A Practical Guide to Energy Performance

Setting the Scene

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What I will cover

1. BACKGROUND
2. UK GOVERNMENT EMISSIONS REDUCTION TARGETS
3. EMMISIONS - ACTUAL VS. BUDGET
4. ENERGY EFFICIENCIES DRIVERS
5. ENERGY PERFORMANCE PARTNERSHIP CONTRACT
   - COMMERCIAL MODEL,
   - MARKET SIZE – USA & UK
   - CHALLENGES
6. GREEN DEAL FOR COMMERCIAL PROPERTIES

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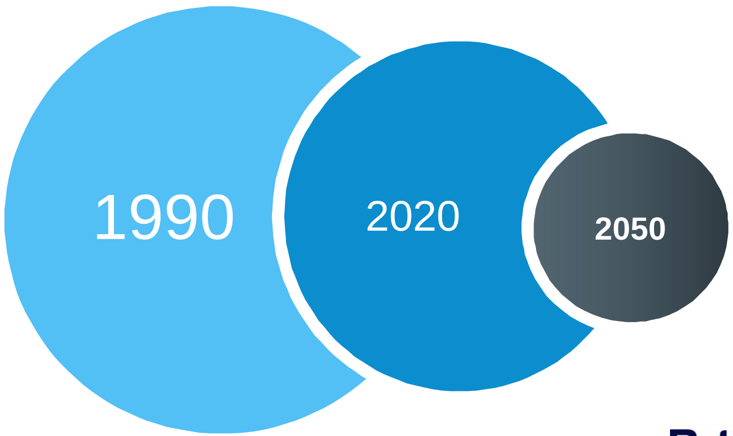
Background

- Climate change - one of the most significant threat to human life & health
- Urgent and effective action needs mitigate against this threat
- Lack of control of HVAC systems costs exceed £0.5bn/annum

UK Government's Emission Reduction Targets

2020 emission need to be 20% lower than those emitted in 1990 and by 2050 emissions need to be reduced by 80% on 1990 levels….



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Carbon Budgets

- Climate Change Act sets out legally binding limits on emissions in successive 5 year period beginning in 2008

	First Carbon Budget (2008-12)	Second Carbon Budget (2013-17)	Third Carbon Budget (2018-22)	Fourth Carbon Budget (2013-27)
Carbon Budget Level (million tonnes carbon dioxide equivalent ($MtCO_2e$))	3,018	2,782	2,544	1,950
Percentage Reduction below base year levels	23%	29%	35%	50%

- Government latest projection show that the UK is on track to meet the first three legislated budgets; since 1990 emissions have fallen by 26%

