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COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT

Accompanying the document

COMMISSION REGULATION (EU) No …/..

amending Commission Regulation (EC) No 1275/2008 with regard to ecodesign requirements for standby, off mode electric power consumption of electrical and electronic household and office equipment, and amending Commission Regulation (EC) No 642/2009 with regard to ecodesign requirements for televisions

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Lead DG: DG ENER

Associated DG: DG ENTR

Other involved services: SG, LS, DG ENV, DG COMP, DG ECFIN, DG INFSO, DG MARKT, DG SANCO, DG TRADE, DG RTD

Agenda planning or WP reference: 2013/ENER/003

1. SECTION 1: PROCEDURAL ISSUES AND CONSULTATION OF INTERESTED PARTIES

1.1. Organisation and timing

This implementing measure is one of the priorities established in the Ecodesign Working Plan 2009.

The implementing measure is based on Directive 2009/125/EC establishing a framework for the Commission to set ecodesign requirements for energy-related products[1] ("Ecodesign Directive"). An energy-related product (ErP), or a group of ErPs, shall be covered by ecodesign implementing measures, or by self-regulation (cf. criteria in Article 17, Annex VIII), if the ErP represents significant sales volumes, while having a significant environmental impact and significant improvement potential (Article 15). The structure and content of an ecodesign implementing measure shall follow the provisions of the Ecodesign Directive (Annex VII).

The Commission has carried out a study on networked standby losses in preparation of the implementing measure. On 14 September 2011 a meeting of the Ecodesign Consultation Forum established under Article 18 of the Ecodesign Directive was held (details are provided below). Article 19 of the Ecodesign Directive foresees a regulatory procedure with scrutiny for the adoption of ecodesign implementing measures.

The Commission, in close collaboration with national experts and stakeholders, **proposed to regulate networked standby through an amending act to the existing Commission Regulation (EC) 1275/2008 ("Standby Regulation")**. As networked connectivity is a feature of a large range of products, including products being introduced in the future, it was found to be the right approach to maintain the "horizontal" approach of the Standby Regulation. Particular, the suggestion is to have the same product scope as defined in the Standby Regulation, as this was considered to be a practical way to distinguish between household and office equipment (in the scope) and "professional" equipment (out of scope).

As a consequence it is suggested to complement the Standby Regulation by:

– definitions specifying the "networked standby" operating condition(s) in terms of the resume time (that is, their functionality),

– power management requirements related to the condition(s),

– power consumption levels for the operating condition(s), including transition periods,

– additional elements for measurements which are not provided by EN 50564.

1.2. Impact Assessment Board

This Impact Assessment has been scrutinised by the Commission's Impact Assessment Board (IAB). In its opinion, the IAB concluded:

[1] Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products, Official Journal L 285 , 31/10/2009 P. 0010 - 0035

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1.3. Transparency of the consultation process

Expertise on networked standby conditions was gathered in particular in the framework of a technical, environmental and economic analysis (in the following called "preparatory study") carried out by a consortium of external consultants[2] on behalf of the Commission's Directorate General for Energy (DG ENER). The preparatory study has followed the structure of the "Methodology Study Eco-design of Energy-using Products"[3]. The preparatory study on networked standby has been developed in an open process, taking into account input from relevant stakeholders including manufacturers and their associations, environmental NGOs, consumer organizations, EU Member State experts, experts from third countries (e.g. USA, Australia) and international organisations as e.g. the International Energy Agency (IEA). Information on the preparatory study was made publicly available through a dedicated website[4] where interim results and further relevant materials were published regularly for timely stakeholder consultation and input. The study website was promoted on the ecodesign-specific websites of DG ENER and DG ENTR.

An open consultation meeting for directly affected stakeholders was organised in the Commission's premises in Brussels on 14 February 2011 for discussing the preliminary results of the study.

The official meeting of the Ecodesign Consultation Forum on Networked Standby was held on 14 September 2011. Building on the results of the preparatory study, the Commission services presented a "working document" proposing ecodesign requirements related to networked standby[5]. The working document had been sent on 28 July 2011 to the members of the Consultation Forum and to the secretariats of the ENVI (Environment, Public Health and Food Safety) and ITRE (Industry, Research and Energy) Committees of the European Parliament for information. The working document was published on DG ENER's ecodesign website, and it was included in the Commission's CIRCA system alongside the stakeholder comments received in writing before and after the meeting.

Networked standby is also being discussed at international level, for example at the level of the IEA (a dedicated workshop has taken place on 7/8 May 2012 in Stockholm). No legislative measures however are in place yet. Korea is developing the e-standby programme where limits are set for a range of networked products, also for products that do not yet have network standby but are expected to in the future. Power limits discussed were in the area of 2/3 Watts for some simpler products such as gateways. However, the EU approach is broader addressing in principle all products with network connectivity

1.4. Outcome of the consultation process

The positions of the main stakeholders, as expressed before, during and after the Consultation Forum meeting on 14 September 2011 as a reaction to the Commission services' working document can be summarised as follows:

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2 "EuP Preparatory Study Lot 26 "Networked Standby", Fraunhofer IZM, final report of 7 May 2011; documentation available on the DG TREN ecodesign website http://ec.europa.eu/energy/efficiency/studies/ecodesign_en.htm

3 Methodology Report, final of 28 November 2005, VHK, available on DG ENER and DG ENTR ecodesign websites

4 www.ecostandby.org

5 Available on DG ENER's ecodesign website

The **Member States** supported "horizontal" ecodesign legislation on networked standby as well as the general approach to regulate networked standby through an amending act to the existing standby/off-regulation (EC) 1275/2008. Amongst the Member States who had been more active in the run up of the meeting there seemed to be a common understanding that the resume time concept was difficult to implement and that a different approach was eventually needed, for example by defining High Network Availability-products. There seemed to be a general agreement that having two instead of three categories (High Network Availability (HiNA) and Low Network Availability (LoNA), without Medium Network Avalailability (MeNA) was a step forward.

The suggested levels for power consumption requirements and the envisaged timing were in general considered appropriate. Only two Member States raised concerns regarding future products, specifically household appliances, fearing that they would not be able to meet the proposed power consumption levels. On the other hand, one Member State advocated a three-staged approached and even more ambitious consumption levels.

A few Member States requested the Commission to refine some of the definitions (e.g. for "network ports") and to clarify the understanding of the "delay times" (from idle into networked standby and from HiNA into LoNa).

The general approach to set mandatory minimum requirements in the framework of ecodesign was largely supported by **Industry**[6] associations. However, some concerns were expressed on the feasibility of "horizontal" legislation on networked standby. It was argued that a horizontal approach was very difficult for networked standby due to the complex terminology and because the very different power consumption requirements of products. The second big concern relates to the overall power limits which are considered to be too demanding for some products (such as work stations, large printers, Complex Set Top Boxes, some IT-technologies) and little ambitious for others (e.g. small printers). The timing with tiers for 2014 and 2016 was perceived as too tight.

Environmental and Consumer NGOs welcomed "horizontal" ecodesign legislation on networked standby and are generally in favour of ambitious consumption levels. Concerns were expressed that consumer features were not sufficiently taken into account.

Further details on these issues are provided with the minutes of the Consultation Forum (Annex I).

2. SECTION 2: PROBLEM DEFINITION

2.1.1. Problem

In the frame of the technical, environmental and economic study for energy consumption of standby in household and office equipment of 2008[7] it was found that network connectivity was to become a common feature of household and office equipment. However, it was agreed at the time being that the technical basis of that study was not sufficient to set ecodesign requirements on low-power operating conditions providing networked connectivity

[6] See e.g. contributions of ORGALIME and CECED to the consultation of Directive 92/75/EEC, available on http://ec.europa.eu/energy/demand/legislation/domestic_en.htm#consultation; "CECED vision on Energy Efficiency" of 1st July 2007, available on www.ceced.eu; letter of EICTA to DG TREN of 28 March 2007 related to the termination of the industry self-commitment of consumer electronics (cf. footnote 21)

[7] EuP Preparatory Study Lot 6 -Standby and Off-mode Losses, TREN/D3/91-2007-Lot6

("networked standby"). This is why a second preparatory study[8] was launched to address networked standby as an issue in itself.

As a basic principle, electrical and electronic household and office equipment is subject to regulation 1275/2008 and hence obliged to switch into standby/off-mode after the shortest possible time appropriate for the intended use. This requirement does not apply where the power management requirements are inappropriate for the product's intended use (Annex II, 2(d)). This is certainly the case for products that provide network availability for the purpose of resuming an application and that are able to be reactivated via a maintained network link or connection. Today, this functionality is provided typically not out of a low power mode such as standby but out of a high power mode such as idle or even active mode.

With increasing networked abilities and context, more and more products will offer functions and services accessible via a network connection. This situation would result in rapidly increasing energy consumption, if products needed to remain in idle or even active mode to realise this functionality. A "networked standby" condition that maintains a certain level of network connectivity but deactivates main function(s) could decrease overall energy consumption of a "networked" product.

Technical solutions that would allow products to switch into low power modes are partly already available but have not yet seized the market. Personal computers are a typical example of products with rather advanced power management solutions and low power modes (different sleep modes). For other products, technical solutions would need to be implemented over the coming years.

2.2. Market failure

As outlined above, network connectivity has been acknowledged to become a common feature of household and office equipment. In this, networked standby had been identified as an area with an important and increasing improvement potential which has so far not been subject to regulation. According to the preparatory study; the energy consumption in networked standby conditions of household and office equipment is estimated to make up 90 TWh (approx. the annual final electricity consumption of Finland), while significant potential for cost-effective improvements exists (around 35 TWh by 2020).

Regarding the general frame, it has to be considered that there is little awareness and little transparency of the operating conditions and power consumption of networked products. Low power consumption in a networked standby condition is not an important purchasing criterion. Thus, networked products often remain in on/idle mode that can easily mean a consumption of 50-100 Watt (or much more e.g. for big printers).

As a consequence available technical solutions reducing energy consumption in networked standby condition are frequently not applied even if possible, on the one hand because for consumers it is not a purchase criterion, on the other because it could mean additional costs for the manufacturers. These costs however in general are rather low.

Hence, a slightly higher purchasing price is in general terms paying off for the user because the overall life-cycle cost, i.a. the purchasing cost plus the costs for operating the product, is reduced. This market failure leads to electricity consumption and related costs being (much) higher than necessary.

[8] EuP preparatory study on Networked standby DG ENER Lot 26 (TREN/D3/91-2007-Lot26), see in particular Task 7-report.

2.3. Baseline Scenario for the electricity consumption of networked standby

2.3.1. Product Scope

In order to carry out a technical, environmental and economic analysis, the preparatory study has considered typical house and office equipment categories with a focus on IT- and Consumer electronics equipment:

- Personal computers
- Displays
- Networked storage
- Imaging equipment
- Consumer electronics
- Networking equipment

Household Equipment like washing machines and dishwashers are part of the picture but there is not a relevant number of appliances with network connectivity features in the market yet.

A detailed analysis of representative models was carried out for 21 product cases. They are assumed to represent 75% of the equipment that falls into the scope of networked standby.

