Renewable Energy

Contributing editor
Eric Pogue

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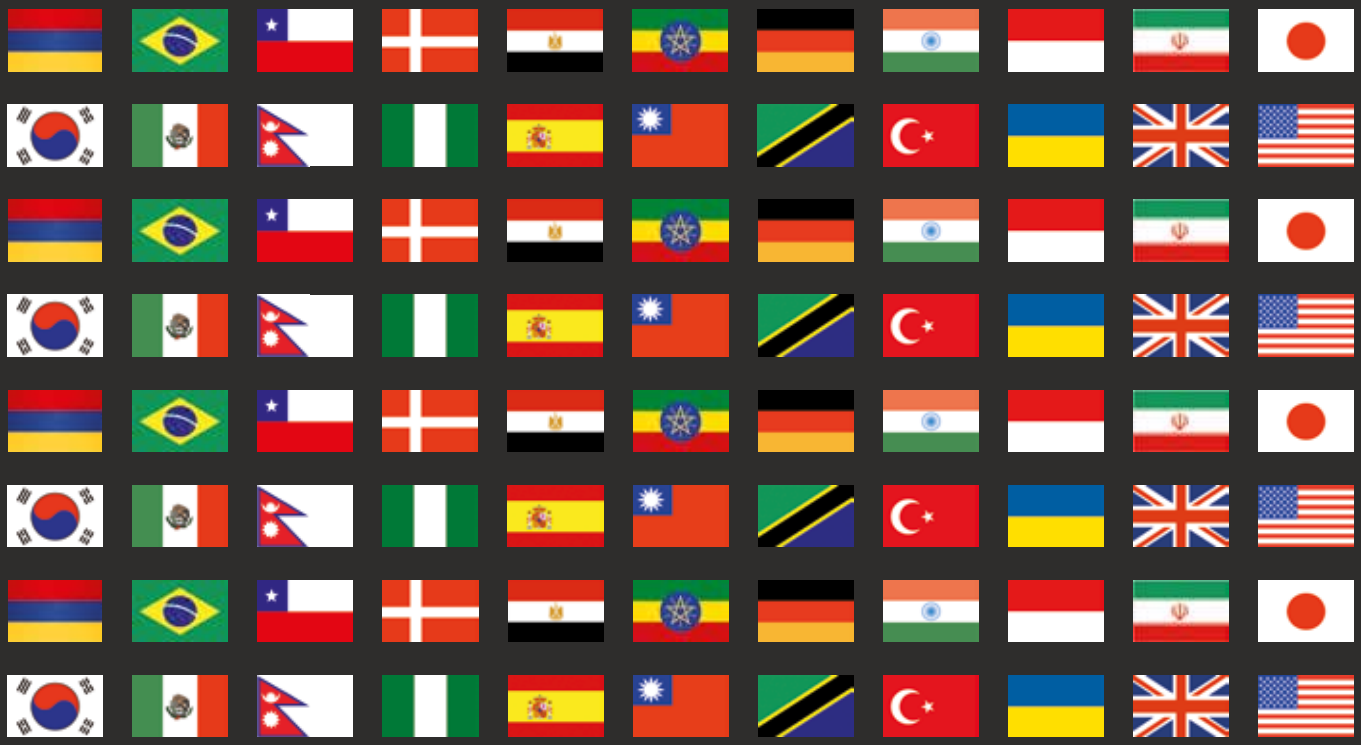

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Second edition

Getting the Deal Through is delighted to publish the second edition of *Renewable Energy*, which is available in print, as an e-book and online at www.gettingthedealthrough.com.

Getting the Deal Through provides international expert analysis in key areas of law, practice and regulation for corporate counsel, cross-border legal practitioners, and company directors and officers.

Throughout this edition, and following the unique **Getting the Deal Through** format, the same key questions are answered by leading practitioners in each of the jurisdictions featured. Our coverage this year includes new chapters on Aremnia, Indonesia, Iran, Taiwan, Tanzania and Ukraine.

Getting the Deal Through titles are published annually in print. Please ensure you are referring to the latest edition or to the online version at www.gettingthedealthrough.com.

Every effort has been made to cover all matters of concern to readers. However, specific legal advice should always be sought from experienced local advisers.

Getting the Deal Through gratefully acknowledges the efforts of all the contributors to this volume, who were chosen for their recognised expertise. We also extend special thanks to the contributing editor, Eric Pogue of Hunton Andrews Kurth LLP, for his continued assistance with this volume.