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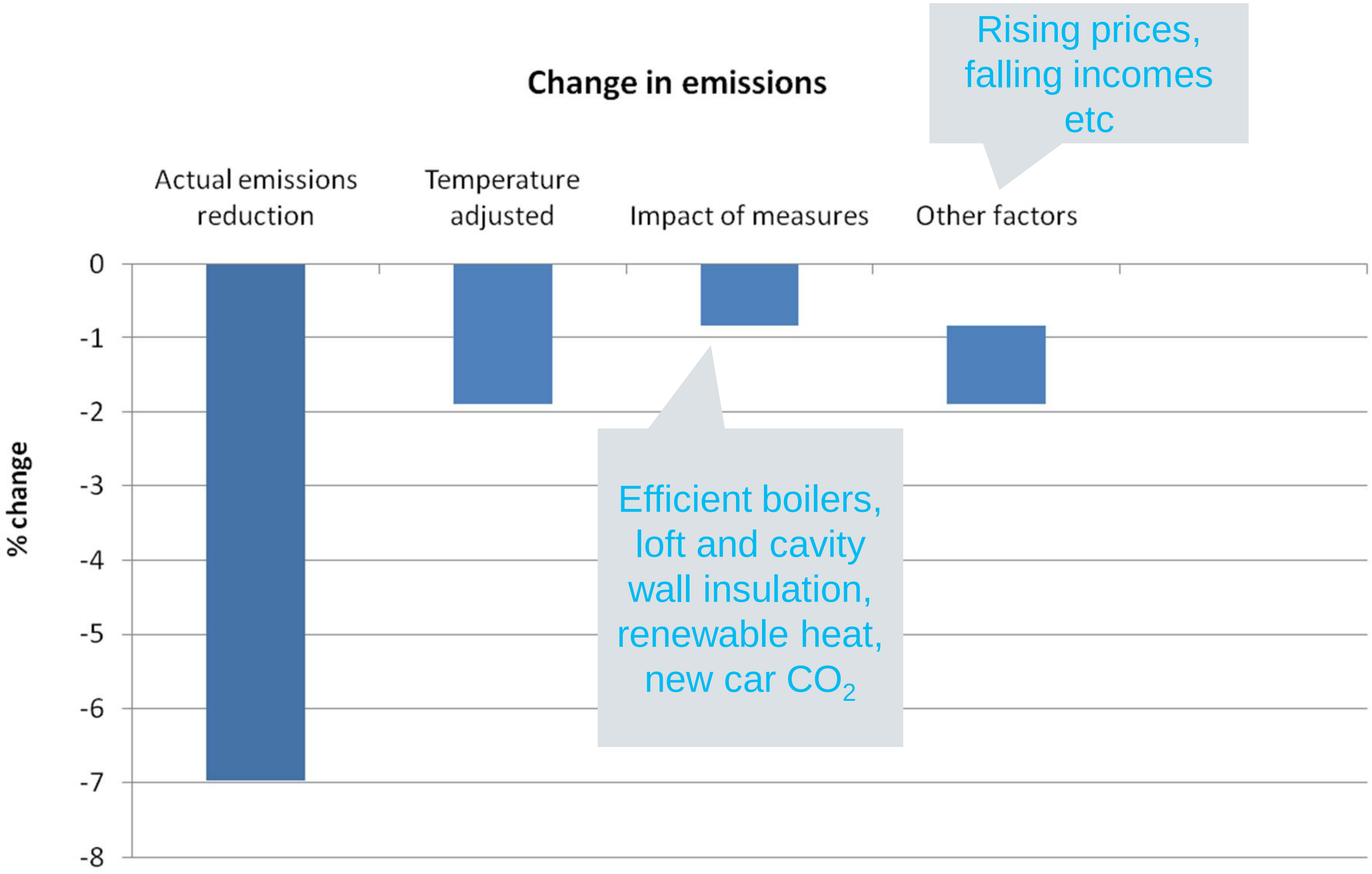
However...



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Beyond 2020...

- Challenge becomes increasing difficult to cut emissions by 80%

- Step/major changes will be required in both use and generation of energy

- Government vision

    - Oil & gas used for transport and buildings will need to be replaced by electricity or hydrogen
    - Decarbonising of electricity via nuclear and renewable?
    - Smarter grids balancing supply & demands

- Looking beyond 2020 ...... ???? State of technology, economy and demand difficult to predict.

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We aren't that good at predicting the future

"The horse is here to stay, but the automobile is only a novelty – a fad"

Advice to Henry Ford's Lawyer, 1922

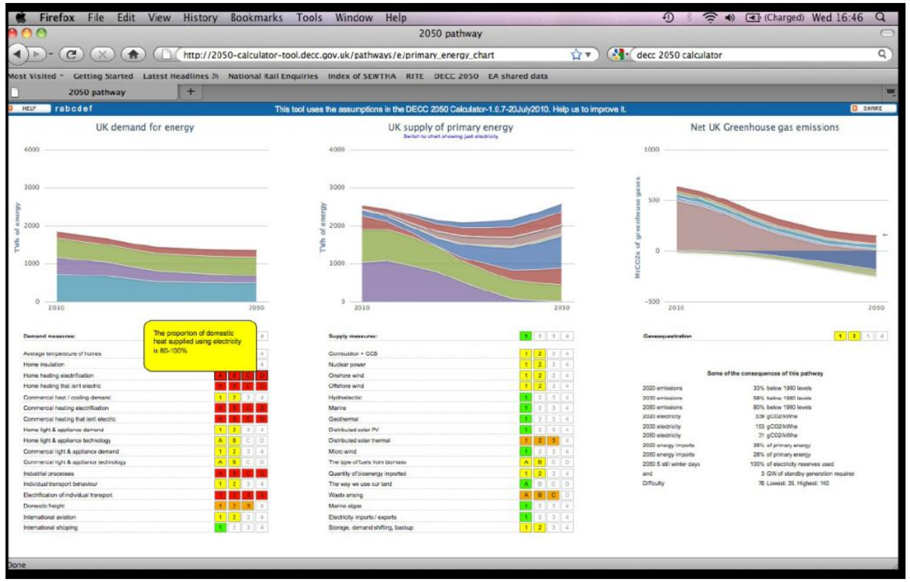
"I think there is a market for about 5 computers"

