

Artificial intelligence in the driving seat

The participants, from the Defence, Science and Technology Laboratory (Dstl), had three days to transform a 'dumb' car into one which could navigate a course using [artificial intelligence \(AI\)](#) .

The challenge aimed to demonstrate the benefits of reinforcement learning and the differences between the virtual and physical environments.

[## AI in the Driving Seat] (https://www.youtube.com/watch?v=Ab_q2ZmxxNc)

Dstl organiser David said

When you are faced with a problem you have not faced before you're forced to think laterally and think outside the box. That's why we love to give our teams and particularly our early career staff these different and exciting challenges. It gives us the opportunity to engage with new technologies which are going to be really important to us in the future.

In DeepRacer someone is controlling the speed but the car is doing all of the rest of the navigation and that is all powered by the AI developed over the last few days. The idea is that you go as quickly as possible around the track. There are countless different approaches you can take.

The AWS DeepRacer Re-invent 2018 track, sized 26 feet long by 17 feet wide, included twists and turns designed to put the newly trained cars through their paces.

In just three days the 1/18 scale small cars, 'trained' by participants using reinforcement learning, had managed to complete the track in just under eight seconds – within a second of the world record speed.

The top virtual time was 7.865 seconds while the top track time was 8.069 seconds.

The event was hosted by Dstl in conjunction with Amazon Web Services (AWS) at Porton Science Park.

During the event participants had to deal with physical factors that they would not encounter in an online simulation such as lighting and roughness of the track.

AWS account manager Shea Hindman said:

DeepRacer is a fun and exciting way for people to get started with reinforcement learning. They are actually working with a fully autonomous vehicle. One of the real arts of creating a winning DeepRacer model is that difference between virtual and reality.

The winning time from Dstl is only a second off world record time – that really underscores the level of expertise and talent that Dstl has.

Dstl participant Nick said:

It's been quite interesting seeing how online results compare to real world results and learning how we can train better models. It leads on to what you see in autonomous vehicles and AI driving. My own simulation did really well online and then on the track didn't end too well. It's been a fun and enjoyable experience.

UKHO calls for UK-based companies involved in seabed mapping to join newly unveiled UK Centre for Seabed Mapping

The UK Hydrographic Office (UKHO) is inviting UK-based public organisations involved in seabed mapping who share common interests in optimising the UK's national maritime assets to become a member of the newly unveiled UK Centre for Seabed Mapping.

The UK Centre for Seabed Mapping (UK CSM) is administered by the UKHO, and was submitted as a UK Government Voluntary Commitment to the United Nations at the UN Ocean Conference in Lisbon, Portugal, on 27 June 2022.

The UK CSM has a remit to increase the coverage, quality and access of seabed mapping data collected using public funds, as well as to better promote it as a critical component of national infrastructure. Created to spearhead a coordinated approach to the collection, management, and access of seabed mapping data – and to champion a more integrated marine geospatial sector in the UK – the UK CSM has established three initial working groups which members can join and contribute to: National Data Collaboration, International Data Collaboration, and Data Collection Standards.

These working groups will further the discussion and coordination of data

accessibility, collection and collaboration, as well as progress work on data standards, by creating the conditions and developing infrastructure to enable the diverse community of marine geospatial stakeholders to come together to deliver significant, sustained, and strategic benefits to the UK – particularly in the context of the Integrated Review and the UK's Global Britain vision.

Twenty two government agencies have already been involved in the inaugural Management Group meeting of the UK CSM and volunteered to participate on the working groups, an encouraging response which shows a great desire to work across industry and help to raise the profile and improve outcomes of seabed mapping.

Commenting on the announcement, David Parker, Head of Hydrographic Programmes at the UKHO, said:

We are happy to start welcoming UK-based organisations with any seabed mapping remit to the UK Centre for Seabed Mapping and we are keen for all relevant organisations to join.

This important and timely initiative, which supports the UK's contribution and commitment to the United Nations Decade of Ocean Science for Sustainable Development running between 2021 and 2030, will meet the growing need for a more collaborative, cohesive, empowered, and better promoted marine geospatial community, and we are excited to work with organisations in the public sector to make this a reality.

