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“POWERING” THE FUTURE OF FEDERAL BUILDINGS: ENERGY EFFICIENCY AS A GOAL

Report of the Standing Committee on Government Operations and Estimates

**Pat Martin
Chair**

JUNE 2013

41st PARLIAMENT, FIRST SESSION

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THE STANDING COMMITTEE ON GOVERNMENT OPERATIONS AND ESTIMATES

has the honour to present its

TWELFTH REPORT

Pursuant to its mandate under Standing Order 108(3)(c)(iv), the Committee has studied the energy efficiency in government buildings, structures and public works, and has agreed to report the following:

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“POWERING” THE FUTURE OF FEDERAL BUILDINGS: ENERGY EFFICIENCY AS A GOAL

CHAPTER ONE: INTRODUCTION

The federal government is one of the largest landowners in Canada, and it either owns or leases a significant number of buildings.¹ In this context, the House of Commons Standing Committee on Government Operations and Estimates (hereinafter the Committee) adopted the following motion: “That, the Committee undertake a study on current and potential avenues for enhanced energy efficiencies and potential cost reductions for federally owned or operated buildings, structures and public works; and that the Committee report its findings and recommendations to the House.”

The term “energy efficiency” refers to “the level of output of a given industrial, commercial, residential or other system per unit of energy input,”² or “using less energy to provide the same service,” while “energy conservation” — which is a term often used in relation to energy efficiency — refers to “reducing or going without a service to save energy.”³ Energy efficiencies in federal buildings⁴ contribute to reduced environmental impacts, lower energy use and better value for Canadians through reduced energy costs.⁵

During the course of its study, the Committee held seven meetings and heard testimony from federal officials from Public Works and Government Services Canada (PWGSC) and from Natural Resources Canada (NRCan), provincial officials from the Governments of Manitoba and British Columbia, representatives of building associations, experts in energy-efficient buildings and other stakeholders. The goal was to identify opportunities for enhanced energy efficiencies and potential cost reductions in federally owned or operated buildings, structures and public works. The study examined federal buildings in general, and although special attention was given to office buildings, the Committee did not focus on buildings with unique energy needs, such as laboratories, prisons and buildings on military bases. The Committee also received a written submission from the United States on energy efficiencies in its federal buildings and related legislative policies.

1 Environment Canada, [Planning for a Sustainable Future: A Federal Sustainable Development Strategy for Canada 2013-2016](#), February 2013, p. 28.

2 Michael M. Wenig, [Assessing Where Renewable Energy and Energy Efficiency Stand in Alberta Policy and Government Organization](#), Canadian Institute of Resources Law, December 2011, p. 1-2.

3 Lawrence Berkeley National Laboratory, [What's Energy Efficiency?](#).

4 “Federal buildings” refers to Crown-owned and -leased buildings.

5 Natural Resources Canada, [Federal Building Initiative](#).

The first step in determining potential avenues to improve further the energy efficiency of federal buildings and to achieve potential cost reductions is to examine the portfolio of federal buildings and to identify the current federal measures that have contributed to improved energy efficiency in these buildings; these issues are discussed in Chapter 2. Chapter 3 presents a number of the costs and the benefits associated with enhanced energy efficiencies in federally owned and operated buildings, while Chapter 4 provides the witnesses' views — and the Committee's observations and recommendations — about how the federal government could reduce its energy use and achieve cost reductions through ensuring that it owns and leases energy-efficient buildings.

CHAPTER TWO: THE PORTFOLIO OF FEDERAL BUILDINGS AND THEIR PATH TO ENHANCED ENERGY EFFICIENCY

Beginning with the Federal Building Initiative (FBI) in 1991, the energy efficiency of federal buildings — both owned and leased — has improved over time. At least in part, these improvements have been the result of such federal measures as the FBI and the Federal Sustainable Development Strategy (FSDS), and a focus on ensuring that these buildings meet the requirements of industry-recognized rating systems for commercial buildings. An examination of the portfolio of federal real estate properties, and the path to energy-efficiency in those properties, provides a context for consideration of what more could be done to improve the energy efficiency of federal buildings and what potential cost reductions can be achieved.

A. The Portfolio of Federal Real Estate Properties

The typical PWGSC-owned building is, on average, now 50 years old. ... The average office building in Canada uses approximately 320 equivalent kilowatt hour, per square metre, versus the PWGSC building, which only uses 285 [kWh] per square metre.

An official from Public Works and Government Services Canada

As a major employer in Canada, the federal government owns and leases a significant number of buildings, with these properties varying in type, size, location and use. As well, a variety of federal entities act as custodians of these buildings.

1. The Properties

In its Guide to the Management of Real Property, the Treasury Board of Canada Secretariat (TBS) characterizes the federal government's real property inventory as "extremely diverse," encompassing "a variety of real property types, including land, buildings, bridges, marine navigation equipment, wharves and monuments, among many others."⁶

The federal inventory of real estate properties includes 31,320 federally owned buildings, representing 19.1 million square metres, and 4,100 federally leased buildings,

6 Treasury Board of Canada Secretariat, [Real Property: Description and Context](#), in *Guide to the Management of Real Property*.

representing 5.1 million square metres, divided among 24 custodians.⁷ An official from PWGSC told the Committee that PWGSC manages 31% of the total floor space occupied by the federal government.⁸ According to that official, PWGSC's total inventory represents 7 million square metres, of which 52% is Crown-owned and 48% is leased by the Crown.⁹ In addition, according to an official from NRCan, his department has a portfolio of 222 Crown-owned buildings, 39 leased buildings and 47 buildings that are managed by PWGSC.¹⁰

2. The Federal Top Ten Organizations

Table 1 presents the top 10 federal organizations in terms of buildings occupied, while Figure 1 presents the top 10 federal organizations in terms of floor area occupied. The buildings of each department and agency vary, and can include storage facilities, training centres, central heating and cooling plants, housing and office buildings, among other types.

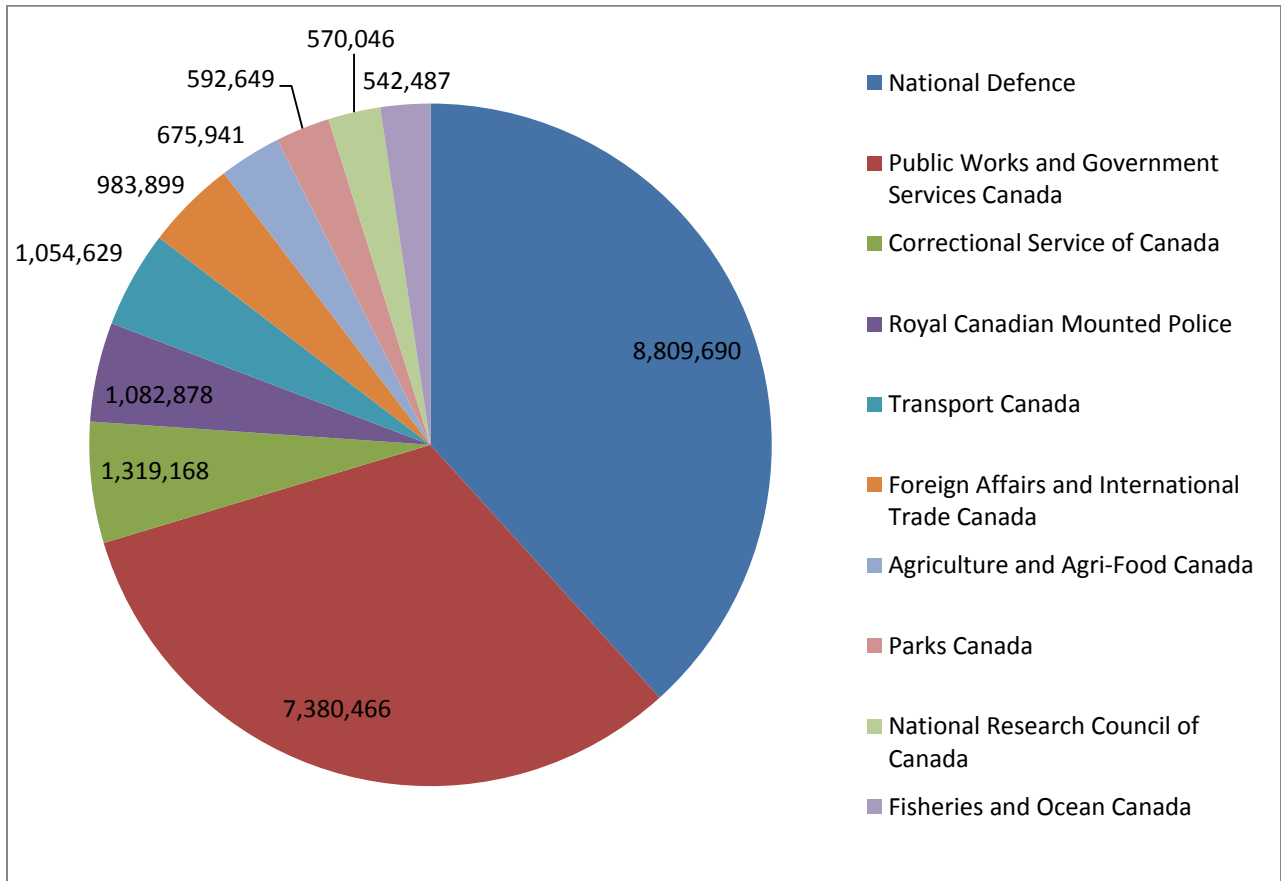
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- 7 Treasury Board of Canada Secretariat (written submission), *Treasury Board Secretariat Response to the House of Commons Standing Committee on Government Operations and Estimates (18 April 2013)*, 9 May 2013.
- 8 John McBain, Public Works and Government Services Canada, [Evidence](#), Meeting 54.
- 9 *Ibid.*, [Evidence](#), Meeting No. 81.
- 10 Geoff Munro, Natural Resources Canada, [Evidence](#), Meeting No. 54.

Table 1 — Top 10 Federal Organizations, by Number of Buildings

Organization	Number of Buildings
National Defence	14,815
Parks Canada Agency	4,445
Royal Canadian Mounted Police	2,692
Public Works and Government Services Canada	2,341
Fisheries and Oceans Canada	2,245
Foreign Affairs and International Trade Canada	2,081
Agriculture and Agri-Food Canada	2,008
Correctional Service of Canada	1,769
Transport Canada	1,121
Environment Canada	387

Source: Table prepared using data obtained from the Treasury Board of Canada Secretariat, (written submission), *Treasury Board Secretariat Response to the House of Commons Standing Committee on Government Operations and Estimates (18 April 2013)*, 9 May 2013.

Figure 1: Top 10 Federal Organizations, by Floor Area (square metres)



Source: Table prepared using data obtained from the Treasury Board of Canada Secretariat, (written submission), *Treasury Board Secretariat Response to the House of Commons Standing Committee on Government Operations and Estimates (18 April 2013)*, 9 May 2013.

B. The Path to Energy Efficiency in Federal Buildings

In the early nineties, departments really addressed FBI aggressively. PWGSC and [the Department of National Defence] together were responsible for about half of the floor space in the [federal building] stock and about 70% of the energy use. They very aggressively addressed their major savings opportunities and they did deep building retrofits addressing the heating, ventilating, cooling, lighting, motors — all the major systems.

An official from Natural Resources Canada

The energy efficiency of federal buildings has evolved over time, from the efforts of individual departments to a comprehensive government-wide strategy on sustainable development, through the use of national building codes and the pursuit of various industry-recognized building certifications.

1. Federal Initiatives

The FBI is a voluntary program that aims to facilitate energy-efficiency retrofit projects in federally owned or managed buildings.¹¹ Although it does not provide upfront financing, it helps federal departments enter into third-party energy performance contracts (EPCs) with energy service companies, with the result that major projects are self-financing. According to an official from NRCan, since 1995, more than 80 projects among 16 federal departments have been energy-efficiency retrofitted under the FBI, which represents a third of Crown-owned floor space; \$320 million in private capital investments has been leveraged.¹²

In 2008, the *Federal Sustainable Development Act* was passed by Parliament; it required the federal government to develop a comprehensive strategy, the [FSDS](#).¹³ An official from PWGSC told the Committee that, under the leadership of Environment Canada and the Minister of the Environment, the Office of Greening Government Operations develops the FSDS — including the goals and targets — through a government-wide consultation process.¹⁴ An official from PWGSC told the Committee that the FSDS applies to 27 departments and agencies, of which 15 are custodian

11 Natural Resources Canada, [Federal Building Initiative](#).

12 Natural Resources Canada (written submission), 24 October 2012.

13 Environment Canada, [Planning for a Sustainable Future: A federal Sustainable Development Strategy for Canada](#), October 2010, p. 3.

