D3.11 - Periodic Topten Pro Guidelines Update 2

August 2018

Topten Act coordinator: ADEME

European portal www.topten.eu

Project partners and websites

Austria, AEA	Belgium,	Czech Republic, SEVEn	France, Guide Topten
www.topprodukte.at	BBLwww.topten.be	www.uspornespotrebice.cz	www.guidetopten.fr
Germany, Oeko-Institut	Italy, Eliante	Lithuania, LNCF	Luxembourg, Oeko-Zenter
www.ecotopten.de	www.topten.it	top-10.lt	www.oekotopten.lu
Norway, Naturvernforbund	Poland, FEWE	Portugal, Quercus	Romania, Icemenerg
www.besteprodukter.no	www.topten.info.pl	www.topten.pt	www.topten.info.ro
Spain, WWF	Sweden, SSNC	Switzerland, Bush Energie	UK, EST
www.topten.wwf.es	www.toptensverige.se	www.topten.ch	www.top10energyefficiency.org.uk

This project has received funding from the European Union's Horizon H2020 research and innovation programme under grant agreement nº649647

Topten Act aims at transforming the European market of energy-using products towards higher energy efficiency by addressing non-technical market barriers. Topten Act works in order to:

1. Increase consumer purchases of top energy-efficient products in Europe: Topten Act identifies the top energy-efficient products in 16 European countries, and pushes this information to consumers through tailored national websites and targeted communications activities. Topten websites are a free, accessible to all, 'public service' that helps consumers navigate the myriad of energy-using products offered to them in AT, BE, CZ, FR, DE, IT, LT, LU, NO, PL, PT, RO, ES, SE, CH and UK.

2. Increase the availability and visibility of top energy-efficient products on EU markets: Consumer demand for top energy-efficient products improves Topten Act's ability to: 1) work with manufacturers to help them steer production lines towards more energy-efficient products; 2) support retailers to display and promote energy-efficient products in their shops.

3. Increase large buyers' knowledge of and demand for top energy-efficient products in Europe (both public and private entities): Large buyers have the ability to steer the market towards more energy-efficient products. Topten Act approaches them with information on products of their interest (e.g. office equipment, vehicles) and offers direct advice in preparing calls for tenders that include energy efficiency criteria.

Editors

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This project has received funding from the European Union's Horizon H2020 research and innovation programme under grant agreement nº649647

This paper (D3.10) summarises the activities concerning the updates of the Topten Pro Guidelines on Topten.eu website.

One of Topten project purposes is to encourage large buyers from public and private entities to demand for top energy-efficient products. Thus, a specific section http://www.topten.eu/english/Professional.html was created for them, with information on products of their interest (e.g. office equipment, lighting, vehicles). Advice and support are offered for procurement actions at national levels. The European website, refreshed and improved in March 2016, incorporates the following topics:

- Recommendation brochures
- Procurement guidelines (for 12 product categories)
  - Office equipment (computer monitors, laser printers, laser multifunctionals, inkjet printers and multifunctionals)
  - Lighting (LED classic lamps, LED spot lamps)
  - Professional refrigerators (storage refrigerators and freezers, minibars and wine coolers, water coolers)
  - Household (dishwashers)
  - Consumer electronics (television sets)
  - Transports (cars and vans)
- Case studies (implementing Topten criteria)
- Useful links
  - Tools and calculators
  - EU legislation
  - Further guidance in EU

Currently, the European Pro Section contents have been adapted by 13 partners. The new website is divided in two separated areas: consumer and business and the latter includes information and product categories relevant for public procurers and large buyers.

Quercus has commitment to update the procurement guidelines for 10 product categories at least twice during the project. There are 12 product categories online, 9 directly linked to Topten consumer's product categories and other 3 made under the ProCold project (on commercial and professional cold products) but anyway included here because of their high interest to public procurers. The last updates were done on June 2018 for Topten categories and August 2016 - July 2017 for ProCold categories. The documents produced are enclosed in this document and each one is divided in the following chapters:

- Why follow Topten criteria?
- How much can you save?
- Procurement criteria (with Technical specifications and Notes on implementation)
- Advice and support

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Annexes list

This project has received funding from the European Union's Horizon H2020 research and innovation programme under grant agreement nº649647

ANNEX I

Computer monitors guidelines for public procurers

Guidelines for Frontrunner Public Procurers

Computer Monitors

Updated: June 2018

Why follow Topten criteria?

- Topten.eu Pro (**www.topten.eu/professional**) is a European web portal helping buyers, professionals, public procurers and large buyers to find **the most energy efficient products available in Europe**. The products are selected and updated continuously, according to their high energy and environmental performances, independently from the manufacturers.
- All computer monitors displayed on **www.topten.eu** meet the criteria contained in these guidelines. Procurers can therefore use the website to check the availability and assortment of products currently on the market, which meet the **Topten selection criteria**.
- Topten.eu Pro links to national partners Topten Pro websites and is developed under Topten Act project, supported by the European Union through Horizon 2020 programme.

How much can you save?

Considering the computer monitors from 17 inches upwards listed on www.topten.eu and the following assumptions, it is possible to achieve the savings indicated in the next table.

Assumptions
- Life time expectation: 5 years
- Daily use: 8h in on-mode and 16h in sleep-mode
- Electricity cost: 0,20 €/kWh

	Topten model	Inefficient model	Topten model	Inefficient model
Screen diagonal (inches)	19”	19”	24"	24"
Electricity consumption	26 kWh/year	44 kWh/year	33 kWh/year	103 kWh/year
Use cost (electricity in 5 years)	26 €	44 €	33 €	103 €
Savings in 5 years	**40% energy / unit ⇨ 18€ / unit**		**68% energy / unit ⇨ 70€ / unit**	

Differences in electricity consumption between inefficient and Topten models rise as the screen size enlarges, leading to higher energy savings and consequently greater money savings. As the example shows, total savings can reach almost 70% reduction, and they should be multiplied by the number of units included in the tender.

Procurement criteria

The following criteria can be inserted directly into tendering documents. The Topten selection criteria and the product lists are updated regularly. The newest versions are always available at **www.topten.eu/pro.**

SUBJECT: **HIGHLY ENERGY-EFFICIENT COMPUTER MONITORS**

TECHNICAL SPECIFICATIONS

1. Sleep-mode power

Maximum **Sleep-mode power**: 0,5 watts

2. On-mode power

The **On-mode power** must be measured according to the Energy Star Program Requirements for Displays Version 6.0 or 5.1 and must not exceed the following maximum values:

Diagonal (inches)	Maximum power On-mode
15 ≤ d < 17	13 watts
17 ≤ d < 20	18 watts
20 ≤ d < 22	20 watts
d ≥ 22	22 watts

Verification

Products bearing the Energy Star Displays Version 6.0 or 5.1 labels with maximum On-mode power corresponding to the above values or lower and with a maximum Sleep-mode power of 0.5 watt will be deemed to comply. Alternatively, bidders may demonstrate compliance with the above requirements by another objective third-party means or by supplying test results in respect of their product demonstrating that the criteria are met. Test results for all modes should be provided using the Energy Star test method.

3. Environmental and Ergonomic Features

All products must meet the criteria of TCO Certified Displays 7 or equivalent criteria. Compliance with these criteria is required in respect of the product, not the company itself.

TCO certification (Swedish Label) applies to IT products that meet sustainable environmental and social criteria during their life cycle (manufacturing, use and end of life).

Verification

All products with the TCO Certified Displays 7 label will be accepted. Alternatively bidders may provide documentation to demonstrate that equivalent criteria are met.

NOTES ON IMPLEMENTATION

It is recommended to apply Environmental and Ergonomic Features as selection criterion to ensure an excellent ergonomic performance as well as to address other environmental criteria. However, if a product does not have the TCO label and instead provides extensive technical documentation this may require additional work on behalf of the procurer.

There are numerous models that comply with these criteria available in the market and in the product lists at www.topten.eu.

Apart from the TCO Certification, there are other certifications that might be taken into account when procuring monitors such as:

- **EU Ecolabel** recognises products that have a lower environmental impact during their life cycle (raw materials extraction, production, use and disposal).
- **Blauer Engel** (German Label) which requires Energy Star V. 6.0 and has requirements for reparability, recyclability, material, ergonomics and consumer information. Some of these criteria are aligned with TCO Certified Displays.

These certifications might be used as award/evaluation criteria and if so, X% (at least 10-15%) of the total marks available should be given to products certified by one of both certifications.

To increase savings and reduce environmental impact, procurers should evaluate life cycle costs when tendering for computer monitors. Thus, it is advisable to include in the tender a costing exercise - even if simple - for the product life cycle costs.

Example of a breakdown costs table, to be filled in by bidders:

	Information details	Different unit costs in € (excluding tax)	Total cost in € (excluding tax)
Delivery			
Installation			
Use*	- Indicate on mode, sleep and off-mode power, in W - Specify daily use hours for on, sleep and off modes x 365 days x 5 years x nº units	Electricity cost: 0,20 €/kWh**	
Maintenance			
Recycling and disposal			

* Example of how use costs can be determined. The variables for the costs calculation during the product life time can be stated by the procurer (according to the equipment replacement rate, its daily use in the different modes, the number of days the equipment is in use, etc.).

** This figure is just an example. The procurer can use the average electricity price paid during the last 2 or 3 years, and also include subscription fee and taxes.

Advice and support

If you would like further assistance in using the information presented here in your own procurement actions or more information on Topten Pro please contact your national Topten team (find the links on Topten.eu).

The European Commission's Green Public Procurement website also contains valuable legal and practical guidance together with procurement criteria for a range of commonly procured products and services.

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ANNEX II

Laser printers guidelines for public procurers

Guidelines for Frontrunner Public Procurers

Laser multifunctional devices

Updated: June 2018

Courtesy of silicon.com

Why follow Topten criteria?

