

Smart Buildings: *Energy Efficiency First!*

Position Paper

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Buildings are a crucial part of the EU energy system

The Energy Union Framework has set out the big lines for a competitive, sustainable and secure EU energy system. Its five interconnected dimensions¹ are a challenge to all levels of governance in the EU and it is imperative that its objectives are achieved so that the EU can reach its 2030 targets and long-term 2050 goals. Within this context, buildings must be seen as a crucial element of the solutions that the EU must adopt in the coming decades because in addition to using about 40% of all energy produced in the EU, they are central to the well-being and health of all EU citizens as we spend about 90% of our time in buildings. The EU has initiated several consultations that affect buildings² without establishing a common understanding of what a *Smart Building* is.

This note sets out the EuroACE definition of what a *Smart Building* is. EuroACE and its member companies, propose that it be adopted by policy makers as the definition that underpins the phrase *Smart Building* in all future policy and legislative initiatives.

Smart buildings are first highly energy efficient so that they can play their role in the EU energy system

Given the increasing scarcity of resources, including energy sources, and the negative impacts that their exploitation is having on the climate, on the environment and on public finances, it is essential that the EU optimises to the maximum extent possible the efficiency and effectiveness with which those dwindling resources are used. For the energy system, this means that buildings, whether new or undergoing renovation, must firstly be made as energy efficient as possible, reducing their energy demand and decreasing the time needed for heating or cooling a building, thus making it comfortable, healthy and responsive to a changed energy system.

A highly energy efficient building is the starting point for a smart neighbourhood or city, a prerequisite for smart development in the EU. As they keep warm and comfortable for longer with less energy input, they can play a more active role in demand response, in load shifting and in energy storage as outlined below.

Smart buildings can play a major role in demand response, energy generation and energy storage

With the emergence of a greater level of de-centralised energy production in the EU, the installation of smart meters in homes and businesses and the incorporation of smart chips in appliances and equipment, buildings will occupy a central position in the overall energy system. Through the installation of smart chips and smart meters connected to smart grids, buildings can contribute to demand response by permitting automatic deferral of demand, thus helping to manage energy.

¹ The five dimensions are: (1) Energy security, solidarity and trust; (2) A fully-integrated internal energy market; (3) Energy efficiency as a contribution to the moderation of energy demand; (4) Decarbonisation of the economy and (5) An Energy Union for Research, Innovation and Competitiveness.

² For example: the public consultation on the Energy Performance of Buildings Directive, the preparation of the Smart Financing for Smart Buildings initiative and the consultations on the Heating and Cooling Strategy to name just a few.

Through the judicious incorporation of renewable energy sources at building level, they can produce energy and, by virtue of the incorporation of energy storage³, buildings can become grid stabilisation resources, absorbing excess production for later use, a factor that will have a greater impact on the energy system in the future.

In short, smart buildings can be energy consumers, energy producers and energy managers and thus play a crucial role in the future of the EU Energy Union. In fact, they must be made to play this new role so that the EU can prosper in the future.

Smart buildings must enjoy full interconnectivity within the energy system

Once a building has been brought to its optimum level of energy efficiency it can be connected through smart grids to its neighbourhood, to service providers and to the local authorities. Through this full interconnectivity the building becomes an integrated element of the energy system and is released to play its full role in ensuring a stable, competitive, sustainable and secure energy system on which the future prosperity of the EU rests.

Smart building protect users' data

A *Smart Building* also makes extensive use of available information about the operation of the building and its environment, including computerised optimisation of its systems during the hours of occupation. The performance of the building is controlled and monitored in a way that is easy, informative and empowering to the owner or occupant so that the right decision on the long-term operation and performance of the building can be taken on the basis of real data. In this way, consumption patterns can be collected and used for the management of the building and for informing future maintenance and renovation strategies.

However, in collecting this valuable data, a balance has to be struck between the rights to privacy of building owners and occupants and the need to mine the data to plan for the future. The data must be aggregated in order to make it anonymous, whilst retaining the right level of detail so that planning decisions for the future management of the building are taken on the basis of reliable data.

A **Smart Building** is therefore a building where energy efficiency comes first, where the right materials and equipment have been specified and installed and which is connected through the smart grid to its neighbourhood. It has a functional, comfortable and healthy indoor environment and its intrinsic low energy demand enables the cost-effective use of renewable energy sources. Being fully integrated into the wider energy system it can, through demand response and energy storage, ensure increased flexibility and deliver better value to owners and occupants. A *Smart Building* empowers its owner or occupant to take informed decisions about energy use throughout the lifetime of the building through the provision of reliable, protected, real-time data.

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³ This can be achieved, for example, through heat stores, batteries, phase change materials etc.

For further information

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About EuroACE

EuroACE represents Europe's leading companies involved with the manufacture, distribution and installation of energy saving goods and services for buildings. EuroACE members employ over 315 000 people in these activities in Europe, and have around 880 production facilities and office locations. The mission of EuroACE is to work together with the EU institutions to help Europe move towards a more efficient use of energy in buildings, thereby contributing to Europe's commitments on climate change, energy security and economic growth.

EuroACE Members (October 2015) are

