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**Investor Confidence – Dr Steven Fawkes & Matt Golden**  
**House of Lords Annual Dinner**  
**BEIS Clean Growth Strategy & Helm Cost of Energy Review**  
**Energy Policy Priorities for 2018 onwards**

# ENERGY FOCUS



**What will they find under the tree this year?**

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The journal of



**PGES**  
All-Party Parliamentary Group  
for Energy Studies



### 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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# CHAIRMAN'S FOREWORD



I am always slightly relieved when the Autumn session draws to a close, as the smooth running of Parliament is interrupted by party conferences and a break in November. However, for the All-Party Parliamentary Group for Energy Studies, it is always a busy session and we try to avoid losing dates to the short recesses.

The tectonic plates of politics are still moving against each other, as the German Chancellor struggles to form a government after their last election and, as I write, both Jean-Claud Juncker and Donald Tusk have made announcements that the Brexit process is proceeding immediately to the second stage, that of trade agreements. Meanwhile, President Trump announced that the US recognises Jerusalem as the capital of Israel and would move its Embassy there, but immediately signed a waiver to defer that for 6 months.

In Energy Focus, you will find the reports from our activities, which included presentations from the Investor Confidence project and BEIS, a House of Lords Dinner and an Energy Policy Workshop. Externally, there was a Clean Growth Strategy White Paper, an Independent Review on the Cost of Energy by Professor Dieter Helm and a Budget Statement, although we were spared too much impact from it, as there was no reference to energy.

You may have noticed that the focus for this Parliament has been preparations and negotiations for the cessation of the UK membership of the European Union. PGES has its established preferred Energy Policy Priorities which were presented to the Minister of State for Business, Energy and Industrial Strategy, in the last Parliament. Our recent workshop has refined these in front of a panel of MPs and Peers from all of the major parties.

For the next session of Parliament, we should have a clear run, with meetings in January, February and March. Details of these are already posted on our website, which is worth checking regularly [www.pges.org.uk](http://www.pges.org.uk). I look forward to being able to welcome you to these meetings.

The New Year will undoubtedly bring us more surprises, I am sure, but to conclude, as ever, whatever the future may hold for UK energy, I am still confident that the Parliamentary Group for Energy Studies, along with its members, will be leading policy discussion.

**Ian Liddell-Grainger MP**  
**Chairman, PGES**  
**An All-Party Parliamentary Group**

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# MAKING THE DEMAND SIDE MORE INVESTABLE

**Steven Fawkes - Managing Partner, EnergyPro Ltd**  
**Senior Advisor, Investor Confidence Project**  
[Steven.fawkes@energyproLtd.com](mailto:Steven.fawkes@energyproLtd.com)

## SEPTEMBER SPEAKER MEETING

**To achieve the cleaner, more flexible, more distributed energy system we want and we need, we need to significantly ramp up the investment into the demand side: energy efficiency, demand response and of course storage. The IEA estimate that globally to achieve a "66%, 20C" scenario investment into energy efficiency the average annual investment into energy efficiency between now and 2050 will have to be c.\$1 trillion a year, about 5 x the current level of investment.**

Demand side technologies present a number of difficulties to investors including:

- the small scale of projects
- high due diligence costs relative to investment size
- the diversity of technological solutions
- the difficulty of measuring the results

If we are to increase investment to the levels required we need to make demand side technologies easier to invest in – as easy as investing in energy supply options. To make this happen we need to work on four components of what I call the jigsaw of energy efficiency financing: providing finance (both development and

project finance), building large-scale pipelines, standardization and building capacity in the supply side, the demand-side end-users and the financial community. Here I am going to focus on standardization and capacity building by looking at three important projects, the Investor Confidence Project and the Energy Efficiency Financial Institutions Group's (EEFIG) DEEP platform and Underwriting Toolkit.

The lack of standardization in energy efficiency brings with it:

- higher due diligence costs
- lack of confidence in the results
- higher performance risk
- difficulties of aggregating projects
- difficulties in building human capacity.

On the supply side we have standardization, for instance in the wind industry the banks and the industry developed a standardised project development approach that included wind measurement and a P90 risk assessment. At the start of the wind industry things were more ad hoc but today if you have not carried out this process or a P90 study you won't get project



finance for a wind farm. In the wind sector standardization was driven by the rise of subsidies and the consequent prospect of large-scale investment. On the demand side we have had to build a large coalition of the much more diverse efficiency industry, banks and investors, government and local programmes to support the development of the standardisation system of the Investor Confidence Project (ICP).

The Investor Confidence Project (ICP) is an international framework for addressing the lack of standardization in project development and documentation. It is designed to reduce owner and investor risk, lower due diligence costs, increase the certainty of achieving savings and enable aggregation. It does this through transparently applying best practices and bring independent verification to the project development and documentation process.

The output of ICP is a project certification system called Investor Ready Energy Efficiency™ (IREE™). Projects

can be originated from anywhere, clients, consultants, ESCOs or others. To qualify for IREE™ certification a project developer has to be credentialed by ICP meaning they have to have been trained in the ICP process and demonstrated a suitable level of experience. Furthermore the project has to have been checked by an ICP Quality Assurance Professional to ensure it has been developed to the ICP standards. The IREE™ certification happens during the underwriting period i.e. when the investment decision is being made.

ICP has developed IREE™ for buildings, both apartment blocks and tertiary buildings, and this is being rolled out in the US and across Europe. We are now developing the system for industrial energy efficiency projects, street light projects and district energy projects in Europe and aim to have these sectors ready to be rolled out early in 2018.

