Volume 35 Number ( December 2018 Reports from the Committee on Climate Change House of Lords Annual Dinner sponsored by Arup & Cadent IPCC Special Report 1.5°C – a short summary Cryodiesel: Low carbon transport – Dolphin N2

# ENERGY FOCUS



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#### The All-Party Parliamentary Group for Energy Studies

Established in 1980, the Parliamentary Group for Energy Studies remains the only All-Party Parliamentary Group representing the entire energy industry. We champion cross-sector energy research and development. The Group's membership is comprised of over 100 parliamentarians, 100 associate bodies from the private, public and charity sectors and a range of individual members.

Published three times a year, Energy Focus records the Group's activities, tracks key energy and environmental developments through parliament, presents articles from leading industry contributors and provides insight into the views and interests of both parliamentarians and officials.

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## Contents

<b>Foreword</b> Ian Liddell-Grainger MP, Chairman of PGES	3
<b>CCC Reports</b> Chris Stark - CEO of the Committee on Climate Change	4
<b>House of Lords Annual Dinner</b> 30 <sup>th</sup> October 2018 - Sponsored by Arup & Cadent	8
IPCC Special Report 1.5°C – a short summary	10
<b>Sponsored Article - Cryodiesel</b> Simon Brewster, CEO, Dolphin N2 explains a low carbon transport development	12
Obituary - Lord Skelmersdale	14
European Court of Justice ruling on the Capacity Mechanism	15
<b>Parliamentary Record</b> Select Committee Statements, Reports And Inquiries	16
Oral Questions	18
Legislation	19

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## CHAIRMAN'S FOREWORD

In the run up to the Christmas recess, we are in the throes of the Brexit agreement that was brought back from Brussels on 13th November. The initial clamour has not died down, not even a little bit, but the serious work is underway. We have had a privilege debate on contempt of parliament and five days of debate on the issues themselves, all in preparation for the meaningful vote in January in Parliament.

Noise around the Brexit debate will, of course, continue to run throughout the next session with ever increasing intensity up to the end of March.

Almost unnoticed, the European Court of Justice issued its ruling on an appeal into the Capacity Mechanism. The European Court of Justice annulled the European Commission's decision not to object to the scheme. The ruling essentially prevents the government from holding future auctions and making payments under existing agreements.

However, the Department for Business, Energy and Industrial Strategy has said it intends to work closely with the European Commission to reinstate the scheme as soon as possible. There are at least six other capacity markets within the EU, it is unclear what action is being taken in these.

The Parliamentary calendar has been drained of ability to do anything whilst the Brexit issue dominates, however, our Minister of State for Energy & Climate Change, the Rt Hon Claire Perry MP has held a Global CCUS Summit in Edinburgh and signed several accords contributing towards reducing global emission.

As we go to press, there is plenty to look forward to in the new year, when we expect to hear from the new Chairman of Ofgem, the Energy Research Accelerator and the Durham Energy Institute. We will also have speaker meetings on transport and heat.

PGES is growing in stature, leading with expertise on issues as they arise. Our Associate and Academic Membership is increasing in strength. Our Parliamentary Members, despite the pressures of political life, still attend meetings, although we would always welcome more!

Ian Liddell-Grainger MP

#### **Chairman, PGES**

An All-Party Parliamentary Group



## **CCC REPORTS**

## **Chris Stark**

## CEO of the Committee on Climate Change

## **DECEMBER SPEAKER MEETING**

When speaking to the Group, four reports had just been issued and are summarised below. These give a good overview of the thinking behind the advice that will be given to BEIS following the recent IPPC Report on 1½° on the UK progress and actions to meet zero carbon.

### Hydrogen in a low-carbon economy

Report issued 22nd November 2018

The report by the Committee on Climate Change (CCC) assesses the potential role of hydrogen in the UK's low-carbon economy and finds that hydrogen:

- is a credible option to help decarbonise the UK energy system but its role depends on early Government commitment and improved support to develop the UK's industrial capability
- can make an important contribution to long-term decarbonisation if combined with greater energy efficiency, cheap low-carbon power generation, electrified transport and new 'hybrid' heat pump systems, which have been successfully trialled in the UK

• could replace natural gas in parts of the energy system, where electrification is not feasible or is prohibitively expensive, for example in providing heat on colder winter days, industrial heat processes and back-up power generation

• is not a 'silver bullet' solution; the report explores some commonlyheld misconceptions, highlighting the need for careful planning

### The report's key recommendations are:

- Government must commit to developing a low-carbon heat strategy within the next three years
- Significant volumes of low-carbon hydrogen should be produced in a carbon capture and storage (CCS) 'cluster' by 2030 to help the industry grow
- Government must support the early demonstration of the everyday uses of hydrogen in order to establish the practicality of switching from natural gas to hydrogen
- There is low awareness amongst the general public of reasons to move away from natural gas heating to low-carbon alternatives

• A strategy should be developed for low-carbon heavy goods vehicles (HGVs) which encourages a move away from fossil fuels and biofuels to zeroemission solutions by 2050

See the infographic opposite.

## Public acceptability of hydrogen in the home

Report issued 22nd November 2018

This report for the CCC by Madano and Element Energy assesses the public acceptability of two alternative low-carbon technologies for heating the home: hydrogen heating and heat pumps.

These technologies could potentially replace natural gas in many UK households as part of the government's efforts to decrease carbon emissions in the UK.

