# Summary

APPLiA represents the home appliance sector in Europe. In general, our sector is a promoter of energy smart appliances and Demand Response technologies in Europe. In addition, our sector has historically supported Ecodesign regulations and their results. We are interested to pursue solutions that are meaningful for all stakeholders, consumers first. Therefore, we welcome the opportunity to provide our feedback on the Task 7 Report released in October 2018. Please find below several key remarks and suggestions.

## General commnents

* 1. Definitions

We believe it is crucial to apply one, single definition of energy smart appliance throughout the European Commission’s various legislative activities. In addition, we very much welcome the distinction that has been made between the different control architectures (i.e. direct flexibility interface, indirect flexibility interface and internal measurement interface), as it clearly separates those products with capabilities for two-way communication with the external world and able to understand and react to external input (the energy smart appliances) and products able to read frequency on the power line in real-time and react accordingly, shifting on or off based on the frequency value (i.e. frequency control). This distinction is not just important for technical reasons, but also because these different kinds of products interact in a completely different way with the end consumer and will deliver value to different actors in the energy system. We therefore strongly support the fact that the internal measurement interface has been moved out of scope of the study.

APPLiA would like to recall the definition of a smart applaince in Regulation (EU) 2017/1369. The definition of energy smart appliance in the Final Report Task 7 includes also examples of local measurements such as “mainly volatge and frequency” which is abundant and might be confusing. We would therefore suggest removing this part.

* 1. Basic principles

**Consumers** are central and should be considered first and foremost when developing outlook policy options. Therefore, Energy Smart capability should not be mandatory on the appliance level. The smart icon, as opposed to minimum Ecodesign requirements, has the potential to stimulate market uptake, innovative solutions of the industry, and keep the freedom of choice for the consumer. Adding a “non-Energy Smart icon” would be redundant, create unnecessary clutter on the label and lead to confusion for consumers.

**Evaluated benefits:** while the rationale for the energy benefits delivered by Energy Smart Appliances presented in the study is agreeable, the quantification of the savings gained by the different appliances remains undervalued.

**Interoperability:** any single data model and application protocol should be driven by industry. Any standardisation process needs to be open, flexible and lightweight, allowing for innovative market developments and changes in technology.

**Clear definitions**: to ensure predictability and legal certainty, it is vital to apply one, single definition of Energy Smart Appliances throughout the relevant legislative activities, clearly separating the Energy Smart Appliances from products capable of frequency control – the latter being outside of the scope of the study.

* 1. Use cases and standards

As an industry, we have defined the relevant use cases for Demand Response capable products, and those use cases have been standardised by CEN/CENELEC and ETSI, within the broader list of Smart Grid use cases (such as load shifting to reduce consumption at peak time and smart start to use lower tariff or green energy). We strongly suggest that the study – and more importantly – the regulatory process considers these cases when defining the required product functionalities.

* 1. Evaluated benefts

APPLiA believes that the presented monetary value and forecasted benefits of Energy Smart Appliances are not an accurate representation of the market. In addition, the presentation in the study penalises certain appliances while overestimating others. Home Appliances are already highly energy efficient products. Therefore, the monetary value received from the Energy Smart Appliances is not necessarily very high. Nevertheless, we believe that the study undervalues the benefits that Energy Smart Appliances can deliver, both for energy consumption and for financial savings.

This can be demonstrated by Electric Storage Water Heaters, some of which are continuously heated, while others are heated overnight (i.e. night storage). The values presented in the report are only realistic for continuously heated water heaters. For water heaters that are heated overnight, the maximal average shifting time can easily reach three to five hours, without any impact on consumer comfort. Due to this unrealistic calculation, the conclusions are inherently underestimated. In addition, the study didn’t consider the benefits that could be gained from technology shifts – for example, shifting from continuously heated water heaters to night storage water heaters. So, while the rationale for the energy benefits delivered by Energy Smart Appliances presented in the study is agreeable, this is not the case for the quantification of the savings gained by the different appliances.

