COMMENTS

ON THE REVISION OF THE COMPUTER REGULATION (EU) NO 617/2013

Brussels, 28 October 2024

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Following the Ecodesign and Energy Labelling Consultation Forum on Computers of 01/10/2024, the environmental NGOs and repair actors hereby submit their views on the proposed refinements.

We, ECOS, iFixIt, Halte à l'Obsolescence Programmée, Deutsche Umwelthilfe, supported by both the Right to Repair Europe and Coolproducts campaigns, strongly support a swift revision of the document that encompasses improved ecodesign requirements on energy and material efficiency. We support the introduction of an Energy Label including energy-related information in combination with repair scoring and durability information.

We appreciate many of the following proposals made in the Consultation Forum meeting, and in this paper we propose a number of refinements that would further ensure the robustness of the draft, including addressing the following aspects:

- Scope and Definitions:

Broaden the scope to include workstations with specific requirements for expandability and error correction, include Chromebooks under thin clients, and refine definitions for devices like tablets and industrial computers.

- Repairability:

Strengthen repairability by ensuring availability of all spare parts to users, with reliable information on their price, setting stricter timelines for parts and repair information, banning parts serialization, and defining clear limits for spare part delivery times and availability.

- Sturdiness:

Clarify sturdiness and repairability metrics to facilitate more meaningful energy labels.

- Battery:

Require batteries that are replaceable by end-users, as is mandated in the Battery Regulation.

- Components:

Restrict the use of flame retardants and limit recycled content to post-consumer recycled.

- Labelling and Consumer Information:

Improve transparency on labels regarding repairability, energy efficiency, spill resistance, and compatibility of chargers, and conduct consumer studies to assess label clarity.

- Operating System and Software Updates:

Mandate updates for a minimum of 10 years, addressing consumer security and functional longevity.

- Energy Efficiency:

Propose exemptions for high-performance GPUs to encourage stricter energy limits and improve energy efficiency metrics.

ECODESIGN ACT

We believe the scope of the measures should be as expansive as possible, yet there is a lack of clarity in the current definitions that runs the risk of establishing loopholes. Particularly in the following areas:

ARTICLE 2 - DEFINITIONS

WORKSTATIONS (NEW DEFINITION)

We do not support the suggestion to remove these products from the scope of the computer measure to include it at some point in the Regulation on ecodesign requirements for servers and data storage products EU 2019/424 (later referred to as 'the Servers Regulation). Workstations should be included in the scope of the computer regulation with a tight definition, material efficiency requirements and higher modal limits. However, without using adders, the additional expandability and sometimes highly specialised hardware, compared to desktops, prevents any effective model limits from being set.

The workstation definition should focus on certification for reliability, registered memory, and error correction code (ECC) while being independent of the processor manufacturer. However, ECC alone is not sufficient and is already available in some consumer desktops. It is not cost-prohibitive and enables CPU manufacturers to differentiate their products. Therefore, it should also include minimum expandability requirements.

We recommend avoiding layered definitions such as “high-performance computing” and “computer using registered memory” and the way that workstations and the general definition of computers and desktops are confounded in the current draft, instead focusing directly on the term workstation with a succinct and clear definition.

Action:

Our suggested definition is below and amended from ENERGY STAR:

- *A workstation is a type of computer with hardware that supports error-correcting code (ECC) that detects and corrects errors with dedicated circuitry on and across the CPU, interconnect, and system memory. In addition, a workstation can support the installation of at least eight memory modules.*

Remove the definition of high performance computing and references to workstation in definitions of other computer types:

1. *For the purposes of this regulation the following definitions shall apply:*

   (1) ‘computer’ ~~or ‘workstation~~’ means…

   (2) ‘desktop computer’ ~~or ‘workstation~~’ means

   (5) ‘Integrated desktop computer’ ~~or’ integrated desktop workstation~~’ means

(3) THIN CLIENTS AND CHROMEBOOKS

We support the additions to the edited version of the ecodesign working document to specifically define and include mobile thin clients in the scope. We consider the definition of mobile thin client to be appropriate and to adequately include Chromebooks, which are essentially thin clients and need no special definitions.

On this assumption, we support the inclusion of Chromebooks within the labelling scope via the thin client definition. Even if they cannot be subject to energy efficiency measures it is still legitimate for them to be

included with battery endurance requirements, using the same methodology developed for the energy label of smartphones[1].

Action:

- It should be made explicitly clear in the annexes to what extent the ED & EL requirements apply to thin clients. In particular, all material efficiency requirements should still apply to these products as well as model power limits.
- Thin clients should be retained in the scope of energy labelling with a specific section on label design for these products included in Annex III.

(8) TABLET COMPUTER

As currently defined in the revised ED working document, tablet computers with a computer OS and without an integrated physically attached keyboard in their designed configuration would fall into a grey zone between Ecodesign Regulation (EU) 2023/1670 on smartphones, mobile phones other than smartphones, cordless phones and slate tablets (later referred to as 'the Smartphones Regulation") and Ecodesign Regulation (EU) 617/2023 on computers. The requirements in the annexes should be carefully written in such a way as to allow for tablet computers to be considered as either notebooks or Chromebooks.

Further, the repair score assumes an option of a notebook either with or without a keyboard and trackpad but does not allow for the possibility of a notebook or computer tablet with a keyboard and no trackpad or vice versa.

Action:

For a more streamlined and future-proof approach, remove the definition of tablet computer and allow for these to be included within the notebook definition:

- (4) 'laptop computer' or 'notebook computer' **'slate computer'** or 'mobile computer' means a computer designed specifically for portability and to be operated for extended periods of time either with or without a direct connection to an AC power source, relying on an integrated battery**, and** . Notebook computers integrate a display **that may be touch-sensitive**, and **may include an attached, detachable or wireless-connected** physical keyboard **and/or** a touchpad with integrated buttons. **It is placed on the market with an operating system designed for computers (as opposed to operating systems designed for mobile platforms, identical or analogous to smartphones).**

Provide additional repair score formula for the following cases:

- *c) if keyboard but no trackpad is present, the following formula shall be used:*
- *d) if trackpad but no keyboard is present, the following formula shall be used:*

[1] Commission Delegated Regulation (EU) 2023/1669 of 16 June 2023 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to the energy labelling of smartphones and slate tablets. Available here.

(13) INDUSTRIAL COMPUTERS

The definition of industrial computer is weak and should be tightened to avoid creating a loophole by referencing compliance with the standard MIL-STD-810.

Action:

Edit definition as follows:

- *'industrial computer' means a computer designed to reliably operate in harsh environments, resisting ~~to~~ heat, dust or water intrusion such as those in factory or industrial environmental for machine automation, manufacturing equipment, process control or autonomous robotics.* ***Industrial computers have been tested using the standard MIL-STD-810.***

ARTICLE 8 – REVIEW

We strongly support addressing repair with used or third-party spare parts, extending the list of spare parts, making all parts available to users, and further information requirements on spare part prices as well as prohibiting serialisation of parts; longer operating system updates and spare part availability periods. In line with the right to repair ambitions, and bearing in mind that the current measures will not come into force until 4 years from now, we urge the Commission to be more ambitious in relation to these aspects in line with our previous position paper to ensure maximum legislative impact rather than postponing these measures to a future revision.

ARTICLE 10 – ENTRY INTO FORCE AND APPLICATION

Considering the inevitable administrative delays in requirements coming into force, we urge the Commission to specify the timing of all ecodesign requirements to be after 12 months, rather than 24 months, especially those on spare part availability, indicative prices, repair information, maximum delivery time, serialisation, recyclability, preparation for reuse, accidental drops, water ingress, keyboard abrasion, and battery endurance in cycles.

We also ask that the referenced clauses be carefully revised as some of those listed previously do not exist in the draft document.

ECODESIGN - ANNEX I – DEFINITIONS

(15) MEMORY

For consistency and robustness, we recommend replacing the current definition with the one present in the Servers Regulation .

