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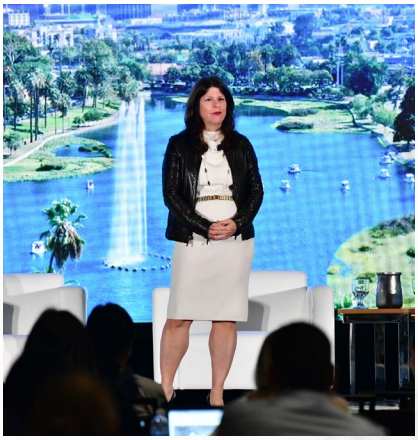
2023 Deloitte Renewable Energy Seminar

Retrospective

Keynotes and plenary sessions

Introduction

Deloitte's 16th annual Renewable Energy Seminar convened in Los Angeles, California, September 27–29, 2023. For the second year in a row, the seminar drew record-breaking attendance, connecting more than 480 attendees from the renewable energy industry as well as those from other industries focused on sustainability and climate change. Under the theme "Sustainable. Renewable. Possible." the program provided two and a half days of compelling discussions, actionable insights, and valuable networking opportunities.



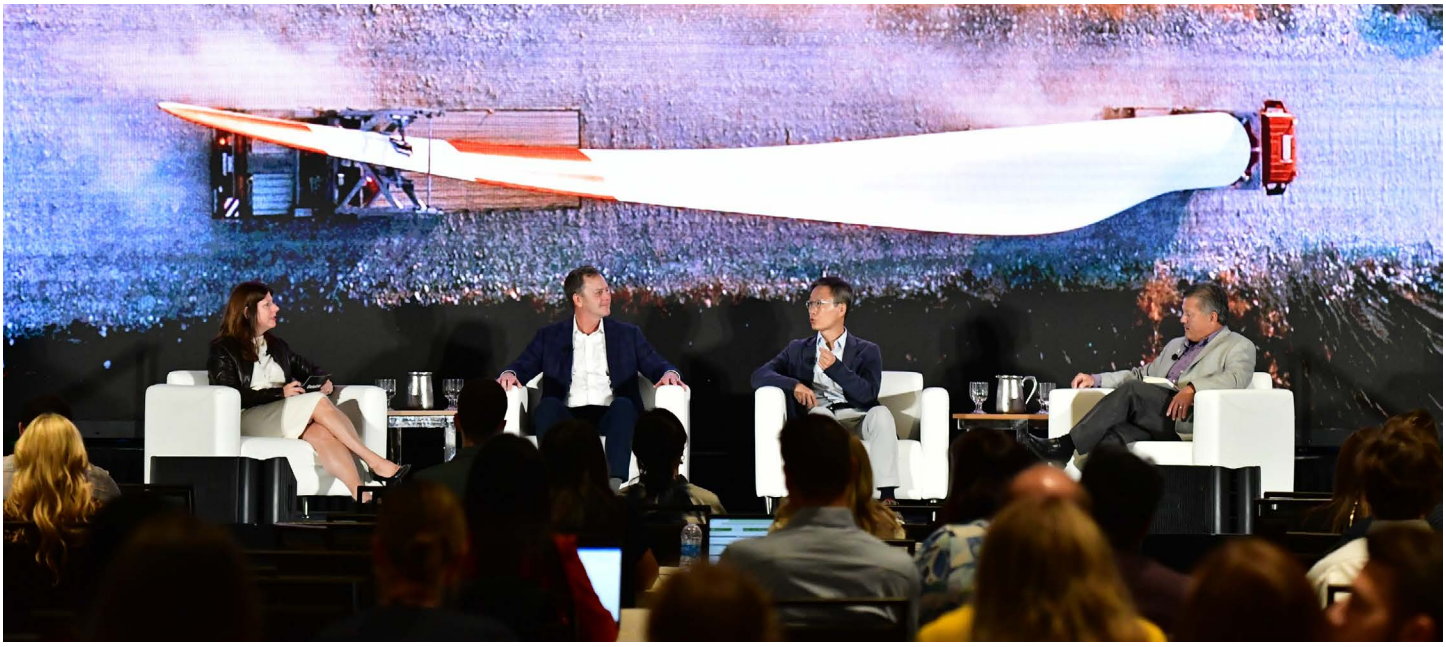
Marlene Motyka, US Renewable Energy leader and principal, Deloitte Transactions and Business Analytics LLP, welcomed this year's attendees and highlighted some of California's climate goals and accomplishments. California has been a long-standing pioneer in the charge toward 100% clean energy and continues to lead the nation toward a greener future. In 2021, 59% of the state's energy came from zero-carbon resources. And the state has already built out 35 gigawatts (GW) of clean electricity capacity—with 9 GW of that coming online over the last three years. California has already met its targets to achieve 33% renewable energy, reduce greenhouse gas emissions to 1990 levels, and sell 1.5 million zero-emissions vehicles.[1]

However, the state still needs to build an additional 148 GW of clean energy resources to reach 100% clean energy and carbon neutrality by 2045.[2] This represents a 400% increase in clean energy capacity over the next two decades. To achieve this feat, the state seems to recognize the importance of not only transitioning to clean power but making it reliable and affordable through a diverse clean energy portfolio.

