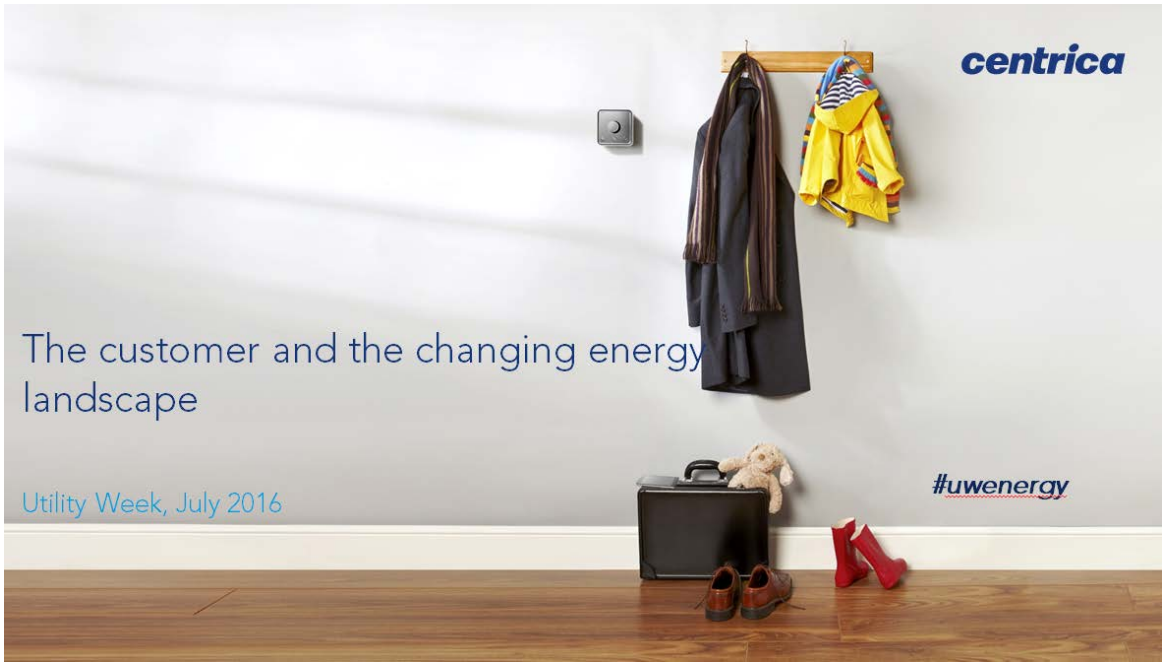
Utility Week Energy Summit 2016
5th July 2016
The Customer and the Changing Energy Landscape
Iain Conn, CEO, Centrica



Good morning everyone. It is a pleasure to be speaking to you today.

I prepared this speech in the expectation and the hope that we would still be in the European Union when I delivered it. I suppose technically we still are, but we are in the departure lounge.

Of course I am disappointed. I predicted that a "leave" vote would create a lot of uncertainty for the economy and the transition would be long and messy.

Although only ten days have passed, so far that has been borne out. But that is democracy. Sometimes you are on the losing side and the task for our business and all our businesses is to make the best of the situation as it presents itself.

Britain's position in the EU is a good example of a big question, leading to choices and a "fork in the road". That is essentially what I want to discuss today.
The "fork in the road" which I believe is upon us in the energy market is the irreversible shift of significant market power towards the customer.

Changes in customer trends and demand can be hard to predict. I have spent over 30 years in the energy industry, and 29 of those were at BP where for the last 7 years I was responsible for all BP's customer facing businesses and the regions of Europe, Asia and Southern Africa. In all that time at BP, including running E&P businesses, it was apparent that oil and gas companies are really good at "counting barrels" but rather weak at "counting demand".

Supplying energy and services since 1812

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The company which is now Centrica dates back to 1812. The supply of energy and services to customers is an unbroken thread from that time to the company we run today. Today we have 28 million customer accounts across the UK, Ireland, the US and Canada.