GETTING THE DEAL THROUGH

London
August 2018

United States

Mike Klaus, Jeff Schroeder, Eric Pogue and Laura Jones*

Hunton Andrews Kurth LLP

Market framework

1 Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

Under the Commerce Clause (article I, section 8, clause 3) and Tenth Amendment to the US Constitution, the United States federal government regulates interstate commerce, while individual states regulate intrastate commerce. As a general matter (with many exceptions), that centuries-old framework has resulted in a system where a state government oversees the siting, development and operation of energy facilities, as well as the transmission, distribution and sale of electricity at retail, or that occurs exclusively within the state, while the federal government possesses jurisdiction when a facility and its generation implicate interstate concerns.

Traditionally, most participants in the electric sector have been regulated monopolies, and government regulators were initially established in order to regulate the rates of those participants, and oversee the quality of their service. The first government regulators of this type were state utility commissions, established to regulate rates, terms and conditions of service provided to retail customers. In the late 1920s, the Supreme Court ruled that state regulatory commissions had no authority to regulate wholesale transactions in interstate commerce, so Congress passed the Federal Power Act giving the Federal Power Commission (FPC) (succeeded in 1978 by the Federal Energy Regulatory Commission or FERC) the authority to regulate rates, terms and conditions of wholesale transactions in interstate commerce.

The core responsibilities originally vested in the FPC (now FERC) and the state regulatory commissions – to ensure just, reasonable and not unduly discriminatory rates, terms, and conditions of service – remain in place today. However, the manner in which these regulators discharge those obligations has changed substantially. While some aspects of electric service, most notably transmission, remains a monopoly, and thus subject to cost-of-service regulation, both FERC and many of the states have come to rely on competition, rather than rate regulation, as the primary mechanism for ensuring just, reasonable, and non-discriminatory pricing for both wholesale and retail sales of electricity and capacity. Thus, much of the role of FERC and the state commissions in today's electricity sector involves market oversight, watching in particular for the possession and exercise of market power.

State commissions also are usually responsible for implementation of the state's siting authority where applicable. Other regulatory agencies in charge of permitting various aspects of a renewable energy project can include, depending on the circumstances, the US Environmental Protection Agency, the US Department of the Interior and state environmental agencies.

2 Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

Municipal utilities (utilities that are an instrumentality of a state or local government) and cooperative utilities (utilities owned directly by the customers that they serve) have traditionally been vertically-integrated, owning generation, transmission, and distribution facilities in order to serve their customers. However, in recent years, they have been making substantial purchases of renewable energy from private owners or developers. In many jurisdictions, these private owners or developers may also enter into arrangements to sell power directly to individual or corporate end users of electricity.

With respect to transmission, there are seven Regional Transmission Organizations (RTOs) in the continental United States: one in New England (ISO-New England), one in New York (New York Independent System Operator), one in the mid-Atlantic and part of the Midwest (PJM Interconnection), two in the Midwest (Midcontinent Independent System Operator and Southwest Power Pool), one in California (California Independent System Operator), and one in Texas (Electric Reliability Council of Texas). These RTOs operate in approximately two-thirds of the geographic area of the continental United States, while the transmission system in the remaining approximately one-third of the country is operated directly by the utilities (on an individual basis) that own that part of the system. RTOs are not governmental entities; most of them are not-for-profit corporations. When a project is developed in an RTO region, the project must take interconnection service from the RTO, and the RTO's rules on market and transmission operation will directly impact the ability of the project to move its power to market, and the revenues that the project receives for its power.

3 Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

Each jurisdiction's renewable energy programme defines what types of technology and energy qualify for particular incentives. The same jurisdiction could also treat the same type of resource differently for different incentives. For instance, a state might define 'renewable energy' to include nuclear resources for its tradable clean energy standard, but exclude nuclear from state investment tax credit eligibility. In a clean energy standard or renewable portfolio standard (RPS), such definitions typically indicate with some precision what resources qualify to generate renewable energy certificates (RECs), which the state's electric utilities are often required to procure to demonstrate compliance with their RPS obligations.

4 What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

As a general matter, a developer of a renewable energy project will need to procure a siting permit or zoning authorisation, a construction permit, and necessary environmental permits in order to start construction of the project. During the construction phase of a renewable energy project, FERC has oversight over interconnection arrangements (in Texas, Hawaii or Alaska, oversight of interconnection will fall to the applicable state regulatory entity – the Public Utility Commission of Texas, the Hawaii Public Utilities Commission or the Regulatory Commission of Alaska). Typically, the interconnecting transmission provider will have a pro forma interconnection agreement on file at FERC, and that pro forma agreement will serve as the template for negotiations.

