**ENERGY SERVICE PERFORMANCE CONTRACTS**

An ESPC is an agreement between an end user and an Energy Service Company (ESCO) that guarantees that the energy savings from the energy efficiency upgrade will finance the initial capital cost of the project over the course of the project. It thus captures future energy savings from a retrofit project in order to finance the initial capital cost. Most importantly, it transfers the financial and technical risks associated with a major energy efficiency upgrade to a third party.

**History**

The first ESCO in Canada and one of the first in the world, Econoler, was created by Quebec Hydro and a local engineering firm in 1981 and developed a new concept for that time based on a shared savings approach where the contract relaxed under an open book approach terminated upon complete payment of all project costs (fast out approach) even if this is reached before the term of the contract.

Over a period of 10 years, the market developed under the concept developed by Econoler and expended throughout the country under the leadership of Econoler who entered into a partnership with Petro Canada to do so.

The market slowed down in the early 1990s where Utility based DSM programs got introduced massively in many of the different provinces in Canada. ESCOs remained active nevertheless mainly driven through the leadership of the Federal government under the Federal Building Initiative, addressing the potential in federal facilities.

In the 2000s, Guaranteed Energy Service Performance Contracts (ESPCs) started to be the typical way to use EPC to upgrade the energy efficiency potential of existing buildings, particularly publicly owned buildings such as municipal and other government buildings, universities/colleges, schools and hospitals (MUSH) at the provincial level.

**Current national market and Activities**

As most of the companies that provide ESPCs in Canada also provide other services, it is difficult to estimate the current size of the Canadian ESPC industry. The most recent compilation done by the Energy Services Association of Canada identified 280 projects that had been completed over the last 10 years\(^1\). These projects range in size from $1 – 50 million and it is estimated that annual revenues for projects that had a performance guarantee is about $300 million.

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\(^1\) Source: Energy Services Association of Canada “Guaranteed Energy Savings”

22 Adelaide Street West, Suite 3400, Toronto, ON. M5H4E9
Tel: 416.357.1198
stuartgalloway@energyservicesassociation.ca energyservicesassociation.ca
The map in the ESAC magazine, page 12 illustrates the distribution by province of these 280 projects completed in the last 10 years, broken down into the following sectors:

- Federal government: 28
- Provincial/territorial government: 1
- Municipal government: 25
- Universities/Colleges: 8
- School Boards: 35 (most multiple locations)
- Healthcare: 55
- Industrial: 6
- Commercial: 16
- Apartments/condos: 98
- Other: 9
- Total: 280

As all of the projects in the apartment/condo sector were for public housing agencies, more than 90% of the projects undertaken in the last 10 years have been for public institutions. Virtually all of these public sector projects involved ESCOs submitting competitive tenders in response to Request for Proposals (RFPs).

NRCan’s Federal Building Initiative (FBI) program was established in 1992 to promote the use of ESPCs in federal departments. It developed model RFPs as well as contracts for federal departments. Examples of RFPs and contracts used by other public bodies are also available. Another good source for model RFPs and contracts were developed by the independent, membership based Energy Services coalition in the US [www.energyservicescoalition.org](http://www.energyservicescoalition.org)

The Energy Services Association of Canada was created in 2010 to advocate greater use of EPSCs across Canada, particularly within governments. Further information on this association and the Canadian markets for ESPCs can be found in their annual magazine and on their web site [www.energyefficiency.org](http://www.energyefficiency.org)

**Federal Policies, Programs and Frameworks**

The federal government established the Federal Building Initiative (FBI) in 1991 to improve energy performance in federal facilities using an ESPC. To date, 87 projects have been completed with many involving as many as 17 different buildings. Since its inception, it is estimated to have attracted over $350 million in private sector funding through use of ESPCs and generated over $45 million in annual savings. While the program has been in continuous operation since inception, the level of activity has been unstable. Eleven new projects were initiated in 1995 but none in 2011 and 2004, only one in 2006
and 2010 and two in 2008, 2009, 2011 and 2012. In the most recent fiscal year, competitions were held for six military bases with an understanding that all the remaining 25 bases will have energy efficiency retrofits undertaken using ESPCs over the next five years.

The federal government has been a leader in promoting the use of ESPCs since shortly after they began to be used. It is also noteworthy that as only about one third of federal buildings have undertaken major energy efficiency retrofits using ESPCs, a great deal remains to be done.

The FBI has a small dedicated staff that supports other departments, particularly those where the individuals responsible have not undertaken an ESPC ever or for many years. They offer energy management training, assistance with raising employee awareness, model RFP and contract documents, step-by-step guides, maintain a list of qualified bidders, offer seminars and networking events, design/analysis tools and publish best practices case studies. Most importantly, they will assign a dedicated FBI Program Officer to support each project.