Action:

Replace the current definition ("*means the computer main chip or chips used for storing information for immediate use in the computer*") with that of the Servers Regulation ("*means a part of a computer external to the processor in which information is stored for immediate use by the processor, expressed in gigabyte (GB)*").

(19) FREE ACCESS WEBISTE

To safeguard ease of availability and anonymity, the definition should be kept in line with the mobile phones regulation.

Action:

Change definition to:

- *'free access website' means a website that can be accessed without having to pay or to provide personal information,* ***including an email address or phone number****;*

(22) TRACKPAD

The definition needs to be improved to better distinguish the trackpad from the definition of a mechanical button.

Action:

Amend the definition as follows:

- *"means* ***a user input device with a touch-sensitive interface that translates the position and motion of the user's finger movements such as clicking, dragging, scrolling, zooming-in, zooming-out, tapping or swiping to a relative screen position or action****. It includes as relevant to the product model, brackets, sealants, electrical circuitry, touch and other sensors relevant for touchpad functionality, electric connections to other assemblies of the device;"*

(45) SLEEP MODE AND (46) ALTERNATIVE LOW POWER MODE

We consider the references to "quickly wake" and "immediate responsiveness" insufficiently robust. It needs to be clarified what qualifies as "quickly", compared to "immediate" and what qualifies as "responsiveness" to prevent a loophole from being created by manufacturers to claim compliance with modal limits.

Action:

Amend the definition as follows:

- 'Alternative Low Power Mode' (ALPM) is a low power mode that the computer enters automatically after a period of inactivity or by manual selection that is defined by the display turning off and the computer entering a state of reduced functionality; a computer with Alternative Low Power Mode must maintain ~~immediate~~ responsiveness ~~to network connections or user interface devices~~ **to continuous inputs from the user interface and network with the same outcomes and within the same timeframe as long idle mode**.

ECODESIGN - ANNEX II – ECODESIGN REQUIREMENTS

1. APPLICABLE TO ALL COMPUTERS

1.1. RESOURCE EFFICIENCY REQUIREMENTS

- 1.1.1. Design for repair and reuse
    - 1.1.1.1. Spare parts availability, and indicative prices

We support that unbundling requirements address the full list of priority parts and the inclusion of 'trackpad', 'webcam', 'USB ports' and 'fan' in the list of parts. However, we consider it necessary that a commencement date for the availability of repair support aspects is specified either from the date of placement on the market or from one month after the product is placed on the market.

Simply providing information on the indicative pre-tax prices of spare parts on a free-access website is not enough to tackle the barrier parts price causes to repair. As per our previous position, we urge the Commission to take more ambitious action in relation to this criterion and delete the word 'indicative' from the obligation of information. This article will bear no results in terms of encouraging manufacturers to commit to the price they declare, or to even try providing spare parts at a reasonable price. If anything, in its current state, this article is an encouragement to provide misleading information.

Action:

Amend the article as follows:

- (1) The list of spare parts concerned by points (a) and (b) of sections 2.1.1.1, 3.1.1.1, 4.1.1.1 and 5.1.1.1, and the procedure for ordering them shall be publicly available on the free access website of the manufacturer, importer or authorised representative **from date of placement on the market and until** at least ~~until~~ the end of the minimum period of availability of these spare parts and the link to such information shall be kept updated in the specific field of the product information sheet as from Regulation (EU) 2024/xxx [OP please insert reference to the Energy labelling Regulation on computers].
- (2) During the period referred to in point (1) of section 1.1.1.2, manufacturers, importers or authorised representatives shall provide ~~indicative~~ pre-tax prices at least in euro, for spare parts listed in points (a) and (b) of sections 2.1.1.1, 3.1.1.1, 4.1.1.1 and 5.1.1.1, including the pre-tax price of fasteners and tools, if supplied with the spare part, on the free access website of the manufacturer, importer or authorised representative.

1.1.1.2. Access to repair and maintenance information

As per our previous position, we urge the Commission to include longer timelines on the availability of spare parts and price and repair information, to open the provision of parts to all users and to extend the priority parts list.

It was argued during the Consultation Forum meeting by Digital Europe that providing access to spare parts for such a long period of time risked triggering overproduction of spare parts and unbearable storage costs for manufacturers. We question this position as it is merely a question of design and logistic strategy. Nothing would prevent manufacturers from re-using overproduced parts in new models put on the market. Manufacturing and using standardised parts would also make it easier to actually sell these parts as they would be compatible with several models. Standardization ensures that different components from various manufacturers can work together. This allows developers to build on existing technologies without constantly reinventing interfaces or formats. As a result, innovation processes can focus on improving performance, energy efficiency, or adding new features. The movement that this regulation should trigger is actually a decrease in the different number of models of computers put on the market and competition towards having the most long-standing, reliable and repairable models. Eventually, with more durable and repairable

products, fewer new products should be manufactured and stored, making space for the manufacturing and storing of spare parts instead.

Safety risks with repair operations conducted by end-users were also mentioned by Digital Europe. It should be noted that the safety risks described are hypothetical, and one could just as well formulate the opposite hypothesis: every repair operation involves some level of inspection and often cleaning of the product, usually not only external but also internal. This offers an opportunity to detect any potential safety hazards that could arise from wear and tear or dirt, and to perform preventive maintenance along with the fault fixing. Professional repairers often perform safety and functionality checks after a repair, which a non-repaired product would not be subject to over the course of its lifetime.

In any case, there is preciously little evidence of any actual safety issues linked to repair activities. During a workshop organised by DG JUST on 12 September 2024, participants were asked about safety issues related to Circular Business Models. Several manufacturer's representatives highlighted the safety-critical nature of their products and the risks involved with tampering with them. However, when asked if these comments merely reflected a risk-aversion position or if they could actually cite any concrete cases of safety incidents, none of the participants mentioned a single actual incident. While a market surveillance authority representative mentioned a case of refurbished fitness equipment imported without the proper documentation, again there were no actual documented incidents with the equipment. To the contrary, a repairer present at the stakeholder workshop mentioned a track record of 60 000 repairs without a single incident.

A similar question by the American FTC during a 2019 workshop, along with a public request for empirical research and data[2], did not yield a single case of a repair-related safety incident[3], and hundreds of thousands of repairs at German repair cafés didn't lead to a single insurance claim[4].

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[2] The call for empirical research requested submissions of data on several issues related to repair, including the risks posed by repairs made by consumers or independent repair shops, the liability faced by manufacturers when consumers or independent repair workers are injured while repairing a product, and the liability faced by manufacturers when consumers are injured after using or coming into contact with a product that has been repaired improperly by a consumer or independent repair shop. See https://www.ftc.gov/nixing-the-fix-call-for-research.

[3] "Upon closer review, some of the safety considerations cited give pause. First, other than citing to the mobile phone thermal runaway occurring in Australia in 2011, manufacturers provided no data to support their argument that injuries are tied to repairs performed by consumers or independent repair shops. This is so despite the fact that the Call for Empirical Research specifically asked for data concerning "[t]he risks posed by repairs made by consumers or independent repair shops" and several manufacturers and their associations submitted comments and were provided the opportunity to participate in the Workshop. Nor have manufacturers provided factual support for their statements that authorized repair persons are more careful or that individuals or independent repair shops fail to take appropriate safety precautions (...)" Federal Trade Commission, *Nixing the Fix: An FTC Report to Congress on Repair Restrictions* (2021), p. 28. Available here.