At the early stages of project development, financing arrangements are governed primarily through market practices and contractual arrangements. However, once construction is completed and the project is ready to produce power, financing arrangements involve more direct regulatory oversight. For projects located in areas of the United States outside of Texas, Hawaii and Alaska, FERC is the primary

regulatory agency to exercise oversight over financing arrangements. Once the project generates test power or files a rate schedule with FERC, it becomes a 'public utility' under the Federal Power Act, and thus subject to FERC regulatory requirements.

The operation of a renewable energy project is governed by many of the same siting and environmental permits outlined above. Operation of a renewable energy project in the continental United States also is subject to mandatory reliability rules promulgated by North American Electric Reliability Corporation (NERC) and approved by FERC. The owner or developer of the project generally will be required to register with NERC, and to comply with a series of reliability rules applicable to generation of power from renewable projects.

The sale of energy and capacity from the project is generally overseen by the applicable regulatory agency. For wholesale sales of electricity and capacity in areas of the continental United States outside of Texas, the owner or developer must have on file at FERC a rate schedule to govern such sales. For most sellers, that rate schedule is a market-based rate tariff (MBR tariff), which allows the owner or developer to sell power on wholesale markets at prices set by the market and will be granted by FERC if the seller can demonstrate that it lacks horizontal or vertical market power in the relevant market. Sellers of electric energy and capacity under an MBR tariff are subject to the requirement to periodically report to FERC the transactions executed under the tariff, and to submit periodic market power updates if they own more than 500MW in the relevant market. For wholesale sales in Texas, Hawaii, and Alaska, and for retail sales of energy everywhere, the seller is subject to the requirements of the applicable state regulatory authority.

With respect to environmental attributes, while the federal government in theory could establish a national renewable energy attribute system, states have occupied the field of US renewable energy attribute programmes to date. The US Congress has considered several bills over the past decade to establish a federal RPS, and the US Environmental Protection Agency's Clean Power Plan, promulgated in October 2015 but now likely to be repealed, possessed some features similar to an RPS.

5 Can environmental attributes be stripped and sold separately?

About 30 US states have established some form of RPS, a regulatory programme that generally requires entities that sell or distribute electricity to end users (typically electric utilities) to procure a certain percentage of their state-wide sales in MWh from renewable sources. These programmes vary widely in the details, including what type of energy is considered 'renewable' or 'clean'. The majority provide that electric utilities demonstrate compliance with their renewable procurement obligation by submitting RECs, which are 'unbundled' from the associated electricity that was generated at a renewable energy facility. The REC is a separate, tradable commodity that represents the environmental attributes of one MWh of renewable electricity.

In almost all cases, these commodities are tradable as a matter of private contract law, and may be sold to different buyers at different prices and subject to different contractual terms. While there have been efforts to standardise REC purchase and sale agreements, none has succeeded, and tradable RECs almost always are subject to negotiated bilateral agreements. Long-term primary REC deals (10–20 years) are typically broker-matched. However, in a state with a relatively new RPS that has volatile pricing, commodity traders and hedge funds may play an active and valuable role by assuming risks to structure and aggregate supply for end users.

6 Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

At the federal level, the primary incentives are the investment tax credit (ITC) and the production tax credit (PTC).

Subject to certain federal income tax requirements, owners of solar projects (and other qualified projects) may claim an ITC based on the owner's tax basis in eligible property. For projects that commence construction by the end of 2019, the credit is 30 per cent of the tax basis of the owner in eligible property. The amount of the credit steps down beginning with projects that commence construction in 2020. The ITC is subject to recapture if, within the first five years after the project is placed in service, the project is taken out of service or sold to a new owner.

Owners of wind projects (and other qualified projects) may claim a PTC over time equal to 2.4-cent per kilowatt-hour (kWh) for the first 10 years of a project's operations. Projects that commenced construction by the end of 2016 may receive the full amount of the PTC. The PTC is phased out thereafter: projects that commence construction in 2017 may receive 80 per cent of the PTC, projects that commence construction in 2018 may receive 60 per cent of the PTC, and projects that commence construction in 2019 may receive 40 per cent of the PTC.