The report's key findings are:

• carbon emissions reduction is viewed as an important issue, but there is limited awareness of the need to decarbonise household heating or the implications of switching over to low-carbon heating technologies Committee on Climate Change

## Hydrogen in a low-carbon economy

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#### Producing hydrogen in the UK

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- acceptability of both heating technologies is limited by a lack of perceived tangible consumer benefit, which has the potential to drive scepticism towards the switch over more generally
- heating technology preferences are not fixed at this stage, although heat pumps appear to be the favoured option in this research study
- three overarching factors were identified as influencing preferences for heating technologies. These factors manifested differently for different people, meaning that the same factor could lead one person to prefer heat pumps and another to prefer hydrogen, depending on their overall heating preferences and understanding of the two technologies. The factors are:
- perceptions of the negative installation burden
- familiarity with the lived experience of using the technologies for heating
- perceptions of how well the technologies would meet modern heating needs
- both hydrogen heating and heat pumps face significant challenges to secure public acceptability

### Land use: Reducing emissions and preparing for climate change

Report issued 15th November 2018

This report by the Committee on Climate Change assesses the role of land use change in meeting climate change mitigation and adaptation objectives.

The Government needs to address climate change, which threatens

the land's ability to provide critical services including clean water, healthy soils and timber, and ensure sufficient food production for an increasing population and space for new homes.

Overall, the report finds that fundamental reform is required to ensure land becomes a more effective carbon store, whilst early action is needed to maximise the benefits from changing how land is used.

The report's key recommendations are:

- New land use policy should promote transformational land uses and reward landowners for public goods that deliver climate mitigation and adaptation objectives. New policies should also reflect better the value of the goods and services that land provides
- Support should be provided to help land managers transition to alternative land uses

The key findings from the report are:

- Climate change impacts are already altering the land's use, while the services provided by the natural environment are being degraded
- Land is a critical natural resource, but past policies governing the use of UK land have been fragmented and incomplete
- New land-use policy must promote radically different uses of UK land
- Alternative uses of land can be economic for farmers and land managers, but Government must provide help for them to transition

### Biomass in a low-carbon economy

Report issued 15th November 2018

This report by the Committee on Climate Change assesses the role of biomass – wood, plants and organic waste – in the global strategy to tackle climate change.

Biomass can play an important role in meeting the UK's longterm (2050) emissions targets, and moving towards net-zero emissions, but only with stricter governance to ensure sustainable supplies.

The report's key findings are:

- Managing biomass stocks is an important component of global climate mitigation strategies
- Sustainably harvested biomass can play a significant role in meeting long-term climate targets, provided it is prioritised for the most valuable end-uses

The key recommendations of the report are:

- The UK should aim to increase the volume of carbon stored in our forests and land
- Food and biodegradable waste must be collected separately from other refuse in all areas across the UK
- Rules governing the supply of sustainable sources of biomass for energy need to be improved
- Biomass must be used in the most effective way. Uses that enable long-term carbon storage should be prioritised

The infographic opposite shows the key messages from the report.



7

## **HOUSE OF LORDS ANNUAL DINNER**

## 30<sup>th</sup> October 2018

Hosted by The Lord Redesdale

Sponsored by Arup & Cadent

Guest of Honour,

Claire Perry MP, Minister of State for Energy and Clean Growth









John Holland, Jennifer Baskill, Cambridge HOK



ARUP

Cadent

Mike Davis, ICE Futures Elaine New, Welcome Chinese



Tony Glover, ENA; Richard Court, Cadent Janet Wood, New Power



Paul Needley, Enertek International; John Saltmarsh, BEIS



Mark Taylor, BEIS Lord Broers





Lord Redesdale welcomes us

Claire Perry takes questions chaired by Ian Liddell-Grainger MP







Simon Brewster, Dolphin N2

Vicky Ford, MP Simon Virley, KPMG



Steven Edwards, WWU Laura Sandys, Challenging Ideas



Claire Perry meets Joanna Whittington, BEIS; David Duguid, MP; Mary Stark, Ofgem



Chris Train, Cadent



lan Gardner, Arup



Ann Robinson Alan Whitehead, MP



Jeff House, Baxi Arjan Geveke, BEIS



Julian Critchlow, BEIS Angela Hepworth, EdF

The Intergovernmental Panel on Climate Change (IPCC) - the United Nations body for assessing the science related to climate change.

## **IPCC SPECIAL REPORT Global Warming of 1.5°C**

An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.

This Report responds to the invitation for IPCC to provide a Special Report in 2018 on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, contained in the Decision of the 21<sup>st</sup> Conference of Parties of the United Nations Framework Convention on Climate Change to adopt the Paris Agreement.

In this heavily abridged note, we present some of the key findings of the Special Report. The level of confidence associated with each key finding is reported using the IPCC calibrated language.

#### Understanding Global Warming of 1.5°C

Human activities are estimated to have caused approximately 1.0°C of global warming5 above preindustrial levels, with a likely range of 0.8°C to 1.2°C. Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate (high confidence).

Warming from anthropogenic emissions from the pre-industrial period to the present will persist for centuries to millennia and will continue to cause further long-term changes in the climate system, such as sea level rise, with associated impacts (high confidence), but these emissions alone are unlikely to cause global warming of 1.5°C (medium confidence).

Climate-related risks for natural and human systems are higher for global warming of 1.5°C than at present, but lower than at 2°C (high confidence). These risks depend on the magnitude and rate of warming, geographic location, levels of development and vulnerability, and on the choices and implementation of adaptation and mitigation options (high confidence).

## Projected Climate Change, Potential Impacts and Associated Risks

Climate models project robust7 differences in regional climate characteristics between present-day and global warming of 1.5°C and between 1.5°C and 2°C. These differences include increases in: mean temperature in most land and ocean regions (high confidence), hot extremes in most inhabited regions (high confidence), heavy precipitation in several regions (medium confidence), and the probability of drought and precipitation deficits in some regions (medium confidence).