In addition, APPLiA believes that storage heaters need to be acknowledged specifically in the ‘in-scope’ list of products. Covering these appliances under electric radiators with inertia would not be representative of the products on the market and the range of functionality available for Demand Side Flexibility. Off-peak storage heating has a significant amount of value with regards to flexibility, which is why it does not make sense for these products to be bundled together, both in the study and in any subsequent potential measures.

* 1. Scope of future requirements for a smart icon

Following the previous point on Evaluated benefits, APPLiA believes that night storages should be included in the scope of proposal for a possible future Energy smart icon.

* 1. No mandatory requirements

APPLiA welcomes the study’s recommendation for a smart icon on the Energy Label as the preferred policy instrument. The smart icon, as opposed to minimum Ecodesign requirements, has the potential to stimulate the market uptake of Energy Smart Appliances in a positive way. In contrast, minimum Ecodesign requirements – even if applied only for those product categories with a relatively high flexibility potential, as suggested by some Member States – would not be favourable to consumers.

Consumers would not be motivated to learn and understand what the Energy Smart functionality is, or how it would need to be activated to help the electric grid. As a result, they would not benefit financially from the Energy Smart functionality inside the appliances that they purchased. On the other hand, the additional electronics needed for the functionality have a cost, which would ultimately be financed by the consumer.

In addition, the most sensitive consumers may be discriminated by a mandatory approach. Some consumers choose not to have internet connection at home or cannot afford an internet connection. If this means the Energy Smart functionality cannot be made operational, these consumers would be forced to finance additional technology in appliances, while it would not be of any use for them, nor would it be useful for balancing the electric grid. The additional cost for this group of consumers, of a mandatory approach, would be significant as electromechanical products could no longer be sold. If Energy Smart functionality would become mandatory, only products with electronic control could be sold. This product segment would have a much higher additional cost to become connected than what has been shown in the study, as all controls of the appliance would have to be electronic to make the product connected.

Therefore, market demand needs to drive the evolution towards Energy Smart Appliances. Creating the right market conditions to make consumers demand Energy Smart Appliances would be the most efficient, fastest and balanced way to gradually establish an installed base of products that could support Demand Response. Consumer demand would push the industry to compete and to improve the products in terms of cost and performances, to meet the demand of the consumers.

* 1. On strategic decisions

#### Energy smart appliances should be able to function with and without the presence of a local energy controller

We would like to ask for clarification on this point. Technically, it is not possible to use both options at once. We would therefore suggest modification as follows: *Energy smart appliance should be equipped with a technology that can communicate/operate with a controller either locally or externally.*

#### Energy smart appliance should be able to receive instructions from a controller inside and outside the customer home network

We support the principle behind this statement however we believe it should be phrased as follows: *Energy smart appliance should be able to communicate to a controller regardless if the controller is inside or outside of the customer home network.*

* 1. *Energy smart icon*

The Energy Smart icon needs to ensure the visibility of the product on the market in the sense that it is ready to communicate in terms of Demand Side Flexibility. A simple symbol should be sufficient and chosen in such a way that it is transparent and easy to understand for consumers. If any wording would be suggested for the icon, we suggest being in line with the wording that is used in the study, i.e. Energy Smart.

Providing one icon to indicate that a product is Energy Smart would provide the most clarity for consumers: if an appliance is Energy Smart, it will have an Energy Smart icon on the Energy Label or added in the Ecodesign information requirements. If the appliance is not Energy Smart, the appliance will simply not have an icon. If there is no Energy Smart icon on the appliance, it inherently means that the product is not Energy Smart. Adding a “non-Energy Smart” \_icon to the label or to the Ecodesign information requirements would be redundant and add unnecessary clutter on the Label. In addition, it may be confusing to consumers to have a “non-Energy Smart” icon, on top of an Energy Smart icon.

