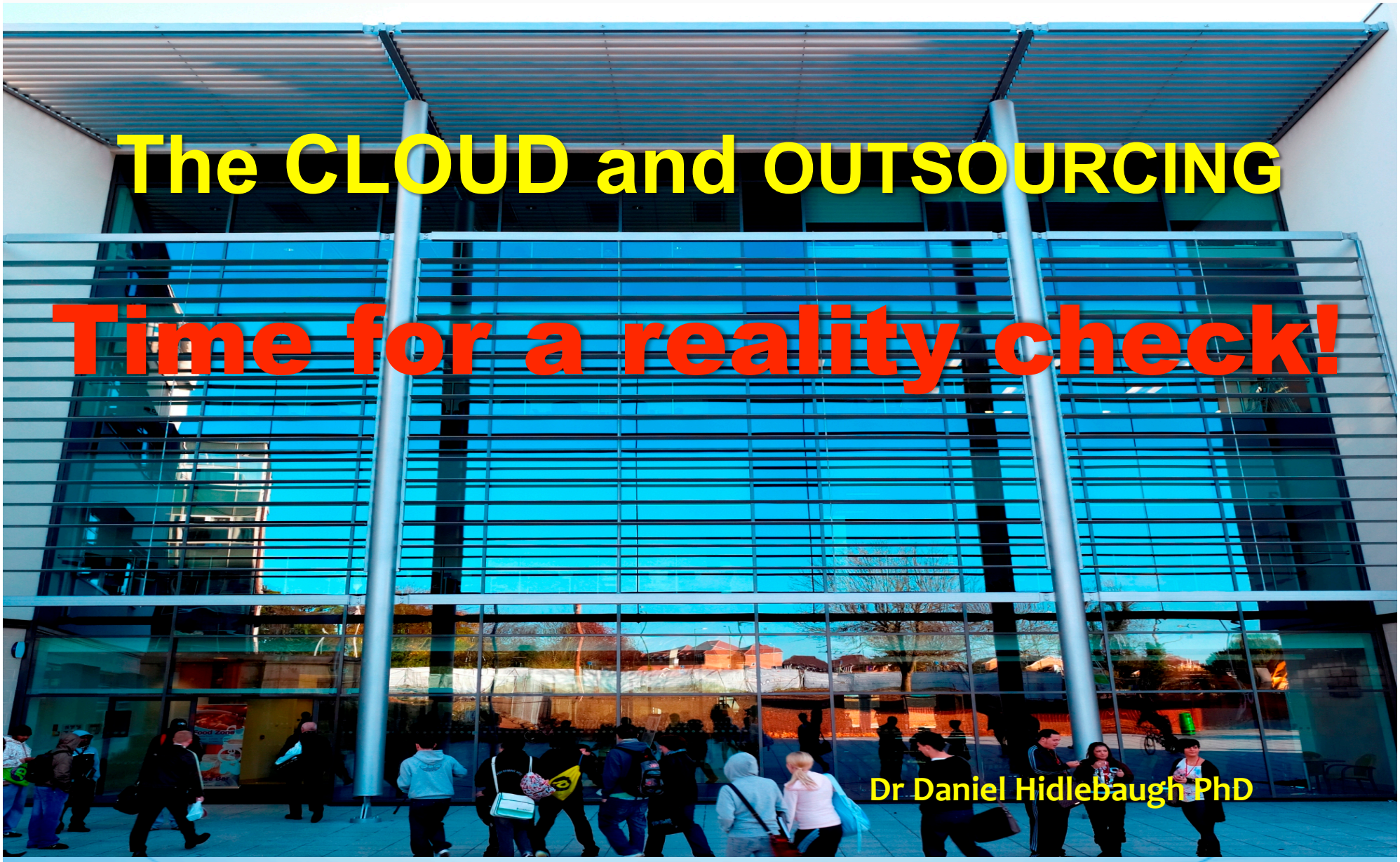
HRC^3


The CLOUD and OUTSOURCING
Time for a reality check!
Dr Daniel Hidlebaugh PhD

Energy bills to soar by 15%

Birtles predicts 'terrible' rise

FROM PAGE ONE

gas. As demand increases, supply has not risen and wholesale prices have been sky-rocketing.

Energy experts have warned that these increased costs will be passed to the consumer.

[illegible] comes after [illegible] of the [illegible] suppliers [illegible] in price rises of 5.9 per cent on average. This has already added £62 to household bills.

Yesterday analysts at Deutsche Bank said the damage to Japan's power plants was likely to "result in a permanent loss of some of the nuclear capacity already down". This will make it increasingly likely it will have to keep importing more LNG .

Now UK bills could soar by 15 per cent. The average annual bill for consumers could rise from £1,132 to £1,304, the highest ever, warned Energyhelpline.com

Customers will be faced with a "double whammy" as oil prices also rise due to unrest in the Middle East and North Africa.

Energyhelpline.com said it already had "indications" major providers were reviewing the prices they charged small business users. Households would follow. Paul Green, chief executive, said: "There has been a 10 per cent rise in wholesale prices in the last month alone. Gas prices have also almost doubled since this time last year."

Ann Robinson director of Consumer Policy at uSwitch.com, said: "If Japan continues to get a significant amount of its energy through imports, then prices will go up."