- Topten.eu Pro (**www.topten.eu/professional**) is a European web portal helping buyers, professionals, public procurers and large buyers to find **the most energy efficient products available in Europe**. The products are selected and updated continuously, according to their high energy and environmental performances, independently from the manufacturers.
- All laser multifunctionals displayed on **www.topten.eu** meet the criteria contained in these guidelines. Procurers can therefore use the website to check the availability and assortment of products currently on the market, which meet the **Topten selection criteria**.
- Topten.eu Pro links to national partners Topten Pro websites and is developed under the Topten Act project, supported by the European Union through the Horizon 2020 programme.

How much can you save?

The category includes laser multifunctional devices able to print colour and monochrome, on standard paper size (A4 and A3). Considering the models listed on www.topten.eu and the following assumptions, it is possible to achieve the savings indicated in the next table.

Assumptions
- Life time expectation: 5 years
- Energy consumption according to Energy Star's typical energy consumption (TEC)
- Electricity cost: 0,20 €/kWh

	Topten model	Inefficient model	Topten model	Inefficient model
Type of device	A3, 75 ipm, monochrome	A3, 72 ipm, monochrome	A4, 38 ipm, colour	A4, 40 ipm, colour
Electricity consumption	270 kWh/year	952 kWh/year	83 kWh/year	484 kWh/year
Use cost (electricity in 5 years)	270 €	952 €	83 €	484 €
Savings in 5 years	**72% energy / unit 682 € / unit**		**83% energy / unit 401 € / unit**	

Note: ipm = images per minute, used to express print speed

Comparing similar models with the same print speed, the Topten models allow electricity savings, in 5 years, of 682 €/unit, for monochrome multifunctionals, and 401 €/unit, for colour multifunctionals. Best models on www.topten.eu consume only as much as 21 kWh/year.

Procurement criteria

The following criteria can be inserted directly into tendering documents. The Topten selection criteria and the product lists are updated regularly. The newest versions are always available at **www.topten.eu/pro**.

SUBJECT: **HIGHLY ENERGY-EFFICIENT LASER MULTIFUNCTIONAL DEVICES**

TECHNICAL SPECIFICATIONS

1. Energy star certification

Products must observe the criteria of Energy Star Programme Requirements for Imaging Equipment Version 2.0.

Verification

Products bearing Energy Star - Requirements for Imaging Equipment Version 2.0 will be deemed to comply. Alternatively, bidders may demonstrate compliance with the above requirements by another objective third-party means or by supplying test results in respect of their product demonstrating that the criteria are met. Test results for all modes should be provided using the Energy Stat test method.

2. TEC (Typical Energy Consumption)

The Typical Energy Consumption (TEC), measured according to Energy Star - Requirements for Imaging Equipment Version 2.0, must not exceed the values listed in the table below. For colour laser multifunctional devices these values correspond to 40% of Energy Star TEC limit, for monochrome laser multifunctional devices to 60%.

Verification

Bidders must supply test results demonstrating the requirement is met according to the methodology set out by Energy Star – "Requirements for Imaging Equipment Version 2.0": Procurers can compare these test results with those of the table below.

Speed (ipm)	TEC Max (kWh/week)		Speed (ipm)	TEC Max (kWh/week)		Speed (ipm)	TEC Max (kWh/week)	
	Mono	Colour		Mono	Colour		Mono	Colour
4 a 11	0,4	0,6	35	1,6	1,9	59	3,9	3,9
12	0,5	0,6	36	1,6	2	60	4,1	3,9
13	0,5	0,7	37	1,7	2,1	61	4,2	4
14	0,6	0,7	38	1,8	2,2	62	4,4	4,1
15	0,6	0,8	39	1,8	2,3	63	4,5	4,2
16	0,7	0,8	40	1,9	2,3	64	4,7	4,3
17	0,7	0,9	41	2	2,4	65	4,8	4,3

18	0,7	0,9	42	2	2,5	66	5	4,4
19	0,8	1	43	2,1	2,6	67	5,1	4,5
20	0,8	1	44	2,2	2,7	68	5,3	4,6
21	0,9	1,1	45	2,2	2,7	69	5,4	4,7
22	0,9	1,1	46	2,3	2,8	70	5,6	4,7
23	0,9	1,2	47	2,4	2,9	71	5,7	5
24	1	1,2	48	2,4	3	72	5,9	5,3
25	1	1,3	49	2,5	3,1	73	6	5,6
26	1,1	1,3	50	2,6	3,1	74	6,2	5,9
27	1,1	1,4	51	2,7	3,2	75	6,3	6,1
28	1,2	1,4	52	2,9	3,3	76	6,5	6,4
29	1,2	1,5	53	3	3,4	77	6,6	6,7
30	1,2	1,5	54	3,2	3,5	78	6,8	7
31	1,3	1,6	55	3,3	3,5	79	6,9	7,3
32	1,4	1,7	56	3,5	3,6	80	7,1	7,5
33	1,4	1,8	57	3,6	3,7			
34	1,5	1,9	58	3,8	3,8			

3. Printing on recycled paper

Multifunctionals must be able to print on recycled paper.

Verification

Bidders must supply technical documentation or test results demonstrating this criterion is met.

4. Two-sided output (duplex printing)

Multifunctionals must have automatic duplex printing function if their print speed is equal or higher than 19 ipm.

Verification

Bidders must supply technical documentation or test results demonstrating this criterion is met.

ADDITIONAL SPECIFICATIONS

5. Assured low-power modes

Bidders must ensure that the declared power levels of the low-power modes are met, and that the printers do enter the low-power modes (no software protocol should prevent printers from quickly entering low power modes). In case the printers are not entering the low power modes as they should, bidders must provide technical assistance and solve the problem.

Verification

Bidders must supply a warranty for technical assistance and problem solving.

NOTES ON IMPLEMENTATION

- Paper manufacturing consumes a lot of energy. Therefore, reducing paper consumption by using two-sided printing with a duplex function contributes to global energy savings.
- There are numerous models complying with these criteria that are available on the market – see the latest product lists at www.topten.eu.

To increase savings and reduce environmental impact, procurers should evaluate life cycle costs when tendering for laser multifunctional devices. Thus, it is advisable to include in the tender a costing exercise - even if simple - for the product life cycle costs.

Example of a breakdown costs table, to be filled in by bidders:

	Information details	Different unit costs in € (excluding tax)	Total cost in € (excluding tax)
Delivery			
Installation			
Use*	Indicate Typical Energy Consumption (TEC) in kWh/week x 52 weeks x 5 years x nº units	Electricity cost: 0,20 €/kWh**	
Maintenance			
Recycling and disposal			

* Example of how use costs can be determined. The variables for the costs calculation during the product lifetime can be stated by the procurer (according to the equipment replacement rate, the number of days the equipment is in use, etc.).

** This figure is just an example. The procurer can use the average electricity price paid during the last 2 or 3 years, and also include subscription fee and taxes.

Advice and support

If you would like further assistance in using the information presented here in your own procurement actions or more information on Topten Pro please contact your national Topten team (find the links on Topten.eu).

The European Commission's Green Public Procurement website also contains valuable legal and practical guidance together with procurement criteria for a range of commonly procured products and services.

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ANNEX III

Laser multifunctionals guidelines for public procurers

Guidelines for Frontrunner Public Procurers

Laser multifunctional devices

Updated: June 2018

Courtesy of silicon.com

Why follow Topten criteria?

- Topten.eu Pro (**www.topten.eu/professional**) is a European web portal helping buyers, professionals, public procurers and large buyers to find **the most energy efficient products available in Europe**. The products are selected and updated continuously, according to their high energy and environmental performances, independently from the manufacturers.
- All laser multifunctionals displayed on **www.topten.eu** meet the criteria contained in these guidelines. Procurers can therefore use the website to check the availability and assortment of products currently on the market, which meet the **Topten selection criteria**.
- Topten.eu Pro links to national partners Topten Pro websites and is developed under the Topten Act project, supported by the European Union through the Horizon 2020 programme.

How much can you save?

The category includes laser multifunctional devices able to print colour and monochrome, on standard paper size (A4 and A3). Considering the models listed on www.topten.eu and the following assumptions, it is possible to achieve the savings indicated in the next table.

Assumptions
- Life time expectation: 5 years
- Energy consumption according to Energy Star's typical energy consumption (TEC)
- Electricity cost: 0,20 €/kWh

	Topten model	Inefficient model	Topten model	Inefficient model
Type of device	A3, 75 ipm, monochrome	A3, 72 ipm, monochrome	A4, 38 ipm, colour	A4, 40 ipm, colour
Electricity consumption	270 kWh/year	952 kWh/year	83 kWh/year	484 kWh/year
Use cost (electricity in 5 years)	270 €	952 €	83 €	484 €
Savings in 5 years	**72% energy / unit 682 € / unit**		**83% energy / unit 401 € / unit**	

Note: ipm = images per minute, used to express print speed

Comparing similar models with the same print speed, the Topten models allow electricity savings, in 5 years, of 682 €/unit, for monochrome multifunctionals, and 401 €/unit, for colour multifunctionals. Best models on www.topten.eu consume only as much as 21 kWh/year.

Procurement criteria

The following criteria can be inserted directly into tendering documents. The Topten selection criteria and the product lists are updated regularly. The newest versions are always available at **www.topten.eu/pro**.

SUBJECT: **HIGHLY ENERGY-EFFICIENT LASER MULTIFUNCTIONAL DEVICES**

TECHNICAL SPECIFICATIONS

1. Energy star certification

Products must observe the criteria of Energy Star Programme Requirements for Imaging Equipment Version 2.0.

Verification

Products bearing Energy Star - Requirements for Imaging Equipment Version 2.0 will be deemed to comply. Alternatively, bidders may demonstrate compliance with the above requirements by another objective third-party means or by supplying test results in respect of their product demonstrating that the criteria are met. Test results for all modes should be provided using the Energy Stat test method.

2. TEC (Typical Energy Consumption)

The Typical Energy Consumption (TEC), measured according to Energy Star - Requirements for Imaging Equipment Version 2.0, must not exceed the values listed in the table below. For colour laser multifunctional devices these values correspond to 40% of Energy Star TEC limit, for monochrome laser multifunctional devices to 60%.