[4] An estimated 200 000 repairs conducted by volunteers at German repair cafés over the last 6 years haven't resulted in a single insurance claim involving an injury related to repair - in fact the only injury-related claim

Action:

Amend the article as follows:

- At least until ~~10~~ 13 years from the date of placement on the market or until ~~7~~ 10 years from the date of end of placement on the market, whichever comes last; manufacturers, importers or authorised representatives shall provide access to repair and maintenance information ~~to professional repairers~~ for parts covered by points (a) and (b) of sections 2.1.1.1, 3.1.1.1, 4.1.1.1 [add references as appropriate to provide full access to everyone] and 5.1.1.1 in the following conditions, unless that information is made publicly available at the free access website of the manufacturer, importer or authorised representative.
- Update the whole section to make it possible for everyone to access all parts currently listed, and add headphone port, enclosure, expansion card/graphics card, data storage, memory, motherboard, CPU and laptop fan to the list of priority parts.

o 1.1.1.3 Maximum spare part delivery time

We support the removal of the stipulation that availability is limited to professional repairers compared to the Ecodesign Regulation (EU) 2023/1670 (smartphones, mobile phones other than smartphones, cordless phones and slate tablets) but consider the allowance of 10-day delivery times for spare parts a significant barrier to repair for this product group, considering how urgently users are likely to need their product repaired without having to opt for a replacement.

Action:

Change the requirements so that all priority parts have to be delivered in 5 working days instead of a subset having a 10-day delivery allowance.

o 1.1.1.4 Serialization, parts pairing and calibration of spare parts

If the proposal presented to the Consultation Forum is to take the place of a definitive ban, which remains our preferred approach, we would support the inclusion of calibration, the need for justification of serialisation related to safety or data security issues, the requirement for non-discriminatory access by users and professional repairers to any software tools, the specification that the requirements come into effect one month after entry into force, and the two additional clauses at the end of the section. However, it is essential that the boundaries of what are considered valid justifications for safety/data security issues are defined and that a publicly available declaration is required to be provided to consumers to justify where serialisation due to safety or data security issues has been applied. Further, considering the criticality of repair time to users, the time for access should be reduced and the time limitation on serialization support removed as there is no justification for a time limitation on the support for serialised parts. If manufacturers are unable to provide support after a set time they should make sure that parts can be replaced without any kind of authorisation after this date whilst informing users of the change.

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involved a person falling down stairs. See Runder Tisch Reparatur, *A German repair registry: Possible ways of implementing a national registry to increase the availability of spare parts* (2021), p. 3.

Action:

- 1.1.1.4(a): Define the boundaries of what are considered valid justifications for safety/data security issues. Require a publicly available declaration to be provided to consumers to justify where serialisation due to safety or data security issues has been applied, specifying the part the exemption is applied to, the extent of the serialisation restriction in the event of parts replacement, and details of the safety or data security issue in question.
- 1.1.1.4(b)(1) and 1.1.1.4(b)(2): Edit the text to specify "non-discriminatory access for ~~professional repairers~~ **end users** to any software tools, firmware or similar…"
- 1.1.1.4(e): Change 3 working days for access to a maximum of 6 hours to safeguard the likelihood of repair and delete the reference to 7 years of duration of these requirements.
- 1.1.1.4(g): **Remove the comma between 'functionality' and 'if'**: *"Manufacturers, [..]shall ensure that parts requiring calibration for full performance provide full functionality~~,~~ if the user opts not to go through the calibration process."*

1.1.1.5 Replacement requirements

We support minimum requirements in ED on disassembly (e.g. fastener types, tools etc, the maximum 'skill level/environment' as 'generalist/workshop' and more strict requirements for a subset of parts to use environment and layman). However, all tools requirements should be specified at the maximum of basic tools and keyboards and touchpads should be able to be replaced without tools as there are already designs on the market that enable this. In addition, the fastener requirements should be tightened.

Whilst understanding the reasoning behind the JRC proposal for alternative disassembly depth ranges for each class based on their study into real products [18, 12, 6, 2], we prefer the greater ambition of the Smartphones Regulation [15, 10, 5. 2] as we believe these will encourage greater shifts in the market towards more reparable designs.

Action:

- Specify all tools requirements at the maximum of basic tools, except for screen, battery, keyboard and touchpads which should require no tools, and tighten the Ecodesign fastener requirements to just resupplied or reusable as per the Smartphones Regulation.
- Adopt disassembly depth criteria in line with the Smartphones Regulation.

1.1.3.2. Flame retardants

We ask for the prohibition of all flame retardants in the enclosures, and that polymers in all plastic-containing parts are compatible with recycling.

Action:

Require the prohibition of all flame retardants in enclosures, and that polymers in all plastic-containing parts are compatible with recycling considering state-of-the-art methods.

1.1.3.5 Recycled content

The requirement must not allow for pre-consumer material to be considered as recycled content. This practice both encourages the destruction of unsold products and allow for the waste material from inefficiencies in manufacturing processes to be considered as recycled content. Recycled content must come from post-

consumer recycled material only and exclude techniques of chemical recovery such as pyrolysis and gasification.

We recommend setting minimum post-consumer recycled content targets for plastic-containing parts (e.g. for the casing or fan of stationary computers and for keyboards and trackpads of portable computers). In addition, secondary materials such as iron, copper, aluminium, gold, silver and platinum are already on the market for computers, and recycled content targets for these materials should be considered, too.

Action:

- Edit the requirement to only allow for post-consumer material and set minimum post-consumer recycled (PCR) content targets for plastic-containing parts.
- Secondary materials (iron, copper, aluminium, gold, silver and platinum) should be considered for recycled content.

- 1.1.2. Design for reliability

    - 1.1.2.1 Operating system updates

We support the specification that the updates referenced apply not only to those offered voluntarily by manufacturers but also to those offered through the operating system provider. However, we request that the duration of availability of operating system updates be clearly specified.

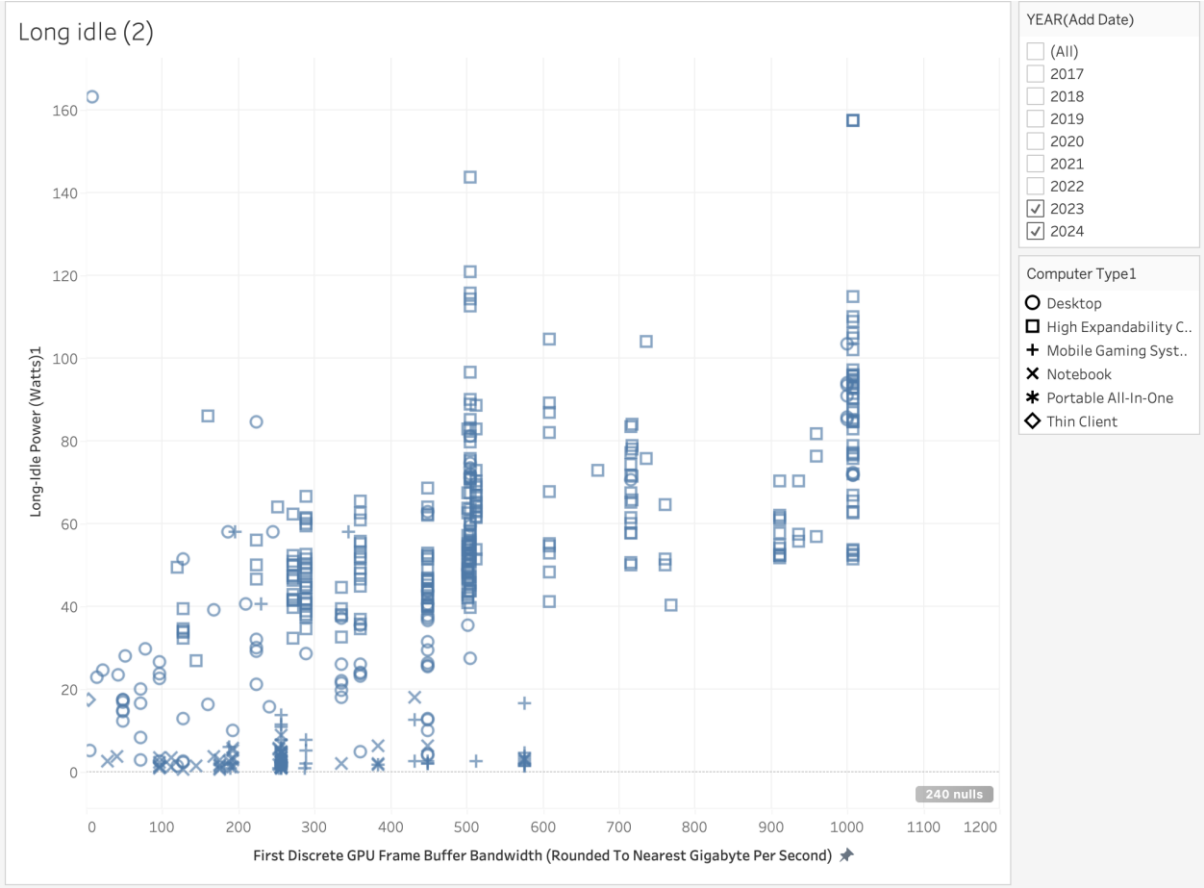
Action:

Specify the duration of availability of operating system and software updates at a minimum of 10 years. Any discontinuation of support due to security issues must be fully justified, including details of alternative approaches explored and why they cannot be applied.

