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Alternative Energy & Power

USA

Trends and Developments

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United States Alternative Energy and Power Industry - Trends and Developments

Electric power markets in the United States have experienced a major shift over the last decade or more. Coal-fired generation, once the backbone of the US electric power supply, has steadily declined, replaced first by inexpensive natural gas (the product of advances in fracking technology), and increasingly by alternative energy sources: utility-scale wind and solar and distributed solar generation. In April 2019, the USA for the first time produced more electricity from renewable sources than from coal, according to the US Energy Information Agency (EIA).

The EIA further projected (before the disruption caused by COVID-19) that in 2020, coal-fired electricity generation would decline an additional 13%, while generation from alternative energy sources would grow by 15%.

National Policies Favouring Alternative Energy

Production Tax Credit

Utility-scale wind generation has grown most rapidly over the last two decades. Federal tax policy has been a significant driver, beginning with enactment of the Renewable Energy Production Tax Credit (PTC) in 1992. The PTC provides a tax credit for each qualifying kilowatt-hour (kWh) of electricity generated, for ten years after the generating source is placed in service.

Short term extensions of the PTC (it has been extended 12 times) have fostered repeated booms and lulls in wind development, as Congress allowed the PTC to expire several times, only to renew it retroactively. But in 2015, Congress adopted a plan to step down the PTC over several years and to end it after 2019.

The PTC is not gone yet – in late 2019, Congress added a year, allowing 2020 projects to receive 60% of the credit (2019 projects only get 40%). And, under so-called “safe harbour” rules, a project’s credit rate is based on when it began construction, as long as it comes online within four years (now extended to five years due to COVID-19). Thus, projects that qualify in 2020 will receive 60% of the PTC, if brought online by the end of 2024.

Investment Tax Credit

Alternatively, facilities eligible for the PTC can claim an “investment tax credit” (ITC), a percentage of the capital cost of construction instead of the per-kWh PTC credit. The ITC also is being phased out, in parallel to the PTC.

Congress enacted an ITC for residential and commercial solar generation in 2006. As with wind generation, the solar ITC has spurred rapid growth in solar-powered electricity generation. Congress extended the solar ITC in 2015, but projects that commence construction after 2019 will receive a reduced credit, stepping down from 30% to just 10% by 2022 for commercial and utility-scale projects, and ending for residential projects after 2021. During the last decade, the solar ITC has helped spur 50% average annual growth in residential and commercial solar generation.

As federal incentives for new alternative energy electric power generation are significantly reduced or phased out (at least under current legislation), other incentives are likely to have a greater impact on future growth in this sector – particularly actions by states and by corporate power purchasers.

State Actions

In the federal system, states are often regarded as the laboratories for experiment and the source of a patchwork of regulations. Because the federal government’s powers are limited to those enumerated in the Constitution, the states can harness their considerable police powers to either facilitate or inhibit the success of industry. The Alternative Energy and Power industry is no exception, particularly when one focuses on solar and wind and sets aside the hydroelectric industry that is regulated pursuant to broad federal authorities under the Federal Power Act.

State-specific renewable energy targets

Many states have developed renewable energy targets that provide an essential incentive for development of renewable energy within their borders. States began adopting Renewable Portfolio Standards (RPS) – a requirement that utilities obtain some quantity of their electricity from renewable sources – in the late 1990s. Today, 29 states have RPSs and eight states have renewable portfolio goals.

In recent years, several states have adopted new or updated standards that push their state electric systems toward 100% clean energy sources. For example, Virginia recently passed the Clean Economy Act, setting one of the largest energy storage targets in the country, pushing state regulators to devise a carbon dioxide cap, and including a RPS with interim targets set at 58% clean power by 2030, 73% by 2035, 88% by 2040, and 100% by 2050. Virginia joined California, Hawaii, Maine, New

Mexico, Washington and the District of Columbia with 100% clean or renewable energy standards (to be achieved in 2045 or 2050), while Nevada and Colorado have set a 100% goal.