There are 8 FBI case studies on the FBI web [http://www.nrcan.gc.ca/commercial/cbr/pubs/4201](http://www.nrcan.gc.ca/commercial/cbr/pubs/4201) One of these case studies is for the Place du Portage complex in Gatineau.

One of the most useful publications that FBI offers, particularly useful for those who are not familiar with using ESPCs, is Energy Performance Contracting: Guide for Federal Buildings.

As noted earlier, the FBI program also encourages federal departments to consider using experienced, unbiased advisors who act as facilitators who assist in the planning, implementation and management of energy efficiency projects. The role of facilitators is described further later in this chapter.

The FBI office also organizes 6-7 Community of Practice meetings to share experiences and ideas. The FBI web site notes that “this is an innovative networking group that uses the shared experiences of seasoned real property and environmental managers to help federal energy managers develop the best possible energy efficiency tactics and strategies”.

One of the main drivers behind the use of ESPCs to improve the energy efficiency of existing federal buildings is the Federal Sustainable Development Strategy (FSDS). In 2008, the Federal Sustainable Development Act was passed; it provides the legal framework for developing and implementing the FSDS. The Act requires the development and publication of a strategy every three years. It also identifies 26 departments and agencies that are responsible for preparing their own sustainable development strategies. Fifteen other federal organizations also contribute to the FSDS on a voluntary basis.

The 2016-19 TSDS centres on 13 aspirational, long term goals, one of which is “Low Carbon Government”. The target is to reduce GHG emissions from federal government buildings and fleets by 40% below 2005 levels by 2030, with an aspiration to achieve it by 2025. A recent estimate of the
efforts to date indicate that the federal government is falling far short of its 2020 target with a 4.6% reduction. It is thus widely accepted that more aggressive action is required.

Although meeting the FSDS target will be a large challenge, one very positive recent development is that the federal government’s Office of Greening Government Operations (OGGO) was recently moved from the Department of Public Services and Procurement Canada (PSPC) to the Treasury Board. OGGO works with federal government departments to reduce the footprint of government operations. They do this by providing advice and guidance as well as compiling and reporting results. They have specifically identified FBI as a “key mechanism to help departments achieve their emission reduction targets” as established by the FSDS. The move for the OGGO from PSPC to Treasury Board sends a very clear signal to all departments that the federal government is determined to meet its ambitious targets.

Another recent federal development of interest is the announcement of an additional $120 billion to be spent on infrastructure over the next 10 years with $40 billion specifically for green infrastructure. While much of this will likely be used to fund construction of new buildings, it can also be used to fund upgrades to existing buildings.

**Provincial Policies and Legal Frameworks**

**Atlantic Canada**

Like all other regions of Canada, there have been a wide range of successful ESPCs projects across the Atlantic provinces. Examples where case studies have been published are Canadian Forces Bases at Gander, Halifax and Gagetown as well as Memorial University.

None of the four provincial governments in this region have an active program to promote the expanded use of ESPCs at this time. There was an initiative in Nova Scotia in the past to select ESCOs to undertake ESPCs for public buildings in four regions; although the ESCOs were selected, no projects were authorized. One recent development of interest relates to work that has been undertaken by Efficiency One, at the request of the Nova Scotia government, to investigate the potential use of Public Purpose Energy Service Companies (PPESCO). These are similar to traditional ESPCs with the same delivery process (audit, proposal, contract, financing, installation, commissioning and training) with savings guarantees and ongoing M&V and reporting. The differences are that they target only public buildings, are smaller than traditional EPSCs (eg less than $ 1 million projects), operate as non-profits, uses capital from third party sources (eg Social Impact Bonds or Community Economic Development Investment Funds) and seeks lower rates of return. The Nova Scotia government has expressed interest in working with existing ESCOs to implement one project using this model as a pilot Efficiency Nova Scotia program. If successful, it may then become one of the programs that Efficiency Nova Scotia offers.
Quebec

Quebec has seen the birth of the development of the use of EPC 35 years ago through Econoler, a Hydro-Quebec subsidiary at the time. Since then, the Quebec government has been recognized as having been the most active and successful at promoting the use of ESPCs for the past 20 years. This has been largely accomplished through direct discussions between provincial ministries responsible for K-12, colleges/universities and hospitals and their related agencies, with those with the highest energy bills being explicitly told to use ESPCs to reduce their energy costs. It is interesting to note is that the by-law entitled Règlement sur les contrats de travaux de construction des organismes publics, chapitre C-65.1, r.5 specifically permits the use of ESPCs in Québec.

