



Energy Performance Contracting: Some Canadian Experience

Energy Efficient Retrofit Measures for Government Buildings Workshop

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Government Services
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Objective

To assist federal departments and agencies to reduce expenditures and demonstrate the government's leadership in addressing the harmful impacts of energy use on the environment.

The current objective is to help government departments and agencies make their buildings more energy-efficient and reduce greenhouse gas emissions.





Target Buildings

Developed to improve energy efficiency in facilities that are owned or occupied by federal organizations and Crown corporations.

Other levels of government, institutions and private sector firms can also draw on the experience for help in designing their own energy efficiency programs.





EPC?

A way of implementing energy efficiency improvements in facilities with no up-front cost and limited risk to the federal organization.



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Energy Performance Contracting (EPC)

Canada's contracting policy authorizes federal departments to use private sector funding to finance energy improvements in their facilities

Departments may enter into an EPC with an energy service company (ESCO)

ESCO borrows private sector money to finance energy improvements and repays it from accrued energy savings

Once EPC is paid, Departments retain future energy savings





Benefits of EPC

Guaranteed energy savings: often more than 20%

Low risk : only pre-qualified contractors bid

Departments retain energy savings after project completion

Private sector financing frees up limited capital

Turnkey implementation, ongoing monitoring and verification of savings

Healthier, more comfortable working environment





More Benefits of EPC

Access to technical expertise including energy audits, design, procurement, construction and monitoring of energy efficiency improvements

Upgrades to building systems and equipment

Source of training for building staff on achieving maintained results beyond project scope

Increased building occupant interest in energy efficiency through employee awareness program

Flexibility to respond to budget cuts and freezes





Policy Framework

Each EPC is evaluated on its own merits

EPC may share savings over prolonged payback period (shared savings performance contract)

Cost / benefit analysis determines payback period

EPC meets NAFTA requirements, WTO Agreement on Government Procurement and Agreement on Internal Trade (AIT)





ESCO

An ESCO is an organization that provides a turnkey service for the implementation of building energy efficiency or energy management projects.

Service package includes **engineering** and **energy management**, **project management** expertise, and **project financing** capabilities.





Qualified Bidder's List

(as of May 2009)

Ameresco Canada Inc.

Direct Energy Business Services Limited

Ecosystem

Honeywell Limited

Johnson Controls L.P.

MCW Custom Energy Solutions, Ltd.

Optimira Energy

Siemens Building Technologies, Ltd.

Wabco Standard Trane Co





Guarantee

The performance contract provides a savings guarantee (or performance guarantee) over the life of the project.





EPCs Innovative?

Services are not new. It is the comprehensive delivery by one supplier that makes EPCs so innovative and attractive. A project can include any of the following services:

