

# Electric Vehicles

## Council Fleet, Car Park Provision and Charging Infrastructure

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# The UK Problem

- Pollution from Transport and Buildings is killing people or making them ill
- Shortage of Energy Generation caused by lack of previous investment
- Complete new strategy required for both Transport and Buildings

# Government moving to Electric

- Electric is the future for all aspects of Building Energy and Transport
- Environmental rules have killed Coal as an electricity generator
- Need to ween ourselves off Gas – not a secure supply after 2030
- Nuclear is proving to be expensive
- Renewables now making a major impact, many being connected at the distribution end of the grid
- Battery Storage heading to be commercially viable
- Solar, Wind and Storage to be the cheapest form of generation and provide security of supply



# Technology has the answer

- Electronics Industry lead development of batteries for Phones and Computers
- Lithium Ion provided small but high capacity batteries
- Motor Industry now using and developing the same technology to power Transport
- This same technology is now also a focus of the power industry, solves grid issues and shortage of generation
- All based, at present, around Lithium Ion battery technology



# Batteries are a Global Industry

- Massive investment in mass production of Lithium Ion batteries, along with technology improvements, to supply the Global electronics and motor industry
- VW alone placing 5 year supply contracts valued around £20B
- As a result battery prices predicted to fall by a further 50% by 2020 and continue to fall to 2030
- Other battery technology being researched e.g Solid State Batteries ( Porsche, Toyota & Dyson) with potential full charging times around 5 minutes
- Difficult to say where it will be beyond 5 years



# Battery / Hydrogen

- Nissan Leaf was first to mass produce an EV, short range and created the term “range anxiety”
- Tesla delivered a 260mile range and supercar performance, changing image of the EV
- Now all Car Manufacturers are introducing EV’s across their full range by 2019 – 2021 with 300mile+ range
- Dieselgate has caused the death of diesel and raised awareness of pollution issues
- Hydrogen Fuel Cell still being developed but battery technology now thought to be the ongoing answer



# EV's are solutions to Pollution

- Ranges of 200 to 350miles are now possible (range anxiety will be dead!)- 500mile being a target by industry
- Charging an EV every time it p[arks will no longer be necessary
- Some talking of the end of new fossil fuel car sales by 2025
- Full charging of EV's now 30mins but puts stress on the grid – grid needs reinforcement or further storage
- All city / delivery vans will soon all be electric e.g Amazon, Tesco, Council vehicles, etc



# "Clean" delivery Vehicles

- No Diesel in Cities soon to reduce pollution
- All sizes of Electric delivery vehicles are being developed, many on pre sale test prior to mass production
- Even articulated trucks can be powered by batteries e.g Tesla Semi
- Council vehicles will need be electric
- Speak with your suppliers



# Emissions and Pollution solutions

- Electric buses – even double decker’s are now running on battery power – not thought possible 2 years ago
- Hydrogen Fuel Cell buses may not be the answer – infrastructure being expensive to install.
- Hydrogen a bi-product of the fossil fuel industry!