Consumer adviser and Daily Express columnist Jasmine Birtles from Money Magpie said: "This is just terrible news for consumers. As if things were not hard enough already. There just seems to be no let up."

Yesterday Germany, which is Europe's largest economy, also said it would switch off seven of its nuclear reactors following the leaks in Japan. Analysts said this would add to the rise in prices.

Meanwhile, European Union energy officials agreed on Tuesday to apply stress tests on plants across the 27-nation bloc.

And Spanish Prime Minister Jose Luis Rodriguez Zapatero said his government would look into how vulnerable the country's six nuclear plants were to earthquakes or flooding. If any [illegible] reactors are shut down, prices could shoot up further.

OPINION: PAGE 14

Cameron hints at axing fuel rise

THE cost of petrol and diesel is the most pressing transport issue, according to Britons.

More than two-thirds of people said that the price of fuel was top priority for ministers.

Pump prices have reached record highs in recent weeks.

On April 1, a proposed duty increase of one penny plus inflation is due to be brought in. It would add around five pence a litre to fuel prices. The Daily Express Stop The Petrol Tax Robbery crusade calls on Chancellor George Osborne to scrap the rise and cut duty on fuel.

Sixty-per cent of what motorists pay at the pumps [illegible]

Yesterday David Cameron dropped a strong hint that the Government will scrap the planned 1p-a-litre rise.

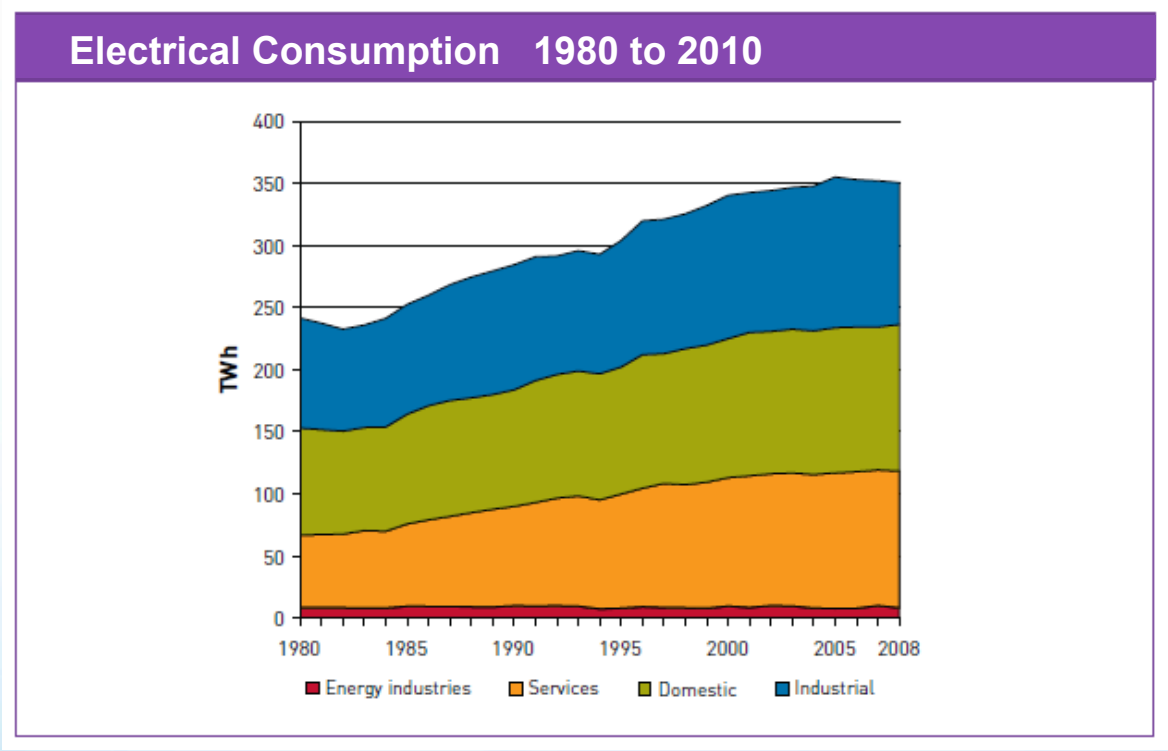
The PM insisted he recognised the "pain" that families and small businesses were feeling, as prices rose above £1.30 a litre, pointing out that a Budget is imminent.

For 68 per cent of [illegible] transport issue, according to a poll by the RAC Foundation.

Remember this……..