Building inspection

Financing

Guaranteed savings

Auditing

Planning

Procurement

Construction

Monitoring

Training



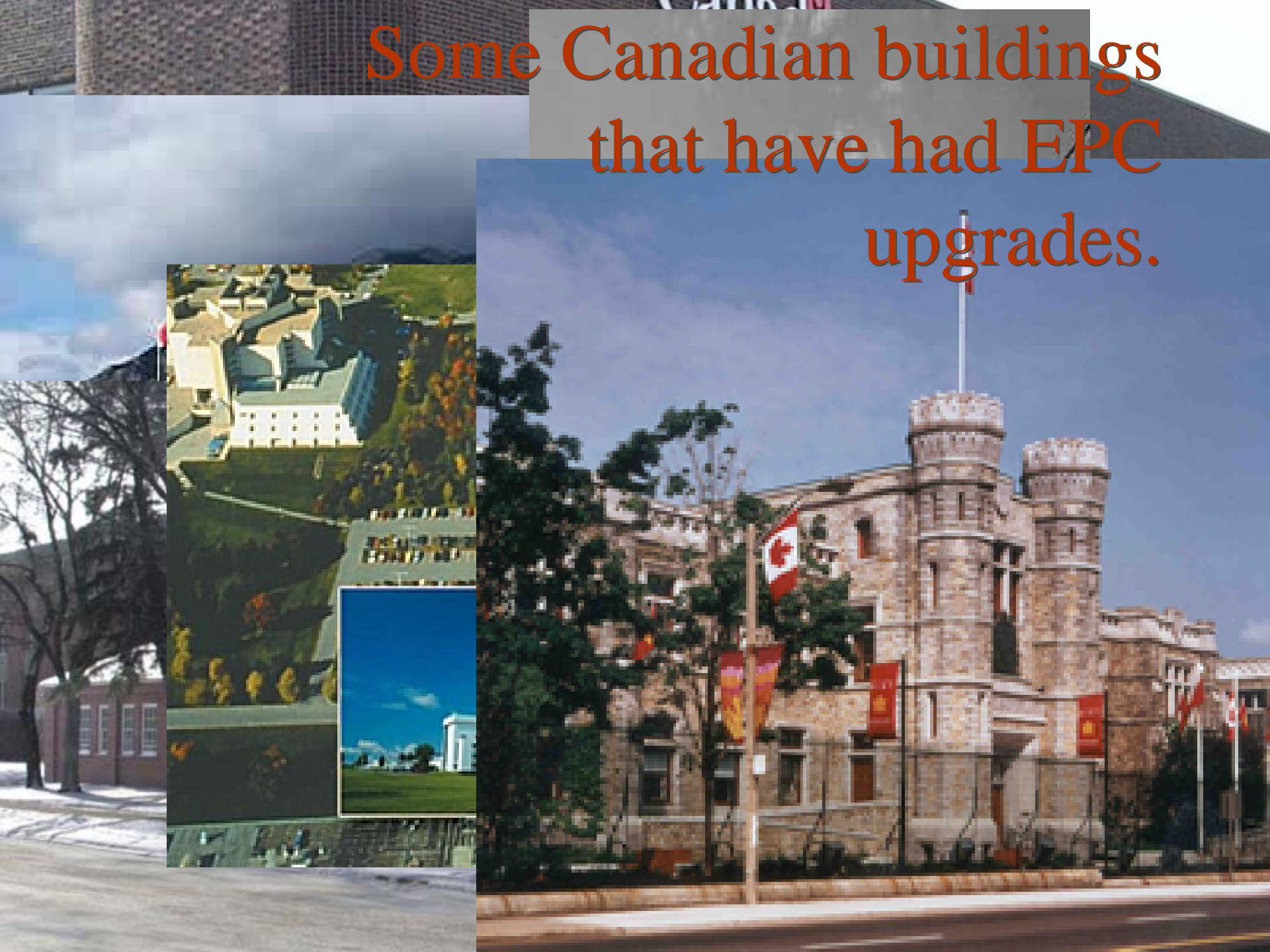


Payback

- Past projects set a 4-year payback
- Packages extended to 5 years
- Recent concerns have extended to 8-10 year maximum
- Shorter than USA. Why?



Some Canadian buildings that have had EPC upgrades.





Typical ECMs in a Canadian EPC

Lighting Systems (35)

HVAC Systems (67)

Building Envelope (41)

CHCP Measures

Renewable Energy

Variable Speed Drives

Fuel Conversions

Water Efficiency (41)

EMCS

Cogeneration

Integrated Systems

Employee Awareness

Recommissioning

Comprehensive Operator
Training





2008 Penetration by Department

Custodian Department/Agency	Total Floor Area (m2)	EPC Floor Area (m2)	% of floor area EPC
National Defence	9,130,752	4,705,718	51.5
Public Works Canada	3,032,721	1,373,543	45.3
National Research Council	412,802	282,192	68.4
Natural Resources Canada	264,757	130,008	49.1
Royal Canadian Mounted Police	749,601	109,991	14.7
Transport Canada	1,305,092	68,743	5.3
Fisheries and Oceans	410,317	50,900	12.4
Environment Canada	131,198	49,171	37.5
Agriculture and Agri-Food Canada	623,846	23,469	3.8
Parks Canada	453,031	20,119	4.4
Others	5,823,960	129,290*	2.2





Impacts

Financial: By 2008, EPC projects were saving \$43 million annually. Canadian Forces Bases comprised seven of the eight largest annual savings from individual projects.

Environmental: As of 2008, the EPC had been responsible for reductions of approximately 285 kilotonnes of greenhouse gases.

Economic: 20 person-years of skilled labor employment were created for every \$1,000,000 of investment.





Program Results

Established 1991 – First project 1993.

85+ project contracts (as of 2008).

\$319 million invested by the private sector.

\$43 million in annual savings.

Over 285 kilotonnes per year of GHG reductions.

Job creation in the energy management service industry.

Average 15-20% energy savings.

30% of crown owned floor area addressed.





Problems ?

- Drastic change in building occupancy
- Fault finding
- Buy outs preferred to extensive analysis
- Bidding on different assumptions – BSI
- Equipment preferred over analysis
- Small buildings left





Future

Bundling unrelated smaller buildings

Creating interest and capability in thoughtful retrofits (high hanging fruit!)

Green and renewable upgrades within reasonable paybacks

Networked buildings and Smart Grid





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