

AURORA

Spring Forum

London 2021

BUILDING BACK: STRATEGISING THE ENERGY SECTOR'S ROLE IN THE GLOBAL ECONOMIC RECOVERY

Wednesday 29 September 2021

EVENT HIGHLIGHTS

In partnership with:



auroraer.com @AuroraER_Oxford #auroraspringforum



DEAR FRIENDS AND COLLEAGUES,

It was my great pleasure to welcome you to London this year for the 7th edition of the Aurora Oxford Spring Forum. What a fantastic day (despite the event being neither in Spring nor in Oxford)!

We set out to shed some light on one of the central issues of our age – the role of the energy sector in advancing a just, prosperous society – and I certainly came away feeling challenged, energised and a little bit more enlightened.

It was also just brilliant to see so many friends in person after so long.

As I mentioned at the conclusion of the day, my overwhelming feeling was of being challenged by the fact that we face a number of very complicated issues as an industry over the coming decades, but also fortunate to have such a clever, thoughtful and dedicated group attempting to surmount them.

I won't attempt to summarise the various sessions here, however in this pack we've aimed to compile the Aurora team's main learnings and punchlines from the day. It is obviously impossible to do justice to the experience of being there, but we hope this is a useful summary to take away, especially of those parallel sessions that you may not have been able to attend.

Many people deserve thanks for the critical role that they played in bringing the 2021 Spring Forum into existence.

Our speakers were brilliant and very generous, including French Minister Delegate for Industry, Agnès Pannier-Runacher, Andreas Nauen, Kate Ringrose, Nora Mead Brownell, Rui Teixeira, Alistair Phillips-Davies, Markus Krebber, and Natalie Adomait.

Our generous sponsors are due special appreciation. The partnership with Barclays, Greencoat Capital, MUFG, Osborne Clarke and RWE builds on many years of fruitful cooperation, and we would like to thank them for supporting the Aurora Spring Forum 2021.

Finally, thank you to my own team at Aurora, especially Narcisa-Camelia Danila, for their diligence, commitment, and adaptability in staging the Aurora Spring Forum 2021.

We look forward to welcoming you again next year to continue the discussion!



JOHN FEDDERSEN
FOUNDER AND CEO
AURORA ENERGY RESEARCH



EVENT HIGHLIGHTS



WATCH THE HIGHLIGHTS VIDEO



#AURORASPRINGFORUM HIGHLIGHTS

**Markus Krebber** [in](#) • 2nd
CEO, RWE AG
1w •

We all agree on green targets, now we need to get this done. I discussed how to transform the energy sector to ensure a just transition at the [#AuroraSpringForum](#) with [John Feddersen](#), [Natalie Adomait](#) and [Alistair Phillips-Davies](#). This requires an honest discussion with people on how we get there and how it will benefit and impact communities. However, it is important to respect and recognise past achievements, while having a coordinated approach between governments, industry, regions, people and infrastructure.

I really enjoyed the conference. It was great to meet so many colleagues from the industry in person to discuss paths to a successful energy transition. Thank you [Aurora Energy Research](#) for having me on the panel.

**Richard Howard**
[@UKenergywonk](#)

Dan Monzani from [@AuroraER_Oxford](#) (formerly [@beisgovuk](#)):

There tends to be a lot of discussion on what investment is needed to get to Net Zero, but needs to be more thinking on who pays for the energy transition - making sure it is efficient and fair to consumers.

**Laura Sandys CBE**
[@Laura_Sandys](#)

You are too kind [@RichardHCNourse](#) Lots of great presentations today [@AuroraER_Oxford](#) big conference. Thanks to you for your support & [@g_j](#) [@RWE_AG](#) & great chairing [@UKenergywonk](#) Was wonderful to see so many friends [@DavenportJuliet](#) [@ELPinchbeck](#) [@guynewey](#) Time4change!

Richard Nourse [@RichardHCNourse](#) • 29 Sep

Brilliant from [@Laura_Sandys](#) at [@AuroraER_Oxford](#) Spring Conference. "Today there are 400 people who run the energy sector and they all know each other's golf handicap. Tomorrow, there will be 100 million."