A fully developed baseline scenario is presented in Annex II.

The study has, amongst others, provided the following key elements:

– a set of definitions of terms relevant for networked standby, including resume time and remotely initiated trigger

– a categorisation of different levels of network availability

– an attribution of power consumption to the levels of network availability

– technologies yielding reduced electricity consumption in networked standby conditions

– the installed base ("stock") and the typical life time;

The structure of the methodology of the technical, environmental and economic analysis is contained in Annex II.

2.3.2. Sales volume

Exact sales data is unfortunately not available. From the stock data available and the average life time, it can however be concluded that the sales will be in the order of 400 Mio units per year, which exceeds the condition (indicative minimum 200.000 units per year sold) that the Ecodesign Directive sets out by order of magnitude[9].

2.3.3. Environmental impact

So far, products that need to provide network connectivity often do not enter low energy-modes at all but stay in active or idle-modes. For the year **2010** the preparatory study estimates the consumption of household and office equipment in "non-active modes" to be at

[9] Exact data is not available. Basis for the estimate is the stock data (in average around 2 Billion product units on stock) and an assumed average life time of 5 years.

52 TWh, corresponding to the electricity consumption of 13 Mio European households, electricity costs of almost **8,84 bln Euro**[10], and **23 mln tons of CO_2 emissions**[11].

For the year **2020** the preparatory study estimates that the consumption of household and office equipment in "non-active modes" is 90 TWh (approx. the annual power consumption of Finland), corresponding to the electricity consumption of 22 Mio European households, electricity costs of more than **19,80 bln Euro**[12], and **27 mln tons of CO_2 emissions**[13].

This figure must be seen against the background of a fast growing penetration of networked household and offices equipment. The overall energy consumption of networked products (meaning: in active and non-active modes) is assumed to increase from 172 TWh in 2010 to 204 TWh in 2020, this is an increase of almost 45%. This increase has two reasons: 1) the general increase of stock of the complex (networked products); 2) the increase of the energy consumption in idle-mode, particularly for products that need to provide high network availability and do not provide an appropriate power management.

Although networked standby power limits would lie well above the standby/off power limits since more functionalities need to be maintained, there is still an important saving potential as today – as outlined in previous sections – networked connectivity is usually provided out of high power modes (idle or active). The power consumption of equipment in idle/active mode can be very high (depending on the product typical orders of magnitude are 25, 50, 100 and more Watts).

2.3.4. Structure of the industry sectors manufacturing equipment having networked standby

To date networked standby is most relevant for three major industry sectors: personal computers industry, consumer electronics industry and network equipment industry. These industry sectors dispose of globally distributed hardware and software supply chains.

Characteristically for the personal computer industry, a few semiconductor and software enterprises determine the technical level and progress of the sector. This is not the case for the consumer electronics industry.

The network equipment industry is not fully independent to implement technical solutions as they are strongly influenced by external service providers who require certain functionalities or respectively who do not support power management on their side of the application.

2.4. Eligibility under Ecodesign and EU's right to act

The Ecodesign Directive and, more specifically, its Article 15 provides the legal basis for the Commission to adopt an implementing measure that would tackle the problem defined in the preceding paragraphs. According to the Ecodesign directive (Art. 15(2)), products are eligible for measures if they meet the following criteria:

(a) the product shall represent a significant volume of sales and trade, indicatively more than 200 000 units a year within the Community according to the most recently available figures;

[10] Assuming an electricity price in the EU for 2010 of 0.17 €/kWh (see EuP preparatory study on Networked standby DG ENER Lot 26**)**

[11] specific EU emissions for 2010: 441g CO2 per kWh taken from the Energy Roadmap 2050http://ec.europa.eu/energy/energy2020/roadmap/doc/com_2011_8852_en.pdf

[12] Assuming an electricity price in the EU for 2020 of 0.22 €/kWh (see EuP preparatory study on Networked standby DG ENER Lot 26)

[13] specific EU emissions for 2020: 301g CO2 per kWh, taken from the Energy Roadmap 2050http://ec.europa.eu/energy/energy2020/roadmap/doc/com_2011_8852_en.pdf

(b) the product shall, considering the quantities placed on the market and/or put into service, have a significant environmental impact within the Community, as specified in the Community strategic priorities as set out in Decision No 1600/2002/EC; and

(c) the product shall present significant potential for improvement in terms of its environmental impact without entailing excessive costs, taking into account in particular:

(i) the absence of other relevant Community legislation or failure of market forces to address the issue properly; and

(ii) a wide disparity in the environmental performance of products available on the market with equivalent functionality.

2.5. Subsidiarity and proportionality

The principle of subsidiarity as is defined in Article 5 of the Treaty establishing the European Union intends to ensure that decisions are taken as closely as possible to the citizen; the Union should take action only in areas which fall within its exclusive competence and which do not lead to a more effective action if taken at national, regional or local level.

It is to be expected that Member States may want to take individual (non-harmonised) action on networked standby to speed up the increase in their energy efficiency. This possibility, in the absence of EU action, is strengthened due to the discussion on possible minimum requirements in the international context, e.g. through the IEA. Such action would hamper the functioning of the internal market and lead to high administrative burdens and costs for manufacturers, in contradiction to the goals of the Ecodesign Directive.

Measures introduced under the Ecodesign and Energy Labelling Directives help bringing down barriers and simplifying existing rules to enable everyone in the EU - individuals, consumers and businesses - to make the most of the opportunities offered to them by having direct access to 27 countries and 480 million people. The Consultation Forum meeting has shown unanimous Member State approval for EU wide regulatory framework for networked standby.

Under the principle of *proportionality*, the content and form of Union action shall not exceed what is necessary to achieve the objectives of the Treaties. The EU will respect this principle as it will limit itself only to setting the legislative framework. As far as certain aspects of the implementation are concerned, i.e. market surveillance and monitoring, EU action is not necessary to achieve the objectives, as Member States assume these responsibilities under the Ecodesign Directive.

3. SECTION 3: OBJECTIVES

As laid out in Section 2, the preparatory study has confirmed that a large cost-effective potential for reducing electricity consumption of networked equipment exists. This potential is not captured, as outlined above. The general objective is to develop a policy which corrects the market failure, and which

– leads to significant reductions of the electricity consumption of networked products in non-active conditions, improving the environmental performance of the affected equipment throughout the life cycle;

– ensures the free movement of affected products within the internal market.

– The objective is to decrease the ever growing energy consumption that is linked to the operation of equipment with network connectivity. The study has shown that – in

line with Article 15 (5) of the Ecodesign Directive, it would be feasible to set horizontal minimum efficiency requirements that would not negatively affect:

– the functionality of products

– health, safety and the environment

– affordability and life cycle costs

– industry's competitiveness

– and that it would not:

– impose proprietary technology on manufacturers

– involve excessive administrative burdens

4. SECTION 4: POLICY OPTIONS

The options as outlined below take into account a number of aspects related to the specific nature of any measure on networked standby, including effectiveness, cost-effectiveness, feasibility, acceptance etc.

Another important aspect is that for different reasons spelled out in Section 2 it is foreseen to address networked standby through an amending act to the existing standby regulation 1275/2008. Hence, any other option than option 5 would not allow following this approach.

4.1. Option 1: No EU action

This option would have the following implications:

– The market failure would persist, although policies addressing specific products (e.g. the voluntary Energy Star programme) to some extent contribute to a reduction of networked standby, in particular for PCs and printers.

– As outlined in the study, the energy consumption in networked standby operating conditions modes is expected to increase substantially as more and more products will offer functionalities that require products to keep a higher power mode. Without network standby, they would not have to meet any limitation of power consumption.

– It is possible that Member States would want to take individual, non-harmonized action on networked standby. This would hamper the functioning of the internal market and lead to high administrative burdens and costs for manufacturers, in contradiction to the goals of the Ecodesign Directive.

– There is a risk of competitive disadvantages, in particular for very price sensitive products, for those manufacturers designing their products to good standards vis-à-vis competitors not using technology leading to low networked standby energy consumption, as developed hereunder.

Therefore this option is discarded from further analysis.

4.2. Option 2: Self-regulation

This option is discarded for the following reasons:

– The market for products that are subject to networked standby is diverse given the horizontal approach ranging from home gateways to washing machines. Moreover, a large share of the actors comes from "fragmented" markets like consumer electronics.

– No initiative for a horizontal self-regulation on networked standby for electrical and electronic equipment has been brought forward by any industrial sector.

– Having said this, there are two Voluntary Agreements in place (on Complex Set Top Boxes and Imaging Equipment) that set out general power limits based on the TEC-scheme (Typical Energy Consumption), which build on a use pattern calculation and include active and low power modes. However, they do not include specific limit values for a networked standby condition.

4.3. Option 3: Ecodesign requirements on networked standby set *only* in the context of product-specific ecodesign implementing measures

This option means that ecodesign requirements on networked standby would be set in product specific ecodesign implementing measures only, without setting "horizontal" ecodesign requirements on standby/off-mode for a group of products. This option would imply the following:

– The majority of the products contributing to the electricity consumption in networked standby operating conditions will not/cannot be addressed by product specific policies as rapid development of new products is a characteristic of the Information and Communication Technology and Consumer Electronics sector. With a vertical ecodesign implementing measures, new product categories might fall out of the scope and would have inappropriately high energy consumption in networked standby when introduced into the market.

– For many products (e.g. gateways, hubs, phones), the overall energy consumption is small and a dedicated vertical eco-design implementing measure may not be justified. At the same time, the energy consumption in non-active modes is often the largest contribution to the overall energy consumption and the most significant environment aspect. Hence, addressing networked standby in product specific implementing measures would realise only a part of the improvement potential in networked standby.

– A horizontal measure on networked standby is, from an administrative point of view, more effective than a (large) number than of product specific measures, aiming at having largely the same effect.

Therefore, this option as being the **only** policy to reduce energy consumption of networked standby functions is discarded.

4.4. Option 4: Labelling targeting specifically the energy consumption of networked standby

This option means that labelling targeting specifically networked standby would be put in place without setting horizontal networked standby eco-design requirements. This option would imply the following:

– In principle, labelling could be one option to increase the market penetration of equipment with low networked standby energy consumption, and the energy labelling framework Directive[14] could, arguably, provide the legislative framework for a horizontal label targeting the energy consumption of networked standby functions.

[14] Directive 2010/30/EU of the European Parliament and of the Council of 19 May 2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products, *Official Journal L 153 , 18/06/2010 P. 0001 - 0012*

– On the other hand, the non-active conditions for networked equipment are diverse and provide different functionalities across and within product groups (for example different sleep modes of PCs). In addition, the energy consumption depends to a very high degree on the resume time. Concluding, it would be difficult to put in place an understandable and consumer-friendly scheme. Even if that was found to be possible, it would require a major marketing and awareness raising effort.

– Depending on the actual design of the labelling scheme, additional burdens could arise for manufacturers and retailers.

Against the considerations specified above, in particular regarding the complexity of functionalities linked to networked standby, it is not appropriate to complement horizontal eco-design requirements on networked standby by a labelling scheme.