IREE™ brings advantages to all parties involved in energy efficiency projects. For building and facility owners it can bring greater confidence in the project development process and savings achievement. It also allows the comparison of projects and can facilitate access to investment. It can also act as a "tender in a box" for clients letting project development contracts. For investors it reduces due diligence costs, can ensure access to better projects, increases confidence in the underlying engineering, and delivers standardised project packs which enables aggregation. For project developers it standardises the process, can differentiate developers and can enable access to finance. For government programmes it is an off-the-shelf system that can be used as the core of programmes. It also allows the quality assurance costs to be distributed across the market.

In Europe ICP has built a network of more than 200 Allies. Amongst that we have built an Investor Network with more than 30 investors and banks globally with more than €4 billion looking to invest into energy efficiency. Some of them recognise ICP projects by offering lower due diligence costs and even lower cost of capital. The network of ICP Project Developers and Quality Assurance Professionals is also growing across Europe.

The UK has been leading the adoption of ICP in Europe. The project was brought to Europe by UK consultancy EnergyPro. The first ever IREE™ project in Europe was an NHS project in Liverpool. Other projects, programmes and investors across Europe are now adopting ICP.

Another major problem in the demand side is a lack of understanding of the risks. The results of demand side projects are rarely analysed and there is a paucity of data on project performance. The EEFIG's Derisking Energy Efficiency Platform (DEEP) seeks to address this by providing an open-source database of projects across Europe. It was launched in late 2016 and already has more than 10,000 projects within it, covering buildings and industry. Analysis of the results demonstrates the low cost of energy efficiency compared to energy supply options. It can be used by project developers and financiers to build understanding and better assess risks from proposed projects.

Within the financial community there is a lack of capacity to properly value demand side projects and assess their risks. EEFIG's Underwriting Toolkit addresses this problem by providing a comprehensive guide to how to assess value and risks of demand side investments. The purpose of the Toolkit is to assist

financial institutions in scaling up the deployment of capital into energy efficiency by:

- helping financial institutions to better understand and evaluate value and risks
- providing a common framework for evaluating energy efficiency investments
- helping developers and owners develop projects in a way that better addresses the needs of financial institutions
- fostering common language between project developers, project owners and financial institutions.

If we are to massively scale up investment into demand side technologies including energy efficiency, demand response and storage we need to address many problems but chief amongst those is making the demand side as investable as the supply side. One essential aspect of doing that is the need for standardisation – this is where the Investor Confidence Project is so important. Now the system exists it can be used anywhere in the US and Europe and is being developed in other regions. It provides a framework and approach that can be used for all demand side technologies. Other initiatives including EEFIG's DEEP and the Underwriting Toolkit also help to build capacity and make the demand side more investable. Given these developments, and the increasing recognition that the demand side really is the cheapest, quickest and cleanest source of energy services we have, I expect investment into the demand side grow rapidly in the coming years.

[europe.eepformance.org](http://europe.eepformance.org)  
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# EFFICIENCY – A DISTRIBUTED ENERGY RESOURCE

**Matt Golden, CEO Open Energy Efficiency  
Senior Advisor, Investor Confidence Programme  
mattgolden@openee.io**

## SEPTEMBER SPEAKER MEETING



**Just about every plan to achieve a clean-energy, low-carbon future includes a large helping of energy efficiency. But while it's true that efficiency is generally much cheaper than generation, energy efficiency as we know it faces an existential challenge.**

The rate at which we're deploying efficiency is simply not keeping pace with utility and grid needs. But even if we were able to achieve scale, in the current construct, it's unclear how we would pay for the massive investment required.

Fortunately, there is another way. We now have the data, market and financing in place to procure energy savings to solve time- and location-specific grid problems. Bundling projects into portfolios turns efficiency into an investor- and procurement-friendly product that has manageable and predictable yields.

By treating efficiency as a genuine distributed energy resource (DER), we can stop relying on

ratepayer charges and programs and instead unleash private markets and project financing to deploy and fund energy-efficiency projects in the same way we do solar, wind and other energy resources -- through long-term contracts, creating cash flows that can be financed like grid infrastructure through project finance rather than consumer credit.

The transition from programs to markets is not a one-step process. It requires a series of investments in data and a cultural shift from regulators and utilities toward adopting financial principles of portfolio management.

The grid is undergoing a transformation from central generation to clean distributed sources of power such as solar and wind. This has resulted in new challenges as we integrate intermittent renewables, often at the grid edge. The imbalance between California's daytime

solar supply and evening demand (the "duck curve") is contributing to regular periods of negative pricing and driving the need for time- and location-responsive distributed energy resources (DERs) such as storage, EV charging and demand response. As DER markets emerge, it is clear that there are no silver bullets to solve this problem, and that current resources are both costly and in short supply compared to the scale of the challenge.

Energy efficiency represents the largest and least expensive of these potential resources, but has largely been left out of the conversation. This is because traditional energy efficiency is based on monthly average savings and therefore can't solve for grid issues that vary by location and time.

However, as smart meter interval data becomes available in an increasing number of states, and as portfolios of efficiency

projects and data are aggregated, we will have the ability to calculate savings on portfolios of energy efficiency projects in terms of both time and location. This analysis creates resource curves (time and locational savings load shapes) that can be used to design efficiency portfolios that reliably deliver "negawatts" where and when they are most needed, rather than simply average reductions in consumption for a given month.

Rather than paying in advance through rebates for traditional energy efficiency that doesn't differentiate between peaks or valleys in demand, utilities will be able to procure savings based on when and where they are happening. By breaking down "energy efficiency" into classes of projects that deliver more valuable resource curves, we can make savings worth more when they have the biggest impact, giving market players the tools and incentives they need to optimize their offerings to deliver the most valuable results to the grid and the best deal to customers.