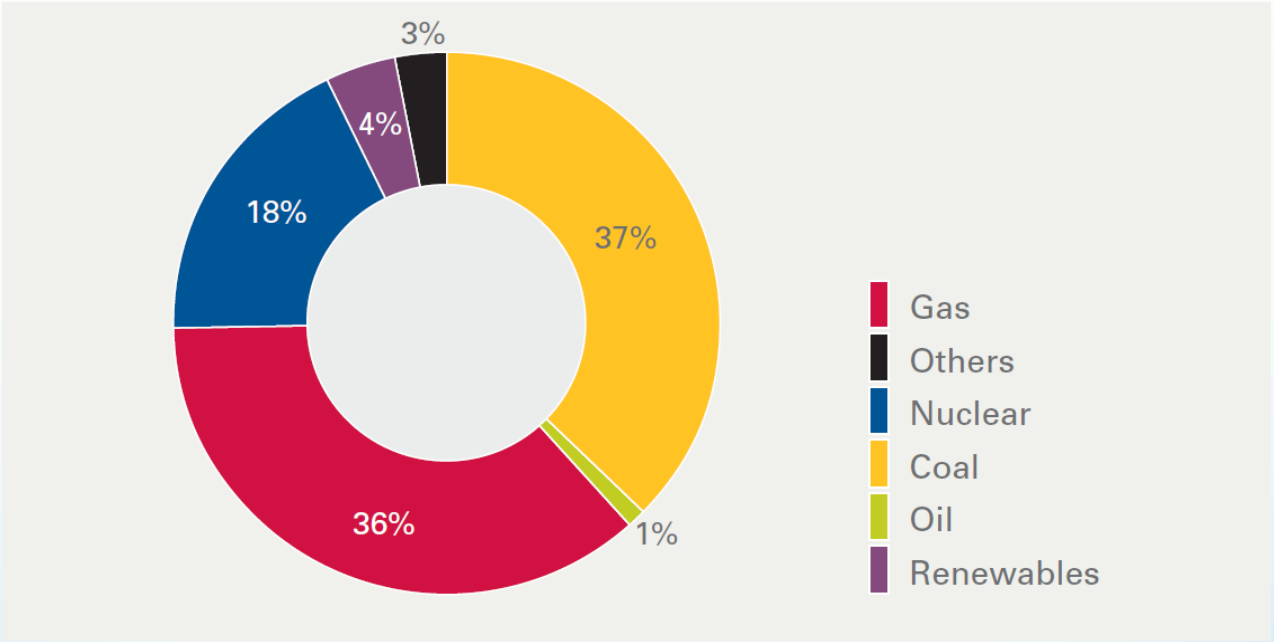
* From the Daily Express 17/03/2011

Did you know



Our requirements for electrical power have increased by a third since 1980 or approximately 10% per decade

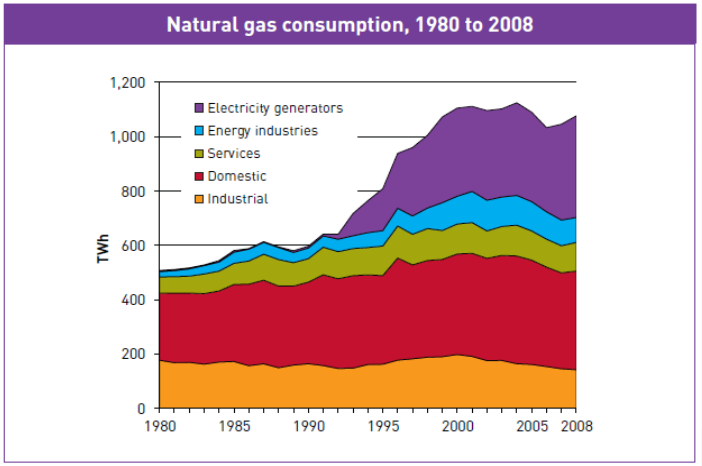
Only 4% of our electrical supply is renewable.



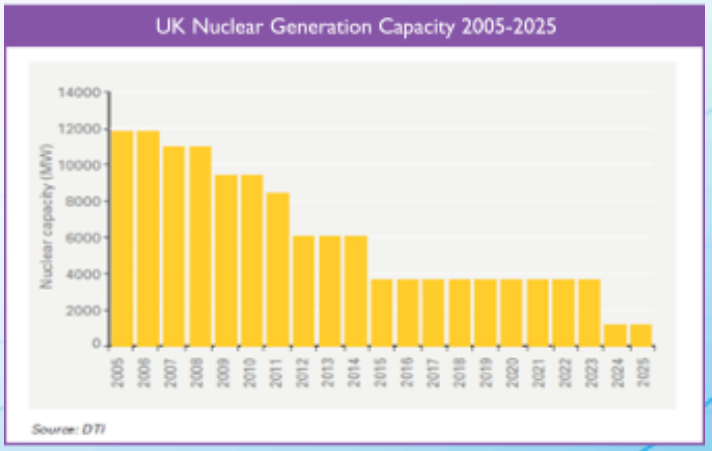
What about the other 96%
Do we have security of supply?

* Electricity consumption is increasing
* UK generation capacity is declining
* Nuclear capacity has not been replaced – 10 years to bring new plants on line.
* Coal replaced by gas powered stations, this is an EU requirement
* Since 2004 UK is a net importer of gas with the majority from Russia
* Electric vehicles will increase electricity demand still further

1 Electric Car = 3 Households



Between 1995 and 2008 Natural Gas used to generate power doubled to almost 1200 TWh



By 2025 Nuclear Capacity will drop by over 10,000 MW

Can renewables fill the gap?

Using an average of 195 kWh / day / person

How about if we add……

- Tide : Severn + The Wash + Strangford Lough Barrage + Blackpool Lagoon
- Deep offshore wind : 9 km strip around the whole UK coastline
- Shallow offshore wind : 4 km strip around the whole UK
- PV (Solar photovoltaic) Farm : Cover 5% of UK (£200,000 / person)
- Solar heating : all south facing roofs
- Inland wind : Cover the windiest 10% of UK

Data from "Sustainable Energy"

without the hot air By Professor David JC MacKay,

Department of Physics University of Cambridge.

www.withouthotair.com

Even if we used all of the resources above we would still only get to 180 kWh/day/person

What can be produced from PV on our south facing roof tops?

