

TUESDAY 28 MAY

BERLIN-BRANDENBURG ACADEMY OF SCIENCES

AURORA
**Renewables &
Battery Summit**

BERLIN 2024



AFTER THE ENERGY CRISIS
PROSPECTS FOR RENEWABLES
& BATTERIES IN GERMANY

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AURORA Renewables & Battery Summit

BERLIN 2024

DEAR FRIENDS AND COLLEAGUES

It was fantastic to see so many of you at the Aurora Renewables & Battery Summit Berlin 2024. The discussions were wide-ranging, and topics were explored in great depth, therefore I can only offer a collection of personal takeaways from the event:

1. In driving forward the German energy transition, we should not get too preoccupied by what might happen in 10 or 20 years, but focus on delivering so-called “no regret measures,” which include electrifying where possible, and building a high share of renewables to meet that demand.
2. However, we should not forget system integration: as renewables become the norm, they need to take responsibility for the system. The days of “produce and forget” need to be over.
3. Storage can be a big part of the solution of system integration, but we need to allow this to happen. In Germany, there are still too many obstacles preventing storage from fully realising its potential, including a lack of incentives to use them to resolve grid constraints and revenue streams to contribute to system services.

In this pack, we've compiled the Aurora team's main learnings and key points from the day. It is obviously impossible to do justice to the experience of being there, but we hope this is a useful summary.

Many people deserve thanks for the critical role that they played in bringing the Aurora Renewables & Battery Summit Berlin 2024 into existence.

Our speakers were excellent, including our Distinguished Opening Keynote Address speaker, Dr. Philipp Nimmermann, State Secretary at the Federal Ministry of Economic Affairs and Climate Action. I'm also grateful to our panellists: Anna von Bremen, Claus Urbanke, Ilona Dickschas, Katja Wünschel, Kilian Leykam, Philipp Heilmaier, Steffen Schülzchen, and Tim Koenemann.

We are deeply grateful to our Premium Partner Osborne Clarke, our Partner Entrix and our Media Partner energate, for their support.

Finally, thank you to my own team at Aurora. First and foremost, my thanks go to our Events and Marketing teams, who once again delivered an incredibly polished event. The Aurora colleagues who contributed keynotes and chaired panels did so exceptionally, despite their busy day jobs—a big thank you to Casimir Lorenz, Claudia Günther, Eva Zimmermann, Fred Beelitz, and Ted Kreisig. Finally, thank you to our colleagues who volunteered on the day—the event could not have taken place without you.

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

Hanns Koenig
Managing Director, Central Europe, Aurora



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SOCIAL MEDIA MENTIONS

Robert Schulz • 2nd
Wir ermöglichen die energiewende - mit Speicherkapazität & Flexibilität. Proje...
2d • 📍

I just attended the **Aurora Energy Research** Renewables & Battery Summit Event, and I was pleasantly surprised by the messages. There were hardly any controversial opinions, it is very clear that we need to deploy storage assets at a large scale, now.

I also appreciated the very supportive words from Mr. Nimmermann as representative from the policy site 📍



Claus Urbanke • 3rd+
Vice President Head of Wind & Solar Germany at Statkraft
2d • 📍

Heute hat es mir großen Spaß gemacht zusammen mit **Katja Wünschel, Philipp Heilmair, Tim Koenemann** und **Claudia Günther** als Panelist am Aurora Renewables & Battery Summit in Berlin teilzunehmen! Vielen Dank an **Aurora Energy Research** für die gewohnt tolle Veranstaltung mit über 500 Gästen in der altherwürdigen Berlin-Brandenburgischen Akademie der Wissenschaften!

Seit Jahren schon diskutieren wir über die Systemintegration von Erneuerbaren, doch heute erscheint das Thema aktueller denn je! 📍

Es gab jedenfalls viel Gesprächsbedarf zu den Themen Speicher-Regulierung, aber auch zu PPAs, negativen Preisen, Netzausbau, Preiszonen, und zu notwendigen Anreizen zur Flexibilisierung der Nachfrage um nur die wichtigsten zu nennen.