**Pradyumna Bhagwat**
[@PCBhagwat](#)

Decarbonization investment challenge will come in Networks, Capital Deployment, Mining, Permitting, Market Design and System operability - [#AnaBarilla](#) [@AuroraER_Oxford](#) Spring Forum

**Javier Cavada Camino**
[@JavierCavada_JC](#)

Honoured to join the [#Energy](#) sector's Global Leading voices this Wed 29 Sept in London, at [@AuroraER_Oxford](#) Spring Forum.

I'll share my vision for the [#EnergyTransition](#) and enjoy thought-provoking analysis and premium debate! 🤖 [#energystorage](#) [#renewables](#) [@HighviewPower](#)





YOUR FEEDBACK

Just wanted to say congratulations for another brilliant conference yesterday. While I still have a fondness for the annual trip to Oxford (and out of Westminster), you managed to recreate the fun, informed, relaxed atmosphere that makes the Conference such a must-attend event. It also went very smoothly, and the food was great.

Thought some of the analysis was incredible, as always. Ana and Manuel's presentations were incredible. Also very excited and intrigued to learn about Origin – could be total gamechanger. Well done.

Simply getting back to an in-person event was great and the quality of the networking opportunity was good. The Aurora analysis presented was interesting and I particularly enjoyed the breakout session involving Greg Jackson and Laura Sandys.

I found it really worthwhile. I'm so glad I could make it.

The quality of speakers you have is top notch and they don't give boring corporate presentations. It was really informative. The breakout sessions were hard to pick between.

Big thumbs up from me :)

Aurora presentations always stimulating - gas market unplanned discussion and cannibalisation session excellent - and lively discussions in some of the breakout sessions too.



Thank you very much for the really great conference. Well organised, interesting and perfect hosting!

Your feedback

PROGRAMME HIGHLIGHTS

PLENARY SESSION – THE ENERGY SECTOR’S ROLE IN DELIVERING A GREEN AND RESILIENT RECOVERY

Speakers:

- Andreas Nauen, CEO, Siemens Gamesa Renewable Energy
- Kate Ringrose, CFO, Centrica
- Nora Mead Brownell, Former Commissioner, FERC & Chair of PG&E; Board Member, Sunnova
- Rui Teixeira, CFO, EDP; former CEO, EDPR

Chair: Laurie Fitch, Strategic Advisory Group Partner, PJT Partners



Brief Summary:

The recent events in the energy sector in Europe, but also in the US (Texas) have created the perfect setup for this session which focused on the challenges around reliability and resilience on the road to the energy transition, particularly in terms of costs.

The session started by looking into the biggest force multipliers for public spending to achieve maximum impact for recovery in the near term, and power sector transformation in the longer term. The discussion continued with how we can make the supply chain greener, where this is going right and where it is going wrong. The role of policy in achieving a greener supply chain was emphasised upon.

The session also tackled new greener technologies like hydrogen, and their role in ensuring security of supply. Finally the speakers discussed the role of the private sector in innovation and driving recovery with a focus also on how we could do a better job at partnering.

PROGRAMME HIGHLIGHTS

1-2-1 INTERVIEW – RETAIL MARKETS AND AFFORDABILITY

Speaker: Dan Monzani, Managing Director – UK & Ireland, Aurora

Chair: John Feddersen, Founder & CEO, Aurora



Brief Summary:

Gas prices leapt 4x over a few months – similar to the 1973 oil shock. In the UK, there have been supplier insolvencies on an unprecedented scale, largely due to poor hedging but even well-run suppliers are struggling with this scale of price shock, for example, because of increased collateral requirements.

Regulators have the necessary tools to transfer customers of bankrupt suppliers to other suppliers without any interruptions of supply. 1.3m customers have moved in September alone through this “Supplier of Last Resort” process. But this is only achievable because the new suppliers can socialise hundreds of millions of pounds of cost across the whole market.

Regulators will evaluate how to improve the financial resilience of suppliers. This could include mandating hedging to a prescribed formula and/or increasing capital requirements. However, there is a cost to this in raising barriers to entry if it restricts innovation – some of which has been very valuable such as the emergence of genuinely world class technology-driven service platforms which reduce the cost to serve and enable dynamic pricing and new retail market business models which can better facilitate net zero.