Verification

Bidders must supply test results demonstrating the requirement is met according to the methodology set out by Energy Star – "Requirements for Imaging Equipment Version 2.0": Procurers can compare these test results with those of the table below.

Speed (ipm)	TEC Max (kWh/week)		Speed (ipm)	TEC Max (kWh/week)		Speed (ipm)	TEC Max (kWh/week)	
	Mono	Colour		Mono	Colour		Mono	Colour
4 a 11	0,4	0,6	35	1,6	1,9	59	3,9	3,9
12	0,5	0,6	36	1,6	2	60	4,1	3,9
13	0,5	0,7	37	1,7	2,1	61	4,2	4
14	0,6	0,7	38	1,8	2,2	62	4,4	4,1
15	0,6	0,8	39	1,8	2,3	63	4,5	4,2
16	0,7	0,8	40	1,9	2,3	64	4,7	4,3
17	0,7	0,9	41	2	2,4	65	4,8	4,3

18	0,7	0,9	42	2	2,5	66	5	4,4
19	0,8	1	43	2,1	2,6	67	5,1	4,5
20	0,8	1	44	2,2	2,7	68	5,3	4,6
21	0,9	1,1	45	2,2	2,7	69	5,4	4,7
22	0,9	1,1	46	2,3	2,8	70	5,6	4,7
23	0,9	1,2	47	2,4	2,9	71	5,7	5
24	1	1,2	48	2,4	3	72	5,9	5,3
25	1	1,3	49	2,5	3,1	73	6	5,6
26	1,1	1,3	50	2,6	3,1	74	6,2	5,9
27	1,1	1,4	51	2,7	3,2	75	6,3	6,1
28	1,2	1,4	52	2,9	3,3	76	6,5	6,4
29	1,2	1,5	53	3	3,4	77	6,6	6,7
30	1,2	1,5	54	3,2	3,5	78	6,8	7
31	1,3	1,6	55	3,3	3,5	79	6,9	7,3
32	1,4	1,7	56	3,5	3,6	80	7,1	7,5
33	1,4	1,8	57	3,6	3,7			
34	1,5	1,9	58	3,8	3,8			

3. Printing on recycled paper

Multifunctionals must be able to print on recycled paper.

Verification

Bidders must supply technical documentation or test results demonstrating this criterion is met.

4. Two-sided output (duplex printing)

Multifunctionals must have automatic duplex printing function if their print speed is equal or higher than 19 ipm.

Verification

Bidders must supply technical documentation or test results demonstrating this criterion is met.

ADDITIONAL SPECIFICATIONS

5. Assured low-power modes

Bidders must ensure that the declared power levels of the low-power modes are met, and that the printers do enter the low-power modes (no software protocol should prevent printers from quickly entering low power modes). In case the printers are not entering the low power modes as they should, bidders must provide technical assistance and solve the problem.

Verification

Bidders must supply a warranty for technical assistance and problem solving.

NOTES ON IMPLEMENTATION

- Paper manufacturing consumes a lot of energy. Therefore, reducing paper consumption by using two-sided printing with a duplex function contributes to global energy savings.
- There are numerous models complying with these criteria that are available on the market – see the latest product lists at www.topten.eu.

To increase savings and reduce environmental impact, procurers should evaluate life cycle costs when tendering for laser multifunctional devices. Thus, it is advisable to include in the tender a costing exercise - even if simple - for the product life cycle costs.

Example of a breakdown costs table, to be filled in by bidders:

	Information details	Different unit costs in € (excluding tax)	Total cost in € (excluding tax)
Delivery			
Installation			
Use*	Indicate Typical Energy Consumption (TEC) in kWh/week x 52 weeks x 5 years x nº units	Electricity cost: 0,20 €/kWh**	
Maintenance			
Recycling and disposal			

* Example of how use costs can be determined. The variables for the costs calculation during the product lifetime can be stated by the procurer (according to the equipment replacement rate, the number of days the equipment is in use, etc.).

** This figure is just an example. The procurer can use the average electricity price paid during the last 2 or 3 years, and also include subscription fee and taxes.

Advice and support

If you would like further assistance in using the information presented here in your own procurement actions or more information on Topten Pro please contact your national Topten team (find the links on Topten.eu).

The European Commission's Green Public Procurement website also contains valuable legal and practical guidance together with procurement criteria for a range of commonly procured products and services.

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ANNEX IV

Inkjet printers and multifunctionals guidelines
for public procurers

Guidelines for Frontrunner Public Procurers

Inkjet printers and multifunctional devices

Updated: June 2018

Courtesy of silicon.com

Why follow Topten criteria?

- Topten.eu Pro (**www.topten.eu/professional**) is a European web portal helping buyers, professionals, public procurers and large buyers to find **the most energy efficient products available in Europe**. The products are selected and updated continuously, according to their high energy and environmental performances, independently from the manufacturers.
- All inkjet printers and multifunctionals displayed on **www.topten.eu** meet the criteria contained in these guidelines. Procurers can therefore use the website to check the availability and assortment of products currently on the market, which meet the **Topten selection criteria**.
- Topten.eu Pro links to national partners Topten Pro websites and is developed under the Topten Act project, supported by the European Union through the Horizon 2020 programme.

How much can you save?

The category includes inkjet printers and multifunctionals able to print colour and monochrome, on standard paper size (A4 and A3). Considering the models listed on www.topten.eu and the following assumptions, it is possible to achieve the savings indicated in the next table.

Assumptions
- Life time expectation: 5 years
- Daily use in offices: 24h in sleep-mode
- Electricity cost: 0,20 €/kWh

	Topten model	Inefficient model	Topten model	Inefficient model
Type of device	Printer A3, colour	Printer A3, colour	Multifunctional A3, colour	Multifunctional A3, colour
Electricity consumption	12 kWh/year	20 kWh/year	13 kWh/year	24 kWh/year
Use cost (electricity in 5 years)	12 €	20 €	13 €	24 €
Savings in 5 years	**40% energy / unit 8 € / unit**		**46% energy / unit 11 € / unit**	

Comparing similar models, the Topten models allow electricity savings, in 5 years, of 8 €/unit for inkjet printers, and 11 €/unit for multifunctional devices. Best models on www.topten.eu consume only 6 kWh/year. Additional costs savings can be achieved by Topten inkjet printers thanks to single ink technology (cartridges) and duplex printing (paper).

Procurement criteria

The following criteria can be inserted directly into tendering documents. The Topten selection criteria and the product lists are updated regularly. The newest versions are always available at **www.topten.eu/pro.**

SUBJECT: HIGHLY ENERGY-EFFICIENT INKJET PRINTERS AND MULTIFUNCTIONAL DEVICES

TECHNICAL SPECIFICATIONS

1. Energy star certification

Products must observe the criteria of Energy Star Programme Requirements for Imaging Equipment Version 2.0.

Verification

Products bearing Energy Star - Requirements for Imaging Equipment Version 2.0 will be deemed to comply. Alternatively, bidders may demonstrate compliance with the above requirements by another objective third-party means or by supplying test results in respect of their product demonstrating that the criteria are met. Test results for all modes should be provided using the Energy Stat test method.

2. Sleep-mode power

Maximum **Sleep-mode power**: 1,5 watts

Verification

Bidders must demonstrate compliance with the Sleep mode power requirement supplying technical documentation according to Energy Star specifications or similar.

3. Single ink technology

Each colour cartridge can be replaced separately.

Verification

Bidders must demonstrate compliance with this requirement supplying technical documentation.

ADDITIONAL SPECIFICATIONS

4. Two-sided output (duplex printing)

Printers and multifunctional devices must have duplex printing function.

Award/evaluation criteria (optional)

X% of the total marks available will be given to products equipped with an automatic duplex printing.

NOTES ON IMPLEMENTATION

- Paper manufacturing consumes a lot of energy. Therefore, reducing paper consumption by using two-sided printing with a duplex function contributes to global energy savings.
- When applying an award/evaluation criteria a significant weighting (at least 10-15%) should be given in the evaluation scheme.
- There are numerous models that comply with these criteria available in the market and in the product lists at www.topten.eu.

To increase savings and reduce environmental impact, procurers should evaluate life cycle costs when tendering for printers and multifunctionals. Thus, it is advisable to include in the tender a costing exercise - even if simple - for the product life cycle costs.

Example of a breakdown costs table, to be filled in by bidders:

	Information details	Different unit costs in € (excluding tax)	Total cost in € (excluding tax)
Delivery			
Installation			
Use*	Indicate sleep-mode power, in W, x 24h x 365 days x 5 years x nº units	Electricity cost: 0,20 €/kWh**	
Maintenance			
Recycling and disposal			

* Example of how use costs can be determined. The variables for the costs calculation during the product life time can be stated by the procurer (according to the equipment replacement rate, the number of days the equipment is in use, etc.).

** This figure is just an example. The procurer can use the average electricity price paid during the last 2 or 3 years, and also include subscription fee and taxes.

Advice and support

If you would like further assistance in using the information presented here in your own procurement actions or more information on Topten Pro please contact your national Topten team (find the links on Topten.eu).

The European Commission's Green Public Procurement website also contains valuable legal and practical guidance together with procurement criteria for a range of commonly procured products and services.

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ANNEX V

LED classic lamps guidelines for public procurers

Guidelines for Frontrunner Public Procurers

Non-directional LED lamps

Updated: June 2018

Why follow Topten criteria?

- Topten.eu Pro (**www.topten.eu/professional**) is a European web portal helping buyers, professionals, public procurers and large buyers to find **the most energy efficient products available in Europe**. The products are selected and updated continuously, according to their high energy and environmental performances, independently from the manufacturers.
- All non-directional lamps displayed on **www.topten.eu** meet the criteria contained in these guidelines. Procurers can therefore use the website to check the availability and assortment of products currently on the market, which meet the **Topten selection criteria**.
- Topten.eu Pro links to national partners Topten Pro websites and is developed under the Topten Act project, supported by the European Union through Horizon 2020 programme.

How much can you save?