1.2. ENERGY EFFICIENCY REQUIREMENTS

We support a maximum power limit in principle. However, without further evidence, it appears the adverse impacts will not justify the savings. Based on deduplicated data from the California Energy Commission (CEC), the proposed energy efficiency requirements show a clear step-change in idle when the discrete GPU installed exceeds a specific performance level. This suggests the long idle limit will effectively ban high-performance graphic cards from desktop computers with no evidence that a cost-effective solution exists.

Conversely, the impact on all other computers without a high-performance graphics card would be negligible. Given that the large majority of the market does not have these high-power demands and expensive graphics cards, the energy efficiency requirements will have a limited impact. Without effective modal energy targets, these power modes - which can represent the majority of the energy consumed by a computer - are unaddressed despite the potential for higher efficiency.



Action:

- An exemption for high-performance graphics cards would allow more stringent energy efficiency targets to be set. This would increase consumer choice while the increase in energy caused by these cards is likely to be far outweighed by the additional savings.
- Revise the energy efficiency metric and label to increase its effectiveness (see later sections and Appendix)

2. NOTEBOOK COMPUTERS

2.1. RESOURCE EFFICIENCY REQUIREMENTS

- 2.1.1. Design for repair and reuse

    - 2.1.1.1 Availability of spare parts (d)

We question the legality of the exemption provided in Annex II.2.1.1.1.(d) as it directly enters in contradiction with article 11.1 of the Batteries Regulation which provides that "Any natural or legal person that places on the market products incorporating portable batteries shall ensure that those batteries are readily removable and replaceable by the end-user at any time during the lifetime of the product". It is also provided that this regulation "shall be without prejudice to any specific provisions ensuring a higher level of protection of the

environment and human health **relating to the removability and replaceability of portable batteries by end-users** laid down in any Union law on electrical and electronic equipment". While one might argue that the Ecodesign requirements could provide environmental benefits in terms of battery life, they do not do so in terms of removability and replaceability of portable batteries by end-users. In any case, it is overall to the benefit of the environment and human health to have batteries which can be replaced by the end-user - if not by hand, at least with basic tools - given that examples show that replaceability of battery does not go against low reliability. Crosscall, for example, designs rugged and waterproof (IP68) smartphones with batteries replaceable by the end-user and a score of 9,1/10 in the French reparability score (ref here). The only trade-off the industry is actually concerned about is the impact of durable and repairable on the seamless and thin design of their products, which should not be the concern of the regulator.

Action:

Make all parts available to end users (therefore remove the reference that allows notebook batteries being made available only to professional repairers if they allow a set number of full charge cycles at 80/83% rated capacity:

- (d) ~~*Manufacturers, importers or authorised representatives may provide the battery or batteries referred to in point (b) only to professional repairers provided that - they ensure that the following requirements are met:*~~
  ~~*(i) after 500 full charge cycles the battery has, in a fully charged state, a remaining capacity of at least 83 % of the rated capacity;*~~
  ~~*(ii) the battery endurance in cycles achieves a minimum of 1000 full charge cycles and after 1000 full charge cycles has, in a fully charged state, a remaining capacity of at least 80 % of the rated capacity.*~~

- 2.1.2.1. Resistance to accidental drops

For notebooks, the regulatory minimum number of drops without defects should be clearly specified.

Action:

Specify the regulatory minimum number of drops without defect as 28, in line with Annex IV

- 2.1.2.2. Resistance to water ingress

A mandatory minimum dust ingress requirement across all computer types should be set.

Action:

Apply mandatory minimum dust ingress requirements across all computer types.

- 2.1.2.4. Resistance to abrasion

We support the requirement on resistance to abrasion on notebook keyboard keys of 100.000 touches but ask that a method be referenced to carry out this test.

Action:

Specify test / verification methods for keyboard abrasion in Annex III/IV.

- 2.1.2.5. Battery endurance in cycles

We ask that more ambitious requirements are set on notebook battery endurance taking into account the latest battery technology and potential advancements by the time the measures come into force.

Action:

Specify requirements for notebook battery endurance in cycles as at least 1000 cycles at 80%. Include a second-tier battery endurance requirement of 1200 cycles with at least 80% remaining capacity two years after the implementation of the first requirement.

- 2.1.2.6. Battery management

We support the text enabling the setting of a maximum charge level to extend the

endurance of the battery but suggest that more flexibility be given to the manufacturer to preset the default threshold between 60-80%, instead of only 80% as this could increase endurance further depending on battery chemistry. An information requirement will be necessary to ensure the potential for battery lifetime extension as a result of these settings is communicated to the user.

Action:

Specify the default maximum charge threshold as between 60-80% and include an information requirement to communicate to the user the potential for battery lifetime extension due to these settings.

- 2.2.2. Information requirements

Consumers should be provided with greater clarity on which chargers are compatible with their notebooks.

Action:

Edit the notebook common charger text to state the voltage range of compatible power adaptors rather than stating the notebook "*can be powered with most USB power adapters*", which could create confusion if the user tries to power their notebook from a phone charger.

ECODESIGN – ANNEX IV - TRANSITIONAL METHODS

The transitional methods need to be clarified in relation to accidental spills, accidental drops, and keyboard abrasion. References to contact closure, insertion extraction cycle resistance, and secure deletion should be removed as these aspects are not addressed in the requirements.

Also, the transitional methods do not specify how the energy efficiency requirements are to be tested.

Action:

- For protection from accidental spills, include functionality failures considered defects as also relating to the notebook camera(s).
- For accidental drops include plugged-in drop test configurations as this is a very common drop configuration
- Make the description of the number of units required to pass more transparent and correct the copy-paste error where cracks in the touchscreen instead of the display are referenced.
- Delete references to contact closure, insertion extraction cycle resistance, and secure deletion.
- Include a method for keyboard abrasion testing.
- Add IEC 62623:2022 to transitional methods

ECODESIGN – ANNEX V - VERIFICATION PROCEDURE FOR MARKET SURVEILLANCE PURPOSES

We strongly support the text requiring that manufacturers provide a copy of the contractual agreement with the operating system supplier to provide the updates and support for the specified duration. We recommend that the description of the number of units tested to pass is made more transparent.

Action:

Make the description of the number of units tested to pass more transparent – in the current wording only the fifth unit needs to pass.

ENERGY LABELLING – ACT

ARTICLE 3 - OBLIGATIONS OF SUPPLIERS

There are stipulations from the Smartphones Regulation that are missing from the computer proposal and should be included.

Actions:

The following clauses from the Smartphones Regulation should be added:

> *(f) any technical promotional material concerning a specific model of computer, including technical promotional material on the internet, which describes its specific technical parameters includes the energy efficiency class of that model and the range of energy efficiency classes available on the label, in accordance with Annex VII;*
>
> *(g) an electronic label in the format and containing the information, as set out in Annex III, is made available to dealers for each computer model;*
>
> *(h) an electronic product information sheet, as set out in Annex V, is made available to dealers for each computer model.*

ENERGY LABELLING – ANNEX I – DEFINITIONS FOR THE PURPOSES OF THE ANNEXES

(2) PRODUCT FAMILY (IN RELATION TO ANNEX II.C)

To be useful to the consumer, the values in the label must be indicative of the efficiency and the consumption (and ideally performance) of the computer being purchased. The current restrictions for families would result in desktop performance and Total Energy Consumption (TEC) values that can vary by as much as 2.5x times, depending on the configuration, while still meeting the same efficiency class (see Appendix). Within this family, manufacturers would then be free to group different configurations however they see fit. This makes comparisons between families confusing since manufacturers are not required to communicate which configurations a family covers.