By 2100, global mean sea level rise is projected to be around 0.1 metre lower with global warming of 1.5°C compared to 2°C (medium confidence). Sea level will continue to rise well beyond 2100 (high confidence), and the magnitude and rate of this rise depend on future emission pathways. A slower rate of sea level rise enables greater opportunities for adaptation in the human and ecological systems of small islands, lowlying coastal areas and deltas (medium confidence).

On land, impacts on biodiversity and ecosystems, including species loss and extinction, are projected to be lower at 1.5°C of global warming compared to 2°C. Limiting global warming to 1.5°C compared to 2°C is projected to lower the impacts on terrestrial, freshwater and coastal ecosystems and to retain more of their services to humans (high confidence).

Limiting global warming to 1.5°C compared to 2°C is projected to reduce increases in ocean temperature as well as associated increases in ocean acidity and decreases in ocean oxygen levels (high confidence). Consequently, limiting global warming to 1.5°C is projected to reduce risks to marine biodiversity, fisheries, and ecosystems, and their functions and services to humans, as illustrated by recent changes to Arctic sea ice and warm-water coral reef ecosystems (high confidence).

Climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth are projected to increase with global warming of 1.5°C and increase further with 2°C.

Most adaptation needs will be lower for global warming ambitions would not limit global warming to 1.5°C, of 1.5°C compared to 2°C (high confidence). There are even if supplemented by very challenging increases in a wide range of adaptation options that can reduce the the scale and ambition of emissions reductions after risks of climate change (high confidence). There are 2030 (high confidence). Avoiding overshoot and reliance limits to adaptation and adaptive capacity for some on future large-scale deployment of carbon dioxide human and natural systems at global warming of removal (CDR) can only be achieved if global  $CO_2$ 1.5°C, with associated losses (medium confidence). The emissions start to decline well before 2030 number and availability of adaptation options vary by (high confidence). sector (medium confidence).

#### Emission Pathways and System Transitions Consistent with 1.5°C Global Warming

In model pathways with no or limited overshoot of 1.5°C, global net anthropogenic CO<sub>2</sub> emissions decline by about 45% from 2010 levels by 2030 (40–60% interquartile range), reaching net zero around 2050 (2045–2055 interquartile range). For limiting global warming to below 2°C11 CO<sub>2</sub> emissions are projected to decline by about 25% by 2030 in most pathways (10–30% interquartile range) and reach net zero around 2070 (2065–2080 interquartile range). Non-CO<sub>2</sub> emissions in pathways that limit global warming to 1.5°C show deep reductions that are similar to those in pathways limiting warming to 2°C (high confidence).

Pathways limiting global warming to 1.5°C with no or limited overshoot would require rapid and farreaching transitions in energy, land, urban and infrastructure (including transport and buildings), and industrial systems (high confidence). These systems transitions are unprecedented in terms of scale, but not necessarily in terms of speed, and imply deep emissions reductions in all sectors, a wide portfolio of mitigation options and a significant upscaling of investments in those options (medium confidence).

All pathways that limit global warming to 1.5°C with limited or no overshoot project the use of carbon dioxide removal (CDR) on the order of 100–1000 GtCO<sub>2</sub> over the 21<sup>st</sup> century. CDR would be used to compensate for residual emissions and, in most cases, achieve net negative emissions to return global warming to 1.5°C following a peak (high confidence). CDR deployment of several hundreds of GtCO<sub>2</sub> is subject to multiple feasibility and sustainability constraints (high confidence). Significant near-term emissions reductions and measures to lower energy and land demand can limit CDR deployment to a few hundred GtCO<sub>2</sub> without reliance on bioenergy with carbon capture and storage (BECCS) (high confidence).

#### Strengthening the Global Response in the Context of Sustainable Development and Efforts to Eradicate Poverty

Estimates of the global emissions outcome of current nationally stated mitigation ambitions as submitted under the Paris Agreement would lead to global greenhouse gas emissions18 in 2030 of 52–58 GtCO<sub>2</sub>eq yr–1 (medium confidence). Pathways reflecting these The avoided climate change impacts on sustainable development, eradication of poverty and reducing inequalities would be greater if global warming were limited to 1.5°C rather than 2°C, if mitigation and adaptation synergies are maximized while trade-offs are minimized (high confidence).

Adaptation options specific to national contexts, if carefully selected together with enabling conditions, will have benefits for sustainable development and poverty reduction with global warming of 1.5°C, although trade-offs are possible (high confidence).

Mitigation options consistent with 1.5°C pathways are associated with multiple synergies and tradeoffs across the Sustainable Development Goals (SDGs). While the total number of possible synergies exceeds the number of trade-offs, their net effect will depend on the pace and magnitude of changes, the composition of the mitigation portfolio and the management of the transition (high confidence).

Limiting the risks from global warming of 1.5°C in the context of sustainable development and poverty eradication implies system transitions that can be enabled by an increase of adaptation and mitigation investments, policy instruments, the acceleration of technological innovation and behaviour changes (high confidence).

Sustainable development supports, and often enables, the fundamental societal and systems transitions and transformations that help limit global warming to 1.5°C. Such changes facilitate the pursuit of climateresilient development pathways that achieve ambitious mitigation and adaptation in conjunction with poverty eradication and efforts to reduce inequalities (high confidence).

Strengthening the capacities for climate action of national and sub-national authorities, civil society, the private sector, indigenous peoples and local communities can support the implementation of ambitious actions implied by limiting global warming to 1.5°C (high confidence). International cooperation can provide an enabling environment for this to be achieved in all countries and for all people, in the context of sustainable development. International cooperation is a critical enabler for developing countries and vulnerable regions (high confidence).