The bigger part of this story is an affordability crisis: Governments need to act near-term to address a huge inflationary shock via wider macroeconomic tools; but long-term it is a reminder to think more about how the costs of the transition fall as well as where we invest – is it fair and is it efficient? Our recent study of clean heat suggests not: running a heat pump is much more expensive than a gas boiler purely because of how levies and taxes make electricity 4-5x more expensive than gas, meaning we are pushing water uphill to encourage uptake.

Aurora has published [an explanation of the causes](#).

PROGRAMME HIGHLIGHTS

KEYNOTE ADDRESS – DECARBONISATION IN FRANCE

Speaker: Agnès Pannier-Runacher – French Minister Delegate for Industry



PROGRAMME HIGHLIGHTS

AURORA KEYNOTE – DECARBONISING EUROPE AND THE CHANGING RENEWABLES INVESTMENT LANDSCAPE

Speaker: Ana Barillas, Head of Iberia, Aurora



Click [HERE](#) to view presentation

Brief Summary:

To reach the levels of decarbonisation required to meet the EU 55% target by 2030, yearly emission reductions will have to be 2.4 times higher than what they have been over the last thirty years. Further electrification of power can achieve about 65% of the target, with two key implications:

1. We will need more than renewables – efficiency, CCUS and hydrogen will have to play a key role, even in the next 10 years.
2. We will need to build renewables at a higher rate than at any point in history.

Meeting these targets requires around 27 GW per year of wind, 24 GW per year of solar, and 3 GW per year of batteries with implications on networks, capital deployment, mining, permitting and development, and market design and system operability.

Over 1 trillion Euros of capital will be required for renewables, batteries and networks alone in the next 10 years. That requires efficient capital deployment from utilities, oil and gas majors, institutional investors and banks alike.

Further, the growth of renewables will have important implications on the mining sector. Not only will the increased demand for minerals and rare earth metals strain supply chains, but the geopolitical challenges that the location of these mines and processing capacity brings will further challenge renewable investors.

PROGRAMME HIGHLIGHTS

PLENARY SESSION – HOW TO TRANSFORM THE ENERGY SECTOR TO ENSURE A JUST TRANSITION

Speakers:

- Alistair Phillips-Davies, CEO, SSE
- Markus Krebber, CEO, RWE
- Natalie Adomait, MD Investments Renewable Power, Brookfield

Chair: John Feddersen, Founder & CEO, Aurora



Brief Summary:

The Environment, Social, Governance (ESG) investment movement has had a material positive impact over the past decade on private sector decisions and social outcomes. Government is no longer the sole major driver of decarbonisation.

ESG measurement and reporting need to be substantially honed. At present we see the perverse outcome that socially responsible custodians of polluting assets in the sector would prefer to divest than to transition assets in a Paris-consistent way.

The concept of Paris-compliant trajectories – in the sense that decarbonisation should happen in a phased way to Net Zero – is important for the robustness and competitiveness of Europe's energy system. Europe will need new fossil fuel generation over the coming decade, and more emphasis on how this can be transitioned to hydrogen, or CCS, in due course is important and timely.

Deep decarbonisation will be difficult in the power sector, and requires an honest discussion with people on how we get there and how it will benefit and impact communities.

PROGRAMME HIGHLIGHTS

AURORA KEYNOTE – DOES NET ZERO EMISSIONS IMPLY ZERO WHOLESALE POWER PRICES?

Speaker: Manuel Koehler, Managing Director
Germany, Aurora



Click [HERE](#) to view presentation

Brief Summary:

Markets all across Europe move towards Net Zero. This will require 1.7 tn EUR investment in renewables and most Renewables investments over the next decade will face merchant risk.

Higher decarbonisation ambitions and the massive buildout of renewables raise the question whether power prices will collapse in a net zero power market with merchant renewables becoming the next class of stranded assets. Low marginal cost Renewables replace coal and gas and the effect of rising carbon declines.

A key observation is that low-carbon dispatchable technologies such as hydrogen-to-power or CCUS will play a key role in a net zero power market, as these technologies benefit from significant economic benefits over other net zero compliant alternatives. However low-carbon dispatchable technologies also come with high marginal cost and even with a low share of generation will set the price for a major share of hours in the year. This implies a strong stabilising effect on capture prices for renewables, lowering the threat of power prices collapsing significantly.