One of the aims of the regulation as formulated is to avoid creating categories of computers using definitions that quickly become outdated as technology progresses. However, by trying to achieve differentiation, this approach appears to create categories by stealth that are inconsistent between families and manufacturers.

Action:

Current definition:

> *(1) 'product family' means a group of computers sharing the same casing/motherboard, operating system and, where relevant, battery and screen combination but may have different internal components, configurations or available I/O connectors. Products within a product family share the same registration in the product database.*

Amend Annex II.C as follows:

> *(1) All models in a product family must have the same Repairability Class* ***and Repairability Index.***
>
> *(2) The mainboard, housing and, where relevant, battery and screen must be identical.*
>
> *(3)* ~~*The worst class for any of the parameters in the label have to be indicated*~~ **For each parameter, the worst index achieved by any product within the family and its associated performance class shall be declared for all products within the product family**.
>
> *(4) Reliability tests must be performed with all optional component and subassembly types being assembled, and being available as a configuration, but where an optional component or subassembly might feature different specifications the least sophisticated specification shall be chosen.*

ENERGY LABELLING – ANNEX II – PRODUCT CLASSIFICATION

The applicability of the different criteria between computer types needs to be clarified. It is important to have clarity on how the label will appear for desktops vs notebooks vs the other product categories.

We ask that the Commission initiates a consumer study to get feedback on the label icons.

Action:

For each criterion (e.g. energy efficiency class, reparability class, etc), it should be made clear in the description which products it applies to.

Launch a consumer study to get feedback on the label design, in particular, to determine how intuitive the icons for desktops vs notebooks vs high-performance computing are.

A) ENERGY EFFICIENCY CLASS

The current active efficiency metric is flawed as well as any efficiency classes based on this.

Action:

Replace active efficiency metrics and develop new classes. See appendix.

B) STURDINESS CLASS

The approach to sturdiness classes is lacking in ambition and seems to be defined in the wrong direction (C appearing more robust than A) and is likely to result in a very low differentiation due to the focus on the

number of units passing. Many rugged devices designed to withstand frequent impacts with minimal damage undergo severe testing, for example Zebra drop testing[5] requires 36 drops. Rugged devices are often tested against different drop surfaces, graded by hardness.

Action:

Redefine the classes with greater ambition - two options are provided below:

Table 2: Sturdiness classes of laptops

Sturdiness class	**Option #1 Pass criterion (# drops)**	**Option #2 Pass criterion (drop surface)**
A (most robust)	After 36 drops, the fifth unit under test is still fully functional	After 28 drops onto steel, the fifth unit under test is still fully functional
B	After between 28 and 36 drops, the fifth unit under test is still fully functional	After 28 drops onto vinyl tile placed over concrete , the fifth unit under test is still fully functional
C (least robust)	After 28 drops, the fifth unit under test is still fully functional	After 28 drops onto 20mm particle board , the fifth unit under test is still fully functional

C) REPARABILITY CLASS

We support the inclusion of captive fasteners in the fastener score but believe there is scope for further refinement to address the need to heat or cool adhesives (as per ETSI ES 204 079) for parts to be removed as this can significantly impact repair time.

The cases where laptops have a trackpad but no keyboard or a keyboard but no trackpad are overlooked and should be addressed for future-proofing.

Action:

- Refine fastener classes as follows:
  - For screen and battery:
    - 1 point: reusable
    - 3 points: reusable and requiring no heating or cooling to be removed
    - 5 points: captive reusable / none, and requiring no heating or cooling to be removed
  - For all other parts:
    - 1 point: removable
    - 2 points: resupplied

[5] https://www.zebra.com/us/en/resource-library/faq/what-is-a-drop-test.html

        - 3 points: reusable
        - 4 points: reusable and requiring no heating or cooling to be removed
        - 5 points: captive reusable / none, and requiring no heating or cooling to be removed
- Distinctions for the presence of trackpad and keyboard in the formula also need to account for the following cases:
    - *c) if keyboard but no trackpad is present, the following formula shall be used:*
    - *d) if trackpad but no keyboard is present, the following formula shall be used:*

D) LIQUID SPILLOVER RESISTANCE CLASS

There is confusion in the documents regarding the assessment of liquid spillover versus the use of IP ratings. We support the improvement in the spill-over classes, but for spill-over resistance to be included on the label, there needs to be at least three classes. However, test methods on spill-over are inconsistent with class gradings. Further, for testing to be representative of real-life use, a keyboard-exposed spill test needs to be included.

Action:

- The text should specify a minimum Ecodesign IP rating requirement for laptops of IP54. This does not completely prevent all dust from entering the device but ensures that any dust that does get inside will not affect normal operation, plus ensures protection against splashing water from any direction such as occasional exposure to spills, light rain, or accidental water contact.
- For all other products, a minimum Ecodesign requirement on dust exposure should be set in line with the laptop requirement at IP5X.
- A keyboard-exposed option for spills should be included for notebooks and a minimum requirement for dust ingress across all computer types.
- It should be ensured that the instructions for testing spillover in Annex V align with the class definitions in this Annex - e.g. a 20ml beaker cannot be referenced if variable spill amounts from 100 to 20ml are used.

ENERGY LABELLING - ANNEX IV – MEASUREMENT AND CALCULATION METHODS

1. CALCULATION OF THE EEI

See Appendix

2. CALCULATION OF THE ANNUAL DYNAMIC TOTAL ENERGY CONSUMPTION (TEC)

We support the calculation method for total energy consumption, assuming the modal power is tested using the same method as IEC 62623:2022

3. CALCULATION OF THE REPAIRABILITY INDEX

LIST OF SPARE PARTS CONSIDERED IN THE CALCULATION OF THE REPAIRABILITY INDEX

As discussed in our previous position paper, parts highlighted as important by repair cafes (as accessible on the Open Repair Alliance laptops page) should be taken into account. Further, the lists of parts should not only include those parts that need to be repaired most frequently but also those that users or repair cafes may need to upgrade the products, and therefore extend their lifetime. It is, therefore, essential that all spare parts are made available to users and that computers are designed in such a way that relevant parts for upgradability are standardised and not soldered/glued. In addition, there is currently a lack of consistency in the parts addressed between ecodesign and energy labelling drafts, and we recommend a consistent approach between the two regulations to avoid confusion and ensure that there are minimum requirements supporting all the parts addressed in the repair score of the energy label.

Action:

We recommend adding the parts listed in bold below to the parts lists for both the ecodesign and the energy labelling regulations:

	Desktops	**Laptops**	**All in one**
EC proposal ED *(parts availability, delivery time, repair information, serialisation)*	~~Screen assembly~~ ~~Keyboard~~ ~~Trackpad~~ Internal power supply Fan ~~Battery~~ USB Port ~~Webcam~~ **Storage unit** **Memory unit** **Enclosure of entry** **Mainboard**	Screen assembly Keyboard Trackpad ~~Internal power supply~~ Fan Battery USB Port Webcam **Storage unit** **Memory unit** **Enclosure of entry** **Mainboard**	Screen assembly Keyboard Trackpad Internal power supply Fan Battery USB Port Webcam **Storage unit** **Memory unit** **Enclosure of entry** **Mainboard**
EC proposal EL *(disassembly depth, fasteners, tools, spare part target group, spare part availability duration, repair information)*	~~Battery~~ ~~Screen assembly~~ ~~Keyboard~~ ~~Trackpad~~ Storage unit Memory unit Enclosure of entry	Battery Screen assembly Keyboard Trackpad Storage unit Memory unit Enclosure of entry	~~Battery~~ ~~Screen assembly~~ Keyboard Trackpad Storage unit Memory unit Enclosure of entry

	Fan Mainboard Port Internal power supply	Fan Mainboard USB Port Webcam	Fan Mainboard Port Webcam

INCLUSION OF THE PRICE OF SPARE PARTS IN THE CALCULATION METHOD (NEW)

As implemented for the "Indice de réparabilité" in France, and as it is generally recognised as one (if not the) main barrier to successful repair operations, we strongly encourage the Commission to integrate the price of spare parts as one of the scoring parameters.