More broadly, US battery-based energy storage capacity installations soared almost 1,100% between 2018 and 2022,[3] reflecting its rapid ascent as a potential game-changer for the electric power sector. And the pipeline for energy storage projects is robust. Ms. Motyka noted that Deloitte explores key energy storage opportunities for the electric power sector in its newly published report, Elevating the role of energy storage on the electric grid. The report uses a framework approach to show energy storage's expanding role in the electric grid through three dimensions: renewable energy integration, grid optimization, and electrification and decentralization support.

Ms. Motyka concluded by affirming Deloitte's commitment to making an impact that matters for its clients, people, and society. She announced that Deloitte donated (on behalf of each participant at this year's seminar) to the charitable organization LA Conservation Corps. Founded in 1985, its mission is to provide at-risk young adults and school-aged youth with opportunities for success through job skills training, education, and work experience with an emphasis on conservation and service projects that benefit the community.

American made: Building green supply chains



The panel started by emphasizing the unprecedented economic transformation occurring in the clean energy sector, driven by the Infrastructure Investment and Jobs Act (IIJA) and the Inflation Reduction Act (IRA). Bob Keefe reported that the IRA had spurred 200 announcements in 38 states since its passage in August 2022, resulting in $86 billion in private-sector investment and the creation of 75,000 jobs. Notably, these developments weren't confined to traditionally "green" states but extended to conservative regions, such as the Southeast, bringing new states into the clean energy revolution.

Reagan Farr of Silicon Ranch highlighted the uncertainty surrounding the IRA's impact, particularly regarding regulations and specific provisions. However, he noted that the trend toward domestic clean energy manufacturing was inevitable and underlined the importance of "energy community" provisions. Taeho Kang of SK PassKey discussed the company's strategic focus on electrification and electric vehicle (EV) charging infrastructure development in the United States. He stressed the role of the IRA in incentivizing foreign companies like SK PassKey to invest and manufacture in the country.

Bob Keefe underscored the broader impact of these developments and emphasized their potential to create jobs and transform regional economies. Reagan Farr shared Silicon Ranch's proactive approach in focusing on US-made materials prior to the IRA. This strategy, driven by job creation and community support, encourages the sourcing of materials from domestic manufacturers.

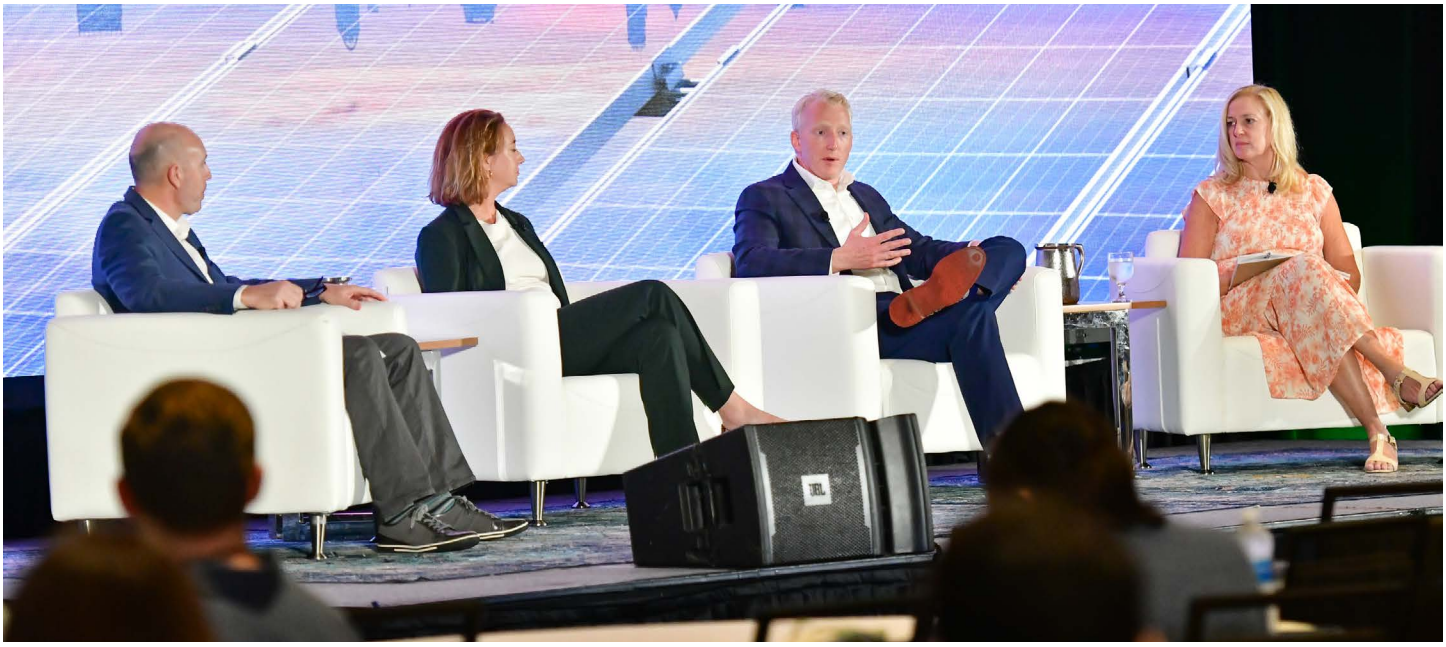
The panel also discussed foreign investments in US clean energy. Bob Keefe noted that about half of the investment in the sector came from foreign companies, including those from emerging markets, further stimulating the American clean energy industry. The panel acknowledged the challenges in transitioning to clean energy, such as updating the outdated electric grid to accommodate EV adoption and ensuring cooperation among suppliers for meeting domestic content rules.