The keynote concludes with a risk framework to assess the breaking points of this argument and applies it to the main markets in Europe.

PROGRAMME HIGHLIGHTS

BREAKOUT SESSION – MARKET DESIGN TO ENABLE THE NET ZERO TRANSITION

Speakers:

- Greg Jackson, CEO, Octopus Energy
- Laura Sandys, Chair of the UK Government's Energy Digitalisation Taskforce
- Tom Glover, UK Country Chair, RWE

Chair: Richard Howard, Research Director, Aurora

Click [HERE](#) to view presentation



Brief Summary:

Energy markets play an essential role in ensuring we have the right energy (e.g. low carbon), at the right time (to meet peak demand) in the right places (ensuring network operability). But as we decarbonise our energy system will the current market design continue to meet these objectives whilst protecting consumers? How will we ensure security of supply in a renewables-dominated system?

The panel discussed how market structures could be enhanced to realise the full benefits of demand side flexibility. There are many examples of smart tariffs in place, but market reforms could do more to incentivise demand shifting, to mitigate peak demand issues and make better use of renewable power. Moreover it was argued that energy companies could get better at articulating consumer propositions to increase engagement and demand flexibility.

Whilst CfD structures have been successful in delivering renewables capacity, there is a need for market signals to ensure investment in low carbon dispatchable plant – such as CCS, Hydrogen CCGTs, and long duration storage – which will play a critical role to keep the lights on at times of low renewables production.

PROGRAMME HIGHLIGHTS

BREAKOUT SESSION – HOW LARGE IS THE ROLE OF ELECTRICITY IN A NET ZERO ECONOMY?

Speakers:

- Emma Pinchbeck, CEO, Energy UK
- Juliet Davenport, Former CEO, Good Energy
- Mallika Ishwaran, Chief Economist, Shell

Chair: Ana Barillas, Head of Iberia, Aurora



Brief Summary:

The role of electricity in a Net Zero economy is expected to be very different across sectors. While passenger transport can be easily electrified, industrial processes are likely to require the deployment of hydrogen and CCUS. The decarbonisation of households is likely to face other challenges – namely the consumer acceptance and engagement with smart technologies and heat pumps.

The panel also discussed other important challenges in reaching Net Zero, including the support for needed research and innovation, infrastructure (including networks), consumer education, skills training, and support for vulnerable consumers.

PROGRAMME HIGHLIGHTS

BREAKOUT SESSION – THE FUTURE OF OFFSHORE WIND, TECHNOLOGY SCALE AND MARKET STRUCTURE

Speakers:

- Bobby Chada, Equity Investment Analyst, Capital Group
- Duncan Clark, Head of UK, Ørsted
- Richard Dibley, Head of Asset Governance UK, Falck Renewables

Chair: Donna Peng, Product Lead SaaS, Aurora



Brief Summary:

Innovation in floating offshore wind and regulatory/market interface are key leverage points for offshore wind to fulfil its important role in global decarbonisation.

Floating offshore wind, an emerging new technology class offers new challenges but is also attracting new entrants to the field. The successful scale-up of floating offshore wind will require the consolidation and standardisation of engineering designs. It will also require government policies that create a sheltering niche as this new technology develops to market maturity.

The regulatory/market interface for offshore wind involves a series of coordination tasks with very long time horizons, easily decades. It is anchored by the auction of seabed leases, which has lasting impacts on subsequent engineering, supply chain, and grid integration decisions. Given the critical role of this process, more visibility into the long-term pipeline of seabed leases as well more predictability in the timing of auctions will facilitate cross-industry planning.

While the offshore wind industry works with the public sector to advance these innovations, they must not lose sight of the importance of investor and community engagement. Overall regulatory frameworks need to remain stable to maintain investor confidence. Meanwhile, bigger and further offshore projects are constantly redefining the boundary of communities that need to be involved.

PROGRAMME HIGHLIGHTS

BREAKOUT SESSION – WHAT WILL DECARBONISING HOME HEATING MEAN FOR GREAT BRITAIN'S ENERGY MARKETS?