Quality marine geospatial data is essential for almost every activity undertaken in the marine domain, including maritime trade, environmental and resource management, shipping operations, and national security and infrastructure. Due to the UK's role as a world leader in seabed mapping, there is a clear opportunity for us to establish a collaborative seabed mapping community which coordinates the collection, management, and access of publicly funded data. More interoperable and usable data will support more informed ocean governance and policy, which in turn will support greater innovation and prosperity.

In line with the fulfilment of our public duty, our vision is for the UK CSM to become the key focal point for our seabed mapping community and a unified voice for policy support, with the capability to develop a network of stakeholders and to enable meaningful cross government coordination.

The UK CSM will lead collaboration to develop specifications which support UK and international standards for the collection of marine geospatial data. This will provide much needed consistency and interoperability in developing the marine geospatial ecosystem – in line with the “collect once, use many times” principle – and will provide the private sector with confidence of direction. The UK CSM will also improve and increase accessibility and enable free access to data whilst honouring intellectual property (IP) rights, national security, and good data governance.

Having a dedicated centre will also help stakeholders to understand what data collection activities are planned in the future and identify opportunities for collaboration, in turn removing duplication, and optimising economies of scale and the quality and quantity of data being collected under current public funding.

If you would like to know more about the membership process and how to join the UK CSM, contact the team at UKCSM@UKHO.gov.uk or visit the [ADMIRALTY website](#).

Plans to bolster UK energy security set to become law

- Most ambitious package of energy measures in a decade to go before parliament to boost Britain’s energy independence and security
- measures will attract private investment, reindustrialise our economy and create jobs through new clean technologies, as well as protect consumers
- new powers to help prevent disruption to fuel supply because of industrial action, malicious protests and on grounds of national security also introduced

New measures to propel the UK’s transition to a cleaner, affordable, home grown energy system will be introduced today in a move that will further boost the country’s energy security and better protect consumers.

The landmark Energy Security Bill, announced as part of the Queen’s Speech, will be introduced into Parliament today by Business and Energy Secretary Kwasi Kwarteng and is the most significant piece of energy legislation in a decade, with 26 measures.

It follows immediate support from the government to help people with rising energy costs and puts into law measures to boost long-term energy independence, security, and prosperity including in the [British Energy Security Strategy](#) announced earlier this year.

The Bill will help drive an unprecedented £100 billion of private sector investment by 2030 into new British industries that are built to last and help diversify our domestic energy supply, including hydrogen and offshore wind, and support around 480,000 green jobs by the end of the decade.

Business and Energy Secretary Kwasi Kwarteng said:

To ensure we are no longer held hostage by rogue states and volatile markets, we must accelerate plans to build a truly clean, affordable, home-grown energy system in Britain.

This is the biggest reform of our energy system in a decade. We're going to slash red tape, get investment into the UK, and grab as much global market share as possible in new technologies to make this plan a reality.

The measures in the Energy Security Bill will allow us to stand on our own two feet again, reindustrialise our economy and protect the British people from eye-watering fossil fuel prices into the future.

Measures set to be introduced include those to support the deployment of low carbon technologies at scale such as carbon, capture, usage and storage (CCUS) and hydrogen, helping drive investment by giving businesses the certainty they need. The government is determined to ensure Britain secures a 'first mover advantage' in seizing the global market share in these technologies, helping to attract new private capital into the UK which will create jobs and reindustrialise parts of the country.

Measures included in the Bill, such as those encouraging the deployment of heat networks and driving down the cost of ultra-efficient electric heat pumps, will help scale up the installation of key clean technologies for the future – reducing the UK's dependency on global fossil fuel markets and exposure to volatile gas prices. Research shows that, on average, heat network consumers pay a lower price for their heat than those on an individual gas boiler, while replacing a gas boiler with a heat pump can reduce a home's energy use by well over 50%.

Other new powers will enable the extension of the energy price cap beyond 2023, shielding millions of customers across the country from being overcharged. The price cap limits the amount suppliers can charge for each unit of gas and electricity and for the daily standing charge.