Once all the 70000 photovoltaic panels are in place, it is expected that the solar panels will create 180,000 units of renewable electricity each year enough energy to make…….

Doesn't sound so practical anymore does it?

nineteen million cups of tea

Business Drivers – Mandatory Legislation

Mandatory legislation

- Kyoto Protocol : 1997
- Energy Act : Nov 2008
- **Climate Change Act : Nov 2008 (Introduced CRC Scheme)**

Voluntary schemes

- BS EN 16001
- The Green Grid PUE
- EU Code of Conduct on Data Centre Energy Efficiency
- BICSI 002-2010 Data Centre Design and Implementation Best Practices

EU Data Centres Electricity Usage

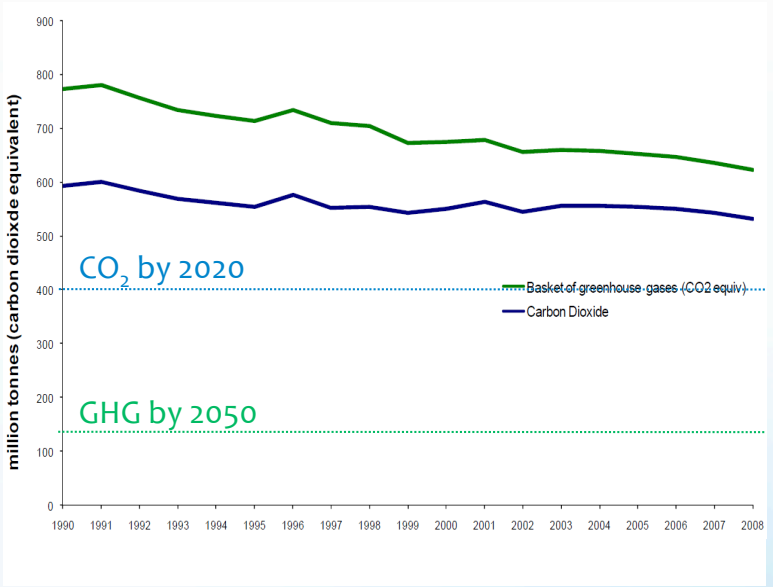
2007 : 56 TWh (3% of UK electricity)
2020 : 104 TWh (6% of UK electricity)

Enterprise IT Energy Use

Client PC	: 31%
Servers	: 16%
Printers	: 14%
Network	: 13%
Telecom	: 11%

Climate Change Act – 26 Nov 2008

- Aims to transition UK to a low carbon economy
- Legally binding target : 80% reduction in greenhouse gas emissions by 2050
- 34% reduction in CO_2 by 2020 (outside public sector)
- 10% year on year CO_2 reduction to 2020 Carbon Neutral for Public Sector.
- Mandatory reporting for all **175,000** half hourly meter owners (20,000 organisations) Not necessarily your school now but soon……..
- **The biggie for Education is that all educational institutions MUST be Carbon neutral by 2020**



Gartner asked 626 worldwide enterprises with 1,000-10,000 employees “Is carbon pricing affecting your planning for next 24 months?”

Results:

7.9%	UK
10.5%	France
21.1%	India
20.0%	China

Carbon Reduction Commitment – what is it

- UK “Cap & Trade” scheme to reduce energy use year by year. Designed to create a shift in awareness, behaviour and infrastructure
- Scheme started 1 April 2010
- In April 2011 allowances must be purchased for every tonne of CO_2 emitted in 2011-2012, initially at a fixed price of £12 / tonne CO_2
- From 2013 allowances will be capped by 5% per year and publically auctioned, price is expected to rise!
- Government will publish an annual league table showing the comparative performance of the top 5000 participating organisations
- May 2009 - Environment Agency sent a letter to all half hourly UK meter addresses

Who does the legislation apply to?

- Any UK organisation with one of the 175,000 half hourly electricity meters in 2008 must disclose information (20,000 organisations)
- Any organisation spending more than £500,000 on electricity in 2008 must join the allowance trading scheme (5,000 organisations)
- **All state-funded schools & universities**
- All central government departments regardless of size
- Qualification is based on electricity but if you qualify you must collect and report on all non-transport fossil fuels (mainly gas, oil)
- CRC targets highest parent organisation who must report on energy usage of all subsidiaries
- What if I already buy100% renewable or generate all my own electricity? It does not matter! You still have to make reductions.

Carbon Reduction Commitment - Summary

- The scheme started on 1 April 2010, first payment is due in April 2011
- Automate your data collection and reporting
- Analyse current consumption to allow accurate forecasts
- Prepare your business for a 5% cut in energy consumption every year until 2050
- Market dynamics and environmental factors mean business can no longer rely on traditional low cost energy sources
- Businesses which prepare for and take advantage of the new energy reality will prosper – failure to do so could be catastrophic

Penalties for non-compliance

- Failure to register is a fine of £5000 + £500 per day
- Failure to disclose information is £500 per meter
- Failure to submit annual report is £5000 + £500 per day (first 40 days) then + £1000 per day. Bottom ranking on Performance League Table
- Incorrect reporting £40 / tonne CO_2 if error > 5%
- Falsification or reckless statements will result in fine up to £50,000
- Non-compliance with enforcement notice – imprisonment up to two years

So What Can We Do?