Therefore this option is discarded from further analysis.

4.5. Option 5: "Horizontal" ecodesign implementing regulation on networked standby

– This option means that maximum levels for the related power consumption in networked standby operating conditions would be set horizontally for a range of products. This could be done via an amendment to the existing standby-regulation 1275/2008 using the same scope and mechanisms.

– Legally binding ecodesign requirements allow for a level playing field amongst manufacturers and ensure fair competition.

– The horizontal – functional - approach has got the advantage that also products will be addressed which are not yet on the market or which have a hybrid nature ("catch-all" clause). This is particularly important in fast moving sectors like the Information and Communication Technology and Consumer Electronics sector.

– The horizontal approach is a cost-effective way to address a specific condition/mode common to many products with a high saving potential without having to implement a high number of regulations.

4.6. Comparison of options

The following table summarises the considerations on the impacts of the sub-options and assesses them on a relative scale from +++ (very strong positive impact) to - - - (very strong negative impact):

– Option/Impacts	– Economic	– SMEs*	– Social/Jobs	– Environ- – mental	– Internal Market
– 1 (no action)	– + - -	– + -	– + -	– - - -	– -
– 2 (self-regulation)	– + -	– + -	– + -	– +	– + -
– 3 (vertical ecodesign)	– ++ -	– + -	– + -	– ++	– + + +
– 4 (Labelling)	– + -	– + -	– + -	– +	– + -
– 5 (Horizontal ecodesign)	– +++ -	– + -	– + -	– + + +	– + + +

* As the concerned sectors are mainly sectors with global actors and globally distributed supply chains, SMEs are in general only marginally affected by this implementing measure.

5. SECTION 5: ANALYSIS OF IMPACTS OF A "HORIZONTAL" ECODESIGN IMPLEMENTING REGULATION ON NETWORKED STANDBY

Given that options 1-4 have been discarded in Section 4, this Section looks into the impacts of option 5. To this end an assessment of possible sub-options as regards the "intensity" of the measure – the combination of the levels of requirements and the timing for the levels pursuant to Article 15(4f) of the Ecodesign Directive – is carried out.

The assessment is done with a view to the criteria set out in Article 15(5) of the Ecodesign Directive, and the impacts on manufacturers including SMEs. The aim is to find a balance between the quick realisation for achieving the appropriate level of ambition and the associated benefits for the environment and the user (due to reduction of life-cycle costs) on the one hand, and potential burdens related e.g. to un-planned re-design of equipment for achieving compliance with ecodesign requirements on the other hand, while avoiding negative impacts for the user, in particular as related to affordability and functionality.

A substantial re-design should not be necessary to achieve the requirements of Tier 1. For a range of products however, re-design will be necessary to achieve the final level of ambition, i.e. the requirements of Tier 2. As a general principle, the cycle for the re-design of a product takes around 4-5 years.

The study, which has been carried out between 2009 and 2011 takes the years 2010 and 2020 as reference. However, with the measure in place not before end of 2012/beginning 2013, Tier 2 will be very close to the year 2020. Hence, the saving-scenarios in view of the year 2020 might be misleading. The potential benefits in terms of energy, CO2- and cost savings will be substantially higher for a later point of time, this is why an extrapolation for the year 2025 was included (see Annex III).

The following sub-options for the intensity of the measure are considered:

Sub-option 1: This sub-option represents the provisions as set out in the Commission's working document discussed in the Consultation Forum. They are based on the recommendations of the preparatory study but deviate in a few points.

- Tier 1 was postponed from 2013 to 2014 taking into account that the regulation will only be adopted early 2013;
- There are only two categories of network availability (HiNA and non-HiNA/LoNA). Following the feedback from industry in the run up of the Consultation Forum that three categories were not needed it was decided to have two instead of three product categories and drop the category of Medium Network Availiability (MeNA);
- The power limits were kept at the level that the preparatory study recommended, for HiNA for the two stages at 12 and 8 Watts and for LoNA at 4 and 2 Watts.
- The delay time was determined to be a maximum of 1 hour.

Sub-option 2: This sub-option is based on a higher level of ambition and was put forward by one Member State, supported by environmental NGOs.

- Three stages are set for 2013, 2014 and 2016
- A final level of ambition is set at 1 Watt for LoNa-Products.
- The delay time was not defined vis-à-vis the Commission's working document; a delay time of 30 minutes (average of the preparatory study) is taken as a basis.

Sub-option 3: This sub-option represents the proposal of Digitaleurope, the association representing the IT-industry and the main stakeholder in the process. Industry claimed that more time was necessary to achieve Tier 2-limits at reasonable cost. They also called for higher general power limits arguing that the Commission working document had combined LoNA-power allowances with MeNA-functionalities.

- Two Stages/Tiers are set for 2015 and 2017.
- There are two categories of network availability (HiNA and non-HiNA/LoNA) and thus two levels of power limits. These were set for HiNA for the two stages at 12 and 8 Watts and for LoNA at 8 and 4 Watts.
- The delay time was proposed to be 30 minutes.

Sub-option 4: This sub-option is based on the Commission's working document taking into account the input received in the context of the Stakeholder Consultation and beyond.

- Two Stages/Tiers are set for 2015 and 2017. To have two stages 2015 and 2017, i.e. more than 4 years until Tier 2 is implemented, would give industry the opportunity to redesign their product within a normal product cycle.
- There are two categories of network availability (HiNA and non-HiNA/LoNA) and thus two levels of power limits.
- These are set for HiNA for the two stages at 12 and 8 Watts and for LoNA at 6 and 3 Watts.
- The maximum delay time is set at 20 minutes.

In order to assess the impact of these sub-options, the following aspects are taken into account:

- Socio-economic impacts:
  - annual electricity cost savings by 2020 (+ 2025)
  - accumulated electricity cost savings until 2020 (+ 2025)
  - possible additional costs related to the improved technology, e.g. for additional and/or more expensive components and to the re-design of products currently not complying with the requirements
  - assessment of conformity with ecodesign requirements and re-assessment of conformity with further requirements (safety etc.)
- Impacts on SMEs
- Social impacts:
  - jobs related to the production of affected equipment
  - affordability of equipment
- Environmental impacts:
  - annual reductions of CO2 emissions until 2020 (+ 2025)
  - accumulated reductions of CO2 emissions until 2020 (+ 2025)
- In general, due to the fact that networked standby functionalities are relevant for a range of household and office equipment categories, detailed figures cannot always be provided and a semi-quantitative analysis is given.

5.1. Socio-Economic impacts

5.1.1. Life-cycle cost and additional costs related to the improved technology and re-design

As shown by the preparatory study, there are products that already have the technologies that would allow them to comply with the level of ambition linked to the second stage of the regulation's implementation. Others will have to undergo at least a partial re-design. As a general rule, a major re-design should not be necessary to fulfil the requirements of the first stage, which comes into force approximately 2 years after the regulation will be adopted. A more substantial re-design can be expected for products along with their normal design-cycle until stage 2 which comes into force approximately 4 years after the planned adoption.

Qualitatively, the shorter the period for entry into force of requirements and the shorter the delay between first and second stage, the higher the potential costs related to unplanned re-design. On the other hand, the longer the period for entry into force of requirements, the better re-design can be integrated into planned re-design without additional costs.

Due to the horizontal character of the regulation, re-design cycles for equipment covered can be in the range from less than a year (e.g. consumer electronics and information technology equipment) to several years (e.g. large household appliances). On the other hand a very limited set of product aspects is affected. In average, a product life time of 5 years was assumed as a basis for the calculations.

In general, the issue of costs have not been pointed out by stakeholders and it was not possible to obtain detailed cost information from industry.

Only in the context of very few particularly price-sensitive segments, costs were a major issue. An example is audio-equipment which has a rather narrow profit margin and for which it is more difficult to make up investments.

The power consumption requirements of stage 1 and stage 2 do not affect the main product functions, and the complexity of re-design is, in general, low.

The power management requirements may require a re-design of software which may be more complex. It can't be ruled out that purchasing cost of equipment increase, although the additional cost, if any, for technologies to achieve networked standby power consumption levels as foreseen by the requirements of stage 1 and stage 2 are expected to be rather low. For some products – for example products that require a large power supply – the technical solution could include a separate power supply which might bring about substantially higher costs (around 20-50€ per product), e.g. in the case of very large printers. However, in these cases, the equipment itself is usually sophisticated and/or office equipment, thus costly, so that the additional costs would still not be disproportionate.

For sub-option 1 and 2 it can be said that the risk of additional costs is relatively higher vis-à-vis sub-option 3 and 4 since the transitional periods are shorter the requirements more stringent.

The requirements for sub-option 3 and 4 would mostly lie within the normal product cycle.

5.1.2. Cost – assessment of conformity with ecodesign requirements and re-assessment of conformity with further requirements

In general assessing the conformity with ecodesign requirements implies costs for manufacturers. The requirements of this regulation are simple, and the method to establish the power consumption of networked standby is relatively straightforward. It is estimated that the cost for measuring the power consumption does not exceed 500€ (in house by the manufacturer) and 1000€ (external laboratory) per sample product/model. At the same time, assessing the conformity for networked standby can be combined with assessing the conformity for standby/off- mode.

Furthermore, products not complying with ecodesign requirements need to be re-designed, which, in general, implies the need for assessing conformity not only with ecodesign requirements, but also re-assessing conformity with further applicable requirements (e.g. "Low Voltage Directive"[15] and EMC Directive).

On the other hand, all manufacturers are affected by the need for a conformity assessment, because the regulation creates a level playing field and possible costs for re-assessment due to re-design are occurring only once upon introduction of the regulation. The costs for assessing conformity are much smaller than further cost factors, therefore the competitiveness of SMEs vis-à-vis high volume producing manufacturers is not significantly affected. At the same time, manufacturers already now producing equipment complying with the requirements may have an, albeit very small, competitive, advantage.

These type of costs are mostly independent from the parameters inside the different sub-options.

[15] Directive 2006/95/EC of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits, OJ L 374, 27.12.2006, p. 10.

5.1.3. Annual electricity and electricity cost (+CO_2) savings

The annual power consumption of electrical and electronic equipment in the scope of the standby/networked implementing measure is expected to increase to 205,38 TWh in 2020 and 220,71 TWh in the Business –as-usual scenario. The sub-options provide a saving potential between 26 to 37 TWh for the reference year 2020 and between 38 and 50 TWh for the reference year 2025 (see overview tables for the years 2020 and 2025 below). These annual electricity savings correspond to substantial savings of electricity costs (see overview tables below, prices of the year 2020[16]) , of which 80%-90% incurred in households.