## **Energy Focus Sponsored Article**

## AN OVERVIEW OF CRYOPOWER



## By Simon Brewster, CEO, Dolphin N2.

Power generation and heavy-duty trucks provide the means of production and distribution that is the lifeblood of the modern industrial economy. Air pollutants have been significantly abated with aftertreatment in both cases and incremental efficiency improvements have reduced the fuel consumption. Batteries have made an impact in improving short term electricity storage for the grid and as the energy store for light-duty vehicles but the manufacture and charging of batteries only delivers reduced emissions to the level of the electricity generation used.



CryoPower has the potential to radically change the emissions of both power generation and HGV, addressing 18% of the total carbon inventory. Adoption in rail and buses could see this being increased to 20% share of the emissions or 91.2Mt CO2e. Under a projected take-up scenario, the deployment of CryoPower technology will lead to annual savings of 12,507 tonnes of NOx, 229 tonnes of PM and 1.18 Mt CO2e by 2032.

Cumulatively by 2032 almost 80,000 tonnes of NOx; over 1,400 tonnes of particulate matter and almost 5.7 million tonnes of CO2 may be saved through the introduction of the technology. Almost £661 million in economic damage costs could be avoided in 2032 and cumulatively over £3.6 billion could be saved between 2022 and 2032.

## Environmentally friendly options and how they scale

Whilst technological solutions such as battery-electric and hybrid powertrains have helped decarbonize the passenger car and light-duty commercial vehicle fleets, the reduction of CO2 from heavy freight applications is a far harder task. The limitations of batteries become evident as they are scaled up. A battery powered HGV has some significant challenges to overcome.

The estimated battery mass required for an HGV with a conservative 300 mile range is in the region of 8.6 Tonnes meaning a potential 28-30% reduction in payload and vehicle utility. The charging time can be reduced by several hours by using high powered chargers but charging efficiency and battery life at these higher rates is significanly impaired and the demand on the local grid infrastructure is beyond current capabilities.

Batteries have been sucessfully adopted on a local and domestic level to support the grid with frequency monitoring and to reduce TRIAD obligation. For power as in transport, the battery is less favourable as it is scaled up with limited capacity and short discharge rates measured in hours rather than days.

## Alternative energy vectors

The contribution of renewable energy sources to the grid plays a significant part to reduce the use of fossil fuels but it introduces further instability in the supply side of a system that already has a volatile demand profile (which is further exacerbated by domestic plug-in EV).

In Europe of the 450GW installed wind power predicted by 2035 only 22.5 GW (5%) is available as a pool resource that can be relied on <sup>(1)</sup>. This problem is described as "wrong time" energy; the morning peak in demand is not

necessarily met with sufficient wind or tidal power and conversely the energy potential of a late evening or night time breeze is of little use unless it can be stored. Addressing the storage of this power is a key enabler in reducing dependency on fossil fuels and reducing emissions. Whilst 99% <sup>(1)</sup> of the global electricity storage uses pumped hydro electric storage, increasing capacity with this system is not an option for most countries as it requires large dams, that have a significant impact on the local area. Storing energy by creating E-fuels is a system that is gaining popularity. Liquid fuels can be produced with 'wrong time' energy that can be utilised at a later time. Compressed or liquid air <sup>(2)</sup> and liquid nitrogen are two of the zero impact Energy vectors that can be used in this way.

It is tempting to see any internal combustion engine as a "transition technology". However, combustible fuels remain by far the most energy-dense in comparison to batteries or fuel cells / hydrogen; they can be manufactured sustainably from bio-mass or synthesised. The CryoPower system has been demonstrated on diesel and natural gas, and it is compatible with naphthas, ethanol, hythane and hydrogen. The liquid nitrogen is already sustainable, as air-separation is a major player in electricity "demand-side management"; as use of renewables rise, it has been shown to be an attractive way of balancing the grid.

Currently non-renewable power generation uses a largely centralised generation model. Large power stations are used because the scale means that they are more efficient and because the exhaust is easier to treat when coming from one source. The negative side to this model is that the distribution infrastructure is expensive to build and maintain and the energy lost in this transmission can be between 7 and 12% <sup>[3]</sup>. CryoPower combines improved thermal efficiency and emissions compared to large power stations and maintains these benefits down to a small scale high speed engines in the 500 kW to 3 MW range. The effect is that small scale power generation becomes advantageous, not just in the conventional 'off grid island' situation but also for urban and inner-city sites offering a step-change boost in efficiency, and a highly efficient model for heat and power

## Low temperature fuel oxidation in place of combustion

CryoPower uses relatively low-cost components and manufacturing processes typically used in current engines, yet aims to compete with zero-emission drivetrains. There are in fact two versions of the technology: *ThermoPower* is a simplified system offering most of the air quality benefits and efficiency advantage versus advanced diesel engines in research; *CryoPower* delivers ultimate efficiency and air quality by addition of liquid nitrogen or air to its internal processes.

CryoPower and ThermoPower are *Recuperated Split Cycle Engines*. The revolutionary step is to separate the "cold" and "hot" parts of the traditional internal combustion engine so that each can be separately insulated. The cold compression cylinder delivers air to the hot combustion cylinder via a heat exchanger or " recuperator " that transfers energy from the hot cylinder exhaust, considered waste in a conventional engine, to the intake air. The combustion process was described in a paper delivered to leading international academics <sup>(4)</sup> as a lower temperature oxidation process akin to that in a fuel cell rather than a combustion process that occurs at higher temperatures. The result is that the negative by-products of combustion nitrogen oxides and particulates - are avoided at source meaning that this system can achieve at least the most stringent SULEV emission standard and potentially lower using known "SCR" (Urea-based) after-treatment.