Ich freue mich schon aufs nächste Mal, Berlin!

#AuroraSummit2024 #RenewableEnergy #BatteryStorage

See translation



Sai Kirithana (She/Her) • 2nd
Strategy | Start-ups | Tech
2d • Edited • 📍

Houseful at **Aurora Energy Research** Renewables and Battery summit Berlin today!

Great insights on the outlook of leveraging the electricity network in Germany for the flexibility market built out - throwing light on the potential challenges, remarkable growth of renewables over the recent few years, emerging European regulations and potential investments guidance in long term scenarios are being discussed.

Glad to have quite an opportunity to witness experts deep dive into CFD subsidies and PPAs providing a fascinating perspective on the development of RES technologies across the region to get the industry onboard!

Katja Wünschel • 2nd
CEO Onshore Wind/PV Europe & Australia, RWE Renewables
1d • 📍

The energy transition in Germany is moving forward – far-reaching and fast. That was the overwhelming feeling of positivity at the **Aurora Energy Research** Renewables & Battery Summit.

We have certainly achieved a lot in recent years. Last year, we doubled the expansion of solar in Germany – even exceeding expansion targets. Compared to the previous year, 80% more wind projects were permitted, with these approval processes markedly accelerated. For the first time, we at **RWE** saw onshore wind projects approved in less than a year.

Here, though, comes the but. The energy transition is not a sprint, but a marathon, and we still have a way to go.

We not only need the rapid ramp up of renewables but also the effective integration of renewables into the energy system. Currently, the grid runs the real risk of becoming a bottleneck for that. In fact, we are already witnessing too many redispatch measures of renewable assets. The accelerated buildout of the grid is thus a prerequisite for a successful energy transition.

A first step is that we must use and modernise the current grid network and infrastructure as effectively as possible. Co-location or hybrid projects for wind, solar and battery storage, for example, can aid this more efficient use of the grid. It also calls for clear approval deadlines, further simplification and acceleration of approval procedures, as well as the digitalisation and standardisation of the grid.

It was a pleasure to discuss all this and where we must now set our course with my fellow panelists, **Claudia Günther, Claus Urbanke, Philipp Heilmair** and **Tim Koenemann**. Many thanks for your thoughts, insights and the very interesting discussion.



Ilan Momber PhD (He/Him) • 2nd
building onu.energy • solving energy buying via AI
2d • 📍

Aurora Energy Research's annual summits are a must for anyone interested in Renewable Energy, and this year lots of Battery topics as well.

Thanks for the invite, **Hanns Koenig**. A great turnout.

As always, a great event with lots of infos about profitability of the assets that are going to drive our future energy system. Some of my take aways:
- a large share of RES build out in the foreseeable future is still in the regulated markets, capital costs rose significantly, CO2 prices are still too low
- even PPA-backed models might not be profitable for a long time

--> even more important we bring the industrial off-takers and **onu.energy** customers to the table and help them with easier to trade green shapes & smaller packaged renewables quantities.

What better place to flex my flashy green **FlexPower** shoes. Thanks again **Amani** & **Max Amir**. Since Hanns did not wear his, I had to show off mine.

What about yours, **Alexander Graf**?

Good catch up / meeting you, **Julia Heckmann, Steffen Schülzchen, Lars Stephan, Samuel Frey, Malte Berresheim, Dr. Fabian Joas** and of course **Tobias Brühne**

Corina S. (She/Her) • 2nd
Product @ Entrix
1d • 📍

It was fantastic to be able to participate in the **Aurora Energy Research's** Renewables & Battery Summit in Berlin [<https://lnkd.in/dZGrXaH5>] yesterday! As a new joiner in the industry, it was so valuable to be in the same room with such knowledgeable people, and be able to meet them in person and learn from them. I am looking forward to many more events like this one!