[16] Assuming an electricity price in the EU for 2020 of 0.22 €/kWh (EuP preparatory study on Networked standby DG ENER Lot 26)

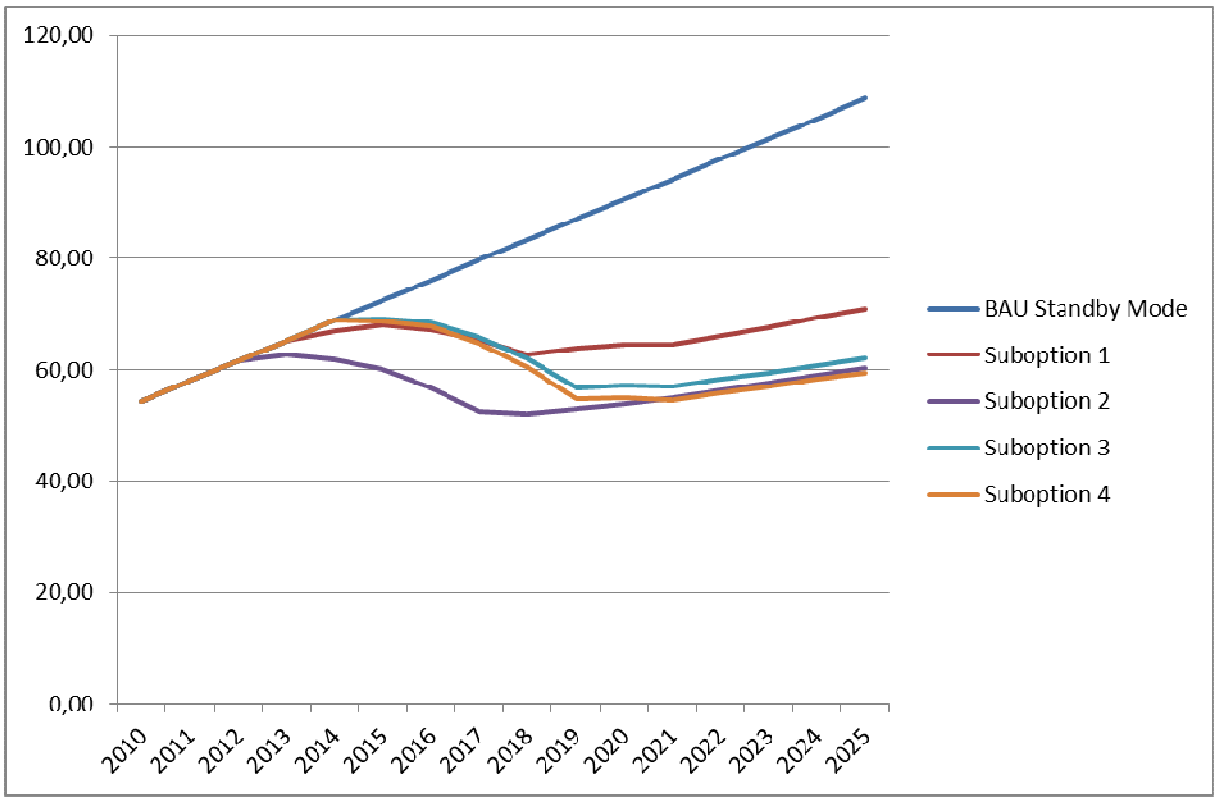
Table 1: overview of the annual electricity and corresponding cost savings and avoided CO2 emissions for all sub-options for the year 2020.

	Annual electricity savings (TWh)	Annual electricity cost savings (billion EURO)	Annual avoided CO2 emissions (Mt)
Sub-option 1	26,0	5,72	7,83
Sub-option 2	36,81	8,1	58,8
Sub-option 3	33,33	7,33	10,03
Sub-option 4	35,52	7,81	10,69

Table 2: overview of the annual electricity and corresponding cost savings and avoided CO2 emissions for all sub-options until 2025.

	Annual electricity savings (TWh)	Annual electricity cost savings (billion EURO)	Annual avoided CO2 emissions (Mt)
Sub-option 1	37,88	9,28	9,35
Sub-option 2	48,3	11,83	11,92
Sub-option 3	46,64	11,43	11,5
Sub-option 4	49,30	12,08	12,16

Figure 1 shows the power consumption of networked equipment in a condition of standby from 2010 until 2025.



Annex III shows the accumulated electricity savings for sub-options 1-4 until 2020 and 2025 in more detail.

Due to economy of scale effects it is to be expected that potential added purchasing costs, if any, will decrease after ecodesign requirements are introduced, and the electricity cost savings are net savings.

This high improvement potential – basically for all sub-options - is, amongst others, due to the fact that network standby functionalities are so far provided out of idle or even active modes which go along with very high power consumption. In addition, as households are expected in the future to operate a range of products falling into the scope of networked standby, savings will add up to a substantial amount.

To a large extent the equipment covered by this regulation is produced for the world market. Therefore the requirements set in this regulation will impact on the design of equipment shipped to markets other than the EU, and the resulting reductions of environmental impact will be much higher than those estimated for the EU alone. It is not possible to quantify this effect because market data for the equipment covered by this regulation could not be analysed for other parts of the world.

An analysis of the savings per policy sub-option, both for electricity savings and electricity cost savings, accumulated until 2020 and 2025, will be given together with an assessment of the CO2 savings in the sections/tables below.

5.1.4. Impacts on SMEs

With reference to the "Operational guidance on assessing impacts on micro-enterprises in Commission Impact Assessments"[17], it can be concluded that a horizontal ecodesign measure for networked standby would most likely not have any substantial impact on SMEs.

[17] Operational guidance on assessing impacts on micro-enterprises in Commission Impact Assessments, 7 May 2012, Ares(2012)557005

The industry sectors relevant for networked products, i.e. mainly personal computers, consumer electronics and network equipment, are usually globally acting sectors which dispose of globally distributed hardware and software supply chains[18]. Manufacturing sites are usually located outside the EU.

At the same time, SMEs relying on network technologies, which are for example a characteristic of office equipment, could benefit from lower energy costs.

In general, ecodesign as internal market legislation benefits transparency and a level playing field for all market players.

For all sub-options there should not be any particular risk for SMEs. Sub-options 1 and 2 are generally more challenging for any manufacturer as the risk of additional costs is relatively higher vis-à-vis sub-option 3 and 4. The requirements for sub-option 3 and 4 would mostly lie within the normal product cycle.

5.2. Social impacts

5.2.1. Jobs

It cannot be excluded that some companies may have difficulties for achieving compliance in time. This may lead, in the extreme, to job losses because (some) products can no longer be placed on the market when the regulation becomes effective and a company has failed to ensure compliance in time. Consequently, sub-options 1 and 2 with shorter transitional periods bear a comparatively higher risk of affecting employment.

However, as outlined above, major risks for job losses have not been pointed out by industry, neither during the Consultation Forum nor in the exchanges that the Commission had with various industry representatives.

It has to be stressed as well that the industry sectors relevant for networked products, i.e. mainly personal computers, consumer electronics and network equipment, are usually globally acting sectors. In overall terms, any negative impacts on jobs, although not expected, would mostly affect jobs that are situated outside the EU. .

It is concluded that, overall, the risk of job losses is small for sub-options 1 and 2, and negligible for sub-options 3 and 4.

5.2.2. Affordability of equipment

As shown above a significant price increase due to ecodesign requirements is not expected and therefore affordability is not negatively affected.

Furthermore, the impact of ecodesign requirement on the affordability of products would in principle require an assessment of income/structure of the users (households and tertiary sector) of the equipment having networked standby. However, even for low income households, affordability is not expected to be substantially affected as additional costs that may arise for technologies necessary to achieve compliance for equipment not yet meeting the requirements yet are expected to be very small, or zero.

Having said this, the sub-options with shorter transitional periods bear a comparatively higher risk to bring about additional costs due to re-design (see above), thus the affordability could, if at all, potentially rather be affected by sub-options 1 and 2 than by sub-options 3 and 4.

[18] See EuP Preparatory Study Lot 26 "Networked Standby

5.3. Environmental impacts

5.3.1. Accumulated reduction of CO2 emissions by 2020

The overview tables 3 and 4 (below) show the expected accumulated electricity savings and correspondingly accumulated a CO_2 emission reductions in 2020 and 2025.[19] The annual CO2-savings can be found in the overview tables 1 and 2.The reduction of the electricity consumption will as well bring about reductions of further electricity production-related environmental impacts, such as SO_2, NOx and heavy metals.

Table 3 gives an overview of the accumulated electricity and corresponding cost savings and avoided CO2 emissions for the period of 2010 - 2020.

	Accumulated electricity savings (TWh)	Accumulated electricity cost savings (billion EURO)	Accumulated avoided CO2 emissions (Mt)
Sub-option 1	99,6	21,0	33,5
Sub-option 2	170,77	35,7	58,8
Sub-option 3	109,8	23,3	36,3
Sub-option 4	117,6	25,0	38,9

[19] specific EU emissions for 2020: 301g CO2 per kWh, taken from the Energy Roadmap 2050http://ec.europa.eu/energy/energy2020/roadmap/doc/com_2011_8852_en.pdf

Table 4 gives an overview of the accumulated electricity and corresponding cost savings and avoided CO2 emissions for the period of 2010- 2025.

	Accumulated electricity savings (TWh)	Accumulated electricity cost savings (billion EURO)	Accumulated avoided CO2 emissions (Mt)
Sub-option 1	268,4	60,8	78,6
Sub-option 2	389,3	87,1	117,3
Sub-option 3	319,5	72,8	92,3
Sub-option 4	339,8	77,3	98,3

Sub-option 1, despite ambitious power levels and timing, allows for less savings over time.

This can be explained with the important role of the length of the delay time, i.e. the time that the equipment requires to resume its main function, which was found to be a more important factor than power limits and timing.

Sub-option 2 with its most ambitious requirements will bring about the highest CO_2-reductions until 2025; this tendency will however decrease over time (see Figure 1).

The CO_2-reductions do not differ substantially for sub-option 3 and 4.

5.3.2. Possible trade-offs between low networked standby power consumption and material–related environmental impacts

The preparatory study has not qualitatively assessed possible trade-offs between reductions of networked standby power consumption, and material related impacts which possibly, but not necessarily, may be arising due to, e.g., additional integrated circuits. However, where necessary, additional components might have already been incorporated to comply with the standby/off-regulation; in addition, networked standby and power management can be mostly achieved by software. Even in the case that additional components were necessary to comply with ecodesign requirements (e.g. additional integrated circuits) trade-offs are not to be expected, i.e. the reduction of the use phase power consumption environmental impact is larger than possible additional material-related environmental impacts.

This aspect seems to be rather independent from the parameters inside the different sub-options.

5.4. Administrative costs for Member States

The form of the legislation is a regulation which is directly applicable in all Member States. This ensures no costs for national administrations for transposition of the implementing legislation into national legislation.

The costs for carrying out the verification procedure for market surveillance purposes depends mainly on the product price (assuming that an authority purchases), and the possible need for a second test on a sample of three additional products in the case that the power consumption levels established in the first test are excessive. In any case, it is to be expected that a product is tested not only for its conformity with ecodesign requirements, but also with further applicable requirements, and the part of the costs required for testing the power consumption

of networked standby and standby/off mode is expected to be small because the measurement is straightforward.

Given that the price of the products is generally not expected to increase, this aspect seems to be rather independent from the parameters inside the different sub-options.

