Office of Energy Efficiency

The Federal Buildings Initiative: An Executive Overview

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The Federal Building Initiative: An Executive Overview

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Energy Publications
Office of Energy Efficiency
Industrial, Commercial and Institutional Programs
Ottawa ON K1A 0E4
Telephone: (613) 995-6950
Fax: (613) 947-4121

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I. Introduction

A. About this Document

This overview explains the Federal Buildings Initiative (FBI). In general terms, its purpose is to give executives the information necessary to understand the Initiative – its environmental benefits, financial advantages, and certain key aspects of its implementation. Essentially, this information will be useful in weighing your options in reducing energy consumption in your facilities. We think that the benefits, including low-risk and low- or no-cost implementation and very real potential savings, will speak for themselves.

Throughout this document, we refer to FBI publications and other material that provide a wide range of information on the Initiative. Please see the Reference Documents section at the end of this overview for information on where to obtain copies.

B. An Overview of the FBI

The FBI offers your organization an approach to making money-saving energy efficiency improvements to buildings, and financing these improvements through outside sources of capital funds.

The benefits of the FBI are clear:

- Energy costs are usually reduced by a sustainable 20 percent, making limited operating funds available for other uses.
- Funding is available from the private sector.
- Maintenance costs are reduced.
- The indoor environment in buildings is improved.
- Implementing the FBI is a positive contribution promoting sustainable development and greenhouse gas reductions.

To help your department or agency to implement the FBI and benefit from energy savings, the Initiative provides two innovative services:

- Energy Performance Contracting (explained below); and
- extensive executive and managerial support.

C. Energy Performance Contracting

Energy Performance Contracting (EPC) is a comprehensive turnkey service. It offers "one-stop shopping" for departments and agencies that want to upgrade their facilities to make them more energy-efficient. The EPC service encompasses capital investment, engineering and design, project management, energy maintenance, specialized employee training, construction, commissioning of improvements and so on.

One of the more attractive features of EPC is that departments can use private-sector funding to finance energy improvements in their facilities. Under a typical energy performance contract, a department or agency enters into a formal agreement with what is known as an Energy Service Company (ESCo). An ESCo borrows money from the private sector to finance the energy improvements, and repays it from the savings from reduced energy consumption. Once the loan has been paid off and the ESCo earns an agreed-upon profit, the energy efficiency investments become the property of the Crown. All future energy savings from that date go to the contracting department.

The FBI clears the way for federal departments and agencies to use EPC within their facilities. The FBI has obtained policy adjustments from the Treasury Board that allow organizations to enter into energy performance contracts on their own authority in much the same manner as they currently pay their energy bills. Detailed explanations of these policy adjustments, as well as interpretations of all other relevant federal administrative policies and international treaty arrangements, are discussed in the Federal Buildings Initiative technical document entitled *FBI: The Policy Context*.

To make the contracting process easier, the FBI also provides model contracting and assessment documents. These model documents include requests for proposals, actual energy performance contracts, environmental

assessments and other necessary policy and legal processes. The Initiative also provides "managed" lists of pre-screened private-sector firms qualified to bid for energy performance contracts. These lists guarantee adherence to the *North American Free Trade Agreement* and the World Trade Organization *Agreement on Government Procurement*.

D. FBI Executive and Managerial Support

To assist departments and agencies in improving the energy efficiency of their facilities and in implementing EPC, the FBI offers a comprehensive package of advice and support for executives and senior management. The package covers all main areas associated with energy efficiency. It is available to your department or agency, whether or not you choose EPC as an implementation option.

II. Implementing Energy Efficiency

A. Introduction

Experience with the FBI has shown that several critical elements are involved in introducing energy improvements to an organization. It should be noted that most of these phases apply whether or not your department or agency chooses to implement the EPC option.

Discussed in turn below, these phases are:

- Planning Energy Efficiency Improvements
- Analysing Energy Improvement Options
- Awareness Campaigns for Employees and Tenants
- Health and Safety
- Implementing Energy Performance Contracting
- Energy Management Training
- Auditing the Results of Energy Performance Contracts
- Policy Matters

B. Planning Energy Efficiency Projects

The FBI is a systematic approach to energy efficiency that encourages departments to take a comprehensive view of their facilities. It effectively integrates energy efficiency into the daily culture of an organization. This necessarily involves the dedication of everyone in the department as well as a number of external stakeholders, including representatives from ESCos and central agencies of the Government of Canada.