Thomas J.Watson, Chairman of the Board IBM, 1943

DECC 2050 Pathways Calculator

- Population growth and demand characteristics
- Build more generation: do you back nuclear, gas, wind, tidal, biomass
- Provide financial incentives for domestic/commercial consumers
- Transport (Road, aviation)

DECC's view of the world pathways to 2050……..



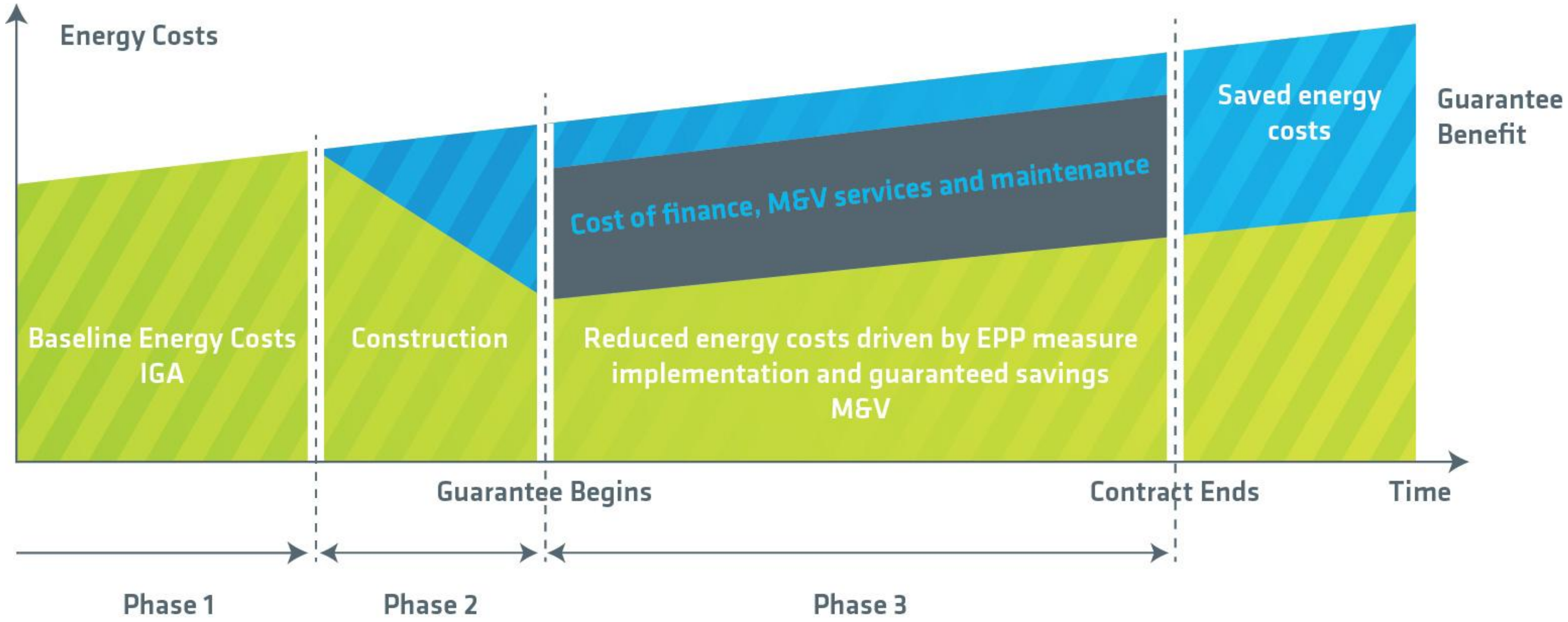
http://2050-calculator-tool.decc.gov.uk/

Energy Efficiency Driver

1. Mitigating the risk of future energy price increases
2. Minimising carbon taxation
3. Maximising investment
4. Mitigating your own resource risk
5. Reducing the cost of energy
6. Generating revenue streams

Energy Performance Partnership can Help….