We supplied some of the earliest gas meters to Downing Street, and we still light and maintain London's gas lamps.

At the very moment of the formation of the company the Luddites were breaking machinery in defiance of technological change.

Lord Byron was making his maiden speech in the House of Lords in support of them.

The world has changed a lot since then.

My speech today is based on the idea that many of the irresistible trends in our industry are all gradually but surely putting the customer in charge.

A power shift is taking place. Resisting it is futile but actually I think we should welcome it and this morning I want to say why and to outline how Centrica is responding to these changes.

The energy mix continues to evolve

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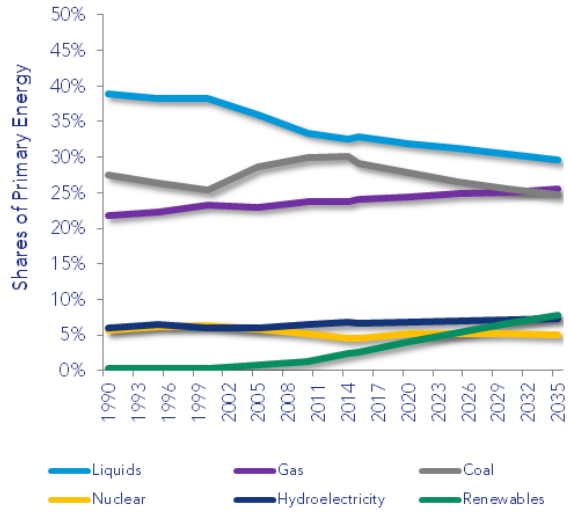

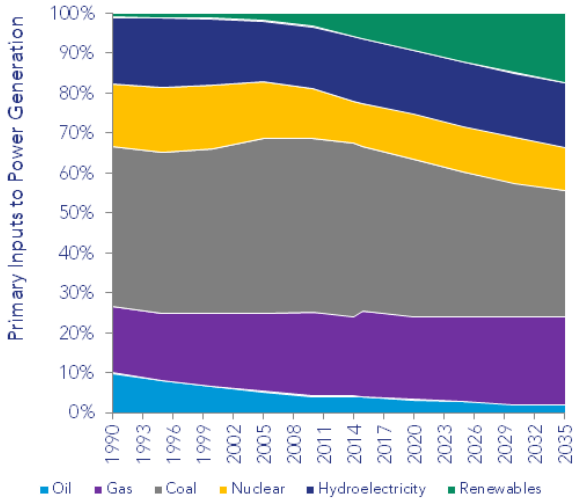

Sources: BP World Energy Outlook 2016

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Let me start by setting out the context in which we operate.

I don't think it is controversial to say that, for the foreseeable future, globally we will remain heavily reliant on hydrocarbons. By 2035 they are still expected to account for about 80 per cent of primary energy supply.

Within that 80 per cent figure, the fossil fuels – coal, oil and gas – will have a roughly equal share of between 25 to 30 per cent each. Hydro and Nuclear will be broadly flat relative to today, and renewables and natural gas will have the highest growth as coal and oil decline.
Over the last 25 years, the energy mix has been changing in response to energy policy around the world.

Three phases of energy policy

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Policy has come in three phases. After the 1992 Earth Summit in Rio there was an imperative to find a strong and consistent response to global warming. That sounded noble and nobody really disagreed. It wasn't clear how to make it practical, though.

We all came out of Rio knowing the right thing to say. I am not sure many of us knew the right thing to do.

Then, over the last decade we have been in an experimental phase. We have made great strides in energy efficiency. There have been subsidies for all types of renewable energy. Global renewable capacity has grown by 76% over the past decade, and energy consumption and GDP growth have begun to diverge, as have energy use and CO2 production.

But a lot of new policies and regulations, like the European Emissions Trading System, have only been partially successful.

Carbon reduction has been mandated in the European Union but there has been a cost. Average retail energy prices are more than double those in the United States, where equivalent progress on decarbonisation has been driven by the market and by the revolution caused by cheap, abundant natural gas.