5.5. Impacts on trade

The process for establishing ecodesign requirements for networked standby has been fully transparent, and before endorsement of the regulation by the Regulatory Committee a notification under WTO-TBT will be issued.

Manufacturers, including EU manufacturers, who sell products both inside and outside (where no requirements on standby/off-mode are set to date) the EU may either produce all products for compliance with the ecodesign requirements, independent of the market where the products are sold, or produce to different specifications for different markets. As a consequence a cost disadvantage could arise vis-à-vis manufacturers who do not sell products in the EU. However, the risk of competitive disadvantages is expected to be low, because additional costs for design/re-design to achieve compliance with ecodesign requirements are low. Furthermore, stakeholders affected by the regulation have not pointed out such a risk. Therefore no competitive disadvantages for EU manufacturers exporting affected products to third countries are expected.

Given that the costs are generally not expected to increase, this aspect seems to be rather independent from the parameters inside the different sub-options. If there was any impact at all and as outlined above, sub-options 1 and 2 have a slightly higher risk to lead to higher costs, this is why accordingly a cost disadvantage could more likely arise.

However, the affected sectors are usually sectors with globally acting distribution and supply chains. The experience shows that the production most likely would be adapted to EU standards in order to avoid producing different product ranges for different markets. Moreover, networked standby is being discussed at international level as well (see above); Korea for example has introduced networked standby requirements for some simpler products.

6. COMPARISON OF SUB-OPTIONS

Sub-option 1

Following this option, the savings in 2020 compared to the BAU scenario would be 26 TWh.

Despite the high ambition, the calculated savings would be relatively small as the increase of the delay time has a considerable impact (otherwise around 37 TWh of savings).

Sub-option 2

Following this option, the savings compared to BAU would be 36,8 TWh in 2020 and 48,30 TWh in 2025.

Sub-option 2 is the option with the highest ambition regarding power limits and timing. It incurs the highest savings towards the beginning of the reference period.

It is however also the option that bears the highest risk of a negative impact on cost, affordability an jobs due to the relatively short transitional periods and a very high level of ambition (1 Watt for LoNA).

Sub-option 3

Following this option, the savings compared to BAU would be 33,3 TWh in 2020 and 46,6 TWh in 2025.

Sub-option 3 is the option with the lowest ambition regarding power limits and timing. However, it incurs still relatively high savings, in particular towards the end of the reference period, due to the short dealy time.

It is not expected to bring about negative impact on cost, affordability an jobs due to the relatively long transitional periods.

Sub-option 4

Following this option, the savings compared to BAU would be 35,5 TWh in 2020 and 49,3 TWh in 2025.

This approach provides:

- A high level of ambition and thus considerable savings
- Sufficient time to re-design products without disproportionate additional costs, thus no or little negative impacts on affordability
- Little risk of job losses
- User-friendliness since short resume times and high capacities are still feasible

The following table summarises the considerations on the impacts of the sub-options and assesses them on a relative scale from +++ (very strong positive impact) to - - - (very strong negative impact):

	Electricity/CO2 cost savings	Additional Costs for manufacturers	Impact on jobs in SMEs
Sub 1	+	+/-	+/-
Sub 2	+++	-	-
Sub 3	++	+	+
Sub 4	+++	+	+

It is concluded that sub-option 4 is the preferred option, achieving the appropriate balance between positive environmental impacts and electricity cost savings, and possible risks related to additional costs for manufacturers and jobs, mostly linked to the timing.

Sub-option 1 does not sufficiently take into account that the increase of the delay time decreases the savings substantially. So although the power limits are very ambitious, the savings remain relatively low. At the same time, the timing in this scenario is rather tight not allowing sufficient time to re-design products at appropriate costs/within the normal product cycle.

Sub-option 2 would initially lead to the highest savings but at the same time would impose considerably higher burdens on manufacturers. In the long term, it would not bring about higher savings than sub-option 4. The timing in this scenario is very tight and the final level of ambitions is very high, thus risking that the re-design products at appropriate costs/within the normal product cycle will not be possible.

Sub-options 3 would impose lower burdens on manufacturers, while leading to lower accumulated electricity/CO2/electricity cost savings vis-à-vis sub-option 4..

6.1. Key elements of the preferred option "Horizontal" ecodesign implementing regulation on networked standby

This sub-section contains key elements of a potential ecodesign implementing measure. Definition of the types of EuPs covered along the parameters spelled out for sub-option 4.

It is proposed to address networked standby through an amending act to the existing Commission Regulation (EC) 1275/2008.

To this end, the scope of the product categories addressed by an ecodesign measure on networked standby is in line with the scope of regulation EC 1275/2008. It addresses plug and play electrical and electronic household and office equipment.

The scope of the standby regulation 1275/2008 was originally defined by using an approach similar to the "Waste electrical and electronic equipment" (WEEE) Directive[20], while limiting the application to products corresponding to "household" and "office" equipment. In addition, the "catch all" clause ensures that products not being explicitly named in the product list that can never be exhaustive, and/or which are just being places on the market are covered. Fixed installed equipment and Information and Technology equipment having class A according to the EMC Directive were exempted from the scope and will remain exempted.

6.1.1. Two-staged implementation of ecodesign requirements

a) Level of ambition

The preparatory study concludes that the energy consumption is directly related to the resume time of a product. This is why it differentiates different groups of products: products with High Network Availability (HiNA, resume time < 1 second), Medium Network Availability (MeNA resume time < 5 seconds) and Low Network availability (LoNA, resume time above 5 seconds). Accordingly, the study assumes three energy consumption levels 8 Watt (HiNa), 3 Watt (MeNA) and 2 Watt (LoNa) to be the appropriate level of ambition for the "horizontal" networked standby.

In the course of the discussion it has become clear that the application of the resume-time paradigm to determine the power allowances bears some operational problems. Experts agreed that it could be an alternative to define a group of products with High Network Availability. The non-HiNA products would be classified as LoNA-products although they would generally be staying below 5 seconds to resume their main function.

b) Power limits

The following power limits are foreseen to come into force in two stages which are scheduled as follows:

Stage 1, effective 2015, with the following power consumption requirements: 12 Watt for products with High Network Availability (HiNA) and 6 Watts for products with Low Network Availability (LoNA).

Stage 2, effective 2017, with the following power consumption requirements 8 Watt for products with High Network Availability (HiNA) and 3 Watts for products with Low Network Availability (LoNA).

[20] Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE), OJ L 37, 13.2.2003, p. 24; recast of the WEEE-Directive about to be adopted very soon.

The second stage corresponds to the desirable level of ambition. Less demanding requirements are set in a first stage, and additional time is given to achieve compliance with level of the requirements of the second stage.

While the technical study had proposed to realise these levels in two stages being 2013 and 2016, the Commission considers giving more time for the development of technical solutions that are not available yet due to the delay in the process and against the background of further stakeholder input

c) Power management

Networked Products in the sense of the regulation need to be automatically switched into a condition having networked standby and meeting the power limits after the shortest possible time appropriate for the intended use. The default delay time should not exceed 20 minutes. The default delay time has major impacts on the energy saving potential.

d) Definitions for networked standby

The functionalities of products in networked standby are not defined as such. Network standby is a low-power condition that allows products to be reactivated via the network by an external trigger. The power consumption depends to a large extent on the degree of network availability, i.e. on the time that is needed to resume functions.

As explained above, the study had concluded that, products should be attributed power allowances depending on the time that is needed to resume applications. It was decided for different reasons and stakeholder feedback to differentiate two different categories (HiNA and non HinA=LoNA) and to define a very limited group of HiNA-equipment:

- Routers, hubs, switches, modems, network access points
- VoIP telephones and video phones
- Equipment with HiNA-functionalities can claim HiNA-power allowances but is not considered HiNA-equipment (e.g. a Complex Set Top Box with integrated router)

e) Benchmarks

The preparatory study and additional input from stakeholders in the Consultation Forum has shown that the lowest achievable networked standby power consumption level differs quite substantially across product groups and network availability (resume/reactivation time). The best available products ("benchmark") in some exemplary categories that achieve high energy efficiency by applying the best available technology are shown in Annex IV.

The preparatory study emphasises however that the energy consumption is strongly related to the resume time of a product, see also below.

6.1.2. Ecodesign parameters for which no ecodesign requirements are necessary

The aim of the regulation is to set ecodesign requirements on a pre-selected environmental impact parameter – energy consumption in the use-phase –, and no provision on further aspects is included. Further environmental aspects of the equipment covered have been addressed qualitatively to the extent possible for the "horizontal" (i.e. not product specific) context, and it is to be noted that the requirements introduced for reducing power consumption in non-active conditions do not negatively affect the other environmental performance parameters of the products covered (see below).

6.1.3. Measurement standard

It is proposed to repeal the 2nd paragraph of Annex II (3) of the Standby regulation in the light of the result of the standardisation process leading to EN 50564 as some of the required uncertainties were identified as being too tight. At the time the Standby regulation came into force EN 50564 was not available, and the uncertainties are now correctly specified in EN 50564.

Additional elements required for the measurement and verification procedures for networked standby which are not provided by EN 50564 will be incorporated.

6.1.4. Information to be provided by the manufacturers

In order to facilitate compliance checks manufacturers are requested to provide information in the technical documentation referred to in Annexes IV and V of Directive 2005/32/EC.

In addition, the following information on networked equipment shall be visibly displayed on free accessible websites of manufacturers:

- Power consumption data in Watts.
- Default time after which the power management function, switches the equipment automatically into a condition having networked standby.

6.1.5. Date for evaluation and possible revision

The main issues for a possible revision of the Regulation are:

- The appropriateness of the levels for the ecodesign requirements for the power consumption in networked standby
- The appropriateness of the product scope.

The second stage of the ecodesign requirements becomes effective in January 2017 (i.e. approximately four years after entry into force of this regulation). With a view to allow sufficient time to collect, analyse and complement data and experiences related to the second stage for a proper assessment of technological progress, a review can be presented to the Consultation Forum six years after entry into force of the regulation.

6.1.6. Interrelation with product specific ecodesign implementing measures

If a certain product is in the scope both of a product-specific ("vertical") and the "horizontal" regulation on networked standby, then the product has to comply both with the horizontal and the vertical measure for affixing the CE mark. Vertical implementing measures are complementary in the sense that environmental aspects other than standby-mode are addressed, including active mode.

However, in general vertical implementing measures prevail, because it may be appropriate for a certain product to set differing requirements on power consumption of standby/off-mode in a vertical implementing measure. In general these should not be less ambitious than those of the horizontal regulation, because the latter sets the "baseline" for networked standby-power consumption.

Products being subject to a vertical implementing measure may be taken out of the scope of the horizontal standby/networked standby regulation.