14 Caroline Weber, Public Works and Government Services Canada, [Evidence](#), Meeting No. 54.

departments, and which are required to improve the environmental performance of their real estate properties.¹⁵

In October 2010, Environment Canada released the first FSDS, which covers the 2010–2013 period.¹⁶ A PWGSC official said that, according to the 2012 FSDS progress report, custodial departments¹⁷ have committed to assessing the performance of 1,908 Crown-owned buildings, which represent approximately 80% of federally occupied buildings with a floor area of at least 1,000 square metres.¹⁸ A draft version of the FSDS for the 2013–2016 period is currently available for public consultation.¹⁹ The proposed changes in the draft version in relation to energy efficiency in federal buildings include benchmarking, building operator training, builder automation systems, commissioning practices, and the use of sustainable real property performance indicators, for example, energy use intensity.²⁰

According to the FSDS, the federal government has already taken actions to reduce its environmental footprint. For instance, all new federal office buildings must meet the Canada Green Council's Leadership in Energy and Environmental Design (LEED) Gold level.²¹ An official from PWGSC told the Committee that every building larger than 1,000 square metres is audited every five years in order to assess its energy consumption.²²

Another PWGSC official informed the Committee that federal departments and agencies must report twice on their efforts to reduce their federal environmental footprint: their targets are indicated in their report on plans and priorities, and their achievements are described in their departmental performance report.²³ An official from PWGSC told

15 Robert Laframboise, Public Works and Government Services Canada, [Evidence](#), Meeting No. 81.

16 The FSDS has three components: an integrated whole-of-government strategy to achieve environmental sustainability; a link between sustainable development planning and reporting with federal government's core expenditure planning and reporting system; and effective measurement, monitoring and reporting mechanisms. The FSDS articulates specific targets in relation to "greening" government operations through "green buildings," "green procurement," e-waste printing units, reduced paper consumption, "green meetings," and reduced levels of greenhouse gas emissions for buildings and the vehicle fleet for federal departments and agencies. See: Environment Canada, [Public Consultation on the Draft Sustainable Development Strategy 2013-2016](#).

17 "Custodial departments" refer to federal departments and agencies that administer real property on behalf of the federal government. According to the Guide to the Management of Real Property, "[a] department can be a custodian of either Crown-owned property, property in which the Crown has a leasehold (or other legal interest), or property it uses for program purposes by other means, such as licence." See: Treasury Board of Canada Secretariat, [Guide to the Management of Real Property](#).

18 Robert Laframboise, Public Works and Government Services Canada, [Evidence](#), Meeting No. 81.

19 Environment Canada, [Public Consultation on the Draft Sustainable Development Strategy 2013-2016](#).

20 Robert Laframboise, Public Works and Government Services Canada, [Evidence](#), Meeting No. 81.

21 Environment Canada, [Planning for a Sustainable Future: A federal Sustainable Development Strategy for Canada](#), October 2010, p. 29.

22 John McBain, Public Works and Government Services Canada, [Evidence](#), Meeting No. 54.

23 Caroline Weber, Public Works and Government Services Canada, [Evidence](#), Meeting No. 54.

the Committee that, over the 2005–2010 period, the department reduced its energy consumption in Crown-owned buildings, and in relation to lease-purchase arrangements by the Crown, achieved estimated savings of \$17 million.²⁴

In 2012 the federal government introduced PWGSC [Workplace 2.0](#), which is an effort to modernize federal public servants' physical workspace, including buildings and offices, and associated work practices.²⁵ This renewal aims to maximize the use of space and technology, and to make new office designs more flexible. An official from PWGSC told the Committee that this initiative supports the development of effective and productive work environments, reduces the space allocated for offices by two square metres per person, and accommodates individual work styles, sustainable design principles and alternative work strategies.²⁶ That said, the official also noted that, due to Workplace 2.0's goal to reduce the amount of office space per worker, energy consumption associated with air conditioning in the summer, as well as the operation of elevators and escalators, will increase.²⁷

The Leading Workplace Strategy in British Columbia is a provincial example of a similar strategy. An official from Shared Services BC told the Committee that the implementation of this strategy in the Victoria capital region reduced the Government of British Columbia's footprint by more than 3,800 square metres, and that reducing the footprint results in lower energy costs.²⁸

2. National Energy and Building Codes

The [National Energy Code of Canada for Buildings 2011](#) provides minimum requirements for the design and construction of energy-efficient buildings and covers the building envelope, systems and equipment for heating, ventilation and air-conditioning, service water heating, lighting, and the provision of electrical power systems and motors.²⁹ The [National Building Code of Canada 2010](#) addresses the design and construction of new buildings and the substantial renovation of existing buildings.³⁰

The Committee was informed that although provinces have their own building codes, only a few provinces have energy efficiency requirements for their buildings, as provinces tend to adopt only the safety components of the national building codes.³¹

24 Ibid.

25 Public Works and Government Services Canada, [Workplace 2.0](#).

26 John McBain, Public Works and Government Services Canada, [Evidence](#), Meeting No. 54.

27 Ibid., [Evidence](#), Meeting No. 81.

28 Bernie Gaudet, Shared Services BC, Government of British Columbia, [Evidence](#), Meeting No. 79.

29 Government of Canada, [National Model Construction Code Documents: National Energy Code of Canada for Buildings](#), 2013.

30 Government of Canada, [National Model Construction Code Documents: National Building Code of Canada](#), 2013.

31 Doug Cane, Caneta Research Inc., [Evidence](#), Meeting No. 80.

An official from NRCan explained that almost every province/territory is implementing the National Energy Code of Canada for Buildings, and that the associated savings will be significant.³² To date, British Columbia has adopted the National Energy Code of Canada for Buildings, and all of the other provinces and territories, with the exception of Northwest Territories, are in the process of adopting the Code.³³ The Government of the Northwest Territories conducted research and concluded that their existing building codes exceed the requirements of the National Energy Code of Canada for Buildings.³⁴ According to Dean Karakasis (Executive Director, Building Owners and Managers Association of Ottawa), when the federal government leases buildings from the private sector, the national code applies to the lease and, in some cases, the provincial code if it has higher standards.³⁵

3. Canadian Rating Systems for Commercial Buildings

According to an official from PWGSC, the federal government has used a variety of building rating systems³⁶ in order to implement measures designed to reduce energy consumption in its new and existing buildings. These systems, which provide information on a building's environmental performance, establish standards, guidelines and codes that buildings are required to meet in order to obtain a certain certification.³⁷ In Canada, the main rating systems for commercial buildings are LEED, Building Owners and Managers Association Building Environmental Standards (BOMA BEST), and Green Globes. Table 2 presents the number of buildings in PWGSC's portfolio that have obtained certification under LEED Gold and BOMA.

32 Carol Buckley, Natural Resources Canada, [Evidence](#), Meeting No. 81.

33 Natural Resources Canada (written submission), *Natural Resources Canada Response to the House of Commons Standing Committee on Government Operations and Estimates (18 April 2013)*, 4 June 2013.

34 Ibid.

35 Dean Karakasis, Building Owners and Managers Association of Ottawa, [Evidence](#), Meeting No. 80.

36 Rating systems can be entirely performance-based, entirely systems-based, or a combination of the two. Performance-based rating systems "certify the performance of a building or construction process based on measurable result," while system-based rating systems "certify that a building has been constructed or operated according to a specified management process, but they do not necessarily consider the level of performance of the building or the building process." See: RBC Environmental Blueprint, [Moving into the Mainstream: Green Buildings and LEED](#), 2011, p. 3.

37 RBC Environmental Blueprint, [Moving into the Mainstream: Green Buildings and LEED](#), 2011, p. 3.

Table 2 — Number of PWGSC Buildings that Achieved a LEED or BOMA Certification, October 2012

Certification	Number of Buildings
LEED Gold	6
BOMA	170
Total Number of Buildings	2,341

Source: Table prepared using figures cited by Public Works and Government Services Canada officials and data obtained from the Treasury Board of Canada Secretariat, (written submission), Treasury Board Secretariat Response to the House of Commons Standing Committee on Government Operations and Estimates (18 April 2013), 9 May 2013.

The LEED system has four levels of certification — Certified, Silver, Gold and Platinum — and rates performance in six categories — sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation and design.³⁸ According to Thomas Mueller (President and Chief Executive Officer, Canada Green Building Council), large, new office buildings that are owned and managed by the private sector are “almost exclusively now being designed and built to LEED Gold and Platinum levels.”³⁹ According to Mr. Mueller, the LEED system is internationally recognized, as it exists in 130 countries.⁴⁰ He also mentioned that the federal government adopted a LEED Gold certification requirement for newly-constructed federal office buildings and was one of the first public agencies in Canada to do so. To date, 56% of federal building projects meet the requirements for LEED Gold or Platinum certification. An official from PWGSC noted that all new office buildings — whether Crown-owned, or built-to-lease or lease-to-own by the Crown for several years — must meet the requirements for LEED Gold certification, while buildings undergoing major renovations must obtain a LEED Silver certification.⁴¹ The official also said that PWGSC has six buildings with a LEED Gold or Silver certification, and that an additional 14 buildings that are either under construction or undergoing certification are in the process of achieving a LEED certification.⁴² As well, he informed the Committee that PWGSC’s buildings that have a LEED Gold certification use as little as 149 ekWh per square metre, which is below the 320 ekWh national average use in office buildings.⁴³

38 RBC Environmental Blueprint, [Moving into the Mainstream: Green Buildings and LEED](#), 2011, p. 7.

39 Thomas Mueller, Canada Green Building Council, [Evidence](#), Meeting No. 78.

40 Ibid.

41 John McBain, Public Works and Government Services Canada, [Evidence](#), Meeting No. 54, and [Evidence](#), Meeting No. 81.

42 Ibid., [Evidence](#), Meeting No. 54.

43 Ibid., [Evidence](#), Meeting No. 81.

Like the federal initiative, the province of British Columbia has a policy that requires all new provincial government buildings to meet the requirements for LEED Gold or an equivalent certification. An official from the Government of British Columbia's Ministry of the Environment told the Committee that 20% of all LEED Gold-certified buildings in Canada are located in British Columbia.⁴⁴

In 2009, the Canada Green Building Council introduced the [LEED Canada for Existing Buildings: Operations and Maintenance](#) (EB:O&M) rating system to help "building owners and operators measure operations, improvements and maintenance on a consistent scale, with the goal of maximizing operational efficiency while minimizing environmental impacts."⁴⁵ Mr. Mueller informed the Committee that, to date, four existing federal buildings meet the LEED EB:O&M certification requirements. In addition, he noted that neither the 2010–2013 FSDS nor the 2012 FSDS progress report indicated that plans exist to certify more existing federal buildings in LEED EB:O&M.⁴⁶

A second rating program is BOMA BEST, which was launched in 2005. Its certification for specific building types — including offices, shopping centres, open-air retail plazas and light industrial buildings⁴⁷ — and has four levels of certification. BOMA BEST measures a building's environmental performance and management in six specific areas: energy, water, waste reduction and site enhancement, emissions and effluents, indoor environment and environment management system.⁴⁸

Benjamin Shinewald (President and Chief Executive Officer, Building Owners and Managers Association of Canada) explained to the Committee that the BOMA BEST program focuses on existing buildings, as greater environmental and energy challenges arise with such buildings. He also indicated that, in order to overcome these challenges, effective and efficient management and operation are required.⁴⁹ John Smiciklas (Director, Energy and Environment, Building Owners and Managers Association of Canada) told the Committee that the goal of the BOMA BEST program is to be as inclusive as possible in order to improve the performance of the vast majority of buildings.⁵⁰ Mr. Shinewald noted that, according to an energy consumption comparison between buildings that are BOMA BEST-certified and data obtained from NRCan's commercial and institutional consumption of energy survey, buildings that are certified at level 2 of BOMA BEST perform 6% better than the national average, while those certified at level 3 perform 18% better, and those certified at level 4 perform 46% better.⁵¹

44 Rob Abbott, Ministry of the Environment, Government of British Columbia, [Evidence](#), Meeting No. 79.

45 Canada Green Building Council, [Existing Buildings](#).

46 Thomas Mueller, Canada Green Building Council, [Evidence](#), Meeting No. 78.

47 BOMA BEST, [About BOMA BEST](#).

48 Ibid.

49 Benjamin Shinewald, Building Owners and Managers Association of Canada, [Evidence](#), Meeting No. 76.

50 John Smiciklas, Building Owners and Managers Association of Canada, [Evidence](#), Meeting No. 76.

51 Benjamin Shinewald, Building Owners and Managers Association of Canada, [Evidence](#), Meeting No. 76.

Moreover, Mr. Shinewald commented that PWGSC has shown environmental leadership by requiring every building that it manages — including those that are leased — to undergo a BOMA BEST assessment.⁵² According to a PWGSC official, 259 Crown-owned buildings have undergone a BOMA Go Green — now, BOMA BEST — assessment, and 170 buildings — or 66% — received a BOMA green building certification.⁵³ Other federal departments are also using the BOMA BEST program. For example, an official from NRCan informed the Committee that the department is upgrading its buildings in order to qualify under the BOMA BEST rating system. As of October 2012, the department had completed 9 certifications out of a total of 21 for its buildings with floor space exceeding 1,000 square metres.⁵⁴

In 1996, the Canadian Standards Association developed [Green Globes Design](#), which is a third rating system used in Canada. In assessing a building's environmental impacts, Green Globes Design for new buildings and retrofits focuses on seven areas: integrated design process,⁵⁵ site, energy, water, resources, emissions and effluents, and indoor environment.⁵⁶ The Green Globes rating system has four levels of certification: one, two, three or four Green Globes.⁵⁷

A PWGSC official informed the Committee that the objective for Canada's Parliament buildings, as well as other buildings that support Parliament's functions, is to obtain a BOMA BEST certification for its operations and a Green Globes Design certification for its renovation projects.⁵⁸ The official explained that, for non-office buildings, acquisitions and major renovations, the target for those buildings is to reach a LEED Silver certification or a three Green Globes level of certification.⁵⁹

Finally, in 1992, the U.S. Environmental Protection Agency launched the [ENERGY STAR program](#), which is a benchmarking tool that evaluates the energy performance of products, new homes, commercial buildings and industrial plants.⁶⁰ According to an official from NRCan, the department's Office of Energy Efficiency is adapting the

52 Ibid.

53 John McBain, Public Works and Government Services Canada, [Evidence](#), Meeting No. 54.

54 Geoff Munro, Natural Resources Canada, [Evidence](#), Meeting No. 54.

55 An "integrated design process" is a "holistic, collaborative and comprehensive design process that brings together all of a project's design professionals and specialty consultants along with the building owner, the builder and sub-contractors (if already selected), the future occupant(s) and other direct stakeholders to design the building as a team." See: Government of Manitoba, [The Green Building Policy for Government of Manitoba Funded Projects](#), 1 April 2007, p. 5.

