

Pillsbury's Dedicated Hydrogen Practice Anticipates Hydrogen's Role in the Energy Transition

Pillsbury Winthrop Shaw Pittman LLP is an international law firm with a particular focus on the technology and media, energy, financial, and real estate and construction sectors. Recognized as one of the most innovative law firms by Financial Times and one of the top firms for client service by BTI Consulting, Pillsbury and its lawyers are highly regarded for their forward-thinking approach, their enthusiasm for collaborating across disciplines and their authoritative commercial awareness.

Mona E. Dajani is a partner at Pillsbury Winthrop Shaw Pitman LLP, where she is the global head of energy and infrastructure and also leads the Renewable Energy practice, covering clean energy, clean energy technology, hydrogen, and sustainable finance. She is dual qualified as a lawyer in the United States and England, together with being a licensed professional engineer. She serves as a lead lawyer in complex mergers, acquisitions, dispositions, financings and project development transactions involving energy and infrastructure facilities in the United States and around the world.

CCBJ: Kudos to Pillsbury Winthrop Shaw Pittman for launching the global hydrogen map, and for your tremendous efforts to support the burgeoning hydrogen economy. First tell us about your hydrogen practice and what services you plan to offer. Who are your target clients?

MD: Hydrogen has a critical role to play in the low-carbon technology portfolio by eliminating carbon from electricity, transportation, industry, and buildings. To meet this moment, we launched a hydrogen practice at Pillsbury as part of our efforts to assist clients with the opportunities presented by the energy transition.

Our multi-disciplined group of lawyers—one of the first launched by an AmLaw 100 firm—offers a deep bench with an understanding of hydrogen-based energy technologies and projects and an unsurpassed track record of helping clients across a range of industries to bring their hydrogen-related innovations to the global market. I'm devoted to helping clients find cost-effective solutions as they contemplate lending, business, and investment decisions related to hydrogen, but also including sustainable finance.

Although hydrogen has been around for a long time, in recent years hydrogen has gone from a sleeping thought to the next big thing. With this increased demand, I've been very interested in how we can leverage hydrogen technologies as part of broader decarbonization planning. In fact, we're now working with many energy companies, including oil and gas majors, utilities, financiers, banks, shipping, automotive, trains, fleets, and heavy industrial clients. They're using hydrogen in their end products such as mining, construction and agribusiness, which need hydrogen as a source of fuel to transition away from diesel.

We're also advising the Clean Air Task Force on the use of nuclear energy for alternative fuel production, including hydrogen and ammonia. And we're working with a global leader in zero-emissions heavy duty trucks and hydrogen infrastructure on a number of high-profile corporate matters and transactions.

From industry to government to the environmental community, the continued development of hydrogen energy has a uniquely broad appeal.

CCBJ: Given the investment your firm has made in tracking hydrogen

projects in planning and in operation, how dramatically has the volume or number of active projects increased recently?

MD: One of the goals of our map is to bring awareness and information directly to the public so it can formulate a true opinion of the untapped potential of hydrogen energy. I believe that green hydrogen is the path of the future, and the trends I'm seeing only further support that thesis.

Green hydrogen, of course, is made by capturing renewable energy using electrolyzers which emit zero carbon. Blue hydrogen is made from non-renewable sources such as natural gas, but includes capture and storage of the lower amounts of carbon involved. Then there's grey hydrogen, which relies on fossil fuels and still accounts for most of the global supply. We're working to change that.

Currently, we're monitoring hundreds of low-carbon hydrogen projects worldwide, some operational and many more under development. The next decade is poised for exponential growth in the low-carbon hydrogen market. The majority of the operational low-carbon hydrogen projects are green hydrogen at the moment, but there are a handful of blue hydrogen projects also in the mix.

Blue hydrogen production will be an interesting market to watch if carbon and storage (CCS) develops enough for it to serve as a more viable or simpler method for oil and gas companies to transition to clean energy without having to abandon fossil fuels. I'd like to think they will be able to overcome the challenges of scale and economics that have held back CCS technology to date.

CCBJ: How much investment capital has gone into the hydrogen economy recently? What is the future outlook?

MD: According to the Hydrogen Insights report released in July, there's

now a \$500 billion investment pipeline associated with green and blue hydrogen development through 2030. This is a significant uptick from the last report in February sparked by stricter carbon targets, new commitments to Net Zero targets, and concrete hydrogen strategies from more than 30 countries.

There's also a strong outlook for hydrogen in BNEF's latest New Energy Outlook, which forecasts that new demand for hydrogen could account for as much as 22% of total final energy consumption by 2050 compared with less than 0.002% today.

CCBJ: What metrics will be used to measure hydrogen productivity in the future along the lines of barrels of oil or megawatts of power? When do you expect the breakthrough that will move the needle on hydrogen's role in the global energy market?

MD: Several metrics will measure hydrogen's continued growth: an uptick in the number of projects, both under development and operational; tons of hydrogen produced per year; and what percentage of energy consumption is being met by hydrogen. It will also be interesting to track the growth of the different hydrogen technologies—how much is green versus blue versus gray?

The good news is that we're seeing many barriers to growing the hydrogen economy—namely price, technology, infrastructure, and policy—fall one by one, as corporations, oil majors and startups steadily move into the market. Several factors may provide a breakthrough moment for hydrogen, either individually or collectively. First, if and when the United States launches a national hydrogen strategy that includes tax incentives. Second, heavy industrial sectors turning to hydrogen in response to growing demand from customers, governments and financial players for decarbonization, as well as environmental demands.