All but a handful of US states have established some type of financial incentive to encourage the development of renewable energy. Aside from RPS programmes, net metering is one of the primary state-level incentives for the solar market. Net metering allows a building owner to sell excess production generated by a rooftop solar system to the utility and receive a billing credit on the owner's electricity bill. 'Virtual net metering' (also called 'remote net metering') means that a customer is entitled to this same type of credit when the project is not located on the customer's property. Community solar is a further extension of virtual net metering, with multiple customers participating in a virtual net metering pool and receiving some of the benefits of an off-site solar project. Other state level incentives include state investment or property tax credits or deductions, sales tax credits, rebate programmes, performance-based incentives, favourable loan programmes, leasing programmes, feed-in tariffs, minimum purchase obligations and tradable REC programmes. State-based incentives can generally be used in addition to federal incentives like tax credits.

7 Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

As discussed above, renewable energy incentives and policies can exist either at the federal or state level and take many forms. The primary incentives on the federal level are the ITC and the PTC. Depending on the state, renewable incentives may also be created by localities. In addition, some electric utilities have established incentive programmes to encourage retail customers to purchase or host renewable energy systems on their properties.

8 What mechanisms are available to facilitate the purchase of renewable power by private companies?

Over the past few years (and even months), corporate interest in the renewable energy and related transactions market has exploded in the United States. Over 100 of the country's largest corporations have pledged to source 100 per cent of their electricity from renewable energy under the 'RE100' initiative. Carrying out these policies, corporate entities, including retailers, manufacturers and technology companies, are either entering the renewable energy arena for the first time or significantly bolstering their current positions. At one end of the spectrum, there is an active market in the US for voluntary RECs, which allow corporates to offset their use of conventional power sources through a contractual instrument, without directly purchasing power from renewable energy projects. At the other end of the spectrum, corporate entities have the ability to host renewable energy projects. Such inside-the-fence projects are generally permitted in the US and, at a high level, have the benefit of less third-party regulation and allow corporate entities to directly obtain the benefits of the renewable energy (environmental, publicity, tax credits, etc). There are many other structures in the market, including bilateral power purchase agreements (where corporate entities in deregulated markets are able to purchase directly from renewable energy project owners) and green tariff programmes (where corporate entities can purchase renewable energy and related attributes directly from their local electric utility). In each instance, the business objectives of the corporate entities, along with the laws and regulations of local energy markets and state laws, dictate the options available for a particular private company. A growing list of brokers are available to help these corporate entities participate in such transactions, including matching corporations with project developers.

9 Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

The US Environmental Protection Agency promulgated the Clean Power Plan in October 2015. That regulation created a programme somewhat similar to an RPS in terms of mandating that existing fossil fuel-fired electric generating sources purchase zero-emission 'emission

rate credits' to balance out their higher emission-intensity generation. The emission rate credits would be similar to RECs in that they would represent the equivalent of 1MWh of electricity generated by new, zero-emission solar, wind, geothermal or hydro energy. The new administration is in the midst of a rulemaking to replace the Clean Power Plan with a different type of rule to regulate carbon dioxide emissions from existing power plants. The Clean Power Plan never took effect due to the imposition of an unprecedented stay by the US Supreme Court during judicial review.

On 1 June 2017, President Trump announced that he plans to withdraw the United States from the Paris Agreement. At this time, the US Congress is not considering any notable legislation that would boost renewable energy.

10 What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

As in other parts of the world, one of the biggest drivers of change, aside from the federal and state incentives described above, has been advances in renewable energy technology and the reduction in cost of renewable energy, particularly the cost of solar panels. Such advances have significantly reduced the levelised cost of electricity (LCOE), which is the aggregate cost to construct and operate a renewable energy project, divided by the aggregate amount of electricity that the project will generate over its useful life (in $/kWh). In some parts of the United States, the LCOE of a solar or wind project is less than the LCOE of a conventional baseload generation project, without accounting for the value of tax credits and other incentives that may be available for solar and wind projects. The point at which the LCOE of a renewable energy project is equal to the LCOE of a conventional baseload generation project is known as 'grid parity'; adoption of solar and wind energy could accelerate once grid parity is reached.

11 Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

Relationships between renewable power market participants generally are governed by contracts that are overseen by either FERC or a state regulatory commission (depending on whether the contract is for the sale of wholesale or retail power, and the location of the seller). Most of these agreements require that the parties resort to informal mediation before seeking to have their disputes resolved in an adversarial proceeding. In circumstances where mediation fails to resolve a contractual dispute, and the parties seek resolution outside of arbitration, the available avenues for addressing the dispute are to file a complaint at the applicable regulatory agency, or to file a complaint in state or federal court (federal courts usually have to rely on diversity jurisdiction in order to be able to hear such disputes). The administrative law doctrine of primary jurisdiction gives the regulatory agency primacy in determining whether the dispute should be resolved at the agency, or whether it should be resolved in court.