56 ECD Energy & Environment Canada Ltd., [Green Globes Design for New Buildings and Retrofits: Rating System and Program Summary](#), December 2004.

57 Green Building Initiative, [Green Globes Overview](#).

58 John McBain, Public Works and Government Services Canada, [Evidence](#), Meeting No. 54.

59 Ibid., [Evidence](#), Meeting No. 81.

60 ENERGY STAR, [About ENERGY STAR](#).

ENERGY STAR program for Canadian purposes; the program is expected to be launched in July 2013 for office buildings and schools.⁶¹

61 Natural Resources Canada (written submission), *Natural Resources Canada Response to the House of Commons Standing Committee on Government Operations and Estimates (18 April 2013)*, 4 June 2013.

CHAPTER THREE: THE COSTS AND BENEFITS OF ENERGY EFFICIENCY MEASURES IN FEDERAL BUILDINGS

Throughout the Committee's study, witnesses commented that while enhancing energy efficiency in buildings involves certain costs, it leads to a number of benefits. In that context, the benefits and the costs should be weighed in deciding on the energy efficiency measures that should be implemented. A cost-benefit analysis can help building managers decide whether to retrofit an existing building, or to construct a new facility. In addition, this analysis can help determine which energy efficiency measures will lead to the desired cost reductions.

A. Costs

[E]nergy use is related to costs, and carbon is related to environmental impact. The challenge is [how] to [reduce] carbon and save money at the same time.

Thomas Mueller, Canada Green Building Council

As part of a strategic planning process, a cost-benefit analysis can inform building owners and managers on how to enhance energy efficiencies in their buildings and achieve cost reductions. There are costs associated with implementing energy efficiency measures in new building construction, energy retrofits to existing buildings, and in obtaining industry-recognized certifications for buildings.

1. Cost-Benefit Analysis

A cost-benefit analysis is one tool that can be used to achieve energy efficiencies and cost reductions in federal buildings. A PWGSC official spoke about research conducted by her department and the National Research Council Canada (NRC) that was designed to indicate the costs and benefits of various kinds of changes to improve energy efficiency in buildings in order to identify the most cost-effective investments that the department can make.⁶² According to an official from NRCan:

If a particular department has a particular interest in a technology, they will express that interest. Then the private sector will return with the feasibility of how it could be included and what the economics would be. The department would have the final say. In some cases, the extremely good economics of other measures will help more leading-edge

62 Caroline Weber, Public Works and Government Services Canada, [Evidence](#), Meeting No. 54.

measures make more sense, so you can bundle these together in an overall investment.⁶³

As part of the planning process for investments in energy efficiency measures, a PWGSC official mentioned that portfolio managers take into account a variety of factors, such as possible sources of alternative energy and the energy regime used in a given location.⁶⁴ Along the same lines, according to an official from NRCan, the FBI program requires that a feasibility study be conducted in relation to the buildings that are being assessed for potential retrofits.⁶⁵ He indicated that, “[NRcan is] looking at all energy sources, from the investigative, the scientific, perspective, as to what’s available and the cost effectiveness.”⁶⁶

As part of a cost-benefit analysis, Mr. Karakasis indicated that the federal government should consider not only the cost of moving, the cost of building versus the cost of renovating, but also the cost of disposing of a building.⁶⁷ Brian Staszewski (General Manager, North America Office, Global Resource Efficiency Services) provided an example of an analysis done in order to decide on whether to retrofit an existing facility or purchase a new building. He explained: “What we did with that facility was a capital asset plan, looking at a 25-year horizon. ...[The client] decided to keep [the facility] because we showed them how energy efficiency measures can [reduce] some of that capital cost.”⁶⁸ In particular, the analysis took into account the cost of keeping the facility up to standard over time.

2. New Building Construction and Existing Building Retrofits

According to Ryan Eickmeier (Director, Government Relations and Policy, Real Property Association of Canada), one of the key challenges to achieving an energy-efficient building may be the up-front construction or retrofit costs, which can be significant and can be a barrier for both the private and public sectors. Mr. Eickmeier informed the Committee that — from the perspective of constructing a new building — the cost of an energy-efficient building is increasingly affordable because of innovative building techniques, the ability to set rents at a level to offset any expenditures incurred to be more energy efficient and savings in energy costs.⁶⁹

While new building construction can be cost-effective, major energy retrofits to existing buildings can be cost-prohibitive, depending on the age of the building, and the

63 Carol Buckley, Natural Resources Canada, [Evidence](#), Meeting No. 54.

64 John McBain, Public Works Government Services Canada, [Evidence](#), Meeting No. 54.

65 Geoff Munro, Natural Resources Canada, [Evidence](#), Meeting No. 54.

66 Ibid.

67 Dean Karakasis, Building Owners and Managers Association of Ottawa, [Evidence](#), Meeting No. 80.

68 Brian Staszewski, Global Resource Efficiency Services, [Evidence](#), Meeting No. 80

69 Ryan Eickmeier, Real Property Association of Canada, [Evidence](#), Meeting No. 76.

extent and difficulty of the work that is required.⁷⁰ As well, the need to relocate tenants while retrofits are occurring can increase costs. According to Mr. Eickmeier, “for privately owned buildings, with long-standing government tenants, major energy retrofits do not always carry a sound or attractive business model.”⁷¹ However, he also said that, “through minor retrofits, through [upgrades to] lighting, through turning off computers [and] through timed power turnoffs throughout the night,” changes can be implemented at a reasonable cost.⁷²

No federal funding was allocated for the achievement of targets under the *Federal Sustainable Development Act*, with the result that departments were expected to achieve those targets within their existing budgets. According to a PWGSC official, based on the standard options available, today’s building upgrades are inevitably more energy efficient, whether the upgrade involves the replacement of a heating, ventilation and air conditioning — or HVAC — system or of a chiller.⁷³ He added that “austerity measures drive all of us to look hard at reducing [...] operating costs, and enhancing energy efficiency is now a lower-cost option.”⁷⁴ The official also said that reduced operating costs that result from the implementation of energy efficiency measures are part of the reason why these measures can be considered a lower-cost option.⁷⁵

3. Certifications

In addition to the cost of constructing energy efficient buildings or retrofitting existing buildings, there are costs⁷⁶ for both initial certification and subsequent re-certifications associated with rating programs, such as BOMA BEST and LEED. According to Mr. Shinewald, the BOMA BEST certification is exceedingly cost-effective and relatively low in cost when compared to other building certification programs.⁷⁷ According to an official from PWGSC, there are advantages and disadvantages to each rating program, including BOMA BEST and LEED; as a result, the department has adopted different rating programs for different buildings.⁷⁸

70 Ibid.

71 Ibid.

72 Ibid.

73 John McBain, Public Works and Government Services Canada, [Evidence](#), Meeting No. 54.

74 Ibid.

75 Ibid.

76 Benefits of rating programs are discussed in Section B.

77 Benjamin Shinewald, Building Owners and Managers Association of Canada, [Evidence](#), Meeting No. 76.

78 John McBain, Public Works and Government Services Canada, [Evidence](#), Meeting No. 81.

B. Benefits

[Energy performance contracting and the Federal Building Initiative are] a great way to make improvements to the cost-effectiveness of government operations, to reduce the impact on the environment, to create jobs now and in a green sector, as well as to fund some much needed facility renewal or infrastructure improvement within the government workspace.

Dave Seymour, Ameresco Canada Inc.

Achieving an energy-efficient building can have a number of benefits, including cost reductions, a reduced environmental impact both outside and at the workplace, and positive effects on job creation.

1. Cost Reductions

According to Dave Seymour (Vice-President, Eastern Region, Ameresco Canada Inc.), during a period of fiscal constraint, there may be a focus on cost savings in the short term. However, energy efficiency projects should be focused on longer-term savings and benefits.⁷⁹ Several witnesses told the Committee that the implementation of energy efficiency measures can lead to significant cost savings. According to an official from NRCan, the 80 federal retrofit projects completed under the FBI program have saved \$43 million each year in energy operating costs.⁸⁰ Similarly, the U.S. government has benefitted from the implementation of energy efficiency measures in the buildings⁸¹ it operates. In particular, since 2005, the U.S. government has invested \$3.1 billion in energy efficiency measures under its energy management program; the result is an estimated \$8.5 billion in costs savings over the life of these measures.⁸² According to an official from Shared Services BC, the Government of British Columbia's investment, in 2008, of \$75 million in capital funding over three years to retrofit existing provincial public-sector buildings is estimated to be generating approximately \$12.5 million in energy savings annually.⁸³

Regarding the value of rating programs, Mr. Mueller informed the Committee that building certifications are one way in which to ensure a good return on investments in

79 Dave Seymour, Ameresco Canada Inc., [Evidence](#), Meeting No. 78.

80 Carol Buckley, Natural Resources Canada, [Evidence](#), Meeting No. 81.

81 The U.S. government has a building portfolio of more than 500,000 buildings, comprising more than 3 billion square feet. See: U.S. Department of Energy (written submission), *Federal Leadership in High Performance Sustainable Buildings*, April 2010.

82 U.S. Department of Energy, [Federal Energy Management Program](#), December 2012, p. 1.

83 Rob Abbott, Ministry of the Environment, Government of British Columbia, [Evidence](#), Meeting No. 79.

buildings.⁸⁴ Pension funds, like those in relation to teachers, are mainly motivated by the return on the investments that they make. According to him, if investments in buildings occur, teachers' pension funds must invest in energy-efficient buildings, and the preferred rating program — in both Canada and the United States — is LEED.⁸⁵ He also said that large commercial landlords use pension funds to invest in buildings, and the rates of return on those investments exceed 10%. In his view, “[constructing] a new, Gold-certified LEED tower in Toronto in the downtown financial district costs about 2% more to build [than a non-certified building] and the returns are over 10%. So the math is pretty straightforward.”⁸⁶

2. External and Workplace Benefits

Witnesses identified several external and workplace benefits associated with increasing the energy efficiency of federal buildings, including lower greenhouse gas emissions, reduced water consumption, and less waste. Several witnesses told the Committee that energy efficiency gains in buildings lead to savings in relation to energy costs. According to an official from NRCan, federal buildings retrofitted under the FBI had, on average, 20% in energy savings.⁸⁷ Similarly, a PWGSC official indicated that, from the perspective of the department's Real Property Branch, energy intensity use reductions of 20% were achieved from 2001 to 2010 as a result of FSDS targets.⁸⁸ In comparison, the U.S. government indicated that federal agencies subject to the energy intensity reduction requirements of the *National Energy Conservation Policy Act* reduced energy use per gross square foot in federal buildings by 16.4% in fiscal year 2011⁸⁹ relative to fiscal year 2003 (preliminary data).⁹⁰

Building occupants also benefit from energy-efficient buildings, which can potentially improve the health and well-being of employees. Mr. Mueller spoke to the Committee about a NRC study that concluded that those who work in LEED-certified buildings are positively influenced by the buildings' certification.⁹¹ According to the NRC study, ratings by building occupants in relation to overall environmental satisfaction were significantly higher for LEED-certified buildings, as were ratings in relation to satisfaction with ventilation and temperature.⁹² The NRC study reported that ratings by occupants indicate that LEED-certified buildings provide a better basic level of thermal comfort.

84 Thomas Mueller, Canada Green Building Council, [Evidence](#), Meeting No. 78.

85 Ibid.

86 Ibid.

87 Carol Buckley, Natural Resources Canada, [Evidence](#), Meeting No. 81.

88 John McBain, Public Works and Government Services Canada, [Evidence](#), Meeting No. 81.

89 The fiscal year for the United States federal government is 1 October to 30 September.

90 U.S. Department of Energy, [FEMP Overview: Government-wide and DOE Progress in Facility & GHG Goals](#), p. 5.

91 Thomas Mueller, Canada Green Building Council, [Evidence](#), Meeting No. 78.

92 National Research Council Canada, *Do green buildings outperform conventional buildings? Indoor environment and energy performance in North American offices*, 2012, p. 31.