Lastly, as we see continued growth of renewable energy like wind and solar, maximizing the output of these projects with commercially scaleable long duration storage that leverages green hydrogen will also contribute to a breakthrough moment for the hydrogen economy. Utility-scale wind farms harvesting the wind and the fields of solar panels converting energy from the sun could be doing a lot more for us. When the electricity they generate doesn't match moment-by-moment demand, it could power electrolyzers that split plain water into oxygen and green hydrogen—a fuel you can store for next week and next season.

CCBJ: As one of the leading law firms in the hydrogen space, Pillsbury must be exceptional in its commitment to innovation and clean energy as reflected in its hydrogen practice. Will law firms increasingly become more engaged with clean energy across the

board and other parts of their clients' businesses and investment portfolios? Or like other sectors, will they become more focused on their core competency?

MD: Given the complexity of these industries there are a lot of factors to consider, which makes it hard to come up with a standard answer. Obviously, it's going to depend on their philosophy regarding their commitment to clean energy, their clients, and of course their core competencies.

With the growing demand for sustainability and additional accountability, it's easy to see law firms attempting to position themselves as experts in sustainable finance although they may rely heavily on outside consultants. I believe law firms like Pillsbury, where we have a true core competency in-house and can provide comprehensive services, will certainly have a competitive advantage as these markets expand. ☀

NextEra Investing in Green Hydrogen

NextEra is doubling down on green hydrogen, with plans to build a 500-megawatt wind project to provide power to a hydrogen fuel cell company, the company announced in a third quarter 2021 earnings call with analysts. The Florida-based NextEra also acquired a 100-megawatt wind project in California for \$280 million, including taking on \$150 million in existing project finance debt.

Overall, NextEra said it has added more than 5,700 megawatts over the first nine months of 2021 to its backlog of renewable energy and storage projects. A large chunk of that—2,160 megawatts—came during the third quarter, divided up between 1,240 megawatts of new wind projects, 515 megawatts of new solar projects and 345 megawatts of new storage assets.

NextEra executives have a bullish take on the prospects for green hydrogen. The nearby hydrogen electrolyzer facility will pump out green hydrogen to be sold to commercial and industrial companies looking to switch out gray hydrogen and fossil fuels. The project is just the first of a "lot more like that," said NextEra with an interest extending to potentially investing "in the actual hydrogen production equipment."

NextEra is advocating a green hydrogen production tax credit to be included in the final version of the budget reconciliation bill. The tax credit would really close "the gap between gray hydrogen and [the] green hydrogen alternative" while spurring growth in the nearer term.

Pillsbury Launches Innovative Map Tracking Hydrogen Projects Globally

Interactive resource reflects rapid progression of hydrogen projects and technologies.

Pillsbury Winthrop Shaw Pittman LLP—the first global law firm to establish a practice team dedicated to all things hydrogen—has launched the only public resource tracking the development of hydrogen projects worldwide (www.TheHydrogenMap.Com).

“With governments and enterprises worldwide increasingly prioritizing decarbonization goals, we are laser-focused on helping clients capitalize on the enormous opportunities that the ongoing energy transition presents,” said partner Sheila Harvey, who serves as firmwide Energy Industry Group leader at Pillsbury and co-leads the firm’s Hydrogen practice.

Hydrogen practice group co-leader Mona Dajani, who also heads the firm’s Energy & Infrastructure Projects and Renewable Energy teams, added: “Demand for energy is driving significant innovation in the hydrogen space. Green hydrogen projects, which combine renewable power sources with hydrogen production, are unlocking new possibilities for regions previously constrained by weak grid connections and transmission bottlenecks and marking a crucial step in the development of the green hydrogen business case.”

The proprietary Pillsbury map concentrates on “green” and “blue” hydrogen projects—production facilities that meet low-carbon thresholds by using either zero-carbon sources such as renewables or nuclear power or by capturing, storing or reusing carbon emissions produced by fossil fuel-based hydrogen production methods—with more than 200 projects already included. This data set will expand over time, with existing entries updated as projects progress.

Notable findings include:

- While 57 hydrogen projects (26% of those tracked) are currently operational, 58 others will be in development by the end of 2021 and construction of another 92 is scheduled to begin in the next decade.
- Global growth is thus far being driven by Western Europe and Asia Pacific, with these regions accounting for more than 83% of known low-carbon hydrogen projects, but hydrogen projects in the United States are on the rise.
- Green hydrogen projects, which generate hydrogen using zero-carbon sources such as renewables or nuclear power, currently dominate the market with 52 operational projects.
- A hydrogen production facility being built at the Tabangao refinery in Batangas, Philippines, is slated to be the first to generate blue hydrogen, in which hydrogen is produced using fossil-fueled sources but the resulting carbon emissions are captured, stored or reused.

“Low carbon hydrogen and ammonia production is the key to decarbonizing the hard-to-decarbonize sectors like transportation, industry and buildings,” said Pillsbury Energy partner and Deputy Energy Industry Group leader Elina Teplinsky. “This map will be a helpful tool for a broad audience of policy makers, industry participants and investors, sustainability analysts, advocates and journalists tracking the development of low-carbon hydrogen projects and encourage dialog between those parties to further accelerate adoption of this transformational technology.”

Innovation has long been the through-line of Pillsbury’s energy and technology practices. Today, that includes being at the forefront of the energy transition, guiding clients in the diversification from fossil fuels to renewable energy, carbon capture, utilization and energy storage. Hydrogen and many new energy technologies are playing a crucial role in the clean energy transition. Pillsbury’s global, cross-disciplinary Energy team is poised to help clients navigate the transformation with strategic advice on new energy technologies as they emerge. ⚙️

Regional Cut-Outs of Pillsbury’s Hydrogen Map