Speakers:

- Joanna Campbell, Assistant Director, National Infrastructure Commission
- Nina Skorupska, CEO, Renewable Energy Association
- Matthew Hart, Head of UK Strategy, E.ON
- Mike Hawkins, Deputy Director Clean Heat Analysis, BEIS

Chair: Benjamin Collie, Principal, Aurora

Click [HERE](#) to view presentation



Brief Summary:

Decarbonising the way we heat our homes raises some of the most difficult challenges in the energy transition. Aurora recently completed a multi-client study to examine how policy and economics could shape the future mix of technologies for residential heating in Great Britain, and what this could mean for the energy system and for consumers. The final report highlights the economics and potential roles of a range of different heating technologies, including air source and ground source heat pumps and hydrogen boilers. It considers how power demand, prices, and system costs will develop in different scenarios, analyses the value of thermal flexibility, and assesses what would be needed to ensure security of supply during extremely cold weather events.

In this session we reviewed some of the topics and issues raised in the study, and the role of government, industry and investors in addressing the main challenges. Our panel discussed the upcoming heat and buildings strategy, the role of building regulations, prospects for improving the energy efficiency of the housing stock, the importance of long-term infrastructure development, and the kinds of policy interventions that might help support heat decarbonisation. The consumer is central to this story: we talked about how households can be supported to overcome both cost and non-cost barriers, and how policy can be designed to protect lower-income households.

PROGRAMME HIGHLIGHTS

BREAKOUT SESSION – HYDROGEN'S ROLE IN DRIVING EUROPE'S GREEN RECOVERY

Speakers:

- Andrew Doyle, Director, Power and Renewables, MUFG
- Chris Hunt, Private Investor; former Partner, Riverstone
- Paro Konar, Director Industrial Energy, BEIS

Chair: Alexander Esser, Nordics Lead, Aurora

Click [HERE](#) to view presentation



Brief Summary:

The last few years were decisive for kicking off the hydrogen economy and four key trends have emerged based on Aurora analysis:

1. All large economies in Europe have published a hydrogen strategy within the last 4 years
2. Europe's Hydrogen demand could grow seven-fold by 2050
3. 40 GW electrolyzers are to be installed in the EU by 2030 – developers have already announced projects covering 3/4 of this
4. Blue hydrogen remains cheaper than green until the 2030s

Demand uptake in industry requires policies and state-support. The UK strategy commits nearly £1 billion to hydrogen-specific uses and envision to apply a set of policies to create a market for hydrogen-based and green products, ranging from product standards to public procurement. The finance community sees off-take agreements as an important tool to make electrolyser financeable.

The panel agreed that first business models will be the hydrogen production at industrial hubs where off-takers are concentrated and the costly transport of hydrogen can be avoided.

BEIS is planning to publish a study on hydrogen transport and distribution, which is still an issue with little clarity for developers and investors.

PROGRAMME HIGHLIGHTS

BREAKOUT SESSION – DECARBONISING HOUSEHOLD EMISSIONS – WHERE HAVE WE FAILED IN THE PAST AND HOW DO WE MAKE IT WORK IN THE FUTURE?

Speakers:

- Emma Pinchbeck, CEO, Energy UK
- Michael Lewis, CEO, E.ON UK
- Rachel Fletcher, Director Regulation and Economics, Octopus Energy

Chair: Emily Gosden, Energy Editor, The Times



Brief Summary:

This enlightening panel discussion on decarbonising household emissions was hosted by Emily Gosden, Energy Editor at The Times. Together with Emma Pinchbeck - Energy UK, Michael Lewis - E.ON UK and Rachael Fletcher - Octopus Energy, Emily discussed how their organisations are focusing on decarbonisation of households, what they have planned and the biggest challenges in reaching success.

There was a clear agreement that household emissions will be hard to eliminate and a strategic focus to integrate heating as a major part of housing strategy is needed.

While there was some difference of opinion on the relative roles of private enterprise and government support, there was a clear agreement that heat pumps and electric vehicles will allow significant progress.

In the backdrop of smaller suppliers leaving the market, the panel discussed the challenges that short term, price based competition for customer creates in developing long term relationships between suppliers and consumers essential to promote long term investments in household energy infrastructure.