Finally, in referencing the same study, Mr. Mueller stated that “the reasons for using LEED is that it results in a better performing workforce and less absenteeism, and because it also helps attract top talent from an employer perspective.”⁹³

3. Job Creation Effects

While the Committee’s witnesses did not indicate the number of jobs created by increasing energy efficiencies in federal buildings, they did comment that implementing energy efficiency measures and conserving energy are labour-intensive; and as a result, leads to employment opportunities that are large and often regional.⁹⁴ Wayne Rogers (President, Luminescence Lighting) provided an example:

There’s absolutely no question that doing energy efficiency projects will increase employment. Just as an example, the project in Prince Edward Island was about a \$150,000 lighting retrofit and 50% of that would have been labour. Of course, the luminaires had to be constructed, so there was a 50% labour component to it as well.⁹⁵

Witnesses highlighted the existence of both direct and indirect employment effects associated with energy efficiency projects. That said, it is the net employment effect that must be considered, as using less energy means that fewer people are required to produce the lower amount of energy that is being demanded. As Peter Love (President, Energy Services Association of Canada) explained, “[s]ome of the studies look at a net impact... Typically, the numbers people tend to come up with range from 7,000 to 9,000 jobs per billion [dollars spent] direct, and about the same indirect.”⁹⁶ As an example, he made reference to the energy retrofit project for the Empire State Building, which resulted in about 7,000 jobs per billion dollars spent. He noted that, when compared to a coal-fired plant project that would create about 970 jobs per billion dollars spent, it was a 7:1 ratio in favour of energy efficiency projects.⁹⁷ As well, he highlighted that NRCan has recently undertaken a study on the employment benefits of implementing energy efficiency measures.⁹⁸

An official from the Government of British Columbia informed the Committee that, “[r]esearch in 2012 by PricewaterhouseCoopers pointed out that our offsets portfolio and the investments the public sector has made in that regard stimulated an estimated \$320 million in capital spending, \$240 million in provincial [gross domestic product] contribution[s], just below \$50 million in contribution[s] to government revenue, and ... the creation of 2,800 jobs.”⁹⁹

93 Thomas Mueller, Canada Green Building Council, [Evidence](#), Meeting No. 78.

94 Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76.

95 Wayne Rogers, Luminescence Lighting, [Evidence](#), Meeting No. 76.

96 Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76.

97 Ibid.

98 Ibid.

99 Rob Abbott, Ministry of the Environment, Government of British Columbia, [Evidence](#), Meeting No. 79.

CHAPTER FOUR: POTENTIAL AVENUES FOR INCREASING ENERGY EFFICIENCY IN FEDERAL BUILDINGS

Throughout the Committee's study, witnesses discussed a variety of ways in which to increase the energy efficiency of federal buildings. These "solutions" have informed the Committee's thoughts and recommendations about potential avenues for enhancing energy efficiencies in federal buildings.

A. The Views of the Witnesses

[B]uildings are extremely complicated, and you have to invest the time to make sure they're working properly. ... [M]ost buildings are not performing optimally, and recommissioning will let them do so.

Stephen Carpenter, Enermodal Engineering

While there is no "one-size-fits-all" solution for the wide-ranging inventory of federal buildings, there are several tools that can be used to achieve increased energy efficiency and lower energy costs. Whether the building is owned or leased, energy efficiency measures are more likely to be implemented when building owners and occupants are provided with incentives to increase the energy efficiency of the building. In the opinion of the Committee's witnesses, energy-efficient federal buildings can be realized through the use of higher targets, policies and processes, building codes, strategic planning, integrated building design, energy performance contracts, energy-efficient equipment, revolving funds and "green leases." As well, in the context of energy efficiency, witnesses spoke about building commissioning and recommissioning, assessments and industry-recognized building certifications, on-going monitoring, coordination among federal departments, as well as awareness, education and training.

1. Leadership through Targets, Policies and Processes

The Committee was told that some organizations face a challenge in assigning qualified people to the development and implementation of energy efficiency initiatives while providing them with clear objectives.¹⁰⁰ However, a PWGSC official noted that the 2010–2013 FSDS set targets that were "clear and [that could] be reported against," and that departments had to report their own targets.¹⁰¹ In speaking about whether

100 Dave Seymour, Ameresco Canada, [Evidence](#), Meeting No. 78.

101 Caroline Weber, Public Works and Government Services Canada, [Evidence](#), Meeting No. 54.

departmental performance reports (DPRs) include energy reduction targets, an official from PWGSC said that these types of targets are not included in DPRs.¹⁰²

Regarding the energy efficiency of buildings, Stephen Carpenter (President, Enermodal Engineering) commented that “the track we’re currently on isn’t going to get us where we need to be when we start looking at the issues of energy use.”¹⁰³ He continued, “It begs the question, how do we achieve more energy-efficient buildings if the track we’re currently on is not getting us there fast enough?”¹⁰⁴ A number of the Committee’s witnesses said that the solution to achieving buildings that have a higher level of energy efficiency involves implementing improved policies and processes, rather than adopting new technologies or allocating new money, as funds are already being allocated to pay buildings’ high energy costs.¹⁰⁵ Some witnesses suggested setting mandatory energy conservation and energy efficiency targets for all new and existing federal buildings, as well as for buildings that receive federal funding.¹⁰⁶ Laverne Dalgleish (Principal, Building Professionals) stated that, without a target, it is difficult to reach desired outcomes. In his view, the creation of targets provides an opportunity to not only achieve, but to go beyond, the target.¹⁰⁷ Doug Cane (Principal, Caneta Research Inc.) advocated an approach similar to that which is being adopted in Europe, where targets for desired energy consumption per square metre are established.¹⁰⁸

Mr. Love noted that governments in other jurisdictions, including the United States, Ontario and British Columbia, have established clear and measurable targets for buildings and a global objective in relation to energy efficiency buildings; these targets and objectives “forces departments to focus on achieving a target.”¹⁰⁹ For example, an official from the province of Manitoba explained that her province’s energy target for new government buildings requires a building to be 33% more energy efficient than “the model-compared building under the 1997 energy code.” She also said that targets will be updated as new energy codes are developed in the province.¹¹⁰ In the late 2000s, the United States established significant water-reduction targets for its federal agencies; they are

102 Robert Laframboise, Public Works and Government Services Canada, [Evidence](#), Meeting No. 81.

103 Stephen Carpenter, Enermodal Engineering, [Evidence](#), Meeting No. 78.

104 Ibid.

105 Stephen Carpenter, Enermodal Engineering, [Evidence](#), Meeting 78, and Brian Staszewski, Global Resource Efficiency Services, [Evidence](#), Meeting No. 80.

106 Stephen Carpenter, Enermodal Engineering, [Evidence](#), Meeting No. 78; Ryan Eickmeier, Real Property Association of Canada, [Evidence](#), Meeting No. 76; Stephen Carpenter, Enermodal Engineering, [Evidence](#), Meeting No. 78; Ryan Eickmeier, Real Property Association of Canada, [Evidence](#), Meeting No. 76; Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76; John Smiciklas, Building Owners and Managers Association of Canada, [Evidence](#), Meeting No. 76, and Laverne Dalgleish, Building Professionals, [Evidence](#), Meeting No. 80.

107 Laverne Dalgleish, Building Professionals, [Evidence](#), Meeting No. 80.

108 Doug Cane, Caneta Research Inc., [Evidence](#), Meeting No. 80.

109 Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76.

110 Cindy Choy, Government of Manitoba, [Evidence](#), Meeting No. 79.

required to reduce, by fiscal year 2015, their water consumption intensity by 16% from the intensity that existed in fiscal year 2008.¹¹¹ Through the use of legislative tools, the United States federal government has made progress towards its energy use goals as established by various statutory requirements and executive orders.

According to Mr. Love, clear and measurable targets are key elements in determining the path required to achieve desired goals, including in relation to energy and water use, recycling and indoor air quality. He commented that, in order to ensure that people are focused on achieving the desired target, federal departments could be responsible for setting their own targets.¹¹² In speaking about building targets, Mr. Carpenter told the Committee that, as carbon targets are currently global, it would be easier and more achievable for building design teams if each building had its own target.¹¹³ Moreover, Mr. Love said that targets could generate friendly internal competition, which could result in innovation.¹¹⁴

Mr. Mueller shared the results of studies by the Canada Green Building Council that found that energy consumption per square metre in Canadian office buildings is between 290 and 350 kWt hours, with an average of approximately 320 kWt, depending on the region; this amount can be compared to a target of 100 kWt hours in Europe.¹¹⁵ Mr. Carpenter suggested the establishment of an energy efficiency target that would require every new office building to use around 250 kWt hours per square metre, which would be a reduction of approximately 22% from the current average level of use.¹¹⁶

According to Mr. Carpenter, the federal government could use the ENERGY STAR program, which is expected to be released in Canada in the coming months, to establish energy efficiency targets.¹¹⁷ With a scale from 0 to 100, with 0 being the worst building in terms of energy performance and 100 the best, he proposed targets of at least 75 and 85 for new and existing federal buildings respectively.¹¹⁸

Some witnesses told the Committee that labelling the energy performance of buildings in a manner that is similar to that in Europe, would provide valid information to future occupants, and would motivate building owners to improve further the energy efficiency of their buildings.¹¹⁹ For example, Mr. Cane mentioned that Canada does not

111 U.S. Department of Energy, [Federal Energy Management Program](#), December 2012, p. 2.

112 Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76.

113 Stephen Carpenter, Enermodal Engineering, [Evidence](#), Meeting No. 78.

114 Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76.

115 Thomas Mueller, Canada Green Building Council, [Evidence](#), Meeting No. 78.

116 Stephen Carpenter, Enermodal Engineering, [Evidence](#), Meeting No. 78.

117 Ibid

118 Ibid.

119 Stephen Carpenter, Enermodal Engineering, [Evidence](#), Meeting No. 78; Laverne Dalglish, Building Professionals, [Evidence](#), Meeting No. 80 and Doug Cane, Caneta Research Inc., [Evidence](#), Meeting No. 80.

have a process for labelling a building's energy performance; in his view, this labelling could be implemented in Canada alongside building codes.¹²⁰

2. Building and Energy Codes

Several witnesses spoke about how national and provincial energy codes for buildings could help to reduce energy consumption. Mr. Staszewski explained that building and energy codes could be an effective tool to improve energy efficiency in all buildings, including those occupied by the federal government.¹²¹ Mr. Cane noted that, compared to a 1997 version of the Code, the NRC's National Energy Code of Canada for Buildings 2011 yields savings in building operating costs that are usually 25% greater.¹²² He also indicated that his company had recently completed a study about developing code proposals for encouraging energy efficiency upgrades during renovation in large buildings.¹²³

3. Strategic Plans for Building Management

Mr. Staszewski proposed the use of a strategic approach — “audit-implement-monitor,” or AIM — rather than a reactive or tactical approach¹²⁴ to improve energy use in federal buildings.¹²⁵ He explained that this strategic approach involves, as a first step, conducting an audit of the building; the next step is developing a strategic plan that evaluates the capital renewal costs over a long period of time, such as 25 years. The third step is implementing energy efficiency measures, while the last step is monitoring the measures that have been implemented. He mentioned that, under a strategic approach, a building manager looks at the global impact of a specific upgrade. According to him, “in terms of the audit, implementation, and monitoring world — in the audit world you start to do the planning that is required to make those good, sound decisions. In that planning process, you're looking at what your long-term plans are for building renewal; that's very important.”¹²⁶ In that context, an official from NRCan told the Committee that his department, as well as the departments with which he works, develop a building management plan that has an energy efficiency component for every building; those plans are updated regularly.¹²⁷

120 Doug Cane, Caneta Research Inc., [Evidence](#), Meeting No. 80.

121 Brian Staszewski, Global Resource Efficiency Services, [Evidence](#), Meeting No. 77.

122 Doug Cane, Caneta Research Inc., [Evidence](#), Meeting No. 80.

123 Ibid.

124 A tactical approach is short term in its duration, and considers a single aspect of a building's energy consumption.

125 Brian Staszewski, Global Resource Efficiency Services, [Evidence](#), Meeting No. 77.

126 Ibid.

127 Geoff Munro, Natural Resources Canada, [Evidence](#), Meeting No. 81.

4. Integrated Design for New Buildings

A number of the Committee's witnesses shared their view that integrated design is critical for new buildings. In speaking about this type of design, Mr. Mueller said that it is important to consider broader issues, such as sustainable building design in terms of the building's intended use, its operation over time and its long-term environmental impact; with those considerations in mind, the key is to involve the "right players," who are not necessarily the lowest-cost "players," in order to design a building that is highly efficient.¹²⁸ In his view, architects play a very important role in new building construction because they are typically the proponents for an energy-efficient design, but engineers, the commissioning agents¹²⁹ and a good builder are also needed.¹³⁰

Regarding new building design, it is possible to model a building's expected energy performance based on its expected energy use. Mr. Mueller informed the Committee that modelling energy performance can be done through computer programs that estimate the amount of energy that a building will use. He also said that, as the private sector gathers more information about the actual performance of buildings, there is a tendency to focus on numeric targets in relation to energy use by buildings.¹³¹

5. Energy Performance Contracting for New and Existing Buildings

According to some of the Committee's witnesses, there can be a financial challenge in making major energy retrofits, including those to federally owned buildings. Energy performance contracting is one tool that can be used to overcome the financial challenge. An official from PWGSC said that governments want to avoid making significant investments in their "bricks and mortar," preferring to make investments in places and programs that serve the country's citizens.¹³² A number of the Committee's witnesses identified an EPC, or an energy savings performance contract, as one way in which to overcome the financial barriers associated with financing retrofits designed to improve a building's energy efficiency.¹³³ According to Mr. Love, with EPCs, the capital cost of a project for building renewal — such as the purchase and installation of energy efficiency measures during building renewal or reconstruction — is financed through future savings on the building's utility bill.¹³⁴ Mr. Seymour told the Committee that:

128 Thomas Mueller, Canada Green Buildings Council, [Evidence](#), Meeting No. 78.

129 A commissioning agent carries out start-up and performance verification activities in relation to the commissioning of buildings; the objective is to ensure that the building and its systems are operating optimally.