Meanwhile in further efforts to protect consumers, for the first time Ofgem will be appointed to oversee regulation of the heat networks market – some 480,000 consumers across Britain – to ensure consumers are charged a fair price, including by enabling the regulator to investigate disproportionate prices and take enforcement action.

Consumers will be protected from increasing network prices in the event of energy network company mergers by enabling Competition and Markets Authority

to review relevant mergers under the new Energy Network Special Merger Regime. This could save consumers up to £420 million over 10 years.

To prevent fuel supply disruption, such as from industrial action, malicious protest and for reasons of national security, the Bill gives the Secretary of State powers to pre-emptively prevent potential disruption to the downstream oil sector. The Bill requires industry to take measures to improve their own resilience, requires industry to provide vital information to ensure government can identify potential disruptions, and other reforms to ensure continuity of supply.

Today's Bill is the latest reform to bolster energy security and follows the Nuclear Energy (Financing) Act which received Royal Assent earlier this year. The Nuclear Act establishes a new funding model to attract a wider range of private investment into new nuclear power projects, cutting the cost of financing projects and reducing the cost to consumers. As a condition for financial support through the new funding mechanism, the government reserves the right to take a 'special share' in all future nuclear projects.

Chief Executive of National Grid, John Pettigrew, said:

The Energy Security Bill builds on the positive steps the government outlined in its British Energy Security Strategy. National Grid plays a vital role at the heart of the energy transition and we look forward to continuing to work together with Government to realise its bold net zero goals including delivering 50 GW of offshore wind power by 2030 and establishing an independent system operator and planner.

Director of External Affairs at the Energy Networks Association, Ross Easton, said:

As the first dedicated energy legislation in nearly a decade, today's Energy Security Bill is a welcome opportunity to enable a cleaner, more affordable and more secure energy system. With record levels of electric vehicles, renewable energy capacity and heat pumps being introduced, alongside new technologies such as low carbon hydrogen, the role of our energy networks in integrating these technologies into the energy system has never been more important.

Director of Advocacy at Energy UK, Dhara Vyas, said:

The energy industry is ready to deliver an affordable, clean power system that will benefit consumers and the UK economy. The Energy Security Bill will help to ensure the UK's long-term energy supply and a cheaper and cleaner system overall. With the cost of energy reaching unprecedented levels it's right that the government

urgently legislates to protect consumers, whilst also delivering frameworks and regulation to support the decarbonisation of the UK economy so that it reduces bills in the long term.

Chief Executive of the Carbon Capture and Storage Association, Ruth Herbert, said:

Carbon capture, utilisation and storage has a critical role to play in reducing the UK's emissions and in the development of our industrial regions, where investment in new infrastructure can put us at the forefront of the global net zero transition.

The CCSA has worked with the UK government on a credible investment framework for CCUS deployment and we are pleased to see the Energy Security Bill laid in Parliament today to implement it. We look forward to confirmation of the first wave of carbon capture projects and a clear plan for subsequent projects to move ahead as soon as possible, given their vital role in our future low carbon economy, driving inward investment and maintaining and creating green jobs for the future.

Reform our energy system to protect consumers from unfair pricing

1. Enable the extension of the energy price cap beyond 2023, protecting 22 million households across the country from being overcharged.
2. Establish a new independent Future System Operator, which will take a whole-system approach to coordinating and planning Great Britain's energy system, looking across electricity, gas and other emerging markets such as hydrogen and CCUS. This will help maintain energy security and minimise costs for consumers over the long term.
3. Unleash competition in onshore electricity networks to save consumers up to £1 billion on projects tendered over the next 10 years, by finding new and efficient, innovative ways to build and deliver network solutions by inviting new parties to participate in this market.
4. Enable the Competition and Markets Authority to review any relevant energy network company mergers through the Energy Network Special Merger Regime. This will help to protect consumers from increasing network prices in the event of energy network company mergers, and we estimate this could save energy consumers up to £420 million over 10 years.
5. Protect consumers from cyber threats with new protections for smart appliances – the Bill will deliver protections for consumers and the grid by placing requirements on energy smart appliances and the organisations who control them.
6. Continue to drive industry progress on the smart meter rollout which is

set to deliver a £6 billion net benefit to society. Smart meters are modernising energy for millions of consumers and providing households with near-real time information which they are using to manage their energy use and save money on their bills.