Action:

Amend the article as follows:

The Repairability Index for laptop computers is an aggregated and normalised score, as a calculated value derived from six scoring parameters where:

– *SDD is the "Disassembly Depth" score.*

– *SPSP is the "Price of Spare Parts" score.*

– *SF is the "Fasteners (type)" score.*

– *ST is the "Tools (type)" score.*

– *SPT is the "Spare Parts Target Group" score.*

– *SPD is the "Spare Parts Duration" score.*

– *SRI is the "Repair Information" score.*

The Repairability Index (R) shall be calculated as follows:

~~*R = (SDD*0,25)+(SF*0,15)+ (ST*0,15)+ (SPT*0,15)+(SPD*0,15)+(SRI*0,15)*~~

*R = (SDD*0,20)+(SPSP*0,20)+(SF*0,12)+ (ST*0,12)+ (SPT*0,12)+(SPD*0,12)+(SRI*0,12)*

The "Disassembly Depth" (SDD), Price of Spare Parts" (SPSP), "Fasteners (type)" (SF) and "Tools (type)" (ST) scores are based on the aggregation of the following priority part level scores:

(…)

The "Price of Spare Parts" (SPSP) score concerns the priority parts It shall be calculated as follows:

- *The pre-tax price of the most expensive spare part represents less than 10% of the price of the product sold new = 5 pt;*
- *The pre-tax price of the most expensive spare part is between 10 and 15% of the price of the product sold new = 4 pt;*
- *The pre-tax price of the most expensive spare part is between 15 and 20% of the price of the product sold new = 3 pt;*
- *The pre-tax price of the most expensive spare part is between 20 and 25% of the price of the product sold new = 2 pt;*

- *The pre-tax price of the most expensive spare part is between 25 and 30% of the product sold new = 1 pt.*
- *The pre-tax price of the most expensive spare part is above 30% of the product sold new = 0 pt*

Instead of using the most expensive spare part as a proxy, the Commission could draw inspiration from the French repair index, where the score is calculated based on the price of spare parts to price of product ratio *Rprice*, which is the ratio of the average of the price of the most expensive priority part *Pex* and the sub-average of the prices of the other parts *P1-n* (limited to the list of priority parts), divided by the product price Pprod.

$$R_{price} = \frac{(P_{ex} + ((P_1 + P_2 + P_3 + \ldots + P_n)/n))/2}{P_{prod}}$$

'DISASSEMBLY DEPTH' AND 'FASTENER TYPE, TOOL TYPE'

Some keyboards may not have a trackpad or some devices with a trackpad may not have a keyboard. Therefore, these two parts need to be decoupled by adding two additional alternative weighting formulas.

Action:

Provide additional formula for the following cases:

c) if keyboard but no trackpad is present, the following formula shall be used:

d) if trackpad but no keyboard is present, the following formula shall be used:

SPARE PARTS TARGET GROUP

In general terms, we support the anti-bundling statement:

- *Points for spare part availability shall be awarded only when a part is available separately and not as part of a multi-part component (bundle) with another priority part*

However, it is unclear how this zero-score case would be implemented in practice/aggregation considering the lowest score in the class structure is 1 point. For example, in the case of the spare parts target group, if one of the above parts is bundled, does this mean the score for this parameter becomes 0?

Action:

Clarify how calculations are affected in the case of a zero-score caused by bundling.

SERIALISATION (NEW)

A negative correction factor should be applied to the repairability score when manufacturers apply the exemption from serialisation requirements. This will encourage using alternative solutions to tackle the security concerns of which manufacturers claim that they necessitate part pairing.

Action:

Include a negative correction factor in the repairability score when manufacturers apply the exemption from serialisation requirements.

PARAMETER INTERDEPENDENCIES (NEW)

We recommend that the final scoring is reviewed to identify any parameter interdependencies and limiting factors introduced to prevent rewarding incongruous combinations of parameters.

Action:

Specify in the scoring calculations that points should not be awarded:

- for the availability of information on spare parts replacement to consumers if the actual spare parts are not also made available to consumers, and vice versa.
- for a low number of disassembly steps for a priority part if the way it is serialised makes the replacement impossible.

5. LIQUID SPILLOVER (NEW)

This criterion is not addressed in relation to measurement and calculation methods.

Action:

Include a section on liquid spillover testing and make clear which product types this vs IP rating requirements apply to.

ENERGY LABELLING – ANNEX V – TRANSITIONAL METHODS

Energy labelling transitional methods should ensure consistency with Ecodesign approaches.

Action

Integrated improvements as per our suggestions in the Ecodesign Transitional Methods annex.

ENERGY LABELLING – ANNEX VI – PRODUCT INFORMATION SHEET

Information in the product information sheet is incomplete (e.g. Liquid spillover is missing). Further information is requested on the guarantee extension, yet it does not appear to link to any other requirements. We also suggest that, for transparency, and to aid in ensuring market surveillance, the product information sheet should include ecodesign information requirements and a breakdown of the calculation of each of the repair scores (e.g. fastener score). This will enable future reviews to evaluate the status of the market and the potential for improvement.

Action:

The product information sheet should be carefully checked and brought in line with the current requirements of the energy labelling working document.

The product information sheet should include:

- the ecodesign information requirements
- the repairability score, including the details of subscore calculations.

ENERGY LABELLING – ANNEX VII – TECHNICAL DOCUMENTATION

Liquid spillover is missing from the technical documentation.

We also suggest that, for transparency, and to aid in ensuring market surveillance, the technical documentation requires a breakdown of the calculation of each of the repair scores (e.g. fastener score).

Action:

Include liquid spillover and a breakdown of the calculations for each of the repair scores.

APPENDIX - ENERGY LABEL AND METRIC ANALYSIS

This appendix summarises the results of our analysis of the proposed active efficiency metric using the testing performed by Digital Europe. It has not been possible to conduct the analysis with the rigour expected from the study review. However, this should not impact the general results and concepts discussed.

Interactive graphs can be found at:
https://public.tableau.com/views/computers/Computerefficiencymetriccomparison?:language=en-GB&publish=yes&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link

EFFICIENCY DEFINITION

The regulation formula for efficiency is based on the active mode only, this is presented as the performance per Watt, or more simply put, the calculations per Joule.

However, since the computer only spends 10-15% of the time in active mode, the efficiency in active might not be representative of the computer across all modes.

We propose an alternative metric based on the total annual computing work and the total annual energy consumption. This approach is more relevant to the consumer who is trying to minimise the overall energy consumed as a result of owning their computer to undertake whatever activities they use the computer for.

Furthermore, it accounts for improvements in sleep and idle power modes which still have significant scope for improvement, particularly for desktop computers. This could help to drive better efficiency in all power modes and allow the manufacturer to seek the most cost-effective approach or design[6]. Measuring all modes is especially important given the current ecodesign energy efficiency requirements have minimal effect on the majority of the market.

The total annual computing work done is found simply by multiplying the active performance by the time spent in active mode.

The total annual energy consumption can be calculated using the formula in the regulations and also defines the time spent in active mode.

The efficiency classes proposed are then set using an exponential scale, or to make it easier to interpret, the logarithm of the annual work/TEC.