Anna von Bremen • 2nd
Partnerin Energy & Utilities bei Osborne Clarke | Head of Energy Innovation | ...
1d • 📍

A big thank you to **Aurora Energy Research, Frederik Beelitz** and my brilliant co-panelists **Steffen Schülzchen, Kilian Leykam** and **Ilona Dickschas** for this exciting panel on a hot topic. In my opinion, there was great consensus that

- the storage industry can and will mix the green with the gray. The metering technology is in place and we are waiting for the signal from the Federal Network Agency.

- BESS are better than any other asset at preventing redispatch. However, they are not taken into account in the current 13k market design.
- BESS must have a firm place in the long-term scenarios of the Federal Ministry of Economics.
- the regulatory hurdles for BESS should be addressed by Solar Package II and the BNetzA before the end of this legislative period.

Let's hope that we'll be quite a bit further along with the next Aurora summit.

Mataza Golzari • 2nd
Energy Trading | PPA & Sustainability Specialist | Former COO at Think RE
17h • 📍

This week I had the pleasure to attend the Renewables and Battery Summit organized by **Aurora Energy Research** in Berlin representing **SEFE Marketing & Trading Ltd.**

I thoroughly enjoyed engaging in expert discussions on various perspectives regarding the future German market design. It is clear that, despite the differences in these viewpoints, a common theme emerged: renewable energy projects will need to assume even greater responsibility, and flexibility must be integrated much more rapidly.

Integrating the remaining 50% of renewable energy will require clear regulatory frameworks. These frameworks will facilitate the development of innovative business models that we can collaboratively leverage.



Florian Mayr • 2nd
Partner at Apricum - The Cleantech Advisory | Strategy Consulting | DDs | Ener...
1d • 📍

A matter of perspective - Adding **#energystorage** to a standalone **#PV** installation in Germany benefits your IRR. Add PV to standalone storage, and your IRR goes down.

This is for merchant solar assets. The case for co-located EEG-assets/assets under the innovation tender is even worse, given the restrictions to charge the battery from the grid.

It's one of the many hurdles to a wider spread deployment of energy storage in Germany.

While the regulatory worries about mixing "green" with "grey" power are understandable, there are working solutions for this applied in many European countries. The "German way" proposed in the recent "Solar Package" seems to be of the complex sort once again.

As **Hanns Koenig** summarized: "Storage can be a big part of the solution, but we need to let it."

Thanks **Eva Zimmermann** for the key note and **Aurora Energy Research** for the "Renewables & Battery Summit" yesterday. Highly recommended event!

