



## Purchase of energy efficient IT and computing equipment

OesteCIM, Portugal

- Verifying compliance with stricter GPP criteria than ENERGY STAR®
- Proving that the market can easily supply low-carbon IT equipment

### Standard product / old tender = benchmark

- 265 computers and monitors
- 25,7 t CO<sub>2</sub>/year
- 4,2 toe /year
- 5.850 €/year electricity costs

### GPP 2020 tender

- 256 new computers and monitors
- 17,8 t CO<sub>2</sub>/year
- 3,0 toe/year
- 2.377 €/year electricity costs

### Results

- 8 t CO<sub>2</sub> savings per year (38 t CO<sub>2</sub> savings in total)
- 1,2 toe of energy savings per year (6 toe in total)
- More than 8.500 € savings on electricity costs in total

## Contract tendered

- Tender of IT equipment (desktops, keyboards, monitors, UPS) by OesteCIM
- 4 Lots tendered – Lot 1: 265 desktop PCs; Lot 2: 265 monitors; Lot 3: 30 keyboards; Lot 4: 100 UPS
- Period of validity of quotations: until 31 December 2014
- Total cost: 226.681,00 € (excluding VAT)
- This tender formed part of the GPP implementation strategy of the OesteCIM, and contributed directly to the Government's *Action plan for better air quality Horizon 2015*, and the *Energy and Climate Plan 2012-2020*



## Procurement approach

OesteCIM developed the platform PICO. It is a network of providers, categorised and managed by OesteCIM that enables companies to communicate their conditions of sale for several goods and services to various stakeholders, such as the municipalities that comprise OesteCIM. PICO sets predefined criteria, based on principles of transparency and efficiency, and allows interested municipalities the access to information provided by selected suppliers, who are properly qualified.

Tenders through PICO follow an auction-based process, where a maximum opening value for each lot is set, from which the bidders depart towards the lowest possible value. The winning proposal is then the one with the lowest price. For bidders to participate in the auction, they must meet the minimum requirements that are set (e.g. contract clauses, environmental criteria, etc). After the auction ends, OesteCIM sets a framework like agreement with the winners for each lot, and the adjudication process is done by each one of the member municipalities.

In the present case, direct award procedures were made to purchase the following lots:

Lot 1: 265 desktop PCs	
<b>Technical specifications</b> Three different models <b>Model 1:</b> <ul style="list-style-type: none"> <li>• 245 desktop PCs;</li> <li>• <u>Processor/Chipset</u>: Reference model: 4th generation Intel Core i5-4570. 4 colors; 6MB cache; 3,2 / 3,6 GHz; 64-bit; Intel ® vPro Technology; chap. Max Memory 32GB; USB 3.0; SATA 6 Gbps ports;</li> <li>• <u>RAM</u>: 4GB DDR3-1333/1600 with at least 1 free Slot;</li> </ul>	<b>Environmental criteria</b> <u>Energy Consumption/efficiency</u> <ul style="list-style-type: none"> <li>• Equipment shall meet the latest ENERGY STAR criteria, and the typical electricity consumption (TEC) in kWh shall be 5% less than the requirement of ENERGY STAR for the respective category of equipment.</li> <li>• <b>Verification:</b> Products must hold ENERGY STAR labelling or other appropriate means of proof fulfilling the listed criteria (technical dossier or test report from recognized body). Additionally supplier must present proofs that</li> </ul>

- Graphics: Rather, link to 2 or more monitors and 1Gb of ram dedicated;
- Disk capacity: 500GB 7200RPM SATA 6G 3.5"
- Operating System: WIN7 PRO 64 PT

**Model 2:**

- 10 desktops;
- Processor/chipset: Type Intel Pentium G3220; 2 colors / 2 threads 164bit, SSE4.1/4.2; TDP 53 W; Dual channel memory; Embedded discrete graphics; 22nm lithography; Dynamic power management: voltage, frequency, clock; On-die thermal management;
- RAM: 1x 4GB 1600MHz DDR3 SDRAM;
- Disk Capacity: 2 x 1TB 7200RPM SATA 6G 3.5 ";
- Operating System: WIN7 PRO 64 PT

**Model 3:**

- 10 desktops;
- Processor/chipset: Type Intel Core i7-3770 3.4 GHz (3.9 GHz Max), 8MB cache;
- RAM: 2x 4GB 1600MHz DDR3 SDRAM
- Graphics: Rather, link to 2 or more monitors and 1Gb of ram dedicated;
- Disk Capacity: 2 x 1TB 7200RPM SATA 6G 3.5 "
- Operating System: WIN7 PRO 64 PT

the TEC in kWh is 5% less than the requirement for ENERGY STAR.