The non-directional LED lamps, listed on www.topten.eu, can directly replace traditional lamps (incandescent and halogen). Models have different shapes and screws, integrated control gear and operate on main voltage (230 volts). Considering the following assumptions, it is possible to achieve the savings indicated in the next table.

Assumptions
- Life time expectation: average 25.000h
- Annual average use in offices: 3.500h
- Electricity cost: 0,20 €/kWh

	Topten model	Inefficient model	Topten model	Inefficient model
Type of lamp	LED Classic E27 - 10W	Halogen Classic E27 - 75W	LED Candle E14 - 5W	Halogen Candle E14 - 42W
Energy class	A++	D	A++	C
Luminous efficacy	152 lm/W	17 lm/W	128 lm/W	11 lm/W
Electricity consumption	35 kWh/year	263 kWh/year	18 kWh/year	147 kWh/year
Use cost (electricity in 15 years)	105 €	788 €	53 €	441 €
Savings in 15 years	**87% energy / unit 683 € / unit**		**88% energy / unit 388 € / unit**	

Topten models can consume almost 90% less energy than comparable halogen lamps and can reach 680€ /unit in energy saving over during their lifetime.

Another aspect to consider is luminous efficacy, expressed in lm/W, which translates the conversion efficiency from electrical power into light. In the examples above, the Topten LED lamps can be almost 12 times more efficient than halogen lamps.

The lifetime of Topten non-directional lamps ranges between 15.000 and 35.000 hours, whilst inefficient halogen models only reach 2.000 hours. This means that these would need to be replaced between 8 to 18 times during the lifetime of one Topten LED lamp.

Procurement criteria

The following criteria can be inserted directly into tendering documents. The Topten selection criteria and the product lists are updated regularly. The newest versions are always available at **www.topten.eu/pro.**

SUBJECT: HIGHLY ENERGY-EFFICIENT NON-DIRECTIONAL LED LAMPS

TECHNICAL SPECIFICATIONS

1. Energy class

LED lamps must have energy efficiency class A++, for non-dimmable lamps, and A+ or higher, for dimmable lamps according to European Energy Label.

2. Luminous efficacy (lm/W)

The minimum luminous efficacy should be 115 lm/W, for non-dimmable lamps, and 100 lm/W, for dimmable LED lamps.

3. Colour Rendering Index (CRI)

The minimum colour-rendering index should be 80.

4. Lifetime

LED lamp lifetime must not be less than 15.000 hours.

5. Switching cycles

The number of switching cycles must be higher than 20.000.

Verification

Bidders must supply a declaration regarding the compliance of their products with the above requirements, supported by technical data and results. Information must be compliant with EU regulations No. 874/2012, No. 244/2009 and No. 2015/1428. Where compliance with these criteria is dependent upon defined usage patterns or other factors, these must be clearly identified in the declaration. Bidders must also prove compliance of their products with RoHS Directive No. 2011/65/EU and REACH Regulation No. 1907/2006.

NOTES ON IMPLEMENTATION

- There are different types (shapes, screws, luminous flux, etc.) and numerous models of LED lamps that comply with these criteria, available on the market and in the product lists displayed at www.topten.eu.

To increase savings and reduce environmental impact, procurers should evaluate life cycle costs when tendering for non-directional lamps. Thus, it is advisable to include in the tender a costing exercise - even if simple - for the product life cycle costs.

Example of a breakdown costs table, to be filled in by bidders:

	Information details	Different unit costs in € (excluding tax)	Total cost in € (excluding tax)
Delivery			
Installation			
Use*	Indicate power, in W, x nº daily hours in use x nº annual working days x nº years *(lifetime, in hours / average annual use, in hours)* x nº units	Electricity cost: 0,20 €/kWh**	
Maintenance			
Recycling and disposal			

* Example of how use costs can be determined. The variables for the costs calculation during the product lifetime can be stated by the procurer (according to the replacement rate of the lamps, their daily use, the number of days they are in use, etc.).

** This figure is just an example. The procurer can use the average electricity price paid during the last 2 or 3 years, and also include subscription fee and taxes.

Advice and support

If you would like further assistance in using the information presented here in your own procurement actions or more information on Topten Pro please contact your national Topten team (find the links on Topten.eu).

The European Commission's Green Public Procurement website also contains valuable legal and practical guidance together with procurement criteria for a range of commonly procured products and services.

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ANNEX VI

LED spot lamps guidelines for public procurers

Guidelines for Frontrunner Public Procurers

Directional LED lamps

Updated: June 2018

Why follow Topten criteria?

- Topten.eu Pro (**www.topten.eu/professional**) is a European web portal helping buyers, professionals, public procurers and large buyers to find **the most energy efficient products available in Europe**. The products are selected and updated continuously, according to their high energy and environmental performances, independently from the manufacturers.
- All non-directional lamps displayed on **www.topten.eu** meet the criteria contained in these guidelines. Procurers can therefore use the website to check the availability and assortment of products currently on the market, which meet the **Topten selection criteria**.
- Topten.eu Pro links to national partners Topten Pro websites and is developed under the Topten Act project, supported by the European Union through Horizon 2020 programme.

How much can you save?

The directional LED lamps, listed on www.topten.eu, can directly replace traditional lamps (incandescent and halogen). Models have different shapes and screws, have integrated control gear and some operate on main voltage (230 volts) or on low voltage (12 volts). Considering the following assumptions, it is possible to achieve the savings indicated in the next table.

Assumptions
- Life time expectation: average 25.000h
- Annual average use in offices: 3.500h
- Electricity cost: 0,20 €/kWh

	Topten model	Inefficient model	Topten model	Inefficient model
Type of lamp	LED GU10	Halogen GU10	LED GU5.3	Halogen GU5.3
Energy class	A++	D	A+	B
Luminous efficacy	97 lm/W	7 lm/W	89 lm/W	14 lm/W
Electricity consumption	21 kWh/year	175 kWh/year	25 kWh/year	175 kWh/year
Use cost (electricity in 15 years)	63 €	525 €	74 €	525 €
Savings in 15 years	**88% energy / unit 462 € / unit**		**86% energy / unit 451 € / unit**	

Topten models can consume about 90% less energy than comparable halogen lamps and can reach 460€ /unit in energy saving over their lifetime.

Another aspect to consider is luminous efficacy, expressed in lm/W, which translates the conversion efficiency from electrical power into light. In the examples above, the Topten LED lamps can be almost 14 times more efficient than halogen lamps.

The lifetime of Topten directional lamps ranges between 15.000 and 40.000 hours whilst inefficient models only reach 2.000 hours. This means that these would need to be replaced between 8 to 20 times during the lifetime of one Topten LED lamp.

Procurement criteria

The following criteria can be inserted directly into tendering documents. The Topten selection criteria and the product lists are updated regularly. The newest versions are always available at **www.topten.eu/pro.**

SUBJECT: HIGHLY ENERGY-EFFICIENT DIRECTIONAL LED LAMPS

TECHNICAL SPECIFICATIONS

1. Energy class

LED lamps must have energy efficiency class A+ or higher, according to European Energy Label.

2. Luminous efficacy (lm/W)

The minimum luminous efficacy should be 75 lm/W.

3. Colour Rendering Index (CRI)

The minimum colour-rendering index 80.

4. Lifetime

LED lamp lifetime must not be less than 15.000 hours.

5. Switching cycles

The number of switching cycles must be higher than 20.000.

Verification

Bidders must supply a declaration regarding the compliance of their products with the above requirements, supported by technical data and results. Information must be compliant with EU regulations No. 874/2012 and No. 1194/2012. Where compliance with these criteria is dependent upon defined usage patterns or other factors these must be clearly identified in the declaration. Bidders must also prove compliance of their products with RoHS Directive No. 2011/65/EU and REACH Regulation No. 1907/2006.

NOTES ON IMPLEMENTATION

- There are different types (shapes, screws, luminous flux, etc.) and numerous models of LED lamps that comply with these criteria, available on the market and in the product lists displayed at www.topten.eu.

To increase savings and reduce environmental impact, procurers should evaluate life cycle costs when tendering for directional lamps. Thus, it is advisable to include in the tender a costing exercise - even if simple - for the product life cycle costs.

Example of a breakdown costs table, to be filled in by bidders:

	Information details	Different unit costs in € (excluding tax)	Total cost in € (excluding tax)
Delivery			
Installation			
Use*	Indicate power, in W, x nº daily hours in use x nº annual working days x nº years *(lifetime, in hours / average annual use, in hours)* x nº units	Electricity cost: 0,20 €/kWh**	
Maintenance			
Recycling and disposal			

* Example of how use costs can be determined. The variables for the costs calculation during the product lifetime can be stated by the procurer (according to the replacement rate of the lamps, their daily use, the number of days they are in use, etc.).

** This figure is just an example. The procurer can use the average electricity price paid during the last 2 or 3 years, and also include subscription fee and taxes.

Advice and support

If you would like further assistance in using the information presented here in your own procurement actions or more information on Topten Pro please contact your national Topten team (find the links on Topten.eu).

The European Commission's Green Public Procurement website also contains valuable legal and practical guidance together with procurement criteria for a range of commonly procured products and services.

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ANNEX VII

Dishwashers guidelines for public procurers

Guidelines for Frontrunner Public Procurers

Dishwashers

Updated: June 2018

Why follow Topten criteria?

- Topten.eu Pro (**www.topten.eu/professional**) is a European web portal helping buyers, professionals, public procurers and large buyers to find **the most energy efficient products available in Europe**. The products are selected and updated continuously, according to their high energy and environmental performances, independently from the manufacturers.
- All dishwashers displayed on **www.topten.eu** meet the criteria contained in these guidelines. Procurers can therefore use the website to check the availability and assortment of products currently on the market, which meet the **Topten selection criteria**.
- Topten.eu Pro links to national partners Topten Pro websites and is developed under the Topten Act project, supported by the European Union through Horizon 2020 programme.

How much can you save?

The category dishwashers, listed on www.topten.eu, includes freestanding and built-in models, with different number of place settings. Considering the following assumptions, it is possible to achieve the savings indicated in the next table.

