

# What's happening with Batteries?

Ray Noble – APSE Energy Associate



# Which Battery Technology and Why?

- Developed by the electronics industry for Mobiles and laptops
- Small batteries with very high packing density
- Lithium Ion batteries are mass produced for these devices and this drives down cost rapidly
- Unlikely other battery technologies will be unable to compete unless manufactured in similar large numbers
- Lithium Ion battery technology now being used by ALL the motor industry
- More global manufacturing drives down prices



# Batteries for EV's

- Investment in new battery plants is £B's
- Big brands, LG, Samsung, Panasonic and BYD
- China is now the largest market for EV's and has the largest battery manufacturing plants in the World and are about to flood Europe with their EV's
- Rapid advancements in technology and new innovation means we can only look forward with certainty for a relatively short term e.g around 5 years
- Next technology - Solid State Batteries in development, Porsche, Toyota, VW & Dyson – reason being they can handle a 5 minute superfast charge rather than a 30 minute fast charge – unlikely to be necessary for all EV's



# EV's are a solution to City Pollution

- Deaths from pollution now published and is a “driver” for change
- Transport is the biggest polluter
- Clean cities globally banning dirty vehicles or imposing extra tax
- Diesel cars already are no longer economic to make – falling sales – WLTP rules changing the claims
- New EV's have range of 200 to 350miles with a target of 500 miles - range anxiety will be dead!
- EV's arriving in bulk in 2020, new players including Apple and Chinese
- Other clean city transport coming to the market – taxi's, delivery vans, etc





# "Clean" City Vehicles

- No Diesel in Cities soon to reduce pollution
- Petrol will be next, probably by 2025
- All sizes of electric delivery vehicles are being developed, many on sale and starting mass production
- All food and parcel deliveries will be first
- Even heavy transport can be and will be battery electric



apse energy

# Public Transport

- All moving to battery electric
- Hydrogen fuel cell was thought to be the future solution
- But battery technology is now a lower cost solution and quicker to deploy
- Industry gearing up fast with new products hitting the market
- Development cost of battery electric vehicles significantly lower than petrol / diesel powered products with a much faster certification process
- This rapid change produces Global opportunities for the UK



# Electricity for charging

- Electricity for charging EV's needs to be “clean” – Government departments need to join up strategies
- Growth in Solar and Wind is now Globally the lowest cost electricity generator
- Most EV's will be charged at home or on-street parking or in car parks – 90%+
- Lamp Posts will be “on street” EV Chargers
- Fast chargers only required generally for long journeys
- Smart technology will avoid overloading the grid but also solve other grid issues
- V2G solutions developing fast and provides other financial opportunities





# Battery in House and Car

- Nissan / Audi / Mercedes, etc offering a home storage system that also talk to the EV and powered by Solar / Grid
- Average mileage per day is 20 miles – massive spare capacity in car battery
- Time of use "Smart" metering for domestics on the horizon
- All batteries can be remotely controlled
- Using Storage avoids need for expensive standby generation or some new power stations and some grid upgrades





# Regulations are to change

- Buildings will be generators
- New developments will need to calculate the impact on the grid – Solar, storage and V2G will change dynamics of the distribution grid
- Buildings will be all electric – Gas is not a secure supply and a cause of pollution – ween off by 2030
- Solar canopies on car parks, linked to EV charging, will be common place
- Planning and Building Regulations changes will be “drivers”
- “Free” domestic batteries on their way!



# Future energy provision

- The future energy mix will be different – Coal is “dead” Gas next
- Battery storage is a “game changer” for both transport and buildings
- Yes we still need grid power but of a reduced capacity and better balanced as a result of batteries
- The end of diesel and then petrol will come very fast – hence BP / Shell investing in renewables and EV charging networks
- Energy companies are becoming service industries and not power producers – EoN, Centrica, etc
- The transformation will be rapid and with casualties – be ready..





Thank You – Questions?

Ray Noble MBE

[rn.solarbipv@gmail.com](mailto:rn.solarbipv@gmail.com)