To close, the panel discussion revealed that the clean energy transformation in the United States appears to be in full swing, with strong momentum driven by the IRA and foreign investments. This shift not only can create jobs and strengthen national security but also can present economic opportunities for regions that were previously not part of the clean energy revolution. However, challenges likely remain, including regulatory uncertainties and broader infrastructure development, which should be addressed to ensure the success of the green supply chain initiatives.

Moderator: Marlene Motyka, US Renewable Energy leader and principal, Deloitte Transactions and Business Analytics LLP

Panelists: Reagan Farr, president and CEO, Silicon Ranch; Taeho Kang, vice president, SK PassKey; Bob Keefe, executive director, E2

Show me the money: Financing and investments in renewable energy



The panelists began by highlighting the complexity introduced by the IRA, likening it to a game of "six-dimensional chess." They emphasized the importance of a long-term policy framework in the clean energy sector, particularly the extension of tax credits under the IRA. They discussed how this extension could impact the industry's ability to adapt and leverage these credits effectively.

Ellen Balfrey, whose company Apex is a developer of renewable energy projects, highlighted the challenges and opportunities brought by the IRA. She expressed excitement about the potential for the IRA to open up more financing options beyond tax equity. However, she also pointed out the complexity introduced by "adders" and "domestic content" provisions, which have altered the ranking of projects and made project financing more intricate.

From a financier's perspective, Beth Waters emphasized the newfound certainty in the industry, as the IRA eliminates the stop-and-start dynamics that have historically impacted project finance. The domestic content provisions are expected to evolve over time. Jon Peeples discussed an anticipated growth of the tax equity market from $30 billion to $100 billion, largely due to the expanded scope of projects eligible for tax credits under the IRA. He also highlighted the bank's efforts to bring more corporations into the tax equity space.

The panel addressed the impact of Basel III rules (an international regulatory accord that introduced a set of reforms designed to mitigate risk within the international banking sector) on clean energy financing, with a focus on developing tax equity term loans to circumvent these regulations. The discussion on transferability deals provided insights into their pricing and the distinctions between investment tax credit (ITC) and production tax credit (PTC) deals. The panelists suggested that the transferability market could evolve into a more efficient and potentially commoditized space.