Assumptions
- Life time expectation: 15 years
- Water cost: 2,6 €/m^3
- Electricity cost: 0,20 €/kWh

	Topten model	Inefficient model	Topten model	Inefficient model
Type of installation / capacity	Freestanding / 13 place settings	Freestanding / 12 place settings	Built-in / 13 place settings	Built-in / 13 place settings
Energy class / drying class	A+++ / A	A+ / A	A+++ / A	A+ / A
Electricity consumption	211 kWh/year	290 kWh/year	155 kWh/year	295 kWh/year
Water consumption	2100 l/year	3080 l/year	2464 l/year	3640 l/year
Use cost (electricity and water in 15 years)	715 €	990 €	561 €	1027 €
Savings in 15 years	**27% energy + 31% water / unit 275 €/unit (energy + water)**		**47% energy + 32% water / unit 466 €/unit (energy + water)**	

Topten models can consume about 47% less energy and 32% less water compared to inefficient models and can reach around 470€ /unit in energy and water savings over their lifetime.

Procurement criteria

The following criteria can be inserted directly into tendering documents. The Topten selection criteria and the product lists are updated regularly. The newest versions are always available at **www.topten.eu/pro**.

SUBJECT: HIGHLY ENERGY-EFFICIENT DISHWASHERS

TECHNICAL SPECIFICATIONS

1. Energy class

Dishwashers must have energy efficiency class A+++, according to European Energy Label.

2. Drying class

Models must have drying class A, according to European Energy Label.

3. Annual water consumption

The maximum annual water consumption is 2800 litres per year.

4. Valve of water/flood protection

Models must have a valve to prevent flooding.

5. Hot water supply

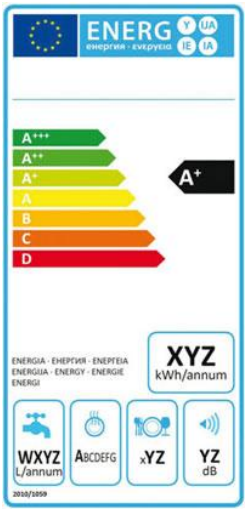
Dishwashers must be ready to be directly connected to hot water (unless water is heated with electrical resistance heating).

Verification 1-5

Bidders must supply a declaration regarding their product's energy and drying efficiency class and water consumption, supported by technical data and results from tests carried out in accordance with Commission regulation No. 1059/2010, based on the measurement standard EN 50242:2016 or equivalent, or a relevant third-party certification/Type I eco-label attesting to compliance. Bidders must provide a declaration regarding the existence of a valve for water/ flood protection and for the capacity of the product to be connected to a hot water supply if necessary.

NOTES ON IMPLEMENTATION

According to EU Regulation No. 1016/2010 some household dishwashers cannot be placed on the market



Currently

Minimum energy class A+	capacity ≥ 8 place settings
Minimum drying class A	capacity ≥ 8 place settings
Minimum drying class B	capacity ≤ 7 place settings

To increase savings and reduce environmental impact, procurers should evaluate life cycle costs when tendering for dishwashers. Thus, it is advisable to include in the tender a costing exercise - even if simple - for the product life cycle costs.

Example of a breakdown costs table, to be filled in by bidders:

	Information details	Different unit costs in € (excluding tax)	Total cost in € (excluding tax)
Delivery			
Installation			
Use*	Annual energy consumption, in kWh/year, x nº units Annual water consumption, in l/year, x nº units	Electricity cost**: 0,20 €/kWh Water cost**: 2,6 €/m^3	
Maintenance			
Recycling and disposal			

* Example of how use costs can be determined. In the EU regulation the annual energy consumption calculation considers 280 cleaning cycles, the left-on and off-mode consumption.

** This figure is just an example. The procurer can use the average electricity price paid during the last 2 or 3 years, and also include subscription fee and taxes.

Advice and support

If you would like further assistance in using the information presented here in your own procurement actions or more information on Topten Pro contact your national Topten team (find it on Topten.eu).

The European Commission's Green Public Procurement website contains valuable legal and practical guidance together with procurement criteria for a range of commonly procured products and services.

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ANNEX VIII

Storage refrigerators and freezers guidelines
for public procurers

Guidelines for Frontrunner Public Procurers

Storage refrigerators and freezers

Updated: July 2017

Why follow Topten/ProCold criteria?

- ProCold (**www.topten.eu/pro-cold**) is an EU-project aiming to **improve energy efficiency in plug-in cabinets** and speed up the **switch to climate-friendly refrigerants**. The project provides help for manufacturers, suppliers, food and beverage companies, retailers, gastronomy, hotels, public authorities, media and other stakeholders.
- Topten (**www.topten.eu**) is a European web portal helping professionals, public procurers and large buyers to find **the most energy efficient products available in Europe**. The products are selected and updated continuously, according to their high energy and environmental performances, independently from the manufacturers.
- All storage refrigerators and freezers displayed on **www.topten.eu** meet the criteria contained in these guidelines. Procurers can therefore use the website to check the availability and assortment of products currently on the market, which meet the **Topten selection criteria**.
- Topten.eu/pro-cold links to national partners' Topten websites and is developed under the ProCold project, supported by the European Union through the Horizon 2020 programme.

How much can you save?

On www.topten.eu storage refrigerator and freezer cabinets are divided in the following categories:

STORAGE REFRIGERATORS	STORAGE FREEZERS
counter refrigerators	counter freezers
refrigerators 1-door	freezers 1-door
refrigerators 2-doors	freezers 2-doors
refrigerator-freezers	

Considering the models listed on Topten and the following assumptions, it is possible to achieve the savings indicated in the next table.

Assumptions
- Life time expectation: 8 years
- Electricity cost: 0,20 €/kWh

		VOLUME (litres)	REFRIGERANT	ENERGY (kWh/year)	ELECTRICITY COSTS (€ in 8 years)	SAVINGS (€ in 8 years)
STORAGE COUNTER REFRIGERATORS	Topten model	111	R600a	394	630	**56% energy/unit 810 €/unit**
	Inefficient model	150	R134a	900	1440	
STORAGE REFRIGERATORS 1-DOOR	Topten model	458	R600a	285	456	**79% energy/unit 1701 €/unit**
	Inefficient model	450	R134a	1348	2157	
STORAGE REFRIGERATORS 2-DOORS	Topten model	826	R290	730	1168	**65% energy/unit 2173 €/unit**
	Inefficient model	900	R134a	2088	3341	
STORAGE COUNTER FREEZERS	Topten model	133	R600a	504	806	**57% energy/unit 1061 €/unit**
	Inefficient model	100	R134a	1167	1867	
STORAGE FREEZERS 1-DOOR	Topten model	501	R290	767	1227	**79% energy/unit 4677 €/unit**
	Inefficient model	450	R404a	3690	5904	
STORAGE FREEZERS 2-DOORS	Topten model	950	R290	4109	6574	**30% energy/unit 2877 €/unit**
	Inefficient model	900	R404a	5907	9451	
STORAGE REFRIGERATOR-FREEZERS	Topten model	513	R290	2373	3797	**36% energy/unit 2107 €/unit**
	Inefficient model	450	R404a	3690	5904	

Comparing models with similar net capacity, the Topten models allow electricity savings, in 8 years, from around 700 €/unit, for storage counter refrigerators, to nearly 4700 €/unit for storage freezers 1-door. Best models on www.topten.eu consume 30% to almost 80% less energy than inefficient models.

In addition, all Topten models use the natural refrigerants R290 (propane) or R600a (isobutane) with global warming potential (GWP) below 4.

Their global warming potential is 1'000 - 4'000 times lower than that of previous refrigerants like R134a or R404A and They already comply with all coming stages of the EU f-gas regulation.

R404A has a GWP of 3990 and will be banned in refrigerated cabinets in 2020 and R134a has a GWP of 1430 and will be banned in refrigerated cabinets in 2022.

Procurement criteria

The following criteria can be inserted directly into tendering documents. The Topten selection criteria and the product lists are updated regularly. The newest versions are always available at **www.topten.eu/pro-cold**.

SUBJECT: HIGHLY ENERGY-EFFICIENT STORAGE REFRIGERATORS AND FREEZERS

TECHNICAL SPECIFICATIONS

1. Energy class

Storage refrigerators and freezers cabinets must have at least the following energy efficiency class, declared according to European Energy Label.

CATEGORY	ENERGY CLASS
Storage counter refrigerators	B
Storage refrigerators 1-door	A
Storage refrigerators 2-doors	D
Storage counter freezers	B
Storage freezers 1-door	C
Storage freezers 2-doors	D
Storage refrigerator-freezers	D

Verification

Bidders must supply the energy label and technical data according to EU Regulations No. 2015/1094 and No. 2015/1095.

2. Refrigerants

Storage refrigerator and freezer cabinets must use refrigerants with global warming potential below 150 such as R290 (propane), R600a (isobutane) or R744 (CO2). This means they are compliant with all coming stages of the EU F-Gas regulation No. 517/2014.

Verification

Bidders must supply the information on refrigerants according to EU regulation No. 2015/1095.

BACKGROUND FACTS

According to EU Regulation No. 517/2014 refrigerators and freezers for commercial use (hermetically sealed equipment) that contain HCFs with global warming potential of 2500 or more will be banned from 1 January 2020 and those that contain HFCs with global warming potential of 150 or more will be banned from 1 January 2022. Therefore the refrigerant R404A which has a global warming potential of 3990 will be banned in refrigerated cabinets in 2020 and the refrigerant R134a which has a global warming potential of 1430 will be banned in refrigerated cabinets in 2022.

Since 1 July 2016, the EU energy label for professional refrigerated storage cabinets is mandatory. It shows:

- the energy efficiency class;
- the annual electricity consumption in kWh per year;
- the net volume of chilled compartments;
- the net volume of freezer compartments;
- the climate class (3, 4 or 5) together with the associated dry bulb temperature (in °C) and the relative humidity (in %).