Rather than paying rebates upfront and measuring monthly outcomes years later -- resulting in prescriptive programs and costly regulations -- utilities can use standard open-source methods and calculations such as CalTRACK and the OpenEEmeter to establish markets in which a wide range of businesses can enter into mid- or long-term contracts, similar to supply-side PPAs, where they are paid for performance through savings purchase agreements (SPAs) for the value of how they shift load over time, based on normalized metered savings.

A new pay-for-performance arrangement would flip the way we pay for energy efficiency on its head. Whereas today energy efficiency investments are

financed by consumers either out of pocket or based on their credit or the value of their asset, we can instead use project finance in the same way we pay for power plants and other distributed resources -- by paying for performance over time and financing the resulting cash flow. Rather than relying on individual consumers to subsidize the public benefits of efficiency, the costs would be spread across all ratepayers and would be rate-based like other utility investments.

By making efficiency work like other capacity resources, we solve for two of the outstanding existential problems that have stood between energy efficiency and its potential: how to bring efficiency to bear as a real solution for modern-day grid issues such as intermittent generation, and how to attract the private investment required to get us there.

While it's true that energy efficiency on individual buildings can be all over the map, at the portfolio level, it makes for a remarkably stable investment. The transition from attempting to be right all the time to instead accepting quantifiable risks and managing performance through portfolios marks a transition from engineering to finance.

Efficiency aggregators compete to enter into SPAs to deliver demand reductions to utilities when and where they need them. Utilities pay for these savings as they are delivered through procurement. Aggregators can then insure and finance these cash flows and compete to deliver products that both resonate with customers and are optimized to maximize the grid value. So long as efficiency is cheaper than the marginal costs of alternatives such as generation, storage, or transmission and distribution investments, it is a good deal for ratepayers.

This transition will take time and data, so it's critical that we get the ball rolling immediately:

1. Utilities should implement open-source metering of energy efficiency performance in order to optimize program implementation and make savings and resource curve data open and transparent.
2. Utilities should create pay-for-performance pilots next to existing programs, allowing third-party aggregators to innovate and compete based on outcomes.
3. Regulators should allow utilities to recover cost so long as the utility cost of metered efficiency is lower than the marginal cost of alternative resources.
4. Regulators and utilities should move efficiency resource curves into all resource procurements alongside other distributed resources.

Given the problems faced by the changing grid, and the market and financial barriers to scale inherent in the current approach to energy efficiency, it is urgent that we start aggressively standing up markets that value energy-efficiency resource curves through pay-for-performance in order to unlock private investment and market innovation.



# HOUSE OF LORDS ANNUAL DINNER – 8TH NOVEMBER 2017

Hosted by The Rt Hon. the Lord Whitty

Guest Speaker, Rachel Fletcher,  
Senior Partner for Consumers and Competition at Ofgem

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Mike Gibbons Elexon,  
Jeremy Pocklington BEIS



Lord Whitty; Rachel Fletcher Ogem,  
Ian Liddell-Grainger MP



Suzanna Jebbit ENA,  
Paul Needley Enertek



Andrew Furlong, Dr Michael Green  
IChemE, Numzia Florio UKPIA



Andrew Mackintosh Calon



Lord Whitty welcomes us



Rachel Fletcher entertains us



A question from  
Lawrence Slade Energy UK



Rachel Fairclough CBRE, Dr Michael Green IChemE,  
Damir Ahmovic Alfa Energy, Ken Daniels Conti Teves, Marcus Cain LSH



A question from Sarah Daly  
Sustainable Homes



Prof Jon Gluyas DEI, Brett Williams Burns  
McDonnell, Rich Hampshire CGI,  
Katrina Mitchell Burns McDonnell



Dr Paul Day, Sentinel, Lord Truscott,  
Andrew Thurlwell IPA, Prof Tim Green IC



James Coady Babcock  
International



# ENERGY POLICY WORKSHOP

## DECEMBER SPEAKER MEETING

Parliamentarians from both Houses met with academia and industry to review the essential priorities for energy policy in the forthcoming months and years. A small panel of energy spokesmen was also gathered.

Each of the panellists was invited to set out their hopes for energy policy, which are summarised below. The level of agreement was worthy of note. This was followed by a free-flowing debate which was Chaired by Ian Liddell-Grainger MP with contributions from academic, industrial and other members.

Notes of the discussions were taken and summarised at the end of the meeting. In an effort to draw together all contributions, further statements were received from the floor. Primarily, it was noted that although minor refinements were needed to our priorities document, however, the initial strategic focus was still valid.

## Introductory Remarks

### The Rt Hon the Lord Teverson



The focus should be moved to Energy Bills (from prices) to highlight efficiency at all points in the energy system helping potential investment.

- Zero carbon homes - heating and cooling. Enabling our buildings to take advantage demand response, storage and local generation.

- Use incentives where can large scale infrastructure investment make a difference and private investment assist the energy transition and delivery of clean growth plan
- On shore wind still has a role to play
- Role of Hydrogen and 2nd and 3rd Generation Biofuels, especially in Transport
- Energy targets are needed

### Alan Whitehead MP



The 5th Carbon budget is now set, so our attention should turn to how to achieve the clean growth plan - which needs sufficient actions to achieve the targets set in the Carbon Budget.

To do this, here are three top priorities:

- Heat Decarbonisation - need to play catch up, using all means on the existing infrastructure, including biogas, syngas, CCS and hydrogen
- Grid operation and efficiency – find how to support decarbonisation and decentralisation
- Proper interconnection with our partners - serious progress with our interconnector programme and Internal Energy Market involvement to ensure shared energy security

### Alan Brown (SNP)



We need to reflect the alignment of policy and have coherent plans outlining their impact on bills.