We have, however, learned a lot about what does and does not work. To balance demand and security of energy, its affordability, and climate change there are clear pathways we now need to pursue. After all the experimentation, the next phase is about pragmatic action in delivery of these pathways.

For power and heat we must pursue energy efficiency, natural gas, nuclear where it is supported, and the steady growth of cost-competitive renewables - something which is now within sight.
It is very important to emphasize that natural gas will play a crucial transition role. It is cleaner than coal, cheaper than nuclear and more reliable than intermittent renewables. As we phase out unmitigated coal – and we must - natural gas is the only source with the scale and capital efficiency to take the strain.

In transport it starts again with efficiency through smaller, boosted internal combustion engines. Hybridisation and certain biofuels are next, and ultimately we will see material penetration of electric vehicles - probably first for performance and to combat low level pollution, and latterly to address transport's contribution to climate change as the electricity grid is decarbonised.

That is where we are in terms of evolution of energy policy. But the main point I want to get across today is that increasingly it is not governments and regulators who are in charge. It is not, alas, company chief executives. It is the customer.

This is especially true in terms of heat and power, and these are the most material energy demand sectors.

Power shifting towards the customer

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There are three drivers contributing to the customer revolution.

The first is about what customers want and what they are already able to do.

They want affordable energy, meaningful choice, the control which allows them to use less energy. Increasingly too they want to have a lower carbon footprint.

Power moves to consumers when they have choice and the choice has never been greater. In the UK, there are now 48 domestic energy suppliers and price comparison websites are an everyday tool of choice for millions of energy customers.

Beyond selecting an energy supplier, customers are taking active control of their energy use. Centrica has the largest installed base of connected thermostats in the UK.

We are now selling on average about 4,000 connected products every week under the HIVE brand. To date, we have sold over 550,000 smart thermostats in the UK and North America. 98 per cent of customers with active heating under the HIVE brand feel more in control of their heating and 60 per cent use HIVE to reduce their energy use and save money.

The second driver is advances in cost-competitive energy generation and storage technologies at the point of use.

In 2015, it was estimated 4 million households globally were equipped with domestic solar systems. By 2020 this is expected to grow to 25 million homes.

In the UK alone, Industrial and Commercial CHP capacity has grown at 2.3 per cent per annum since 2000 to 6.1GW, while small scale Micro-CHP capacity has grown by over 5 times since 2010 to 0.7 GW.

Electricity storage is set to become an established and affordable technology. Lithium-ion battery prices fell by over 65% between 2010 and 2015.

The viability and use of distributed generation and storage technologies by households and businesses is going to grow. Power-by-the-hour energy pricing will make a major difference.

This trend is partly driven by the fact that, across the world, in the residential and the business markets, people want to be responsible about their carbon footprint. They also benefit by being more efficient. Conventional methods of producing usable heat and power separately has a typical combined efficiency of roughly 45%, CHP systems can operate at efficiencies of 60–80 per cent or more. It is possible that distributed generation, which only has a 2 per cent market share globally today, could see its share increase to 12 per cent by 2030.

Distributed energy technology is shifting power downwards and, in alliance with big data, it is doing that quicker and more radically than ever before.

Data, and the insight which can be derived from it, is the third major driver.

Customers want to know how and when they are using their energy, and how they can make changes to behaviour and technology adoption to improve on their patterns of use.

By 2020 there will be 200 million smart electricity meters and 45 million smart gas meters in the European Union alone. With the right data customers gain more control over their energy use. With that control, and with increased choice in the market, comes market power.

For example, the idea of “behavioural demand response” is already becoming a reality in the US. It is a clever melding of usable data and insight, energy usage reports, demand response programmes and time-of-use pricing. Over 9 million US domestic consumers participated in demand response programs in 2014 creating energy savings of 1.4 TWh and customer incentives of $1.2 billion.

We have a scheme through our North American business, Direct Energy, which allows customers to earn bill credits for adjusting their consumption during peak weather and demand periods. This would be impossible without the data.