Cash-Positive Commercial Model



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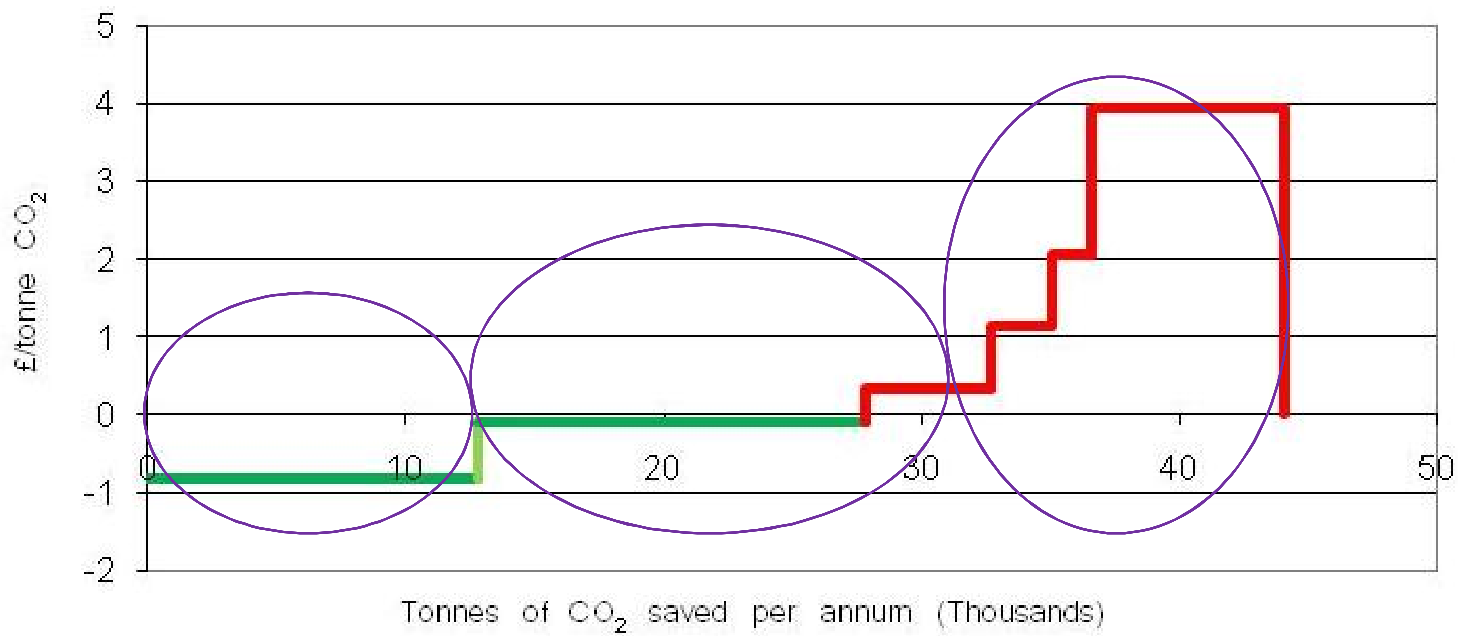
Outlook for Energy Efficiency

The Marginal Abatement Cost (MAC) Curve provides a route map to achieve your carbon reduction target.

Private sectors decision makers are also under pressure to realize rapid (2 to 3 year maximum) returns on investment and may shy away from more long-term and comprehensive performance contracts.



A Local Health Board – Case Study

- 4 Acute Hospitals
- Total benefits of >£1m per annum with British Gas guaranteeing savings >£750k per annum for the next 10 years
- ~26% energy consumption saving
- Significant asset renewal program
- Broad range of technical solutions including CHP, lighting, BMS, STOR and PV.
- Sensitive to needs of a critical environment.
- CO_2 emission reduction of ~5,500 tones p.a.

GIG CYMRU NHS WALES Energy Performance Partnership

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How much more care and support could you deliver with an extra £1 million a year?

A Welsh Local Health Board has contracted for guaranteed annual energy savings of £862,000 and the potential to earn £194,000 annual income for the next ten years.

The total annual energy reduction is 27.8%.

The Challenge

Like health authorities across the UK, a Welsh Local Health Board (LHB) faced a number of challenges. How can you be sure that your investments will achieve the desired savings? How do you upgrade your energy facilities without compromising patient care? How do you address energy bills that have risen by 19.5% over the previous 10 years and are projected to increase further?