- A more strategic focus with fewer individual initiatives
- Transmission costs and market design
- On shore wind and storage

has a role to play

- We need to consider the nuclear impact (Hinkley and impact of a programme of Small Modular Reactors)

This was followed by a free-flowing discussion, looking at the existing priorities, the members submissions and exchanging of views. From this evening, the following PGES Energy Policy Priorities were refined. These will be used in the coming months as a focus for our activities and displayed on [pges.org.uk](http://pges.org.uk).

PGES would like to thank all contributors for their time and efforts.

# PGES ENERGY POLICY PRIORITIES

Over the last few years, we have seen a rapid change in the way that consumers interact with energy companies and the way that energy is collected, generated and used. Thus Energy Policy needs a major shift away from the central generation model to one focussed on distributed resources, flexible networks and the consumer, engendering transparency, trust and consumer confidence.

A clear plan must be set with ambition, goals and milestones to show an overarching route towards meeting our carbon targets as well as how consumers can also impact their own bill.

## 1. Energy Efficiency

Demand reduction needs to be separated from fuel poverty. Behavioural change and system end goal need focus more than the means to achieve them. Commercial & Industrial sector is an easy win, ongoing building performance checks needed.

## 2. Heat

Very large energy consumption. Decarbonisation by all means to support carbon targets. Retrospective and progressive Building Regulations needed to improve building stock.

## 3. Market design whole system and operation

Policy harmony is required, instead of the current approach which suppresses important elements. Important also as policy is slower to change than either markets or technology.

## 4. Flexibility

Includes Demand Side Response, Energy Management and Storage; Smart Grid and Micro Grid, enabling least cost routes to decarbonisation. Broad acceptability, essential elements for energy policy. Include storage, not just batteries.

## 5. Future of gas

Hydrogen (H2), Biogas, Green gas, Syngas, CCS and use of existing infrastructure. CCS is an essential element. Using the existing infrastructure means easy consumer acceptance.

With the interweaving strands being

## 1. Energy as National Infrastructure

National level approach is vital, but market led solutions must be encouraged. These need different approaches, not one size fits all. Set targets to avoid picking winners.

## 2. Transport

Not just electric vehicles. Focus on decarbonisation to help drive consumer understanding.

## 3. Energy in Brexit

Industry needs clear ambition led by Government for energy, efficiency and interconnecting.

## 4. Fuels

A coherent policy landscape, reflecting the interweaving relationship between fuel sources and uses. Gas, Wind (onshore and off), Solar, Nuclear, (abated) Coal and Oil used for all forms of heat, light and movement and their interactions with water, food and other demands.

## 5. Investment

Investment finance is available, but UK must show itself to be investable and ambitious.

PGES would like to see a clear ambitious target set for de-carbonisation and reduction of consumption, with landmarks and milestones, thus giving industry the clear opportunity to innovate to achieve those targets. It is important how they fit together and impact on customers views.

# COST OF ENERGY REVIEW

By Professor Dieter Helm CBE  
MA DPhil Oxf 25/10/17

dieter@dhelm.co.uk



## Key Findings and Recommendations

1. The cost of energy is too high, and higher than necessary to meet the Climate Change Act (CCA) target and the carbon budgets. Households and businesses have not fully benefited from the falling costs of gas and coal, the rapidly falling costs of renewables, or from the efficiency gains to network and supply costs which come from smart technologies. Prices should be falling, and they should go on falling into the medium and longer terms.
2. Households and businesses have not benefited as much as they should because of legacy costs, policies and regulation, and the continued exercise of market power.
3. The scale of the multiple interventions in the electricity market is now so great that

few if any could even list them all, and their interactions are poorly understood. Complexity is itself a major cause of rising costs, and tinkering with policies and regulations is unlikely to reduce costs. Indeed, each successive intervention layers on new costs and unintended consequences. It should be a central aim of government to radically simplify the interventions, and to get government back out of many of its current detailed roles. This review explains how to do this.

4. The legacy costs from the Renewables Obligation Certificates (ROCs), the feed-in tariffs (FiTs) and low carbon contracts for difference (CfDs) are a major contributor to rising final prices, and should be separated out, ring-fenced, and placed in a 'legacy bank'. They should be charged separately and explicitly on customer bills. Industrial

customers should be exempt. Once taken out of the market, the underlying prices should then be falling.

5. The most efficient way to meet the CCA target and the carbon budget is to set a universal carbon price on a common basis across the whole economy, harmonising the multiple carbon taxes and prices currently in place. This price should vary so as to meet the carbon targets. It would be significantly lower than the cost of the current multiple interventions.
6. There should be a border carbon price to address the consequences of the UK adopting a unilateral carbon production target.
7. The FiTs and other low-carbon CfDs should be gradually phased out, and merged into a unified equivalent firm power (EFP) capacity auction. The costs of intermittency will then rest

with those who cause them, and there will be a major incentive for the intermittent generators to contract with and invest in the demand side, storage and back-up plants. The balancing and flexibility of markets should be significantly encouraged.

