

Grid Integrated Control of Buildings

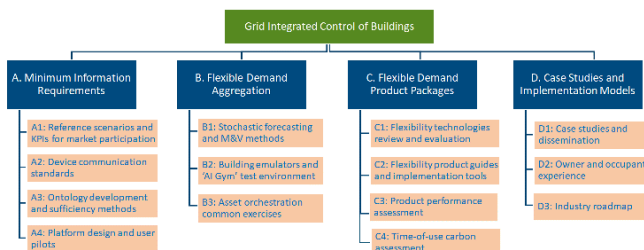
EBC ANNEX 96

This research project is building on the work of the EBC projects 'Annex 67: Energy Flexible Buildings', 'Annex 81: Data-Driven Smart Buildings' and 'Annex 82: Energy Flexible Buildings Towards Resilient Low Carbon Energy Systems'. It is providing building owners and energy market participants with a framework of concepts, procedures, tools, and evidence that can enable trustworthy, automated, cost-effective trading of flexibility resources from buildings at scale.

It is considering the technologies available for delivering flexibility from heating and cooling systems in individual buildings with a focus on supporting the adoption of simple, repeatability scalable solutions. The project is also considering the digital infrastructure necessary for coordinating and automating the dispatch of large numbers of flexible load resources, in local and national energy markets / schemes. In addition to this, it is examining the ability of flexible energy resources to reduce carbon emissions, based on time-of-use grid carbon intensity.

PROJECT OBJECTIVES

- 1 advancing the technology readiness level of flexible load technologies available in buildings
- 2 developing the digital framework(s) for exposing flexible load resources to energy markets / schemes
- 3 demonstrating the potential for automating flexibility aggregation and orchestration processes through modern digitalisation technologies
- 4 assessing the potential to use flexible loads to reduce emissions in buildings, by better matching demand with grid time-of-use emissions
- 5 driving adoption of project results through case studies, business model innovation and results dissemination



The four main project activities, focusing on grid / aggregate level resource management and building / site level delivery of flexibility.

Source: EBC Annex 96

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.

The following project deliverables are planned:

- A set of reference scenarios describing how flexibility can participate in relevant markets, and the associated user requirements.
- A guide to monitoring and verification for flexible demand financial settlement.
- An assessment of technologies for delivering flexible demand from heating and cooling services.
- A report on the potential for flexibility to reduce emissions when measured on a time of use basis.
- Web portal for viewing case studies of flexibility in real world applications.
- Industry roadmap report explaining intervention opportunities to grow the flexible demand industry.

Project duration

Ongoing (2024 - 2028)

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Participating countries (provisional)

Australia, Belgium, Brazil, Canada, P.R.China, Denmark, France, Germany, Korea, Norway, Portugal, Sweden, USA

Further information

www.iea-ebc.org