For example, HVAC products usually consist of different components that may or may not be Energy Smart. However, even if the individual components are not Energy Smart, they may become Energy Smart when they are put together and become the assembled appliance. For this, the present market reality and diversity need to be carefully considered.

It should be possible to promote a **set of components** complying with the requirements of an Energy Smart Appliance as being Energy Smart, and the Energy Smart icon must be able to clearly inform the consumer about the smart possibilities of the set, and to promote the Energy Smartness of the product as a whole. This already exists in the Ecodesign and Energy Labelling Regulation for Lot 1 products, where not only an individual component is considered, but also the set, and Energy Labels are described for “packaged” appliances. A set of components that form an Energy Smart Appliance can consist of an incremental number of parts and can even be combined with cloud applications.

Having an Energy Smart icon on the label should furthermore not result in a rescaling, or including bonuses on the energy classification. This would mislead the consumer, since not in all cases Demand Side Flexibility will result in reduction of energy consumption. On the other hand, it should also be ensured that Energy Smart Appliances are not penalised for the extra Energy Smart functionalities they have (which may use slightly more energy).

Lastly, to avoid any confusion, it would be best to introduce an Energy Smart icon only at the date of revision of the Energy Label, on a product by product basis.

* 1. Vertical approach

APPLiA welcomes the suggested vertical approach of the study, as it considers the fundamental different nature of the products involved. Depending on the product, the approach for Demand Side Flexibility is different. We therefore support that the horizontal requirements are applied only where possible, to keep the necessary freedom for different innovative solutions that can be adapted to specific product needs and opportunities.

Furthermore, we believe that over-specification of the requirements for the Energy Smart icon needs to be avoided, since this can hamper innovation in a fast-moving market. Detailed requirements may be specified in standardisation, where technological changes can be followed more efficiently. An example of a Technical Committee engaged in this work is CENELEC TC59X. In addition, to avoid double or contradictory regulation, additional technical requirements that are already covered by other legislation (for example related to cybersecurity or privacy) do not need to be covered in the requirements for Energy Smart Appliances.

* 1. External controllers

Regarding the thermal appliances group, we are concerned about the consultant’s initial suggestion to exclude appliances with external controllers (‘controller’ as defined in the Task 7 draft report), as this may create an unfair competitive advantage for products with integrated controllers. A lot of heating products are sold onto the market today with external controllers (e.g. heat pumps with zoned heating controls). The ability to provide external controllers can allow for more advanced system capabilities, and the decision to exclude from the scope would eliminate a large proportion of flexible products from being able to apply the energy smart label. The heating and cooling market is a very modular market where appliances consist of several separate components. In our view, a lot of these products are those with the most significant flexibility potential, and this decision would create confusion for consumers and un-fair competition in the market. We therefore propose that combining a certain product with a suitable external controller might lead to a smart appliance, as well. Alternatively, it might be interesting to think in terms of system, without distinguishing the location of the controller.

* 1. Product Safety

APPLiA members take the safety of their appliances very seriously – consumer safety is non-negotiable. Therefore, the appliance should be able to overrule requirements coming from the grid, if these requirements may compromise the safety of the product, the safety of the content of the product, or if they would impact performance. For example, if a refrigerator is turned off for too long, the food that is stored in the appliance may expire and provide health risks to the consumer. Also, if a washing machine is turned off for too long, the clothes that are inside may be damaged due to mould. Of course, these limitations are product-specific and need to be handled vertically, where appropriate experts can evaluate this.

* 1. Reference to standards

We would suggest making a reference to the standards, for example by stating that the two-way communication that defines a smart appliance should be based on existing standards, though we would leave the specification of those standards open. One example of this suggestion would be the Smart Premises Interoperable Neutral-message Exchange (SPINE) that has been standardised within CEN/CENELEC (i.e. EN 50631-1 Household Appliances Network and Grid Connectivity – Part 1: General Requirements, Generic Data Modelling and Neutral Messages). This standard defines data models for Interoperable Connected Household Appliances. The data model is derived from a logical decomposition of use cases into functional blocks that themselves are realised by abstract actions on the data model itself.

