

Business and Technical Concepts for Deep Energy Retrofit of Public Buildings

ANNEX 61

Stringent targets for reductions in energy use in government / public buildings are now becoming more common in many industrialised countries. However, the funding and <know-how> (applied knowledge) available for owner-directed energy retrofit projects has not kept pace with new requirements to increase the number of energy retrofits and to improve the energy efficiency of existing buildings. In recent years, the Energy Savings Performance Contract (ESPC) has proven to be a very energy and cost efficient tool in some countries. This project aims to increase the acceptance of ESPCs, and to broaden the implementation of deep energy use reduction through refurbishment of existing buildings using ESPCs.

To date ESPCs have been used primarily as instruments for retrofitting heating, ventilating, and air-conditioning (HVAC) systems, lighting systems and controls. Implementation of certain individual measures (for example building envelope insulation and improved air-tightness, or co-generation) results in significant reductions in building heating and cooling loads or minimization of energy waste, but requires significant investments with long paybacks. However, when different technologies are implemented together, or are bundled, they can result in significant energy use reductions, require smaller investments, and consequently have faster paybacks.

Deliverables of this project are:

- a guide for deep energy retrofit of buildings and communities,
- business models of deep retrofit using combined public and private funding,
- documented results of realized projects and case studies demonstrating the developed models.

PROJECT OBJECTIVES

- 1 provide a framework and selected tools and guidelines to significantly reduce energy use (by more than 50%) and improve indoor environment quality in government and public buildings and building communities undergoing renovation,
- 2 gather and, in some cases research, develop, and demonstrate innovative and highly effective bundled packages of ECMs for selected building types and climatic conditions,
- 3 develop and demonstrate innovative, highly resource-efficient business models for retrofitting / refurbishing buildings and community systems using appropriate combinations of public and private funding such as ESPCs and other concepts to be developed together with the building owners,
- 4 support decision makers in evaluating the efficiency, risks, financial attractiveness, and contractual and tendering options conforming to existing national legal frameworks, and
- 5 engage end users, mainly building owners and other market partners in the proceedings and work of the project.

INTERNATIONAL ENERGY AGENCY

The International Energy Agency (IEA) was established as an autonomous body within the Organisation for Economic Co-operation and Development (OECD) in 1974, with the purpose of strengthening co-operation in the vital area of energy policy. As one element of this programme, member countries take part in various energy research, development and demonstration activities. The Energy in Buildings and Communities Programme has co-ordinated various research projects associated with energy prediction, monitoring and energy efficiency measures in both new and existing buildings. The results have provided much valuable information about the state of the art of building analysis and have led to further IEA co-ordinated research.

EBC VISION

By 2030, near-zero primary energy use and carbon dioxide emissions solutions have been adopted in new buildings and communities, and a wide range of reliable technical solutions have been made available for the existing building stock.

EBC MISSION

To accelerate the transformation of the built environment towards more energy efficient and sustainable buildings and communities, by the development and dissemination of knowledge and technologies through international collaborative research and innovation.



Residential building renovation in Karlsruhe, Germany.

Project duration

Completed (2012–2017)

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Further information

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