8. After all existing commitments in respect of FiTs and low-carbon CfDs have been fully honoured, and in the transition to a proper, uniform carbon price and an EFP auction, they should be split into three parts: the construction and project-development phase; the operation of the plant; and decommissioning. The first should have a higher cost of capital, reflecting the equity risks; the second should be more akin to a regulatory asset base (RAB) in the utilities and closer to the cost of debt; and the third should be a charge to operating costs. The customers should benefit from the refinancing when the project comes into operation.
9. The current RIIO (Revenue = Incentives + Innovation + Outputs) periodic review price caps for the transmission and distribution companies are already being significantly outperformed – in part because of mistakes in the assumptions – and have resulted in higher prices than need to be charged for the efficient delivery of their functions. Ofgem should consider what actions should be taken now.
10. For the networks, going forward, there should be no more periodic reviews in the current RIIO framework. Technical change is so fast that predicting costs eight–ten years hence is impractical.
11. The government should establish an independent national system operator (NSO) and regional system operators (RSOs) in the public sector, with relevant duties to supply, and take on some of the obligations in the relevant licences from the regulated transmission and distribution companies. The NSO and the RSOs should, where practical, open up the various functions and enhancements to the networks to competitive auctions and, at the local level, invite bids for network enhancements, generation and storage, and demand-side response (DSR) from energy service companies.
12. The separate generation, supply and distribution licences, at least at the local level, should be replaced by a simpler, single licence.
13. As a result of the above changes, the role of Ofgem in network regulation should be significantly diminished.
14. There should be a default tariff to replace the Standard Variable Tariff (SVT), based on the index of wholesale costs, the fixed cost pass-throughs, levies and taxes, and a published supply margin.
15. Capping the margin would be the best way to meet the objectives of the new draft legislation. By focusing on the margin within the default tariff structure, competition would be enhanced, thereby encouraging new entrants.
16. The government should issue an annual statement to Parliament, setting out the required capacity margins and providing guidance to the NSO and RSOs.



# CLEAN GROWTH STRATEGY WHITE PAPER

17th October 2017

## Key policies and proposals

The Government published a Clean Growth white paper in October. Listed below are the key policies and proposals.

### Accelerating clean growth

Develop world leading Green Finance capabilities, including by:

- setting up a Green Finance Taskforce
- working with the British Standards Institution to develop a set of voluntary green and sustainable finance management standards
- providing up to £20 million to support a new clean technology early stage investment fund
- working with mortgage lenders to develop green mortgage products

### Improving business and industry efficiency – 25% of UK emissions

Develop a package of measures to support businesses to improve their **energy productivity**, by at least 20% by 2030, including by:

- consult on **improving the energy efficiency** of new and existing commercial buildings
- consulting on **raising minimum standards of energy efficiency** for rented commercial buildings
- exploring how **voluntary building standards** can support improvements in the energy efficiency performance of business buildings

- simplifying the requirements for businesses to measure and report on energy use, to help them identify where they can cut bills

Establish an Industrial energy efficiency scheme to help large companies install measures to cut their energy use and bills

Publish joint **industrial decarbonisation and energy efficiency** action plans

Demonstrate international leadership in **carbon capture usage and storage** (CCUS) and investing up to £100 million and work to deploy at scale in UK.

Develop our strategic approach to **greenhouse gas removal** technologies

Phase out the installation of high carbon forms of fossil fuel heating in new and existing businesses off the gas grid during the 2020s

Support the **recycling of heat** produced in industrial processes

#### Innovation:

- invest around £162 million of public funds in research and innovation in Energy, Resource and Process efficiency, including up to £20 million to encourage switching to **lower carbon fuels**

- support **innovative energy technologies** and processes with £14 million through the **Energy Entrepreneurs Fund**

### Improving our homes – 13% of UK emissions

#### Improving the energy efficiency of our homes

Support around £3.6 billion of investment to upgrade around a million homes through the **Energy Company Obligation** (ECO)

All fuel poor homes to be **upgraded to Energy Performance Certificate (EPC) Band C** by 2030 and as many homes as possible to be *EPC Band C by 2035 where practical, cost-effective and affordable*

Improve the **energy performance standards of privately rented homes**, upgrading as many as possible to *EPC Band C by 2030 where practical, cost-effective and affordable*

Consult on how **social housing** can meet similar standards

Consult on strengthening **energy performance standards for new and existing homes** under building regulations, including futureproofing new homes for low carbon heating systems

Offer all households the opportunity to have a smart meter to help them save energy by the end of 2020

#### Rolling out low carbon heating

Build and extend **heat networks** across the country, underpinned with public funding (allocated in the Spending Review 2015) out to 2021

**Phase out the installation of high carbon fossil fuel heating** in new and existing homes currently off the gas grid during the 2020s

Improve standards on the 1.2 million new boilers installed every year in England and require **installations of control devices** to help people save energy

Invest in **low carbon heating** by reforming the Renewable Heat Incentive, spending £4.5 billion to support innovative low carbon heat technologies in homes and businesses between 2016 and 2021

Innovation: Invest around £184 million to develop **new energy efficiency and heating technologies** to enable lower cost low carbon homes

### Accelerating the shift to low carbon transport – 24% of UK emissions

**End the sale of new petrol and diesel cars** and vans by 2040

Spend £1 billion supporting the take-up of **ultra low emission vehicles** (ULEV),

Develop one of the best **electric vehicle charging networks** in the world by:

- investing an additional £80 million, alongside £15 million from Highways England, to support **charging infrastructure** deployment
- taking new powers under the **Automated and Electric Vehicles Bill**, for the provision of charging points

Accelerate the uptake of low emission taxis and buses by:

- providing £50 million for the **Plug-in Taxi programme**, which gives taxi drivers up to £7,500 off the purchase price of a new ULEV taxi, alongside £14 million to support 10 local areas to deliver dedicated charge points for taxis

- providing £100 million for a national programme of support for retrofitting and new **low emission buses** in England and Wales

Work with industry as they develop an Automotive Sector Deal to accelerate the transition to **zero emission vehicles**.

Announce plans for the public sector to lead the way in transitioning to **zero emissions vehicles**.