130 Thomas Mueller, Canada Green Buildings Council, [Evidence](#), Meeting No. 78.

131 Ibid.

132 John McBain, Public Works and Government Services Canada, [Evidence](#), Meeting No. 54.

133 Geoff Munro, Natural Resources Canada, [Evidence](#), Meeting No. 54; Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76; Dave Seymour, Ameresco Canada, [Evidence](#), Meeting No. 78.

134 Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76.

[An EPC] is a great way to make improvements to the cost-effectiveness of government operations, to reduce the impact on the environment, to create jobs now and in a green sector, as well as to fund some much needed facility renewal or infrastructure improvement within the government workspace. Much of [these improvements] can be accomplished without needing new federal funds.¹³⁵

Under an EPC, an energy service company¹³⁶ takes on the technical¹³⁷ and financial risk associated with an energy project; if a problem arises, the company has responsibility, and remediation occurs in accordance with the terms of the contract.¹³⁸ There are two types of EPCs: in the first, contracts are structured so that savings are guaranteed by the energy service company to meet or exceed total annual contract payments; in the second, the costs are shared between the energy services company and the building owner or occupant, with payments based on energy and operational savings, and a stipulated maximum energy consumption level over the life of the contract.¹³⁹ According to Mr. Love, if the guaranteed energy savings are not realized, the energy services company is responsible for the difference between the actual energy cost and the guaranteed level of energy performance.¹⁴⁰ When the period of an EPC ends, the building owner is the beneficiary of any future energy cost reductions.¹⁴¹ To illustrate this concept, Mr. Love explained:

You invest \$100 in the energy efficiency of a building and there are guaranteed savings of 15% to 20% ... and it's that income flow for the period of the contract that is used to pay off that initial \$100 investment. After the end of the contract, those energy savings accrue to the building owner.¹⁴²

An EPC has two main cost components: the performance guarantee fee and the financing charge. According to Mr. Seymour, under the FBI, these two cost components are disclosed separately as part of the EPC proposal.¹⁴³ In speaking about whether an EPC is competitively priced, he indicated that, while an individual energy service company may consult various financial institutions in calculating the financing charge, there is a limited number of both energy service company competitors and financial institutions involved in performance contracts with the federal government.¹⁴⁴

135 Dave Seymour, Ameresco Canada, [Evidence](#), Meeting No. 78.

136 An "energy service company" is a company that provides project financing under an energy service performance contract.

137 "Technical risk" refers to a lack of technical expertise in relation to a given project, such as expertise in engineering, safety, management or other specialized areas, or a lack of understanding of specialized equipment or technology.

138 Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76.

139 Energy Services Association of Canada, [Performance Based Solutions](#).

140 Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76.

141 Ibid.

142 Ibid.

143 Dave Seymour, Ameresco Canada, [Evidence](#), Meeting No. 78.

144 Ibid.

Mr. Love commented that the involvement of the private sector, through the energy service company, brings innovation and expertise in the area of enhancing energy efficiency in buildings.¹⁴⁵ As well, the Committee was told that the involvement of an energy service company as part of an EPC, means that problems are identified and resolved by the private-sector partner, often proactively.¹⁴⁶ He added that EPCs are well-suited to more complex projects. According to him, when there are mechanical, electrical and other considerations involved in an energy retrofit project, EPCs can be useful in ensuring the completion of a comprehensive turnkey project.¹⁴⁷

The Committee heard from some witnesses that energy retrofits using EPCs can lead to higher costs. According to Mr. Staszewski, under an EPC “you have to know that you're going to be paying 20% to 40% more for those retrofit costs.”¹⁴⁸ He added that, “when you do an [EPC], you're buying insurance, and they put a premium on the retrofit. That's why it's more expensive.”¹⁴⁹ An official from NRCan commented that “the number of 20% to 40% ... sounds a bit high.”¹⁵⁰ She added that if a project is financed externally, it will cost more than if it had been financed internally.¹⁵¹ Some of the Committee's witnesses indicated that simple energy efficiency retrofit projects could be done without EPCs. For example, both Mr. Love and Mr. Rogers commented that lighting projects can be very cost-effective and the return on investment can occur within a very short period of time.¹⁵²

Through its FBI, NRCan is trying to facilitate the use of energy performance contracting in the federal government.¹⁵³ Under this initiative, and with the assistance of energy service companies, the federal government has completed energy retrofits in about 33% of its buildings, and a number of the Committee's witnesses supported the initiative's continued use.¹⁵⁴ According to an official from NRCan, “[i]n a world of funding constraint, FBI provides an essential vehicle to fund capital investments for retrofits.”¹⁵⁵ Mr. Love also commented on the FBI, stating: “You have a great mechanism. The [FBI] ... has been going for 20 years. It assists other departments in doing this [energy and facility renewal]

145 Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76.

146 Ibid.

147 Ibid.

148 Brian Staszewski, Global Resource Efficiency Services, [Evidence](#), Meeting No. 80.

149 Ibid.

150 Carol Buckley, Natural Resources Canada, [Evidence](#), Meeting No. 81.

151 Ibid.

152 Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76; Wayne Rogers, Luminescence Lighting, [Evidence](#), Meeting No. 76.

153 Carol Buckley, Natural Resources Canada, [Evidence](#), Meeting No. 81.

154 Geoff Munro, Natural Resources Canada, [Evidence](#), Meeting No. 54; Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76; Dave Seymour, Ameresco Canada, [Evidence](#), Meeting No. 78.

155 Geoff Munro, Natural Resources Canada, [Evidence](#), Meeting No. 54.

work, but we would like to see many more contracts being done by the federal government using this mechanism.”¹⁵⁶ Mr. Seymour agreed that FBI projects to date “have been successful, [are] meaningful, and ... are indicative of the ample opportunity that still exists for Natural Resources Canada's federal buildings initiative to flourish.”¹⁵⁷ An official from NRCan told the Committee that:

...departments typically don't have familiarity with energy performance contracting unless they've done one before, so [NRCan] created a set of model documents that are specific to this type of contract and are available for departments to use. [NRCan] also [does] the front end work in qualifying the companies in Canada who have the expertise, the knowledge, and the financial capacity to conduct one of these types of contracts. There are eight companies in Canada with access to \$700 million in financing for energy performance contracts.¹⁵⁸

These energy service companies are screened to meet all of the FBI program criteria and are listed on NRCan's [FBI Qualified Bidders List](#).

The Committee was informed that other jurisdictions work with third parties through energy service performance contracting or utility energy service contracting.¹⁵⁹ In the United States, federal building projects in 2011 included approximately \$369 million, financed through EPCs and \$165 million, financed through utility energy service contracts.¹⁶⁰ In Canada, the province of British Columbia uses a third party to oversee the management and operation of its buildings in relation to energy performance.¹⁶¹ An official from Shared Services BC explained that:

[P]artnerships are very important for us, and one of our most significant partnerships is with the utilities in our province. Approximately 30% of our capital costs for projects are incented through our local utilities. BC Hydro is an example. It provided almost \$1 million over the last two years in energy efficiency incentives, as well as human resources to help support the work we do.¹⁶²

Furthermore, the official said that the business case for all of the province's energy efficiency initiatives is based on the return on investment: the initial capital cost must be

156 Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76.

157 Dave Seymour, Ameresco Canada, [Evidence](#), Meeting No. 78.

158 Carol Buckley, Natural Resources Canada, [Evidence](#), Meeting No. 81.

159 “Utility energy service contracting” refers to the use of a “utility energy service contract,” whereby a utility company arranges funding to cover the capital costs of an energy efficiency, renewable energy or water efficiency project; the funding is repaid over the contract term from cost savings generated by the energy efficiency measure(s).

160 U.S. Department of Energy, [Federal Utility Partnership Working Group Meeting: Washington Update, 11 April 2012](#), p. 3.

161 Bernie Gaudet, Shared Services BC, Government of British Columbia, [Evidence](#), Meeting No. 79.

162 Ibid.

repaid, within five years, through operational “cost avoidance” as a result of energy cost savings.¹⁶³

Public-private partnership (P3) agreements for newly constructed buildings are similar to EPCs, in that they represent performance-based contracts; as with EPCs, P3 agreements can be drafted to include energy performance requirements. According to Mr. Carpenter, under a P3 model where the private sector is responsible for designing, building and operating a building for the federal government, the private sector should also be responsible for guaranteeing the energy performance of that building.¹⁶⁴ He stated that, with the increased use of P3s, the federal government should consider ensuring that — where appropriate — all P3 contracts include guarantees regarding energy use. This approach has been used in the federal government for the P3 project in relation to the Royal Canadian Mounted Police (RCMP). An official from PWGSC highlighted that the “P3 project for the RCMP E Division in Surrey, British Columbia, includes a requirement that the proponent achieve LEED [G]old certification. [The] lease require[s] [the private sector partner or proponent to] achieve a certain efficiency as part of the contract.”¹⁶⁵

Energy efficiency projects that are financed through EPCs include a payback period, which is the length of time required for the project to break even; as required by the terms of the EPC, the energy service company’s capital investment in the project is repaid by the building owner through the energy cost savings within a period of time known as the payback period. The payback period varies regionally, as energy is less expensive in some provinces than in others.¹⁶⁶ To date, the average payback period on EPCs used in the federal context has been fairly short. According to Mr. Seymour, in order to finance major projects for infrastructure renewal, the government should consider using a longer payback period, which would allow a higher capital investment and, thereby, buildings that could both perform better and perform better for longer.¹⁶⁷ With respect to the future use of NRCan’s FBI, an official from NRCan noted that there are 13 sites across Canada where the department believes that there is as much as \$8 million in project investments that can be financed through EPCs under the FBI.¹⁶⁸

Under PWGSC’s management, the Parliamentary Precinct Branch is currently in the first year of a program to increase energy efficiency in existing buildings. According to an official from PWGSC, the total cost of planned projects exceeds \$2.8 million, and the investment in those projects is expected to be repaid through energy cost savings over a payback period of 3.4 years to 8.8 years.¹⁶⁹

163 Ibid.

164 Stephen Carpenter, Enermodal Engineering, [Evidence](#), Meeting No. 78.

165 John McBain, Public Works and Government Services Canada, [Evidence](#), Meeting No. 81.

166 Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76.

167 Dave Seymour, Ameresco Canada, [Evidence](#), Meeting No. 78.

168 Geoff Munro, Natural Resources Canada, [Evidence](#), Meeting No. 54.

169 Public Works and Government Services Canada (written submission), October 2012.

6. Energy-Efficient Equipment for Retrofits to Existing Buildings

Energy retrofits to existing buildings can include the installation of energy-efficient equipment and the use of new technologies. According to Roberto Montanino (Commercial Programs Supervisor, Manitoba Hydro), “[m]ore efficient equipment tends to not need to work as hard, therefore extending the life of the equipment.”¹⁷⁰ In addition, Mr. Dalgleish mentioned that energy-efficient technology is available and it should be considered for improving the performance of buildings — “whether it be high performance insulation, high-performing windows, or extremely high efficiencies on mechanical equipment.”¹⁷¹

An NRCan official told the Committee that his department was very active in the research and development of energy-efficient building technologies in the areas of lighting, building design, heating and cooling, and a variety of technologies and controls.¹⁷² Regarding research, Mr. Dalgleish suggested that the federal government should increase funding to the NRC in order to facilitate the development of new products, technologies and methodologies related to reduced energy consumption by buildings.¹⁷³

Mr. Eickmeier told the Committee that major energy retrofits can involve significant upfront costs and are not always seen as an attractive investment, especially in relation to privately owned buildings with long-standing occupants, including the federal government.¹⁷⁴ Several witnesses stated that favourable tax treatment for the purchase of equipment, such as a high-efficiency furnace, would help property owners to finance retrofit projects.¹⁷⁵ According to Mr. Eickmeier, although tax incentives would favour the private sector, the federal government would benefit from energy savings resulting from the energy efficiency upgrades to the buildings it leases.¹⁷⁶

Mr. Eickmeier also informed the Committee that costly building expenditures — such as those for boilers and chillers — are generally depreciated at the rate of 4%, which is the same rate applied on any other fixed capital investment. He argued that costly building expenditures should receive a 50% average depreciation rate.¹⁷⁷ Moreover, in his view, this type of tax incentive would have a positive impact on the number of major energy retrofits; the benefits of the retrofits would include a renewed building stock,

170 Roberto Montanino, Manitoba Hydro, [Evidence](#), Meeting No. 79.

171 Laverne Dalgleish, Building Professionals, [Evidence](#), Meeting No. 80.

172 Geoff Munro, Natural Resources Canada, [Evidence](#), Meeting No. 81.

173 Laverne Dalgleish, Building Professionals, [Evidence](#), Meeting No. 80.

174 Ryan Eickmeier, Real Property Association of Canada, [Evidence](#), Meeting No. 76.

175 Ryan Eickmeier, Real Property Association of Canada, [Evidence](#), Meeting No. 76; Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting 76; Wayne Rogers, Luminescence Lighting, [Evidence](#), Meeting No. 76; and, Benjamin Shinewald, Building Owners and Managers Association of Canada, [Evidence](#), Meeting No. 76.