7. Create a new governance framework for energy codes, which will enable innovation and allow Ofgem to ensure that the technical and commercial rules of the electricity and gas markets can adapt to meet the needs of a rapidly evolving energy system. The energy codes cover everything from how buyers and sellers must interact in commercial markets to the technical specifications required to connect to the grid.

8. Reduce the number of cabling, landing points, and substations by introducing multi-purpose interconnectors as a licensable activity. This will provide certainty to investors and developers, enabling them to make decisions regarding future projects.

9. Remove obstacles to innovative batteries and pumped hydro storage. This will facilitate the deployment of electricity storage, such as batteries and pumped hydro storage, by clarifying it as a distinct subset of electricity generation.

10. Create a more equal and fair energy market by enabling government to establish a buy-out mechanism under the Energy Company Obligation (ECO) scheme for suppliers. As committed to in the Energy White Paper, new legislation will enable the removal of obligation thresholds under the scheme without creating significant financial and administrative burden for small suppliers. ECO is a domestic energy efficiency scheme focused on providing support to fuel poor, low income and vulnerable households by placing a requirement on larger energy suppliers to install energy efficiency and heating measures in people's homes in order to reduce their energy bills. The current ECO4 scheme came into force in June 2022 and will run until March 2026.

11. Ensure families are better protected by appointing Ofgem as the new regulator for heat networks in Great Britain. This will ensure consumers get a fair price and a reliable supply of heat.

12. Kickstart the development of heat networks and enable heat network zoning in England, helping overcome barriers to deployment by identifying areas where they provide the lowest cost solution to heating buildings.

13. Take back control of powers given to the EU on the energy performance of buildings. The Bill will provide a replacement power to enable the UK government to amend the EU-derived Energy Performance of Buildings regime going forward.

Leverage private investment in clean technologies and building a homegrown energy system

14. Accelerate the growth of low carbon technologies including carbon capture usage and storage (CCUS) and hydrogen by introducing state of the art

business models, attracting private investment by providing long-term revenue certainty. Together with the measures on CO2 transport and storage, this will put the country on a path to seize market share and grow the economy.

15. Establish the economic regulation and licensing framework to enable the set-up and scale-up of the first-of-a kind CO2 transport and storage networks.

16. Enable the delivery of a large village hydrogen heating trial by 2025, providing crucial evidence to inform strategic decisions in 2026 on the role of hydrogen in heat decarbonisation. Two potential locations for this have already been announced in Whitby, in the Ellesmere Port area, and Redcar.

17. Help establish a market-based mechanism for the low-carbon heat industry to step up investment and lower the cost of electric heat pumps, while scaling up domestic manufacturing and installation.

18. Through the Bill, the UK will be the first country in the world to legislate for fusion energy, providing clarity on the regulatory regime for fusion energy facilities and removing uncertainty for the fusion industry.

Ensure the safety, security and resilience of the UK's energy system

19. Bring forward measures for downstream oil (fuel) security, covering sites such as oil terminals and filling stations, to prevent fuel supply disruption, including from industrial action, malicious protest and for reasons of national security.

20. Enhance our nuclear third party liability regime, that will lead to the availability of greater compensation to potential victims in the unlikely event of a nuclear incident, remove potential barriers to future investment and provide greater reassurance to private sector investors and the supply chain for new nuclear.

21. Facilitate the safe, and cost-effective clean-up of the UK's nuclear sites, ensuring the UK is a responsible nuclear state. The Bill will provide communities with clarity that should a geological disposal facility be located beneath the seabed it will be safe, secure and appropriately regulated by the ONR.

22. Make the UK oil and gas sector fit for the future by enabling existing legislation to be updated, ensuring that the offshore oil and gas environmental regulatory regime maintains high standards in respect to habitats protection and pollution response.