Invest £1.2 billion to make **cycling and walking** the natural choice for shorter journeys

Work to **shift more freight from road to rail**, including low emission rail freight for deliveries into urban areas, with zero emission last mile deliveries

Position the UK at the forefront of research, development and demonstration of Connected and Autonomous Vehicle technologies, including through the establishment of the **Centre for Connected and Autonomous Vehicles** and investment of over £250 million, matched by industry

Innovation: Invest around £841 million of public funds in innovation in **low carbon transport** technology and fuels including:

- design, development and manufacture of **electric batteries** through investment of up to £246 million in the Faraday Challenge
- delivering trials of **Heavy Goods Vehicle** (HGV) platoons

### Delivering Clean, Smart, Flexible Power – 21% of UK Emissions

**Reduce power costs** for households and businesses by:

- implementing the **smart systems plan**, which will help consumers to use energy more flexibly
- working with Ofgem and National Grid to create a more **independent system operator** to keep bills low through greater competition, coordination and innovation across the system
- responding to the forthcoming independent **review into the cost of energy** led by Professor Dieter Helm CBE

- publishing a draft bill to require Ofgem to impose a **cap on standard variable and default tariffs** across the whole market

Phase out the use of **unabated coal** to produce electricity by 2025

Deliver new **nuclear power** through Hinkley Point C and progress future projects in the pipeline

Improve the route to market for **renewable technologies** such as offshore wind through:

- up to £557 million for further **Pot 2 Contract for Difference auctions**, with the next one planned for spring 2019
- working with industry as they develop an ambitious Sector Deal for **offshore wind**

Target a **total carbon price** in the power sector which will give businesses greater clarity on the total price they will pay for each tonne of emissions.

**Innovation:** Invest around £900 million of public funds, including around:

- £265 million in smart systems to reduce the cost of electricity storage, **advance innovative**



# PARLIAMENTARY RECORD

## SELECT COMMITTEE ON ENERGY AND INDUSTRIAL STRATEGY

20st July 2017 – 1st December 2017

### House of Commons

#### Business, Energy and Industrial Strategy Committee

##### Energy price cap inquiry

Oral evidence concluded; report in preparation.

The Business, Energy and Industrial Strategy Committee evidence sessions about the different energy price cap proposals and their implications for customers, energy prices and competition.

On 17th October, evidence given by Stephen Fitzpatrick, CEO, Ovo, Sarwjit Sambhi, Managing Director UK Home, Centrica, Catherine Waddams, Professor of Regulation, Norwich Business School, Centre of Competition Policy, Greg Jackson, CEO, Octopus Energy, Dermot Nolan, CEO, Ofgem, Rachel Fletcher, Senior Partner Consumers and Competition, Ofgem.

The next week, on 1st November, evidence given by Rt Hon Greg Clark MP, Secretary of State, Department for Business, Energy and Industrial Strategy, Margot James MP, Minister for Small Business, Consumers and Corporate Responsibility, Department for Business, Energy and Industrial Strategy, Jeremy Pocklington, Director General for Energy and Security, Department for Business, Energy and Industrial Strategy

##### Brexit and the implications for UK business: Civil nuclear sector inquiry

Inquiry status: Open. The deadline for submissions has passed. This is the civil nuclear sector strand of the Committee's Brexit and the implications for UK business inquiry.

On 1st November, evidence given by Dr Mina Golshan, Deputy Chief Inspector and Director for the Sellafield, Decommissioning, Fuel and Waste Division, Office for Nuclear Regulation, Ben Russell, Head of Policy and External Affairs, Horizon Nuclear Power, Peter Haslam, Head of Policy, Nuclear Industry Association, Andrew van der Lem, Head of Government and Public Affairs, Nuclear Decommissioning Authority, Richard Harrington MP, Minister for Energy and Industry, Katrina McLeay, Head of Safeguards and Delivery, David Wagstaff, Head of Euratom Exit Negotiations, Department for Business, Energy and Industrial Strategy

##### Clean Growth Strategy inquiry

Inquiry status: Open. Oral evidence is ongoing.

On 28th November, evidence given by Claire Perry MP, Minister of State for Climate Change and Industry, Pete Betts, Director for International Climate and Energy, and Tim Lord, Director for Clean Growth, Department for Business, Energy and Industrial Strategy;

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

Inquiry status: Open. The deadline for submissions has passed.

The Committee has not yet published any evidence.

#### Committee of Public Accounts

##### Hinkley Point C

##### Third Report of Session 2017–19 Published 22nd November 2017

Summary

Hinkley Point C is the first nuclear power station to be built in the UK since 1995. The Committee is concerned consumers are locked into an expensive deal lasting 35 years and that the Government did not revisit the terms between the original decision to go ahead and now, despite estimated costs to the consumer having risen five-fold during that time. Over the life of the contract, consumers are left footing the bill and the poorest consumers will be hit hardest. Yet in all the negotiations no part of Government was really championing the consumer interest.

**demand response technologies** and develop new ways of balancing the grid

- £460 million in nuclear to support work in areas including future **nuclear fuels, new nuclear manufacturing techniques**, recycling and reprocessing, and advanced reactor design
- £177 million to further reduce the cost of **renewables**, including innovation in offshore wind turbine blade technology and foundations

#### Enhancing the benefits and value of our natural resources – 15% of UK emissions

Design a new system of future **agricultural support** to deliver better environmental outcomes

Establish a new **network of forests** in England

Work towards our ambition for **zero avoidable waste** by 2050

Publish a new **Resources and Waste Strategy**

Explore new and innovative ways to manage **emissions from landfill**

Support peatland through a £10 million capital grant scheme for **peat restoration**

**Innovation:** Invest £99 million in innovative technology and research for agri-tech, land use, greenhouse gas removal technologies, waste and resource efficiency

#### Leading in the public sector – 2% of UK emissions

Agree tighter targets for 2020 for **central government** and actions beyond this date

Introduce a **voluntary public sector target** of a 30% reduction in carbon emissions by 2020 to 2021 for the wider public sector

Provide £255 million of

funding for **energy efficiency improvements** in England and help public bodies access funding

#### Government leadership in driving clean growth

Work with businesses and civil society to introduce a '**Green Great Britain**' week to promote clean growth

Reinstate a regular **Clean Growth Inter-Ministerial Group** responsible for monitoring the implementation of this Strategy and driving ambitious clean growth policies

Report annually on our performance in delivering GDP growth and reduced emissions through an '**Emissions Intensity Ratio**'

#### Tracking our progress

Publish an **Emissions Intensity Ratio** (EIR) to measure our clean growth performance each year to track progress. To drive the emissions intensity of the economy down by an average of 5% per year to 2032.