Document: EU regulation No. 2015/1094

Energy efficiency class	A	B	C	D	E	F	G
Energy efficiency index	15-25	25-35	35-50	50-75	75-85	85-95	95-115

NOTES ON IMPLEMENTATION

To increase savings and reduce environmental impact, procurers should evaluate life cycle costs when tendering for storage refrigerators and freezers. Thus, it is advisable to include in the tender a costing exercise - even if simple - for the product life cycle costs.

Example of a breakdown costs table, to be filled in by bidders:

	Information details	Different unit costs in € (excluding tax)	Total cost in € (excluding tax)
Delivery			
Installation			
Use	Energy consumption in kWh/year x nº units	Electricity cost: 0,20 €/kWh*	
Maintenance			
Recycling and disposal			

* This figure is just an example. The procurer can use the average electricity price paid during the last 2 or 3 years, and also include subscription fee and taxes.

Advice and support

If you would like further assistance in using the information presented here in your own procurement actions or more information please contact your national Topten team (find the links on **www.topten.eu/pro-cold**).

ProCold has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement nº649293. The sole responsibility for the content of the Topten Pro procurement guidelines lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither EASME, nor European Commission and project partners are responsible for any use that may be made of the information contained therein.

ANNEX IX

Minibars and Wine coolers guidelines for public procurers

Guidelines for Frontrunner Public Procurers

Minibars & Wine Coolers

Updated: August 2016

Why follow Topten/ProCold criteria?

- ProCold (**www.topten.eu/pro-cold**) is an EU-project aiming to **improve energy efficiency in plug-in cabinets** and speed up the **switch to climate-friendly refrigerants**. The project provides help for manufacturers, suppliers, food and beverage companies, retailers, gastronomy, hotels, public authorities, media and other stakeholders.
- Topten (**www.topten.eu**) is a European web portal helping professionals, public procurers and large buyers to find **the most energy efficient products available in Europe**. The products are selected and updated continuously, according to their high energy and environmental performances, independently from the manufacturers.
- All minibars and wine coolers displayed on **www.topten.eu** meet the criteria contained in these guidelines. Procurers can therefore use the website to check the availability and assortment of products currently on the market, which meet the **Topten selection criteria**.
- Topten.eu/pro-cold links to national partners' Topten websites and is developed under the ProCold-project, supported by the European Union through the Horizon 2020 programme.

How much can you save?

On www.topten.eu there is one category for minibars and another for wine coolers which is divided in one temperature zone and multi temperature zone.

Considering the models listed on Topten and the following assumptions, it is possible to achieve the savings indicated in the next tables.

Assumptions
- Life time expectation: 10 years
- Electricity cost: 0,20 €/kWh

		VOLUME (litres)	REFRIGERANT	ENERGY (kWh/year)	ELECTRICITY COSTS (€ in 10 years)	SAVINGS (€ in 10 years)
MINIBARS	Topten model	40	R600	50	100	**81% energy/unit** **440 €/unit**
	Inefficient model	40	R717	270	540	

		Volume (litres)	Refrigerant	Energy (kWh/year)	Electricity costs (€ in 10 years)	Savings (€ in 10 years)
Wine coolers 1 temperature zone	Topten model	340	R600a	121	242	**71% energy/unit 598€/unit**
	Inefficient model	343	R600a	420	840	
Wine coolers multi temperature zones	Topten model	450	R600a	128	256	**72% energy/unit 664 €/unit**
	Inefficient model	418	R600a	460	920	

Comparing models with similar net capacity, the Topten models allow electricity savings, in 10 years, from around 660 €/unit for wine coolers multi-temperature zones, to 600 €/unit for wine coolers 1-temperature zone, and to nearly 450 €/unit for minibars. Best models on www.topten.eu consume more than 70% less energy than inefficient models.

In addition, all Topten models use the natural refrigerants R290 (propane) or R600a (isobutane) with global warming potential (GWP) below 4 (compression-type models), or they do not contain any refrigerant in case of Peltier-type (thermoelectric) models.

It is important to note that hotels can save the most energy by choosing a different approach altogether: An alternative to minibars in each room is an energy efficient vending machine or refrigerator available on the floor.

Procurement criteria

The following criteria can be inserted directly into tendering documents. The Topten selection criteria and the product lists are updated regularly. The newest versions are always available at **www.topten.eu/pro-cold**.

Subject: **Highly Energy-Efficient Minibars and Wine Coolers**

Technical Specifications

1. Energy class

Minibars and wine coolers must have at least the following energy efficiency class, declared according to the EU Energy Label.

Category	Energy class
Minibars	A+
Wine coolers One temperature zone	A+
Wine coolers Multi temperature zones	A

Verification

Bidders must supply the EU Energy Label and technical data according to EU Regulations No. 1060/2010 and No. 643/2009.

2. Refrigerants

Compression-type minibars and wine coolers must use refrigerants with global warming potential below 150 such as R290 (propane) or R600a (isobutane).

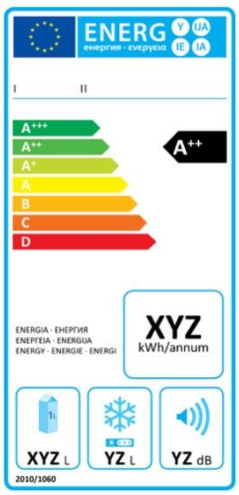
Verification

Bidders must supply the information on refrigerant type, charge in kg and global warming potential (GWP).

BACKGROUND FACTS

According to EU Regulation No. 517/2014 domestic refrigerators and freezers that contain refrigerants with global warming potential of 150 or more are banned since 1 January 2015.
According to EU Regulation No. 643/2009 some household refrigerating appliances cannot be placed on the market:

Household minibars:



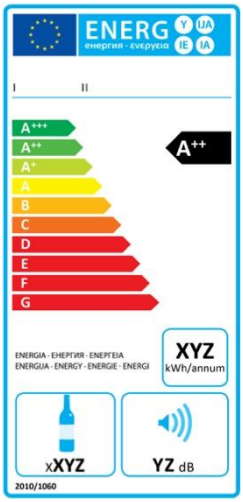
Compression-type refrigerating appliances

Since 1 July 2014 only models with energy class equal or above A+ can be placed on the market

Absorption-type or other-type refrigerating appliances

Since 1 July 2015 only models with energy class equal or above D can be placed on the market

Household wine coolers:



Wine storage appliances

No restrictions

Topten/ProCold appeals to manufacturers to apply these rules to all minibars and wine coolers, independently of whether they are marketed for domestic or professional use.

Energy efficiency class	Energy efficiency index
A+++	EEI <22
A++	22 ≤ EEI < 33
A+	33 ≤ EEI < 42
A	42 ≤ EEI < 55
B	55 ≤ EEI < 75

Energy efficiency class	Energy efficiency index
C	75 ≤ EEI < 95
D	95 ≤ EEI < 110
E	110 ≤ EEI < 125
F	125 ≤ EEI < 150
G	EEI ≥150

Types, efficiency and noise

Compression-type minibars are by far the most energy efficient ones. On the EU Energy Label compression-type minibars reach the classes A+++ and A++. The best Peltier-type minibars reach A+, but typically they are in lower classes. Absorption-type minibars are inefficient and mostly in class D. Compression-type is also the most efficient technology for wine coolers. The best wine coolers reach classes A++ (one temperature zone) and A+ respectively (multi temperature zone).
Noise is an important criterion especially for minibars. Absorption-type and Peltier-type minibars are silent and have therefore become conventional technology for minibars. Compression-type represents the conventional technology for most other household and commercial appliances. It is the most energy efficient technology, but the compressor makes some noise. The solution for minibars is therefore to install them with a presence sensor or timer that keeps them silent during the guests' residence in the room. Eutectic plates (= cold storage) guarantee a long cooling time without the need of the compressor starting.

NOTES ON IMPLEMENTATION

To increase savings and reduce environmental impact, procurers should evaluate life cycle costs when tendering for minibars or wine coolers. Thus, it is advisable to include in the tender a costing exercise - even if simple - for the product life cycle costs.

Example of a breakdown costs table, to be filled in by bidders:

	Information details	Different unit costs in € (excluding tax)	Total cost in € (excluding tax)
Delivery			
Installation			
Use	Energy consumption in kWh/year x nº units	Electricity cost: 0,20 €/kWh*	
Maintenance			
Recycling and disposal			

* This figure is just an example. The procurer can use the average electricity price paid during the last 2 or 3 years, and also include subscription fee and taxes.

Advice and support

If you would like further assistance in using the information presented here in your own procurement actions or more information please contact your national Topten team (find the links on **www.topten.eu/pro-cold**).

ProCold has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement nº649293. The sole responsibility for the content of the Topten Pro procurement guidelines lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither EASME, nor European Commission and project partners are responsible for any use that may be made of the information contained therein.

ANNEX X

Water coolers guidelines for public procurers

Guidelines for Frontrunner Public Procurers

Water Coolers

Updated: August 2016

Why follow Topten/ProCold criteria?

- ProCold (**www.topten.eu/pro-cold**) is an EU-project aiming to **improve energy efficiency in plug-in cabinets** and speed up the **switch to climate-friendly refrigerants**. The project provides help for manufacturers, suppliers, food and beverage companies, retailers, gastronomy, hotels, public authorities, media and other stakeholders.
- Topten (**www.topten.eu**) is a European web portal helping professionals, public procurers and large buyers to find **the most energy efficient products available in Europe**. The products are selected and updated continuously, according to their high energy and environmental performances, independently from the manufacturers.
- At the moment, there are no water coolers displayed on www.topten.eu. The Topten/ProCold-criteria for water coolers are based on the ENERGY STAR® (**www.energystar.gov**). Products that meet the criteria contained in these guidelines can be found in the ENERGY STAR database. Procurers can use the database to check the availability and assortment of products currently on the market (download the excel to see availability in Europe).
  Database under https://www.energystar.gov/productfinder/product/certified-water-coolers/results
- Topten.eu/pro-cold links to national partners' Topten websites and is developed under the ProCold-project, supported by the European Union through the Horizon 2020 programme.

How much can you save?

There are units with bottles and units connected to tap water, stand-alone units and table-top units, but concerning energy consumption the relevant distinction is between water coolers that provide cold water only and those that provide hot and cold water.