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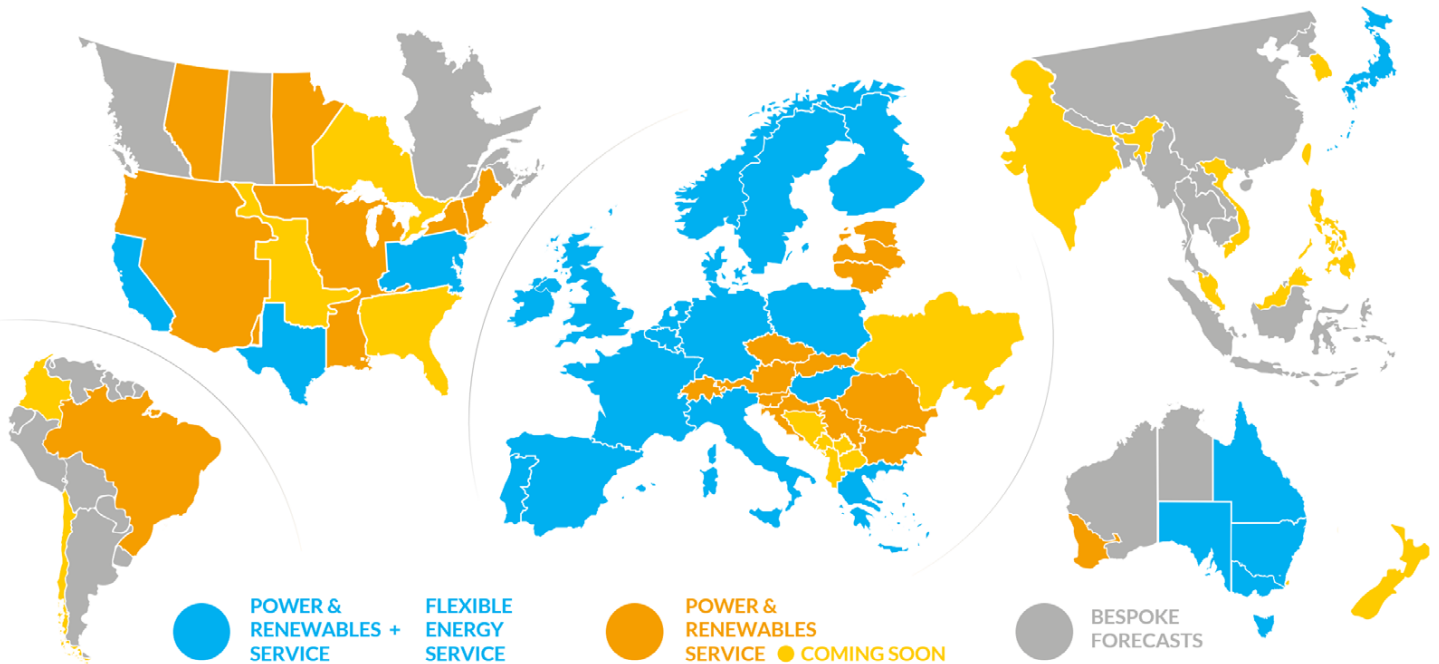
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Panel Discussion –

Finding the Green in Grey: The Opportunities for Hybrid Battery and Renewables Projects



Anna von Bremen



Daniel Breuer



Martin Geipel



Marleen Rheker



Jule Martin



David Langenbach



Nikolas Klausmann

28 May 2024 | 5:35 - 6:25 pm

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PROGRAMME HIGHLIGHTS

DISTINGUISHED OPENING KEYNOTE ADDRESS AND Q&A

Dr. Philipp Nimmermann, State Secretary,
Federal Ministry for Economic Affairs & Climate Action

Summary:

What is the vision for the post-crisis German energy market? According to State Secretary Dr. Philipp Nimmermann, the answer lies in creating a sustainable system that is decarbonised, ensures security of supply, and remains affordable. Achieving this vision requires a coordinated approach involving increased renewable energy development, grid expansion, and facilitation of dispatchable and flexible capacity.

With solar build-out already exceeding annual targets this year, and legislation recently passed to accelerate onshore development, Nimmermann believes that renewables expansion is generally on track. However, this expansion creates challenges by increasing system volatility. Grid expansion is essential to alleviate this pressure and counter the resulting grid congestion. To this end, Nimmermann proposes introducing an amortisation account, which would allow the costs of network expansion to be spread over time, making financing easier.

Another solution to meet the new challenges of renewables is to unlock the potential of storage solutions and flexibility which Nimmermann calls “the sleeping beauty of the energy market.” This requires overcoming existing challenges in terms of predictability, simplifying technical connection conditions through digitalisation, and opening up new business opportunities such as system services. In the long term, storage solutions need to be accompanied by the development of dispatchable capacity such as hydrogen peaker plants. The promised power plant strategy and a technology-neutral capacity mechanism from 2028 should encourage such expansion, but are still under discussion.

In conclusion, Nimmermann emphasises that “non-regret” options which facilitate the vision of the previously outlined sustainable energy system will ensure that the energy transition is not a cost, but an opportunity for investment. In this context, he acknowledges that scenario modelling will be an important tool in the search for these options.