* 1. Interoperability requirements

As mentioned, the market for Energy Smart Appliances is moving ahead quickly. New developments are popping up every day, and innovation is key for upholding a competitive European market. APPLiA therefore believes that the common data models and application protocols that are mentioned in the study as part of the requirements for interoperability, should allow for sufficient flexibility and speed – \_something that would not be achievable if they were specified in legislative measures. Due to the slower pace of the regulatory system, standards proposed in legislative measures simply cannot keep up with market developments.

Therefore, APPLiA suggests leaving the development of data models and protocols to the industry, or to standardisation activities that are sufficiently open to allow for constant changes and updates (an example of this is the work currently being done with SAREF or in CENELEC TC 59X), and are technology neutral.2 While we definitely support a standardised approach (so that technologies can be used by everyone), we also stress the need for flexibility. Also, multi-protocol or multi-signal solutions are already quite common and can allow different solutions to co-exist within the home. Another, preferred, solution could be to show information about the protocol that the Energy Smart Appliance is using – \_instead of defining the solution itself.

Still, please note that the term “application protocol” used in the study is not clear: what is meant by “application protocol” in the sense that it refers to any specific items that would need to be fixed? In general, APPLiA believes that (future) protocols should not be fixed: they should be open for everyone and open to new developments. Further clarification for the “application protocol” referred to in the study would therefore be necessary. An application protocol will fix technical specifications and, as such, it is necessary to coordinate this with the appropriate standardisation bodies to avoid lock-in of technology or hampering innovation. Interoperability should also consider the best possible use of technology. For example, it should not only consider the ON/OFF functionality, but also reduced capacity and proactive control based on tariff information from the network. Interoperability using a renewable, secondary power supply (such as PV or wind) should also be considered further. On the other hand, the fact that Energy Smart Appliances should support an upgradability functionality may be a complicated requirement, since it is not clear what is supposed to be upgraded.

To conclude, only products complying with a certain set of standard messages could qualify to checkmark that they are Energy Smart. However, interoperability cannot be forced or mandated. It can be incentivised or promoted, guided or specified, but requirements should not be too complex. A minimum set of mandatory commands/messages in every appliance would be needed for building a minimum interoperable status throughout the market. Nevertheless, regulations should not prevent companies’ willingness to introduce new solutions, regardless if proprietary or not, as long as the end consumer is clearly made aware of what he/she is getting. This could otherwise be a severe limitation to innovation and new business models, which of course could not be the objective of the EU.

## Horizonatal requirements (p.102)

APPLiA has made an assessment of proposed horizontal and vertical requirements, including a suggestion and several alternative requirements that could be included instead.

#### Possibility of disabling energy smart functionality

Yes, this requirement makes sense.

#### The energy smart functionality shall be disabled by default

Yes, this requirement makes sense.

#### Possibility to overrule external energy smart command

Yes, the user’s option to override makes sense. For example, for appliances where the operation can be interrupted, this requirement has merit. If users want to override requests from the utility (or any other party), they should be able to do this. Of course, the details of the requirements are best fixed in the vertical lots where such product specific issues can be evaluated.

#### Automatic resume of default operation

Yes, this requirement makes sense.

#### Settlement support functionality

If we understand this requirement correctly, it recommends a settlement support functionality for the purpose of supporting direct Demand Response business cases with an external party. In addition, the appliance should keep measurements, and record its historical power consumption in memory. Optionally, it records the external instructions received. However, we believe that this does not make sense, as many appliances do not have the process power, nor the memory, to process and store this information. Therefore, such a settlement function should not be a necessary part of the appliance. It could be, however, included in the energy management system, in the smart meter, or something that is assured from the energy provider.

