

The Danish Electricity Saving Trust Purchasing Guidelines

2009

For all those responsible for purchasing electrical appliances and equipment.

- IT and office equipment
- Consumer electronics
- Network equipment and servers
- Lighting
- Ventilation
- Circulator pumps
- Motors
- Large appliances
- Food and drink vending machines

The Danish Electricity Saving Trust recommends that all public sector institutions and private companies comply with the Purchasing Guidelines. Purchases based on these guidelines conform to the purchasing requirements laid down in the Circular on improving energy efficiency in government institutions, and in the 2007 voluntary agreement covering energy savings in the municipalities.



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The Purchasing Guidelines are valid for 2009. See purchasing requirements with full description of scope and definitions at www.elsparefonden.dk/indkoeb (in Danish).

Comments or questions

Please contact us on +45 7026 9009 or by e-mail at sparel@sparel.dk

Purchasing Guidelines make it easy to purchase energy efficiently

The Purchasing Guidelines are the Trust's tool for all those that influence the purchasing process in public sector organisations and commercial companies. This applies equally to senior managers who establish the overall guidelines for purchasing policy and those responsible for energy and purchasing, IT staff, technicians and others that plan and carry out the purchase of electrical devices and equipment.

The Purchasing Guidelines make it easy to organise a responsible purchasing policy which takes both finances and the environment into account. The Guidelines also comply with the legal requirements covering energy efficient purchasing by government institutions, and with the voluntary agreements with equivalent requirements for energy efficient purchasing by the municipalities.

Energy efficient products are normally not more expensive, but if they are they cost a lot less to operate.

Using the Guidelines

The Purchasing Guidelines contain requirements applying to energy consumption for the majority of electrical equipment used in public sector institutions. The Guidelines can be used at many levels in an organisation; in fact they can be used without having to be acquainted with every last detail (see table below). The Guidelines are a useful tool in connection with tenders, and they can also be used to put energy efficient purchasing on the agenda.

Who can use the Guidelines – and how?		
Who	When	How
Leaders and senior management	Formulating purchasing policies and action plans for organisations	Incorporate targets for energy efficient purchasing, and refer to the fact that all purchases must comply with requirements in the Trust's Purchasing Guidelines
Staff responsible for energy	In a dialogue with leaders and purchasers	Refer to the Purchasing Guidelines with the message that it is easy and financially advantageous to purchase energy efficiently
Staff responsible for purchasing in large organizations	Large purchases and tenders	Copy requirements from the Purchasing Guidelines into the tender specifications, and specify that offers can only include products that comply with the requirements
Purchasers, technicians, staff responsible for operations, and similar persons in smaller companies and institutions	Purchasing of low volume products, components, etc.	Inform suppliers or stores that products must comply with the Purchasing Guidelines. Show them the Guidelines or refer them to www.savingtrust.dk/purchasing . When choosing products independently: Choose products based on the requirements, or choose recommended products featured on the Trust's product overviews. See more at www.savingtrust.dk/purchasing When in doubt, contact the Trust for guidance

Who should follow the Purchasing Guidelines?

All municipal and government institutions must purchase energy efficient equipment based on the Purchasing Guidelines.

The Purchasing Guidelines apply to the purchase of both new equipment and new components for existing systems. The requirements also apply to equipment installed in institutions supplied under other types of agreements, such as leasing contracts.

The requirements covering energy efficient purchasing were incorporated in a voluntary agreement on energy savings in the municipalities concluded in October 2007 between Local Government Denmark (KL) and the then Danish Ministry of Transport and Energy.

The requirements covering energy efficient purchasing by government institutions were laid down in a 2005 Circular on improving energy efficiency in government institutions, which also included the requirement that institutions should publicise their energy consumption, and covered areas such as energy efficient behaviour and the implementation of financially viable energy saving projects.

Government must reduce its energy consumption

The Danish government's budget includes proposals for greater efforts to save energy, with DKK 10 million earmarked for this purpose. In order to achieve the overall aim of 10% less energy consumption in ministries in 2011 energy budgets have already been reduced from 2009. Senior management therefore needs to focus on energy consumption in terms of both investments and day-to-day operations.

Despite the fact that the government only accounts for ca 1% of Danish energy consumption, the purpose of the initiative, apart from achieving actual savings, is to make sure that the government takes a lead and implements the best solutions.

SKI (National Procurement Ltd - Denmark)

The framework contracts produced by SKI include a comprehensive selection of products bearing the Trust's Energy Saving Label listed in SKI's electronic catalogue of energy efficient products.

These products conform to the requirements specified in the Trust's Purchasing Guidelines. By choosing products with the Energy Saving Label, purchasers in public sector institutions can be certain that the products purchased conform to the legal requirements in the Circular on energy efficiency in government institutions, and to the voluntary agreement covering the municipalities.

Purchases are not required to be put out to tender if they are made through SKI. Read more at www.ski.dk (mostly in Danish).

Government purchasing

All government institutions are required to use SKI purchasing agreements for areas covered by common government tenders. This applies to products such as computers, monitors, printers, multifunction photocopiers, electric height adjustable desks and servers. See further information at www.statensindkob.dk (in Danish).

The Trust's product overviews, tools and View Electricity Consumption ('Se Elforbrug')

The Trust has developed a range of tools to make it easier for those responsible for purchasing to buy energy efficient appliances.

The Trust's product overviews make it easy to choose particularly energy efficient products. All the products on the Trust's product overviews fulfil the requirements in the Purchasing Guidelines. The product overviews cover: light fittings, A-rated energy saving bulbs, computers, monitors, A-rated circulator pumps, large domestic appliances, professional fridges and freezers, energy saving equipment, power supplies, air-to-air heat pumps and wireless devices. The Trust is continually introducing new product overviews and plans to introduce several more covering IT and consumer electronics in 2009. See product overviews at www.elsparefonden.dk/produktoversigter (in Danish).

The Trust has also developed a range of tools to help purchasing staff in Denmark to implement measures to save energy. Read more about these at www.elsparefonden.dk/indkoebsansvarlig (in Danish). One of these tools is a 'Total price calculator' which can be used to calculate electricity costs over the total lifetime of an item of equipment, in order to find the most cost effective purchase overall. Try the 'Total price calculator' at www.elsparefonden.dk/totalprisberegneren (in Danish).

View Electricity Consumption ('Se Elforbrug') is an effective tool produced by the Trust for tracking and creating an overview of electricity consumption in public sector institutions and private companies. View Electricity Consumption makes it possible to analyse consumption and compare an institution's electricity consumption with other similar institutions. It is much easier to identify potential savings if you know what your consumption is, and where you should start. View Electricity Consumption can be accessed at www.savingtrust.dk/view-electricity-consumption where you can read more about analysing electricity consumption and savings opportunities.

Purchasing products not featured in the Guidelines

For products not covered by the Purchasing Guidelines, the Trust recommends that you ask about power consumption in the On and Standby modes, and choose one of the products with the lowest consumption. Standby consumption should not exceed 1 watt. For further information please contact the Trust's Customer Advice service on +45 7026 9009 or by E-mail at sparel@sparel.dk.