However, state law can pose significant obstacles to alternative energy development. The obstacles may be intentional or unintentional and can take many forms. Some are specific to the alternative energy industry.

For example, interconnection standards, which establish the rules whereby new generation facilities can connect to the existing electric grid, may facilitate or obstruct alternative energy development. At a smaller scale, metering policies may either allow customers who generate excess electricity to sell it or get credit for it on the market, or forbid them from doing so.

Land use and environmental regulations

Other obstacles to alternative energy development include state and local land use and environmental regulations. In general, local governments regulate local land use through zoning and other mechanisms. Two decades ago, few land use/zoning ordinances identified alternative energy development as a recognised land use.

While progress has been made toward identifying wind and solar projects as recognised land uses and identifying areas within local jurisdictions where such land uses are authorised, either as of right or with a permit, obstacles remain, for example to the co-location of energy storage with alternative energy generation.

Obstacles to development

The myriad of state environmental regulations may pose an obstacle to alternative energy development. These can range from the requirement to prepare environmental impact assessments to comply with state law, to requirements aimed at protecting farmland or wildlife. These regulations are often weaponised by project opponents in order to advance their parochial interests.

Historically, governments have found it difficult to combat the arguable abuse of environmental regulations by motivated project opponents.

Corporate Power Purchases

Large companies have increasingly become important alternative energy customers in the United States, and elsewhere. The number of Fortune 500 companies with 100% renewables goals grew from 23 in 2017 to 53 in 2018. Companies joining RE100, a global corporate initiative that began in 2014, set a public goal to source 100% of their global electricity consumption from renewable sources by a specified year.

In December 2019, RE100 passed 200 members. By June 2020, it had 235.

Corporations are increasingly meeting their commitments to renewable electricity by purchasing the power directly from generators through corporate power purchase agreements (PPAs). These long-term agreements, typically linked to the output from specific generating assets, provide the companies with stable power prices as well as green credentials. Corporate PPAs also play a key role in financing the development of alternative energy projects.

Electricity purchases

Electricity is purchased at a pre-agreed price structure for a set period, which provides certain cash flows for the project. Higher education is also becoming a major purchaser of alternative energy. In 2019, the Environment America Research and Policy Center reported that more than 40 colleges and universities obtain 100% of their electricity from renewable sources.

This is a rapidly growing market. In 2018, US corporate direct purchases of renewable power totaled 13.4 gigawatts (GW), double the volume in 2017. Bloomberg New Energy Finance estimates signatories to the RE100 initiative alone will need to fund around 102 GW of new solar and wind projects globally to meet their 2030 commitments.

Wildlife and Natural Resources

Utility-scale alternative energy projects face different permitting challenges from conventionally-fueled electricity generation. Wildlife and natural resource issues play a significant role in alternative energy project siting decisions. Advances in generating technology have allowed alternative energy projects to capture more energy cost-effectively, and the market demand for wind and solar projects has increased.

Consequently, renewable energy projects are being sited in new states and regions. As more and more projects appear on the landscape, “easy” sites have become scarce. The complexity of wildlife and natural resource issues varies depending upon the ecological and legal setting.

Through the Central Plains, migratory birds dominate wildlife conversations. In the Midwest and Northeast, bat species are a significant concern. For solar energy, terrestrial species drive siting concerns.

Endangered species

Even though most alternative energy projects occur on private lands, development on federal lands or with a federal nexus can trigger Endangered Species Act (ESA) review. Increasingly, alternative energy projects, particularly solar projects

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with larger footprints, are finding it more and more difficult to avoid impacts to other natural resources, such as “Waters of the United States” governed by the Clean Water Act. Obtaining permitting under these other natural resource statutes triggers review under the ESA, which can add time and cost to project development.

States, too, have their own wildlife permitting programs. California, New York and Illinois, for example, have their own endangered species act statutes and permitting programs.