Utility-scale renewable projects

12 Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

For each of the past five years, over 50 per cent of new utility-scale capacity has been from wind and solar projects, with new natural gas projects accounting for about 33 per cent of new utility-scale capacity. The remaining new utility-scale capacity is from other types of projects, including biomass, hydropower and fuel cell projects. As older coal, natural gas and hydropower plants are retired, wind and solar projects are expected to continue to account for a large portion of new utility-scale capacity in the United States. Planning for the deployment of utility-scale wind and solar projects is heavily based on qualification for federal tax credits and related deadlines for the commencment of construction.

13 What types of issues restrain the development of utility-scale renewable energy projects?

Given a general decline in power prices under utility scale power purchase agreements, the most significant issue with respect to the financial viability of many wind and solar projects is the availability of federal tax credits, which accounts for a large portion of the capital costs of projects.

Hydropower

14 Describe the primary types of hydropower projects that are prevalent.

Most hydroelectric facilities in the United States are run-of-river (with or without pondage to regulate hydrology) or pumped storage facilities. Hydroelectric generation represents only approximately 7 per cent of installed US capacity, and within this small sub-set of generation asset class, there exist even smaller and nascent alternative hydroelectric technologies such as tidal turbines. Depending on the state where the hydroelectric facility is located, such facility may be owned by an independent power producer, investor-owned electric utility or Federal administrator or corporation, such as Bonneville Power Administration and the Tennessee Valley Authority.

15 What legal considerations are relevant for hydroelectric generation in your jurisdiction?

As with most electric generating facilities, most hydroelectric facilities in the United States are regulated by FERC. FERC is the exclusive regulatory agency for the commissioning and licensing of hydroelectric facilities. One issue that is unique to hydroelectric facilities is 'headwater benefits' under section 10(f) of the Federal Power Act, which comprise energy production gains realised by the owner of a downstream hydropower project as a result of the regulation of river flows by the owner of an upstream storage reservoir or other headwater improvement (such as a dam). The Federal Power Act imposes obligations on downstream hydropower project owners to reimburse upstream headwater project owners for certain costs related to an equitable part of those energy production gains. The Federal Power Act mandates that FERC determine headwater benefits received by downstream hydropower project owners. Another legal concern relating to hydroelectric facilities relates to the protection and preservation of endangered species such as salmon, eel and other aquatic species.

Distributed generation

16 Describe the prevalence of on-site, distributed generation projects.

In the solar market, approximately half of new capacity is from on-site distributed generation projects. The prevalence of on-site, distributed generation projects varies significantly based on the state-level regulations and renewable energy programmes. Factors that promote a strong distributed generation market include: favourable weather conditions, availability of net metering programmes and state regulations that allow third-party investors to own the assets of the project (and thus claim the tax credits).

17 Describe the primary types of distributed generation projects that are common in your jurisdiction.

In the residential market, the vast majority of distributed generation projects are rooftop solar projects. In the commercial market, distribution generation projects include solar projects, wind projects and fuel cell projects. In both the residential and commercial distributed generation markets, the state regulatory framework controls whether the assets of the projects may be owned by entities other than the user of the electricity, thereby allowing third-party investors to claim the tax credits associated with the assets.

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

In the United States, microgrids are rarely, if ever, completely disconnected from the larger bulk electric system. Rather, microgrids are considered to be a variation on 'behind-the-meter' resources that are used primarily to serve the needs of a highly localised site, but that retain a grid interconnection in order to both sell excess power, and to receive power from other grid resources when the behind-the-meter generation is unavailable.

Over the past several years, as renewable energy resources have achieved a higher proportion of the overall generating mix in the United States, as the desire to address climate change has become more pronounced among both policymakers and businesses, and as policymakers have begun to place increased emphasis on grid 'resilience' in the

face of severe weather events like hurricanes and polar vortexes, many policymakers, particularly at the state level, have begun to articulate a desire to encourage the development of a 'distributed electric system'. The primary characteristics of such a distributed system would be less reliance on large, central station power plants, and more reliance on renewable energy resources distributed across different locations on the bulk electric system. In these policy discussions, microgrids – at not only industrial and commercial sites, but in residential areas as well – are often cited as an essential part of the desired end state of a functional distributed electric system.

