



# ***Energy Performance Contracting and the Residential Sector***

## **Introduction**

**C** MHC recently completed a study, entitled “Energy Performance Contracting and the Residential Sector.” Energy Performance Contracting (EPC) allows private firms to enter into arrangements with property owners to reduce the energy consumption of their buildings through customized energy —efficiency upgrades. Energy Service Companies (ESCO’s) provide a range of services including audits, financing, installation and maintenance and are repaid based on the client’s energy savings. Operating costs can be reduced and energy efficiency improved with no up-front costs and limited risks to the facility owner.

Despite the success of EPC in non-residential markets, virtually no applications in the housing sector have been achieved in Canada. To date ESCO’s have focused almost exclusively on commercial, office and institutional buildings such as hospitals and schools. ESCO’s have targeted these types of projects because they are sufficiently large scale, have simplified approval processes, and are easy to replicate. The residential market has been viewed as high risk, diffuse and difficult to manage. The objective of CMHC’s study was to determine if the EPC industry could successfully enter the residential market.

## **Study Findings**

A mature EPC industry currently exists in virtually every region of Canada.

EPC services in Canada are currently offered by 40 to 50 registered ESCO’s. These companies typically have total revenues from all services ranging from \$1 million to over \$1 billion. Much of the

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industry's success in non-residential sectors is attributed to organizational support from governments and utilities. For example, the industry's growth over the past ten years has been stimulated by two major interventions: the Guaranteed Energy Performance Program launched by Ontario Hydro to stimulate building retrofits through EPC; and the Federal Buildings Initiative (FBI), launched by Natural Resources Canada (NRCan) to reduce the operating costs of federal buildings by improving energy efficiency.

The industry has also improved its success by offering performance guarantees, and through effective marketing and innovative risk management arrangements, such as repayment based on monthly energy savings and energy savings insurance packages.

### **The EPC industry has successfully entered the US residential sector**

In the United States, about three million dwellings – mostly low-rise buildings – have been retrofitted under EPC contracts. Utility sponsored programs initially attracted ESCo's to the residential market where most retrofits were being done in single detached homes. As the US market shifts away from utility programs, social housing is becoming a very attractive submarket for EPC: the scale of the projects is large, the housing is in poor condition and there is a need to cut operating costs.

### **There is a market for EPC in Canada's residential sector**

This study included an industry survey of Canadian ESCo's to determine their level of interest in entering Canada's residential sector. ESCo's identified highrise apartments and highrise and medium-rise social housing as the market segments with greatest potential. These segments offer larger investment returns and greater control of day-to-day energy use in the buildings.

Overall, there is a substantial energy saving potential in the residential market, particularly in light of the aging condition of the housing stock. The total investment potential for the highrise market is estimated at \$550 million to \$650 million. Since about 10-16 percent of the housing stock is in need of major repair, energy management can be effectively combined with renovation work, representing a cost-effective piggyback opportunity.

### **Barriers to EPC entry into the residential market can be overcome**

ESCo's also identified the following barriers to EPC entry in the residential sector and possible responses to overcoming these barriers:

- The inability of ESCo's to control occupant behavior (e.g. heat levels, window openings) will reduce the effectiveness of upgrades, particularly in a rental context where most tenants have no financial incentive to conserve. To overcome this, ESCo's could educate occupants and maintenance personnel to gain their cooperation;

- The complexity of decision-making authority complicates the approval process. In response, ESCo's would have to customize contract structures and services to address the range of ownership and decision-making authority in the residential sector, (e.g. low-rise freehold housing, cooperatives and condominiums);
- Rent control restricts the return on energy upgrade investment. This can only be overcome through changes in legislation; and
- ESCo's in Canada prefer to deal with large contracts over \$500,000, which could be a problem for most segments of the residential sector. In response to this, ESCo's are willing to consider smaller project sizes (as small as \$3,000 to \$5,000), and would encourage the grouping of buildings to achieve economies of scale and an acceptable level of investment.

ESCo initiatives to minimize risk include:

- targeting priority markets, such as highrise rental apartments and social housing;
- using energy management measures that are proven and offer reasonably fast pay-backs; and
- customizing contract structures and services to meet specific residential needs.

Institutional intervention, particularly government/utility partnerships, was also considered to be an important prerequisite for entering the residential market.

The most appropriate third party initiatives include:

- facilitating access of ESCo's to social housing;
- briefing the financial and risk assurance industry about EPC and residential market opportunities;
- organizing demonstration projects for the industry and for building owners/managers; and
- providing endorsements to lend credibility to ESCo's.

## **Conclusion**

The study concluded by recommending that further research be conducted, including:

- an analysis of the potential for residential renovation contractors with no EPC experience to begin offering EPC services in the residential sector;
- an examination of the success of ESCo's in the US residential sector; and
- a thorough review of the investment potential in the residential sector, focusing on medium-rise and highrise housing.

The study also recommended that governments, utilities, ESCo's and the financial and insurance sectors develop a strategy to facilitate EPC entry into the residential sector. The strategy would focus on increasing market access

and reducing the risk to a level comparable to other EPC market sectors. It would also target high priority markets (highrise rental apartments and medium-rise and highrise social housing) and build on the success of existing services, financing packages and promotional techniques. If possible, it would include a demonstration project that would showcase innovative approaches, such as financing arrangements, risk management techniques, and energy management measures). Finally, promotional and educational products could be developed for building managers and owners, the financial and insurance sectors, and other decision makers.

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