**Substitution/upgrading of components**

- Computers should be designed so that the memory is easily accessible and can be updated and the hard drive and CD / DVD can be changed.  
Availability of spare parts for at least three years must be guaranteed from the moment that the computer no longer manufactured.
- **Verification**: Supplier's declaration, technical dossier or data sheet that demonstrates compliance with the criteria.

**Sound Power Level**

- The declared sound power level with A-weighting of computers, measured according to ISO 7779 (or equivalent) standard, cannot exceed:
  - 4.0 B (A) in idle mode [equivalent to 40 dB (A)].
  - 4.5 B (A) when accessing a hard disk drive [equivalent to 45 dB (A)].
- **Verification**: products holding EU's ecolabel or other appropriate means of proof, like supplier's declaration, technical dossier or data sheet, will be deemed to comply.



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**Lot 2: 265 monitors**

Units	Technical specifications
152	Monitor LED 18,5" Warranty 4 years
30	Monitor LED 19" Warranty 4 years
53	Monitor LED 20" Warranty 4 years
30	Monitor LED 22" Warranty 4 years

**Environmental criteria****Energy consumption and efficiency**

Equipment shall meet the latest ENERGY STAR criteria and the typical electricity consumption (TEC) in kWh shall be 5% less than the requirement of ENERGY STAR for the respective category of equipment.

**Verification**: See desktops above.

**Lot 3: 30 keyboards****Technical specifications**

Keyboard with smart card reader for digital accreditation with 4 years warranty

**Environmental criteria**

No criteria were set.

**Lot 4: 100 UPS****Technical specifications**

**Reference model:** 850 VA UPS PHASAK LCD USB + RJ. 800 VA / 480 W; interactive digital technology; AutoCorrect too low or too high voltages without using the battery; USB communications port; Total electrical protection. 4 years warranty.

**Environmental criteria**Energy consumption and efficiency

Equipment shall meet the criteria for energy efficiency defined by the EU in the document “Code Of Conduct On Energy Efficiency And Quality Of AC Uninterruptible Power Systems (UPS)” for its respective category.

Document available at:

[http://re.jrc.ec.europa.eu/energyefficiency/Code\\_of\\_conduct/UPS/Code\\_of\\_conduct\\_UPS\\_16032011.pdf](http://re.jrc.ec.europa.eu/energyefficiency/Code_of_conduct/UPS/Code_of_conduct_UPS_16032011.pdf)

**Verification:** Suppliers declaration in accordance with the Annex C of “Code Of Conduct On Energy Efficiency And Quality Of AC Uninterruptible Power Systems (UPS)”, or any other appropriate means of proof fulfilling the listed criteria.

## Criteria development

- Enclosed environmental criteria were based on the set of the European Union GPP Toolkit ([http://ec.europa.eu/environment/gpp/eu\\_gpp\\_criteria\\_en.htm](http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm)) and further developed through discussion with the GPP 2020 partners.
- There wasn't any market sounding / dialogue activities before tendering needed as this is about standard products available on the European market.

## Results

The results presented below represent an initial estimation, based on the criteria that were set and the available solutions on the market (see calculation basis for more information).

The results pertain only to desktops and monitors. Keyboards are not considered as their consumption is inherently connected to that of the desktop. UPS will not take part of this initial estimation, as there is still no methodology available to determine a baseline from which

to compute savings. This, however, is a work in progress by the partner team at LNEG. We count on having such methodology and consequentially the results for UPS savings later in the project.