176 Ryan Eickmeier, Real Property Association of Canada, [Evidence](#), Meeting No. 76.

177 Ibid.

enhanced job creation, increased profitability, and reduced energy consumption, greenhouse gas emissions and air pollution.¹⁷⁸

7. Revolving Funds for Retrofits to Existing Buildings

The Committee was told that revolving funds are one way in which building retrofits could be financed. Mr. Staszenski told the Committee that PWGSC should establish a revolving fund¹⁷⁹ through which federal departments could access interest-free capital; the loans would be repaid through the savings realized from reduced utility costs resulting from energy efficiency upgrades. According to him, such a fund would lead to savings for the federal government, as departments require support to implement energy efficiency measures in buildings that consume a lot of energy.¹⁸⁰ He provided examples of revolving funds at the municipal level. For example, the City of Toronto has a revolving fund of \$22 million, while the City of Edmonton has a fund of \$5 million.¹⁸¹ According to Mr. Staszenski, funds must be easy to access in order to be useful.

In commenting on whether a revolving fund could increase the number of federal buildings being retrofitted under the FBI, a PWGSC official indicated that the private sector funds the FBI; in his view, the need for a revolving fund is not “that evident when ... look[ing] at the structure of how the FBI is constituted.”¹⁸²

8. “Green Leases” for New and Existing Buildings

A “green lease” encourages sustainable practices by both the owner and the occupant, and promotes reduced energy and water consumption, increased recycling and the use of sustainable materials in building improvements made by occupants.¹⁸³ A building lease can be designed in a number of ways, with the owner and/or the occupant partly or wholly responsible for utility costs. According to Mr. Eickmeier, when utilities are paid by the owner, “[a green lease] sets targets within the lease agreement with the [occupant]. So it's not just simply saying that [occupants] will occupy this space for five years, but that they will meet or exceed certain targets toward energy, water, and waste reduction.”¹⁸⁴ An official from PWGSC told the Committee that, for Crown-leased buildings:

178 Ibid.

179 A “revolving fund,” or a “revenue re-spending authority,” is a fund established to provide capital to fund members (e.g., federal departments), with repayment of the loans used to provide loans to other fund members. See: Office of the Auditor General of Canada, [1995 November Report of the Auditor General of Canada](#).

180 Brian Staszenski, Global Resource Efficiency Services, [Evidence](#), Meeting No. 80.

181 Ibid.

182 John McBain, Public Works and Government Services Canada, [Evidence](#), Meeting No. 81.

183 S. Michael Brooks, [Green Leases and Green Buildings](#), Aird and Berlis LLP, Toronto, 2008.

184 Ryan Eickmeier, Real Property Association of Canada, [Evidence](#), Meeting No. 76.

[T]he cost of energy is normally included in the cost of the rent ... through a triple-net or semi-gross lease. The federal [government] typically uses semi-gross [leases], where ... a base year of energy consumption [is established by] the [owner] and then [the federal government] pay[s] an index increase, not actual cost. This gives [the federal government] greater predictability over the term of the lease.¹⁸⁵

According to witnesses, “green leases” represent a potential solution to the agency problem¹⁸⁶ which exists between owners and occupants. As stated by Mr. Seymour, “[b]y adopting [green leases], by being forthright and specific about what you will accept in a building as you negotiate the lease with the owner — such that ‘these are the kinds of conditions we expect to be met’ — you get into energy density [or use] targets.”¹⁸⁷ Witnesses also told the Committee that the federal government should establish certain specifications through “green leases.” For example, Mr. Staszewski stated that the federal government should set standards regarding the energy performance that it expects the owners of the buildings that it leases to achieve. Moreover, he explained that the federal government has the power to demand energy-efficient lighting or water-efficiency measures in order to ensure that its operating costs are reasonable.¹⁸⁸ However, the Committee cautions that green leases, like any legal arrangement, can involve additional costs.

Mr. Karakasis said that having specifications for energy performance in leases is “good business,” and that the federal government should use its “buying power” to ensure building performance that is characterized by energy efficiency. He remarked that the government can say: “here are the standards of performance we want for lighting, air change, ... and we want to see that in your offer to us, and if you don't have it, we're going to shop around.”¹⁸⁹ As well, in his view, building owners that have major federal occupants would welcome the opportunity to reduce energy through engagement in targeting high energy performance.¹⁹⁰

While the decision to pursue a “green lease” for a new building is fairly straight forward, the decision to negotiate a “green lease” for an existing federal building is more complicated; in particular, the question becomes whether to wait until the end of the term of the lease to renegotiate certain energy performance specifications, or to “open” the lease to renegotiate such specifications. Mr. Karakasis told the Committee that, instead of “opening up [a] lease to change terms and conditions within a lease, to create [energy

185 John McBain, Public Works and Government Services, [Evidence](#), Meeting No. 81.

186 “Agency problem” refers to the challenges in motivating one party (the “agent”), to act in the best interests of another (the “principal”) rather than in his or her own interests. As an example, in a lease situation where the owner pays for the capital expenditures, such as equipment, and the occupant pays the energy bills, there is not likely to be an incentive for the owner or the occupant to make an investment in new, energy-efficient capital equipment or improvements.

187 Dave Seymour, Ameresco Canada, [Evidence](#), Meeting No. 78.

188 Brian Staszewski, Global Resource Efficiency Services, [Evidence](#), Meeting No. 80.

189 Dean Karakasis, Building Owners and Managers Association of Ottawa, [Evidence](#), Meeting No. 80.

190 Ibid.

efficiency] targets, ... a more fundamental way of doing it is simply upon renewals.”¹⁹¹ According to an official from PWGSC, at the time of lease renewal, “[they] would look at the energy efficiency of the building to incent the [owner] to implement projects to save himself, or herself and [the federal government] money as well.”¹⁹²

Regarding lease terms and energy efficiency, an official from the province of British Columbia stated that leases in relation to the province’s commercial building portfolio have a term of five years. He added that, “if there’s an energy efficiency opportunity in a lease base, ... [that] information is then provided to our lease services department, who consider the information when they’re renegotiating the lease for that space every five years.”¹⁹³

9. Enhancing Efficiencies in New and Existing Buildings

The terms “commissioning” and “recommissioning” refer to a similar idea: ensuring that a building’s integrated systems are operating properly and that energy use in relation to those systems is minimized.¹⁹⁴ Generally, commissioning refers to new buildings, and recommissioning applies to existing buildings. According to Mr. Carpenter, most existing buildings are not performing optimally, and there is an opportunity to improve performance over time. Moreover, in his view, buildings have extremely complicated systems, including HVAC systems, and managers need to ensure that desired levels of energy efficiency exist.¹⁹⁵ According to him, building optimization can be used to “tune up” existing buildings, and there is an abundance of low- or no-cost recommissioning initiatives that can be done to improve the energy efficiency of existing buildings.¹⁹⁶ Some of the Committee’s witnesses noted that ensuring that buildings perform optimally from the perspective of energy use is important. In their view, the energy use of buildings should be benchmarked and managed well, on an ongoing basis, in order to maintain continued optimization of building performance. According to Mr. Mueller, “[t]he evidence would suggest that operational savings of up to 20%, maybe a little more, are possible from recommissioning.”¹⁹⁷

The Committee was informed that lighting is a particular area that should be addressed in order to achieve higher energy performance. According to Mr. Rogers, lighting represents 20% to 25% of the energy consumption of any building.¹⁹⁸ He said that “[p]roven fluorescent technology called linear T8 and T5 has been effective since 1992, and manufacturers have steadily improved it, making it highly reliable and cost-effective.

191 Ibid.

192 John McBain, Public Works and Government Services, [Evidence](#), Meeting No. 81.

193 Bernie Gaudet, Shared Services BC, Government of British Columbia, [Evidence](#), Meeting No. 79.

194 Stephen Carpenter, Enermodal Engineering, [Evidence](#), Meeting No. 78.

195 Ibid.

196 Ibid.

197 Thomas Mueller, Canada Green Building Council, [Evidence](#), Meeting No. 78.

198 Wayne Rogers, Luminescence Lighting, [Evidence](#), Meeting No. 76.

Despite this, over 70% of older buildings in Canada are fitted with old 1940s T12 lighting technology”.¹⁹⁹ In his view:

If we simply use 100-million square metres of space as a reference for government buildings, including those leased to government, we could think of saving 10 watts per square metre simply by retrofitting the lighting. Those areas would include ones that have already been upgraded with technology replacement. If the lighting operates for a conservative 3,000 hours per year, with an energy value of 10¢ per kilowatt hour, then the value of those savings would be \$300 million per year with a net CO₂ reduction of over two million tonnes per year.²⁰⁰

An official from the province of British Columbia stated that energy efficiency is not a one-time event; instead, it is ongoing.²⁰¹ He also identified the importance of making sure that the systems in place are operating as designed, and of ensuring that those systems continue to be operated optimally,²⁰² while Mr. Montanino told the Committee that, in Manitoba, the opportunities that are identified through retro-commissioning — or a recommissioning process — would typically be paid back within one or two years.²⁰³

10. Assessments and Certifications for New and Existing Buildings

As noted in Chapter 2, industry-recognized rating programs — such as LEED or BOMA BEST — are third-party programs designed to assess and — provided specified standards are met — to certify buildings at certain levels based on their energy and environmental performance. According to Mr. Smiciklas, building assessments occur in order to provide a baseline measure of a building’s energy performance, and to identify actions that should be taken in order to improve the sustainability — or energy performance — of the building.²⁰⁴ He informed the Committee that, in his view, “[s]etting targets for all federal buildings, not just those managed by [PWGSC], first to be assessed, then certified, and then to graduate to the highest level of certification is the very best way that the government can both respect taxpayers’ dollars and demonstrate its environmental leadership.”²⁰⁵

Provided the required energy and environmental performance standards are met, certification may occur following an assessment. According to an official from PWGSC, most new federal buildings are being certified under LEED, while existing federal buildings that are certified meet the BOMA BEST rating standards.²⁰⁶ While Mr. Mueller told the Committee that LEED and BOMA BEST are complementary rating programs, he also

199 Ibid.

200 Ibid.

201 Bernie Gaudet, Shared Services BC, Government of British Columbia, [Evidence](#), Meeting No. 79.

202 Ibid.

203 Roberto Montanino, Manitoba Hydro, [Evidence](#), Meeting No. 79.

204 John Smiciklas, Building Owners and Managers Association of Canada, [Evidence](#), Meeting No. 76.

205 Ibid.

206 John McBain, Public Works and Government Services Canada, [Evidence](#), Meeting No. 81.

remarked that BOMA BEST is a good entry-level system and that LEED EB:O&M is both “more stringent and more demanding.”²⁰⁷ He noted that while the private sector and the public sector are comparable in their practice of obtaining LEED certifications for new buildings, the private sector is currently ahead of any level of government in Canada in terms of LEED EB:O&M certification for existing buildings; a very small number of existing federal buildings are being certified under the LEED EB:O&M program.²⁰⁸ Finally, according to him, in spite of the cost of retrofitting buildings to improve energy efficiency, the private sector is motivated by corporate social responsibility, occupant demand for energy-efficient office space and profit in relation to competing for new buildings occupants.