Personally

- **Become Aware**

  Understand the impact you are having in your daily life.

- **Open Your Mind**

  There's a lot to learn about this complex issue, but don't let that dissuade you from taking some simple steps.

- **Small Changes Make A Big Difference**

  There are many things you can do to change your daily activities so slightly that you'll hardly notice the difference.

Professionally as Educators:

- **Become Aware in your classroom**

  Turn off PC's when you leave a classroom.
  Don't leave Smart boards running if not in use.
  Turn the lights off when you leave a classroom.

  +++

- **Don't be afraid of making suggestions to SR Management**

One of those suggestions should be Outsourcing.

One of the major items you could consider outsourcing is:

IT functions - you can outsource most IT functions, from network management to project work, website development and data warehousing.

For Example:

- Instead of hosting your student email use Microsoft Live Ed, Google or any of the other free hosting services. (Remember this is not secure so staff email should not use these services)
- Outsourcing of some of your applications, for example Moodle, finance, or your MIS (like SIMS)

Why would I outsource IT?

- You may benefit from the latest technology and software upgrades.
- You won't have to invest in expensive systems or keep up with industry trends.
- Both of the above allow Education to benefit from the outsourcing company's economies of scale and investment in highly trained staff while it concentrates on core teaching and learning.

But the most important are the "GREEN" and financial savings.

Usually going **GREEN** means it costs extra money but generally outsourcing (if outsourced to the right location) can mean not only does your institution reduce its Carbon Footprint but you can actually save money while providing a technically up to date and reliable system.

Did you know……..

1. The average Secondary school will have between 3 and 10 servers running school systems.
2. The average FE institution will have 80 to 120 servers running systems.
3. The average HE institution will have between 100 and 200 servers running systems.

And those cost ……….

Averaging the number of servers

	Cost to run and Cool	Tons of CO_2 Produced
Secondary = 5	£2,454.55	16.72 each
FE = 100	£49,334.37	334.37 each
HE = 150	£73,636.36	501.55 each

3941 Secondary in UK = £10M and 65,894 Tons CO_2

487 FE Colleges in UK = £24M and 162,838 Tons CO_2

165 Universities in UK = £13M and 82,756 Tons CO_2

Totals approximately £47M and 311,488 Tons CO_2

Based on average wattage for server being 270W and UK institutional cost for power at .10 per kWh running and .11 per kWh for cooling

Outsourcing 75% of these servers would save……

A total of

£35,250,000.00

And

233,616 Tons of CO_2

Annually

Not commonly known….

- Insiders in the Government have admitted that we are quite likely to have rolling brownouts in the next 3 to 5 years.
- We just cannot sustain the increase in demand for electricity.
- There are HE institutions in the UK that do not have enough power to plug 1 more server in. The Mains are absolutely at capacity.

Moving a server from a UK Educational Institution to a UK Data Centre doesn't help!

We are still using UK power that cannot be easily replaced. And what about the CO_2 produced?

The CO_2 we are producing in the UK at a Data Centre or Institution is still a debit to us because the PUE of most Data Centres in Europe is minimum of 1.5

