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## Executive summary

Britain is now in the grip of a full-blown recession and Labour's Debt Crisis has put our public finances in chaos, with the worst budget deficit in the developed world.

Conservatives have proposed urgent national economic policy measures, including tough fiscal controls, tax cuts for employers, and a National Loan Guarantee Scheme to help companies stay afloat and keep people in work.

But we cannot simply rebuild our economy as it was, heavily reliant on a few industries and on a narrow range of unstable and carbon-intensive energy sources. The future must be different to the past, and Conservatives understand that we urgently need to make the move to a low carbon economy, for three main reasons:

First, it will strengthen our economy. Decarbonising Britain will help create hundreds of thousands of jobs, raise skills and improve Britain's competitiveness. These jobs and skills will give new hope to people being hit by the recession. A decarbonised Britain will be a world leader in green technology, engineering, innovation and growth.

Second, decarbonising the economy will help guarantee our energy security. If we continue to rely on imported fossil fuels from Russia, North Africa and the Middle East, then businesses and households will be increasingly at risk of losing their energy supply or paying wildly fluctuating prices. We need a different future where we get our energy from a wider range of more dependable sources and where we encourage innovative energy sources to be developed; where every household and business can play a part in producing energy and where breakthrough technologies are rapidly implemented.

And third, decarbonising our economy will help us protect our environment for future generations. Just as the reckless accumulation of debt in our economy means higher taxes for the next generation; so the reckless accumulation of carbon dioxide in our atmosphere will impose costs on our children and their children. Now that we know the scale of the risks we have created and are creating, it would be selfish, irresponsible and morally wrong not to act now to reduce our carbon emissions and do all we can to protect the future.

## The Conservative plan for decarbonising our economy

No-one knows what the future holds. But based on our knowledge today, in 2009, we can make some reasonable estimates about the difference we can make if we implement the big changes set out in our plan for a low carbon economy.

If we implement our plan for decarbonising the economy now, we believe that by 2050:

- Britain's lighting and electronics, and most of our machinery, trains and cars can be powered by low carbon electricity provided through a new electricity internet;
- we can be tapping new, abundant low carbon energy sources like tidal power and biogas and using the energy produced not just to deliver electricity but also to warm our homes and provide heat for our communities;
- our homes and businesses can be dramatically more energy efficient;
- we can be much less dependent on imported fossil fuels from volatile regions of the world, and as a result much more secure;
- we can meet our target to reduce emissions by 80% over 1990 levels;
- we can turn Britain into the world-leading economy for green innovation and technology, and
- we can enhance our competitiveness through a significant reduction in the amount of energy required to manufacture products, to provide services and to live and work in the United Kingdom.

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- We are certain that we can build this secure, green prosperous future, but only if we start the work of transforming our national energy infrastructure now.

## An electricity internet

The way our energy is produced and transmitted around the country is stuck in the 1950s and '60s: the era of centralised command and control. Highly engineered plants using mainly post-war technologies transmit electricity across 'dumb' networks which cannot intelligently manage the load on them to reflect the capacity available. It is akin to an analogue system – with little scope for interactivity between producer and consumer, and little opportunity for personalised control or responsibility.

The changes we want to make are genuinely revolutionary. They involve putting computing intelligence into electricity networks, through the introduction of a smart grid and the use of smart meters in people's homes, so that demand and supply can be intelligently managed. Communications technology has now made this type of interactivity commonplace in many aspects of our lives – but not in energy. The change is as big as the one from the plain old telephone system to the internet – a quantum leap in energy transmission and distribution where simple, slow signals are replaced by highly sophisticated exchanges between consumers and producers, transforming the efficiency and effectiveness of the national grid. That is why we call it the electricity internet.

Moving to an electricity internet unlocks many opportunities. *Large-scale use of renewables* becomes feasible because a *smart grid* can manage domestic and commercial appliances to use more energy when it is abundant and less at peak times. The vast and barely exploited renewable resources that Britain has in abundance – tidal power, offshore wind, wave energy – can be exploited and fed into the national grid.

The electricity internet, like the world wide web, also unleashes the possibility of anyone who wants to contribute being able to do so. Homes and businesses, schools and hospitals, will be able to contribute energy from their own *small-scale low carbon energy production* – or micro-generation – via their *smart meters*, earning money in the process.

Participation in the interactive, intelligent management of load via the smart grid will be voluntary; the customer will choose. But those that take up the opportunity will see their energy bills fall while their standard of living rises, as they take much greater control of their energy use.

And the electricity internet won't just change the energy and power we don't see, it will change the way we live our lives on a daily basis. Just a few years ago zero-emission cars were a pipe-dream, to be seen on Tomorrow's World but not on Top Gear, but a new smart grid enables the installation of plug points in streets, heralding a new era of *electric and plug-in hybrid cars* which will clean up pollution and cut the cost of motoring. The electricity internet will transform the way we think about power.