7. SECTION 7: CONCLUSION

Following the principle of proportionality in the analysis effort, policy options 1 to 3 were discarded at an earlier phase of the analysis. The analysis of several sub-options for the

intensity of an ecodesign regulation on networked standby power consumption for electrical and electronic household and office equipment shows that sub-option 4 optimally fulfils the objectives as set out in Section 3. In particular, the regulation/sub-option 4 implies

– cost-effective reduction of electricity losses in conditions having networked standby;

– correction of a market failure and proper functioning of the internal market;

– no significant administrative burdens for manufacturers or retailers;

– insignificant, if any, increase of the purchasing cost, which would be largely overcompensated by savings during the use-phase of the product;

– accumulated electricity savings/electricity cost/CO2 emission savings of 117,6 TWh, 25,0 billion Euro, 38,9 mt CO2 by 2020 and 339,8 TWh77,3 98,3mt billion EURO by 2025.

– a reduction of the annual electricity consumption of 35,5 TWh (more than the power consumption of Denmark) in 2020 compared to the BAU scenario, corresponding to electricity cost savings of 7,814 billion EURO, and 10,7 mln tons avoided CO2 emissions;

– a reduction of the annual electricity consumption of 49,3 TWh in 2025 compared to the BAU scenario

– costs for re-design and re-assessment upon introduction of the regulation, which are limited in absolute terms, and not significant in relative terms (per product);

– fair competition by creation of a level playing field;

– no significant impacts on the competitiveness of industry, and in particular SMEs due to the small absolute costs related to product re-design and re-assessment;

– a low risk for having negative impacts employment, in particular in SMEs.

8. SECTION 8: MONITORING AND EVALUATION

The appropriateness of scope, definitions and limits will be reviewed after maximum 6 years from the adoption of the measure (as required by Annex VII.9 of the Ecodesign Directive and laid down in the implementing measure). Account will be taken also of speed of technological development and input from stakeholders and Member States. Compliance with the legal provisions will follow the usual process of "New Approach" regulations as expressed by the CE marking.

Compliance checks are mainly done by market surveillance carried out by Member State authorities ensuring that the requirements are met. Further information from the field as e.g. complaints by consumer organisation or competitors could alert on possible deviations from the provisions and/or of the need to take action.

Input is also expected from work carried out in the context of upcoming ecodesign activities on further product categories, and related activities as e.g. the Energy Star programme.

Annex I

Minutes of the meeting of the Ecodesign Consultation Forum[21]

14/09/2011 - Centre Albert Borschette (CCAB), rue Froissart 36, 1049, Brussels.

EC participants: P. Hodson (ENER.C.3, Chairman), Ulrike Nuscheler ENER.C.3, Adam Romanowski (ENER C3).

The Chair welcomed the participants and introduced them to the planned structure of the meeting: There would be a presentation of the working document by the European Commission divided into four blocks with discussion after each of the blocks. DIGITALEUROPE as main stakeholder was allowed to present 2-3 slides for each of the blocks.

First block: Approach, Scope and Relation towards other instruments

Under the first block, the following issues were addressed:

- General approach and Scope
- Relation between a networked standby regulation and the current regulation 1275/2008
- Relation between a networked standby regulation and the Voluntary Agreements in progress

Commission staff outlined the general approach of the planned measure: The regulation on networked standby should be incorporated into the existing standby regulation 1275/2008 via an amending act. This implies that the horizontal approach of 1275/2008 is maintained and the scope - household and office equipment as defined in 1275/2008 - remains equivalent (Exception: "complex", i.e. networked TVs that will be added to the scope).

Networked products are a subset of products covered by regulation 1275/2008. Non-networked products will not be subject to the networked standby requirements while the normal standby requirements continue to apply to networked products, in particular if no network ports are activated.

To clarify the relation between the horizontal regulation(s) and vertical measures/instruments it was made clear that products which will be regulated through a vertical eco-design regulation at a later stage can be exempted from the scope of the horizontal regulation. Products addressed by a Voluntary Agreement (VA) will have to comply with the requirements of the horizontal regulation or with more ambitious requirements of the VA.

The Chairman opened the discussion and invited DIGITALEUROPE as main affected industry stakeholder to present their views along with some slides.

DIGITALEUROPE signalled general support for the proposed approach to regulate networked standby via an amendment to regulation 1275/2008 since this was considered a very clear message to the design teams, in particular as the scope will not be altered. However, a horizontal approach would also have disadvantages: As it needed to cover all products the terminology was complicated, for networked standby even more complicated than for regulation 1275/2008.A vertical regulation could be more ambitious and – because technology-specific – more straightforward. DIGITALEUROPE proposed to have a horizontal approach for products for which vertical measures, including Voluntary

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Agreements, were not in place or planned. Regarding the relationship between 1275/2008 and a future implementing measure on networked standby, DIGITALEUROPE drew attention to the different timelines for design requirements that industry considered confusing.

While ECOS showed sympathy for industry's concerns regarding an overlap of requirements between horizontal and vertical measures, they strongly disagreed on the proposed solution of DIGITALEUROPE, i.e. exempting products that are subject to planned or adopted vertical measures from horizontal measures. ECOS proposed instead to state in a recital that vertical measures should only take effect 12-18 months after entry into force of the horizontal measure in order to allow industry time to react to different requirements.

The NL-representative emphasised the advantages of a regulation vis-à-vis Voluntary Agreements which do not have the same legal status and can be withdrawn any time, thus creating uncertainty. He was concerned that with the approach suggested by DIGITALEUROPE loopholes would be created.

Regarding the two VAs in question (Complex Set Top Boxes and Imaging Equipment) there were some exchanges between DIGITALEUROPE on the one hand and Consumer and Environmental organisations on the other hand. While industry took the view that the VA in Imaging Equipment covered 98% of the products, hence should have the same value as a regulation, ECOS and BEUC pointed out that it was not the same situation with Complex Set Top Boxes and that Voluntary Agreements took a lot of time to prepare.

UK signalled support for the proposed approach (horizontal, amendment act). To keep the scope of regulation 1275/2008 was considered to be the right choice. The representative underlined that the networked standby regulation should be quickly adopted; one should aim for a compromise with industry. More ambitious targets could be set via vertical measures and later on in the revision. UK stressed the point that VAs would indeed have to comply with the requirements of the horizontal regulation.

DK outlined that the horizontal approach guaranteed also that future products will be taken into account. The IFA in Berlin had shown that more and more products will have network connectivity, including white goods.

The Chairman concluded that Voluntary Agreements had an important role and that the Commission continued to work on this, in particular where no horizontal or vertical requirements applied. He stressed that it was a fact that legislative acts prevail over Voluntary Agreements.

Second block: Definitions and Network Availability

EC staff explained the concept of resume time and the definition of network ports. In the course of the preparatory study, resume time had been identified as the parameter to determine different degrees of network availability (High/Low Network Availability -> "HiNA"/"LoNA") and thus power allowances. EC staff recognised however that in the process of further elaboration doubts had come up on whether the categorisation and testing of the time to resume a main function could be implemented.

DIGITALEUROPE in its presentation confirmed that the practicability of resume time was limited because for example already the definition of "main function" as being product-specific would cause problems. Moreover, no test methods and test standards were available. The representative concluded that it was impossible to implement the resume-time concept. He proposed as an alternative that product categories with HiNA and LoNA should be defined on the basis of the Code of Conduct for Broadband Equipment.

The DK representative agreed that the categorisation of HiNA- and LoNA-products on the basis of resume time was difficult. He found however that many of the concerns expressed by DIGITALEUROPE were less relevant. He said DK was open to discuss a new approach but that the Code of Conduct was not the right basis.

Already at the beginning of the meeting the AT-delegate had argued in favour of a detailed categorisation of products within the horizontal measure in order to avoid amendments.

The DE representative warned that the definitions would bring about major difficulties for market surveillance if they were ambiguous. In particular, it would need to be precisely defined what a "remote trigger" was in order to distinguish it from a simple activation (example TVs and remote control).

The chairman asked what a new approach could look like and gave the floor to the representative of NL who had developed a typology of products under an amended regulation 1275/2008 prior to the meeting (including a list of products with High Network Availability-functionalities), which he briefly outlined. It was suggested to circulate the typology (see Annex III) amongst the participants and to collect further comments.

The representative from SE welcomed the overall approach as set out in the working document. He added that the Commission should explore if standardisation could be included.

The UK delegate stressed that the resume time definition should be clear. DIGITALEUROPE's proposal could prove to be too inclusive. The definition of the network port would need to be clarified: Was it meant to be bi-directional? She raised two more questions: Would a remote control be considered as a remotely initiated trigger? How should two products in one package be dealt with?

DIGITALEUROPE/Cisco agreed that a better definition of network ports was indeed necessary. In that context, the representative of DIGITALEUROPE/SEE pointed out that the definition of network ports was also not applicable to all products, e.g. game consoles. Therefore, he suggested a different wording which would take into account that there are networked products whose remote access functionality will not be used.

The representative of NL explained that Ecodesign referred to products as placed on the market and that it would not be helpful to address their packaging under this regulation. He also clarified that only network ports that were connected to the network and able to be reactivated via the network would be considered as such. If no network port was connected and active, equipment would need to fulfil the requirements of regulation 1275/2008.

Third block: Power Management and Power Limits

The Commission Staff outlined the Power Management requirements set out in the Working document with Power Management to be introduced with a first Tier and Low Network Availability as default condition. They presented the power limits for the Low and High network availability for the first and second tier (planned for 2014 and 2016).

The following discussion addressed: a) power limits for LoNA-products and b) auto power down requirements.

a)

In its presentation, DIGITALEUROPE criticised the reinterpretation of the concept of Low Network Availability: The performance requirements of Medium Network Availability (network availability between 1 and 10 seconds) had been combined with a power allowance of Low Network availability (4 Watts/Tier 1 and 2 Watts/Tier 2). This approach was not feasible for some products a complete redesign was needed to achieve the limits. While for a first tier products should not need to be systematically re-designed, this would be the case for some wide product groups (audio, video, products with high rated power). Also the timing for Tier 2 (2016) which assumes a general re-design of products would be critical.

The CECED-representative raised concerns regarding household appliances. It could not be predicted how networked household appliances would develop. Household appliances with motor and heating components required a high rated power.

The DK-representative was of the opinion that it should not be technically difficult to achieve the proposed levels but that the time line was essential. He presented the Danish position on power limits and transitional periods: For High Network Availability 10 Watts instead of 12 Watts and three tiers instead of two: 2013, 2014, 2016 (the latter with 1 Watt/2 Watt for Low and High Network Availability)

The IT-delegate was concerned that it might prove to be too difficult to set limits for products that will only be developed in the future.

DIGITALEUROPE/Sony stressed that while some products were able to achieve the limits rather easily, it would take 4 years to develop new chips. The representative raised concerns regarding the fact that the second Tier (2016) would enter into force after the foreseen revision of regulation 1275/2008.

EEB replied that this was the case also in other measures; to have a Tier after the foreseen revision was absolutely feasible. In response to CECED's concerns the representative said that it was the regulation's objective to trigger new thinking, hence energy consumption should be taken into consideration now and not when appliances were ready.