Purchasing requirements

The purchasing requirements in the Guidelines are valid for one year and cover the most common electrical equipment found in offices and other public sector institutions. The requirements are established by the Trust primarily on the basis of well known international schemes. The starting point for the requirements on energy efficiency is that they can be fulfilled by 20-25% of the products on the market.

The requirements are presented in tables on the following pages. Each product group includes good advice that can lead to extra savings when purchasing or using equipment. There are also references to the Trust's product overviews and websites with additional information and other relevant links.

Compared with the 2008 Purchasing Guidelines, the requirements have been amended for computers, work stations, printers, photocopier and similar devices, network and broadband equipment, external power supplies, and set top boxes (digital decoders). Requirements or recommendations have also been introduced for new products such as thin clients, desk lighting and data centres. Unless otherwise stated in the table with the requirement, Energy Star requirements, which have been agreed but first come into force during 2009, have already been incorporated as purchasing requirements from 1 January 2009. Requirements under the EU Ecodesign Directive which have been agreed under the Commission's Consultation process, but which will be implemented later, will also be used from January 2009. It will be possible to keep up to date with any new requirements introduced during 2009 on the Trust's websites.

Background to the purchasing requirements

The Trust has established requirements for energy efficient purchasing based on a number of international energy labelling schemes, including:

- Compulsory EU energy labelling scheme (www.ens.dk/sw12327.asp).
- Energy Star (www.eu-energystar.org and www.energystar.gov).
- EU Code of Conduct (re.jrc.ec.europa.eu/energyefficiency).
- CEMEP (European Committee of Manufacturers of Electrical Machines and Power Electronics, www.cemep.org).
- Europump (www.europump.org).
- EU Ecodesign (http://ec.europa.eu/energy/efficiency/ecodesign/eco_design_en.htm).

The requirements are established to ensure that there are enough electrical appliances to choose between, and that the appliances that fulfil the requirements are the most energy efficient.

PURCHASING REQUIREMENTS

Computers and monitors

GOOD ADVICE ON PURCHASING AND OPERATING EQUIPMENT

- Choose notebook computers and flat screen monitors. Typically, these consume less than half as much current compared with desktop computers and CRT monitors.
- If the product has an external power supply then this should conform to requirements for power supplies on page 13.
- Choose computers and monitors with the lowest power consumption costs over their total lifetimes. The most efficient models use less than half as much power compared with the most inefficient. Check and calculate total costs at www.savingtrust.dk/it-and-office-equipment.
- Make sure that computers and monitors are programmed to switch to Sleep mode after 5 to 30 minutes of inactivity using the 'Control Panel' power management options.
- Use an AutoPowerOff plug bank that automatically switches off any connected equipment (monitor, printer, etc.) when the computer is switched off.
- Wherever possible, use special server software which can disconnect the computer from the network when it is not in use.
- Persuade users to remember to switch off computers and monitors before they go home, and when they go for lunch or meetings. If everyone has an AutoPowerOff plug bank then switching off the computer will automatically turn off any connected peripherals.
- Remember that notebook computer docking stations use power on Standby, and use extra current when powered up. Ask about this consumption, and choose a product with low Standby consumption.

FURTHER INFORMATION

- See purchasing requirements in greater detail with full description of scope and definitions at www.elsparefonden.dk/indkoeb (in Danish).
- See product overviews covering computers and monitors from suppliers that have concluded voluntary agreements with the Trust, with a declaration that they comply with requirements relating to energy efficient purchasing at www.savingtrust.dk/it-and-office-equipment.
- Learn more about energy efficient purchasing and operation of computers and monitors at www.savingtrust.dk/it-and-office-equipment.
- Read more about AutoPowerOff plug banks, and where to buy them, at www.savingtrust.dk/autopoweroff.
- View good advice on office layouts in the Trust's Interior Layout Guidelines ('Indretningsvejledning 2008') (in Danish) at www.savingtrust.dk/interior-layout-guidelines.

Because there is such a large variation in power consumption for computers and monitors, it's possible to halve the consumption by choosing energy efficiently when buying or replacing equipment. Savings of up to EUR 135 can be made for every unit over the lifetime of the equipment. Save most by choosing notebook computers instead of desktop models. Always buy only flat screen monitors and replace old CRT monitors with the new versions.

PURCHASING REQUIREMENTS: PERSONAL COMPUTERS

Requirements conform to Energy Star program requirements for computers Version 5.0 (requirements must be used after 1 April 2009; until then Energy Star Version 4.0 applies, which is available at www.elsparefonden.dk/indkoeb (in Danish))

Type	Power consumption kWh/year	Delay before Sleep
Desktop computers		
Office and home computers	148.0	30 minutes
More powerful computers with: - 2 physical cores and at least 2 GB System Memory	175.0	30 minutes
- greater than 2 physical cores, at least 2 GB System Memory and/or a discrete GPU	209.0	30 minutes
- at least 4 physical cores, at least 4 GB System Memory and/or a discrete GPU greater than 128 bit	234.0	30 minutes
Notebook computers		
Office and home computers	40.0	30 minutes
More powerful computers with: - a discrete GPU	53.0	30 minutes
- at least 2 physical cores, at least 2 GB System Memory and/or a discrete GPU greater than 128 bit	88.5	30 minutes
Internal power supply must have 85% minimum efficiency at 50% of rated output and 82% minimum efficiency at 20% of rated output		
If the computer has an external power supply it must conform to the Trust's requirements		
Computer must activate Sleep mode for attached or internal display within 15 minutes of user inactivity		

The requirements cover standard types of personal computers. Power consumption and times are the maximum permitted for energy efficient equipment. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, definitions and methods for calculating annual power consumption.

Note: Computers with performance exceeding the basic functions in relation to RAM, GPU, etc. are permitted additional power allowance.

PURCHASING REQUIREMENTS: THIN CLIENTS

Requirements conform to Energy Star program requirements for computers Version 5.0

Type	On (at idle)Watts	Off and Sleep (if Sleep function present) Watts
Thin clients		
- Thin clients that do not meet the definitions below	12.0	2
- Thin clients that support local multimedia encode/decode	15.0	2
Requirements for external and internal power supplies: same as for computers		
Must be shipped with display's Sleep mode set to activate within 15 minutes of user inactivity		
Thin clients with Ethernet capability shall have the ability to enable and disable WOL for Sleep mode		

Requirements cover thin clients. Power consumption is the maximum permitted for energy efficient equipment. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, products covered, definitions, etc.

Note: Thin clients delivered with Wake On LAN (WOL) are allowed +0.7 W in Off mode and Sleep mode (if this mode present).

PURCHASING REQUIREMENTS: WORKSTATIONS

Requirements conform to Energy Star program requirements for computers Version 5.0 (requirements must be used after 1 April 2009; until then Energy Star Version 4.0 applies, which is available at www.elsparefonden.dk/indkoeb (in Danish))

Type	Typical consumption Watts	Delay before sleep
Workstations	0.28 x (maximum power + 5 x number of hard drives)	30 minutes
Internal power supply must have 85% minimum efficiency at 50% of rated output and 82% minimum efficiency at 20% of rated output		
If the computer has an external power supply it must conform to the Trust's requirements		
Workstation must activate Sleep mode for attached or internal display within 15 minutes of user inactivity		

Requirements cover computers sold as workstations conforming to Energy Star definitions for workstations.