## Our proposals

To achieve this transformation we will:

- **transform electricity networks with 'smart grid' and 'smart meter' technology** so that the use of electricity for a wide range of household and workplace appliances, and the charging of electric and plug-in hybrid cars, can be tailored automatically to match the supply of electricity - permitting in turn a huge increase in renewable power;
- **create a decentralised energy revolution by introducing a system of 'feed in tariffs' for electricity generation** to multiply electricity production from micro-generation;
- **vastly expand the amount of offshore wind and marine power by giving the National Grid the incentive to construct a new network of under-sea Direct Current (DC) cables** and banding the Renewables Obligation to support these technologies; and

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- introduce incentives for electricity network operators to **establish a new national recharging network, enabling Britain to lead the world in replacing traditional cars with electric and plug-in hybrid vehicles.**

## New low carbon energy sources

In a world of declining North Sea production and unstable fossil fuel supplies, we need to diversify our energy sources and use technological innovation to unlock the potential of existing but untapped sources of energy. Labour have failed to invest sufficiently in the development of new energy technologies and have not done enough to break down the regulatory barriers that are stopping these innovations. Keeping our energy secure and kicking our addiction to carbon go hand in hand, so our plan for a low carbon economy will enable new, exciting and practical technologies to come on stream.

By adding *carbon capture and storage* to every new coal plant we'll be able to take the most highly polluting, high carbon producing fuel of all and transform it into a low carbon fuel of the future. Britain is blessed with large coal reserves, so there will be big benefits for our economy too in cleaning up coal power.

We can greatly reduce our dependence on imported gas by introducing *new biogas plants*. Instead of rubbish and farm-waste going to landfill and slurry tanks, it will be turned into low-carbon, low emission biogas. This new biogas will be fed into the gas grid or used to supply heat to community heating schemes which, by cutting the amount of energy lost in power generation, will dramatically cut costs for residents who take part.

Local heating schemes could also be fuelled by *second-generation biofuels*. Because they are derived from agricultural waste and non-food crops, they will bring an end to the current problem where increased use of biofuels raises food prices, hitting consumers in the pocket.

And by speeding them through the planning process *new Marine Energy Parks* will spring up around our coastline, developing different ways of harnessing tidal and wave power for energy production.

## Our proposals

To bring new energy sources on stream we will:

- **enable biogas – methane produced from the anaerobic digestion of farm and food wastes – to replace up to 50% of our residential gas heating** by changing the regulatory regime for the gas grid and introducing 'feed-in tariffs' for biogas;
- **incorporate carbon capture and storage equipment into at least 5,000MW of new coal-fired power plants** so that they can be capable of meeting an Emissions Performance Standard restricting carbon emissions to the level achieved by a modern gas power plant;
- **support all forms of low carbon heat generation and give local authorities powers to establish new Combined Heat and Power district heating networks;**
- create binding sustainability rules for existing biofuels and establish a more ambitious Renewable Transport Fuel Obligation to **promote the development of sustainable second-generation biofuels;**
- clear the way for new nuclear power stations through **the establishment of a National Nuclear Waste Site and type approvals for nuclear stations;** and
- provide government backing, through fast-track planning, **for a network of large scale Marine Energy Parks.**

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## Low carbon buildings, transport and commerce

Becoming a low carbon economy is not just about developing the new energy generation technologies of the future. It is also about taking action now to reduce emissions from the principal non-energy sources of carbon, namely housing, industrial buildings, transport and household goods.

Changes to *household insulation* can have such a dramatic effect on energy consumption that it's possible to fit out a home with energy saving equipment and for the household to still save money on their bills immediately. Only the apathy and lack of imagination of the Labour Government is stopping us doing this now. Making it happen will create thousands of jobs during the recession.

As well as families seeing savings on their bills, using smart meters and *energy use comparisons* they'll also be able to know whether they are consuming more than average and find ways to reduce consumption further. In many cases, they'll be able to ask their *employer to pay* for these changes and the employer will be able to earn emissions credits for doing so, helping them fulfil their energy saving obligations.

And we'll make sure the goods and services we use every day get more and more efficient, adopting from Japan a scheme that produces *a rising bar of energy efficiency* for all appliances, and building a modern and efficient *high speed rail network*.

## Our proposals

To start cleaning up our emissions now we will

- **introduce a new entitlement for every home to be fitted immediately with up to £6,500 of approved energy efficiency improvements**, the cost to be repaid through fuel bills over a period of up to 25 years but **delivering immediate reductions in the gas and electricity bills** of participating households;
- mandate energy suppliers to **ensure that every gas and electricity bill contains energy use comparison information**;
- introduce new rules that **allow employers to meet carbon reduction requirements by sponsoring energy efficiency improvements in their employees' homes**;
- **establish a new 'top runner' scheme to highlight the most energy-efficient household goods**;
- fully implement the Energy Performance in Buildings Directive and require **Display Energy Certificates for public and private non-domestic buildings** over 1000 square metres; and
- immediately start work on establishing **a new high speed rail network linking cities in the North and South**, boosting economic regeneration and jobs, and removing the need for a third runway at Heathrow.