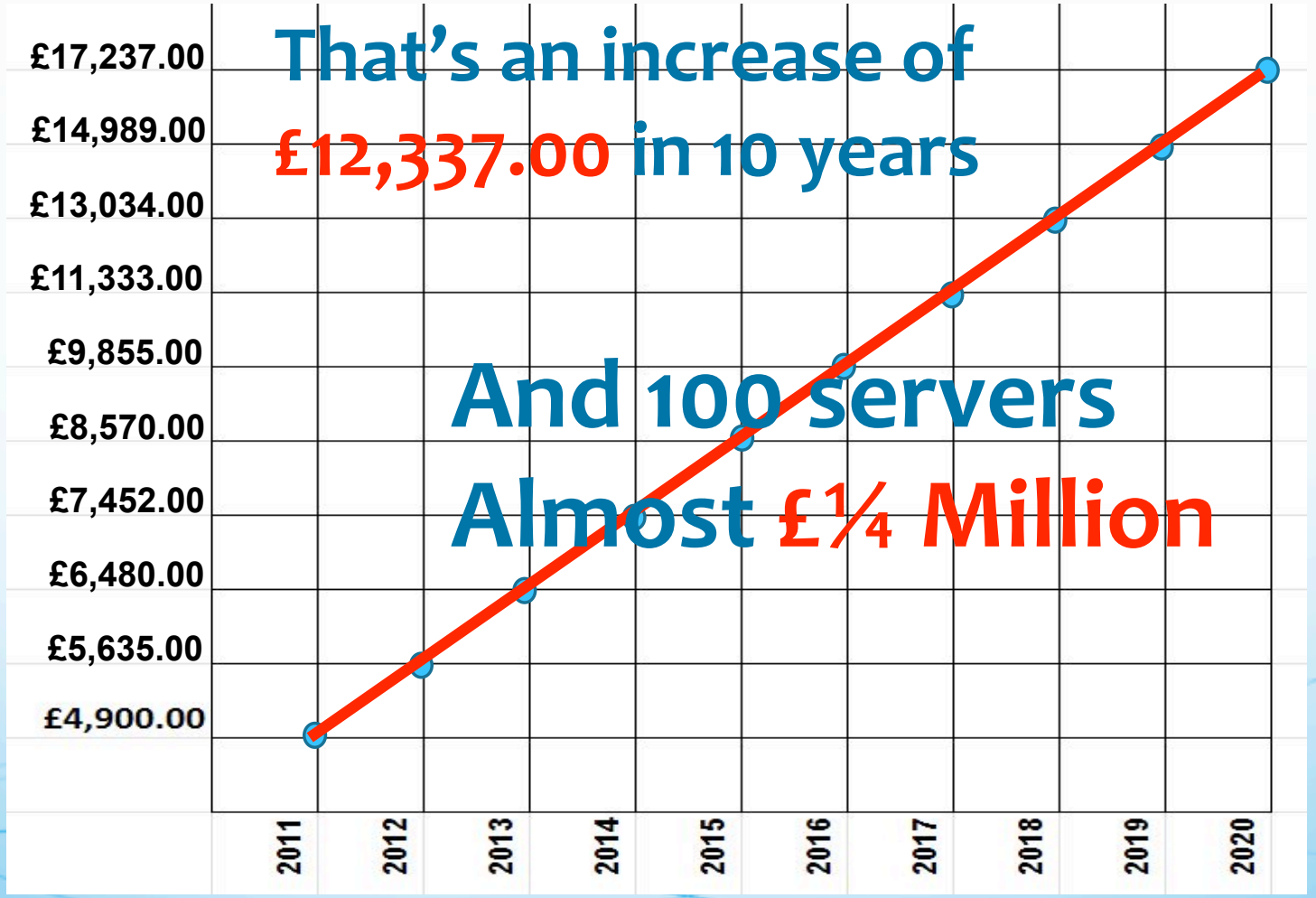
Power usage effectiveness (**PUE**) is a measure of how efficiently a computer data centre uses its power; specifically, how much of the power is actually used by the computing equipment (in contrast to cooling and other overhead).

Rolling Brown outs?

This could mean that ever 2 weeks or so institutions could have their power cut for a portion of the day!

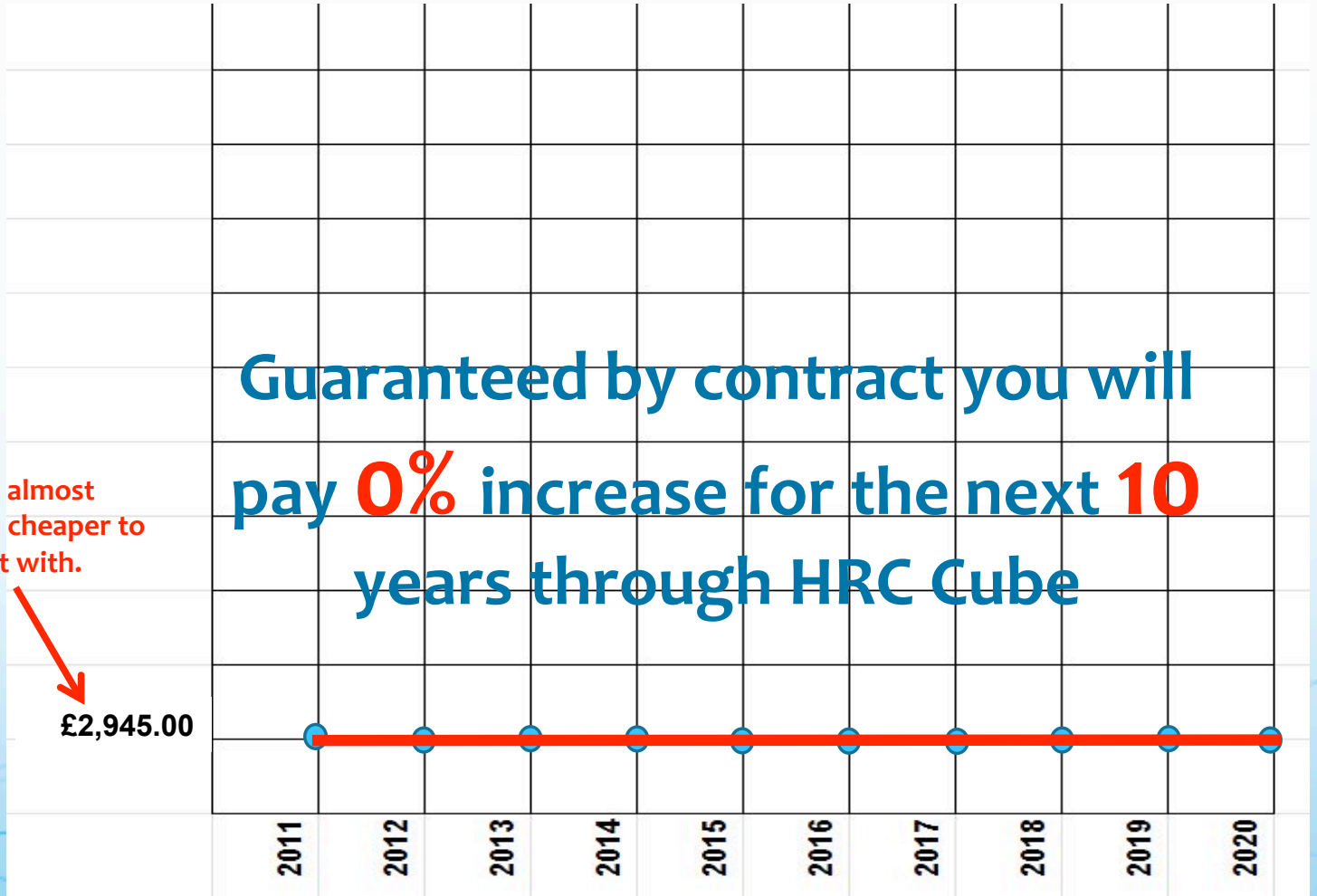
For secondary institutions financial penalties are not likely but for FE and HE where students pay for their education and have a fiduciary responsibility to provide at least VLE access for students the failure to do so could end up with those institutions being sued for the inability to provide that VLE access.