#### Next steps

Update key elements of the strategy in line with our annual statutory responses to the Committee on Climate Change's reports on progress, ahead of setting the **sixth carbon budget** by 30 June 2021.

Launch the following **government consultations** during 2017 and 2018:

- the design of a new **industrial heat recovery** programme
- making the **private rented sector energy efficiency** regulations more effective, and setting longer term **energy performance standards** across both the domestic private and social rented sectors
- a streamlined and more effective energy and **carbon reporting framework**

• a package of measures to support businesses to improve their energy productivity

• our strategic approach to the **aviation sector** in a series of consultations over the next 18 months

Many of the future actions will be set out in the **25 Year Environment Plan**, a long term strategy for the UK's transition to zero road vehicle emissions.

From 2018 we will work with private partners and NGOs to introduce a **Green Great Britain Week**, an annual event to:

- focus on climate and air quality issues
- demonstrate our progress on climate action
- share climate science
- highlight economic opportunities from clean growth

As the financial case for Hinkley has weakened, the Government has talked up the boost to jobs and skills that Hinkley will generate. But the Government has no clear plan of how these so-called wider benefits will be achieved, or crucially how it will measure success.

We have seen other large infrastructure projects promise a lot of jobs and skills and not deliver. The Government must act now to firm up its vague promises of wider benefits so UK workers, supply chain businesses and apprentices can see tangible benefits.

With Brexit looming delivering a plan for the wider benefits has even more urgency as we cannot be sure that we will attract the necessary skills from overseas.

## House of Lords

### EU Energy and Environment Sub-Committee

#### Brexit: energy security inquiry

Oral evidence concluded; report in preparation.

On 25th October, evidence given by Richard Harrington MP, Minister for Energy and Industry, Department for Business, Energy and Industrial Strategy; Dan Monzani, Head of Energy Security, BEIS; Katrina McLeay, Head of Safeguards and Delivery, Euratom Exit Team, BEIS.

On 18th October, evidence given by His Excellency Jean-Christophe Fügé, Ambassador, Head of International Energy Affairs at the Swiss Federal Office of Energy (SFOE), Department of the Environment, Transport, Energy and Communications

On 6th September, evidence given by Joseph Dutton, Policy Adviser, E3G; Georgina Wright, Research Assistant and Co-ordinator, Europe, Chatham House; Malcolm Keay, Senior Research Fellow, Oxford Institute for Energy Studies. Lawrence Slade, Chief Executive, Energy UK; Phil Sheppard, Director of UK Systems Operation, National Grid; Ian Graves, Director of European Business Development, National Grid.

# PARLIAMENTARY ORAL QUESTIONS AND DEBATES

## House of Commons Oral Questions - From 21st July 2017 to 13th December 2017

### Hendry Review Tidal Lagoons

Neil Parish (Tiverton and Honiton) (Con)  
Albert Owen (Ynys Môn) (Lab)  
Theresa Villiers (Chipping Barnet) (Con)  
Christina Rees (Neath) (Lab/Co-op)  
6th September 2017 Column 142 – 143

### Renewable Energy Projects

Rachel Reeves (Leeds West) (Lab)  
Mark Pawsey (Rugby) (Con)  
Hywel Williams (Arfon) (PC)  
6th September 2017 Column 143

### Energy Questions 12th September 2017

#### Carbon Emissions

Sir Desmond Swayne (New Forest West) (Con)  
Albert Owen (Ynys Môn) (Lab)  
Barry Gardiner (Brent North) (Lab)  
Column 617 – 618

### Energy Supply

Maria Eagle (Garston and Halewood) (Lab)  
Colin Clark (Gordon) (Con)  
Alan Brown (Kilmarnock and Loudoun) (SNP)  
James Heapey (Wells) (Con)  
Drew Hendry (Inverness, Nairn, Badenoch and Strathspey) (SNP)  
Dr Alan Whitehead (Southampton, Test) (Lab)  
John Stevenson (Carlisle) (Con)  
Column 625 – 628

### Renewable Energy and Carbon Budget Targets

Zac Goldsmith (Richmond Park) (Con)  
Clive Lewis (Norwich South) (Lab)  
Column 632

### Domestic Energy Price Cap

John Penrose (Weston-super-Mare) (Con)  
Column 633

### Topical Questions

Caroline Flint (Don Valley) (Lab)  
Rebecca Long Bailey (Salford and Eccles) (Lab)  
Jessica Morden (Newport East) (Lab)  
Bill Grant (Ayr, Carrick and Cumnock) (Con)  
Catherine McKinnell (Newcastle upon Tyne North) (Lab)  
Martin Vickers (Cleethorpes) (Con)  
Mary Glendon (North Tyneside) (Lab)  
Stephen Hammond (Wimbledon) (Con)  
Column 633 – 637

### Third Nuclear Power Station

David Morris (Morecambe and Lunesdale) (Con)  
13th September 2017 Column 838

### Climate Change Funding

Jo Swinson (East Dunbartonshire) (LD)  
18th October 2017 Column 824

### INEOS Fracking Company

Mr Dennis Skinner (Bolsover) (Lab)  
23th October 2017 Column 846

### Oil and Gas Industry

David Duguid (Banff and Buchan) (Con)  
Andrew Bowie (West Aberdeenshire and Kincardine) (Con)  
Ian Murray (Edinburgh South) (Lab)  
Christine Jardine (Edinburgh West) (LD)  
25th October 2017 Column 287