Power consumption and times are the maximum permitted for energy efficient equipment. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, definitions, etc.

Note: Requirements cover typical consumption calculated as: 0.35 x power in Standby + 0.10 x power in Sleep + 0.55 x power in On mode at idle with only basic applications running.

PURCHASING REQUIREMENTS: MONITORS

Requirements conform to Energy Star program requirements for computer monitors Version 4.1

Type	On Watt	Sleep Watt	Standby Watt
Horizontal x vertical resolution (O) < 1 megapixel	23	2	1
Horizontal x vertical resolution (O) ≥ 1 megapixel	28 x O	2	1

Requirements cover standard types of computer monitors connected to mains electricity. Power consumption is the maximum permitted for energy efficient equipment. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, definitions, etc.

Note: New Energy Star requirements for monitors are expected early 2009. These requirements will be used as soon as they are published on www.elsparefonden.dk/indkoeb (in Danish).

Photocopiers and printers, etc.

PURCHASING REQUIREMENTS

GOOD ADVICE ON PURCHASING AND OPERATING EQUIPMENT

- Make sure you choose equipment that meets rather than exceeds your needs.
- Choose machines which warm up quickly to operational mode and with good energy-saving functions.
- If the product has an external power supply then this should conform to requirements for power supplies on page 13.
- Whenever possible, choose a model with duplex functionality (double-sided printing and/or copying). Configure the equipment to automatically print or copy in duplex, or persuade staff to use the duplex feature. Several tons of paper can be saved over a machine's lifetime, with twice as much space available on the shelves.
- Make sure that machines are set to enter Sleep mode and switch off automatically in the shortest possible time acceptable in relation to warm-up time.
- Check whether you need to have a conventional fax machine in situations where you can use a multifunction machine with a built-in fax or a fax modem on a server, which is permanently switched on anyway.
- Choose a scanner with an on-off switch. If this is not possible, connect the scanner to a separate plug which users can easily switch off, and persuade them to switch off the device after use.
- Set the timer controls to switch off machines automatically at the end of the working day, or persuade users to switch off all machines if they are the last person leaving the office.

FURTHER INFORMATION

- See purchasing requirements in greater detail with full description of scope and definitions at www.elsparefonden.dk/indkoeb (in Danish).
- Read about energy efficient power saving options at www.elsparefonden.dk/spareindstillinger (in Danish).
- View good advice on print room layouts in the Trust's Interior Layout Guidelines ('Indretningsvejledning 2008') (in Danish) at www.savingtrust.dk/interior-layout-guidelines.

Photocopiers, printers, scanners and fax machines are often hidden power guzzlers in the office because most of the time they sit around waiting without producing anything. If equipment is not configured to switch to energy saving mode, or if the power consumption is too high in the energy saving mode, it can easily add several hundred Euros per machine to the annual electricity bill.

PURCHASING REQUIREMENTS: ALL STANDARD FORMAT PHOTOCOPIERS, PRINTERS, MULTIFUNCTION MACHINES, FAX MACHINES WITH RAPID FUSING TECHNOLOGY, AND DIGITAL DUPLICATORS

Requirements conform to Energy Star Version 1.1 of 1 October 2008

Type	Typical power consumption kWh/week
Photocopiers, printers, fax machines, digital duplicators Monochrome Speed (S) ≤ 15 pages per min. Speed (S) 16-40 pages per min. Speed (S) 41-82 pages per min. Speed (S) > 82 pages per min. Colour Speed (S) ≤ 32 pages per min. Speed (S) 31-58 pages per min. Speed (S) > 58 pages per min.	1 0.10 x S - 0.5 0.35 x S - 10.3 0.70 x S - 39 0.10 x S + 2.8 0.35 x S - 5.2 0.70 x S - 26
Multifunction machines Monochrome Speed (S) ≤ 10 pages per min. Speed (S) 11-26 pages per min. Speed (S) 27-68 pages per min. Speed (S) > 68 pages per min. Colour Speed (S) ≤ 26 pages per min. Speed (S) 27-62 pages per min. Speed (S) > 62 pages per min.	1.5 0.10 x S + 0.5 0.35 x S - 6.0 0.70 x S - 30 0.10 x S + 3.5 0.35 x S - 3.0 0.70 x S - 25
Speed 25-44 pages per min. (monochrome) Speed 20-39 pages per min. (colour)	Should be able to be supplied with automatic duplexing
Speed ≥ 45 pages per min. (monochrome) Speed ≥ 40 pages per min. (colour)	Automatic duplexing as standard function

Power consumption is typically weekly consumption measured according to the TEC test procedure and is the maximum permitted for energy efficient equipment. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, printer technologies covered, definitions and methods.

Note: If the machine is supplied with an external power supply or is delivered with an external digital front-end with its own power supply covered by the Trust's purchasing requirements for external power supplies, the power supply must comply with these requirements. If the machine has an external digital front-end which draws its power from the machine the power consumption of the unit in ready mode should be excluded from the machine's weekly consumption.

PURCHASING REQUIREMENTS: OTHER PRINTERS, PHOTOCOPIERS, MULTIFUNCTION MACHINES, FAX MACHINES, SCANNERS AND FRANKING MACHINES

Requirements conform to Energy Star Version 1.1 of 1 October 2008

Type	Sleep Watt	Standby Watt
Printers, multifunction machines and fax machines (standard format; inkjet)	1.4	1
Printers (standard format; stencil and similar)	4.6	1
Printers, multifunction machines (large format; inkjet)	15	1
Printers (large format; electro photography, direct thermal, solid ink, dye sublimation, thermal transfer and stencil, etc.)	14	1
Photocopiers and multifunction machines (large format; electro photography, direct thermal, solid ink, dye sublimation, thermal transfer)	30	1
Printers (small format; electro photography, inkjet, direct thermal, solid ink, dye sublimation, thermal transfer and stencil, etc.)	9	1
Scanners (all formats)	4.3	1
Franking machines (monochrome; electro photography, direct thermal, thermal transfer, inkjet)	7	1
Must be shipped with display's Sleep mode set to activate after a period depending on the size of the machine, e.g. standard format printer (11-20 pages per minute) must revert to Sleep mode after 15 minutes		
If the machine has an external digital front-end which draws its power from the machine the power consumption of the unit in ready mode is deducted from the sleep consumption		

Power consumption is the maximum permitted for energy efficient equipment measured according to the OM test method. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, printer technologies covered, definitions and methods.

Note: If the product has one or more extra functions, the maximum threshold for Sleep mode can be increased depending on the function.