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AURORA KEYNOTE

ASSESSING THE FUTURE OF MARKET-BASED RENEWABLE BUILD-OUT POST-CRISIS & ITS IMPLICATIONS

Speaker:

Casimir Lorenz, Head of Advisory, Central Europe, Aurora

Summary:

In light of the recent drop in expected short-term prices, renewables are struggling to find a route-to-market without subsidies. Focusing on solar PV projects, the merchant (wholesale market) business case is not viable in the current market environment. For PPA-backed solar PV projects, there is a similar pattern: Neither utility PPAs (Power Purchase Agreements) nor corporate PPAs, which typically show a higher willingness to pay, are profitable currently. This picture may change over time however, particularly due to cost depressions: The solar PV merchant case is expected to become viable in the late 2030s, and PPA-backed projects may be profitable in the mid-2030s. Until then, "continued government support will be necessary to reach buildout targets" Casimir Lorenz stated in his keynote.

In line with the EU power market design reform, Contracts for Difference (CfDs) are expected to become a key support mechanism for renewables. "Regardless of how exactly they will be designed in Germany, CfDs will shape the solar PV market," Casimir Lorenz continues. Given the current market outlook, CfDs will be the preferred option for most solar developers and PPAs will become less central. Some PPAs may still be closed, for instance, in the case of large projects with lower levelised costs of electricity. It is crucial to consider limiting the CfD project size; otherwise, unnecessary subsidies may be paid to projects despite being viable PPA business cases, thereby crowding out the PPA market.

While moving from a PPA to a CfD environment, the government should keep the long-term perspective in mind: If renewables are to be viable in a subsidy-free world, the PPA market must play a more central role again. To bridge this interim phase, the government could, for instance, consider supporting PPA contracts.

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PANEL DISCUSSION

THE STATE OF RENEWABLES RAMP UP: NEXT WAVE OF MARKET INTEGRATION

Chair: Claudia Günther, Research Lead, Aurora

Speakers:

- **Claus Urbanke**, Vice President Wind, Solar & Storage Development, Statkraft Germany
- **Katja Wünschel**, CEO, RWE Renewables Europe & Australia
- **Philipp Heilmaier**, Head of Division, Future of Energy Supply, dena
- **Tim Koenemann**, Head of Centre of Competence Green Infrastructure Finance, Commerzbank AG

Summary:

The electricity market is becoming a system dominated by renewables. Last year, the share of renewables in Germany's electricity mix exceeded 50% for the first time. Claudia Günther was joined by a panel of distinguished experts to discuss how the second 50% can be integrated, the extent to which renewables must contribute to system compatibility, and the role of power grids.

Despite a successful 2023 for renewables build-out, the panellists emphasised the challenge of maintaining momentum. Katja Wünschel summarised it well: "We are in the middle of a marathon, not a sprint." Looking ahead, challenges such as increasing redispatch volumes, and a growing number of negative price hours are on the horizon, leading to higher grid costs and squeezing the business case for renewables. Tim Koenemann, of Commerzbank, highlighted the need for better planning for negative price risks and regulatory stability, such as around a potential bidding zone split, to create stable financing conditions for renewables.

To manage system integration, Claus Urbanke, of Statkraft, emphasised the need for increased system flexibility, and predicted that "more regulation will be implemented to increase demand flexibility." Katja Wünschel, of RWE, (with panel consensus) stressed the need for continued grid expansion alongside other flexibility measures to make renewable power accessible.

Despite the challenges of increasing renewables penetration, Philipp Heilmaier, of dena, highlighted the unchanged consensus on the regulatory and market sides that wind and solar, combined with flexible technologies, including batteries, remain the solution for the remaining decarbonisation path.