23. Ensure that the UK's oil and gas and carbon storage infrastructure remains in the hands of companies with the best ability to operate it. The North Sea Transition Authority cannot currently prevent undesirable changes of ownership and control of petroleum and carbon storage Licensees before they happen. The Bill will rectify this to allow the NSTA to identify and prevent a potentially undesirable change of control before it happens.

24. Protect taxpayers by maximising cost recovery. In line with the polluter pays principle, the government will be able to more fully recover the costs associated with regulating offshore oil and gas decommissioning activities from the industry.

25. Bring forward the final delicensing and re-use of nuclear sites, allowing more proportionate clean-up of these sites, resulting in estimated savings of around £490 million (NPV) over the first 20 years, with similar savings up to 2080.

26. Strengthen the Civil Nuclear Police's powers to help keep Britain safe. This Bill will introduce legislation to enable the Civil Nuclear Constabulary to utilise their expertise in deterrence and armed response to support the security of other critical infrastructure sites.

Constructing new energy infrastructure and market reform does take time, so in the meantime the government has already taken action to protect households from the impact of rising prices, with a £37 billion package of financial support to help households with energy bills in the immediate term.

More recently this saw the announcement that almost all of the eight million most vulnerable households across the UK will receive support of at least £1,200 this year, including a new one-off £650 cost of living payment.

As well as the energy bills discount due to come in from October doubled from £200 to £400, while the requirement to pay it back has been scrapped.

In addition, high global gas prices and linked high electricity prices that we are currently facing have given added urgency to the need to consider electricity market reform. The Review of the Electricity Market Arrangements (REMA), announced in the British Energy Security Strategy, is ongoing and ministers will set out options for reform this Summer.

The Bill also comes on top of the government's actions to help increase home energy efficiency, including investing £6.6 billion in total this parliament to improve the energy efficiency of homes and buildings across the country, delivering savings of £300 a year on average on their energy bills.

Powers introduced in the Bill will extend and apply mainly to Great Britain, with some provisions applicable across the UK.

Read:

[**New Electricity Networks Commissioner**](#)

appointed to help ensure home-grown energy for Britain

- New commissioner appointed to accelerate the delivery of crucial electricity network infrastructure so home-grown energy can reach and power homes across the country
- Nick Winser will help ensure the right infrastructure, like the cables and wires of our low carbon energy system, are in place, rapidly reducing the time it takes to boost electricity flow
- this follows announcements of an industry advisor for Great British Nuclear and an Offshore Wind Champion to further boost the UK energy mix – all crucial to delivering the British Energy Security Strategy

Nick Winser CBE is appointed today (6 July 2022) as the UK's first Electricity Networks Commissioner, in the government's latest step to ensure secure, clean and affordable British energy for the long term.

Earlier this year, the UK government set out ambitious targets to boost UK energy generation from clean technologies, such as offshore wind and nuclear reactors. Accelerating the country's domestic supply of clean and affordable electricity will help to drive down bills and increase energy independence – but this also requires new network infrastructure to support it.

Nick's new role as Electricity Networks Commissioner will be pivotal in helping ensure the right infrastructure, such as electricity poles and transmission lines, are in the right places so clean, British-generated electricity can flow to households across the country.

This includes dramatically reducing timelines for delivering onshore transmission network infrastructure by around 3 years and developing recommendations to help halve the end-to-end project process by the mid-2020s.

Nick has extensive experience in the electricity networks field spanning 30 years, and in advising government and industry on energy policy. He is currently chairman of the Energy Systems Catapult.

Nick's appointment follows recent announcements of Simon Bowen as industry advisor for Great British Nuclear, and Tim Pick as the government's Offshore Wind Champion to further boost the UK energy mix for generations to come.

Business and Energy Secretary Kwasi Kwarteng said:

I am delighted to appoint Nick Winser as the UK's first Electricity Networks Commissioner.

Nick will play a pivotal role in ensuring the right network infrastructure is in the right places to ensure households can

benefit from our abundant supply of clean, affordable, home-grown energy.