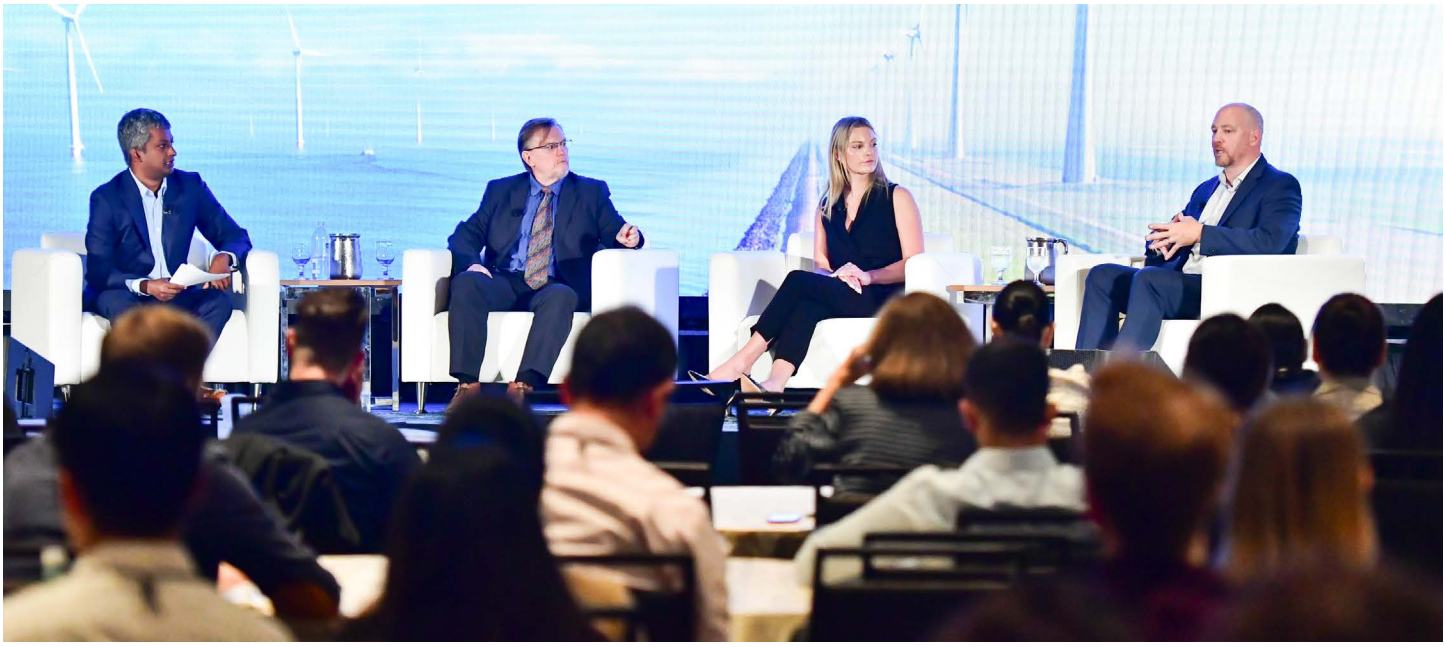
The session touched upon the risks associated with claiming credits, and the panelists highlighted the market's evolving understanding of transferability. They discussed pricing for transferability deals, with a focus on wind, solar, and storage. Turning to the IRA's impact on the hydrogen market, Ms. Balfrey noted a significant impact and the emergence of new incentives to support infrastructure development.

The panel concluded with a focus on repowering, loans pre-notice to proceed, and the future outlook, with a particular emphasis on the need for additional Treasury Department guidance and the development of the transfer market. They also touched on the challenges of getting more tax equity investors into the market and the unique constraints faced by lenders due to resource limitations and the increasing number of infrastructure deals.

Moderator: Tom Stevens, partner, Deloitte Tax LLP

Panelists: Ellen Balfrey, senior vice president, Finance, Apex Clean Energy; Jon Peeples, director of Business Development, US Bank; Beth Waters, managing director, Project Finance, MUFG

Harnessing the power of offshore wind



"Is President Biden's 2030 offshore wind target of 30 GW still reasonable?" This question started off the session, with Tyler Studds acknowledging that while this goal may be reasonable, it's not entirely achievable in the current landscape. The projects planned for completion by 2030 won't suffice, but there are essential components in place, including offshore leasing support from the Biden administration and state policies such as those in Massachusetts, New York, and New Jersey, accounting for 25 GW of capacity.

Permitting issues emerged as a significant concern for developers and decarbonization targets. Mr. Studds highlighted the differences in missions and cultures between permitting agencies and encouraged transparency and durability in the existing permitting process. The session also explored the potential for enhanced coordination in permitting processes, with California serving as a positive example of interagency collaboration.

Addressing pricing concerns related to supply chain, inflation, and fixed power purchase agreements (PPAs), Taylor Blevin emphasized the importance of alignment between advancing projects and various stakeholders. The panelists noted the significance of proving the concept in early projects to incentivize manufacturing and industry growth, with inflation-indexed PPAs as a potential solution. Transmission planning and grid capacity were discussed as well. Jeff Billinton underscored the importance of coordinated planning and timing, highlighting the essential role of proactive planning in building transmission infrastructure to accommodate the projected offshore wind generation.