The resulting efforts to promote the development of microgrids have occurred primarily at the state level, and have tended to focus less on direct financial incentives, and more on changes to the existing regulatory framework that need to be made in order to facilitate the establishment of microgrids. The thorniest issues have involved questions about the role of incumbent load-serving utilities in backing up microgrid operations, the costs that microgrids should pay in order to maintain the larger bulk electric system, and the financial impact that microgrids are likely to have on incumbent load-serving utilities. These utilities have faced slow or stagnant load and revenue growth for nearly a decade, and have expressed some degree of concern about the prospect of losing additional revenue as a result of customers leaving the system in order to form microgrids. At the same time, policymakers and consumer advocates have expressed concern that a proliferation of microgrids will leave traditional utilities with a more unstable, less financially sound customer base that will have to pay more for basic electric service.

19 What additional legal considerations are relevant for distributed generation?

With rapid growth in distributed generation, one of the key issues facing state regulators is how to deal with customers that switch to on-site solar and therefore purchase less power from the grid but still use the distribution grid to meet a portion of their electricity needs. The result is that the utility receives less revenue from the sale of power, while the utility's fixed costs for maintaining and operating the distribution grid do not change. In response, certain state regulators have either:

- reconsidered the compensation structure for net metering programmes (meaning that, rather than a customer receiving a credit for excess power sold back to the grid that is equal to the full retail rate of electricity, the customer receives a lower credit that takes into account a utility's transmission costs); or
- placed caps on the aggregate capacity of projects that are eligible for net metering.

Energy storage

20 What storage technologies are used and what legal framework is generally applicable to them?

Various versions of lithium-ion storage comprise the dominant technology today, and the use of lithium-ion in applications outside of grid-connected and behind-the-meter electric power (such as in electric vehicles) means that the technology should continue to benefit from significant research and development investment. Other technologies include flow batteries, lead acid batteries, pumped hydro storage, compressed air storage, flywheels and energy storage that does not deliver electricity as its product, such as ice-based cooling systems that are 'charged' using grid electricity. To date, implementation has been primarily in front-of-the-meter installations, including at gas-fired generation facilities to assist with ramping up of production, rather than in behind-the-meter installations.

Energy storage is capable of providing energy, capacity and certain ancillary services products, and its consistent availability makes it particularly effective at providing frequency regulation. Among the services for which energy storage facilities are particularly well suited are frequency regulation, backup power, peak shaving, black start and energy arbitrage. In addition, energy storage at times represents load rather than generation. In early 2018, FERC issued a final rule requiring that RTOs under its jurisdiction adopt rules designed to integrate energy storage resources into their markets. Among the requirements imposed by FERC are mandates that market rules accommodate all products that energy resources are capable of providing, that energy storage resources be allowed to set the applicable market clearing price (both as buyers and as sellers), and that market bidding rules recognise the unique parameters presented by energy storage facilities. RTOs are obligated to submit compliance filings implementing the new FERC rules in late 2018.

Different states are also attempting to modernise markets or more straightforwardly incentivise deployment of storage resources. Two leading states include New York, which is implementing its Reforming the Energy Vision process to reconsider the structure of electric utilities and their markets, and California, which has begun to require its utilities to procure a significant amount of energy storage, in part to address market disruptions caused by a recent significant gas storage leak at Aliso Canyon.

21 Are there any significant hurdles to the development of energy storage projects?

The biggest hurdles to the development of energy storage are the cost of the facilities, the lack of operating history of the technology and the need for new market structures in order to determine how the facilities should be compensated.

Foreign investment

22 May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

There are few restrictions to foreign ownership of renewable energy projects in the US, other than potential issues relating to the Committee on Foreign Investment in the United States (CFIUS). CFIUS in its current form allows the President of the United States to review mergers and acquisitions by foreign persons that result in foreign control over a US company or US assets that may impair national security. Because power generation facilities, including renewable ones, can be considered 'critical infrastructure', it is advisable for any 'foreign person' under CFIUS rules to make a voluntary filing with CFIUS prior to closing on any acquisition of a US-based renewable generation facility, particularly a larger project.