- Desktop PCs

	CO <sub>2</sub> emissions (t CO <sub>2</sub> e/year)	Energy consumption (toe/year)	Electricity costs (€/year)
(Low Carbon Solution)	10,5	1,78	2.377
(Last Tender/or „worst case“)	16,1	2,60	3.657
Savings	5,6 t CO <sub>2</sub> e/year	0,82 toe/year	1.280 €/year



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- Monitors

	CO <sub>2</sub> emissions (t CO <sub>2</sub> e/year)	Energy consumption (toe/year)	Electricity Costs (€/year)
(Low Carbon Solution)	7,2	1,23	1.646
(Last Tender/or „worst case“)	9,6	1,64	2.194
Savings	2,4 t CO <sub>2</sub> e/year	0,41 toe/year	548 €/year

- Total savings

	CO <sub>2</sub> emissions (t CO <sub>2</sub> e/year)	Energy consumption (toe/year)	Electricity Costs (€/year)
Savings	8 t CO <sub>2</sub> e/year	1,23 toe/year	1.828 €/year

### Calculation basis

Calculations have been estimated with the use of the Carbon Savings Calculator for ICT-Office Equipment, available at <http://www.gpp2020.eu/low-carbon-tenders/measuring-savings/>.

The reference values for the estimation pertain to the Low Carbon Solution, with TEC 5% less than ENERGY STAR requirements, and to the Worst Solution available on the market. The reference value for the Low Carbon Solution was taken as being 5% less than a conventional ENERGY STAR certified product and was inserted into the Calculator. For the Worst Solution no alteration of the presented value in the Calculator was made. All the reference values are accepted as an approximation of real values.

- 265 desktop computers and monitors were tendered.

- Worst Solution desktops available on the market will consume on average 120 kWh/year.
- New desktops, with TEC 5% inferior to ENERGY STAR requirements, will consume on average 78 kWh/year.
- Worst Solution monitors available on the market will consume on average 72 kWh
- New monitors, with TEC 5% inferior to ENERGY STAR requirements, will consume on average 54 kWh.
- Average CO<sub>2</sub> emissions of electricity production in Portugal are estimated at 0,506 kg CO<sub>2</sub>/kWh.
- Average electricity cost for Portugal is estimated at 0,115 €/kWh.
- Desktops and monitors have an average lifetime of 5 and 4 years, respectively.
- Conversion factor: 1 toe = 11.630 kWh.



Throughout their respective life cycle the purchased equipment are expected to save around 6 400 € for desktops (5 years) and 2.192 € for monitors (4 years) in electricity costs, when compared to the worst solution. As such this purchase has the potential to save around 8.592 € in electricity costs in a period of 4-5 years to the agglomeration of municipalities that comprise OesteCIM.

## Response from the market

The market gave a favourable response to the demands set. Demands didn't exclude providers, and these were able to easily supply evidences of compliance.

## Lessons learned

Verification schemes in the framework of PICO and other type of procedures developed by OesteCim must be improved. Minimum requirements were set, but these were only verified after the auction part of the tender was completed.

Since tenders through PICO are decided only on the basis of the lowest price, it is not possible to include award environmental criteria. In these cases environmental criteria are only possible to introduce as a minimum requirement. This calls for a sensitive approach in the choice of criteria that maximizes the benefits under these limitations.

However, in other type of procurement procedures developed by OesteCim, as framework agreements, public tenders and direct agreements, is possible to include complementary and/or award environmental criteria

OesteCIM has learned that in order to conduct Green Public Procurement it has to follow through on verification. This approach can be replicated in other regional procurement organisations.



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## About GPP 2020



procurement  
for a low-carbon  
economy

GPP 2020 aims to mainstream low-carbon procurement across Europe in support of the EU's goals to achieve a 20% reduction in greenhouse gas emissions, a 20% increase in the share of renewable energy and a 20% increase in energy efficiency by 2020.



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To this end, GPP 2020 will implement more than 100 low-carbon tenders, which will directly result in substantial CO<sub>2</sub> savings. Moreover, GPP 2020 is running a capacity building programme that includes trainings and exchange. – [www.gpp2020.eu](http://www.gpp2020.eu)

## About PRIMES



PRIMES  
Green Public Procurement

Across six countries in Europe; Denmark, Sweden, Latvia, Croatia, France and Italy, PRIMES project seeks to help municipalities overcome barriers in GPP processes, many of which lack capacity and knowledge.

PRIMES aims to develop basic skills and provide hands-on support for public purchasing organisations in order to overcome barriers and implement Green Public Purchasing. This will consequently result in energy savings and CO<sub>2</sub> reductions. – [www.primes-eu.net](http://www.primes-eu.net)



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