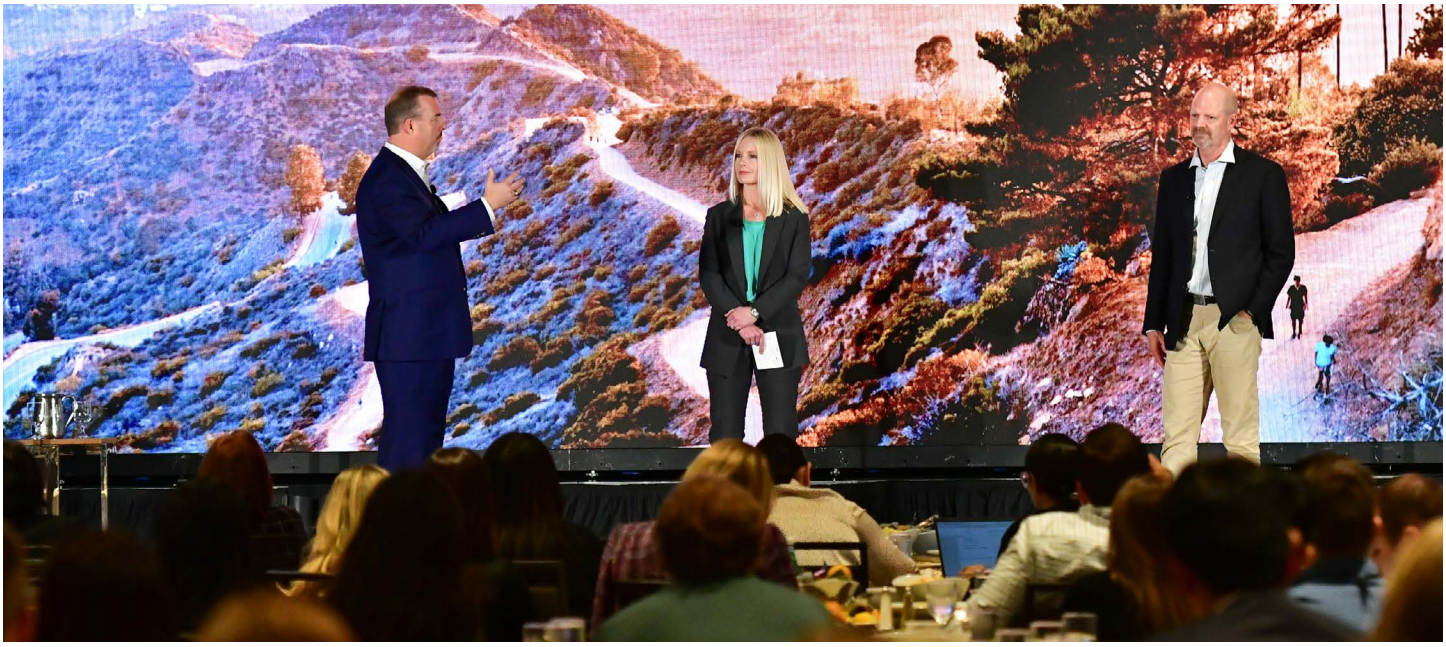
The discussion also delved into issues specific to the Gulf of Mexico, which faces challenges due to less resources and economic uncertainties. The panel agreed on the importance of considering uplift and uncertainty in long-term planning.

Finally, the panelists touched on the economic viability of offshore wind compared to other energy sources, emphasizing the value of offshore wind as a complement to other resources, such as in New England, which can face natural gas supply constraints during winter. The panelists highlighted the importance of resource diversity, workforce development, and the potential for a significant nationwide impact if the industry can successfully develop a domestic supply chain.

Moderator: Yomal Wijekoon, principal, Deloitte Transactions and Business Analytics LLP

Panelists: Jeff Billinton, director, Transmission Infrastructure Planning, California ISO (CAISO); Taylor Blevin, senior manager – Americas Project Finance, Ørsted; Tyler Studds, CEO, Golden State Wind, Ocean Winds

The evolution of clean energy in the United States: Reflections from the development and OEM perspectives



In a keynote lunch session, attendees heard from industry leaders Hunter Armistead and Laura Beane. Mr. Armistead, with a background in tax-efficient financing for renewables, recounted the industry's transformation since 2002. He highlighted the tumultuous period during the financial crisis and the challenges of going public during the yieldco era. However, the development of projects like SunZia brought new opportunities and growth prospects.

Ms. Beane's journey into the industry began as a receptionist, ultimately becoming CEO of Avangrid and chief renewable energy officer for Engie. She emphasized the positive changes brought by the ITC and PTC extensions, reducing uncertainty in the sector. Still, Mr. Armistead expressed concerns about the development of the transferable energy market, which hasn't developed enough to expand the tax equity market as anticipated.

The discussion touched on domestic manufacturing's resurgence due to the ITC, as well as the impact of rising commodity costs. Both speakers agreed that to ensure the industry's survival, all sectors, including suppliers, need to remain profitable.

Regarding innovation, Ms. Beane suggested that slowing down the development cycle for larger wind turbines and equipment could be necessary to ensure safety and expressed concerns about employee safety and the need for a skilled workforce. When discussing wind energy's recent rising costs, Mr. Armistead considered it a temporary increase and noted that clearer rules in the transferability and tax equity market could help make it a shorter "blip." Both speakers found energy storage's role crucial in addressing energy demand fluctuations. They also discussed the importance of decommissioning and repurposing wind equipment at the end of its life cycle.

