EASE comments to
EU Heating and Cooling Strategy Consultation Forum
Issue Papers I to V

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Transparency Register:
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Introduction

EASE appreciates the opportunity to comment in advance on the Issue Papers provided by the Commission in preparation of the *ad hoc* Heating and Cooling Consultation Forum taking place on Wednesday, 9 September 2015. The Issue Papers are extremely well written and interesting.

We are pleased to see that the Commission is working in the area of heating and cooling strategy and we are committed to responding to any ensuing communications/consultations from the Commission in this area.

EASE – representing the voice of the energy storage community, actively promoting the use of energy storage in Europe and worldwide – remains at the disposal of the Commission for any additional support. Since our foundation in 2011, we have been the European platform for sharing and disseminating energy storage-related information. We call on the Commission to keep EASE as the principal contact point for all matters related to energy storage.

We have some comments and concerns, primarily around omissions in these documents rather than what has been currently included. In this document, we will outline our high level comments on the series of five Issue Papers. Additional and more specific input was provided directly on the Issue Papers II to V in track change mode or comments[1].

[1] Available as attachments to the email: "EASE_Consultation Forum 09092015 – Issue Paper II – Heating and cooling use in industry and the tertiary sector"; "EASE_Consultation Forum 09092015 – Issue Paper III – Technologies for heating and cooling"; "EASE_Consultation Forum 09092015 – Issue Paper IV – Linking heating and cooling with electricity" and "EASE_Consultation Forum 09092015 – Issue Paper V – Integrated planning and mapping and scenarios for heating & cooling".

Issue Paper III

General Comments

In general, we believe that this document is a very comprehensive description of the current state of the art and usual scenario but more specific issues/challenges are not highlighted.

We found that it is missing the importance of electricity out of renewable sources for the decarbonisation of buildings. We tried to express the logic of this assumption in the proposal for Figure 1. The majority of primary renewable energy is PV and wind; transformed into electricity and then utilised in different applications, in this paper reflecting heating and cooling. The primary energy sources drive the renewable content for the heating and cooling system. Electric driven cooling and heating is therefore a major milestone for the decarbonisation of heating and cooling use in buildings, when using renewable electricity. In combination with storage capabilities in smart grids it is a key technology with other electrical heating for the success of decarbonisation efforts.

The document assesses the technological « prowess » of certain solutions, but does not sufficiently address how the building envelope, user interaction, energy management and said technologies interact. This is why an integrated approach must be used. We believe a more holistic and technology agnostic approach should be used when discussing technologies and no relevant technologies should be favoured over others or indeed omitted.

Smart Heating

In point no. 2 the notion of smart heating is mentioned – *modern heating systems* – but not further developed. We believe that smart heating systems should be explained further.

Smart electric heating technologies offer between 15-40% energy savings when switching from a traditional electric resistive heater to a smart electric heater with energy saving functions such as programming, open-window detection, absence detection etc. And as the role of the user is paramount in true energy savings, user-information (indications on how to best optimise use of ones' system) increases the chances of successful savings. Finally, there are already existing technologies of smart electric heating systems that can communicate with the grid and the meter, and such solutions need to be promoted. Advanced Demand Side Management (DSM) solutions are truly optimised to full potential when integrated with room-by-room, smart electric heating solutions.

Smart Electric Thermal Storage

There is no mentioning at all in any of the Issue Papers of 'Smart electric thermal storage' (SETS) which we believe is an omission and should be included[2]. This is the concept of using thermal storage in space and water heating to store renewably generated energy from PV or from a decarbonised grid. In this way we can facilitate renewables and the decarbonisation of the grid and of heating at the same time. The future electricity grid, based on a rapidly growing share of renewables, will face a rapid reduction of spinning reserves, and thus

[2] References to thermal storage should include also cold storage for cooling services.

voltage and frequency stability will face fast growing problems. Smart electric heating systems (including SETS) can offer new services to stabilise the grid within seconds.

The potential value from SETS participation within the EU power system has been estimated in a report by Kema (now DNV GL)[3].

Finally, we highlight the importance of ensuring coherence between the different EU Directives and Regulations related to the energy system and its consumptions. For instance, the Ecodesign Directive (labelling of energy appliances) will apply a very low label rating to heaters including thermal storage, due to the decrease of efficiency with thermal losses. This low rating can potentially exclude these technologies – which could be combined with thermal storage in order to increase the share of renewables in the heating sector – from the market.