Considering the models in the ENERGY STAR database and the following assumptions, it is possible to achieve the savings indicated in the next tables.

Assumptions
- Life time expectation: 6 years
- Electricity cost: 0,20 €/kWh

		Energy (kWh/day)	Refrigerant	Energy (kWh/year)	Electricity costs (€ in 6 years)	Savings (€ in 6 years)
Water Cooler Cold Only	Topten model	0.15	R290	55	66	**50% energy/unit 66 €/unit**
	Inefficient model	0.30	R134a	110	132	
Water Cooler Hot and Cold	Topten model	0.17	R290	62	74	**80% energy/unit 298 €/unit**
	Inefficient model	0.85	R134a	310	372	

Comparing similar models, the Topten models allow electricity savings, in 6 years, up to 300 €/unit for hot and cold water and around 65 €/unit for cold only. Best models consume about 50% less energy than inefficient models, and even 80% less in the case of hot and cold units.

Water coolers with climate-friendly refrigerants are starting to enter the market (e.g. R290 or R600a).

Procurement criteria

The following criteria can be inserted directly into tendering documents. The newest version of this document is always available at **www.topten.eu/pro-cold**.

SUBJECT: **HIGHLY ENERGY-EFFICIENT WATER COOLERS**

TECHNICAL SPECIFICATIONS

4. Energy use per day

Water coolers must use no more energy than given in the following table, measured according to the method described by ENERGY STAR under:
https://www.energystar.gov/ia/partners/product_specs/program_reqs/ES_WC_V2_Spec.pdf

Category	Energy Use (On Mode With No Water Draw)
Cold Only	≤ 0.16 kWh/day
Hot and Cold	≤ 0.18 kWh/day

Verification

Bidders must supply the energy use measured according to the procedure defined by ENERGY STAR.

5. Standby mode

Water coolers must have the ability to go into standby mode.

Verification

Bidders must supply the manual and indicate the page(s) with instructions regarding standby mode.

6. Refrigerants (optional)

Water coolers must use refrigerants with global warming potential below 150, such as R290 (propane) or R600a (isobutane).

Verification

Bidders must supply the information on refrigerant type, charge in kg and global warming potential (GWP).

BACKGROUND FACTS

According to EU Regulation No. 517/2014 (so-called "f-gas regulation") commercial plug-in refrigerators and freezers that contain refrigerants with global warming potential of 150 or more will be banned from 1 January 2022. This will also apply to water coolers. First water coolers using refrigerants with global warming potential below 150 such as R290 (propane) or R600a (isobutane) are on the market.

The best choice for hot and cold water coolers is "on-demand" units. They do not store hot water in a tank but produce it on demand with a flow heater or thermoblock. This makes an enormous difference. Units with a tank use 5 times more energy than on-demand units. ENERGY STAR notes that there may be a wait of a few minutes for hot water with on-demand units.

Water coolers do not need to be on around the clock. Experiences with other refrigerating appliances like beverage coolers show that energy consumption can be reduced by 15 - 45% when the unit is operated in standby mode during the night and weekends.
More info under www.topten.eu/pro-cold/emd/

NOTES ON IMPLEMENTATION

To increase savings and reduce environmental impact, procurers should evaluate life cycle costs when tendering for water coolers. Thus, it is advisable to include in the tender a costing exercise - even if simple - for the product life cycle costs.

Example of a breakdown costs table, to be filled in by bidders:

	Information details	Different unit costs in € (excluding tax)	Total cost in € (excluding tax)
Delivery			
Installation			
Use	Energy use in kWh/day x 365 days/year x nº units	Electricity cost: 0,20 €/kWh*	
Maintenance			
Recycling and disposal			

* This figure is just an example. The procurer can use the average electricity price paid during the last 2 or 3 years, and also include subscription fee and taxes.

Advice and support

If you would like further assistance in using the information presented here in your own procurement actions or more information please contact your national Topten team (find the links on **www.topten.eu/pro-cold**).

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ANNEX XI

Cars and vans guidelines for public procurers

Guidelines for Frontrunner Public Procurers

Cars and Vans

Updated: June 2018

Courtesy of: autogastechnik.eu

Why follow Topten criteria?

- Topten.eu Pro (**www.topten.eu/professional**) is a European web portal helping buyers, professionals, public procurers and large buyers to find **the most energy efficient products available in Europe**. The products are selected and updated continuously, according to their high energy and environmental performances, independently from the manufacturers.
- All cars and vans displayed on **www.topten.eu** meet the criteria contained in these guidelines. Procurers can therefore use the website to check the availability and assortment of products currently on the market, which meet the **Topten selection criteria**.
- Topten.eu Pro links to national partners Topten Pro websites and is developed under the Topten Act project, supported by the European Union through the Horizon 2020 programme.

How much can you save?

Considering cars and vans with combustion engines running on either diesel, petrol or car natural gas (CNG), including hybrids, listed on www.topten.eu, and the following assumptions, it is possible to achieve the savings indicated in the next table.

Assumptions
- Lifetime mileage: 100.000 km
- Fuel price: 1,2 €/litre of petrol and 1,1 €/litre of diesel

	Topten Model	Inefficient Model	Topten Model	Inefficient Model
Category of car	Small	Small	Van 6 or more seats	Van 6 or more seats
CO_2 Emissions	75 g/km	180 g/km	96 g/km	260 g/km
Fuel consumption	3,3 l/100 km petrol hybrid	7,5 l/100 km petrol	4,1 l/100 km petrol hybrid	10,9 l/100 km petrol
CO_2 Emissions (100.000 km)	8 t	18 t	10 t	26 t
Fuel costs (100.000 km)	3.960 €	9.000 €	4.920 €	13.080 €
Savings over 100.000 km	**56% CO_2 / unit 5.040 € / unit**		**62% CO_2 / unit 8.160 € / unit**	

Choosing a Topten hybrid model will allow savings of over 5.000 € over the lifespan of a small car, compared with a small car inefficient model on the market. Smaller cars generally consume less fuel but even for vans with 7 seats, a Topten hybrid model can save up to 8.100 € over 100.000 km, in comparison with an inefficient van model.

CO_2 emissions, expressed in g/km, are an important environmental impact to take into account. It is directly linked to fuel type and consumption. In the examples above, Topten models emit around 60% less than inefficient car models.

Different categories of Topten cars, presented according to car size and fuel types, can be found on www.topten.eu. All the Topten models allow large energy and CO_2 emissions savings, and have as well lower environmental impacts, such as noise and other air pollutants.

Procurement criteria

The following criteria can be inserted directly into tendering documents. The selection criteria and the product lists are updated continuously. The newest versions are always available at **www.topten.eu/pro**.

The specifications for cars and vans are based on the ecological rating system developed by the Institut für Energie und Umweltforschung (IFEU), by order of the German Office for Environment (Bundesumweltamt) and is used by the Swiss Association for Traffic and Environment (ATE) together with its sister organisations - the traffic associations of Germany and Austria (ATE). This multi-criteria rating system takes into account the greenhouse gas, air pollutant and noise emissions for each vehicle type and awards a cumulative score (Eco Points) reflecting environmental performance. The better the environmental performance, the higher the score of Eco Points.

The following technical specifications only relate to cars and vans with a combustion engine, which run on petrol, diesel or natural gas, including hybrid models. Only vehicles with CO_2 emissions up to 180 g/km are taken into consideration.

SUBJECT: HIGHLY ENVIRONMENTAL PERFORMING CARS

TECHNICAL SPECIFICATIONS

1. Pollution index

All car and vans must achieve a minimum score of Eco Points, as shown in the table bellow, per vehicle category, and not exceed a maximum allowed emission rate. The calculation scheme for the Pollution Index determination is explained further below.

Vehicle category	Vehicle length (VL)	Minimum Eco Points
Mini cars	VL < 3,6 m	72,3
Small cars	3,6 m ≤ VL < 4,0 m	67,3

Compacts	4,0 m ≤ VL < 4,4 m	67,2
Middle class	4,4 m ≤ VL < 4,8 m	57
Upper middle class	4,8 m ≤ VL < 5,0 m	48,0
Van with 5 seats	5,0 m ≤ VL	57,8
Van with 6 or more seats	5,0 m ≤ VL	51,8

Calculation of the ATE Pollution Index (expressed in Eco points)

The next table indicates the four types of environmental impacts that contribute to the determination of the Pollution Index.

	Environmental impact	Weighting
A	CO_2 emissions	60%
B	Noise emissions	20%
C	Air pollutants affecting human health	15%
D	Nature pollution (ex. acid rain)	5%

A - CO_2 emissions impact

CO_2 emissions released by vehicles are rated with a linear function. For a CO_2 emissions of 60 g/km a score of 10 points will be granted, while 180 g CO_2/km receive 0 (zero) points. The specific formula for calculating this environmental impact is:

Eco points = (180 – x) * 0,0833 x = CO_2 emissions, in g/km

B - Noise emissions impact

The noise rating scale runs linearly between 10 points, when noise levels correspond to 65 dB(A) and 0 (zero) point when noise emissions are equal to or higher than 75 dB(A), as shown below:

dB(A)	65	66	67	68	69	70	71	72	73	74	75
Points	10	9	8	7	6	5	4	3	2	1	0

C and D - Air pollutants affecting human health and nature pollution impacts

Euro standards set the emission limits for several pollutants affecting human health and nature, as well as ecosystems in general. These two impacts are scored according to the emission class (Euro 6) and type of fuel used by the vehicle.

Emission class[1]		Human health impact[2]	Nature impact[3]
Euro 6	petrol	9,35	7,6
	diesel	2,00	-6,0
Euro 6 Norm 14	petrol	7,48	7,6
Euro 6 Norm 17	petrol	9,35	7,6
Euro 6d-TEMP	petrol	6,64	3,28

[1] Emission classes are set by Directive (CE) nº 692/2008
[2] Air pollutants considered are nitrogen oxides (NO_x) and non-methane hydrocarbons (HCNM)
[3] Environmental pollution is related to the particulate pollutants emitted by exhaust pipes

Final score, expressed in Eco points

The separate scores of each single environmental effect categories are weighted, added up and multiplied by 10, to obtain the final score.