Split-cycle engines are known technology, and recuperation is commonplace in industrial gas turbines. It is the specific combination of these, plus liquid nitrogen, that is innovative. Ricardo's work on recuperated split cycle engines started in 1992 in a project with the UK energy utility National Power, leading to two demonstrator units. The results of the first running CryoPower engine are confirming the simulation and theory.

The business case for the technology is based on *much lower CapEx* than low emission alternatives, and a *rapid payback* versus conventional (usually diesel) technology. On-cost for the ThermoPower engine is estimated at around +20% vs conventional Diesel, with a fuel saving of 10% giving payback in a year or less; for CryoPower, capital cost is estimated at around 50% of the cost of a commercial Diesel engine; fuel cost savings of up to 20% per year will again give a rapid payback on the extra cost.





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<sup>(1)</sup> SBC Energy Institute Analysis based on 50Hertz data archive (Wind and Solar Actual In Feed 2012, Control Load 2012)

<sup>(2)</sup> https://www.viridor.co.uk/our-operations/energy/new-technologies/energy-storage/

<sup>(3)</sup> Time to Take a Fresh Look at CHP..., Simon Minett, director, DELTA Energy and Environment, October 2005

<sup>(4)</sup> THIESEL 2018 Conference on Thermo- and Fluid Dynamic Processes in Direct Injection Engines "Towards zero emission engines through the adoption of combustion lead engine design realised using a split cycle topology

emission engines through the adoption of combustion lead engine design realised using a spl "R. Morgan, F. Khalid, A. Atkins S. Harvey, Firmansyah, D. Mason, K. Vogiatzaki and M Heikal

## **OBITUARY**

## Roger Bootle-Wilbraham,

7<sup>th</sup> Baron Skelmersdale

attend without notice.

## The Rt Hon. the Lord Skelmersdale. born April 2 1945, died October 31 2018

Lord Skelmersdale, long serving member of the PGES Executive Council and former government minister, died suddenly aged 73. This was just after our Annual House of Lords Dinner and the first event that he had failed to

He was one of most supportive members from the upper house and was active within the Group, regularly attending meetings and events. He hosted and chaired the first ever PGES Policy Forum to decide on energy policy priorities following the Brexit Referendum and hosted our House of Lords Annual Dinner in December 2016.

A keen bridge player, he was also a member of the All-Party Parliamentary Bridge Group and captained the Lords' bridge team for several years. He was helpful with aspects of junior bridge, visited a number of schools and was always present when pupils visited Parliament. He was due to play in the annual Lords v Commons bridge match the day before he died.

In 1999, after the hereditary peers lost their automatic right to sit in the House of Lords, he was "thrilled" to come fifth on the ballot for the group of 92 hereditaries allowed to stay on pending completion of House of Lords reform, for which the more than 200 hopefuls had to submit personal manifestos of not more than 75 words. "I am sure my CV was by far the most boring," Skelmersdale said, "but I very much enjoy my work here."

Lord Skelmersdale served in junior ministerial posts under Margaret Thatcher in the departments of the Environment and Health and Social Security and in the Northern Ireland Office and was Deputy Speaker in the House of Lords twice. He was a horticulturalist by trade, a keen bridge player and a longstanding president of the British Naturalists' Association. Quietly spoken, Skelmersdale seldom made headlines, but could be relied upon for loyal service answering guestions in the House of Lords and serving on committees.

Keen to encourage, taking time to offer help and assistance, Lord Skelmersdale was much respected figure in energy.

He will be sorely missed by the Group.



Lord Skelmersdale at one of the many PGES functions he attended. He was an active member of PGES and served on Executive Council for many years.

## **CAPACITY MARKET SUSPENDED FOLLOWING ECJ RULING**

Judgment in Case T-793/14 Tempus Energy Ltd and Tempus Energy Technology Ltd v Commission

The European Court of Justice has annulled the decision of the European Commission to grant state aid authorisation for the UK's capacity market scheme, stating that the Commission should have had doubts in respect of certain aspects of the planned aid scheme and should have initiated a formal investigation procedure in order better to assess its compatibility.

On 23 July 2014, the Commission decided not to raise objections to the aid scheme establishing a capacity market in the UK, on the ground that that scheme was compatible with the EU rules on State aid. The ECJ has found that the Commission had granted approval after only a one month long preliminary examination and had failed to take full account of objections raised. The Court found that the Commission should have concluded that there were doubts, which should have led it to initiate the formal investigation procedure, in order to allow interested parties to submit their observations and to put at its disposal the relevant information in order better to assess the compatibility of the planned capacity market.

The Commission must now undertake a full investigation of the scheme before granting state aid approval. It may emerge that changes to the scheme are required, or that the scheme can remain unchanged. The ruling came from a challenge brought by clean technology company Tempus Energy. Tempus claimed that the scheme unfairly favoured fossil fuel generators over Demand-Side-Response and battery storage projects.

The ECJ ruled that the European Commission had been wrong to authorise the scheme without properly investigating technological neutrality. The judgment suspends state aid approval for the scheme. It therefore imposes a 'standstill period' in which the granting of aid through the scheme will not be lawful. During this time the government cannot hold capacity auctions, make any capacity payments or take any other action that could be perceived as granting state aid.