Figure 1: Categories of Heating and Cooling Technologies

We believe that the diagram on page 2 is misleading. We would like to propose another diagram – see Issue Paper III – (or something similar) be used, which also includes the cross-cutting technologies under mentioned in section 7.1 (page 29).

Section 4.3 Heat Pumps

We believe that there should be reference made in this section to the linking of heat pumps to domestic solar PV. Furthermore we notice that there is no differentiation made between the types of heat pumps used in different types of buildings i.e. A high flow temperature Air Source Heat pump would be most suitable for an existing, older building (as opposed to a new build property). The general perception given in this section is that heat pumps are only low temperature solutions and this is a negative perception which could impact the commercial uptake of heat pumps in the market.

It is recognised that the uptake of heat pumps will increase in the coming years as the electricity generated from renewable sources increases and heat pumps will play an important role in the decarbonisation of heating. However, there are millions of conventional electric heating systems already installed around Europe, such as electric night storage heaters which could be retrofitted with Smart Electrical Thermal Storage and would thus become smart grid ready and be used for not only heating but energy storage, demand side management and grid services.

Section 4.4 Hybrid Applications

There is no reference in this section to linking heat pumps to Solar PV or to electric thermal storage combined with smart ICT technology, e.g SETS. We believe these points should be included. Smart hybrid heating systems based on electrically driven heat pumps and electric heaters and maybe also batteries will deliver even more and better services while empowering the citizens for self-generating and self-consuming cheaper electricity and heat while providing stability services to the grid.

[3] Kema, 2013 – Potential for Smart Electric Thermal Storage Contributing to a Low Carbon Energy System, Report commissioned by Glen Dimplex and SSE Plc.
Available online at: http://www.dimplex.co.uk/assets/Downloads_PDF/Kema_Report.pdf

Issue Paper IV

In general, this paper provides quite general information; more information on some issues would be appreciated. As an example, no technical constraints (e.g. characteristics of the District Heating Network mentioned) described.

The content of the paper does not exactly match its title. The content is about flexibility of the electricity market and not only in relation with the Heating and Cooling markets.

In this regard, EASE points out that all energy storage technologies are sources of flexibility and the economic evaluation of different storage technologies needs to be taken into consideration. Electricity storage technologies and chemical or thermal energy storage cannot be compared from the economic point of view without making any distinction on the TRLs and application (short term or seasonal storage etc.). For a realistic comparison, the energy carrier that is stored should also be considered.

Overall a description of heat storage technologies is missing in the annex. Also, we are missing detailed description of still open research topics. We provide a broad, technology-neutral and widely accepted matrix to support the Commission and we believe that this approach should be included in the body of the document and also in Annex 1. Please see also http://www.ease-storage.eu/technologies.html.

Issue Paper V

The document confirms that renewables (thus producing electricity) are projected to become the main source of EU energy from 2030 onwards, while at the same time, energy demand will have to decrease significantly. Further, the projections show an evolution towards more electrical appliances, with the number of central heating units and direct gas heating units plating in the 2030s and electric heating appliances rising significantly. This is further reason to facilitate the introduction and promotion of high performance, efficient electric heating solutions that interact with users, the building envelop, active energy management systems, and the meters for the overall benefit to be attained. This should not be limited to heat pumps and micro-CHP, but decentralised, installed smart electric heating and smart electric thermal storage solutions also.

Other comments

There is no reference in these Issue Papers to the use of locally produced electricity from PV systems on residential homes for either water or space heating. Battery storage is mentioned for some countries for storing PV electricity, but thermal stores (water cylinder, storage heaters and PCM (phase change material) stores) are not. Considering that about 40% of our electricity is used for heating, both solutions should be promoted in parallel.

Furthermore, when electricity is mentioned in these papers as an energy source, there is a distinct lack of explanation regarding the benefits of using electricity from renewable sources. There should be more explanation in these documents on the impact of renewable electricity in heating and cooling.

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The European Association for Storage of Energy (EASE) is the voice of the energy storage community, actively promoting the use of energy storage in Europe and worldwide.
EASE actively supports the deployment of energy storage as an indispensable instrument to improve the flexibility of and deliver services to the energy system with respect to European energy and climate policy. EASE seeks to build a European platform for sharing and disseminating energy storage-related information. EASE ultimately aims to support the transition towards a sustainable, flexible and stable energy system in Europe.

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