The representative of DIGITALEUROPE/Intel explained that in the case of PCs, with technological development, also capacities and memory would constantly increase and thus increase power consumption. Low energy levels for PCs were possible but would mean bigger delays (in the area of 20 seconds). Anything beyond 5 seconds would make users shut down their computers. He reminded participants that in the original concept of the study a resume time of 5 seconds would have been considered Medium Network Availability.

ECOS countered that power limits were one thing, user comfort something else. Tablets could boost within 1 second, laptops were much slower, and this was an issue for the manufacturers.

DIGITALEUROPE/Intel disagreed with this statement explaining that the power consumption depended mainly on the large memory. Tablets could use a different technology than PCs and notebooks.

EEB in response to DIGITALEUROPE answered that consumers indeed did not accept long resume times while they were working with the computer. However, the working document would not refer to manual reactivation but to reactivation via a remote trigger. A solution could be to give users the possibility to choose higher network availability. The representative added that in case the Commission wanted to propose higher limits, they should make sure that simple products would not use high levels of energy.

For Complex Set Top Boxes, DIGITALEUROPE/Technicolor found that horizontal power limits were not useful in general. Complex Set Top Boxes partly required High Network Availability (if linked to gateways). The power limits for Low Network Availability were not at all realisable. Stringent requirements might mean that manufacturers combined several devices to be able to meet the limits.

DIGITALEUROPE/Océ stated that from a broader perspective even less stringent values would mean a huge improvement in terms of energy efficiency. So far, equipment in "ready mode" consumed easily 50, 100, 200 watts, for example PCs consumed 70 Watts in idle mode, printers even 500 Watts. Against this background, the question whether 6 or 8 Watts were appropriate was much less relevant, there would in any case be huge savings.

INFORSE disagreed saying that with the current trend to have more and more networked products, even a difference of one watt mattered as they were accumulating.

DIGITALEUROPE/HP called for the computer vertical implementing measure to be quickly implemented. An alternative, vis-à-vis stringent power limits for computers and hence a slower responsiveness, could be to ship computers with a higher version as default condition and enable consumers to choose an energy-saving mode, which could help avoid complaints.

DIGITALEUROPE/Cisco stressed that the foreseen 4 Watts of Tier 1 were not achievable.

DIGITALEUROPE/SSE explained that WOWLAN as used for game consoles entailed an additional functionality, which would mean that more energy (around 2 Watts) was needed.

The SE-delegate asked why the concept of Medium Network Availability as introduced by the study had been abandoned.

The Commission explained that the feedback from industry had been that very few products needed more than 5 seconds resume time and that it was not very useful to have a third category. One should rather distinguish products that have to react at once (High Network Availability) and products which do not (Low Network Availability). Moreover there was a natural competition between manufacturers to have short reactivation times. The Commission had, for the sake of clarity and simplicity, considered this approach a good one to follow.

b)

Regarding the power management requirements for certain networked products, ECOS was of the opinion that, where possible, the product should be able to shut down the networked connection once a job was done, e.g. an oven.

In this context, the Commission explained that networked products would need to comply with the requirements of regulation 1275/2008 once the task was carried out and there was no further need to wait for an external trigger, for example washing machines. In such cases it would not make sense that a networked product was forced to go into networked standby. It should preferably go to a normal standby/off mode. One could develop this concept further towards less obvious examples, e.g. for products that do not get a signal for a couple of days or during night (while taking into account the "appropriateness of the intended use" to be determined by the manufacturer).

The NL-representative disagreed on this interpretation of auto power down to normal standby/off-mode also for networked products. From his perspective, this seemed confusing.

Fourth block: Measurements and Information requirements

The Commission staff presented the Ecodesign requirements regarding Measurements and Information set out in the working document.

The representative of CENELEC said that experience had shown that a deviation limit of 10% was already difficult to achieve. Against this background, she was wondering how a 5%-target would fit.

The Commission explained that in the standby regulation a margin of 2% had been stipulated and that it was foreseen to align this with standard EN 50564. A margin of 5% for power consumption seemed to be adequate.

BEUC asked what the Commission's plans were to have consumer information better integrated in the measure.

ECOS supported BEUC in this saying users should have more control. Equipment should be shipped with wireless connections disabled and should provide a hard switch. The set up menu should offer the possibility to switch off High Network Availability.

DIGITALEUROPE/Technicolor disagreed: If wireless connections were not activated, industry would be confronted with many complaints.

Regarding hard switches, there had been long discussion in the past; already the definition of a hard switch had triggered problems. Moreover, manufacturers were reluctant because they feared damage to the product.

EEB/Ökopol concluded that beyond the discussion about hard switches it was a fact that consumers had less and less influence and that it would already be an advantage if consumers knew in what levels they were.

Conclusions of the meeting:

The chairman summarised the findings and drew the following conclusions:

The Scope won't be reviewed;

The proposal of the Netherlands to define High Network Availability product groups should be further discussed and refined;

The requirements for Power Management should be reviewed, in particular regarding the question of in which cases networked products will need to comply with the requirements of regulation 1275/2008;

The concerns of the consumers should be revisited;

The power limits and the timing should be further discussed.

He gave a deadline for comments for 14 October 2011.

Annexes:

Annex I: Participants List

Annex II: Working Document

Annex III: Topology of Network Availabilities of Products

Annex II

Structure of the methodology used for establishing the technical, environmental and economic analysis

Following the "Methodology Study Eco-design of Energy Using Products" ("MEEuP"), the tasks listed below are carried out for developing the technical, environmental and economic analysis referred to in Annex II of the Ecodesign Directive:

Task 1: Product definition, existing standards and legislation

Task 2: Economics and market analysis

Task3: Analysis of consumer behaviour and local infrastructure

Task 4: Technical analysis of existing products

Task 5: Definition of base case ("average" model) and related environmental impact

Task 6: Technical analysis of best available technology

Task 7: Improvement potential

Task 8: Policy, impact and sensitivity analysis

Annex II

Data comparison of products in total (with active mode)

Product Category	2010	2020	Difference
Complex TV	4.67	44.06	39.38
Home Gateway	11.34	22.26	10.91
Compl. Player/Recorder	1.20	8.02	6.82
Game Consoles	7.21	12.33	5.12
Complex STB	5.63	10.28	4.65
Home Notebook	3.64	6.55	2.90
Home NAS	1.35	3.30	1.94
Office Notebook	2.84	3.67	0.84
Home Phones	4.43	5.15	0.72
Office Display	2.42	2.89	0.47
Home Display	4.72	4.85	0.12
Office IJ Printer/MFD	1.10	1.21	0.11
Home EP Printer	0.49	0.55	0.06
Office Desktop PC	8.68	8.62	-0.06
Home Desktop PC	16.82	16.71	-0.11
Home IJ Printer	1.75	1.55	-0.20
Office Phones	2.23	2.02	-0.21
Office EP Printer	3.15	2.83	-0.33
Simple STB	6.50	4.24	-2.27
Simple Player/Recorder	11.65	6.96	-4.69
Simple TV	72.88	37.35	-35.53
Total	174.72	205.38	30.66

Data comparison of products in total (without active mode)

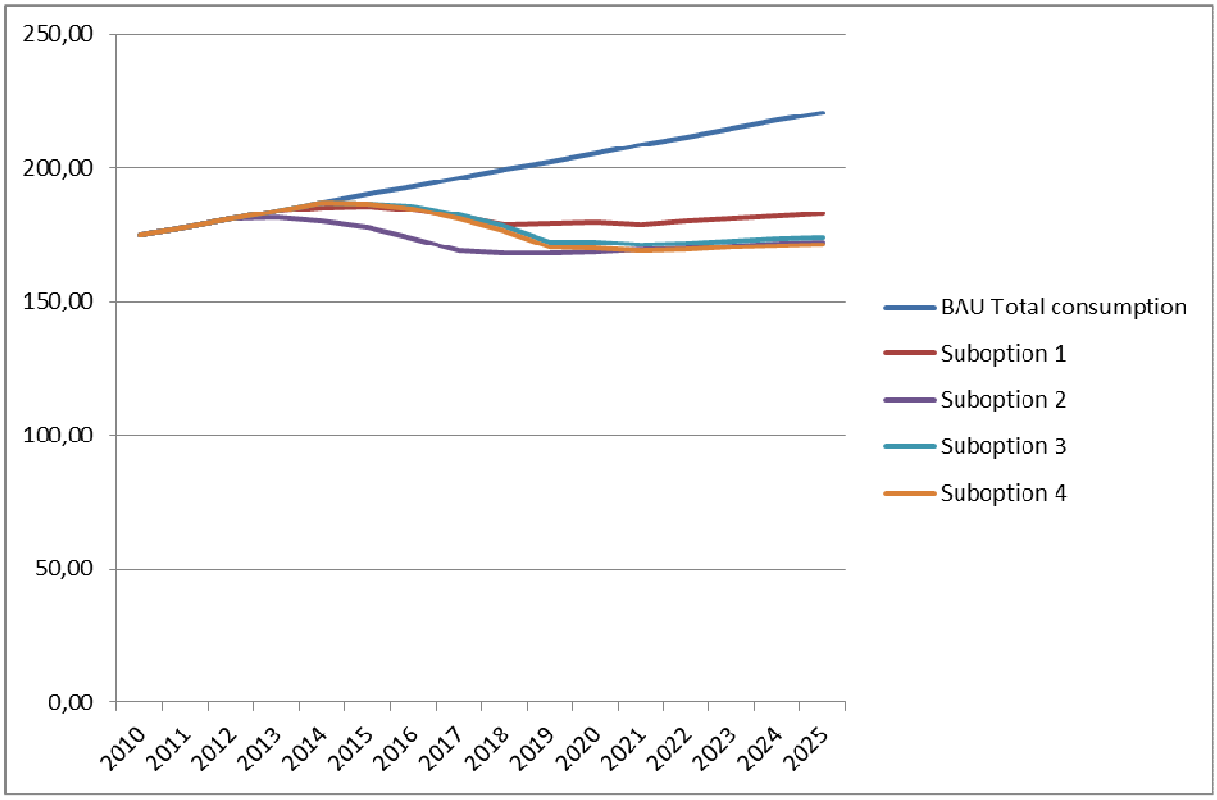
Product Category	2010	2020	Difference
Complex TV	0.29	15.32	15.03
Home Gateway	7.17	15.36	8.18
Compl. Player/Recorder	0.44	5.51	5.07
Game Consoles	4.47	9.35	4.88
Complex STB	1.14	5.33	4.19
Home Notebook	1.58	3.31	1.74
Home NAS	0.91	2.23	1.31
Home Desktop PC	6.78	7.94	1.16
Home Phones	3.96	4.61	0.65
Office Notebook	0.89	1.32	0.43
Home Display	0.86	1.26	0.39
Office Desktop PC	2.64	2.97	0.34
Office Display	0.26	0.44	0.18
Office IJ Printer/MFD	0.91	1.06	0.15
Home EP Printer	0.40	0.45	0.05
Office EP Printer	1.43	1.37	-0.06
Office Phones	1.80	1.63	-0.17
Home IJ Printer	1.66	1.47	-0.19
Simple STB	2.09	1.36	-0.73
Simple TV	5.61	2.87	-2.73
Simple Player/Recorder	9.10	5.44	-3.66