Newly appointed Electricity Networks Commissioner Nick Winser said:

Electricity networks are essential to transporting new low carbon power generation, such as that from offshore wind and nuclear, to where it is needed, in homes and businesses across the country, where it will be used more and more for new purposes like charging electric vehicles and heating households through heat pumps.

I look forward to taking on this important new role where I can help accelerate the delivery of new electricity transmission infrastructure, helping to provide consumers with a secure, reliable, supply of green electricity, while keeping costs as low as possible.

[The 4th UK-Taiwan Energy Dialogue](#) [Expanding bilateral cooperation for a](#) [net zero future](#)

British Office Taipei and the Bureau of Energy, Ministry of Economic Affairs co-hosted the fourth UK-Taiwan Energy Dialogue to discuss ports for the offshore wind industry, biomass energy, and pathways to reach net zero by 2050 on 5 July. The Dialogue was attended by John Dennis, Representative at the British Office Taipei and WANG Mei-Hua, Minister of Economic Affairs, and was chaired by Julie Scott, Head of Energy Diplomacy of Department for Business, Energy & Industrial Strategy (BEIS) and YU Cheng-Wei, Director General of the Bureau of Energy (BOE). The participants reached agreement to cooperate on a joint project on offshore wind ports development.

John Dennis, Representative at the British Office Taipei said,

I am delighted that our fourth Energy Dialogue has produced another round of rich discussions on our partnership as we work towards a net zero future together. Since the last Dialogue it has been excellent to see Taiwan publish its net zero roadmap and take steps to enshrine its targets in law. Our growing partnership is perhaps most clearly evident in offshore wind, where we now have 36 UK companies set up here in Taiwan to support the development of the sector as it rightly aims to become a hub for the region. I am sure

the joint project agreed here will further deepen our already strong co-operation on energy and climate change.

WANG Mei-Hua, Minister of Economic Affairs said:

To tackle climate change, we have announced the target of reaching net-zero emissions by 2050. We also published "Taiwan's Pathway to Net-Zero Emissions in 2050" in March of this year, which includes 12 specific strategies and increasing the share of renewable energy in the energy mix as one of the key strategies. Taiwan and the UK have common goals of continually developing low-carbon energy and achieving net-zero emission. I hope both sides continue to exchange views in the energy field in the future.

Julie Scott, Head of Energy Diplomacy at BEIS said,

I am glad to have the opportunity to co-chair the fourth UK-Taiwan Energy Dialogue with Director-General YU Cheng-Wei of the Bureau of Energy, and welcome Taiwan Power's upcoming mission to the UK later this year, including a visit to Drax Power Station. I am convinced that we can further enhance the bilateral collaboration on sustainable biomass energy, building on the links established through this Dialogue.

YU Cheng-Wei, Director General of BOE also said:

I want to express my sincere gratitude to all participants from both sides for sharing your insight and experience during the meeting. I am happy to see the progress of the Taiwan-UK joint research project on carbon emissions reduction and the advice given by both sides for Taiwan's pathway to net-zero emissions by 2050. I also expect to see that both sides can work together to create mutual benefits while moving toward net-zero transition.

During the Dialogue, the UK's Department for International Trade and BVG Associates described the crucial role port infrastructure has played in developing the UK's offshore wind sector. UK ports are continually evolving to support supply chain needs and achieve the UK's ambitious renewables generation targets. Participants reached agreement on a joint project to support the long-term development of Taiwan's port infrastructure.

The Department for Business, Energy & Industrial Strategy shared UK experience and best practice in the sustainable use of biomass as part of the transition away from coal. Taiwan Power Company shared their assessment of the future of biomass in Taiwan and will have a follow up visit to the UK to draw on UK expertise in the sector.

The UK's Energy System Catapult then highlighted the importance of floating offshore wind and grid transformation while providing an update on the Catapult's progress in developing scenarios for Taiwan's pathways to net zero. In the subsequent discussion the British Office Taipei proposed a joint research project further exploring policies and technologies to improve grid resilience.