To get the best results from a program like the FBI, your organization will need an action plan that provides a framework for implementing an energy efficiency program. At the start, certain key events need to be identified and managed. For instance:

- In getting started, the action plan must be fully integrated into the corporate planning framework.
- The action plan must have the full and visible support of senior management.
- Senior management must identify and support an "energy champion" for the department.

Other key events follow. Successful energy-management programs require close co-operation among a great number of professionals within an organization. These can range from energy specialists to engineers, financial officers, building managers and, especially in the case of EPC, contract officers. Also included in this list will be employee representatives to ensure that the concerns of employees are thoroughly taken into account.

Having identified who should be involved in your energy efficiency program, various managerial and financial questions, such as the following, must be considered:

- How should we set goals and integrate energy efficiency planning within our formal and informal management structures?
- What financial and contractual arrangements make the most sense for our organization? (It must be noted here that the financial and contractual arrangements will vary widely, depending on whether EPC is used in place of more traditional goods procurement.)
- How should we explain the goals of energy efficiency planning to employees, and tell them what we are doing to look after their interests – especially with respect to health and safety?
- How can we promote an energy efficiency ethic among our people and sustain it after the project has been completed?

As noted earlier, FBI staff offer critical executive and managerial advice for both short- and long-term planning considerations. To begin planning, departments can refer to the technical document *Energy Management Planning: An Overview.*

C. Analysing Energy Improvement Options

In improving energy efficiency within a facility, departments and other federal organizations face two basic options:

- relying on traditional procurement and building management processes, or
- using FBI-sponsored EPC.

To assess your options for improving energy efficiency, consider the following differences between EPC and traditional approaches.

Energy Audits and Recommendations

- *Traditional*

  Energy audits usually provide recommendations, but do not refer to a financing plan. Accordingly, these audits are often no more than a list from which a department chooses projects as cash flow permits. Comprehensive audits of multi-building facilities are rare, and those that have been carried out have usually not adequately considered central heating plants and thermal distribution systems.

  These audits also often focus only on visible, low-investment, low technology and stand-alone alterations where costs can be covered by either maintenance or discretionary budgets.

- *Energy Performance Contracting*

  The EPC approach looks at everything. Before a project begins, a preliminary audit identifies all potential energy savings. A detailed engineering study is carried out to assess all energy systems. The contractor then does a cost-benefit analysis and recommends how best to make the energy efficiency improvements, given current prices for electricity, fuel and new equipment.

  All possible approaches to cutting energy costs that can be paid for out of savings are investigated. No predetermined investment cap is imposed that might arbitrarily restrict a department from carrying out a project that, from a cost-benefit perspective, is financially sound.

Limiting the Risk of Lower-than-Expected Technical Performance

- *Traditional Methods*

  The custodian department or agency that pays the energy bills assumes the risk that an energy efficiency project may not perform as expected. In some cases, performance warranties provided by equipment suppliers can reduce these risks. However, most equipment is not stand-alone. Taking advantage of warranties can prove difficult when various makes and models of equipment are linked together.

- *Energy Performance Contracting*

  The ESCo assumes all technical performance risks within an energy performance contract because payment to the ESCo is contingent on the savings generated by the energy improvement project. The ESCo is responsible for ensuring that the project performs according to a pre-established level of energy consumption and demand.

  The custodian department or agency assumes no financial risk for inadequate performance during the period of the energy performance contract. If cost savings do not accrue, payments to the ESCo are reduced by a corresponding amount.

Project Financing

- *Traditional Methods*

  Departmental capital budgets are the traditional source of funds for energy-improvement projects, which often suffer from capital constraints and competition from new and existing program requirements. Years of budget reductions have also further restricted capital budgets within departments and agencies.

- *Energy Performance Contracting*

  The ESCo finances the project through a variety of means, none of which requires subsidization from the capital budgets of departments and agencies. In addition, the amount of money available through ESCos is generally restricted only by the limits of cost-benefit analysis, not (as noted above) by arbitrary investment caps.

ESCos are also able to obtain third-party Energy Savings Insurance to cover their financial exposure during the lifetime of an energy performance contract. In effect, this translates into a guarantee that the ESCo's financing will remain in place during the lifetime of the contract.