PROGRAMME HIGHLIGHTS

BREAKOUT SESSION – NUCLEAR’S ROLE IN NET ZERO: EXISTING ASSETS, NEW TECHNOLOGIES & NEW INVESTMENTS

Speakers:

- Deepa Venkateswaran, Head of Equity Research, Bernstein
- Declan Burke, Director Nuclear Projects & Development, BEIS
- Simone Rossi, CEO, EDF Energy

Chair: Felix Chow-Kambitsch, Head of Commissioned Projects – Western Europe, Aurora



Brief Summary:

In a lively panel discussion, Simone Rossi from EDF Energy, Deepa Venkateswaran from Bernstein, and Declan Burke from BEIS exchanged views on the future of nuclear energy in the UK.

The panel tackled two key questions:

1. What is nuclear’s role in Net Zero?
2. How do we bring in new nuclear in the UK?

While there were varying opinions amongst the panellists on how much nuclear is needed for Net Zero, there was a consensus that some nuclear is needed.

There was a point of agreement that a diversified energy mix that includes nuclear provides resilience in an otherwise renewables reliant energy system. Financing of nuclear is seen as a major barrier to new nuclear, and it was made clear that private capital is not comfortable taking on the construction risk of nuclear projects.

The panel agreed that the state has a role in supporting new nuclear, and it was emphasised that any policy support should minimise the costs to the consumers.

PROGRAMME HIGHLIGHTS

BREAKOUT SESSION – DOES ONSHORE WIND HAVE A PUBLIC ACCEPTANCE PROBLEM IN EUROPE AND IF SO, HOW DO WE FIX IT?

Speakers:

- Christoph Torwegge, International Energy & Utilities Sector Leader, Osborne Clarke
- Lindsay McQuade, CEO, ScottishPower Renewables
- Richard Nourse, Partner, Greencoat Capital

Chair: Hanns Koenig, Head of Commissioned Projects – Central Europe, Aurora

Click [HERE](#) to view presentation



Brief Summary:

Onshore wind does not have a wide-spread acceptance problem: surveys indicate 70-80% support, even from those with wind parks in their vicinity.

However, there is a very vocal and increasingly well organised minority in opposition to onshore wind developments, which are using all legal avenues available to stop them.

In order to support onshore wind development, simplified processes (ideally “one stop shops” addressing several administrative layers) are needed, and avenues for legal objections should be shortened.

At the same time, it may be hard to build sufficient onshore wind in densely populated countries like Germany and the Netherlands, and offshore is likely to play a larger role than what was thought a few years ago. This is getting less problematic due to the steep cost declines in offshore technology; however more transmission will be needed for offshore than for onshore, which can create further opposition.

PROGRAMME HIGHLIGHTS

FIRESIDE – CHATHAM HOUSE RULE

RECENT MARKET DEVELOPMENTS AND THE PATH TO NET ZERO

Speaker:

- Neil Kenward, Director for Strategy and Decarbonisation, Ofgem

Chair: Richard Howard, Research Director, Aurora



CHATHAM HOUSE RULE:

What is said in the room stays in the room

PROGRAMME HIGHLIGHTS

BREAKOUT SESSION – NEGATIVE EMISSIONS TECHNOLOGIES AS PART OF THE SOLUTION TO REACH NET ZERO

Speakers:

- Damitha Adikaari, Director Science & Innovation for Climate & Energy, BEIS
- Julia Pyke, Director of Sizewell C Financing & Economic Regulation
- Mike Thompson, Chief Economist, Committee on Climate Change
- Will Gardiner, CEO, Drax

Chair: Dan Monzani, Managing Director – UK & Ireland, Aurora



Brief Summary:

This session built on one of the themes of the day: even within the power sector, the first ~8000 hours a year may be “easy”, but the last ~800 are very hard. Across the economy that is even more true – some sectors are harder than others and the last part of each sector is exponentially harder. However early negative emissions technologies are expensive: Iceland’s new direct air capture plant costs £600/t.

Mike Thompson, Committee on Climate Change, argued that we needed to invest in negative emissions both in order to hit net zero in 2050 and the 6th carbon budget in the mid-2030s.