Fish and wildlife

The US Fish and Wildlife Service (USFWS) is considering whether to grant protection under the ESA (ie, “list”) many species that may be found over a large range, such as the little brown bat, the lesser prairie chicken and the monarch butterfly. USFWS maintains a workplan that it uses to help organise its “calendar” of listing decisions, which includes these three species, among many others. If listed, these species will require assessment across great swaths of the United States.

However, localised, longstanding listed species such as the Houston toad may not be distributed widely, but still can complicate project development due to uncertainties surrounding their habitat.

Bald and golden eagle protection

Beyond the ESA, compliance with the Bald and Golden Eagle Protection Act (BGEPA) can create an added layer of complexity for alternative energy. Golden eagles and bald eagles are found throughout the United States. While typically thought of as a wind energy issue, the growing prevalence of eagle nests and accelerating alternative energy development on the landscape have created increasing interactions for solar and hydroelectric energy development as well. For example, the California Flats solar energy facility in California has obtained both an ESA permit for potential impacts to terrestrial species and a BGEPA permit for potential impacts to golden eagle nests in the vicinity of the project footprint. Given that project development can take several years, it is not uncommon to find eagle nests or increased eagle use within a project footprint where previously there had been none.

Project investors may require additional demonstration of BGEPA risk management where nests have been built within or near project boundaries.

Migratory birds

The Migratory Bird Treaty Act (MBTA), enacted in 1918, has received significant attention in the last decade due to highly publicised enforcement actions at wind energy facilities. MBTA is a strict liability statute that makes it a crime to hunt, take, or

kill a migratory bird. Whether the MBTA actually applies to alternative energy projects (or any other commercial or industrial projects that may kill migratory birds incidentally while engaged in otherwise lawful activities) is currently in flux.

Beginning in the 1970s, USFWS applied the MBTA to the incidental take of migratory birds, but the Trump Administration has declared that the MBTA was never meant to extend to incidental take. That position, declared through a 2017 Department of Interior Solicitor’s opinion, is currently the subject of litigation. In 2020, the Trump Administration has proposed rules codifying its position.

Whether those rules will be finalised and whether they will withstand the inevitable legal challenges remains to be seen. Alternative Energy projects often have lifespans of many decades. The state of flux and potential exposure under the MBTA can impact alternative energy project financing.

Overall impacts

Technology is developing rapidly as a tool for project developers to assess and manage impacts to wildlife. Drones and cameras are increasingly employed to conduct surveys at solar and wind energy sites to measure activity and identify sensitive features such as raptor nests. For eagles, cameras are connected to wind turbine control systems and can signal specific turbines to shut down within minutes upon detection of an eagle.

Developments have been made in bat deterrent technology that allow wind energy developers to install devices on turbines that will discourage bats from flying near the turbines. Agencies are figuring out how to incorporate this emerging technology into impact estimates, minimisation efficacy and permit conditions within the limits of the relevant laws.

Offshore

Offshore wind has been slow to take off in the United States, but has shown significant movement in the last several years, and the prospects for offshore wind generation in the USA are increasing rapidly. The United States has only one operating offshore wind energy facility, the Block Island wind farm off the coast of Rhode Island. However, as of late 2019, active offshore leases for projects exceeding 21 GW have been issued from Maine down to North Carolina.

Several east coast states have held competitive bids for offshore wind projects to further state renewable goals. Many of these bids include revitalisation of the port cities that will serve as staging areas during project construction. For example, in late 2019 Connecticut awarded a project that included revitalisation of 18 acres in Bridgeport.

The Bureau of Ocean Energy Management (BOEM) is the regulatory agency that administers the Outer Continental Shelf (OCS) Renewable Energy Program in US federal waters (defined as the water at a distance of more than three miles from shore). BOEM regulations set forth an evaluation process for offshore wind in four stages: planning, leasing, site assessment and construction and operations. National Environmental Policy Act (NEPA) reviews occur at multiple stages of BOEM review.