Network equipment and servers

GOOD ADVICE ON PURCHASING AND OPERATING EQUIPMENT

- A large amount of electricity can be saved for server equipment and in the server room. Typically, by saving 1 kWh on the server equipment, you can save 1.5 kWh for the whole server room, because it also costs less to run the cooling system. See how to do this by reading the Trust's Planning Guidelines for Server Rooms ('Projekteringsvejledning for serverrum') and the Trust's Interior Layout Guidelines ('Indretningsvejledning 2008') (both in Danish).
- Electricity consumption accounts for a significant share of the total cost of running a server room. Therefore factor electricity consumption into purchasing policies for IT and cooling equipment.
- Try the Trust's tool at www.selvtjekserverrum.dk (in Danish) and get an initial overview of savings opportunities.

FURTHER INFORMATION

- See purchasing requirements in greater detail with full description of scope and definitions at www.elsparefonden.dk/indkoeb (in Danish).
- Read more recommendations about server rooms in the Trust's 'Good advice for saving electricity in the server room' and at www.savingtrust.dk/servers.
- Read more about energy efficient server room layouts in the Trust's Interior Layout Guidelines ('Indretningsvejledning 2008') (in Danish) at www.savingtrust.dk/interior-layout-guidelines.
- Find information on the EU Broadband Equipment Code of Conduct, UPS equipment and data centres at <http://sunbird.jrc.it/energyefficiency>.

Network equipment and servers account for a large proportion of the total electricity consumption in office buildings because equipment is generally always on. It is possible to save up to half the electricity used through energy efficient purchasing and good server room layouts without compromising operational and IT security.

PURCHASING REQUIREMENTS: UPS FOR SERVERS

Requirements for UPS systems (uninterruptible power supply, power protection for servers) Requirements conform to EU Code of Conduct Version 1.0a, January 2008

UPS mode	UPS with double conversion in basic configuration (VFI-S)	VI and VFI UPS (except VFI-S)	VFD UPS
Energy efficiency requirements at 100% of nominal output			
10 ≤ power < 20 kVA	91.0%	92.5%	96.0%
20 ≤ power < 40 kVA	91.5%	93.0%	96.5%
40 ≤ power < 200 kVA	92.0%	93.5%	97.0%
200 kVA ≤ power	93.0%	94.5%	98.0%

Requirements covering other power levels (25%, 50% and 75% of nominal power) are available at www.elsparefonden.dk/indkoeb (in Danish)

Requirements cover Uninterruptible Power Supplies (UPS) per EN 62040-3 ed. 1.0 b:1999, which supply three phase electricity over 10 kVA at 400/230 V. The energy efficiency is the minimum permissible for energy efficient equipment. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, definitions and measurement methods, etc.

Note: Additional reduction in energy efficiency is allowable when using additional isolation transformers and equipment to achieve harmonic current.

PURCHASING REQUIREMENTS: SMALL-SCALE SERVERS

(computers designed to provide server functions in homes and small offices). Requirements conform to Energy Star program requirements for computers Version 5.0

Type	On (at idle)	Off Watts
Small-scale servers for home and office use		
- Server, smaller than definitions below	50.0	2
- More powerful server (minimum 1 GB RAM with greater than 1 physical core or greater than 1 discrete processor)	65.0	2

Requirements for external and internal power supplies as per computers

Must be shipped with display's Sleep mode set to activate within 15 minutes of user inactivity

Small-scale servers with Ethernet capability must be able to activate or deactivate Wake On LAN (WOL) in sleep mode

Requirements cover computers designed to provide server functions in homes and small offices. Power consumption is the maximum permitted for energy efficient equipment. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, products covered, definitions, etc.

Note: Small-scale servers shipped with Wake On LAN (WOL) activated are allowed +0.7 W in Off mode.

RECOMMENDATIONS FOR SERVER ROOMS AND DATA CENTRES

Recommendations conform to the latest version of the EU Code of Conduct for energy efficient data centres

Type	Recommendations
Server rooms and data centres	Follow guidelines in EU Code of Conduct on Energy Efficient Data Centres for measurement of energy consumption, identification of potential savings and implementation of savings. Sign voluntary agreements with the EU Commission on energy efficient data centres (applies to large primary data centres)
Institutions which purchase server capacity from data centres	Enquire about (in tender material, etc.) and select supplier which follows the guidelines described in the EU Code of Conduct on Energy Efficient Data Centres. Enquire about, and select a supplier which has concluded a voluntary agreement with the EU Commission on energy efficient data centres (applies to large primary data centres)

Recommendations apply to owners of server rooms and data centres, and institutions which purchase server capacity from data centres. See www.elsparefonden.dk/indkoeb (in Danish) for more information.

PURCHASING REQUIREMENTS: NETWORK AND BROADBAND EQUIPMENT

Requirements conform to EU Broadband Equipment Code of Conduct - Version 3, 18 November 2008

Type	Ont Watts	Low energy state Watts
Broadband equipment. Basic functions and WAN interface		
- DSL modem, USB	2.0	2.0
- ADSL/ADSL2/ADSL2+	5.0	4.2
- VDSL2	7.5	5.5
- Fast Ethernet (100Base-T)	4.2	2.9
- Gigabit Ethernet (1000Base-T)	7.0	4.0
- Fibre Ptp Ethernet WAN (100/1000Base-BX or FX)	7.1	3.4
- GPON	9.7	5.0
- DOCSIS 2.0	5.5	5.5
- DOCSIS 3.0	8.0	8.0
- WiMAX	11.0	8.2
Network infrastructure equipment		
- Wi-Fi Access points (single band IEEE 802.11b/g or 11a)	4.0	3.0
- Wi-Fi Access points (single band IEEE802.11n Draft 2 radio, etc.)	6.0	4.5
- Wi-Fi Access points with dual (2.4 and 5 GHz) band IEEE 802.11n Draft 2 radio etc.	10.0	7.0
- Small hubs and non stackable Layer 2 switches (up to 8 Ethernet ports 10/100/1000 Mbit/s) without CPU	8.0	3.0
- Optical LAN adapter (10/100/1000 Mbit/s)	4.0	4.0
- Powerline adapters	5.0	4.5
- Other LAN technologies (HPNA, MoCA, etc.)	5.0	5.0
Other home network devices		
- ATA/VoIP gateway	2.7	2.0
- VoIP telephone	4.2	3.5
- Print server (without Wi-Fi)	4.5	3.0

External power supplies must conform to the Trust's requirements

Requirements cover home broadband equipment (components, etc.) and network equipment for home use. Power consumption is the maximum permitted for energy efficient equipment. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, products covered, definitions, etc.

Note: Additional consumption by broadband equipment is allowable if equipment provides supplementary functions over and above basic functions such as Ethernet switch, USN, Bluetooth, etc. Additional consumption not permitted for USB DSL modems.

Other office equipment

GOOD ADVICE ON PURCHASING AND OPERATING EQUIPMENT

- Use an AutoPowerOff plug bank to switch off electric height adjustable desks, separate power supplies and other devices that only need power when the computer is switched on.
- Remember to switch off power supplies or chargers when the telephone, etc. is fully charged.
- If the product has an external power supply, the power supply must comply with requirements for power supplies described opposite.

FURTHER INFORMATION

- See purchasing requirements in greater detail with full description of scope and definitions at www.elsparefonden.dk/indkoeb (in Danish).

Most offices have electric height adjustable desks, cordless and mobile telephones and many small devices with separate power supplies. Taken individually these devices do not consume much power, but if there are many the amount of wasted power can be significant.