Design, Tendering and Installation

- *Traditional Method*

  Considerable management and technical staff time is required to review designs and carry out tendering for various projects or elements of projects. Decisions can also require the involvement and co-ordination of a number of levels of management.

  The department or agency, with or without the help of consulting engineers, must also oversee contractors and be available at all times to make decisions if installation problems occur. The real costs of this kind of involvement can be high.

- *Energy Performance Contracting*

  The contracting firm provides a comprehensive service package that includes turnkey management of the design, tendering, installation and monitoring of new energy-improvement projects.

  To assist your organization in considering these options, the Federal Buildings Initiative provides a number of technical documents. See the Reference Documents section for a complete list.

D. Awareness Campaigns for Employees and Tenants

The success of a major energy efficiency project depends greatly on the on the co-operation of employees and tenants. To the extent that they buy into and endorse the project, they will take pride in the many benefits associated with it – especially its contribution to sustainable development.

Any campaign to inform people of the benefits of a project should deal directly with the fact that most employees and tenants within a facility are very protective of their work environment. It is where they spend most of their working lives. If you do not explain the nature of the retrofits and why you are carrying out the project, morale and productivity can suffer. On the other hand, if everyone understands what you are doing and why you are doing it, they will co-operate with you. This co-operation is critical to guaranteeing the continuing success of the retrofit after the capital equipment has been installed and the project is up and running.

The FBI's experience with numerous energy projects has shown that an effective awareness campaign should do the following:

- promote the importance of the project and its contribution to sustainable development as something that employees and tenants can all be proud of;
- keep employees and tenants advised and up-to-date on all disruptions that could occur in the work area;
- encourage employee buy-in and behavioural change, and promote a "think conservation" ethic by explaining how they can do their bit to save energy;
- highlight the important benefits of retrofitting – from saving money to combatting pollution;
- provide a method for obtaining feedback from employees and tenants, especially about the most effective ways for communicating with them in the future; and
- establish a mechanism for keeping the lines of communication open with employees and tenants over the long term.

The FBI helps managers to build employee consensus and support by providing executive advice and offering training programs. Please refer to the technical document *A Manager's Guide to Creating Awareness on Energy Efficiency.*

E. Health and Safety

Success can be achieved only by avoiding negative reactions and quelling feelings of uncertainty. The main concern of many employees and tenants will be health and safety. In the past, energy-saving programs have frequently contributed to various problems, including difficulties in maintaining indoor air quality. For this reason, the FBI has developed guidelines for health and safety when implementing energy efficiency projects. These guidelines, which ensure that the comfort and productivity of employees and tenants in retrofitted buildings will not be compromised, are available in the FBI publication *Federal Buildings Initiative: Health and Safety Guidelines.*

F. Implementing Energy Performance Contracting

After you have analysed your options, you may decide to use EPC or pursue traditional contracting processes and manage the project inside your department or agency. Contracting arrangements associated with the EPC option are discussed in depth in Section III of this overview. For traditional contracting methods, refer to the appropriate internal departmental procedures.

The FBI also provides many technical documents to assist you in the contracting process (see *Implementing Energy Performance Contracts* in the Reference Documents section).

G. Energy Management Training

From an energy efficiency perspective, properly structured and targeted training is very much part of any successful energy project. Training will:

- generally make staff and management more knowledgeable about energy efficiency, thus creating the co-operative environment needed to ensure the success of energy efficiency projects;
- improve energy usage practices, in turn reducing labour, operating and maintenance costs;
- result in better-maintained equipment, prolonging its useful life and reducing the need for costly future re-investment;
- improve staff relations by opening lines of communication and creating a team environment; and
- ensure that your organization is able to continue with sound energy-management practices after the project has been completed.

FBI staff can advise executives and managers on how to structure and properly target training to get the most out of energy efficiency projects, and to make training part of the initial project-planning process. If your organization decides to use EPC, the ESCo can provide the necessary training. It can be paid for through the savings resulting from lower energy bills, or out of the department's training budget.

For further information, refer to *Energy Management Training* in the Reference Documents section.

H. Auditing the Results of Energy Efficiency Contracts

Work within the public sector requires the highest levels of integrity, both in substance and in appearance. Accordingly, the FBI provides both executives and auditors with guidelines for examining the results of energy efficiency projects (see the technical document *Federal Buildings Initiative: Guidelines for Auditing Results).*

Guidelines for Auditing Results refers to both financial and administrative, and environmental audits. The Government of Canada's *A Guide to Green Government*, issued in 1995, provides guidance to departments in preparing their now-mandatory sustainable development strategies, including implementation of environmental management systems. Energy efficiency projects, including energy performance contracts, can play a key role in demonstrating that your organization is adhering to the principles of sustainable development.