Total	54.39	90.60	36.217

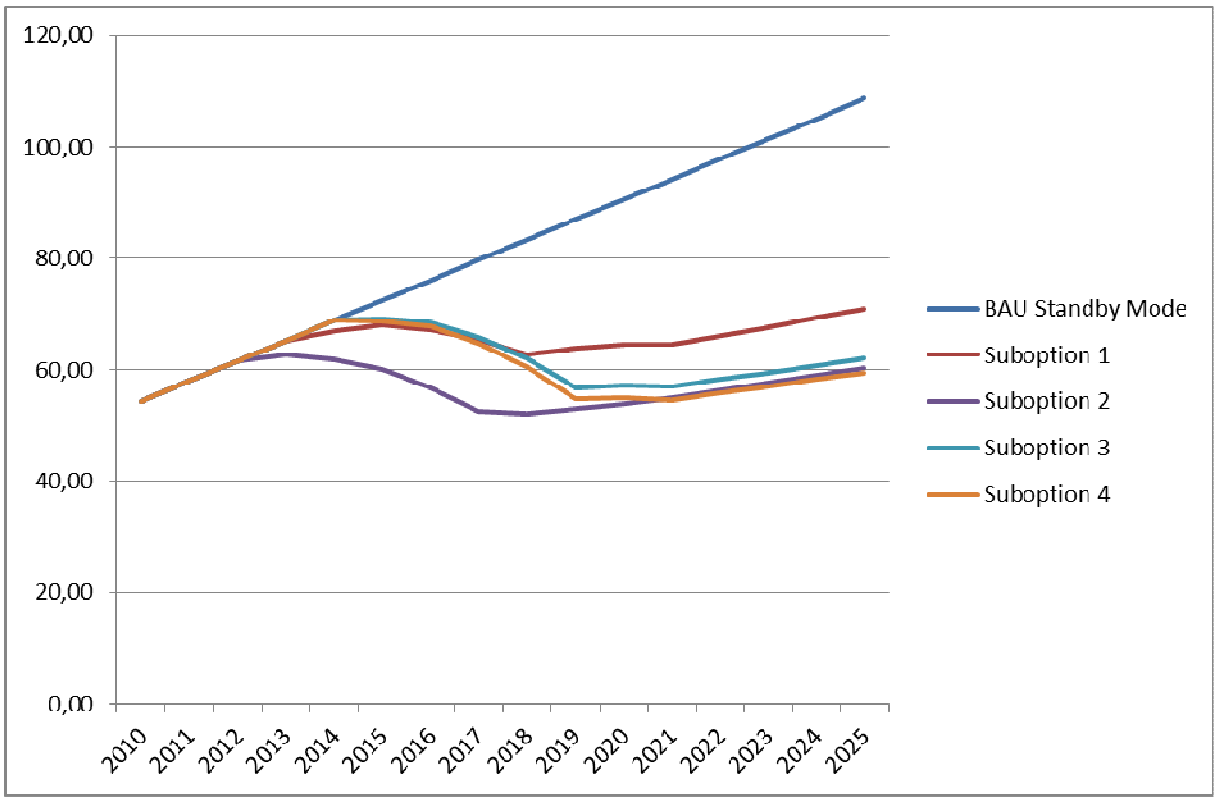
Annex IV

Assessment and calculation of savings per sub-option

Total power consumption of networked equipment from 2010 to 2025



Power consumption of networked equipment in a condition of standby from 2010 until 2025.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2025
BAU Standby Mode
Suboption 1
Suboption 2
Suboption 3
Suboption 4

Calculations of Savings for Sub-option 1 – Summary table

Summary Table																		
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Accumulated 2010-20	Accumulated 2010-25
Stock in million	1 932	1 971	2 010	2 049	2 088	2 127	2 165	2 204	2 243	2 282	2 321	2 360	2 399	2 438	2 477	2 516		
BAU Scenario in TWh	174,72	177,79	180,86	183,92	186,99	190,05	193,12	196,18	199,25	202,32	205,38	208,45	211,51	214,58	217,65	220,71		
Tier 1/ Tier 2 Scenario in TWh	174,72	177,79	180,86	183,92	185,09	185,57	184,09	181,78	178,65	179,13	179,38	178,83	179,83	180,83	181,83	182,83		
Electricitry Savings in TWh	0,00	0,00	0,00	0,00	1,90	4,49	9,03	14,40	20,60	23,18	26,00	29,61	31,68	33,75	35,82	37,88	**99,61**	**268,36**
Cost Savings in Mio. €	0,00	0,00	0,00	0,00	360,87	875,15	1 806,42	2 952,70	4 326,38	4 984,67	5 720,82	6 663,05	7 286,71	7 931,04	8 596,06	9 281,75	**21 027,01**	**60 785,62**
CO2 Savings in Mio. t w/o supply chain	0,00	0,00	0,00	0,00	0,78	1,80	3,44	5,20	7,03	7,44	7,83	8,59	8,85	9,06	9,22	9,35	**33,52**	**78,59**
CO2 Savings in Mio. t with supply chain	0,00	0,00	0,00	0,00	0,83	1,93	3,69	5,57	7,52	7,97	8,38	9,20	9,47	9,70	9,87	10,00	**35,89**	**84,13**

Calculations of Savings for Sub-option 2 – Summary table

Summary Table																		
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Accumulated 2010-20	Accumulated 2010-25
Stock in million	1 932	1 971	2 010	2 049	2 088	2 127	2 165	2 204	2 243	2 282	2 321	2 360	2 399	2 438	2 477	2 516		
BAU Scenario in TWh	174,72	177,79	180,86	183,92	186,99	190,05	193,12	196,18	199,25	202,32	205,38	208,45	211,51	214,58	217,65	220,71		
Tier 1/ Tier 2 Scenario in TWh	174,72	177,79	180,86	182,37	182,06	180,93	178,49	175,24	174,45	175,02	175,59	176,63	177,66	178,69	179,72	180,76		
Electricitry Savings in TWh	0,00	0,00	0,00	1,55	4,93	9,13	14,63	20,95	24,80	27,30	29,79	31,82	33,86	35,89	37,92	39,95	**133,07**	**312,51**
Cost Savings in Mio. €	0,00	0,00	0,00	287,62	936,16	1 779,71	2 925,91	4 293,87	5 207,44	5 869,48	6 553,50	7 159,93	7 786,69	8 433,79	9 101,21	9 788,97	**27 853,69**	**70 124,29**
CO2 Savings in Mio. t w/o supply chain	0,00	0,00	0,00	0,65	2,02	3,66	5,58	7,57	8,46	8,76	8,96	9,23	9,45	9,63	9,77	9,86	**45,66**	**93,60**
CO2 Savings in Mio. t with supply chain	0,00	0,00	0,00	0,69	2,16	3,92	5,97	8,10	9,06	9,38	9,60	9,88	10,12	10,31	10,46	10,55	**48,88**	**100,20**

Calculations of Savings for Sub-option 3 – Summary table

Summary Table																		
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Accumulated 2010-20	Accumulated 2010-25
Stock in million	1 932	1 971	2 010	2 049	2 088	2 127	2 165	2 204	2 243	2 282	2 321	2 360	2 399	2 438	2 477	2 516		
BAU Scenario in TWh	174,72	177,79	180,86	183,92	186,99	190,05	193,12	196,18	199,25	202,32	205,38	208,45	211,51	214,58	217,65	220,71		
Tier 1/ Tier 2 Scenario in TWh	174,72	177,79	180,86	183,92	186,99	186,64	185,50	182,20	177,96	172,21	172,05	171,17	171,90	172,62	173,35	174,08		
Electricitry Savings in TWh	0,00	0,00	0,00	0,00	0,00	3,41	7,62	13,99	21,29	30,10	33,33	37,28	39,62	41,96	44,30	46,64	**109,75**	**319,53**
Cost Savings in Mio. €	0,00	0,00	0,00	0,00	0,00	665,88	1 523,19	2 867,29	4 471,59	6 472,09	7 333,19	8 387,81	9 112,24	9 860,07	10 631,29	11 425,90	**23 333,24**	**72 750,54**
CO2 Savings in Mio. t w/o supply chain	0,00	0,00	0,00	0,00	0,00	1,37	2,90	5,05	7,26	9,66	10,03	10,81	11,06	11,26	11,41	11,50	**36,29**	**92,34**
CO2 Savings in Mio. t with supply chain	0,00	0,00	0,00	0,00	0,00	1,47	3,11	5,41	7,78	10,35	10,74	11,58	11,84	12,06	12,21	12,32	**38,85**	**98,85**

Calculations of Savings for Sub-option 4 – Summary table

Summary Table																		
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Accumulated 2010-20	Accumulated 2010-25
Stock in million	1 932	1 971	2 010	2 049	2 088	2 127	2 165	2 204	2 243	2 282	2 321	2 360	2 399	2 438	2 477	2 516		
BAU Scenario in TWh	174,72	177,79	180,86	183,92	186,99	190,05	193,12	196,18	199,25	202,32	205,38	208,45	211,51	214,58	217,65	220,71		
Tier 1/ Tier 2 Scenario in TWh	174,72	177,79	180,86	183,92	186,99	186,33	184,84	181,11	176,40	170,19	169,86	168,85	169,49	170,13	170,77	171,41		
Electricitry Savings in TWh	0,00	0,00	0,00	0,00	0,00	3,73	8,28	15,08	22,85	32,12	35,52	39,60	42,03	44,45	46,88	49,30	**117,57**	**339,82**
Cost Savings in Mio. €	0,00	0,00	0,00	0,00	0,00	726,83	1 655,08	3 090,58	4 797,81	6 906,65	7 814,21	8 910,03	9 665,83	10 445,87	11 250,17	12 078,71	**24 991,17**	**77 341,78**
CO2 Savings in Mio. t w/o supply chain	0,00	0,00	0,00	0,00	0,00	1,50	3,16	5,45	7,79	10,31	10,69	11,49	11,74	11,93	12,07	12,16	**38,89**	**98,28**
CO2 Savings in Mio. t with supply chain	0,00	0,00	0,00	0,00	0,00	1,60	3,38	5,83	8,34	11,04	11,44	12,30	12,56	12,77	12,92	13,02	**41,64**	**105,21**

Annex IV - Benchmarks

Product	Power consumption in networked standby (W)	Resume time (category)	Remarks*
Desktop computer	1.65	MeNA	S3+WOL
Notebook computer	1.25	MeNA	S3+WOL
Notebook computer	< 1	LoNA	S4/S5+WOL
Network Attached Storage (Home NAS)	2.3	MeNA	
Inkjet printer	3.7	MeNA	WLAN, USB
Large format printer	9.7	LoNA	
Home Gateway	3.3	HiNA	
Complex set-top box	4.5	MeNA	Cable
Mobile (handheld) products	< 1	HiNA	WLAN

* S3-S5 refer to ACPI states: S3=suspend to RAM; S4=suspend to disk; S5=soft off. WLAN=Wireless LAN. USB=Universal Serial Bus.