One of the more specific features of the process for selecting successful ESCOs in Quebec is the use of Net Present Value (NPV). This approach consists in a total of the discounted annual revenues from a project plus the residual value at the end of the project minus the initial project cost. This has been used as it has a number of interesting features; it can be considered an indication of the net value of different concepts for a project and is very simple to compare one proponents NPV with that of others. The weakness of the measure is that typically the contracts that are signed do not have provisions that relate to the failure to achieve these proposed savings and the residual value. Also, the residual value is a very imprecise number and one that is not known until the project is completed; proponents can thus include inflated residual values to make their NPVs appear very high.

Ontario

As noted previously, fully two thirds of all ESPC projects completed over the last 10 years in Canada have been completed in Ontario. Even excluding the 94 projects undertaken by one organization (Toronto Community Housing Corporation - TCHC), almost 50% of all the remaining projects were in Ontario. And this level of activity has been achieved by the most part without any clear leadership or advocacy for the use of ESPCs by the provincial government or any of their ministries or agencies.

Aside from the FBI program, the two programs undertaken by TCHC resulted in the largest investment by any other organization in Canada. The Building Renewal Program, which ran from 2005-2009, resulted in upgrades to 28 apartment buildings and 33 townhouse blocks. 6,926 suites in total. A total of $112 million was invested in building upgrades through the use of EPC. The subsequent Building Energy Retrofit Program, which ran from 2009-2012, resulted in upgrades to a further 26 apartment buildings and 5 townhouse blocks, 6,144 suites in total. A total of $57 million was invested in building upgrades through EPC contracts. Under both programs, important improvements to the buildings were made that included both energy and non-energy related upgrades.

One interesting development that could lead to increased interest in using ESPCs was the introduction of Regulation 397/11 under the Green Energy Act that require all municipalities, universities/colleges,
school boards, and public hospitals to begin submitting annual reports on their energy usage and resulting GHG emissions, starting in 2013. The same regulation also required these organizations to submit plans that include proposed measures to reduce energy and GHG emissions, starting in 2014. Ontario is the only state or province in North America that requires such reports. It has followed this initiative with a requirement that all commercial buildings disclose their energy consumption, starting with buildings over 250,000 sq. ft. in 2018 and then including all buildings over 50,000 sq. ft. by 2020. It is expected that both initiatives will increase the interest in seeking opportunities to reduce energy and GHG emissions, some of which could include using an ESPC. It is estimated that there is a potential 1.6 MT GHG reduction available in Ontario, which represents over 10% of the gap currently faced by Ontario in meeting its 2020 emission reduction target.

Another development of note in Ontario is the Tower Wise program developed by the Toronto Atmospheric Fund (TAF), now know as the The Atmospheric Fund, an organization created by the city with a $23 million endowment in 1991 to help it achieve its energy/GHG reduction targets. Tower Wise focusses on encouraging owners of rental apartments, condos or social housing to upgrade their buildings energy efficiency by using an ESPC. These are typically smaller projects which were often too small for traditional ESCOs to provide performance guarantees. Instead, TAF links owners with Energi, a private company that offers an insurance product that provides an energy performance guarantees for a fee, typically 2-4% of the project value. There are 7 case studies on TAF’s web site http://towerwise.ca/ consisting of 3 condos, 2 social housing units and 2 rental apartments.

The most recent development in Ontario is the Climate Change Action Plan. Released in 2016, it summarizes how the province intends to use the $8 billion of revenue that is expected to be generated under its new cap-and-trade program for pricing carbon emissions. This plan includes $380-500 million to retrofit social housing, $400-800 million to retrofit schools, hospitals and universities/colleges and $90-100 million for energy efficiency retrofits of its own buildings. One of the recommendations in this Plan is that the government “will enable the use of energy performance contracts across the OPS” (Ontario Public Service which consists of all government ministries).

**Manitoba**

Manitoba, mainly through programs managed by Manitoba Hydro, has been active in promoting energy efficiency for many years. Although there have been a few successful ESPC projects in the past, they have not been actively promoted by either the government or Manitoba Hydro.

This could change as the government is in the process of creating Efficiency Manitoba, a new crown corporation that will be mandated to achieve electricity savings of 1.5% and natural gas savings of 0.75%
per year for the next 15 years. Using ESPC to achieve these objectives could be among the opportunities that this new agency may consider.

**Saskatchewan**

There were 13 ESPC projects in Saskatchewan over the last 10 years, almost as many as there were in the other four western provinces. The main reason for this was that SaskPower, the provincially owned integrated electricity utility, actively promoted the use of ESPCs by its institutional customers. They also sought an ESCO partner to undertake this work and after a competitive bid, formed a joint venture with Honeywell. Their five year agreement was renewed for a further 5 year term. Like Alberta, Saskatchewan also offers long term capital to public enterprises through a debenture program.