### Natural Carbon Capture Potential

Mrs Anne-Marie Trevelyan (Berwick-upon-Tweed) (Con)  
25th October 2017 Column 298  
Fracking Ban in Scotland  
Tommy Sheppard (Edinburgh East) (SNP)  
25th October 2017 Column 300

### Swansea Bay tidal lagoon

Tonia Antoniazzi (Gower) (Lab)  
25th October 2017 Column 298

### Zero Energy Bill Homes

Andrew Selous (South West Bedfordshire) (Con)  
30th October 2017 Column 569

### Energy Questions 7th November 2017

#### Civil Nuclear Industry

Wera Hobhouse (Bath) (LD)  
John Stevenson (Carlisle) (Con)  
Layla Moran (Oxford West and Abingdon) (LD)  
Mark Pawsey (Rugby) (Con)  
John Woodcock (Barrow and Furness) (Lab/Co-op)  
Column 1313 – 1314

#### Carbon Capture and Storage

John Mc Nally (Falkirk) (SNP)  
Alan Brown (Kilmarnock and Loudoun) (SNP)  
Dr Alan Whitehead (Southampton, Test) (Lab)  
Drew Hendry (Inverness, Nairn, Badenoch and Strathspey) (SNP)  
Column 1316 – 1317

#### Smart Meters

Nigel Huddleston (Mid Worcestershire) (Con)  
Mary Creagh (Wakefield) (Lab)  
John Lamont (Berwickshire, Roxburgh and Selkirk) (Con)  
Jim Shannon (Strangford) (DUP)  
Column 1320 – 1321

### Paris Climate Change Agreement

Michael Tomlinson (Mid Dorset and North Poole) (Con)  
Jenny Chapman (Darlington) (Lab)  
Edward Argar (Charnwood) (Con)  
Caroline Lucas (Brighton, Pavilion) (Green)  
Column 1321 – 1322

### Tidal Lagoons

Richard Graham (Gloucester) (Con)  
Column 1325

### Topical Questions

Rebecca Long Bailey (Salford and Eccles) (Lab)  
John Penrose (Weston-super-Mare) (Con)  
Dr Caroline Johnson (Sleaford and North Hykeham) (Con)  
Stephen Kinnock (Aberavon) (Lab)  
Rebecca Pow (Taunton Deane) (Con)  
Steve McCabe (Birmingham, Selly Oak) (Lab)  
Martin Vickers (Cleethorpes) (Con)  
Column 1326 – 1332

### Global Warming

Daniel Zeichner (Cambridge) (Lab)  
21st November 2017 Column 853

### Paris Climate Change Treaty

Kerry McCarthy (Bristol East) (Lab)  
23rd November 2017 Column 1164

### Investment in North East Scotland Oil and Gas Industry

Colin Clark (Gordon) (Con)  
28th November 2017 Column 147

### Investment in Clean, safe Renewables

Chris Law (Dundee West) (SNP)  
29th November 2017 Column 308

### High Energy Efficiency Standards for New Houses

James Heapey (Wells) (Con)  
4th December 2017 Column 686

### Dedicated funding for Wave and Tidal Power

Mr Alistair Carmichael (Orkney and Shetland) (LD)  
6th December 2017 Column 1018

### Support for Scotland's Clean Energy Industries

Theresa Villiers (Chipping Barnet) (Con)  
6th December 2017 Column 1018

### Energy Questions 12th December 2017

#### Renewable Energy – (Scotland)

Brendan O'Hara (Argyll and Bute) (SNP)  
Hannah Bardell (Livingston) (SNP)  
Stephen Kerr (Stirling) (Con)  
James Heapey (Wells) (Con)  
Mr Alistair Carmichael (Orkney and Shetland) (LD)  
Column 160 – 161

#### Carbon Savings

Colin Clark (Gordon) (Con)  
Anna McMorris (Cardiff North) (Lab)  
David Warburton (Somerton and Frome) (Con)  
Sammy Wilson (East Antrim) (DUP)  
David T. C. Davies (Monmouth) (Con)  
Column 163 – 166

#### Industrial Strategy

Andrew Bowie (West Aberdeenshire and Kincardine) (Con)  
Column 168 – 169

#### Carbon Reduction Targets

Joan Ryan (Enfield North) (Lab)  
Graham P. Jones (Hyndburn) (Lab)  
Dr Alan Whitehead (Southampton, Test) (Lab)  
Column 169 – 170  
**Offshore Wind Industry**  
Peter Aldous (Waveney) (Con)  
David Hanson (Delyn) (Lab)  
Column 170 – 171

#### Topical Questions

Dr Roberta Blackman-Woods (City of Durham) (Lab)  
Alan Brown (Kilmarnock and Loudoun) (SNP)  
Liz Saville Roberts (Dwyfor Meirionnydd) (PC)  
Preet Kaur Gill (Birmingham, Edgbaston) (Lab/Co-op)  
Martin Vickers (Cleethorpes) (Con)  
Sir Edward Davey (Kingston and Surbiton) (LD)  
Column 172 – 175



# NUSCALE POWER: AN SMR OPPORTUNITY FOR THE UK

NuScale Power is one of the world's most advanced developers of small modular reactor (SMR) technology, bringing scalability, flexibility and factory fabrication to nuclear energy.

Up to 12 of our 50 MWe NuScale Power Modules can be installed in a single facility, generating up to 600 MWe of reliable, cost-competitive, low carbon energy.



Technology overview



With the backing of our major investor, Fluor Corporation we expect to be generating for our first U.S. customer by the mid-2020s.

We also see our technology being manufactured, deployed and generating electricity in the UK within a similar timeframe.