The Auditor General considers the key principles for departmental environmental management to be the following:

- the full commitment of staff, especially senior managers, combined with a clear articulation of the organization's environmental policy, serving to align staff and managers with common principles of operation;
- effective planning to fulfil the organization's environmental policy;
- sufficient capabilities and support mechanisms to ensure successful implementation;
- the measurement and monitoring of results, including audit; and
- a continual review and improvement of environmental management systems.

In auditing environmental management systems, the Auditor General will assess them against current best practices and published standards such as the International Organization for Standardization (ISO), *ISO 14004: Environmental Management Systems – General Guidelines on Principles, Systems and Supporting Techniques*, ISO/DIS 1400X ISO/TC 207 SCI N83. MN June, 1995. The *Report of the Auditor General of Canada – October 1995* discusses these principles and standards in some detail.

I. Policy Matters

Energy efficiency projects, whether they follow the more traditional procurement methods or use the EPC option, must be carried out within the broader policy context of the Government of Canada. In essence, departments and agencies must adhere to a wide range of policies adopted by the government of the day. These include (to name only a few) policies relating to environmental protection, fiscal responsibility, integrity of the contracting process, international trade, health and safety, and employment equity.

The FBI has been designed to harmonize with the general policy context. The technical document *Federal Buildings Initiative: The Policy Context* is continually updated to provide departments and agencies with a concise synopsis of how best to design an energy efficiency project to ensure that it conforms to policy. Policy-making is a dynamic exercise, and FBI staff are always available to discuss policy developments throughout the government and how they could affect energy efficiency projects, especially those involving EPC.

III. Energy Performance Contracting: An In-Depth Look

A. The Scope of Energy Performance Contracting

As noted earlier, EPC provides another source of funds (other than your department's capital budgets) for carrying out energy efficiency projects. EPC can also supply many other services, including energy analysis and audit, engineering and design, construction, commissioning, staff training, and maintaining and monitoring the performance of energy-saving equipment after it has been installed. How much the ESCo receives for an energy project depends entirely on the energy savings realized through reduced energy consumption. Revenue and profit for the ESCo flow from the difference between the pre- and post-improvement energy bills. Essentially, payments to the ESCo depend directly on the energy savings achieved.

The potential for improving energy efficiency within a facility (and thus the size of an ESCo's investment) is determined by an energy audit. An energy audit establishes baseline energy consumption data, which are used to calculate potential energy savings, and provides a detailed, comprehensive list of cost-effective energy improvements that can be made using available technology. The FBI has established standards for these audits. Please refer to the technical document *Federal Buildings Initiative: Audit Standards Guideline.*

The full impact and benefits of EPC can best be gauged by the past experience of other organizations that have used the EPC approach. Two typical examples are the Canada Centre for Inland Waters, and the National Research Council:

- Canada Centre for Inland Waters: Located in Burlington, Ontario, the Canada Centre for Inland Waters is a research facility operated by Environment Canada's National Water Research Institute. Built during the 1970s, the complex contains over 48 000 square metres of space and houses numerous laboratories, in addition to space to dock and service ships. Before it implemented an energy performance contract, the centre's annual bill for electricity, natural gas and potable water was $1.73 million. With a capital investment of $5.5 million – financed entirely through an outside ESCo in 1994 – these operating expenditures are expected to fall by some $878,000 annually. After a seven-year period to repay the ESCo's investment, all of these savings will accrue directly to the organization.
- National Research Council, Montreal Road Campus: In 1989, the National Research Council negotiated an energy performance contract to improve the energy efficiency of four buildings with a total floor space of 61 000 square metres at its Montreal Road Campus in Ottawa. The upgrade of these buildings required an up-front capital investment of $1.7 million, again financed completely through a private-sector ESCo. The investment was paid off within four years through energy savings, after which the savings began to accrue to the National Research Council. Accordingly, the NRC's operating budget for energy has been permanently reduced by some $400,000 each year.