The session concluded with a sense of excitement about the industry's potential and the need for careful guidance to harness renewable energy effectively. Green hydrogen is also generating significant interest, as the industry awaits further guidance on hotly debated hydrogen tax credit accounting.

Mr. Armistead likened the industry's enthusiasm to a group of kindergartners eager to play a game that still lacks clear rules, emphasizing the importance of additional clarity and guidance on the new clean hydrogen incentives.

Moderator: Brad Poole, partner, Deloitte & Touche LLP

Panelists: Hunter Armistead, CEO, Pattern Energy Group; Laura Beane, president, North America, Vestas

The fifth element: Unlocking clean hydrogen

The discussion kicked off with Bryan Wright highlighting Constellation's hydrogen initiatives, emphasizing a focus on green hydrogen and clean energy projects in New York and the Midwest. Neil Navin, representing SoCalGas, discussed the need for substantial investments in renewable natural gas, carbon capture and storage, and hydrogen technologies. Dan Gaspar from PNNL advocated for building a burgeoning hydrogen economy to address hard-to-abate sectors. Lindsay Ashby of Avangrid discussed the company's operational electrolyzers in Spain and Canada as well as various hydrogen projects in the United States, including those involving transportation, fertilizers, and hard-to-abate sectors.

The panel explored topics such as the fastest-growing applications of hydrogen, emphasizing transportation, dispatchable electricity generation, and manufacturing. Communication and education on hydrogen safety were deemed crucial, with a need to engage communities and apply a safety culture akin to nuclear facilities.

Panelists also noted hydrogen's potential as an energy carrier and underscored its ability to help decarbonize multiple sectors. They discussed infrastructure development for hard-to-abate sectors, with an emphasis on the need to convert the existing hydrogen industry to green hydrogen and integrate it into the broader economy.

The session touched upon the use of hydrogen for storing renewable energy and the associated costs. Panelists detailed electrolyzer, infrastructure, and downstream costs. Furthermore, the discussion delved into the relevance of Washington state incentives and the workforce needed for the hydrogen sector. They highlighted water usage in hydrogen production as an important consideration, with a focus on reusing and repurposing water resources. The panel also discussed the global perspective of hydrogen, the potential for international trade, and financing structures.

In the coming years, the panel anticipated that regulatory systems for hydrogen would become more established and the industry would witness the deployment of larger projects. They speculated on the possibility of hydrogen applications in markets such as bunker fuel for shipping and the attainment of the US Department of Energy's goal to reduce clean hydrogen costs to $1 per kWh.

Moderator: Kate Hardin, executive director, Deloitte Research Center for Energy & Industrials, and managing director, Deloitte Services LP

Panelists: Lindsay Ashby, business development manager, Avangrid Renewables; Dan Gaspar, senior advisor and manager, PNWH2 and PNNL; Neil Navin, chief clean fuels officer, SoCalGas; Bryan Wright, president and senior vice president, Hydrogen Production & Services, Constellation

Power hour: An energy transition conversation

To begin this session, Alex Kapper discussed Caterpillar's new division focused on electrification and energy solutions, including battery and fuel cell development, and their dedication to helping customers pioneer the future of clean energy. Mr. Kapper emphasized the three dimensions of Caterpillar's involvement in the energy transition: pursuing its own decarbonization goals; contributing to building global energy transition infrastructure; and helping its customers with their complex decarbonization journeys in industries like construction, mining, and railroads.

Susan Nickey then shared how HASI invests in climate solutions in capital-intensive industries. HASI brings capital and financing solutions to the table, investing in wind, solar, storage, energy efficiency, and more. She also highlighted their advocacy efforts, focused on driving policy changes to advance their business and sustainability agenda.

And David Szmigielski discussed how Wells Fargo can assist clients in achieving their sustainability targets through mergers and acquisitions, initial public offerings, and investor positioning. He emphasized how Wells Fargo can help clients quantify the benefits of their sustainability initiatives, such as emissions reduction and carbon accounting, and noted that they are actively seeking solutions across various sectors.

The panel addressed various topics, including the importance of long-term policy support like the IIJA and the IRA and how these policies are transformational for the industry. They noted the growth enabled by these policies and the increasing demand for clean electricity due to factors like electric vehicle adoption, AI-driven data centers, and new manufacturing facilities.