The Department for Business, Energy & Industrial Strategy has released a statement advising that it is already working closely with the Commission and is doing everything to re-obtain state aid approval as soon as possible. It is unclear when the standstill period will end. In the meantime, activities that do not involve granting aid - such as completing the Pregualification process for 2019, will continue.

National Grid has issued advice for affected capacity agreement holders and capacity market applicants. Further guidance from BEIS and National Grid on the implications is expected.

## **PARLIAMENTARY RECORD**

## **SELECT COMMITTEE STATEMENTS, REPORTS AND INQUIRIES**

## 1<sup>st</sup> September 2018 - 21<sup>st</sup> December 2018

## House of Commons

## **Business, Energy and Industrial Strategy Committee**

## Carbon Capture, Usage and Storage (CCUS).

Inquiry announced 29<sup>th</sup> May 2018

This inquiry remains open and examines the Government's commitment to deploying CCUS technology and whether it has a "Plan B" to meet the UK's climate change targets should desired cost reductions not materialise.

Carbon capture, usage and storage (CCUS) is a set of technologies which can together capture carbon dioxide from waste gases, and either 'lock up' this carbon dioxide in long-term storage or use it in industrial processes.

Ahead of the first evidence session, the Business, Energy and Industrial Strategy Committee has published 51 written evidence submissions for its inquiry on carbon capture, usage and storage (CCUS), received from business organisations, local authorities, academics and others.

Evidence was given on 6 November by Luke Warren, CEO, Carbon Capture and Storage Association; Professor Stuart Haszeldine, Director, Scottish Carbon Capture and Storage; Kristofer Hetland, Senior Adviser, Project Management, Equinor and Nick Sturgeon, Energy and Competitiveness Director, Chemicals Industry Association

Further evidence given on 21 November by Claire Perry MP, Minister of State for Climate Change and Industry, Department for Business, Energy and Industrial Strategy, Ashley Ibbett, Director for Clean Electricity, Department for Business, Energy and Industrial Strategy, Tim Lord, Director for Clean Growth, Department for Business, Energy and Industrial Strategy

### **Draft National Policy Statement for Geological Disposal** Infrastructure inquiry. Inquiry announced 25<sup>th</sup> May 2018.

The inquiry examines draft guidance on the determination of nuclear waste disposal planning applications. The inquiry will also examine the scope of the guidance for those considering applications and the framework for granting development consents. It will also consider how

it fits in with the Government's Industrial Strategy and emphasis on regional growth.

No further action has been taken since Summer recess.

## Swansea Bay Tidal Lagoon inquiry.

Inquiry announced 9<sup>th</sup> May 2018.

The Committee will not be calling for written evidence. The BEIS Committee and the Welsh Affairs Committee will be looking at the Swansea Bay Tidal Lagoon and investigating delays and obstacles in the decision-making process. Oral evidence only was considered on 25 June.

No further action has been taken since the Sumer Recess.

## Small businesses and productivity inquiry.

Inquiry announced 31<sup>st</sup> January 2018

The first evidence session was on 19 June. Further evidence was given on 9 October by Paul Antino, Managing Director, NRT Building Services Group Ltd; Tim Hopkinson, Director, Poppleton; Tony Davis, Managing Director, AMD Electrical; Martin Burton, Contracts Director, Arnold James Ltd; then by Kelly Tolhurst MP, Parliamentary Under-Secretary of State, Minister for Small Business, Consumers and Corporate Responsibility; Rannia Leontaridi, Director, Business Growth, Department for Business, Energy and Industrial Strategy.

The Fifteenth Report of Session 2017-19, Small businesses and productivity was published on 5<sup>th</sup> December 2018.

## Conclusions:

SMEs are crucial to the economic success of the UK and to delivering the Government's Industrial Strategy, improving productivity, rebalancing the UK economy and delivering on the Prime Minister's promise to spread prosperity

more widely. This will require support for high growth scale-ups at the dynamic end of the economy but also for those at the less productive tail end, and in between. All types of SME can benefit from increasing their productivity and the Government needs to make this case more strongly to small businesses.

There is a wide range of support for SMEs to help them become more productive and scale-up, ranging from improving management skills and digital capacity to helping SMEs innovate and export. However, to be taken up and effective this support needs to be better tailored to the different needs of our varied small businesses and their capacity to take advantage of it. SMEs are more likely to do this when they can access support locally, digitally and through support networks which can endorse what works. This makes LEPs, Growth Hubs and local networks crucial and it is important that they are properly resourced and periodically assessed for their effectiveness.

While SMEs need support and help accessing support is consistent with meeting targets set out in the Clean they also need a level playing field on which they can Growth Strategy, and our fourth and fifth carbon budgets. compete. This means that our small businesses need to be paid on time and on fair terms. For too long, SMEs This inquiry is also likely to focus on action to upgrade have been treated disgracefully by many larger companies the energy efficiency of fuel-poor homes and the who have deliberately paid late, as part of their business Government's work to drive demand for energy efficiency model based on taking advantage of their supply chains. measures within able to pay households. Poor payment practices need to be addressed as part of a wider effort to improve corporate behaviour and Science and Technology Committee because they will help avoid more big business collapses with the devastating impact they visit upon SMEs and other stakeholders. They also need to be addressed so Technologies for meeting Clean Growth emissions as not to undermine the Government's efforts to support reduction targets inquiry. improvements in SME productivity. Better management, Inquiry launched on 23<sup>rd</sup> October digital capacity, innovation and exporting capability are all The Science and Technology Committee is undertaking an instrumental in improving SME productivity. Without fair and prompt payment to provide financial stability, the UK's inquiry into the technologies needed to meet Clean Growth SMEs will not be able to pursue growth. emissions reduction targets. The Committee is still excepting written submissions.