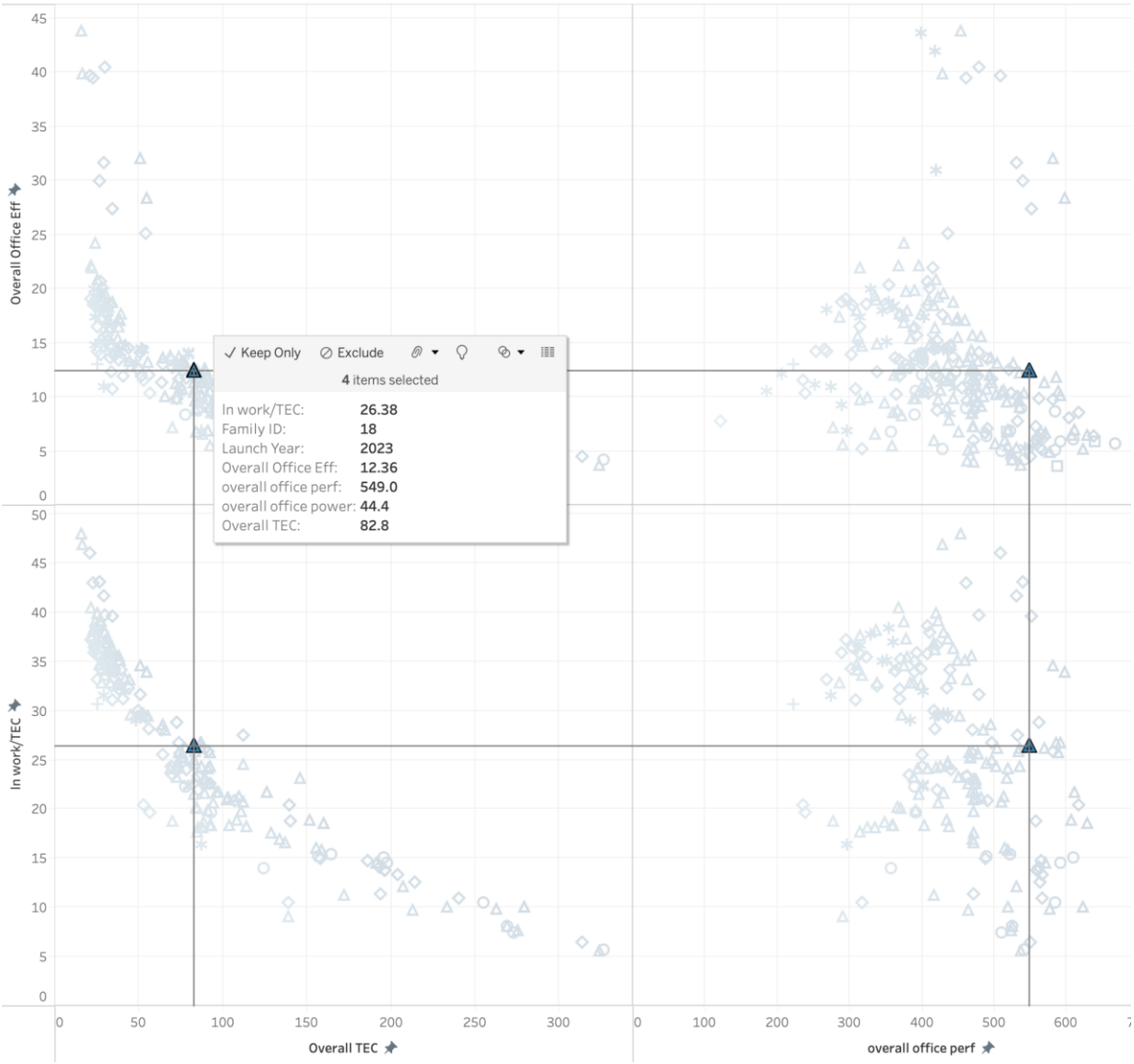
Preferred alternative efficiency metric = ln(Time active x active performance / annual TEC)

Nb. A scaling factor has been applied to aid comparison to set the most efficient product efficiency at approximately 45.

COMPARISON OF METRICS

[6] Articles in tech media suggest that the latest intel CPUs have achieved a very large improvement in idle power but still lag behind competitors in active efficiency. We are not aware of any testing using the GTD tool to verify this.

The comparison is made on a grid of four graphs. The TEC is shown on the axis on the left, while the performance is presented on the right. The two y-axis show the regulation metric (top) and the alternative metric at the bottom. By presenting it this way, it is easy to triangulate different models across both efficiency metrics, TEC and performance since they lie on the same horizontal and vertical lines.



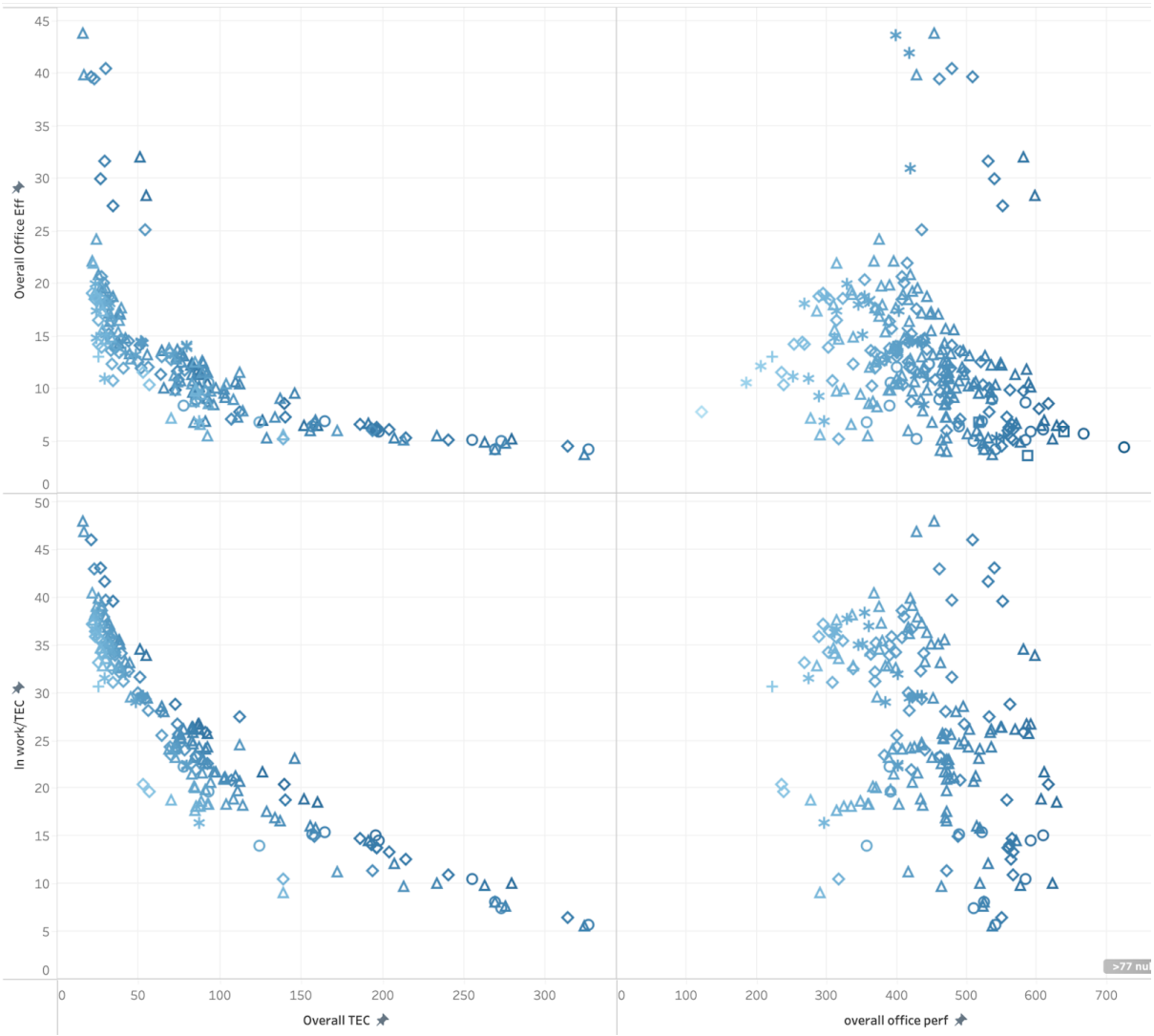
GENERAL RESULTS

The overall distribution of the data shows

- TEC is generally unchanged between 2021-2023, with a small possible increase
- Performance increases between 2021-2023 but the selection of configurations tested has a larger impact than annual changes
- The active efficiency

- Is not linearly correlated with TEC. At low efficiencies, the TEC range is very high, while at high efficiencies, the TEC is generally fixed.
- The distribution of models is uneven across the efficiency range with a few models with much higher efficiency, and highly clustered in the 10-20 range.
- The distribution of models is uneven across the performance range.