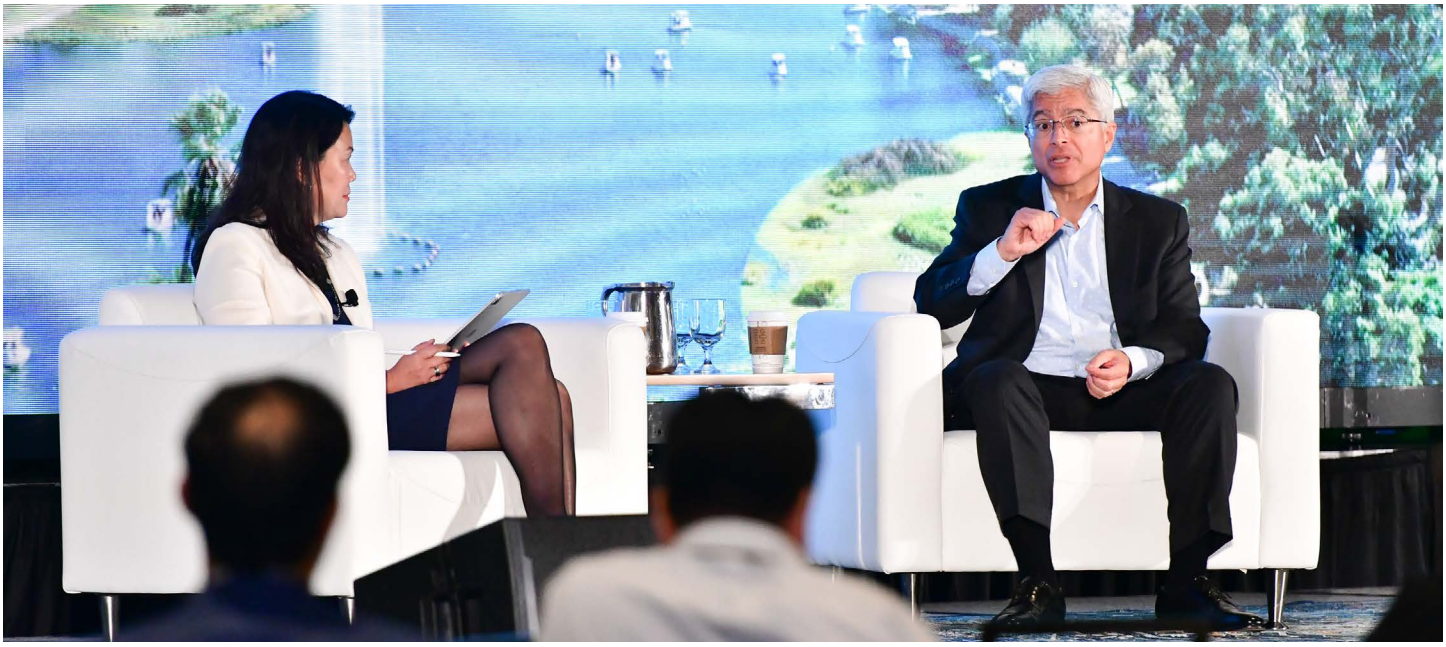
Mr. Szmigielski discussed Wells Fargo's focus on circularity and sustainable fuels, while Ms. Nickey highlighted the importance of investing in and building a more reliable and advanced energy grid. They also discussed the significance of nature conservation and biodiversity in their strategies.

Looking forward, the panel stressed the significance of education, communication, and workforce training to promote renewable energy initiatives and stressed the importance of new financing solutions, innovative business models, and scalability in the industry. They anticipate emerging technologies, such as hydrogen production and advanced battery technologies, to unlock more applications and opportunities.

Moderator: Jim Thomson, vice chair, US Power, Utilities and Renewable Energy National Sector Leader, Deloitte LLP

Panelists: Alex Kapper, director, Strategy & Business Development, Caterpillar; Susan Nickey, chief client officer, HASI; David Szmigielski, director, Sustainable Finance & Advisory, Wells Fargo

The countdown is on: How to transform the energy sector, electrify the economy, and reach net-zero by 2045



In this armchair discussion, Mr. Pizarro discussed Edison International's latest paper, "Countdown to 2045," a sequel to "Pathway to 2045," emphasizing California's leadership in climate solutions. He highlighted the need for California to transition to a net-zero economy by utilizing clean electricity and meeting a projected 80% increase in electricity demand, boosted from the prior 60% estimate. Key changes include substantial investment in renewable energy generation as well as electricity transmission and distribution systems. According to the analysis, by 2045, 90% of vehicles in the state would need to be electric and 95% of buildings would use electricity for heating and cooling.

Mr. Pizarro, in his role as the chair of the Edison Electric Institute (EEI), expressed confidence in the grid's readiness but emphasized the necessity of cooperative efforts from utilities and communities. He stressed the importance of embracing various clean energy technologies, including wind, solar, storage, geothermal, and offshore wind, while also focusing on distribution system resources.

Addressing climate adaptation, Mr. Pizarro highlighted the risks of wildfires, sea-level rise, and extreme weather events, with a focus on hardening the energy system. The industry is collaborating through EEI and the Electric Power Research Institute to address these challenges.

