Future of mobility: the role for high-power charging

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Good morning and welcome – thank you for coming.

I am going to start by making three assumptions about why we are here:

- We all see the importance of electric vehicles in the future of transport.
- But we also all know that there are barriers and obstacles to the widespread adoption of EVs.
- And we all believe that high-power charging will be instrumental in overcoming those barriers and enabling the growth of EVs.

At BP, we hope that by hosting this event – along with our partners at CharIN – we can bring together some of the many stakeholders in this area and help advance this agenda.

I am pleased to welcome voices from right across the industry. From energy suppliers to infrastructure providers, from vehicle manufacturers to customer representatives – welcome.

I hope today provides a chance for us to engage in some frank and open conversations – and perhaps help unlock the great potential of high-power charging.

BP's role in the debate

Some of you may wonder about BP's interest in this discussion. After all, many of you know us mainly as a provider of fuels for internal combustion engines. That is true – it has been a big part of our business model for more than 100 years.

But our interest is, and has always been, broader than that. It is about providing mobility solutions for whatever vehicles our customers choose to drive.

The rise of EVs is a new chapter in the constantly evolving story of human mobility.

Dual challenge

It's also part of a bigger story – one about global energy. The world needs more energy with much fewer emissions. That is the dual challenge that frames everything we do at BP.

And BP is in action on many fronts.

We're reducing emissions in our operations; we're improving our products and services so customers can lower their carbon footprint; and creating new low carbon businesses, while expanding existing ones.

And we backed up this initiative with ambitious, near-term emission-reductions goals – and have recently announced good progress against those.

To meet the dual challenge, emissions in transport need to come down.

It accounts for around a quarter of global greenhouse gas emissions. And here in the UK, the transport sector is the biggest contributor to emissions.

Increasing electrification is one of the many avenues we need to pursue to make that happen, particularly for lighter vehicles.

Of course, electrification will not be a silver bullet. BP projections, based on current trends with EVs expanding rapidly, suggest that the vast majority of vehicles on the road in 20 years' time will still have conventional engines. Even if EVs penetrate the market at a much faster rate, there will still be significant numbers of conventional vehicles in use.

So, to reduce transport emissions, it is really important to consider conventional vehicles, as well as EVs. That means producing cleaner and better fuels and lubricants, continuing to increase the use of biofuels, and improving the efficiency of internal combustion engines.

That efficiency point is especially important. For example, a 5% improvement in the average efficiency of new internal combustion engine vehicles registered in the EU would lead to an annual reduction in CO_2 emissions of 1.8 million tonnes.

That's the equivalent of replacing one million new ICE vehicle car sales with battery operated EVs.

And let's remember that there are lorries, planes and ships that are much harder to electrify.

But today is about EVs – and electrification certainly has a role to play in advancing the energy transition. As well as driving down CO_2 emissions, it can play a big role in improving air quality and bring benefits to consumers.

Of course, this also presents exciting opportunities for businesses like BP and we see possibilities to expand and complement our business offerings.

I believe the key for BP – and anyone else looking to expand EVs – is to build our EV offering around convenience.

Remember that the consumers buying ICE vehicles today are the same people who might consider buying an EV in the future.

The experience of owning and running an EV – and the way their cars slot into their daily lives – has to be as good as today, if not better, and more convenient.

High-power charging

Right now, that is not the case. As things stand, there are many obstacles to the widespread consumer adoption of EVs.

One significant potential barrier to society fully embracing EVs is consumer adoption.

Cost, range, queues and access to reliable charging points on the move still unsettle people. We can't just assume we can extrapolate the consumer behaviour from early adopters into the general public.

As an example, 60% of residents here in London lack convenient access to at-home charging.

That is why, at BP, we see an especially important role for building a national network of high-power charging – one which would closely replicate the current fuelling experience. We think this will give people confidence about the ability to travel greater distances, without worrying about whether they will run out of power.

Such a network could play a powerful role in bringing EVs to more people and ensuring these vehicles can serve a wider audience:

- It would suit individuals who don't have off-street parking.
- Fleet operators who need to charge multiple vehicles and cannot afford to take them off the road for long periods of time.
- And it could reduce the prices of EVs by enabling consumers to buy cars with smaller batteries that charge faster. Batteries represent one third to 40% of EVs cost.

All this plays into the concept of convenience that I mentioned earlier.