PURCHASING REQUIREMENTS: EXTERNAL POWER SUPPLIES (EPS)

Requirements conform to EU Ecodesign requirements for EPS (stage 2) (apply from 1 April 2009, but until then use requirements in 2008 Purchasing Guidelines)

Type	Consumption with no load (no devices connected)		
Rating plate Power Watts	AC-AC except low voltage types Watts	AC-DC except low voltage types Watts	Low voltage types Watts
Power ≤ 51	0.5	0.3	0.3
Power > 51	0.5	0.5	
Type	Active mode efficiency (average value for different efficiency levels)		
Rating plate Power Watt	AC-AC and AC-DC except low voltage types Watts	Low voltage types Watts	
Power ≤ 1.0	0.48 x power + 0.140	0.497 x power + 0.067	
1.0 < power ≤ 51.0	0.063 x Ln(power) + 0.622	0.075 x Ln(power) + 0.561	
Power > 51.0	0.87	0.86	

Requirements cover external power supplies and battery chargers (supplied with appliance or separately) for normal use in offices and homes. Power consumption is the maximum permitted for energy efficient equipment, and efficiency is the minimum allowed for energy efficient equipment. See full description of scope and definitions, etc. at www.elsparefonden.dk/indkoeb (in Danish).

Note: low voltage types are external power supplies with voltage of less than 6 volts and a current equal to or less than 550 mA.

PURCHASING REQUIREMENTS: ELECTRIC HEIGHT ADJUSTABLE DESKS

Per requirements established by the Danish Electricity Saving Trust

Type	Standby Watts	Delay before Standby (measured from the time the desk has come to rest) Minutes
All	2	5

Requirements cover all electric height adjustable desks. Standby consumption is the maximum permitted for energy efficient equipment. See full description of requirements at www.elsparefonden.dk/indkoeb (in Danish).

GOOD ADVICE ON PURCHASING AND OPERATING EQUIPMENT

- Ask about power consumption when buying new equipment, and choose an appliance with low power consumption when switched on, and Standby consumption not exceeding 1 watt.
- Choose a TV system with a screen that meets rather than exceeds your needs. The bigger the TV the higher the power consumption.
- Choose a TV with a built-in digital decoder. This saves electricity used by an extra set top box which you otherwise need to see digital TV via your own antenna.
- Ask whether Standby is automatically activated after a period of inactivity, and how much time elapses before this happens.
- A TV's power consumption depends on how bright the screen is. Ensure that the brightness is not greater than recommended by the supplier. Try to reduce the brightness and see whether the picture is still satisfactory.
- If the product has an external power supply fitted, the power supply must comply with requirements for external power supplies shown on page 13.
- Switch off at the mains plug when the TV is not in use.
- Switch off the TV when not using its main functions. Use an AutoPowerOff plug bank that turns off equipment connected to the TV such as set top box, DVD player, video, etc. when the TV is switched off.
- Configure audio systems to revert to Standby automatically after maximum 30 minutes.

FURTHER INFORMATION

- Read about the switch to digital TV at www.DetNyeTv-signal.dk or www.digitalisering.dk (in Danish).
- See purchasing requirements in greater detail with full description of scope and definitions at www.elsparefonden.dk/indkoeb (in Danish).
- Find information on the EU Code of Conduct at <http://re.jrc.ec.europa.eu/energyefficiency>.

Division øst

From 1 November 2009 it will not be possible to receive analogue TV signals via an antenna. If you have your own antenna it is therefore a good idea to buy a TV with a built-in digital decoder. This saves electricity used by an extra set top box which you otherwise need to see digital TV. You should also consider your requirements because the bigger the TV the higher the power consumption.

PURCHASING REQUIREMENTS: TVs

Requirements conform to Energy Star Version 3.0 of 1 November 2008

TV size	Maximum On Mode Power (16:9 format TVs) Watts	
Screen diagonal D (in inches)	Not High Definition (HD)	HD and Full HD
20	45	66
32	78	120
42	115	208
50	153	318
60	210	391

For calculating requirements for other screen sizes use the equations below. Screen area A for 16:9 format TVs is calculated per the following: $A = 0.4273 \times D^2$, where D is diagonal of the screen in inches

TV size	Maximum On Mode Power (16:9 format TVs) Watts	
Screen area A (in inches)	Not High Definition (HD)	HD and Full HD
$A < 680$	$0.120 \times A + 25$	$0.200 \times A + 32$
$680 \leq A < 1045$		$0.240 \times A + 27$
$1045 \leq A$		$0.156 \times A + 151$

Standby consumption must not exceed 1 watt and this lowest power consuming Standby mode must be the default Mode for TVs shipped to consumers

If the TV has an external power supply it must conform to the Trust's requirements

Requirements cover TVs connected to mains electricity irrespective of type. Power consumption is the maximum permitted for energy efficient equipment. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, definitions, etc.

Note: A special method is used for calculating On mode power consumption for TVs with automatic brightness control, where the feature is activated by default when shipped.

PURCHASING REQUIREMENTS: SIMPLE SET TOP BOXES (DIGITAL TO ANALOGUE CONVERTERS)

Requirements conform to EU Commission Ecodesign requirements for simple set top boxes

Type	Active mode Watts	Standby Watts
Simple set top box	5.0	1.0
Simple set top box with display	5.0	2.0

Simple digital set top boxes which can decode high definition (HD) signals are allowed an additional 3 watts in active mode

Requirements cover simple digital set top boxes (digital to analogue converters) connected to mains electricity. Power consumption is the maximum permitted for energy efficient equipment. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, products covered, etc.

Note: Requirements do not cover simple set top boxes with integrated hard drive or extra tuner built in.

PURCHASING REQUIREMENTS: AUDIO SYSTEMS AND SEPARATES

Requirements established by the Danish Electricity Saving Trust

Type	Standby Watts	Delay before Standby Minutes
Integrated audio systems Audio separates	1 1 (if function available)	30

Requirements cover audio systems and separates connected to mains electricity. Power consumption and time are the maximum permitted for energy efficient equipment. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements.

PURCHASING REQUIREMENTS: VCRS AND DVDS

Requirements established by the Danish Electricity Saving Trust

Type	On Watts	Standby Watts	Delay before Standby Minutes
Playing only Playing and recording for VCRs Playing and recording for DVDs	11 15	1 2.5 2.5	30

Requirements cover VCRs and DVDs connected to mains electricity. Power consumption and time is the maximum permitted for energy efficient equipment. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements.

PURCHASING REQUIREMENTS: COMPLEX DIGITAL TUNERS

Requirements conform to EU Code of Conduct on Energy Efficiency of Digital TV Service Systems Version 7 – 15 January 2008

Type	Active Standby Watts	Passive Standby Watts
Complex set top boxes (with Conditional Access)		
Terrestrial antenna	5	3
Cable	6	3
Satellite	7	3
Internet DSL	5	3

Requirement for passive Standby consumption must be fulfilled if function available on device

Maximum additional power of 13 watts permitted over and above lowest threshold for extra components such as internal hard drive, tuner, ADSL and Docsis modem, and various interfaces. Additional allowance for MPEG4 and multi-decode platforms is 17 watts. Additional allowance for cable digital tuners with Docsis modem and VOIP functionality is 4.5 watts

Requirements cover digital tuners with conditional access connected to mains electricity. Power consumption is the maximum permitted for energy efficient equipment. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, definitions, additions, etc.