The usual minimal requirements for major energy efficiency projects suitable for EPC are:

- an annual energy bill of at least $100,000;
- a potential energy retrofit valued at least at $100,000;
- a wide range of possible energy efficiency improvements;
- a defined payback period supported by cost-benefit analysis using market-determined interest rates; and
- a life span for energy improvements substantially exceeding the financial payback period.

It may be possible to bundle a number of buildings offering smaller potential energy savings to make a larger, more attractive project. Bundling could occur where a number of buildings form a complex under common management.

The overall condition of the facilities is also important. Buildings in poor repair are usually not good candidates for EPC. On the other hand, buildings undergoing major renovation, regardless of condition, can be suitable if renovations extend to air-conditioning systems, ceiling removal, etc. Facilities less than two years old generally do not have a long enough history of energy use to justify entering into an energy performance contract.

B. The Conceptual Basis of Energy Performance Contracting

As noted at the beginning of this overview, an energy performance contract can provide your organization with a new financing arrangement that uses private-sector dollars to pay for the new equipment and other modifications needed to cut your energy consumption. Typically, under an energy performance contract the contracting department or agency agrees to remit to the ESCo any savings flowing from the ESCo's investments to make a facility more energy-efficient (see below).

"First-Out" and "Shared Savings" Contracts

The Treasury Board has approved two types of energy performance contracts, the First-Out Performance contract and the Shared Savings Performance contract.

With the First-Out Performance contract, the ESCo retains all of the energy savings until the project is paid for or until the end of the contract, whichever occurs first. Typically, the contract stipulates a maximum return to the ESCo on its investment. If the ESCo realizes this return before the contract expires, the contract terminates. If the ESCo does not realize this return before the contract expires, the contract terminates in any event, and payments to the ESCo cease. In estimating the full costs of a project, the ESCo must declare its investment up front, including all costs and mark-ups. Percentage margins allowed to the ESCo are fixed. As noted above, at the end of the contract or when the contract has been paid for, the department retains all subsequent energy savings. The Treasury Board requires that the length of time and the financial returns of the contract be justified by the usual cost-benefit analysis.

With a Shared Savings Performance contract, the ESCo and the department or agency each receives an agreed-upon percentage of energy savings over the lifetime of the contract. Although departments or agencies realize financial savings earlier with a Shared Savings Performance contract, this type of contract runs for a substantially longer period than a First-Out Performance contract. In all other respects, the contracts are similar.

The Treasury Board's contracting guidelines authorize your organization to enter into energy performance contracts for values up to $25 million. For your first project over $1 million and any project over $25 million, the Treasury Board's approval is necessary.

C. Choosing an Energy Management Firm

Under an energy performance contract, an ESCo provides a turnkey service. The firm may be either an energy service company (ESCO), or a consortium involving consulting engineers and other players in the energy and property management fields who can provide the range of services generally included in EPC.

The services an ESCo provides are not new. What makes EPC so innovative and attractive is that one supplier delivers all the services associated with an energy efficiency project – including financing. EPC, therefore, brings engineering and energy management expertise, project management and training experience, and project financing capabilities together in one package.

To choose an ESCo, a department or agency must use a tender bidding process. To make this process simpler for your organization, the FBI has created a qualified bidders' list of pre-screened firms capable of carrying out energy performance contracts. You are strongly encouraged to use this list. It guarantees adherence to the provisions of the *North American Free Trade Agreement*, and the World Trade Organization *Agreement on Government Procurement*.

D. Activating an Energy Performance Contract

When a department or agency is considering the EPC option to retrofit a particular facility, the FBI recommends the following basic steps:

- *One: The Preliminary Energy Audit.* The department or agency must first determine what potential the building has for reducing energy consumption. Local utility companies often provide preliminary energy audits free of charge. These audits

identify opportunities to save energy and include inventories of energy-using equipment and a basic analysis of energy consumption. They also recommend steps that can be taken to improve efficiency, and they estimate savings and payback periods. Preliminary energy audits might also identify rebate packages being offered by local utility companies.

- *Two: Examination of Master Utility Agreements.* In some regions, departments or agencies may enter into master agreements with local utilities, which establish the ground rules for co-operation on energy efficiency improvements. The FBI provides departments and agencies with model master agreements with each participating utility. These agreements have already been worked out with local utilities to support the successful implementation of energy performance contracts. Your organization can either use the model agreements as is, or negotiate specific clauses as required.