A recent development of interest is the RFP that was issued by Saskatoon for an ESPC;

**Alberta**

Alberta Infrastructure managed the most active and successful program to promote the use of ESPCs in provincial buildings of any government to date in Canada. Initiated in 1995, retrofits were completed in over 150 facilities with various vendors for projects totally $28 million. It was estimated that these projects contributed to a 10% reduction in energy use over the decade that the program ran.

Another leading innovation in Alberta was the Capital Borrowing Regulation under the School Act. Initially passed in 1988 and later amended, it requires that if school boards borrow funds to retrofit a school to reduce energy consumption, the provider of the services must offer a performance guarantee. Recently, the Presidents of the Alberta School Boards Association (ASBA), College Of Alberta School Superintendents (CASS) and the Association of School Business Officials of Alberta (ASBOA) issued a joint letter to all School Board Chairs, Superintendents and Secretary-Treasurers encouraging them to investigate the potential of using ESPCs for schools in their boards. One of the leading boards using ESPCs is the Edmonton School Board.

The recent final report from the Alberta Energy Efficiency Advisory Panel “Getting it Right: A More Energy Efficient Alberta” included among its recommendations that the Alberta government consider expanding this mechanism to other institutions. It also added that a complementary action would be for the government to formally authorize the use of ESPCs for public sector buildings.

Alberta Health Services recently entered into ESPC contracts for the Alberta Hospital and the Royal Alexandra Hospitals in Edmonton with potential plans to use these contracts at other hospitals throughout Alberta.

**British Columbia**

22 Adelaide Street West, Suite 3400, Toronto, ON. M5H4E9
Tel: 416.357.1198
stuartgalloway@energyservicesassociation.ca energyservicesassociation.ca
The Green Buildings BC Retrofit Program was launched in 1996 and was designed to promote energy reduction in B.C.’s provincial building stock. The program was successful in assisting school districts, universities and colleges in undertaking energy reduction programs.

The second largest ESPC initiative in Canada was undertaken by BC Housing. From 2009-2012, energy and infrastructure improvements were made in 5,000 social housing residences in over 300 buildings; total project cost was $120 million. In addition to saving $3.3 million/year, GHG emissions were reduced by 5,000 tonnes with significant reduction in deferred maintenance backlog.

B.C.’s carbon neutral government program is legislated under the Greenhouse Gas Reduction Targets Act (GGRTA) and the Carbon Neutral Government Regulation. It requires all public sector organizations (PSOs) to follow a five-step process to achieve carbon neutrality. In their initial Energy Plan, it was estimated that there is a requirement for about $1.5 billion in energy efficiency upgrades.

**Facilitators**

As noted in the sections above, the federal FBI program as well as the Quebec government encourage public entities to employ independent facilitators to assist them with their projects. This has been a particularly important success factor when the project managers were unfamiliar with ESPCs.

There are nine main steps in the ESPC process, broken down into three stages. As noted in a recent article on the use of facilitators by skilled facilitator can assist in each:

Some ESCO clients have found this service to be critical. On the FBI web site, the following quote is made by Karen Dupuis of the RCMP Northwest Region “If the (FBI) facilitation services were not available, I don’t think we could have moved forward with this project. It just wouldn’t have gotten off the ground”.

**Conclusions and way forward**

At the federal level, it is encouraging that the recent federal budget allocated an additional $13.5 million, that the Department of National Defense have signed that they intend to use ESPCs to undertake major energy efficiency retrofits at every military base in Canada and that Treasury Board is now responsible for the Office of Greening Government operations and the achievement of the FSDS targets.
At the provincial level, the Energy Services Association of Canada has identified the following five policy recommendations, based on a review of best practices in other jurisdictions:

1. **Authorization that ESPCs can be used by public sector buildings** – Although ESPCs have been successfully used in every province, no provincial government has publicly acknowledged that government departments and the public sectors they control (Broader Public Sector or BPS) can use these contracts. Such authorization is also clear at the federal level in Canada and is promoted by NRCan’s Federal Building Initiative (FBI) program.

2. **Encourage governments/BPS to use ESPCs** – This is only done officially at this time at the federal level in Canada through the Federal Building Initiative.

3. **Identify lead management agency to promote use of ESPCs** – Provincial governments should follow the lead of the Federal government in this way. Indeed NRCan’s FBI program has this responsibility for all government federal departments.

4. **Empower lead agency with staff to promote ESPCs** –

5. **Use ESPCs to provide funding to match federal programs** – there is currently a particular opportunity to use ESPCs to provide the provincial portion of the matching grants for energy efficiency retrofits to green infrastructure and social