Another important consideration is the network infrastructure and the economic impact on countries and cities of providing an electricity network to support increased consumer penetration.

The issues here stem from the limitations on the amount of power that can be withdrawn from the electricity network. That can differ at various points across the grid, from household through distribution networks to the transmission system.

As we try to solve these limitations, consideration should be given to the most cost efficient and least disruptive ways of delivering the required electricity to the scaled-up EV parc.

We believe this could be delivered through a network of high-power charges, on and off forecourts. Such a network would be both a convenient and cost-effective way for people to go around their daily lives, as they do today.

At BP, we are already working towards this goal…

Last year, we acquired Chargemaster, the UK's largest electric vehicle charging company, and today we can confirm we will begin rolling out ultra-fast chargers at BP forecourts from July. We plan to install more than 400 ultra-fast chargers between now and 2021, and in this year alone we will introduce 100 charge points at over 50 sites.

Offering ultra-fast charging is critical to support the latest electric cars and the new models in development, many of which will charge at 150kW as standard.

Ultra-fast charging is well-suited to the convenience already offered at our forecourts, and we could expect to see charging times of around 10 minutes with the latest electric vehicles.

We are pioneering the installation of these type of charging points on forecourts and we have accelerated our investment in developing this infrastructure.

We are in action globally also, scaling up our offer in China and Germany along with UK as the leading markets. In China we are offering 60kW charging which is one of the fastest in the market. And in Germany, we will soon start piloting ultra-fast chargers at some of our key retail sites.

And we are working to advance the accessibility of high-power charging through investing and partnering:

- We invested in Storedot, a leading developer of ultra-fast charging batteries.
- As well as FreeWire, a manufacturer of mobile rapid charging systems for electric vehicles.

But as we know, this is a fast-evolving area where we all have much to learn and improve, so we are collaborating with OEMs and technology companies on both on- and off-car technology, such as battery and thermal management, to make ultra-fast charging a 'mass market' product.

Themes

But building such a network cannot be done overnight and there are many questions we need to answer. I believe these fall into three main groups:

1. Consumers

The first of these, as I just touched on, is the consumer experience.

From our consumer research we know many customers are less comfortable engaging with EV's compared to internal combustion engine vehicles

How can we make the consumer experience more convenient?

- Is it focussing on reducing the charge-time and increasing power?
- Is it about analysing where best to locate charge-points?
- Is it about building integrated offers that allow consumers to achieve multiple goals in one trip?

2. Technologies

The second question relates to technologies and how we develop the right technology.

We need to ensure vehicles are compatible with high-power charging.

We need to develop high powered charging battery cell technologies -- including smaller, lower cost batteries that can take a more frequent, ultra-fast charge.

And once we solve cell technology challenge, we will next need to turn to the challenge of heat dissipation.

All the while, we must balance these issues with practical considerations like safety, cost and space, allowing us to gain trust from consumers.

There is a role for many of the stakeholders involved to work together. What conversations do government, power companies, infrastructure providers, car OEMs, and grid stakeholders need to have to make this a reality?

3. Infrastructure

The third question is about infrastructure:

To deliver a high-power charging network, BP believes there is a need to invest in the infrastructure to enable it.

Could this be accelerated by achieving high power charging technology for the mass market?

At what speed should the network be developed?

Conclusion

Those are just some of the many questions in need of answers.

We probably all recognise that we can make better and quicker progress by working together.

So I am delighted that we have such a diverse and knowledgeable group here today.

I am grateful to Jesse Norman for joining us. Part of his brief as Minister of Transport concerns the Future of Mobility, so his input is invaluable. Thank you, Minister, for your time and interest.

I am also grateful to Michael Keller, Claas Bracklo and the CharIN team for helping us put on today's event.

Let me also introduce John Abbot. It is not every day you see BP and Shell working closely together, but frankly, this agenda requires it.

And thank you again to all of you for joining us and taking part.

As I mentioned at the start, the reason we're all here is the world needs more energy but with fewer emissions, and because we believe high-power charging is essential for electrification to scale up, by providing convenience to consumers and optimising economic resources.

But perhaps also because we share a desire to overcome the barriers that stand in our way.

Up until now many of us have mainly been working on our own to find solutions.

But the only way we can make this work is if we collaborate and work together.

We all have something to offer and we all have experiences to share.

So I look forward to a day of discussion, debate, perhaps some disagreement – and hopefully some answers.

Thank you.