When combined, these three drivers are creating a powerful “virtuous cycle”. The innovation is making energy more efficient, pricing more competitive and improving customer service and transparency.

The customer is becoming increasingly in control, and through market deregulation the numbers of competitors vying to satisfy those customers is on the increase. This can only be good for the market, for the customer, and for accelerating innovation and technological development.

These changes will however precipitate a number of challenges, which need to be addressed.

For example, as the energy system becomes more decentralised, and we move away from a system that is built around a centralised grid, in OECD countries what is the role of the system operator? Who will pay for the grid?

In non-OECD countries, will they choose the known route of developing a centralised grid, investing in laying cables, building pylons and running big power stations or will they choose to develop decentralised systems? Will they leap-frog all that huge up-front cost and choose a non-grid model?

Which technologies at the point of use will become most effective and adopted in the marketplace? It may ultimately be solar and much more effective battery storage, but for space heating in the interim what will people choose?

How do we cope with the extraordinary data revolution? What will it enable us to do? What will machine learning and artificial intelligence enable in energy system optimisation? How do we handle such large quantities of data safely, securely and responsibly?

And at the same time as we make such major transitions, we have to make sure that the lights stay on, and that customers receive energy at an affordable price.

Five major changes

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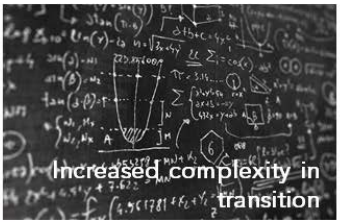

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I don't intend to try a comprehensive answer to all these big questions today but as power shifts towards the customer, and energy systems become more distributed, there are five serious consequences that we need to consider. Two of them are very welcome and three of them present us with challenges.

The first desirable change is that we have the prospect of accelerating access to energy for millions of people in developing countries without the colossal infrastructure costs of building a country wide central grid.

The parallel here with the telecoms industry, in which mobiles have enabled developing countries to become substantially connected without fixed lines, is clear.

The second welcome shift is that because choice and technology will increase efficiency and a reduced carbon footprint for the customer, energy use and GDP growth will continue to diverge. So will CO2 emissions and energy use.

Then there are also three near-term consequences which are more problematic.

There will be a fundamental shift in where energy is generated and managed. Where a shift towards distributed generation occurs, the separation in location between generation and consumption will disappear.

As a result, there will be huge complexity in managing the grid system under the pressure of change. It is even possible that distributed energy may increase to the point where it will challenge the economics of the central grid and generating system. The grid could eventually become back-up, swapping places with the traditional role hitherto assumed by distributed generation. This would be a huge, historic shift.

Finally, a new competitive landscape is emerging in energy markets. There are already new value chains, new business models, new competitors becoming established.