Remember that 15% power increase in the paper clip at the beginning?



Based on 10 Servers for power and cooling at £ .10 per kWh power and an additional £ .11 per kWh for cooling

Stable Power prices in Iceland



Based on 10 Servers for power and cooling at £ .12 per kWh power and an cooling at Thor

So what can be done?

Hertford Regional College has formed a Joint Venture company to provide Data Centre services to the Education Sector that is both Green and a financial saving.

$$e^2\, e = hrc^3$$

a formula 4 success

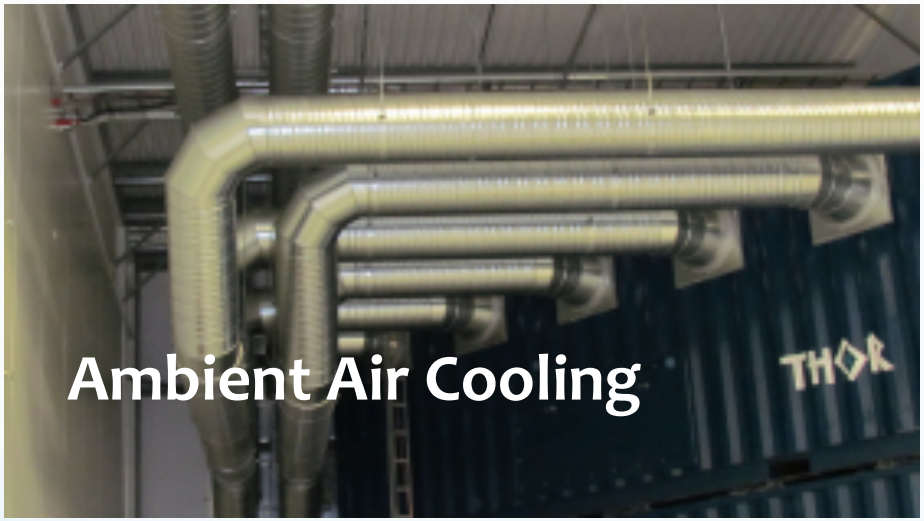
HOW?
Our JV partner is a Data Centre in Iceland

THOR DATA CENTER

THOR DATA CENTER

- Thor Data Centre in Iceland offers the ability for Education to save significantly on Data Centre costs, while providing the same or better levels of security, resilience and availability as any in the EU. Approved under Data Protection act for EU student data.
- Powered 100% from geo-thermal sources, this is the only truly green Data Centre in the world.
- Ambient Air Cooling
- No fossil fuels, no dependencies on oil and gas availability or cost. Abundant renewable energy sources providing zero carbon power.
- Power costs are low, up to a quarter of equivalent UK prices.
- With Security certified to ISO27001, and high speed links to Europe (JaNet)
- Demonstrably improve your carbon footprint while saving money at the same time

