Refit") refers to the preparation of a building office space previously occupied by a federal organization to meet new requirements or to respond to a change in functional requirement of an organization.</p> <p>This definition applies to space fit-ups and retrofits for building office space of ≥ 1000 m² and a complete redesign of the space. This includes:</p> <ul style="list-style-type: none"> – Space is stripped to its base building (industry standard) configuration; – Redesign of lighting; and – Redesign of plumbing services for the space.

Table 6: Definitions of Accommodation Types

Accommodation Types	Definition
1. Crown-owned, Crown managed	The building is owned by the Crown under the custodianship of PWGSC and managed by employees of the Department.
2. Crown-owned RP-n managed	The building is owned by the Crown under the custodianship of PWGSC and managed by a private sector contractor under an RP-n contract.
3. Buildings in which space is leased	The building is owned by a private sector company and managed by that company or its agent.

5. Definitions: Green Building Assessment Tools

Green or sustainable buildings are generally defined as those that deliver superior environmental performance in areas such as: the building site; water; energy; material resources; and the indoor environment. PWGSC uses the tools presented in Table 7 (below) to assess the performance and impact of its buildings during project delivery (i.e. design and construction) and building management (i.e. operation and maintenance).

When selecting a tool to assess and report on environmental performance and impact, the project team must consider the project type, the total value of project and the relevant commitment made by PWGSC toward greening its operations. The *Green Building Implementation Guide* (refer to Section 6 for a link to this document) outlines in detail how project teams should approach the assessment of each project type, including how to select the appropriate assessment tool.

Table 7: Description of Assessment Tools and Supporting Materials



Leadership in Energy and Environmental Design®: LEED is a points-based rating system used to assess the environmental performance of buildings. It is the principal system used by PWGSC and is widely recognized as the industry standard. It can be used to assess: new construction, including major renovations (NC); the fit-up of an existing building; commercial interiors (CI); and existing building operations and maintenance (EB:O&M). Buildings are awarded one of four levels based on their score: Certified, Silver, Gold, and Platinum.



Green Globes: Green Globes (formerly BREEAM/Green Leaf) is a points-based rating system used to assess the environmental performance of buildings. It can be used for both new construction (including major renovations) and for interior space fit-ups of existing spaces. Buildings are awarded one to five 'Green Globes' based on their score.



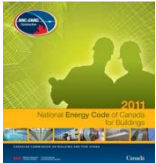
Athena Environmental Impact Estimator (EIC) and EcoCalculator® (EC): The Athena Sustainable Materials Institute's EIE/EC tools are used to conduct a life-cycle assessment to determine the environmental impact of major construction and renovation projects. These tools enable informed decisions, at different levels of detail and precision, estimate the environmental impact of construction materials and their use in building projects, focusing principally on concrete, steel and wood.



Building Owners and Managers Association Building Environmental Standards program (BOMA BEST®): The BOMA BEST program assesses the energy and environmental performance of operation and maintenance of existing buildings. It is the principal system used by PWGSC for existing buildings and is widely recognized as the industry standard. It has a set of best practices and gradations of environmental certification.



ENERGY STAR Portfolio Manager: The ENERGY STAR Portfolio Manager is an interactive energy management tool for tracking and assessing the energy and water consumption of buildings. It allows users to monitor, rate, and optimize their building's energy use – all in a secure online environment. Developed and owned by the U.S. Environmental Protection Agency, the Portfolio Manager is currently in use by Natural Resources Canada and has been adapted to include Canadian weather and other data specific to Canada.



National Energy Code for Buildings, 2011 (NECB): The National Energy Code for Buildings, 2011 (NECB) provides minimum requirements for the design and construction of energy-efficient buildings. It covers the building envelope, systems and equipment for heating, ventilating and air-conditioning (HVAC), service water heating, lighting, and the provision of electrical power systems and motors. It applies to new buildings and additions. It does not apply to farm buildings nor to housing and smaller buildings covered in Part 9 of the National Building Code of Canada (NBC).

2014 PWGSC Greenhouse Gas Action Plan: The 2014 PWGSC Greenhouse Gas Action Plan was developed as a specific guide to achieving the Department's FSDS greenhouse gas (GHG) emission reduction target. The Action Plan identifies the most cost effective path to achieving the Department's emission reduction goal by 2020. The Action Plan establishes specific regional GHG goals to achieve the overall GHG emission reduction target, and identifies the key facilities across the country that must be the focus of PWGSC's efforts.

Sustainable Heritage Guide (SHG): The Sustainable Heritage Guide was developed by PWGSC to provide guidance to project teams on integrating sustainability building standards in heritage building projects.

Green Lease: PWGSC's 'green lease' provision was established in 2004 to address other types of leases for office buildings (other than those that are Crown owned). The PWGSC Green Lease addresses key environmental standards such as the proper management of wastewater, indoor air quality and energy efficiency.

6. Acronyms and References

Athena EIC/EC – Athena Environmental Impact Estimator and EcoCalculator ([EIE/EC®](#))

BOMA BEST – Building Owners and Managers Association Building Environmental Standards program ([BOMA BEST](#))

EB:O&M – LEED Existing Building Operations & Maintenance ([LEED EB:O&M](#))

ENERGY STAR Portfolio Manager – ([ENERGY STAR Portfolio Manager](#))

FSDS – Federal Sustainable Development Strategy Canada ([FSDS](#))

GHG – Greenhouse Gas

Green Building Implementation Guide – ([Green Building Implementation Guide](#))

Green Globes – ([Green Globes](#))

Green Lease – ([Green Lease](#))

HVAC – Heating, Ventilation and Air Conditioning

LEED – Leadership in Energy and Environmental Design ([LEED®](#))

NCA – National Capital Area

NBC – National Building Code of Canada

NECB – National Energy Code for Buildings – ([NECB](#))

NPMS – National Project Management System

OGGO – Office for Greening Government Operations

PWGSC – Public Works and Government Services Canada

RPB – Real Property Branch

RPP – Reports on Plans and Priorities

SDS – Sustainable Development Strategy