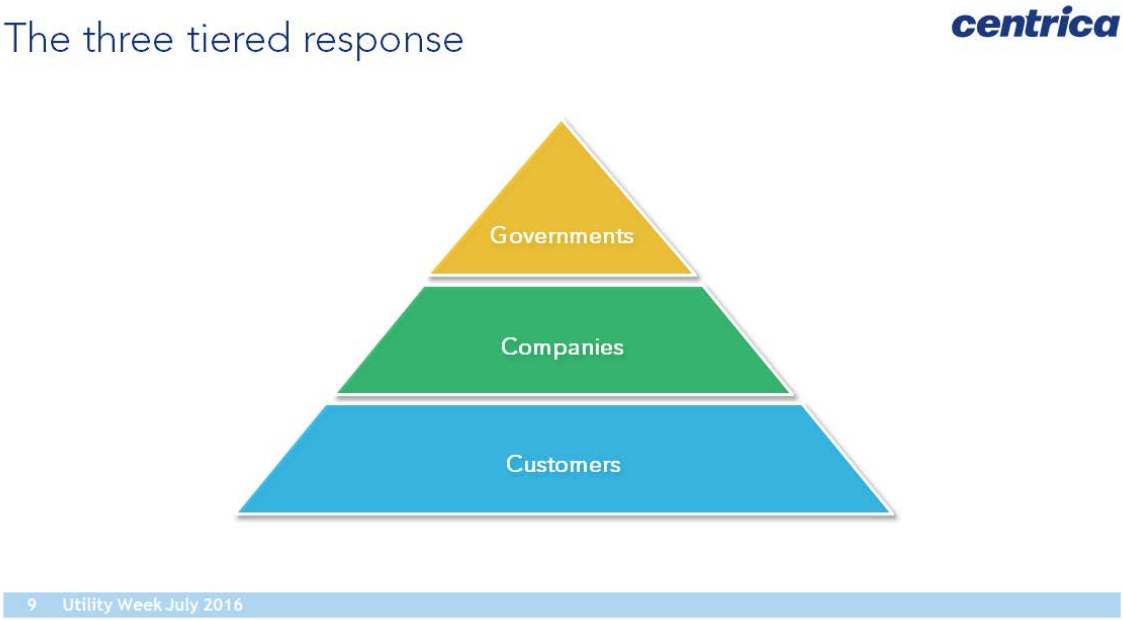
Google has launched a WiFi router which could double as a smart home hub. Amazon has stepped up its efforts in the Connected Home market, partnering with appliance makers such as GE, and Samsung have announced plans to equip their TV's with smart home hubs - connecting all the smart devices within the home.

So, let me try to summarise my case before I move on to what I think we should do in response.

I think there are two irreversible trends. Energy systems are becoming more distributed and power is shifting downstream to the customer. The customer is becoming a price setter rather than a price taker.

I welcome these shifts. They will result in more innovation, more efficiency, more competitiveness and an accelerated pathway to a lower carbon future.

This leads to an important and pragmatic question - do we just let markets evolve us to the right destination, or do we shape and improve the journey? What is the best way of getting from where we are now to where we need to be?



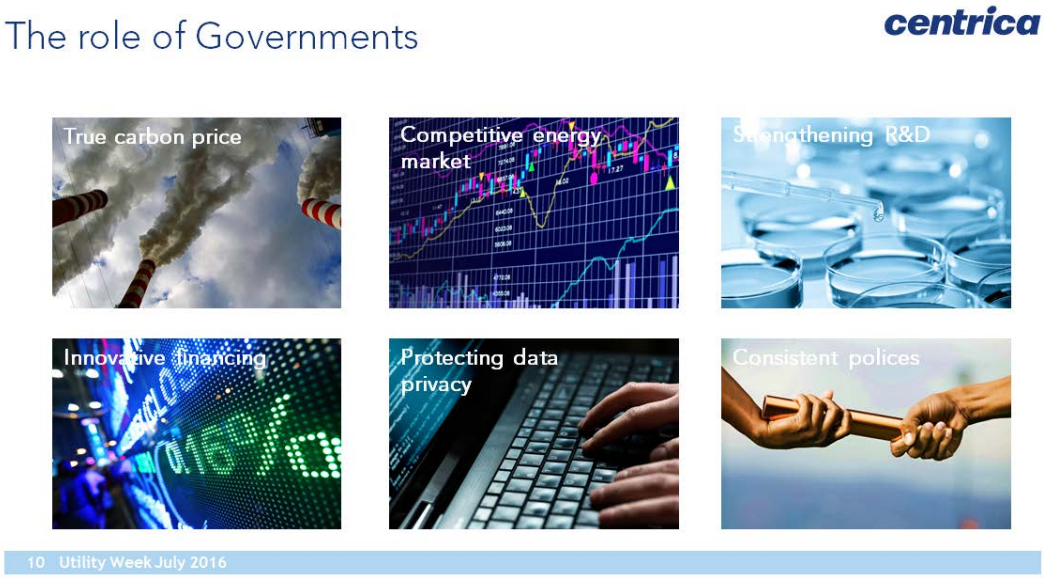
When you think how you respond to trends like these I think it is helpful to break the question down. I have broken it down into the three levels at which a response is needed.