Currently, approximately 153 federal buildings are registered or certified in the LEED program.²⁰⁹ Regarding newly constructed federal buildings, he argued that the government should continue to maintain its LEED Gold certification requirement for new buildings. He told the Committee that, over the next three to five years, the federal government should consider certifying buildings to a higher standard, such as LEED Platinum. Similarly, Mr. Eickmeier encouraged the government to mandate and achieve high levels of certification for new federal buildings, both Crown-owned and -leased. Regarding the increased use of LEED certification for federal buildings, a PWGSC official commented that “LEED has certainly established itself as a well-known brand in North America, but it is not without cost. It has a very intensive data requirement for what you have to document, what you have to provide for certification in the evaluation process.”²¹⁰

An official from PWGSC highlighted a federal example of LEED certification: the Jean Canfield Building in Charlottetown, Prince Edward Island. This building, which was the first federal building in Atlantic Canada to receive a LEED Gold certification, was designed with a number of features that reduce energy consumption, such as heat recovery from exhaust air, daylight harvesting, a rooftop photovoltaic solar panel, and a direct connection to Charlottetown’s district energy system to avoid installing a heating and cooling plant for the building itself.²¹¹ An official from NRCan spoke about another energy-efficient federal building: a materials technology laboratory owned by NRCan that is located on the McMaster University campus in Hamilton, Ontario. According to him, this laboratory is expected to obtain a LEED Platinum certification due to a number of design features that promote lower energy consumption, as well as a system that stores energy that is not used in warmer months, for use in colder months.²¹²

Regarding existing federal buildings, a number of witnesses argued that there is an opportunity for more buildings to be either certified or certified to a higher level. According

207 Thomas Mueller, Canada Green Building Council, [Evidence](#), Meeting No. 78.

208 Ibid.

209 Ibid.

210 John McBain, Public Works and Government Services Canada, [Evidence](#), Meeting No. 81.

211 Ibid., [Evidence](#), Meeting No. 54.

212 Geoff Munro, Natural Resources Canada, [Evidence](#), Meeting No. 54.

to Mr. Eickmeier, “[n]ot only will this commitment speak volumes about top-down leadership; it will also have a net-positive effect on energy reductions across the country, given the considerable portfolio buildings within [the federal] inventory.”²¹³ Mr. Mueller suggested that existing federal buildings should be certified under LEED for Existing Buildings, with recertification every five years.²¹⁴ According to Mr. Carpenter, LEED EB:O&M essentially requires buildings to be in the top 30% of energy-performing buildings.²¹⁵ Mr. Smiciklas suggested that the federal government should assess all federal buildings using the BOMA BESt rating program, including those for which PWGSC is not the custodian. According to him, the BOMA BESt certification program is the most environmental and cost-effective manner in which the government could achieve its environmental and fiscal goals.²¹⁶ He also stated that BOMA Canada is ready to work with federal departments that are not currently using BOMA BESt in order to develop new assessment protocols and new rating system guidance that can be based on the unique needs of certain buildings, such as laboratories, prisons and buildings on military bases. Furthermore, he urged the government to certify its buildings to the highest level of certification, which he said would result in major reductions in energy use and significant savings in operating costs.²¹⁷

11. Monitoring Building Systems and Reporting for New and Existing Buildings

In addition to initial building assessments, as well as certifications and recertifications, monitoring is a step in improving the energy performance of a building. A building’s energy performance can be monitored in a number of ways, including energy audits. According to an official from PWGSC, all Crown-owned and -lease-to-purchase properties are subject to such audits every five years.²¹⁸ Similarly, the U.S. Department of Energy’s Federal Energy Management Program (FEMP) requires that covered facilities are evaluated for energy improvements each year. Specifically, at least 25% of facilities covered by the *Energy Independence and Security Act of 2007* requirements, need to be audited each year, so that every facility is evaluated once every four years.²¹⁹

Mr. Mueller told the Committee that, in order to ensure continued optimization of the performance of its certified buildings, the federal government would benefit from benchmarking and managing its energy and water use appropriately, on an ongoing basis.²²⁰ According to Mr. Carpenter, measuring and tracking energy use, and comparing

213 Ryan Eickmeier, Real Property Association of Canada, [Evidence](#), Meeting No. 76.

214 Thomas Mueller, Canada Green Building Council, [Evidence](#), Meeting No. 78.

215 Stephen Carpenter, Enermodal Engineering, [Evidence](#), Meeting No. 78.

216 John Smiciklas, Building Owners and Managers Association of Canada, [Evidence](#), Meeting No. 76.

217 Ibid.

218 John McBain, Public Works and Government Services Canada, [Evidence](#), Meeting No. 54.

219 U.S. Department of Energy, [Federal Energy Management Program: Energy Efficiency Evaluation and Planning for Existing Buildings](#).

220 Thomas Mueller, Canada Green Building Council, [Evidence](#), Meeting No. 78.

actual to forecasted usage, is an effective way in which to assess progress made and to correct problems as they arise.²²¹ He also advocated the installation of metres to monitor the energy use of specific building components, such as the cooling and heating system, as well as the lights.²²² According to Mr. Love, office buildings located in downtown Toronto that are involved in the voluntary Race to Reduce program, which has the goal to reduce a building's energy consumption by 10% by the year 2014, use an ENERGY STAR portfolio manager to monitor energy savings.²²³

In the United States, section 103 "Energy Use Measurement and Accountability" of the *Energy Policy Act of 2005* requires that by 1 October 2012, all federal buildings be metered for the purposes of efficient energy use and reduction in the cost of electricity used in such buildings. The Act specifies that federal agencies must use advanced meters or metering devices that provide data at least daily, and measure the consumption of electricity at least hourly, to the extent practicable. In addition, the U.S. *Energy Independence and Security Act of 2007* requires that energy use data for each metered building is entered into a benchmarking system, such as the ENERGY STAR Portfolio Manager.²²⁴

An official from NRCan spoke about another tool for monitoring building performance: an automated building monitoring system. He indicated that NRCan has developed a diagnostic tool — DABO, the diagnostic agent for building operations — that diagnoses all of the pre-set conditions of a building's components with a central control system on a 24/7 cycle. According to him:

[The diagnostic tool] works ahead of time —i.e., saying that something is going out of the zone, and you can adjust now. If you actually get yourself into a problem, it can give you advice on how to fix the problem. Then, after the fact, it can also say, in a retroactive sense, here's what happened, and here's how you can prevent it from happening again.²²⁵

He added that:

[B]y itself [DABO is] not sufficient. It's a great tool, but as in all cases, using a tool properly is the key. There's a training component associated with the building management itself that links with DABO, and the combination of the two can be very effective. We figure as much as 10% to 20%, depending on the building age, the building condition, etc., can be gained. It costs about a dollar a square foot, with somewhere in the neighbourhood of a three- to five-year payback.²²⁶

221 Stephen Carpenter, Enermodal Engineering, [Evidence](#), Meeting No. 78.

222 Ibid.

223 Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76.

224 U.S. Department of Energy, [Federal Energy Management Program: Federal Requirements for Sustainable Buildings by Topic](#).

225 Geoff Munro, Natural Resources Canada, [Evidence](#), Meeting No. 54.

226 Ibid.

Similarly, according to an official from the Government of Manitoba, the province has direct digital controls — or DDCs — in 146 government buildings.²²⁷ These DDCs manage a number of systems, including heating, ventilation, air conditioning, and such other components as heat pumps, hot water tanks and cooling towers. Through DDCs, building operators have access to systems 24 hours a day. She indicated that “[e]nergy efficiency is one piece of [the working environment], as is water efficiency, but it also has to be a comfortable building that our colleagues want to work in. The DDC system allows us to be adaptive and responsive to that.”²²⁸

12. Coordination Among Federal Departments

According to a number of the Committee’s witnesses, inadequate coordination between building owners and occupants is a major challenge faced by federal departments that are seeking to improve their energy efficiency.²²⁹ For example, Mr. Love noted that — like tenants and landlords in the residential sector — an “agency problem” sometimes exists at the federal level. In some cases, one department looks after capital expenditures while another department oversees operating costs; these two departments tend to work in silos.²³⁰ As a result, the upfront investment is made by one department, but the other department obtains the cost savings; a lack of coordination between these departments could result in a lower-than-optimal investment in energy efficiency upgrades. Mr. Staszewski suggested that a team — rather than a silo — approach would lead to optimal results.²³¹

Mr. Karakasis also identified the delegation of authority regarding the management of federal buildings as a challenge, since this management is divided between two types of people: on one hand, project officers or environmental specialists, who are responsible for collecting data in relation to buildings and for running environmental programs, and — on the other hand — property managers or building operators, who are responsible for the overall management of the buildings and who have the best understanding of how the building operates. He said that property managers or building operators need to be involved in the collection of data, as they often know how to improve the performance of the buildings that they manage. In his view, project officers or environmental specialists could help occupants adopt energy-conscious behaviours, such as making use

227 Susanne Parent, Department of Manitoba Infrastructure and Transportation, Government of Manitoba, [Evidence](#), Meeting No. 79.

228 Ibid.

229 Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76; John Smiciklas, Building Owners and Managers Association of Canada, [Evidence](#), Meeting No. 76; Ryan Eickmeier, Real Property Association of Canada, [Evidence](#), Meeting No. 76; and Dave Seymour, Ameresco Canada Inc., [Evidence](#), Meeting No. 78.

230 Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76.

231 Brian Staszewski, Global Resource Efficiency Services, [Evidence](#), Meeting No. 80.

of existing infrastructure for recycling and adopting practices that lead to reduced energy consumption.²³²

Mr. Love identified the loss of corporate memory as another challenge among federal departments. According to him, employees are highly mobile, and corporate knowledge is sometimes lost in departments, when people move to opportunities elsewhere.²³³

13. Awareness, Education and Training

In order to engage people in taking actions that will improve energy efficiency in federal buildings, they must be aware of the targets that have been set in this regard. Mr. Eickmeier commented that the FSDS and energy efficiency targets must be publicized so that the public, relevant stakeholders and employees are aware of the desired objectives.²³⁴ In an effort to help building occupants change their behaviour, Mr. Staszewski supported the creation of incentives, as well as awareness and savings programs; with the latter, occupants would receive a portion of the savings resulting from their energy-conscious behaviours, with these savings used for building improvements.²³⁵ While Mr. Karakasis agreed with these savings programs, he spoke about the need for a more coordinated effort between the private and the public sectors in engaging occupants in the energy efficiency process, and in helping them to understand that they are part of the effort to reduce energy use and waste.²³⁶

Mr. Eickmeier mentioned that changing the behaviour of occupants — who are key partners in energy efficiency initiatives — could generate significant savings.²³⁷ However, Mr. Mueller highlighted that changing human habits could be a significant challenge.²³⁸ Mr. Karakasis suggested that consultations with occupants about the energy efficiency process and about how to reduce energy consumption could help to overcome the challenges associated with changing human behaviour.²³⁹ Mr. Love shared his view that engaging the organization as a whole in a specific project, and implementing a process whereby occupants can participate, could help to improve energy efficiency in office buildings.²⁴⁰

232 Dean Karakasis, Building Owners and Managers Association of Ottawa, [Evidence](#), Meeting No. 80.

233 Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76.

234 Ryan Eickmeier, Real Property Association of Canada, [Evidence](#), Meeting No. 76.

235 Brian Staszewski, Global Resource Efficiency Services, [Evidence](#), Meeting No. 80.

236 Dean Karakasis, Building Owners and Managers Association of Ottawa, [Evidence](#), Meeting No. 80.

237 Ryan Eickmeier, Real Property Association of Canada, [Evidence](#), Meeting No. 76.

238 Thomas Mueller, Canada Green Building Council, [Evidence](#), Meeting No. 78.

239 Dean Karakasis, Building Owners and Managers Association of Ottawa, [Evidence](#), Meeting No. 80.

240 Peter Love, Energy Services Association of Canada, [Evidence](#), Meeting No. 76.

Witnesses identified training and education for employees and occupants as a critical element in achieving higher levels of energy efficiency, as training and education allow individuals to understand the opportunities, the objectives and the manner in which building performance could be improved; according to them, the result could be significant savings. In the view of a PWGSC official, employees are very interested in contributing to energy efficiency measures, as they are interested in preserving the environment; to this end, PWGSC is developing targets that would further engage employees in adopting energy-conscious behaviours.²⁴¹ Mr. Rogers suggested that the federal government should develop a simple education program to identify possible actions that could be taken to improve energy consumption; the program could be presented to every federal department and office building.²⁴²

According to witnesses, it is important to provide property and facility managers who oversee the federal real estate portfolio with adequate training. While Mr. Karakasis stated that these individuals need to have access to continuing education in order to help them learn and implement best practices in relation to building management, Mr. Staszewski stressed that these individuals must be provided with the tools and resources needed to operate the buildings they manage effectively; these tools and resources include training and appropriate funds to implement required energy efficiency upgrades.²⁴³

An official from PWGSC said that training is sometimes embedded within the established targets or options, as a way of achieving a given goal.²⁴⁴ She commented that, in general, PWGSC “[has] to create high-level objectives and then allow departments and deputy heads to exercise their own authority and judgement in terms of how best to get to that target.”²⁴⁵ An official from NRCan said that her department offers training on energy management, including Dollars to \$ense Energy Management Workshops²⁴⁶ that offer energy-saving tips, as well as information on such topics as energy management information systems, recommissioning, planning energy management, identifying opportunities to save energy, monitoring energy use and financing energy efficiency measures.²⁴⁷ According to an official from NRCan, since the establishment of the department’s energy management training program in 1997, 25,000 people have participated, including approximately 2,000 federal employees; estimated savings across Canada have been predicted to be at least \$175 million.²⁴⁸ Another official from NRCan

241 Caroline Weber, Public Works and Government Services Canada, [Evidence](#), Meeting No. 54.

242 Wayne Rogers, Luminescence Lighting, [Evidence](#), Meeting No. 76.

243 Dean Karakasis, Building Owners and Managers Association of Ottawa, [Evidence](#), Meeting No. 80, and Brian Staszewski, Global Resource Efficiency Services, [Evidence](#), Meeting No. 80.

244 Caroline Weber, Public Works and Government Services Canada, [Evidence](#), Meeting No. 54.

245 Ibid.

246 Carol Buckley, Natural Resources Canada, [Evidence](#), Meeting No. 54.

247 Natural Resources Canada, [Dollar to \\$ense Energy Management Workshops](#).

248 Geoff Munro, Natural Resources Canada, [Evidence](#), Meeting No. 54.

told the Committee that her department also offers training for private- and public-sector building occupants to help organizations use and waste less energy.²⁴⁹

An international example of a government energy management program was provided to the Committee by the U.S. Department of Energy. The U.S. FEMP includes training and other promotional material directed to federal agencies' public servants. These materials include the FEMP Focus newsletter, extensive online and in-person training, and the annual GovEnergy workshop. As well, the FEMP has recognition programs.²⁵⁰

Mr. Karakasis spoke about training provided by the building sector, and indicated that BOMA Ottawa has a variety of documents that outline industry standards; it also offers programs and forums to share best practices and experiences regarding building management and energy savings.²⁵¹

B. Committee Observations and Recommendations

As we assess performance and short, medium, and long-term planning needs, we are also able to identify opportunities for energy savings and the implementation of cost-efficiency measures. ... As we look at owned versus leased delivery, and short-term versus long-term needs, [occupant] requirements, and our overall portfolio strategies — ... all of these impact our decision-making process.