BOEM guidance estimates that the first three stages alone (before reaching construction and operation) may take nearly ten years to complete. Vineyard Wind, off the coast of Massachusetts, has incurred significant delays due to NEPA review prior to beginning construction.

West coast development and gulf coast studies

Offshore wind development on the west coast is also drawing more interest. BOEM is in the planning stages for areas in offshore California and Hawaii. The California and BOEM “California Intergovernmental Renewable Energy Task Force” has initiated stakeholder outreach to identify appropriate areas in California for offshore wind development.

BOEM, the State Historic Preservation Officer of California and the Advisory Council on Historic Preservation entered into a programmatic agreement to address how BOEM will address its obligations under the National Historic Preservation Act when issuing approvals for offshore wind energy development in California. Hawaii similarly has co-ordinated with BOEM to establish a Hawaii Intergovernmental Renewable Energy Task Force to evaluate how to move forward with offshore wind development. While initial Texas offshore wind leases expired in 2014, signs also point to increased interest in the feasibility of offshore wind energy development on the Gulf Coast.

In April 2020, BOEM and the National Renewable Energy Laboratory announced two gulf coast studies analysing different offshore renewable energy technology and indicated the studies will inform federal, state and local renewable energy planning over the next decade.

Other legal interests

In addition to the BOEM regulatory regime and the associated NEPA and NHPA reviews, several other legal interests are relevant to offshore development. Native American tribes have raised concerns of interference with valuable marine cultural resources. Commercial fisherman have also raised concerns with respect to offshore wind impacts on their operations.

Impacts to marine species protected by the Marine Mammal Protection Act and the ESA must also be factored into project

development. Multiple studies are also underway to understand offshore wind impacts to avian and bat species that may migrate off the coast. Finally, the underwater cabling and interconnection to the onshore power grid requires various federal and state legal considerations such as right-of-way use and interconnection processes.

Utility-Scale Battery Storage

Battery storage technologies have long been seen as a key to unlocking a fully renewable energy portfolio by allowing electricity suppliers to address the imbalance between energy demand and alternative energy production related to the intermittent nature of solar and wind resources. This area has grown tremendously in recent years, and 2019 was the United States energy storage industry’s biggest year of installations ever, with its largest single quarter in the fourth quarter last year.

In addition to a rapid increase in behind-the-meter battery storage installations, there appears to be a growing trend toward larger utility-scale battery storage projects. The appeal of these utility-scale systems is that they can reduce or even obviate the need for traditional gas-powered power plants to meet peak electrical demand needs. While few of the major utility-scale battery storage projects have been brought online so far in the United States, there are currently several being planned and constructed.

The largest projects anticipated to come online within the next few years are expected to exceed 100-megawatts, headlined by Florida Power & Light Company’s 409-megawatt Manatee Energy Storage Center announced last year, which will be powered by solar panels and replaces a pair of aging natural-gas-fired plants.

Pairing battery and alternative generation

The pairing of large battery systems with alternative generation (wind or solar) is increasingly popular. In 2016, there were 19 sites in the USA with paired battery and alternative generation systems; by 2019, that number had grown to 53 sites, and another 56 paired sites are projected to come on line by 2023. Most of the projected growth in battery storage is in Florida, Nevada, California, Arizona, Oklahoma and Texas.

Limitations

Notwithstanding the announcement of megaprojects, the development of utility-scale battery storage projects has partially been limited by regulatory uncertainty that has inhibited investment. In response, the Federal Energy Regulatory Commission (FERC) issued Order 841 in 2018, which directed the regional transmission organisations (RTOs) and independent system operators (ISOs) that run the country’s wholesale electricity markets to craft new rules to allow storage resources

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to bid their services into the markets. The implementation of Order 841 continues to be contentious and is currently the subject of on-going litigation, with proponents arguing that it is a crucial tool to encourage battery storage development, and critics arguing that it encroaches on state authority over the distribution system.