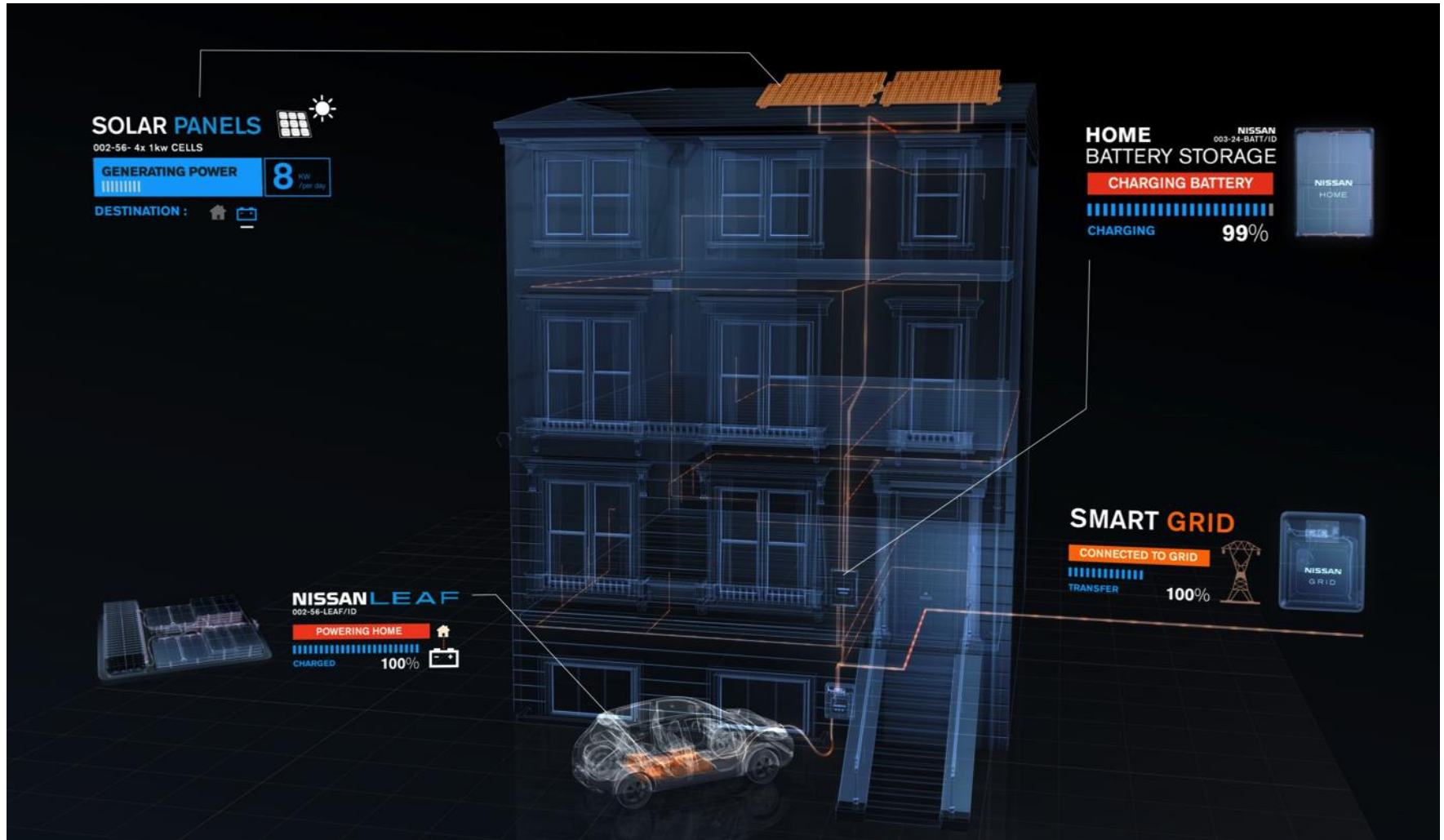


# Clean Fuel

- EV's are only “clean” with clean fuel
- Increased supply of “clean” Solar and Wind electricity is essential (on land and Buildings)
- EV's will be charged at home or locally (Car Parks, Supermarkets & Offices) with long runs topped up at Service Areas
- Grid will not cope with fast chargers unless Storage used as an interface
- Solar canopies over surface parking linked with Storage providing “clean” electricity
- Need to increase charging network



# Smart technology



# Provision for charging EV's

- New building regulations on their way
- Houses should provide EV charging points
- Retrofit program should be undertaken on existing houses with garages / drives
- Buildings should provide EV charging points in their car parks
- Fast chargers should be provided at Service areas with sources of “clean” energy locally
- Councils could provide the charging infrastructure and earn long term revenue



# Time of use tariffs & Smart meters are coming

- Time of use tariffs are going to be standard across all users, even for domestic
- 4.00pm to 8.00pm is the highest charges (Red Zone)
- Using electric or charging EV's at this time should be avoided (smart controls)
- Storage provides a way of moving electricity and avoiding Red Zone costs
- Supply of electricity is getting smarter
- Smart technology will allow batteries to be charged for free when excessive electricity on the grid – increasingly likely with more renewables on the grid
- Speed of change is rapid



# Start working out the opportunities

## Cornwall's energy future

We will create an energy future that is cleaner and more affordable, retaining the social and economic benefits in Cornwall.