Moreover, a smart appliance is an appliance that is in line with the definition that is mentioned in the beginning of this document, as well as with the three existing minimum Demand Response use cases. As we already mentioned above, these use cases have already been standardised and are strongly supported by the industry. Therefore, it is the definition and those use cases that should be mentioned instead of this requirement.

#### Any energy smart appliance shall make energy consumption data available to the user, via an open interface and the display (if available)

Appliances shouldn’t have to embark on calibrated metering or to assure metering functions, especially with the recent deployment of smart meters in Europe. If the appliance is able to provide a power profile, then this power profile could also be provided to the consumer – this is feasible and could be beneficial to the consumer. However, this is done in advance. Otherwise, an appliance would need to store all its data in order to make it available to the user, and manufacturers would be forced to add cost to the products (which would ultimately come back to the consumer).

We therefore recommend making this requirement optional, and to re-formulated this requirement to fit it to the appliance’s power profile, though we would refrain from adding any additional criteria for this: for many companies, the provision of the power profile is already a de facto option (e.g. air-conditioning). Moreover, we don’t see any necessity in disaggregating the home’s power consumption (with is already done by – for example – certain Smart Meters that allow consumers to make a distinction between certain types of products) on an individual appliance basis. In addition, providing data to the user may require products to have a display or an application to be able to show this data. However, this is not what makes an appliance smart and it should not be a requirement for an appliance to be seen as smart.

* 1. The communication interface of energy smart appliances shall support the following horizontal requirements

#### Common data model: the (application protocol of the) communication interface of an energy smart appliance shall support the specific common data model;

We believe that this requirement – as it stands now – should not be included, as the market for energy smart appliances is moving ahead quickly. New developments are popping up every day, and innovation is key for upholding a competitive European market. We therefore believe that common data models and application protocols should allow for sufficient flexibility and speed – something that would not be achievable if they were specified in legislative measures. Due to the slower pace of the regulatory system, standards proposed in legislative measures simply cannot keep up with market developments.

Therefore, we suggest leaving the development of data models and protocols to the industry, or to standardisation activities that are sufficiently open to allow for constant changes and updates, such as SAREF, OCF implementations of data model definition and protocol implementation or work being done in CENELEC TC 59X and are technology neutral. While we definitely support a standardised approach (so that technologies can be used by everyone), we also stress the need for flexibility. Also, multi-protocol or multi-signal solutions are already quite common and can allow different solutions to co-exist within the home. Another, preferred, solution could be to show information about the protocol that the energy smart appliance is using – instead of defining the solution itself.

In all, we suggest making the requirement more generic, as the general idea behind the requirement (on sharing a common language) is quite good, but it should refrain from mentioning protocols or communication interfaces.

#### Any energy smart appliance must comply with EU cyber security and data protection legislation

The home appliance industry is committed to making its products as secure as possible, and the protect the privacy of consumers to the highest level. Even though the idea behind the requirement is the right one, Ecodesign may not be the correct place to put it. Other legislative instruments are available, or are being developed, that would be better suited to address cybersecurity and privacy, such as the General Data Protection Regulation (Regulation (EU) 2016/679), the proposed e-Privacy Regulation and the proposed Cybersecurity Act.

#### Remote software update functionality

This requirement lacks specificity, because different products will behave in different ways, based on which manufacturers might also want to upgrade their appliances in different ways – that are most suited for the product at hand. It is also not practical, as manufacturers cannot design in support for future technologies that do not exist.

Moreover, this is a very competitive issue that should not be formalised in a regulatory requirement, since it will prevent companies from innovating. For example, it may be a feature of high-end devices, that cannot be forced onto the regular range – though every connected device will have some form of upgradability, there is no guarantee that it can support every future feature or interface demand. Therefore, we believe that this requirement should not belong to regulations under Ecodesign. Solutions may however be developed within standardisation, where there is close cooperation with industry and a close relationship to the available technologies.