Will Gardiner, Drax, described how biomass with carbon capture and storage (BECCS) could be deployed this decade, with the right policy framework, to capture negative emissions at <£100/t with verifiable and certifiable guarantees on sustainability of feedstocks.

Julia Pyke, Sizewell C, explained how EDF planned to build a direct air capture plant using waste heat from nuclear reactors to reduce the costs of direct air capture to levels similar to BECCS.

Damitha Adikaari, BEIS, examined the various other innovations funded by Government from biochar to reclaiming carbon from seawater.

The economics of future negative emissions technologies isn’t yet clear but can be thought of on three axes: concentration of CO₂ (on which biomass scores highly); use of scarce resources like land, water or power (where reuse of waste heat at Sizewell has a benefit); and modularity which might offer production economies in some of the newer technologies.

PROGRAMME HIGHLIGHTS

BREAKOUT SESSION – LONG-DURATION STORAGE AS A SOLUTION TO REDUCE THE COST OF MEETING THE NET ZERO TARGETS

Speakers:

- Chris Elder, Managing Director, InterGen
- Javier Cavada, CEO and President, Highview Power
- Jim Smith, Managing Director, SSE Renewables

Chair: Emma Woodward, Senior Associate, Aurora



Brief Summary:

GB's net zero emissions target for 2050 has driven an increase in intermittent low carbon generation. Long-Duration Energy Storage (LDES) can meet the resulting need for additional flexibility to match supply and demand in both time and location, as well as providing other ancillary services to the system, replacing thermal technologies.

The definition of LDES can vary, but here is taken to mean technologies that can provide power for four hours or longer, aligned with the recent BEIS call for evidence on long duration storage. In practice, a range of storage durations will be required in a net zero world, allowing power to be shifted across hours, days, weeks and potentially interseasonally.

A wide variety of LDES technologies will be required to achieve this, including pumped hydro, li-ion batteries and compressed air, technologies such as hydrogen may also be utilised to meet inter-seasonal storage requirements.

However, the high costs and long lead times for LDES technologies, coupled with the current lack of revenue certainty and market certainty present a significant barrier to entry. Support mechanisms and policy interventions to de-risk investments into LDES, such as the proposed cap and floor scheme, will therefore be needed. All viable technologies should be considered for subsidy support. Any interventions undertaken by BEIS, such as interventions in network charging or in the capacity market must complement rather than contradict each other.

PROGRAMME HIGHLIGHTS

BREAKOUT SESSION – PREPARING GRIDS FOR THE ENERGY TRANSITION

Speakers:

- Cathy McClay – Trading and Optimisation Director, Sembcorp Energy UK
- Fintan Slye, Director, Electricity System Operator
- Laurie Fitch, Strategic Advisory Group Partner, PJT Partners

Chair: Marlon Dey, Research Lead – Great Britain, Aurora



Brief Summary:

Electricity grids are the backbone of the energy sector and their roles in the energy transition will continue to grow as electricity becomes the common currency of energy. Their growth and operation will be critical to enabling the energy transition and delivering Net Zero, which will require an estimated EUR500 billion of capital investment across Europe over the next nine years, to deliver both additional capacity and new capabilities.

As we move towards energy systems based on renewables and flexible capacity, grids face new challenges in keeping the lights on, and their operators have to fundamentally rethink the way to manage the grid. Electricity System Operators require new tools and technologies to keep key aspects of the system stable, such as frequency, inertia and voltage; and new markets need to be developed to deliver this change. System Operators such as National Grid ESO in Great Britain are actively working toward delivering a system capable of operating a Net Zero power system by 2025, which involves the creation of new markets to manage the inherent volatility of an intermittent renewables-based energy supply.

The role of System Operators and the institutions required to deliver the energy transition has come into the debate in GB, with both the Government and regulator jointly considering a new model that would reform where the responsibility lies for key functions in gas and electricity markets, and their networks. Several considerations have arisen out of the proposed reforms which would have wide ranging implications for industry stakeholders.