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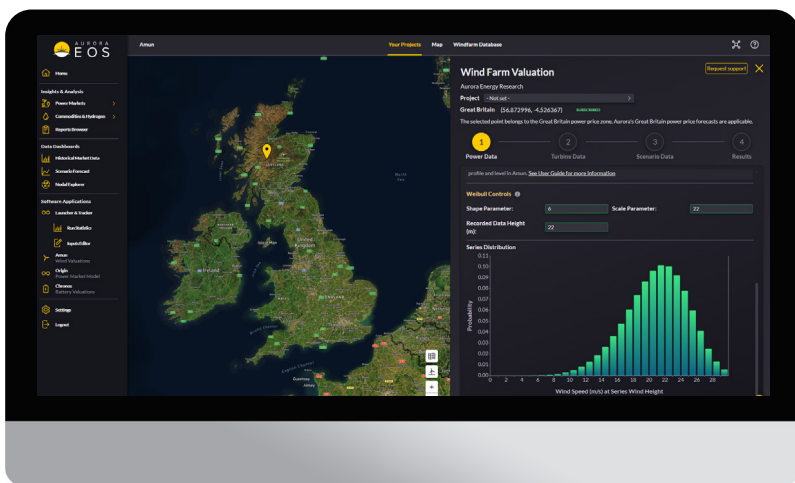
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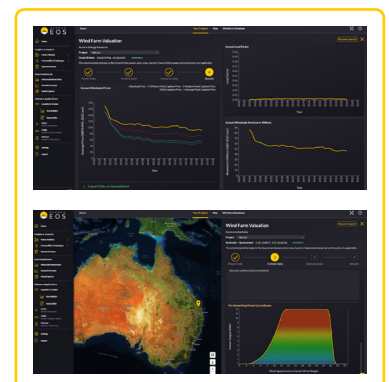
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AURORA KEYNOTE

RENEWABLES & BATTERIES IN EUROPE: A DREAM TEAM HINDERED BY GERMAN REGULATIONS?

Speaker:

Eva Zimmermann, Associate, Aurora

Summary:

Wind, solar, and battery capacities are increasing significantly in Germany. In her keynote on the integration of renewables and batteries in Europe, Eva Zimmermann focused on the potential benefits and challenges of co-locating these technologies in Germany. Co-location, which involves operating at least two technologies at a single grid connection point, offers significant advantages such as reducing risks and imbalance costs, and diversifying revenue streams. Despite these benefits, “the viability of co-located assets presents a mixed picture” Eva noted during her keynote.

Adding a battery to an existing merchant solar plant can increase the project IRR by 1 percentage point, but due to the attractiveness of the EEG, very few merchant solar plants are currently in operation. Instead, participating in the innovation auction worsens the business case by 2 percentage points, compared to the merchant case, while co-locating a subsidised solar asset worsens the business case even further. This is due to the exclusivity principle, which prohibits charging ‘grey’ electricity from the grid while receiving EEG support, drastically reducing the arbitrage potential of batteries.

But there is light at the end of the tunnel. With the Solar Package 1, the legislator has implemented that from June 2025, it will be possible to switch on a monthly basis between the innovation auction and merchant operation. In addition, from June 2026, it should be possible to charge from the grid and the renewable system in parallel, without losing the subsidy payments. Does this solve all the problems? Not yet. The legislation still needs to specify the metering requirements and how exactly parallel charging will be possible while meeting the green power criteria, but it is a step in the right direction.

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PANEL DISCUSSION

FINDING THE GREEN IN GREY: THE OPPORTUNITIES FOR HYBRID BATTERY & RENEWABLES PROJECTS

Chair: Frederik Beelitz, Advisory Principal, Aurora

Speakers:

- Anna von Bremen, Partner & Head of Energy Innovation, Osborne Clarke
- Iona Dickschas, Head of Business Development, ju:niz Energy
- Kilian Leykam, Director Energy Storage, Aquila Clean Energy
- Steffen Schülzchen, Founder & CEO, Entrix

Summary:

This panel discussed the implications of the recently enacted updated solar legislation (Solarpaket) and German storage strategy (Speicherstrategie) for co-located batteries and renewables. While there was consensus that the legislation removes some barriers for battery projects, the panel stressed that the current regulatory framework is insufficient to realise the full potential of batteries. In particular, they highlighted the business case implications of tying renewables subsidies to exclusive usage of green power in co-located storage assets.