The Welsh LHB found that different equipment suppliers could each propose a partial solution to the overall reduction but with different warranty and maintenance terms. A supplier or facilities management company may be an expert in a particular technology but compromised when it comes to giving impartial advice.

The Welsh LHB decided to procure one energy performance partner that will guarantee savings and take responsibility for the upgrade and maintenance of its energy estate.

The Solution

Through a process of competitive dialogue, the Welsh LHB has found the ideal solution. Entering into an energy performance partnership with energy services company British Gas, the LHB will benefit from guaranteed energy consumption savings of at least £862,000 a year, a 27.8% reduction in consumption. British Gas has already assessed the LHB's four main hospitals, recommending a series of upgrades to improve energy performance. The energy performance partnership will see British Gas conduct a detailed assessment of each technology before proceeding with the installation of equipment. Under the partnership arrangement, equipment will be maintained by the LHB's own staff with British Gas providing measurement and verification of the energy savings achieved over the 10 year life of the contract.

Result

The Welsh LHB will now benefit from a long-term relationship with British Gas that will help to achieve its energy goals. The partnership guarantees a minimum direct annual saving of £862,000 (27.8%), a reduction of emissions by 5,429 t/CO2e, and an additional potential annual income of £194,000.

Improved facilities and better controls will result in more responsive heating, cooling, ventilation and hot water based on the specific needs across the sites. By securing an Energy Performance Partnership, the Welsh LHB expects to save money and improve the wellbeing and comfort of patients at the same time.

Local Health Board goals

- Reduce energy consumption by at least 25%
- Achieve ISO 14001 environmental management accreditation
- Become an exemplar across NHS Wales
- Raise staff awareness to reduce energy consumption
- Meet the Welsh Government's One Wales objectives
- Enhance security of energy supply
- Improve resilience of the energy infrastructure

'The partnership guarantees a minimum annual saving of £862,000 (27.8%), a reduction of emissions by 5,429 t/CO2e, and a potential income of £194,000.'

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20 year market gaining traction, doubling from 2013 to 2020

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UK, a developed market worth €400m

Number of ESCO's	20
Size of the market	400 Million € / year
ESCO Association	Energy Services and Technology Association (ESTA)
Type of ESCO's	Subsidiaries of large international manufacturers of building automation & control systems and energy service & supply companies
Market Development	No significant growth
Sector ESCO Projects & main EE measures	Public sector and complex building projects and co-generation, district heating and supply side projects

Energy Service Companies Market in Europe

- Status Report 2010 -

U.K. EPC Market Growth

Source: BSRIA; Review of the European Performance Contracting Market; December 2006, Frost & Sullivan, Credo research and analysis for British Gas

UK market relatively under-developed - challenges include:

- Low awareness and lack of information about the EPP concept;
- Scepticism & little understanding of the opportunities EPP projects offer;
- High perceived risk of the EPP investment, lack of expertise and experience on the financial market;
- Non-supportive procurement rules;
- Accounting problems (investment vs. operating costs);
- Lack of "off-balance sheet" solutions, need more commercial banks financing;
- Reluctance to outsource;
- Administrative hurdles, high transaction costs (especially for saving guarantees);
- Tactical rather strategic approach

Green Deal

- Golden Rule – Expected savings must be = to or > then cost attached to the energy bill
- Estimated savings based on ‘standardised’ use of space assessed by Green Deal Advisor.
- Length of payment not to exceed lifetime of equipment
- Payment via utility bills; consent required from all parties inc bill payers
- Loan recourse to the meter; therefore will pass on to new occupiers or landlord in case of vacant property
- RHI & FiT & STOR not part of the package
- Market does not have Green Deal loan offer for non-domestic sector

EPP Contract

- Client objective based on financial & non financial success criteria:
- Guaranteed savings based on IGA, verified by M&V for length of project & shortfalls, paid by ESCO.
- Payback for commercial sector tend to be shorter then life of equipment; caveat need to make attractive for funders
- Payment from organisation seeking finance & strict termination rules apply to change of use or change of control
- Income from RHI, FiT & STOR allowed; flexibility allows for long-pay back items to be included
- Interest rates applied including on credit ratings & ECM’s used

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