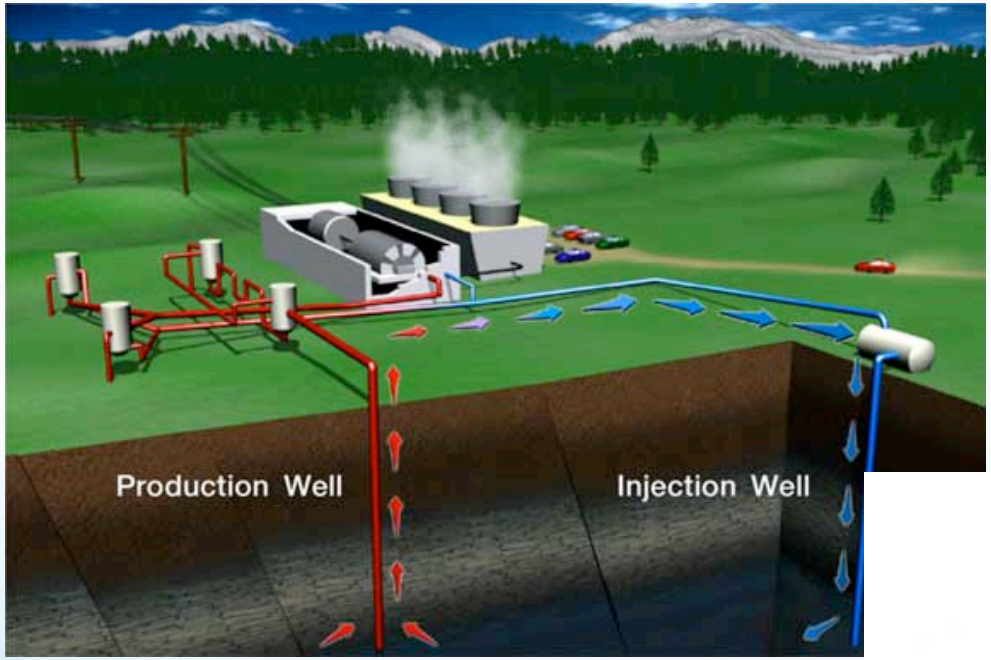
Features

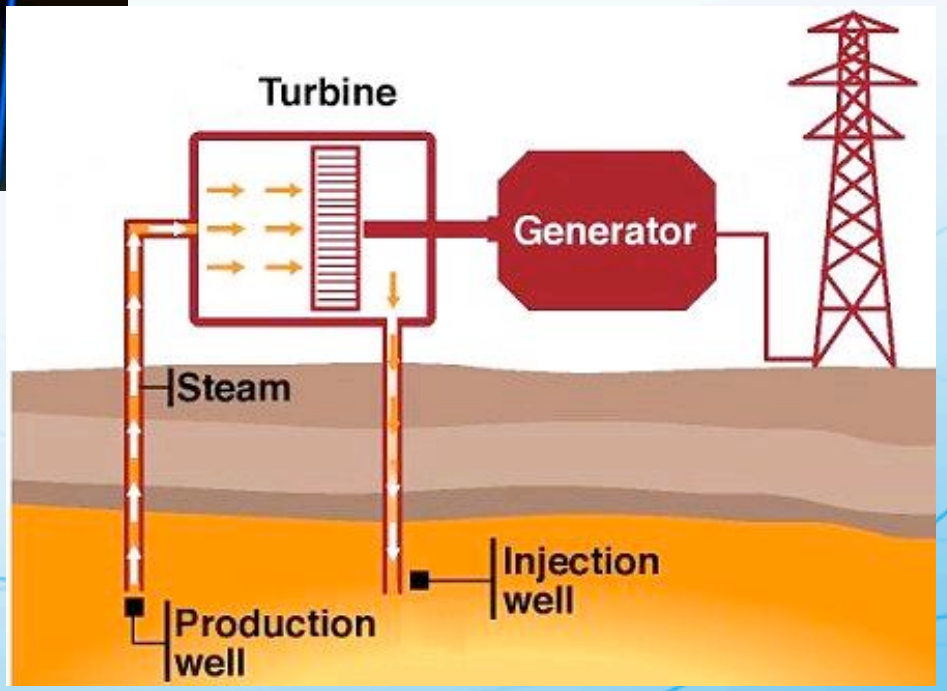

Ambient Air Cooling
THOR


Opera Browser has moved all 500 servers to Thor


100% Renewable Geo-Thermal Power Zero Carbon producing

100% Renewable Geo-Thermal Power





Connectivity

How does JANET connect to Iceland?

JANET connects to the European Educational Network (GEANT) then to Nordu.net then to RH.net all educational, all 128 bit encrypted. In essence an educational secure Private Cloud.

Return times to Thor via JANET is 48ms

What else does outsourcing with HRC^3 do for us?

Remember that annual cost of £35.25 Million spent on outsourcing in the EU?

- The cost to outsource in Iceland is only 50% or £17.6 M
- The CO_2 is the same 233,616 Tons of CO_2 But instead of a charge it is now a **CREDIT**

That's like removing 153,000 automobiles from our streets

Some other Services that can be outsourced by HRC3 to save you money besides your VLE.

- **Telephony**
  - Moving from ISDN to SIP Trunking – No up front cost but a usual saving of up to 50% on all trunks. This could be as high as £6,000.00 per year as in the case of HRC.

    The **Session Initiation Protocol** (**SIP**) is widely used for controlling multimedia communication sessions such as voice and video calls over Internet Protocol (IP).

  - Moving to SIP Extension – Removal of costly Call Manager/IP telephony servers. This could be as high as £20,000.00 in licensing and management costs per year.
- **Backup or Disaster Recovery**
- **Real Time or Archived Storage**

Remember the Carbon Reduction of 10% year on year from 2010 to Carbon Neutral in 2020?

- If you fail to make those reductions your institution could be paying fines of as high as £50K per year if you are over the threshold or if you fail to make the 10% reduction you will pay £12 per Ton of CO_2 per year in fines.
- By outsourcing to Iceland through HRC^3 those CO_2 fines turn into **Credits** that will help with your 10% reduction or can be sold on the open market.

In Conclusion:

Think Outsourcing

= Green

= Savings

= HRC^3

Remember!

HRC and HRC Cube are inviting you to an evening of Beer, Wine or soft drinks as well as hot nibbles and an opportunity to mix and mingle with your contemporaries.

FREE

Buses will shuttle to the college starting at 19:00 and ending at 22:00 this evening.

Take a break on us and enjoy

Thank You

Dr Daniel Hidlebaugh PhD

CTO HRC Cubed

Director of Networks and IT Systems

Hertford Regional College

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Email: dhidlebaugh@hrc.ac.uk

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