Note: Ecodesign requirements or new European voluntary agreements covering energy efficiency requirements for complex digital tuners are expected in 2009. The new requirements should be used following their publication at www.elsparefonden.dk/indkoeb (in Danish).

GOOD ADVICE ON PURCHASING AND OPERATING EQUIPMENT

- Carry out a thorough survey before choosing a lighting system. Involve the users and, where necessary, a lighting consultant.
- Consider whether furniture and fittings can be arranged differently in order to make the best use of daylight.
- Use the Danish Electricity Saving Trust's diagnostic tools which can help assess existing lighting and calculate the financial implications of installing a new system.
- Use an integrated calculator tool, for example, FABA Light 4.0 to make light and energy calculations for the new system. FABA Light consists of a general energy calculator tool, which calculates the total electricity consumption used by lighting in a building, in connection with the design and documentation of the system in compliance with the Danish Enterprise and Construction Authority's building regulations. Data can be exported from FABA Light to the SBi Be 06 program, which follows the official Danish method of arriving at the total energy framework calculation in relation to the building regulations.
- Follow SBi recommendations to ensure the functionality of energy efficient lighting control in connection with installing lighting equipment. The recommendations contain good advice on establishing requirements for functionality, tenders, adjustments, etc.
- Consider dividing the system into zones based on daylight conditions, and tailoring the lighting to user needs in terms of light distribution, intensity and quality.
- Use a combination of basic lighting from the lighting system and energy efficient work lights.
- Choose fittings that are robust, easy to clean, and well screened (i.e. users do not see the light source). They should also be flexible and with an output that suits the location. Also, always view a sample light fitting that is switched on.
- Purchase A-rated energy saving bulbs listed on the Trust's product overview of recommended A-rated bulbs, which meet requirements in terms of quality and energy efficiency, at www.savingtrust.dk/public-and-commerce/products/lighting/energy-saving-bulbs.

FURTHER INFORMATION

- See purchasing requirements in greater detail with full description of scope and definitions at www.elsparefonden.dk/indkoeb (in Danish).
- Read more about lighting systems for offices and institutions at www.savingtrust.dk/public-and-commerce/products/lighting/lighting-systems/tools which is also where you can download our diagnostic self-check and financial calculator tools.
- Go to www.savingtrust.dk/lighting-systems for an overview of energy efficient lighting systems for offices, day care centres, classrooms, and access areas. View some of the lighting systems in the Trust's demo rooms.
- Find information on the FABA Light integrated calculator tool at www.faba.dk (in Danish).
- Read more about efficient lighting control in the SBi recommendations: 'Ensuring functionality of energy efficient lighting control' (in Danish).
- View good advice on lighting and energy efficient layouts in the Trust's Interior Layout Guidelines ('Indretningsvejledning 2008') (in Danish) at www.savingtrust.dk/interior-layout-guidelines.
- Read more about LEDs in the Trust's pamphlet: 'Lighting emitting diodes for lighting 2008' at www.savingtrust.dk/publications/pamphlets, and 'Lyskilder til boligen' (Light sources in homes) at www.elsparefonden.dk/publikationer/brochurer (in Danish).
- View the Danish Enterprise and Construction Authority's building regulations at www.ebst.dk/br08.dk/BR07/0/54/0 (in Danish).

In many places, lighting systems provide a poor light and use too much electricity, but it is possible to have better lighting and halve the power consumption by replacing the old equipment. Because lighting systems are often an investment over a 10 to 20-year horizon it is important to choose an energy efficient system. Otherwise electricity bills can be very expensive in the long term. If the lamps and fittings are not replaced, then it is a question of choosing the most efficient light sources.

LEDs (Lighting Emitting Diodes) are developing very rapidly, and functionality is improving constantly with more and more possible uses. LED light sources now have the same level of efficiency as energy saving bulbs. When purchasing new lighting it can therefore be a good idea to use LED lighting. The Trust has produced a new brochure with information and inspiration on LEDs called 'Lighting emitting diodes for lighting 2008', which can be downloaded at www.savingtrust.dk/publications/pamphlets.

PURCHASING REQUIREMENTS: LIGHTING SYSTEMS

Type	Power consumption W/m ²
Offices	10
Day care centres	10
Classrooms	8
Access areas	5
Other locations	5
Lighting control	All systems must have movement and daylight sensors to adjust lighting in relation to the amount of available natural light
Energy efficiency	Fittings must have an efficiency rating of at least 50%
Legal requirements	Must fulfil legal requirements, including Danish Standard DS 700 covering 'Artificial Lighting in the workplace' ('Kunstig belysning i arbejdslokaler')

Requirements cover lighting systems installed in normal locations, where the fittings and lighting quality are not required to exceed the official standards. Power consumption is the maximum permitted for energy efficient equipment. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, etc.

Note: Lighting systems should be designed and documented using recognised and integrated calculation tools such as, for example, FABA Light 4 (www.faba.dk) (in Danish).

PURCHASING REQUIREMENTS: LIGHTING CONTROL

Requirements established by the Danish Electricity Saving Trust

Type	No-load loss Watts (per lighting control unit or function)
All	1

Requirements cover all types of lighting control for locations. Power consumption is the maximum permitted for energy efficient equipment. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, etc.

Note: Choosing an experienced installer of lighting control systems is recommended. Installers are advised to follow the SBi recommendations no. 220 to ensure the functionality of energy efficient lighting control in connection with installing lighting control systems.

PURCHASING REQUIREMENTS: LIGHT SOURCES

Requirements conform to Energy Label A per compulsory EU energy labelling scheme

Type	Energy label
All, where fitting design and requirements for light quality permit	A

The requirements apply to normal types of lighting sources where the fitting design and lighting quality permit the use of A-rated light sources. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, etc.

Note: The Trust's product overview of recommended A-rated bulbs covers A-rated bulbs which additionally also fulfil the Trust's requirements for light quality and longevity.

PURCHASING REQUIREMENTS: LAMPS FOR DESK LIGHTING

Requirements established by the Danish Electricity Saving Trust

Type	Requirements
Lamps for desk lighting	Should be LED or CFL
Lamps fitted with CFLs should have energy efficient electronic ballast	

Requirements cover all lamps used for desk lighting. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, etc.