PROGRAMME HIGHLIGHTS

BREAKOUT SESSION – THE ROLE FOR GAS IN A RAPIDLY DECARBONISING EUROPE

Speakers:

- Alex Grant, Senior Vice President, Equinor
- Andy Koss, CEO, Sembcorp Industries
- Mallika Ishwaran, Chief Economist, Shell
- Tony Cocker, Senior Independent Director, SSE

Chair: Anise Ganbold, Lead on Global Energy Markets and Hydrogen, Aurora



Brief Summary:

Gas prices have been surging in mid to late 2021, and the panel kicked off by discussing whether the situation today changes the discussion over the role of gas in Europe and if more investments are needed to ensure supplies.

Longer-term, the EU and individual countries in Europe have pledged to reach Net Zero carbon emissions by 2050, and this put into question what the future of natural gas will be.

The panel discussed whether and where natural gas has a role to play in a Net Zero Europe, particularly in the power sector by gas-fired turbines with carbon capture. Upstream emissions from natural gas industry cannot be ignored, and the panellists debated how to measure emissions and who should be responsible for abatement.

The panel was overall optimistic that natural gas still has a role to play in Europe by 2050 alongside carbon abatement measures.

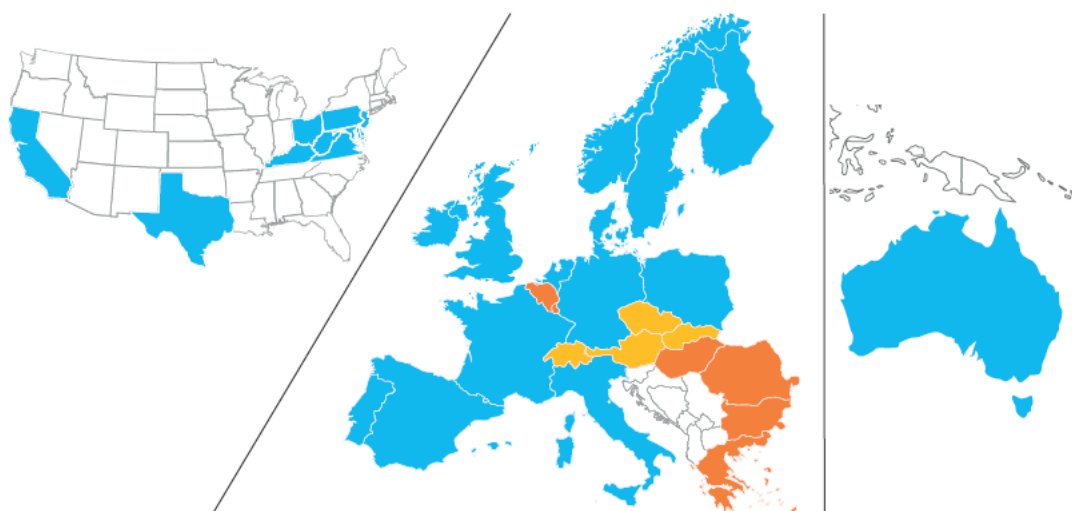
Spring Forum

London 2021

AURORA'S POWER MARKET INTELLIGENCE SERVICES

MARKET ANALYSIS AND FORECAST FOR ALL POWER MARKET PARTICIPANTS

We offer power market forecasts and market intelligence spanning Europe's key markets, parts of the USA and Australia.



COMPREHENSIVE POWER MARKET SERVICES

- Market forecast reports
- Forecast data in Excel
- Global energy market forecast reports
- Strategic insight reports
- Regular subscriber group meetings
- Policy updates
- Bilateral workshops
- Analyst support

POWER MARKET FORECAST REPORTS

- Power market forecast reports
- Forecast data in Excel
- Bilateral workshops
- Analyst support

BESPOKE FORECASTS

- We can provide power market forecasts upon request

For more information about our services and insights, please get in touch:

Sebastian Just, Commercial Director, Aurora
M: +44 (0)7827 810 656
E: sebastian.just@auroraER.com

AURORA

Spring Forum

London 2021

THANK YOU FOR JOINING THE AURORA SPRING FORUM 2021

Thanks to all those who joined us on Wednesday 29 September, meeting in person once again was truly great.

We look forward to welcoming you next year!

SPECIAL THANKS TO OUR 2021 PARTNERS



For more information about our events, please get in touch:

Narcisa Danila, Event Content Manager, Aurora
M: +44 (0)7510 325161
narcisa.danila@auroraER.com