- The preferred metric:
  - Is also not perfectly linear but substantially better
  - Has a more even distribution of models across efficiency ranges
  - Has a more even distribution across performance ranges



IN-DEPTH RESULTS

The following comparisons quantify the behaviour of the metrics. By using configurations within a family. It also highlights potential issues of the proposed family definition

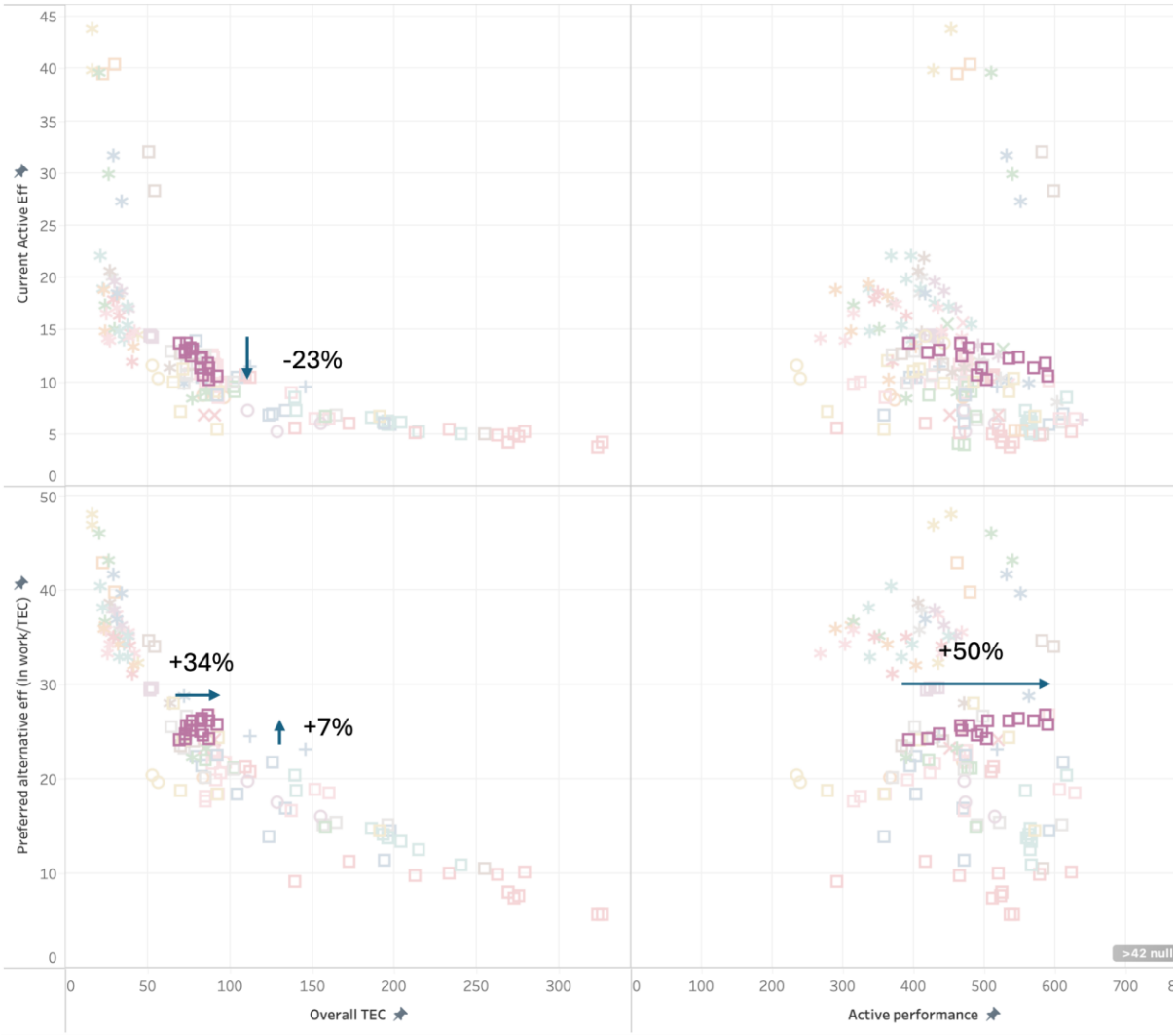
HIGH-EFFICIENCY NOTEBOOKS

Notebooks show very little change in TEC but a large increase in efficiency between configurations when compared to desktops. The two data points below show how the metric responds to changes in TEC and performance. The upper data point uses 22% less energy but also has 8% lower performance. Using the current active efficiency, this is displayed as a 33% improvement in efficiency, which is higher than the energy reduction, even if there was no loss of performance. In contrast, the preferred alternative metric presents this as a much more reasonable 7% efficiency improvement.

MINI DESKTOPS

This family sits at the midpoint in terms of general efficiency. The analysis of the lowest energy and highest energy configurations shows that a 34% increase in annual energy also provides a 50% increase in performance, which would generally be considered an efficiency improvement. However, while the preferred alternative metric correctly identifies this as an efficiency gain, the active efficiency presents this as a 23% efficiency loss. In this example, the active efficiency metric is now directionally incorrect.

It is also noted, that the preferred metric provides more support for using families because the efficiency for desktop computers is more similar across configurations than stated by the active efficiency metric.



GAMING DESKTOPS

The gaming desktops show a similar issue to mini desktops in terms of efficiency (efficiency is the reverse of energy consumed), but not as exaggerated because this is lower down the scale for the active efficiency metric.

However, this raises the issue of the range of TEC within an energy efficiency class and family. While the difference in energy within a notebook or mini desktop family is in the 20-30% range, they are still relatively small on an absolute scale. For gaming desktops, the range is large on both the proportional and absolute scales. This suggests families need to be limited unless it is very clearly stated on the label what the ranges in TEC are within a family.

OTHER CONSIDERATIONS

- **TEC differs between computer types making comparisons incompatible**

The differences in TEC are partially a result of certain types of computers being used more, especially workstations. Applying a different TEC means comparisons are not equal. This is partially true and is also a reason not to have all products on the same label.

However, there is an overlap between purchases of notebooks and desktops and comparison can still be useful. In addition, keeping different TECs is beneficial because they also represent the difference in hardware design and power management of desktops/notebooks and the user behaviour that follows. These changes also lead to energy savings and should be represented in the label and efficiency metric.

- **The quantity of work for the average user is fixed and not related to the performance of the computer. A dynamic TEC should be adopted which reduces active time according to active performance.**

While this may be largely true for a particular market segment (eg. office notebook users), it is unlikely to be true across the entire breadth of computers and performance available. In addition, it is not true over time as software becomes increasingly sophisticated and capable. Since the metric cannot be adjusted throughout the label, using a fixed proportion of time in active idle is considered to be the fairest approach.

CONCLUSIONS

The proposed metric is a pragmatic approach which provides useful, actionable information to the consumer choosing a computer. While there are differences between TEC, the benefits of including all power modes far outweigh the potential negatives. The conceptual elegance of avoiding all reference to computer types needs to be abandoned when it comes to the cost of a label and efficiency classes that can mislead the consumer. To mitigate this, the consumer would need a high level of understanding of how the metric behaves in relation to the computer performance and energy consumption, which is further hindered when the label of a family also lacks a representative TEC and there is no performance information displayed.