An official from Public Works and Government Services Canada

With respect to leadership through targets, policies and processes, the Committee recommends that:

RECOMMENDATION 1:

The federal government continue to ensure that programs under the Federal Sustainable Development Strategy or real property policies in relation to environmental impacts are stringent and rigorous.

249 Carol Buckley, Natural Resources Canada, [Evidence](#), Meeting No. 54.

250 U.S. Department of Energy, [Federal Energy Management Program](#), December 2012, p. 2.

251 Dean Karakasis, Building Owners and Managers Association of Ottawa, [Evidence](#), Meeting No. 80.

RECOMMENDATION 2:

The federal government develop energy efficiency data-collection tools and indicators to monitor energy use in federal buildings. Such tools and indicators can include:

- energy targets based on kilowatt hours in new and existing federal buildings; and
- labelling buildings according to their energy performance.

Further, in order to identify and address buildings that require improvement, the government should create a database in order to compare the energy use of federal buildings, based on building age, size and location.

RECOMMENDATION 3:

The federal government establish a policy requiring departments to consult with the Natural Resources Canada's Federal Building Initiative prior to planning a building renovation that would involve costs that exceed a specified value.

With respect to building and energy codes, the Committee recommends that:

RECOMMENDATION 4:

Where appropriate and within existing budgets, the federal government work with the private sector to develop standards in relation to building construction, as well as operation and maintenance, for non-office space buildings, such as laboratories.

RECOMMENDATION 5:

Within existing budgets and using measures such as cost-benefit analysis where appropriate, Natural Resources Canada work in cooperation with the provinces and territories with the objective of furthering the energy-efficiency provisions of the National Building Code.

With respect to strategic plans for building management, the Committee recommends that:

RECOMMENDATION 6:

Prior to undertaking energy retrofits, departments develop strategic plans for energy-efficiency measures. Consideration should be given to energy savings, capital costs over the long term, and global impacts of specified upgrades.

RECOMMENDATION 7:

The federal government formulate and update its strategy and action plan for improving energy efficiency based on an analysis of energy used. The analysis could include consideration of the “audit-implementation-monitor” approach, markets, technologies and efficiency opportunities.

RECOMMENDATION 8:

After a cost-benefit analysis, actions be taken to deliver cost-effective energy savings. Furthermore, facility managers who oversee the federal real estate portfolio should report on their efforts in relation to these savings.

With respect to energy performance contracting for new and existing buildings, the Committee recommends that:

RECOMMENDATION 9:

Prior to entering into performance agreements for energy-efficiency retrofits, an evaluation of the administrative overhead costs and/or premiums, and consideration of alternative strategies, be undertaken in order to ensure the project is cost-effective and provides value for money.

RECOMMENDATION 10:

The federal government, through the Federal Building Initiative for retrofitting federal buildings, encourage private investment in federal buildings in support of energy-efficiency capacity building.

With respect to enhancing efficiencies in new and existing buildings, the Committee recommends that:

RECOMMENDATION 11:

The federal government aim to improve the energy efficiency of existing federal buildings through cost-effective reductions in energy consumption.

RECOMMENDATION 12:

The energy performance of federal building components and systems be improved in order to support the federal government's economic goals.

With respect to assessments and certifications for new and existing buildings, the Committee recommends that:

RECOMMENDATION 13:

In order to promote energy efficiency and energy management, the federal government – where appropriate – encourage the assessment of existing buildings under the most appropriate certification and ensure that all newly constructed federal buildings meet the minimal operational requirements.

With respect to monitoring building systems and reporting for new and existing buildings, the Committee recommends that:

RECOMMENDATION 14:

The energy use of federal buildings be tracked to provide building managers or custodial departments with information on energy performance. This tracking should occur with the express purpose of furthering in-house best practices.

With respect to awareness, education and training, the Committee recommends that:

RECOMMENDATION 15:

Within existing budgets, federal departments, agencies and Crown corporations enhance awareness and capacity for improved energy efficiency.

CHAPTER FIVE: CONCLUSION

The Committee believes that, with the implementation of the recommendations in this report, the energy efficiency of federal buildings will be greatly improved and energy costs will be significantly reduced. In addition, energy-efficient buildings will contribute to reduced environmental impacts, greenhouse gas emissions and energy use, as well as other improved outcomes for Canadians. Through such programs as the FBI and the establishment of an overarching framework with the FSDS, the federal government has enhanced the performance of its buildings. Moreover, the use of national building codes and the pursuit of various industry-recognized building certifications have improved the energy efficiency of federal buildings. While energy savings have been achieved through such programs, and some targets prescribed through the FSDS, based on testimony heard, the committee feels that there is potential for greater cost savings over the long term from more targeted measures in efficiencies, more strategic planning, and improved operation and management of existing building stock.

That said, the energy efficiency of federal buildings, whether owned or leased, could be enhanced further, and the Committee encourages the federal government to establish a strategic plan to manage the federal building portfolio from an energy-efficiency perspective, and to use cost-benefit analysis when identifying potential energy-efficiency measures to be implemented and when evaluating whether to construct a new building, retrofit an existing building or enter into a lease arrangement.

The Committee recognizes that there are several avenues for increasing the energy efficiency of federal buildings, and encourages the federal government to enhance its efforts in exploring energy-efficient building designs and codes, assessments and certifications, and green leases. The Committee also believes that financing measures are important and that the federal government should look into various opportunities to encourage and support energy-efficient buildings such as revolving funds, energy performance contracts, and tax and other federal supports for energy-efficient buildings that may also prove beneficial to help support greater efficiencies. Finally, in the Committee's view, a federal focus on clear targets, policies and processes, a strategic planning approach, better coordination among departments, improved education and training, and ongoing monitoring of federal buildings are needed if federal goals in relation to energy-efficient buildings are to be realized. In short, a variety of avenues must be explored as decisions are made about "powering" federal buildings in order to ensure energy efficiency.

APPENDIX A LIST OF WITNESSES

Organizations and Individuals	Date	Meeting
<p>Department of Natural Resources Carol Buckley, Director General, Office of Energy Efficiency Geoff Munro, Chief Scientist and Assistant Deputy Minister, Innovation and Energy Technology Sector</p>	2012/10/02	54
<p>Department of Public Works and Government Services John McBain, Assistant Deputy Minister, Real Property Branch Caroline Weber, Assistant Deputy Minister, Corporate Services and Strategic Policy Branch</p>		
<p>Building Owners and Managers Association of Canada Benjamin Shinewald, President and Chief Executive Officer John Smiciklas, Director, Energy and Environment</p>	2013/03/05	76
<p>Energy Services Association of Canada Peter Love, President</p>		
<p>Luminessence Lighting Wayne Rogers, President, Edmonton</p>		
<p>Real Property Association of Canada Ryan Eickmeier, Director, Government Relations and Policy</p>		
<p>Building Owners and Managers Association of Ottawa Dean Karakasis, Executive Director</p>	2013/03/07	77
<p>Global Resource Efficiency Services Brian Staszewski, General Manager, North American Office</p>		
<p>Ameresco Canada Inc. Dave Seymour, Vice-President, Eastern Region</p>	2013/03/19	78
<p>Canada Green Building Council Thomas Mueller, President and Chief Executive Officer</p>		
<p>Enermodal Engineering Stephen Carpenter, President</p>		
<p>Government of British Columbia Rob Abbott, Executive Director, Ministry of Environment, Climate Action Secretariat, Carbon Neutral Government and Climate Action Outreach Bernie Gaudet, Acting Director, Corporate Sustainability, Ministry of Citizens' Services and Open Government, Shared Services BC</p>	2013/03/21	79

Organizations and Individuals	Date	Meeting
<p>Government of British Columbia</p> <p>Erik Kaye, Acting Manager, Energy Efficiency Branch, Ministry of Energy, Mines and Natural Gas</p>	2013/03/21	79
<p>Government of Manitoba</p> <p>Cindy Choy, Director, Green Building Coordination Team, Accommodation Services Division, Department of Manitoba Infrastructure and Transportation</p> <p>Dave Cushnie, Technical Engineering Officer, Operations Branch, Accommodation Services Division, Department of Manitoba Infrastructure and Transportation</p> <p>Leonard Lewkowich, Utilities Analyst, Operations Branch, Accommodation Services Division, Department of Manitoba Infrastructure and Transportation</p> <p>Susanne Parent, Director of Operations, Operations Branch, Accommodation Services Division, Department of Manitoba Infrastructure and Transportation</p>		
<p>Manitoba Hydro</p> <p>Colleen Kuruluk, Manager, Power Smart Programs</p> <p>Roberto Montanino, Commercial Programs Supervisor, Power Smart Programs</p>		
<p>Building Owners and Managers Association of Ottawa</p> <p>Dean Karakasis, Executive Director</p>	2013/04/16	80
<p>Building Professionals</p> <p>Laverne Dalglish, Principal</p>		
<p>Caneta Research Inc.</p> <p>Doug Cane, Principal</p>		
<p>Global Resource Efficiency Services</p> <p>Brian Staszewski, General Manager, North American Office</p>		
<p>Department of Natural Resources</p> <p>Carol Buckley, Director General, Office of Energy Efficiency</p> <p>Geoff Munro, Chief Scientist and Assistant Deputy Minister, Innovation and Energy Technology Sector</p>	2013/04/18	81
<p>Department of Public Works and Government Services</p> <p>Robert Laframboise, Director General, Office of the Greening Government Operations</p> <p>John McBain, Assistant Deputy Minister, Real Property Branch</p>		

APPENDIX B LIST OF BRIEFS

Organizations and Individuals

Building Owners and Managers Association of Canada

Real Property Association of Canada

U.S. Department of Energy

REQUEST FOR GOVERNMENT RESPONSE

Pursuant to Standing Order 109, the Committee requests that the government table a comprehensive response to this report.

A copy of the relevant *Minutes of Proceedings* ([Meetings Nos. 54, 76, 77, 78, 79, 80, 81, 86, 87, 89, 91 and 93](#)) is tabled.

Respectfully submitted,

Pat Martin

Chair

Empowering Energy Efficiency

Supplementary Report to the June 2013 Report of the Standing Committee on Government Operation and Estimates

Submitted by the New Democratic Party of Canada

New Democrats are pleased that the OGGO committee agreed to conduct the study we proposed on actions already taken or potential future actions towards improved energy efficiency in federal buildings and facilities. Our objective was to showcase action to date and additional alternative strategies to reduce energy consumption. We were particularly interested to showcase and examine the potential for savings to the public purse through strategic and dedicated up-front investments for reduced energy consumption.

While we are generally pleased with the report, we are of the view that the following additional measures recommended by experts or being deployed by other jurisdictions could incent greater action by the federal government to set an example for reduced energy consumption.

1. Legally Prescribed Energy Efficiency Targets

We recommend that the Government of Canada prescribe in law energy efficiency targets for federal departments and agencies based on best practices in energy use and that those targets be regularly publicly reviewed and updated. In addition, it is also recommended that the government examine alternative mandatory energy efficiency measures enacted by other jurisdictions, including the measures shared with the Committee by the U.S. Department of Energy. An examination of potential harmonization of energy efficiency measures could readily be pursued through the existing Canada-U.S. Clean Energy Dialogue.

2. Monitoring , Labeling and Reporting Energy Consumption

We recommend that Natural Resources Canada work with Public Works and Government Services to develop and implement a system for all federal departments and agencies to not only measure and monitor but also publicly report, at a minimum on an annual basis, on energy consumption and measures taken to reduce energy use in all federally owned and operated buildings and facilities.

3. Interagency Coordination and Capacity Building

We recommend that Natural Resources Canada and Public Works and Government Services cosponsor educational and capacity building processes to enhance awareness and capacity of all federal departments, agencies and Crown corporations towards improved energy efficiency.

4. Government-Wide Energy Efficiency Optimization for Buildings

We recommend that as the majority of federal buildings are owned or operated by departments or agencies other than PWGSC or NRCN, it is important that these other entities also undertake BOMA Best or other energy audits to determine current energy use and to identify potential for improved energy efficiency and cost savings.

5. O & M

We recommend development of O& M procedures and manuals to enable ongoing and cost effective efforts towards energy use optimization. In furtherance of this objective we recommend the government confer with the U.S. Department of Energy and other related agencies on lessons learned from best practices.

6. Dedicated Budget Allocations

We recommend that the federal government allocate dedicated funds in its departmental budgets for the purpose of improved energy efficiency in government owned buildings.

7. Jobs and Skills Development

We recommend that any assessment of the costs effectiveness of investment in improved energy efficiency give due consideration to the value of any jobs created in the energy efficiency sector. It is further recommended that for any bidding processes for energy efficiency projects, that one of the requirements be provision of a specified number of apprenticeships in energy efficiency sector.

In conclusion, we are confident that by acting on these additional recommendations, the government will avoid being penny-wise and pound-foolish for failing to give adequate regard to the benefits of investment in energy efficiency.