

How to drive energy efficient datacenters through procurement – criteria and approach

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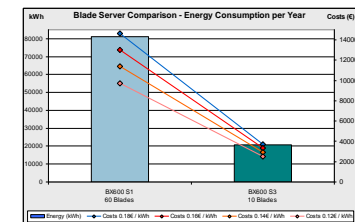
PrimeEnergyIT in brief

General objective

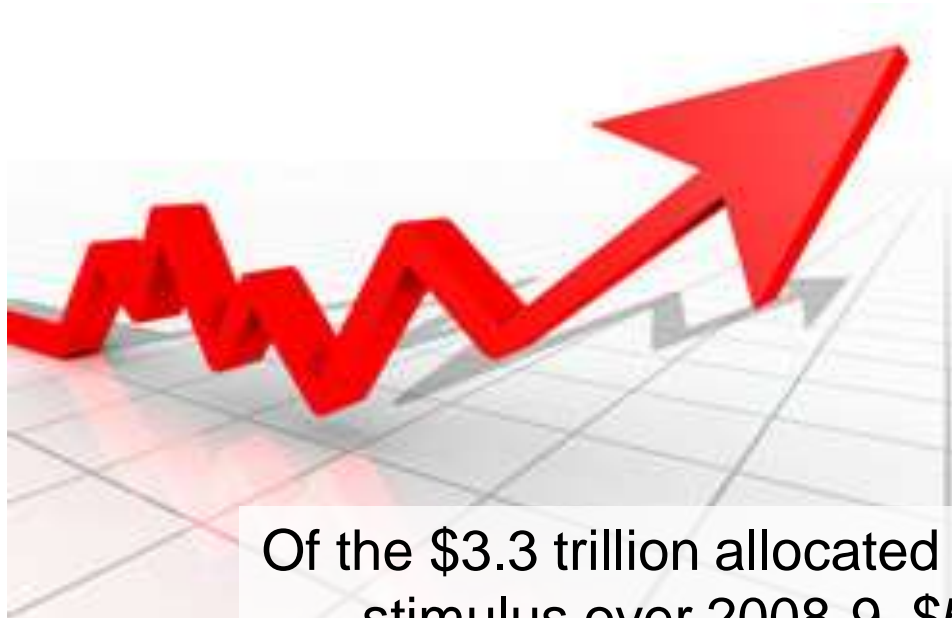
- Increasing energy efficiency in data centers by use of energy efficient server, data storage, network and cooling technology

Core activities

- Supporting efficiency criteria development
- Dissemination of best practice
- **Guidelines/implementation of energy efficient procurement**
- Education for IT managers



Public procurement: follow the money?



Of the \$3.3 trillion allocated worldwide to fiscal stimulus over 2008-9, \$522 billion was devoted to green expenditures or tax breaks

(Robins et al. 2009 and 2010)

The potential of Sustainable Public Procurement (SPP)

Drive the market: In 2010, the EU public authorities spent 2300 Billion EUR, equal to about 16% of the GDP

Public procurement is the biggest single customer-side driver

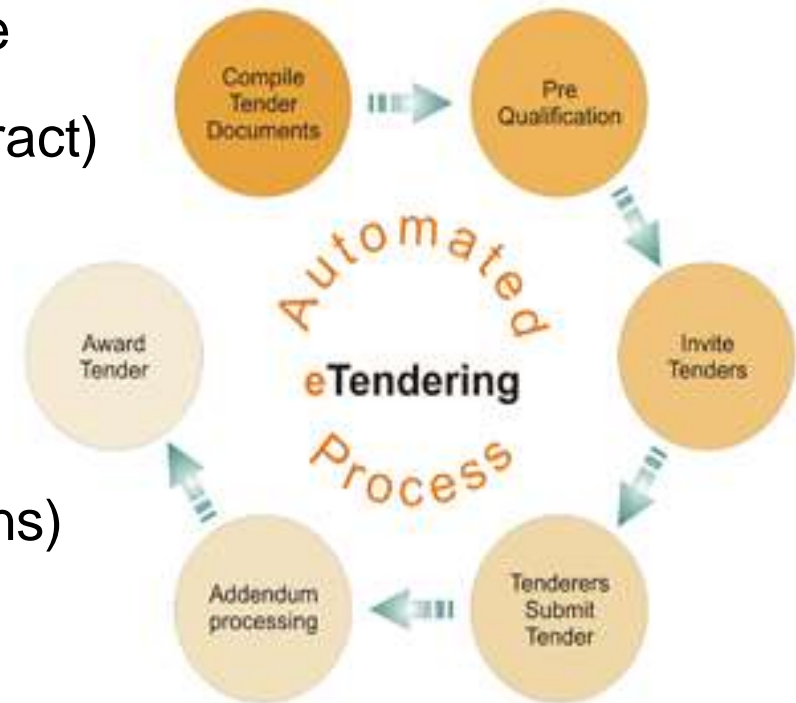
Public procurement & tendering: general legal principles