For instance, “separate metering devices for renewables assets and batteries are not a new technology”, stated Iona Dickschas. They could easily be implemented, thus solving the question of proof of origin (green vs grey) for electricity stored in a battery. This would significantly improve the business case for co-located batteries, which “play a less prominent role in Germany compared to countries in Southern Europe, in particular Italy and Spain”, noted Kilian Leykam.

Furthermore, the panellists underscored that batteries are perfectly suited to prevent costly redispatch. The current regulation in Germany even supports operators of switchable loads, allowing them to purchase electricity from assets that would otherwise be curtailed at lower prices via auctions (\$13k EnWG). However, Anna von Bremen points out that “batteries are not taken into account in this policy” and thus would not benefit from this instrument.

On the other hand, new opportunities are opening up for batteries. These include the German capacity mechanism, which is currently being developed, and markets for both reactive power and inertia. The panellists agreed that all these markets provide potential upsides for batteries. They are closely observing how these markets shape battery business models in other European countries.

The panel concluded that batteries could and should play a more prominent role in the energy system. The existing regulatory hurdles need to be overcome to remove uncertainties and foster a viable business case for (co-located) batteries.

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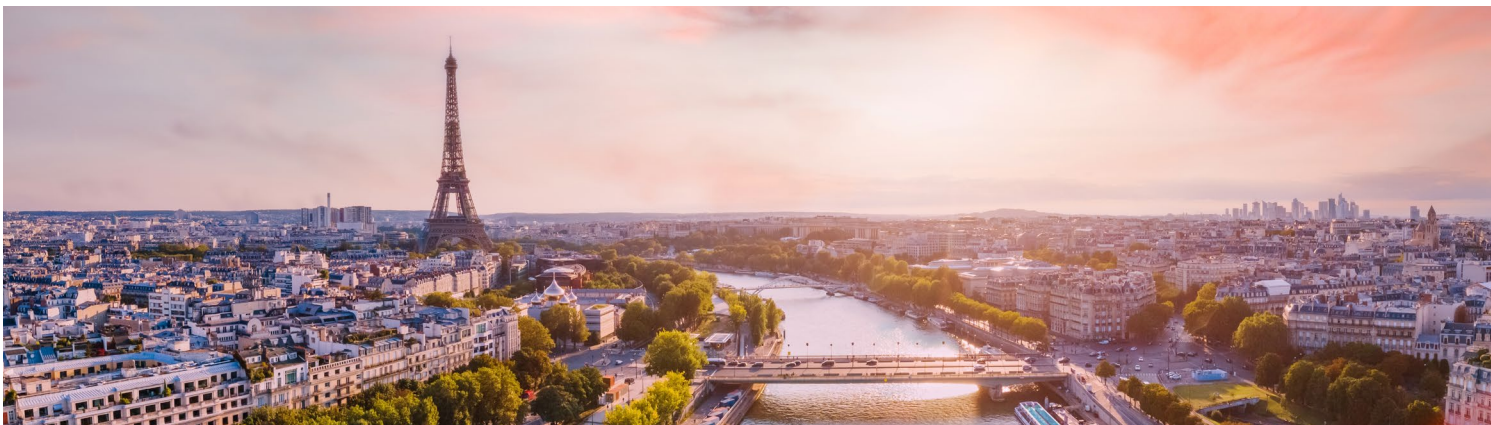


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Priscilla Castro, Senior Event Content Producer, Aurora

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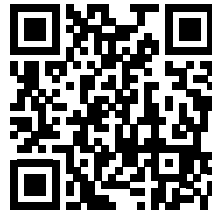


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