Eco points = [(A score * 0,6) + (B score * 0,2) + (C score * 0,15) + (D score * 0,05)] *10

Verification

Bidders must supply technical data and test results for the vehicles tendered to demonstrate performance in each of the categories covered by Eco Point rating, accompanied by the above calculation indicating the Eco Points achieved.

2. Particle filter

All diesel vehicles must be fitted with a particle filter (DPF).

NOTES ON IMPLEMENTATION

To increase savings and reduce environmental impact, procurers should evaluate life cycle costs when tendering for cars and vans. Thus, it is advisable to include in the tender a costing exercise - even if simple - for the product life cycle costs.

Example of a breakdown costs table, to be filled in by bidders:

	Information details	Different unit costs in € (excluding tax)	Total cost in € (excluding tax)
Delivery			
Warranty			
Use*	Fuel consumption x km x nº units	Fuel cost**	
	CO_2 emissions (kg/km) x km x nº units	0,035 €/kg	
	NO_x emissions (g/km) x km x nº units	0,0044 €/g	
	HCNM emissions (g/km) x km x nº units	0,001 €/g	
	Particulate emissions (g/km) x km x nº units	0,087 €/g	
Maintenance			
Recycling and disposal***			

* Example of how use costs can be determined during the usage phase, according to Directive No. 2009/33/EC (Table 2 of the Annex). Other information on glossary, costs per km over the vehicle lifetime, by typology, and other calculating tools in http://ec.europa.eu/transport/themes/urban/vehicles/directive/.

** Bidders must show the calculation of the average fuel consumption per km (if necessary conversion factors are given in Directive Nº 2009/33/CE -Table 1 of the annex).

*** Figures to document this line can include costs related to vehicle change by similar or different car range.

Advice and support

If you would like further assistance in using the information presented here in your own procurement actions or more information on Topten Pro please contact your national Topten team (find the links on Topten.eu).

The European Commission's http://ec.europa.eu/environment/gpp/index_en.htm website also contains valuable legal and practical guidance together with procurement criteria for a range of commonly procured products and services.

Topten ACT has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement nº649647. The sole responsibility for the content of the Topten Pro procurement guidelines lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither EASME, nor European Commission and project partners are responsible for any use that may be made of the information contained therein.

ANNEX XII

Television sets guidelines for public procurers

Guidelines for Frontrunner Public Procurers

Television sets

Updated: June 2018

Why follow Topten criteria?

- Topten.eu Pro (**www.topten.eu/professional**) is a European web portal helping buyers, professionals, public procurers and large buyers to find **the most energy efficient products available in Europe**. The products are selected and updated continuously, according to their high energy and environmental performances, independently from the manufacturers.
- All television sets displayed on **www.topten.eu** meet the criteria contained in these guidelines. Procurers can therefore use the website to check the availability and assortment of products currently on the market, which meet the **Topten selection criteria**.
- Topten.eu Pro links to national partners Topten Pro websites and is developed under Topten Act project, supported by the European Union through Horizon 2020 programme.

How much can you save?

Considering television sets listed on www.topten.eu and the following assumptions, it is possible to achieve the savings indicated in the next table.

Assumptions
- Life time expectation: 10 years
- Daily use: 8h in on-mode
- Electricity cost: 0.20 €/kWh

	Topten model	Inefficient model	Topten model	Inefficient model
Screen diagonal	108cm / 42"	107cm / 42"	139cm / 55"	139cm / 55"
Energy class	A++	B	A+	B
Resolution	HD	HD	4K	4K
Electricity consumption	88 kWh/year	275 kWh/year	184 kWh/year	456 kWh/year
Use cost (electricity in 10 years)	177 €	554 €	372 €	920 €
Savings in 10 years	**66% energy / unit ⇨ 377€ / unit**		**60% energy / unit ⇨ 548€ / unit**	

Differences in electricity consumption between inefficient and Topten models rise as the screen size enlarges, leading to higher energy savings and consequently greater money savings. As the example

shows, total savings can reach 66% reduction, and they should be multiplied by the number of units included in the tender.

Due to longer daily usage, energy consumption and potential savings by TVs are higher in a professional environment than for home TVs. While the annual energy consumption declared on the Energy Label and on Topten.eu is calculated based on an assumed usage of 4 hours per day, for professional use we assume 8 hours per day.

Procurement criteria

The following criteria can be inserted directly into tendering documents. The Topten selection criteria and the product lists are updated regularly. The newest versions are always available at **www.topten.eu/pro.**

SUBJECT: **HIGHLY ENERGY-EFFICIENT TELEVISION SETS**

TECHNICAL SPECIFICATIONS

1. Energy class

According to their visible screen diagonal and resolution, television sets must have at least the following energy efficiency class, declared in agreement with the European Energy Label.

TV models with HD resolution or lower

SCREEN SIZE (DIAGONAL)	ENERGY CLASS
d < 70 cm	A
70 cm ≤ d < 100 cm	A+
d ≥ 100 cm	A++

TV models with 4K or UHD resolution

SCREEN SIZE (DIAGONAL)	ENERGY CLASS
d < 70 cm	A
d ≥ 70 cm	A+

2. On-mode power

The on-mode power must be declared according to European Energy Label and should be 64W maximum. Models with 4K (Ultra High Definition) may have a maximum of 85W.

3. Standby and off-mode powers

The maximum power in standby-mode is 0.5W or 1.0W (if with information or status display).

The maximum power in off-mode is 0.3W or 0.5W (if there is a visible button to turn power consumption to ≤ 0.1W).

For networked televisions sets placed on the market since January 2017, the limit for networked standby-mode power is 8.0W (if with HiNA) or 3.0W (no HiNA).

Verification

Bidders must supply the energy label and technical data according to EU Regulations No. 642/2009 and No. 1062/2010. If no information is provided, the television set is considered not to be networked equipment, otherwise bidders must supply technical data according to Regulation No. 801/2013.

NOTES ON IMPLEMENTATION

New screen definitions

Currently is possible to find television set with screen definition higher than Full HD, namely 4K or 4K UHD (Ultra High Definition) and 8K or 8K UHD, with 3840 horizontal pixels x 2160 vertical pixels and 4320 horizontal pixels x 4320 vertical pixels, respectively.

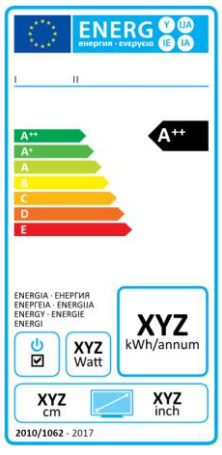
Standby and off-mode power consumptions

Ecodesign regulation No. 642/2009 for televisions states the maximum power in standby-mode (0.5W) if the television set is providing only a reactivation function or its indication and another limit (1.0W) if providing only information or status display, or providing only a combination of reactivation function and information or status display.

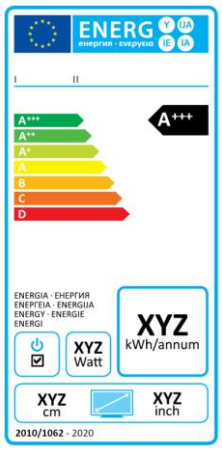
Ecodesign regulation No. 801/2013 amends the previous regulation to include networked televisions. The maximum power in standby-mode depends whether the equipment has high network availability (HiNA) or low network availability (no HiNA). Since January 2017 these limits are stricter and correspond to 8.0W (with HiNA) or 3.0W (without HiNA).

Energy label

Energy labels for televisions are regulated by EU Regulation No. 1062/2010 which includes also television monitors. The regulation defines an energy label scale up to A+++ to D and also a timetable for the introduction of new efficient energy classes, as shown bellow.



1 **A++ to E label**
From 01/01/2017



2 **A+++ to D label**
From 01/01/2020

COMMISSION DELEGATED REGULATION Nº 1062/2010	
Energy efficiency class	**Energy efficiency index**
A+++	EEI < 0,10
A++	0,10 ≤ EEI < 0,16
A+	0,16 ≤ EEI < 0,23
A	0,23 ≤ EEI < 0,30
B	0,30 ≤ EEI < 0,40
C	0,40 ≤ EEI < 0,50
D	0,50 ≤ EEI < 0,64

If a television set has an easy visible switch, which puts the device in a condition with power consumption not exceeding 0.01W then this symbol is added in the energy label.

EU Ecolabel

EU Ecolabel recognises products that have a lower environmental impact during their life cycle (raw materials extraction, production, use and disposal). The validity of criteria for the award of the EU Ecolabel to television sets, published in 2009, was recently prolonged until 31/12/2017. It guarantees lower energy consumption during use and standby and minimum energy efficiency class B.

This certification might be used as award/evaluation criteria and if so, X% (at least 10-15%) of the total marks available should be given to products certified by this certification.

To increase savings and reduce environmental impact, procurers should evaluate life cycle costs when tendering for computer monitors. Thus, it is advisable to include in the tender a costing exercise - even if simple - for the product life cycle costs.

Example of a breakdown costs table, to be filled in by bidders:

	Information details	Different unit costs in € (excluding tax)	Total cost in € (excluding tax)
Delivery			
Installation			
Use*	On mode power (W) x nº daily hours in use x nº annual working days x 10 years x nº units	Electricity cost: 0,20 €/kWh**	
Maintenance			
Recycling and disposal			

* Example of how use costs can be determined. The variables for the costs calculation during the product life time can be stated by the procurer (according to the equipment replacement rate, its daily and annual use, etc.).

** This figure is just an example. The procurer can use the average electricity price paid during the last 2 or 3 years, and also include subscription fee and taxes.

Advice and support

If you would like further assistance in using the information presented here in your own procurement actions or more information on Topten Pro please contact your national Topten team (find the links on Topten.eu).

The European Commission's Green Public Procurement website also contains valuable legal and practical guidance together with procurement criteria for a range of commonly procured products and services.

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