- *Three: Assess Suitability of Energy Performance Contracting.* Armed with the results of a preliminary energy audit of a particular facility, you must decide if EPC is attractive and realistic for that facility. Simply put, you must ask whether the returns justify the effort. At this stage, your organization may want to meet officials of ESCos, or discuss the audit results with FBI staff or others who have used energy performance contracts in the past.

- *Four: Request for Proposals.* Once you have decided to pursue an energy performance contract, the next step is to develop and issue a Request for Proposals (RFP) to a list of ESCos pre-screened by the FBI. Model RFP documents are available from the FBI. Please refer to the document *Managing Energy Performance Contracts in Federal Buildings*, which discusses RFPs and their evaluation in detail.

- *Five: Finalize the Energy Performance Contract.* After you have evaluated the proposals, a contract must be signed with the successful ESCo. Again, the FBI provides a model contract that you can modify as required.

  Translating a firm's proposal into a contract can require considerable negotiation. Both parties should be prepared to devote the time needed to develop a mutually satisfactory agreement. To be successful, EPC depends on a strong commitment to teamwork between the department or agency and the ESCo.

  The document *Managing Energy Performance Contracts in Federal Buildings* discusses contract implementation, monitoring, contract adjustment processes, and dispute resolution mechanisms in detail. This document, and the FBI model contracts, should be your "anchor" in negotiating the final contract. FBI staff are also available to help you with these negotiations.

- *Six: Post-Implementation.* When the energy performance contract expires, the cost savings flow back to your operating budget. Payments to the management firm cease, and your organization takes possession of all installed equipment. Then you will continue to reap the benefits of more efficient facilities and lower energy bills long after the energy performance contract has been completed.

- *Seven: Long-Term Energy Management. Plan.* Investments in buildings to make them more energy efficient require a commitment to long-term planning and implementation. This commitment is essential to make sure that efficiencies once gained are preserved.

The FBI model Long Term Energy Management Plan can help your department or agency to make the ongoing investments needed to ensure that the savings flowing from the original investment in energy efficiency will continue.

For more information

Please contact the Federal Buildings Initiative at:

Fax: (613) 947-4121

Internet: http://oee.nrcan.gc.ca/fbi

Mailing Address:

Federal Buildings Initiative

Natural Resources Canada

580 Booth Street

Ottawa, Ontario K1A 0E4

Reference Documents

Please refer to the following list of documents, which are intended to support you throughout the Energy Performance Contracting process.

These publications will help your organization plan and carry out energy efficiency projects. Except where noted, they are available by contacting the Federal Buildings Initiative program.

Planning Energy Management Projects

- *Energy Management Planning – An Overview*

Analysing Financing Options

- *Federal Buildings Initiative: Financing Options for Energy Management Services*
- *Federal Buildings Initiative: Case Studies*

Awareness Campaigns for Employees and Tenants

- *A Manager's Guide to Creating Awareness on Energy Efficiency*

Health and Safety

- *FBI Health and Safety Guidelines*

Implementing Energy Performance Contracts

- *Managing Energy Performance Contracts in Federal Buildings*
- *Federal Buildings Initiative: Audit (Energy) Standards Guidelines*

Energy Management Training

- *Energy Management Training: The Key to Success*

Auditing the Results of Energy Performance Contracts

- *Federal Buildings Initiative: Financial and Administrative Audit*
- International Organization for Standardization (ISO), *ISO 14004: Environmental Management Systems – General Guidelines on Principles, Systems and Supporting Techniques,* ISO/DIS 1400X ISO/TC 207 SCI N83. MN June, 1995
- *Report of the Auditor General of Canada – October 1995* (available directly from the Office of the Auditor General of Canada)
- *Federal Buildings Initiative: Audit Standards Guidelines*

Policy Matters

- *Federal Buildings Initiative: The Policy Context*

Technical Information

- Technical Information (factsheets on energy efficiency technologies)
- *Energy Audit Software Directory*
- Case studies and other reports from the Centre for the Analysis and Dissemination of Demonstrated Energy Technologies

Office of Energy Efficiency
Office de l'efficacité énergétique

Leading Canadians to Energy Efficiency at Home, at Work and on the Road

The Office of Energy Efficiency of Natural Resources Canada is a dynamic organization with a mandate to renew, strengthen and expand Canada's commitment to energy efficiency in order to help address the challenges of climate change.