### Electric vehicles: developing the market and infrastructure inquiry.

Inquiry launched on 17<sup>th</sup> September 2017.

Report published. Awaiting Government Response.

## Gas Storage.

Inquiry launched on 17<sup>th</sup> October

The BEIS Committee will be examining issues around UK gas security and gas storage, the Government's approach to diversity of supply, and what action the Government is taking to ensure the supply system is robust and secure. Oral evidence sessions announced

Evidence was given on 31st October by Duncan Burt, Director of Operations, National Grid; Oliver Rix, Partner (Energy and Resources), Baringa; Dr Laura Cohen, Gas Security Group and CEO, British Ceramic Confederation; Roddy Monroe, Chair, Gas Storage Operators Group; and by Dan Monzani, Director for Energy Security, Networks and Markets, Department for Business, Energy and Industrial Strategy; Dave Buttery: Deputy Director for Energy Security, Department for Business, Energy and Industrial Strategy

### **Energy Efficiency.**

Inquiry launched on 19th November.

### This inquiry is open and accepting written submissions. The deadline for submissions is 17<sup>th</sup> January 2019.

This inquiry will examine whether the Government's current delivery of energy efficiency improvements within residential, commercial and public-sector buildings

Inquiry status: open - accepting written submissions

## House of Lords

## EU Energy and Environment Sub-Committee

#### The Office of Nuclear Regulation's Brexit preparedness

Since the Summer Recess, Oral evidence is concluded. Ministerial correspondence on-going.

## **PARLIAMENTARY RECORD**

## **ORAL QUESTIONS** 25<sup>th</sup> July 2018 – 14<sup>th</sup> December 2018 HOUSE OF COMMONS

#### Green car challenge

Mr Philip Dunne (Ludlow) (Con) 10<sup>th</sup> September Column 453

#### Green Finance

Rebecca Pow (Taunton Deane) (Con) Mr Philip Dunne (Ludlow) (Con) Douglas Chapman (Dunfermline and West Fife) (SNP) 11<sup>th</sup> September Column 596

Investment in Renewable Energy Paul Blomfield (Sheffield Central) (Lab) 12<sup>th</sup> September Column 749

Fracking Justin Madders (Ellesmere Port and Neston) (Lab) 12<sup>th</sup> September Column 750

Funding of Fossil Fuel Use Chris Law (Dundee West) (SNP) 10<sup>th</sup> October Column 124

Battery technology Mark Pawsey (Rugby) (Con) 11<sup>th</sup> October Column 262

Low-Carbon Transition in Scotland Alan Brown (Kilmarnock and Loudoun) (SNP) 11<sup>th</sup> October Column 262

**Climate Change Report** Andy McDonald (Middlesbrough) (Lab) 11<sup>th</sup> October Column 274

E10 Fuel Nic Dakin (Scunthorpe) (Lab) 11<sup>th</sup> October Column 284

Energy Questions – 16<sup>th</sup> October 2018

**Internal Energy Market** James Heappey (Wells) (Con) Column 480

#### **Energy Prices**

John Stevenson (Carlisle) (Con) Anna Turley (Redcar) (Lab/Co-op) Sir Desmond Swayne (New Forest West) (Con) Seema Malhotra (Feltham and Heston) (Lab/Co-op) Drew Hendry (Inverness, Nairn, Badenoch and Strathspey) (SNP) Column 484 - 486

#### Emissions

Henry Smith (Crawley) (Con) Jeff Smith (Manchester, Withington) (Lab) Thangam Debbonaire (Bristol West) (Lab) Column 486 - 487

Renewable Energy Thangam Debbonaire (Bristol West) (Lab) Column /87

Solar Industry Jeff Smith (Manchester, Withington) (Lab) Column 487

**Climate Change** Barry Gardiner (Brent North) (Lab) Column 487

Greenhouse Gas Emissions Daniel Zeichner (Cambridge) (Lab) Column 493

R & D Funding for Geothermal Energy Chris Elmore (Ogmore) (Lab) Column 495

Nuclear Power Trudy Harrison (Copeland) (Con) Mrs Anne-Marie Trevelvan (Berwick-upon-Tweed) (Con) Chris Williamson (Derby North) (Lab) Column 496

**Topical Questions** Colin Clark (Gordon) (Con) Louise Haigh (Sheffield, Heeley) (Lab) David Duquid (Banff and Buchan) (Con) Column 498 - 501

Fracking within vision of Green Brexit Liz Twist (Blaydon) (Lab) 18<sup>th</sup> October Column 774

**Carbon Tax** Alex Cunningham (Stockton North) (Lab) Mr Gregory Campbell (East Londonderry) (DUP) 25<sup>th</sup> October Column 419

**Environmental Protection** Karen Lee (Lincoln) (Lab) Mr Peter Bone (Wellingborough) (Con) 25<sup>th</sup> October Column 421

**Budget Speech and Climate Change** Clive Lewis (Norwich South) (Lab) 6<sup>th</sup> November Column 1365

Renewable Energy Seema Malhotra (Feltham and Heston) (Lab/Co-op) 6<sup>th</sup> November Column 1368

Renewable Energy Developers

Mr Alistair Carmichael (Orkney and Shetland) (LD) 6<sup>th</sup> November Column 1374

#### Energy Questions – 20<sup>th</sup> November 2018

Solar Generation

Kevin Hollinrake (Thirsk and Malton) (Con) Daniel Kawczynski (Shrewsbury and Atcham) (Con) Richard Graham (Gloucester) (Con) David Hanson (Delvn) (Lab) Mr Philip Hollobone (Kettering) (Con) Sir Edward Davey (Kingston and Surbiton) (LD) Carol Monaghan (Glasgow North West) (SNP) Dr Alan Whitehead (Southampton, Test) (Lab) Column 701 – 704

