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IT planning: using less electricity

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Summary

- IT uses a lot of electricity
- Most electricity is carbon generated
- It is a Real Cost to your institution
- Include the cost of electricity
- Measure usage
- Futures



Official information is interesting – Lighting

- £1.9 billion p/a lighting homes in UK
- 10% – 15% of electricity bills
- An energy saving bulb in every home
 - saving in a year could power the Blackpool Illuminations for 900 years
 - carbon dioxide saved would fill the Royal Albert Hall 1,980 times



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But not useful for IT planning...



Leaving a PC monitor on all night wastes enough energy to microwave six dinners

Switch to saving

Tel 0800 58 57 94

www.thecarbontrust.co.uk/energy

The Carbon Trust is funded by the Department for Environment, Food and Rural Affairs, the Scottish Executive, Welsh Assembly, Northern Ireland Assembly, the Mayor of London, and the London Development Corporation. © Carbon Trust and London 2006. Registered 1996.





Electricity is expensive

- Sheffield spends £6M on utilities
 - £1,000 per employee
- IT electricity is significant
 - even if it is not your budget
 - it is a real cost to the institution
 - we should all be working to minimise it
- We do need to do the sums



Cost

- Electricity
 - about 8p per unit (per kilowatt hour)
 - perhaps plus VAT (5%)?
 - perhaps plus climate change levy?
 - increasing, so say **10p per unit**
- **Air-conditioning costs**
 - in a cooled space **15p per unit**



Cost per year

- Much equipment is run all year
 - for $365 * 24 = 8,760$ hours
 - nearly 10,000 hours
- **1 watt of equipment for 10,000 hours**
 - uses 10,000 watt hours
 - which is 10 kilowatt hours (units)
 - which costs about £1
 - or air-conditioned, about £1.50



Costing Purchases

- Capital cost
- + maintenance and support
- **+ electricity over lifetime**
 - even if it is not in your budget
 - it is a real cost to the institution
- Extra capital to save electricity?
 - try to get a rebate from bill payer



Typical Items - PC

- Uses (with monitor) $> 100\text{w}$
 - on all day, £100 per year
 - over five years, £500, more than capital
 - typically in use for 40 hours (out of 168)
 - power down when idle could save 75%
- Best “PC” is Mac Mini
 - uses (with monitor) $< 70\text{watt}$, saving 30%
 - RM, Viglen do low power “green” PCs



Typical items - server

- 1u Dell 1950, 2 Intel X5355, 8 cores
 - capital cost **£4284 (inc VAT)**
 - 18 watts (standby) “off”
 - 227 watts idle
 - 310 watts intense
 - in a machine room £400 p/a
 - electricity over a 5 year life **£2,000**



Typical items - phone

- Avaya digital phone
 - 1,000 phones from one 1kw cabinet
 - about 1 watt/phone, £1 per year
- Cisco IP phone
 - 5 watts per phone
 - 3 watts per ethernet port (unless shared)
 - 8 watts total, £8 per year
- Sheffield has about 10,000 phones!



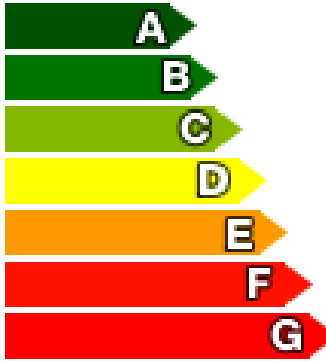

University of Sheffield Costs

- 13,000 PCs, 40 hours/week
 - £325,000 p/a electricity at least
 - some in cooled space, some on longer
- 2 Machine Rooms, 120KW equipment
 - £180,000 p/a because cooled
- Phones 10,000 @1 watt
 - £10,000 p/a, but IPT would be £80,000



Purchasing

- Lack of official data
- No EU Energy Label
- Energy Star not taxing
- 80 PLUS program
 - not taxing or widely used
- One Watt Initiative
 - domestic appliances
 - not required in UK

Energy		Washing machine
Manufacturer Model		
More efficient 		A
Energy consumption kWh/cycle <small>Based on standard load washing at 60°C normal cycle</small> <small>Actual energy consumption will depend on how the appliance is used</small>		1.55
Washing performance <small>A higher G lower</small>		A B C D E F G
Spin drying performance <small>A higher G lower</small> Spin speed (rpm)		A B C D E F G 1400
Capacity (cotton) kg Water consumption		5.0 5.5
Noise (dB(A) re 1 pW) Washing Spinning		5.2 7.6
Further information is contained in product brochures		
New EU label Loosely recreated by 3:1 Mark and Simon		



Supplier Information lacking

- Not all figures accurate
 - Do not rely on power supply rating
- Some suppliers have “green ranges”
 - eg Viglen, RM, Dell
 - currently a price premium
- Some suppliers make claims, like Sun
 - but Sun thin clients have no standby



You have to measure

- Easy and quick
 - Maplin Plug-in power monitor
 - Cheap £14.99
- Machine room
 - check the meters
 - equipment power
 - cooling efficiency?





The future

- Suppliers are all going green
- but in the future...
- now, we must press suppliers!
- energy efficient equipment should not command a premium
- suppliers will only change if the market requires it!



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To
Discover
And
Understand.