Mr. Pizarro underscored the significance of private-sector involvement in meeting emissions targets and urged individuals and companies to take responsibility. He emphasized the importance of bipartisan action and the role of companies and voters in advocating for climate action.

The discussion also touched on government shutdowns potentially slowing down the energy transition, efforts to support disadvantaged communities, permitting and siting challenges, and financing additional transmission. Mr. Pizarro suggested that financing may not be the primary obstacle but rather the potential need for streamlined permitting and investment in infrastructure.

Moderator: Jian Wei, principal, Deloitte Consulting LLP

Panelist: Pedro Pizarro, CEO and president, Edison International

The US energy transformation: Private sector-led and government-enabled —highlights from the US Department of Energy's Loan Programs Office

In a virtual livestream, Phil Kangas highlighted that the passing of the IRA was the single largest investment in clean energy in American history and included $11.7 billion of appropriations for the Loan Programs Office (LPO). The LPO plays a pivotal role in managing these funds, with its authority set to increase to more than $100 billion.

Mr. Kangas noted that the LPO focuses on supporting clean energy technologies at a stage with minimal technical risk. To achieve this, they require a minimum of 1,000 hours of piloted evidence data. They help companies navigate through what's often called the "Valley of Death." In this stage, technologies often lack the proof needed to secure Wall Street backing, and that's where the LPO acts as a "government accelerator" by providing patient capital and flexible financing. The LPO's commitment extends to forming partnerships between these companies and the DOE, which can provide other crucial support in moving projects toward bankability.

Mr. Kangas also underscored that despite the immense scope of its work, the LPO keeps an eye on fostering real change in energy markets rather than acting as the "department of nifty business ideas." They facilitate risk and due diligence through pre-application dialogues, positioning themselves as the "front door of the DOE." With 208 project applications and 167 active ones, Mr. Kangas said that the LPO stands ready to lend more than $250 billion to help drive utility transformations, emphasizing the need to work at an unprecedented scale to achieve US goals in the energy transformation.

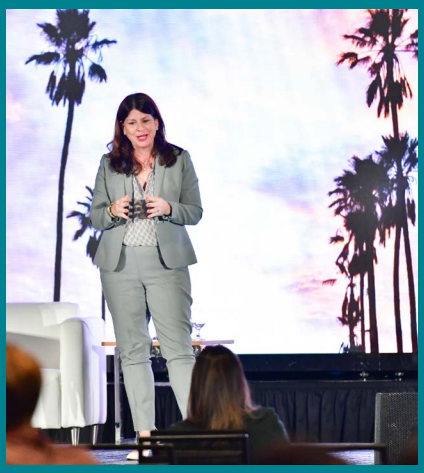
Moderator: Alfie Zarate, principal, Deloitte Transactions and Business Analytics LLP

Panelist: Phil Kangas, director of Outreach and Business Development, Loan Programs Office, Department of Energy (DOE)

Conclusion

Deloitte's Ms. Motyka closed out this year's event by thanking all the speakers for sharing their insights and sparking thought-provoking discussions that carried from the plenary and breakout sessions to the receptions. She also thanked all the participants for spending three days in Los Angeles with us.

Ms. Motyka then announced the dates for next year's Deloitte Renewable Energy Seminar, taking place September 25–27, 2024, in Orlando, Florida.



Some of the key takeaways from the panelists:

- With the passage of the IRA, the US government has empowered the private sector to lead in the domestic development and deployment of clean energy technology.
- By its first anniversary in August 2023, the IRA had spurred more than 200 clean energy and clean vehicle project announcements in 38 states, which, if completed, would bring in about $86 billion in private-sector investment and potentially create up to 75,000 new clean energy jobs. And the rapid pace of announcements has continued since then.
- The IRA could potentially expand the size of the tax equity market from $30 billion to $100 billion, but further guidance and clarification is required for markets to reach potential.
- The Biden administration's offshore wind goal of 30 GW by 2030 has prompted significant progress, but it may not be achievable in the current landscape.
- As the hydrogen sector continues to expand, communication and education on hydrogen safety are crucial. Water usage in hydrogen production is a critical consideration, and there should be a focus on reusing and repurposing water resources.
- The IIJA and IRA are enabling growth, and US clean energy demand is increasing due to factors like electric vehicle adoption, AI-driven data centers, and new manufacturing facilities.
- Industry, community, and public-sector collaboration should continue to upgrade and expand the electric grid to accommodate growth and respond to climate change.

We look forward to continuing the conversation next year!

Endnotes

1. State of California, "Governor Newsom updates the road map to California's clean energy future," May 25, 2023.
2. Ibid.
3. California Governor Gavin Newsom, Building the electricity grid of the future: California's clean energy transition plan, May 2023.

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