23 What restrictions are in place with respect to the import of foreign manufactured equipment?

Effective in February 2018, in response to a petition from two US solar firms (Sunviva and Solarworld), the Trump administration levied a 30 per cent import tariff on crystalline-silicon photovoltaic (CSPV) cells and modules. Thin film solar modules are excluded from the tariff. The tariff decreases by 5 per cent each year and expires in 2021. In anticipation of the tariff, many project developers imported panels in the second half of 2017 in advance of the tariff, particularly for solar projects that are expected to be constructed in 2018. There have also been calls for 'buy American' rules to be implemented federally in the US or by individual states to assist US manufacturers of wind turbines and other capital-intensive renewable energy equipment. These rules have not yet been implemented, but also have political appeal in many jurisdictions in the US where these workers live and work.

Projects

24 What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

Although there are some federal statutes that can have a direct impact on the development of a renewable energy facility – for example, the Clean Water Act (CWA) and the Endangered Species Act – the primary permits applicable to the construction of such a facility are issued by state and local governments.

The primary state-level permit needed to construct a new renewable energy project is a siting permit. These are required in many, although not all, states, and have a series of different names, depending on the state. The most common name for these types of permits is Certificate of Public Convenience and Necessity (CPCN), although they also are referred to by other names (eg, in Connecticut, these permits are referred to as Certificates of Environmental Compatibility and Public Need). To obtain a siting permit, an applicant generally is required to make a showing regarding the need for the prospective generator, as well as its financial and its environmental impacts upon the

state where it will be located. In states where a siting permit is required, there is variation in the types of generation to which the requirement applies. For example, in the state of California, any generator with a capacity of 50MW or higher, including any renewable generator, must obtain a certification from the California Energy Commission.

In most states, whether a CPCN is required or not, a developer of a renewable energy facility likely will be required to obtain a local building permit (in cases where no CPCN is required, the developer also may have to address local zoning issues), as well as state-issued environmental permits. Such environmental permits can include permits under section 401 of the CWA (enforcement of which is largely delegated to the states), as well as permits required under state environmental laws. In some of the states where CPCNs are required, the site permitting process serves as a 'one-stop shop' in which other state-level permits, particularly environmental permits, also are addressed. In other CPCN jurisdictions, the CPCN process is divorced from the other state and local permitting processes, and a developer is required to procure all such permits separately.

At the federal level, the primary permits required are those involving environmental issues and, where applicable, use of federal lands. Many renewable energy projects will implicate the CWA's section 402 requirements, addressing pollutant discharge (especially through rainwater run-off), and section 404 requirements, addressing discharge of dredged or fill materials. If these provisions are implicated, a developer will need to obtain a permit from the Environmental Protection Agency, for section 402 issues, the US Army Corps of Engineers, for section 404 issues, or both. If a renewable energy facility is proposed to be sited on federally-owned land, it also will need a site permit from the federal agency responsible for managing that land.

Once FERC's jurisdiction over the owner or developer of a renewable energy project is triggered – either by filing an MBR Tariff or other rate schedule at FERC, or by generating power for injection onto the interstate transmission system – any sale or transfer of the facility also (and with very limited exceptions that often are not applicable to such owners or developers) will be subject to prior review and approval by FERC. The FERC review of such facility transfers will focus primarily on whether the new owner will have market power in the market where the facility is located.

25 What type of offtake arrangements are available and typically used for utility-scale renewables projects?

A financeable project typically requires a long-term (20-year) power purchase agreement (PPA) under which a creditworthy buyer, such as a utility company or, more recently, a corporate buyer, agrees to buy the electricity for a fixed price.

As an alternative to a PPA or the physical sale of power to the offtaker, in certain deregulated markets, such as Texas, a developer may enter into a long-term hedge agreement (or a synthetic PPA) with a financial institution or other creditworthy party. Such hedges or synthetic PPAs are often structured as a 'contract for differences', where the project owner sells electricity in the merchant market at the floating market price. Then, the project owner pays the floating price to the counterparty, and the counterparty pays the project owner a fixed price for the electricity (or one party pays the other the net settlement amount).

26 How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

Utility companies and state agencies generally secure long-term power purchase agreements through a competitive request for proposal process. Long-term power purchase agreements between corporations and developers are often secured through less formal processes.