- ✓ **EU Treaty Principles:**
 - ✓ Transparency
 - ✓ Non-Discriminatory
 - ✓ Equal Treatment
- ✓ **EU Directives 2004/17 and 2004/18** and the subsequent translation into national law at Member States:
 - ✓ Use of green criteria in general
 - ✓ Use of standards
 - ✓ Use of ecolabels (e.g. EnergyStar, Blue Angel, EU Flower label, Nordic Svan)



Steps and procedures

- ✓ Identifying the procurement procedure (open, restricted, service, supply, competitive dialogue, framework contract)
- ✓ Defining the subject matter
- ✓ Clarifying the eligibility criteria
- ✓ Developing technical specifications (descriptive vs. functional specifications) and verification schemes
- ✓ Developing award criteria (weighting matrix)
- ✓ Using contract performance clauses



PrimeEnergyIT sustainable public procurement guidelines

- Development phase: April – December 2011
- Developed as support for both datacenter requisitioners and procurers with product and service focus
- Will build upon common EU guidance (EU GPP toolkit)
- Core elements include: integrated system approach, refurbishment/retrofitting services, recommended criteria for each section of tendering (specifications, award criteria, etc.)



Green criteria – product focus

- Learning from existing IT SPP guidelines such as UNEP SPP guidelines for office IT equipment
- Focus on key components such as servers, cooling, etc.
- Key criteria include:
 - Product lifetime (warranty, upgradability, resource efficiency, end-of-life: re-use, re-cycling)
 - Energy consumption (minimum requirements according to Energy Star + award criteria on better performing products)
 - Exclusion and reduction of hazardous substances (such as brominated flame retardants, VOC, PVC)
 - Corporate performance, social criteria and packaging

Green criteria – product cont.

- Key criteria include (cont.):
 - Overall energy performance of server: calculated according to SPECpower_ss2008 = minimum 2.000
 - Virtualisation: ratio virtual server / physical server >2
 - Temperature of servers: e.g. in accordance with “ASHRAE recommended range of class 1 data centres”
 - Cooling equipment: Coefficient of Performance, COP, Computer Room Air Conditioners, CRAC, placement of racks, temperatures, modularity of racks – verification EN ISO/IEC 17025
 - ...



Green criteria: services focus

- Moving towards a continuous monitoring of energy performance of datacenters
- Embedded in an energy management system for the datacenter (includes: energy strategy of service provider, procurement of IT products, facility management, clear tasks and responsibilities for continuous optimisation of the energy performance)
- The service provider uses green electricity – used in award criteria phase: consider additionality (share of new plants in defined time frame), mix of renewable electricity (hydro, photovoltaic, wind, biomass)

Green criteria: life-cycle costing and CO2 assessment

- Costs of a data center (service, acquisition, maintenance, operation, end-of-life)
- Life-cycle costing refers to the total cost of ownership over the life of an asset. It is most commonly used for:
 - option evaluation when procuring new assets,
 - decision-making to minimise life-cycle costs throughout the life of an asset,
 - comparison of actual costs for similar asset types,
 - as feedback into future design and acquisition decisions.



Calculating the LCC by making use of existing tools

- Regardless if it is service, works or product tender, the calculation of LCC supports your innovative and cost-effective award procedure for any contract related to energy efficient data centers
- The LCC-CO2 tool provided by the SMART SPP project provides you with a common Excel-based calculation tool that is available for free – download at www.smart-spp.eu/guidance



Embedded CO2 emissions of IT products

- Guide to PAS 2050 – how to assess the carbon footprint of goods and services
(<http://www.bsigroup.com/upload/Standards%20&%20Publications/Energy/PAS2050%20Guide.pdf>)
- Inventory of Carbon and Energy (ICE)
(<http://www.bath.ac.uk/mech-eng/sert/embodied>)
- ISO/WD Standard 14067, Carbon Footprint of Products - standard for carbon product footprinting under development and expected in 2012
(<http://www.iso.org/iso/search.htm?qt=14067&searchSubmit=Search&sort=rel&type=simple&published=on>)

Conclusions

- Apply an integrated, holistic approach to the procurement of data center products and services
- Make use of the existing sustainable public procurement schemes referring to key criteria of recommended ecolabels and standards (specifications) and by making most use of the award criteria phase, providing an emphasis on life-cycle costs and environmental performance characteristics
- Take into account the build environment (LED lighting, zero CO2 emission buildings)
- Prepare to have an impact on the social-responsibility of supply chains

Contact

Thank you!

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Websites / further reading:

www.efficient-datacenters.eu

www.iclei-europe.org/procurement

www.procuraplus.org