Ventilators, motors and circulator pumps

PURCHASING REQUIREMENTS

GOOD ADVICE ON PURCHASING AND OPERATING EQUIPMENT

- Get a certified ventilation check-up as one element of the Trust's ventilation package. The Trust recommends installing a remote meter reading system, which makes it possible to view power consumption on the Internet and compare it with other systems.
- From 2008, all large air conditioning and ventilation systems in Denmark are subject to a compulsory ventilation inspection, which must be carried out every five years. This compulsory inspection can be included in the Trust's ventilation pack instead of the certified ventilation check-up. The Trust is offering public sector institutions the opportunity to receive a free meter system for their ventilation system when carrying out a ventilation check-up.
- Ensure that the ventilation system only operates when required – matched to the time of year and day. Install a timer control if none is fitted, and check that it is installed correctly in relation to demand.
- Ensure that the system's air flow is correctly adjusted so that the ventilation satisfies the required demand.
- Pay particular attention to the filter, ducts, size of the heating surfaces and automatic units so as to improve the SEL factor.
- Ensure that pumps and motors only run when necessary, and that output matches demand.
- Comply with the Danish building regulations covering new ventilation systems. These include requirements that ventilation systems must have a heat recirculation coefficient of at least 65%, and requirements covering maximum consumption of electricity by ventilation fans operating in constant flow ventilation systems.
- Comply with the Danish building regulations applying to SEL (specific electricity consumption) factor for ventilation systems.

FURTHER INFORMATION

- See purchasing requirements in greater detail with full description of scope and definitions at www.elsparefonden.dk/indkoeb (in Danish).
- Read more about ventilation systems for offices and institutions at www.savingtrust.dk/ventilation.
- Read more about energy efficient ventilation in the Trust's Interior Layout Guidelines ('Indretningsvejledning 2008') (in Danish) at www.savingtrust.dk/interior-layout-guidelines.
- Find more information on the compulsory ventilation inspection at www.ens.dk/ventilationseftersyn, and view the relevant section of the Danish Building Regulations at www.ebst.dk/br08/BR07/0/54/0.
- Read more about A-rated circulator pumps for buildings and view product overviews at www.savingtrust.dk/public-and-commerce/products/heating-and-ventilation/a-rated-pumps or www.sparepumpe.dk/index.asp?m=0&lang=uk.
- See product overview, and read more about energy saving motors at www.sparemotor.dk/index.asp?m=0&lang=uk.



In many places, room ventilation is very poor and power consumption is excessive. Nonetheless, it is possible to improve ventilation and reduce the electricity bill. Furthermore, circulator pumps and motors are often not matched to requirements and thus consume far more power than necessary.

PURCHASING REQUIREMENTS: CIRCULATOR PUMPS

Requirements conform to energy label A per the voluntary agreement developed by Europump or, if there are no A-rated pumps for the specified type of pump, to the electricity supply companies' requirements for energy saving pumps (sparepumpe®)

Type	Other requirements
All	Energy label A
If no A-rated pump is available for the specified pump type	Meets requirements for energy saving pumps

Requirement covers all types of pumps included in the voluntary labelling scheme developed by the European pump producers' association (Europump), or as described on the electricity supply companies' list of energy saving pumps. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, etc.

PURCHASING REQUIREMENTS: MOTORS

Requirements conform to band EFF1 per the voluntary agreement between the EU Commission and CEMEP

Type	Efficiency class
All	EFF1

Requirements include all types of motors covered by the agreement between the European Commission and CEMEP. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, etc.

PURCHASING REQUIREMENTS: VENTILATORS

Requirements conform to Sparventilator® specifications of the Danish electricity supply companies

Type	Efficiency %
Radial ventilators (centrifugal ventilators) and axial ventilators	
Shaft power < 0.5 kW	76
0.5 < Shaft power ≤ 1 kW	78
1 < Shaft power ≤ 3 kW	79
3 < Shaft power ≤ 10 kW	80
10 < Shaft power ≤ 20 kW	81
20 < Shaft power ≤ 50 kW	82
50 < Shaft power ≤ 100 kW	83
Shaft power > 100 kW	84
Room ventilators	
Shaft power < 0.5 kW	72
0.5 < Shaft power ≤ 1 kW	72
1 < Shaft power ≤ 3 kW	73
3 < Shaft power ≤ 10 kW	74
10 < Shaft power ≤ 22 kW	75

Requirements cover ventilators for ventilation systems installed in offices, open spaces, etc. The minimum requirement for energy efficient ventilators is that they comply with requirements specified in the table. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements, efficiency criteria, etc.

Large appliances and food and drink vending machines

GOOD ADVICE ON PURCHASING AND OPERATING EQUIPMENT

- Try to choose large domestic appliances that meet rather than exceed your needs.
- Some large domestic appliances have Standby consumption which is not included in the energy label. Check how much power is used and choose types with low consumption.
- Talk to your supplier about power consumption of food and drink vending machines before signing a contract, and consider whether there are alternative solutions which use less energy.
- Wherever possible, only use food and drink vending machines that have sleep mode, which is activated when the machines are not in use for a set period of time.
- Consider whether it is possible to use a tap water flow cooler instead of a bottled water cooler.
- Measure the power consumption of existing vending machines to check whether something needs to be done about the consumption.
- Install clock timers or other types of automatic controllers on food and drink vending machines without a sleep function, to ensure automatic switch-off when not in use. However, this should only apply to vending machines that dispense non-perishable foods.

FURTHER INFORMATION

- See purchasing requirements in greater detail with full description of scope and definitions at www.elsparefonden.dk/indkoeb (in Danish).
- Check product overviews covering all large domestic appliances and the market's lowest prices at www.savingtrust.dk/large-appliances.
- Check the product overviews covering professional fridges and freezers that comply with the energy efficient purchasing requirements at www.savingtrust.dk/large-appliances-professional.
- Read more about EU energy labelling for large domestic appliances at www.ens.dk/sw12327.asp.

It is easy to choose energy saving large domestic appliances by going for the EU's energy label. Requirements covering professional equipment are currently only available for fridges and freezers. Annual running costs for large domestic appliances can be reduced considerably by choosing an energy saving type. Many offices have food and drink vending machines that dispense coffee, soft drinks and sweets. These machines often consume a large amount of energy. The Trust has not yet formulated any purchasing requirements for vending machines, but we can offer expert advice on purchasing and operating them.

PURCHASING REQUIREMENTS: LARGE DOMESTIC APPLIANCES

Requirements conform to A (A+ and A++ for fridges and freezers) per compulsory EU energy labelling scheme

Type	Energy label
Fridges, freezers and combinations	A+ eller A++
Washing machines (energy, wash and spin ratings)	A, A, A
Dishwashers	A
Tumble dryers	A
Ovens (in cookers and built-in separately)	A

Requirements cover large domestic appliances for household use per the compulsory EU Energy Labelling Directive for household appliances, etc. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements.

PURCHASING REQUIREMENTS: COFFEE MAKERS

Requirements established by the Danish Electricity Saving Trust

Type	Requirements
All	Active Sleep function activated on delivery. Instructions on activating the Sleep function near the machine

Requirements cover automatic coffee makers and other hot drink machines. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements.

PURCHASING REQUIREMENTS: PROFESSIONAL FRIDGES AND FREEZERS

Requirements established by the Danish Electricity Saving Trust based on schemes in the UK

Type	Relative power consumption kWh/48 hours/m ³
Fridges 400 and 600 litres 1300 litres	15 12
Freezers 400 and 600 litres 1300 litres	40 36

Requirements cover fridges and freezers suitable for professional use. Power consumption is the maximum permitted for energy efficient equipment and fulfils the criteria required for inclusion in the Trust's product overviews of energy saving refrigeration equipment. See www.elsparefonden.dk/indkoeb (in Danish) for full description of requirements

Note: Electricity consumption cannot be compared with consumption by household appliances because different standards of measurement apply.

