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Energy Savings Performance Contracting: An Important Resource in India's Pursuit of Sustainable Development

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Energy efficiency is a key, economical resource for India's pursuit for sustainable development and Environment protection. Significant energy and cost savings can be achieved through the energy management of on hand systems. The implementation of fresh energy proficient technology in equipment and practices can help facilities to accomplish enhancement in productivity, environmental emissions, and quality of service. Energy Performance Contracting (EPC) or Energy Savings Contracting System (ESCS) is a modern financing technique that utilizes cost savings from reduced energy consumption to repay the cost of installing energy conservation measures. Thus, Energy performance contracting (EPC) is a demonstrated and globally accepted means for reducing the operating costs and environmental impacts. EPCs are provided by Energy Service Companies (ESCOs). Until now in spite of government support for EPC, India's ESCO industry is still in juvenile state.

INTRODUCTION

Every class of energy use, assume the four fundamental ways to reduce energy cost:

a) Decrease the price of the purchased energy

b) Decrease operating hours of the energy using equipment

c) Decrease the load or the need for energy

d) Raise in the operating efficiency of the energy using equipment

Energy Savings Performance Contracting (ESPC) is a contracting process in which a private service provider (typically called an energy services company or ESCO) assesses, designs, finances, acquires, installs, and maintains energy-saving equipment/systems for a client and receives compensation based on the energy consumption / cost savings performance of those equipment / systems. The investment in new equipment is reimbursed with the increasing savings in energy, water, and energy related cost savings (Turner and Wayne, 2001).

The Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 on Energy End-use Efficiency and Energy Services (Energy Services Directive) established the following terminology (Marino et al, 2010):

- "Energy Performance Contracting" (EPC): a contractual arrangement between the beneficiary and the provider (normally an ESCO) of an energy efficiency improvement measure, where investments in that measure are paid for in relation to a contractually agreed level of energy efficiency improvement;
- "Energy Service Company" (ESCO): a natural or legal person that delivers energy services and/or other energy efficiency improvement measures in a user's facility or premises, and accepts some degree of financial risk in so doing. The payment for the services delivered is based (either wholly or in part) on the achievement of energy efficiency improvements and on the meeting of the other agreed performance criteria;

Potential equipment/system retrofit projects engage lighting, HVAC systems, automatic controls, building envelope enhancements, water preservation measures, and alternative fuel systems. Such contracts can be signed for time up to 25 years. In particular when small or no domestic financial support is presented, ESPC can be a successful medium by which energy conservation measures can be implemented (U.S. Navy, 1994).

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Such kind of contracting provides an efficient substitute for implementing energy saving projects when installation resources such as manpower, technical expertise and/or domestic funding are in short supply or merely not presented (Buckley and Chapman, 1997; VINE E. 2005).

Connection between energy conservation programs and environment protection

The prime relationship between energy conservation programs and environmental initiatives is the advantage to the environment of a decline in energy consumption. When electricity is generated, three principle pollutants are released from the power plant: sulfur dioxide, nitrogen oxides, and carbon dioxide.

When sulfur dioxide and nitrogen oxides are emitted by power plants and automobiles, they mix with water vapor, turn into sulfuric and nitric acids, and fall to the ground in the form of rain, snow, fog, or acidic particles. "Acid rain" damages buildings, trees, and other vegetation and can harm aquatic life.

Smog is caused by various pollutants. Nitrogen oxides are a primary ingredient in this corrosive mixture that is harmful to humans. At best, smog irritates the eyes and lungs. At worst, it can intensify respiratory ailments, including asthma and bronchitis. (Herring and Roy, 2007).

Advantages of Energy Savings Performance Contracting

Energy Savings Performance Contracting has following advantages (A Best Practice Guide to Energy Performance Contracts, 2000):

- ESPC will offer better, safer functioning and living environment.
- Contracts assure energy operation and maintenance price savings.
- Reduce the GHG (green-house gas) emissions; at the same time as also reduce costs and increases competitiveness along with improved energy efficiency.
- Reduces of operating costs;
- Facility improvement;
- Potential to focus on improving the quality of the indoor environmentindoor air quality (IAQ);
- Environmental benefits.
- Training and implementation of sustainable energy practices.

The Energy Performance Contracting (EPC) market has numerous key drivers that include the following:

- Savings Mandates EPC may act as the evasion method for implementing energy efficiency projects in those governments which are progressively mandating insistent energy savings goals for public facilities however, are not providing extended capital budgets to pay for energy efficiency improvements.
- Facility Modernization Those market facilities that in general lack for capital and maintenance budget may use EPC projects to obtain the needed facility progression. The measures in an EPC project improve building performance as well as saves energy. Lighting, temperature conditions and ventilation are all improved, which also has a considerable effect on the productivity of building occupants, whether they are workers or students.
- Green Buildings "Energy Efficiency Pays for Green," which this focus in mind the facility owners who intend to "Green" their buildings/structures often implement EPC projects. The green measures finance the installation of renewable energy measures through a long-term EPC contract. Thus, the savings obtained from energy efficiency measures helps to finance the renewable measures.
- Climate Change The organizations that are trying to meet state mandates for GHG (Green House Gas) reductions keep energy efficiency as their primary choice. Further, the revenues that will be attached to carbon trade regimes are expected to deliver more widespread EPC projects that involve renewable technologies, because these carbon trading income are over and above the energy savings revenues that today finance comprehensive energy efficiency EPC projects. The development of supplementary revenue flow creates different project economics that can support the use of more costly technologies like renewable energy.
- Utility and ISO/RTO Capacity Programs EPC projects, which can be self-financed through energy savings, are an attractive alternative for the State regulators that face utility applications to build a new generation of power plants. So,

they are increasingly looking to large-scale energy efficiency programs as an alternative.

CONCLUSIONS

EPC projects focus at the deployment of comprehensive solutions for improving energy efficiency. This type of contract would help to overcome financial constraints to energy efficiency investments by paying off initial costs through the future energy cost savings resulting from reduced energy consumption. ESCOs have long been likely to have an significant role in encouraging energy efficiency. While the concept of ESCOs is very popular in the western countries, the growth of the ESCO industry in India has not taken place in spite of constant efforts by the Government. One of the Government reports highlights deficiency of knowledge from building owners on the performance contracting route for energy efficiency improvements, high transaction costs in preparing documents for bid requests and a lack of true ESCO's who identify with the ESCO concept and who can fetch in third-party financing for the projects as barriers to immature markets of EPC in India. In India most of the ESCOs are often equipment companies that focus on sales of a single technology, rather than a group of energy conservation measures. Lack of technical expertise in these ESCOs to undertake comprehensive energy efficiency measure is a major barrier to EPC in India. However, enormous growth potential for ESCO activity in India has been estimated given financial and policy support.

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