#### **Nuclear Power**

Trudy Harrison (Copeland) (Con) Luke Pollard (Plymouth, Sutton and Devonport) (Lab/Co-op) John Stevenson (Carlisle) (Con) Meg Hillier (Hackney South and Shoreditch) (Lab/Co-op) Column 704 - 705

Nuclear Power Stations

Alan Brown (Kilmarnock and Loudoun) (SNP) Column 713 - 714

#### Hydraulic Fracturing

Mr Jim Cunningham (Coventry South) (Lab) Sir Desmond Swayne (New Forest West) (Con) Barry Gardiner (Brent North) (Lab) Column 714 - 715

#### **Topical Questions**

Melanie Onn (Great Grimsby) (Lab) Bob Blackman (Harrow East) (Con) Steve McCabe (Birmingham, Selly Oak) (Lab) Andrew Bowie (West Aberdeenshire and Kincardine) (Con) Column 714 - 721

**UK Aid** 

Dan Carden (Liverpool, Walton) (Lab) 21<sup>st</sup> November Column 850

#### Climate change

Stephen Gethins (North East Fife) (SNP) Lucy Powell (Manchester Central) (Lab/Co-op) 4<sup>th</sup> December Column 641 & 645

Accelerating Renewable Energy Rebecca Pow (Taunton Deane) (Con) 4<sup>th</sup> December Column 657

#### **Carbon-neutral Housing**

Mr Laurence Robertson (Tewkesbury) (Con) Mr Barry Sheerman (Huddersfield) (Lab/Co-op) 10<sup>th</sup> December Column 9

### **Fuel Poverty**

James Heappey (Wells) (Con) 11<sup>th</sup> December Column 147

## **PARLIAMENTARY RECORD**

## **LEGISLATION** 1<sup>st</sup> September 2018 – 21<sup>st</sup> December 2018

## Domestic Gas and Electricity (Tariff Cap) Act

A Bill to make provision for the imposition of a cap on rates charged to domestic customers for the supply of gas and electricity; and for connected purposes.

The Bill was introduced to the House of Commons by the Government and given its First Reading on Monday 26 February 2018 and Second Reading on Tuesday 6 March 2018. Committee debates were held on 13 and 15 March. Third Reading was 4 July, no amendments were made at third reading. Following "Ping Pong" on 18 July, the Bill received Royal Assent on 19 July before the House rose.

## Private Member's Bills

## **Carbon Emission Reductions Bill**

A Bill to amend the target for reducing net carbon emissions in the UK to 100% by 2050.

This Bill is a Private Member's Bill sponsored by Baroness Featherstone, first reading took place on 18 July, its second reading is yet to be scheduled.

### **Clean Air Bill**

A Bill to require the Secretary of State to set, measure, enforce and report on air quality targets; to make provision about mitigating air pollution, including through the use of clean air zones; to make provision about vehicle emissions testing; to restrict the approval and sale of vehicles with certain engine types; and for connected purposes.

This Bill is a Private Member's Bill sponsored by Geraint Davies MP (Swansea West), presented to Parliament on 22 November 2017 and order for second reading was read and discharged on Friday 15 June 2018. The Bill is now scheduled to be read a second time on Friday 25 January 2019

## Domestic Energy (Value Added Tax) Bill

A Bill to reduce Value Added Tax on domestic energy bills; and for connected purposes.

This Bill is a Private Member's Bill sponsored by Sir Christopher Chope MP (Christchurch), presented to Parliament on 5 September 2017 and scheduled to have its second reading debate on Friday 23 November 2018.



## **Domestic Properties** (Minimum Energy Performance) Bill

A Bill to require the Secretary of State to ensure that domestic properties have a minimum energy performance rating of C on an Energy Performance Certificate; and for connected purposes.

This Bill is a Private Member's Bill sponsored by Sir David Amess MP (Southend), introduced on Tuesday 6 February 2018 under the Ten Minute Rule. This Bill was expected to have its second reading debate on Friday 16 March 2018. However, it was objected to and second reading was then scheduled to take place on Friday 15 June 2018. No date has been set for second reading.

## **Electric Vehicles** (Standardised Recharging) Bill 2017-19

A Bill to make provision about standardised requirements for electric vehicle charge points; and for connected purposes.

This Bill is a Private Member's Bill sponsored by Bill Wiggin MP (North Herefordshire), introduced to Parliament on 20 November 2018 under the Ten Minute Rule and expected to have its second reading on Friday 8 March 2019.

## **Energy Consumption** (Innovative Technologies) Bill 2017-19

A Bill to require the Secretary of State to undertake a public consultation on innovative technologies and energy consumption in households and commercial properties and to report on responses to that consultation and steps to be taken to encourage the development of innovative technologies to reduce energy consumption; and for connected purposes.

This Bill is a Private Member's Bill sponsored by Rebecca Pow MP (Taunton Deane), introduced to Parliament on 12 September 2018 under the Ten Minute Rule and expected to have its second reading on Friday 8 February 2019.

## Local Electricity Bill 2017-19

A Bill to extend the period for the Secretary of State to exercise powers relating to smart metering and to provide for a special administration regime for a smart meter communication licensee.

This Bill is a Private Member's Bill sponsored by Jeremy Lefroy MP (Stafford), introduced to Parliament on 6 September 2018 under the Ten Minute Rule and expected to have its second reading on Friday 25 January 2019.

## FLUOR



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