Electricity savings require joint efforts

GOOD ADVICE

- Sign a Curve Breaker Agreement with the Trust, and get help to set a realistic potential savings target.
- Tell staff about My Home so they can also make a contribution at home, and bring their good habits to work.
- Tell staff about Klub1000 so they can get help to achieve the Trust's benchmark of 1,000 kWh per person per year.

FURTHER INFORMATION

- Read more about Curve Breaker Agreements at www.savingtrust.dk/curve-breaker-agreement.
- Read more about My Home at www.savingtrust.dk/my-home.
- Create a personal profile on My Home at www.savingtrust.dk/my-home.
- Read more about Klub1000 at www.elsparefonden.dk/klub1000 (in Danish).
- Find useful advice on energy efficient purchasing at www.savingtrust.dk/purchasing.

Sign a Curve Breaker Agreement with the Trust

The Trust offers Curve Breaker Agreements to Danish municipalities, regional authorities, government institutions and large office-based companies with the aim of halting electricity consumption by setting fixed savings targets, and planning how savings can be achieved. Electricity consumption in the public sector has risen by nearly 1% in recent years. The underlying vision of agreements is to break the upward electricity consumption curve in the public sector by 2009 at the latest. The agreements should help save millions of Danish kroner worth of electricity as well as providing a greener profile to the organisations making the efforts. As part of the agreement, you will benefit from a range of tools to fulfil the targets which you have set with help from the Trust. Apart from tools for energy efficient purchasing, the tools mostly focus on achieving more energy efficient user behaviour and on the operation of plant and equipment. When you sign a Curve Breaker Agreement the Trust offers you help to achieve the targets. Amongst other areas, help covers the following:

- Coaching by a permanent contact person and a variety of professional experts.
- Assistance to implement energy efficient purchasing policies.
- Material for behavioural campaigns.
- A free electricity saving bag.
- Opportunity to attend courses and theme meetings.
- Use of self-check tools.
- Profiling in the media.
- Help to put the focus on energy savings in schools.

Get information about the vision behind Curve Breaker Agreements, help and coaching at www.savingtrust.dk/curve-breaker-agreement.

Motivate staff - tell them about My Home and Klub1000

It's always a good start to publicise electricity consumption, and the next step is to establish good habits. By running your own campaign to publicise electricity consumption and good habits you can profit by motivating staff to use the tools, My Home and Klub1000. Motivation often starts at home, and once good habits set in they become so ingrained that people take them to work.

Staff in the workplace can be made aware of the existence of the My Home website as a useful tool to show how much electricity is used at home and how much energy can be saved. My Home is the Trust's Internet-based platform which allows users to get an overview of their energy consumption and manage it intelligently. The platform operates like an individual energy adviser and analyst. Try My Home at www.savingtrust.dk/my-home.

All staff also have the opportunity to join Klub1000, which is a forum for energy aware consumers. The Klub1000 name derives from the Trust's 1,000 kWh per person per year benchmark for sensible consumption. The aim of Klub1000 is to help members achieve electricity savings and acquire good habits which they can take wherever they are, including the workplace. Join the club and read more about its activities at www.elsparefonden.dk/klub1000 (in Danish).

About the trust

The Trust's Customer Advice service offers advice on savings opportunities

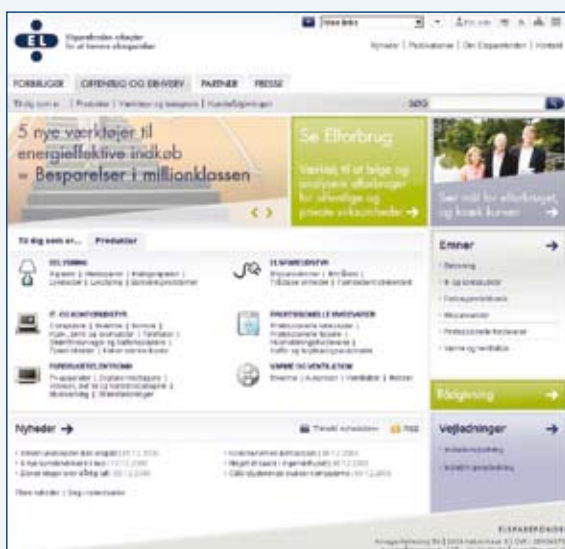
The Trust's Customer Advice service is there to help public sector institutions reduce their electricity bills, and there are many ways of achieving this. For example, more than one-third of all electricity consumed by public sector workplaces is used after 17.00, when all employees have generally gone home. Customer Advice can provide advice and guidance about purchasing, operating and refurbishing plant and equipment in some of the following areas:

- Lighting
- IT and office equipment
- Ventilation, cooling and circulator pumps
- Server rooms
- Large appliances

Ring or send an e-mail to Customer Advice if you have any questions. Customer Advice has specialists and process consultants who will do everything they can to help. They can also assist with the organisation of the work and can contribute to meetings and theme days about how to save energy.

Keep up to date by using www.savingtrust.dk

The Trust's www.savingtrust.dk website contains helpful information, guidance and knowledge about electricity consumption and savings possibilities. The site also provides access to materials, tools and calculators developed by the Trust that make it easy to get an overview of your electricity consumption and find out about savings opportunities.



Examples of tools are:

- Guidelines and purchasing tools targeted at staff responsible for purchasing, energy and IT.
- View Electricity Consumption ('Se Elforbrug') shows electricity consumption patterns with the possibility to analyse consumption and compare key figures.
- Product overviews which make it easy to find products that comply with the purchasing requirements. For example, there are overviews covering light fittings, A-rated energy saving bulbs, A-rated circulator pumps, large domestic appliances, professional fridges and freezers, energy saving equipment, power supplies, air-to-air heat pumps, and wireless devices.
- Calculator tools for lighting, IT equipment and servers make it easy to prepare for the switch to more energy efficient solutions.
- Ventilation packs at fixed, low prices with a certified ventilation check-up included. Public sector institutions can get an electricity meter and online access to key figures and comparison of key figures with other ventilation systems.
- Staff campaign which provides advice on how to implement a behavioural campaign and campaign material.
- Layout guidelines covering energy efficient layouts for office buildings.

Tools and materials are being developed and improved constantly. Find the latest information at www.savingtrust.dk.

The Danish Electricity Saving Trust promotes electricity savings in the household and public sectors. The Danish Electricity Saving Trust is an independent trust led by a Board appointed by the Danish Ministry of Climate and Energy. The Trust was established in 1997.

The Danish Electricity Saving Trust's Purchasing Guidelines 2009.

Making it easy for all public sector institutions and other organisations to purchase energy efficient products and save money.

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Contact the Trust's Customer Advice service
Tel.: +45 70 26 90 09
E-mail: sparel@sparel.dk
www.elsparefonden.dk
www.savingtrust.dk



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