Note: we might need to adapt it, since “remote” was added

#### The appliance is able to communicate with a local controller or customer energy management system without making use of the internet

We believe that the principles that are behind this requirement are the right ones: appliances are able to receive signals from outside sources and can decide on what command to follow – this is an inherent part of the definition of a smart appliance.

However, these outside sources are not necessarily limited to energy management systems, if properly, wired or wireless, connected to a network infrastructure. Also, the consumer should have a choice here, to adapt the appliance to fit with his or her own architecture. Requiring an appliance to have the ability to communicate both externally and locally will require additional software/hardware in the controller without it being used systemically by the end user.

Therefore, we suggest making this requirement more generic, so that it will fit better with the situation as it is in practice, for example: “the communication interface should support communication with local (in the home area network)/external (for example: cloud-based) systems, with the aim to influence the energy consumption of the smart appliance.”

If the appliance connects to a manufacturers cloud/IoT platform, then the flexibility interface functionalities must also be available via web interfaces on that cloud/IoT platform

No APPLiA comment yet

#### The communication interface supports a direct flexibility interface

This requirement seems to be redundant, since it is inherent in the definition of smart appliance.

#### The communication interface supports requests for the historic power consumption and external instructions received

APPLiA believes that this does not make sense, as many appliances do not have the process power, nor the memory, to process and store this information. Therefore, such a settlement function should not be a necessary part of the appliance. It could be, however, included in the energy management system, in the smart meter, or something that is assured from the energy provider.

## Vertical requirements

* 1. Periodical appliances

#### A minimum amount of flexibility (The user must be able to select a deadline of up to at least 24h in the future from the moment of program configuration)

APPLiA comment:

#### Availability of flexibility quantification functionality;

#### The estimated energy consumption profile, a list of periods during which the appliance can be paused, and the scheduled user configurated start deadline of the program; When the appliance is active and executing a scheduled program, also: the current point of execution in the program and the current state

APPLiA comment:

#### Default configurable surplus energy consumption limit (Available setting that can be changed by the user via an open interface and display)

APPLiA comment:

#### An energy smart appliance must support a minimum instruction set

#### This requirement is already well-defined by the standardised use cases on Demand Response.

#### Energy smart functionality is documented in the technical documentation and user manual of the appliance

Here, it needs to be clarified what the purpose is for explaining the energy smart functionality and for whom this explanation is intended. If the explanation is intended for the consumer, then it makes sense to place the information in the user manual. If, on the other hand, the explanation is intended for the Market Surveillance authorities, then the technical documentation would be sufficient.

#### Any energy smart appliance with indirect flexibility interface must, when possible, schedule an operation when the electricity price is at its lowest within the timeframe specified by the user

APPLiA comment:

* 1. Thermal appliances

#### The user can set the upper-and lower bounds of the acceptable temperature range

APPLiA comments

#### The appliance communicates a power flexibility graph 7.10.6.4 (p80)

APPLiA comments

#### The appliance must support a minimum instruction set for thermal appliances 7.12.2.2 (p96)

APPLiA comments

#### The appliance must respect the user comfort bounds at all times

APPLiA comments

#### Any energy smart appliance with indirect flexibility interface must, when possible, schedule an operation when the electricity price is at its lowest within the timeframe specified by the user.

We believe that this requirement can be removed. Price variability may not be the only logic for an energy manager to take into account. There are different algorithms that take into account more than just price, such as comfort.

## On roadmap

APPLiA reads with interest the proposal to work on further definition of vertical requirements in dedicated product groups involving stakeholders and experts. APPLiA is ready to work closely with the Commission and/or study team to advise how to best define these requirements.

Any further comments?

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| APPLiA - Home Appliance Europe represents home appliance manufacturers from across Europe. By promoting innovative, sustainable policies and solutions for EU homes, APPLiA has helped build the sector into an economic powerhouse, with an annual turnover of EUR 44 billion, investing over EUR 1.4 billion in R&D activities and creating nearly 1 million jobs. |  |