First, even though the customer is becoming king, there is still a government at court. Policy will always set the terms under which we operate and that is still true.

Second, there is the response at the level of the company. What should we in this room do to respond? What are we at Centrica doing?

Then third, I want to end where I began by reiterating the power that now lies in the hands of customers as a result of the trends I have outlined today.

Let’s take government first.



A key priority of governments should be to enable a true economy-wide price of carbon. In the EU the ETS does send out a signal but not a strong one. The many inferred prices in each nation need to be brought together and, although there is a proposal on the table from the European Commission, it does not go far enough.

Governments need to act to increase the efficiency and effectiveness of the energy market. In Europe, energy costs are twice those of the US. More diversity of supply and import routes, and increased access and competition are the ways to bring the cost down and to increase energy security into the bargain.
How the UK hopes to influence this from outside is a particular question, but I will avoid returning to dwell on that conundrum.

Governments need to encourage research into new energy technologies. Through its Horizon 2020 programme, the EU can encourage large-scale pilot projects across Europe in areas such as battery storage. In line with COP 21 the energy R&D budget needs to be scaled up and focused.
That is, in turn, going to require innovative financing mechanisms, perhaps on the model of the European Fund for Strategic Investment.

There is also a task for governments in protecting data privacy without stifling enterprise. We need regulation of data management without regulation of the insight competitors develop from analysing data.

Governments must also encourage education and awareness into energy challenges, and what is already available for citizens and businesses to adopt.

Finally, governments must recognise the need for consistency of policy, if they want investment behind it.

After Government, the second tier is the corporate tier.

There is a lot that a company can do to respond to the changes I have set out. Let me say a few things about how Centrica is responding.

We have devised a strategy that we believe is directed straight towards the change in the world that I am describing.

We are an energy and services company that is increasingly focused on the changing needs of the customer. Our resources are shifting, from the E&P side towards customer-facing businesses.

For both businesses and residential consumers we are focused on growing our offers in the areas of energy supply, services, distributed energy and power, the connected home, and energy marketing and trading.

One of the great advantages we have at Centrica is that we are close to the action. Because we have a team of 12,000 engineers and technicians on the ground in all our geographies, we operate at the point where physical meets digital.

These engineers and technicians are customer-intimate and trusted to enter homes and businesses to solve problems as close to our customers as you can get.

We are also developing and expanding the technology portfolio we have available to offer our customers. In the connected home, last year we bought AlertMe and have developed a proprietary platform from which to offer multiple products such as remote energy management, security and remote monitoring capabilities. We have some further exciting products in the pipeline.

We have around 1 million smart meter customers in the UK. Each one receives our unique smart energy report, 'my energy', providing insights and enabling them to adjust their energy use.