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

The operation of a renewable energy project and the sale of electricity generally are distinct activities under US law, and are governed by separate, although overlapping, legal requirements. The operation of a renewable energy project generally requires the authorisations outlined above – a CPCN or equivalent local zoning permit, applicable CWA and other environmental permits, and federal land permits (where the facility is on federal land). In circumstances where the renewable energy project is injecting power onto the interstate transmission system (as defined above), the owner or developer will have to have a rate schedule on file at FERC to govern that activity. Usually, the rate schedules that such owners or developers have on file at FERC are MBR tariffs. Finally, most renewable energy projects that are 75MW and above, and that are used to produce power for sale in the continental United States (including Texas), are subject to mandatory reliability regulation administered by FERC.

The sale of electricity from a renewable energy project requires different regulatory authorisations, depending upon whether the sale is at wholesale or retail, and upon where the project is located. Wholesale sales of electricity from projects located in the continental United States outside of Texas are regulated by FERC, and require that the owner or developer have a rate schedule on file to govern those sales. As noted above, most such owners or developers file an MBR tariff, which allows the owner or developer to sell power at wholesale at rates set by the market. The filing of an MBR tariff requires that a seller demonstrate to FERC that it lacks market power in the relevant market, a showing that generally must be repeated every few years by entities that own or control more than 500MW in that market.

Retail sales of electricity, and wholesale sales of electricity in Texas, Hawaii, and Alaska, are governed by state law, and overseen generally by the public utility commissions in those states (ie, the Public Utility Commission of Texas, the Hawaii Public Utilities Commission, and the Regulatory Commission of Alaska). Regulation of wholesale sales by those state entities generally follows the FERC's focus on market power. Regulation of retail sales is governed by state law in all jurisdictions of the United States, and is highly variable. In some states, retail sales by non-incumbent utilities are permitted, while in other states, retail sales may be made only by the incumbent utility, usually at cost-of-service rates.

As a final matter, it should be noted that renewable energy projects in the United States (including Texas) that do not exceed 80MW are entitled to certify as qualifying facilities (QFs) under the Public Utility Regulatory Policies Act of 1978 (PURPA). In certain parts of the United States, these QFs are entitled to require that load-serving electric utilities purchase their power at an 'avoided cost' rate – that is, the rate that the utility otherwise would have to pay for power if it did not purchase from the QF. Although PURPA is a federal statute, the determination of avoided cost rates is made, in the first instance, by state utility commissions.

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

Legal requirements applicable to the decommissioning of renewable energy projects in the United States are established, if at all, primarily through contractual obligation rather than regulatory mandate. For projects that are sited on federal or state-owned land, the agency granting the permit might include, as a condition, a requirement to provide for facility decommissioning through a sinking fund or credit enhancement. However, in most instances, there are no applicable regulatory requirements mandating that a project owner or developer provide financially for decommissioning costs. In these instances, any legal obligation to provide for decommissioning cost would arise in the context of projects that are developed on land that is leased from an owner that is separate from the owner or developer of the project. In this context, it is not unusual for the lessor to ask for financial commitments from the lessee to provide for decommissioning when the useful life of the project has ended. In addition, once a project has been decommissioned, a project company will often submit at FERC a cancellation of its MBR tariff.

Transaction structures

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

Construction of privately owned renewable energy projects is typically financed through a combination of sponsor equity and non-recourse or

limited recourse debt. For debt financing purposes, a special purpose entity (a project company) typically owns the project and obtains loans or bonds, which are secured by the assets of the project and the equity interests of the project company. In the event that the project company fails to repay the debt, the lenders' or bondholders' recourse is generally limited to the assets of the project.

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

If the original owner of a project company (the sponsor) is not able to benefit from the tax credits and other benefits itself, the sponsor typically monetises the tax credits and other benefits through one of the following transactions:

- a direct sale, where the sponsor sells 100 per cent of the interests of the project company to one or more passive investors that seek to claim the benefits of the ITC or PTC (the equity investor);
- a sale leaseback, where the sponsor sells the project to an equity investor and then leases the project back;
- an inverted lease or lease pass-through, where the project is leased to a separate entity or partnership that is entitled to the tax credits; or
- a partnership-flip transaction, which has been the most popular tax equity transaction in recent years.

Under a partnership-flip transaction, the sponsor and the equity investor form a special purpose holding company to own the project company. Under the partnership agreement, the equity investor receives a fixed percentage of project cash flows (which may be subject to a step-up if the project underperforms) and generally 99 per cent of tax benefits until the equity investor has received a return equal to a specified target return. Then, the cash distributions and allocations of tax items 'flip', and the sponsor receives the majority of project cash flows and generally 95 per cent of tax items. Following the 'flip date', the sponsor member has a right to buy out the equity investor's remaining interest in the holding company.

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