Grid Resiliency

Recent major natural disasters have highlighted the role that alternative energy can play in building a more resilient power grid. As the United States anticipates more severe and damaging weather-related events in the future due to climate change, many have looked toward renewable technologies and battery storage to reduce the reliance on the traditional electrical grid and mitigate the impact of those disasters. Accordingly, significant efforts are underway both at the federal level and in several states to promote distributed energy resources and microgrids.

Following catastrophic wildfires in the western United States, there have been several legislative efforts to incentivise and facilitate the development of distributed energy resources and microgrids to make the power grid more resilient. Additionally, electrical utilities in California have implemented several public safety power shutoffs to preemptively de-energise large portions of their electrical distribution systems during weather conditions that present high wildfire risk, which can potentially go on for prolonged periods of time.

Both of these developments have placed a greater emphasis on energy storage and distributed energy resources to provide reliable backup power. For example, California's Assembly Bill 1144 (Friedman, 2019) recently shifted the emphasis of the state's utility-funded Self-Generation Incentive Program to grant significant financial incentives for renewable technologies and energy storage in wildfire-prone areas.

On the East Coast, hurricanes and other major storm events have also spurred several communities to invest in energy storage and distributed energy resources. In 2017, Hurricane Maria destroyed much of Puerto Rico's power grid, leaving many without electricity for months. More recently, earthquakes in January 2020 again impacted the Puerto Rico Electric Power Authority's critical infrastructure and resulted in significant power outages. These events have spurred many on the island to invest in standalone microgrids composed of solar and battery technologies intended to reduce reliance on the traditional power grid.

Conclusion

In the United States, alternative energy development is now outpacing traditional energy sources and has moved well beyond the peripheries of the energy sector into a primary focus of the energy industry nationally. The trends and developments highlighted here reflect an increasing interest in taking on larger and more ambitious alternative energy projects. The sector continues to work through federal and state regulatory barriers, but is maturing rapidly as a result of governmental incentives and market drivers. This growth trend is expected to continue over the course of the upcoming decade, even without federal tax incentives.

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Nossaman LLP has more than 150 attorneys across five California offices and in Austin, Seattle and Washington, DC, and Nossaman's renewable and alternative energy team has earned a national reputation for assisting clients in the development, permitting and acquisition of energy projects. The firm's energy practice primarily focuses on renewable energy generation and has decades of experience with high-profile project development, including complex permitting challenges, compliance strategies, policy-level advocacy and litigation. The team assists

renewable energy and linear infrastructure project proponents with natural resource permitting and compliance strategies, particularly as to wildlife laws, and helps clients influence the development of regulatory policies. The firm's regulatory and contracting expertise also includes enforcement and compliance actions, policy proceedings, rulemaking proceedings, mergers and acquisitions, customer complaints, utility relocations, and eminent domain, including right-of-way acquisitions.

Authors



Svend Brandt-Erichsen focuses his practice on the development and ongoing operation of energy and natural resource projects. He advises companies on permitting compliance, regulatory development and other issues arising under all of the major federal

environmental statutes, as well as their counterparts in a number of states. Svend helps companies obtain a wide range of environmental permits and approvals, appeals permits when necessary, and defends them from third-party challenges. He has helped clients obtain use of federal lands and litigated challenges to those uses as well as broader issues of federal land management.



Paul S Weiland is chair of Nossaman's environment and land use group. His practice focuses on litigation, permitting and compliance counseling. Paul's clients include publicly regulated utilities, public agencies, corporations, trade associations, and individuals. He counsels them

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Brooke M Wahlberg is a natural resources lawyer focused on powering the economy while maintaining compliance with environmental laws. She is go-to counsel for matters involving the Endangered Species Act (ESA), the Migratory Bird Treaty Act (MBTA), the Bald and Golden

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Willis Hon focuses on serving clients across California on a broad range of administrative and regulatory matters. He regularly appears before the California Public Utilities Commission (CUPC) in ratesetting, adjudicatory, and rulemaking proceedings on behalf of water utility

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