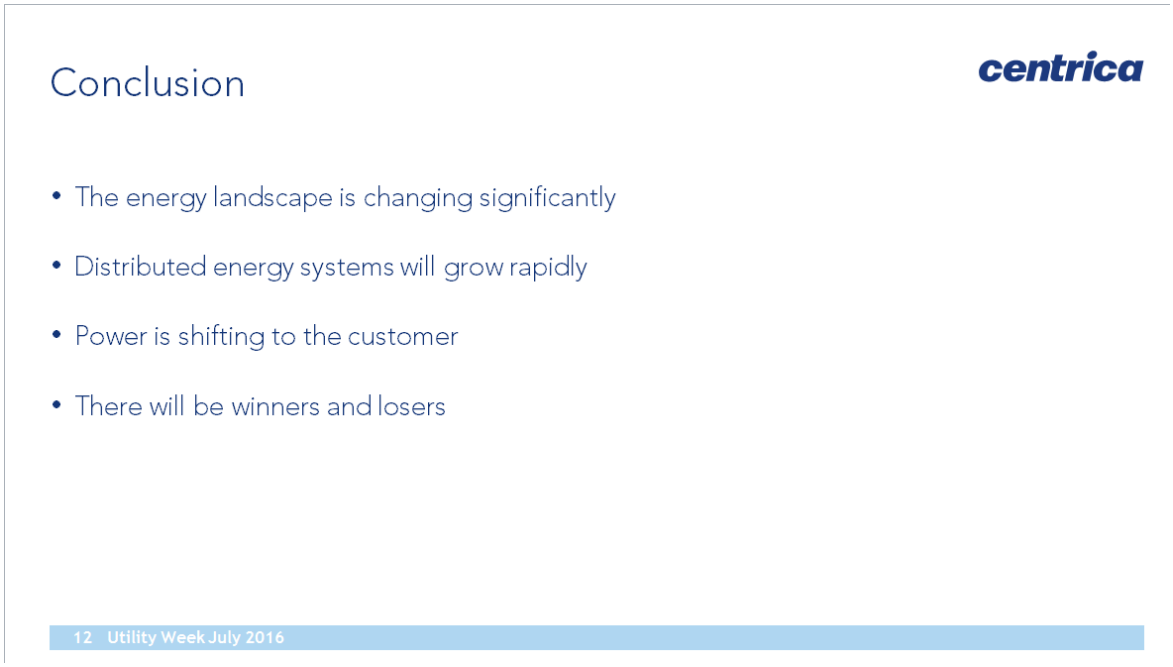
This year we launched the "connected boiler" under the "Boiler IQ" brand. It uses pioneering remote diagnostics and predictive fault detection to alert customers and ourselves ahead of a critical fault or failure. It's a major step forward.

In distributed energy, we have the capability to offer instant disaggregation and analytics of client energy use and recently we have agreed to buy two companies active in the fields of design, installation and maintenance of Combined Heat and Power systems and in remote management of distributed intermittent power generation assets.

I really believe that "where physical meets digital" will become a fundamentally important part of the future of our industry.
And that is where Centrica is placed. We are one of the pioneers of the Connected Home. We are a leader in home services and warranties. We have the experience and the expertise in energy management systems to enable customers to manage, optimise and dispatch their energy.

We are already known as a customer-facing company. That will not change in the future. That is where the power in the market increasingly lies - with the customer - and that is where we intend to focus our efforts.

At Centrica we are doing everything we can to ensure we are well placed for the major changes in the energy system, and clearly we are witnessing significant change.



I therefore want to end where I began.

I said that governments and companies are two of the three tiers of power.

Overwhelmingly the most important is the third tier, the customer, to whom the power is flowing.

Competitive rivalry, the demanding consumer, technology at the point of use, information in the market place, increased data and knowledge……it is all granting power to the customer.
I think we need to recognise that we are living through a big moment in the history of the industry.

The landscape for energy has changed more in Britain than in most other countries.

For more than fifty years the market had been structurally stable. There was an established central operation organised around a grid. It relied on fossil fuels and there was a regulatory regime which had not changed in a long while. We introduced more competition, less public ownership and devised a regulated market which has worked to increase investment and ensure supply.

More recently the link between energy supply and traditional suppliers has been broken. We have not chosen to protect national champions and have encouraged a vibrant and competitive market.

As in many markets, the customer is now equipped with more choice of supplier, new technologies, new insights and more offers than ever before. Increasingly what they want is more control, more insight, more efficiency, and more on-line. More power will inevitably pass to the customer.

These are the trends that define our present and condition our future.

Governments will continue to set the rules and boundaries. Businesses must shape offers and solutions within those boundaries. Customers must demand more of businesses and citizens of their Government.

People often say that business, especially big business, wields a lot of power. In society today, people worry about “big business”.

I know what they mean but I do not think that is justified because, when markets work as they should, the power of the customer forces regulation in the right direction and acts as a discipline on companies.
We are in the early stages of the customer revolution in our industry. Perhaps not everyone has yet realised that is where we are heading. But that is our destination and I think it is an exciting prospect.

There will be winners and losers in this change. I have every intention that Centrica will be in the vanguard of shaping this future, with the customer at the heart of what we do and what we offer.

Thank you.

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