CORNWALL & ISLES OF SCILLY  
LOCAL ENTERPRISE PARTNERSHIP



### Cornwall has a wealth of renewable energy resources



Best wind resource in Western Europe



Best solar resource in mainland UK



Best geothermal resource in the UK



Huge potential for offshore renewables



32% of our electricity demand met by renewables in 2016

### We will exploit this unique opportunity to...

#### Tackle energy inequalities



Making our homes, businesses and transport greener and more affordable.

#### Take local control of our energy



Generating, owning and using our energy locally to reduce bills.

#### Become a world-leading green economy



Retaining benefits in our communities and securing year round jobs.

### We will create an energy future that is cleaner and more affordable, retaining benefits in Cornwall

#### 2030 outcomes



Reduce fuel poverty to 5%



50% locally owned generation



100% electricity demand met by renewables



20% reduction in fuel bills



30% of energy spend retained in the Cornish economy



4000 green jobs

### but Cornwall is not benefiting and we currently spend £1bn a year on our energy



98% of our energy spend leaves the local economy



People are struggling to heat their homes



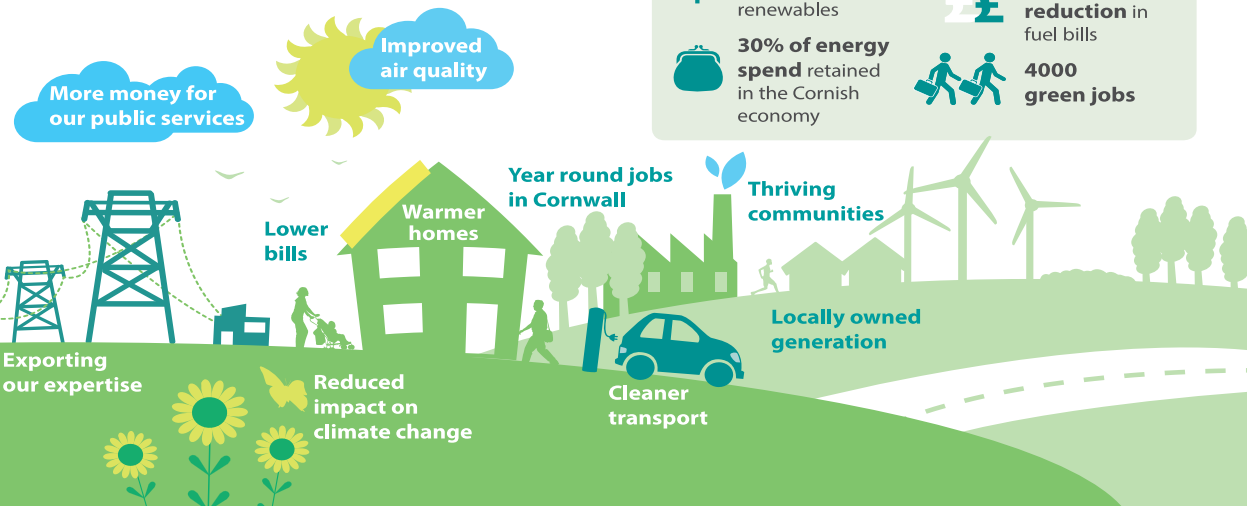
Public sector budgets and funding are reducing



Our economy is under performing



Our infrastructure is outdated



Thank You

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