Legal 500
Country Comparative Guides 2025

United States

Renewable Energy

Contributor

Willkie Farr &
Gallagher LLP

Jorge Kamine

Partner and Co-Chair of Project Finance & Investment Practice | jkamine@willkie.com

Norman Bay

Partner, Chair of Energy Regulatory & Enforcement Practice, Co-Chair of Energy & Commodities Practice | nbay@willkie.com

The authors wish to thank partner Robert Jacobson, counsel William Thomas and associates Samara Cohen, Maria Clara Castro do Egito Coelho, and Behn Sorbi for their contributions to the chapter.

|

This country-specific Q&A provides an overview of renewable energy laws and regulations applicable in United States.

For a full list of jurisdictional Q&As visit **legal500.com/guides**

United States: Renewable Energy

1. Does your jurisdiction have an established renewable energy industry? What are the main types and sizes of current and planned renewable energy projects? What are the current production levels? What is the generation mix (conventional vs renewables) in your country?

The United States has a strong, established renewable energy industry. According to the U.S. Energy Information Administration ("EIA"), in 2024, about 4,304 billion kilowatt-hours ("kWh") of electricity were generated at utility-scale generation facilities. About 59% of this generation was from fossil fuels (coal, natural gas, petroleum, and other gases); about 23% was from renewable energy projects, and about 18% was from nuclear power plants. Only natural gas (1,864 billion kWh) produced more electricity than renewables in the United States in 2024, and the share of electricity generated by natural gas is expected to decrease in 2025 and 2026. On the other hand, the U.S. more than doubled its oil- and gas-fired capacity in development (for a total of over 85 gigawatts ("GW") installed), a trend that is expected to continue. Renewables surpassed (i) nuclear for the first time in 2021 and (ii) coal for the first time in 2022.

As of December 2023, there were 1,540 wind utility-scale generators; 6,308 solar photovoltaic utility-scale generators; 13 solar thermal utility-scale generators; 1,934 biomass utility-scale generators; 167 utility-scale geothermal generators; and 3,999 hydroelectric conventional utility-scale generators. EIA estimates that an additional 32.5 GW of utility-scale solar photovoltaic systems will be installed in 2025, which would represent about 1.1% more capacity than was added in 2024 (30 GW).

EIA also projects that total net renewable generation will increase 5.9% by 2050. Renewables accounted for 23% of total U.S. generation in 2024. In 2025, solar is expected to account for 52% of new capacity, followed by battery storage at 29%. In contrast, EIA expects that the share for generation from coal will decline 18% from 2023 to 2025, and the share from natural gas will decline from 39% to 38%. Regarding production levels in 2024, renewable energy sources (including wind, conventional hydroelectric, solar, biomass, and geothermal energy) generated 878 billion BTU.

2. What are the key developments in renewable energy in your country over the last 12 months?

As discussed in Question 1 above, key developments over the last 12 months include continued rapid growth in renewable electric generation capacity. However, as discussed in greater detail in responses below, recent government actions and a shifting government approach show: government support for renewable energy development and investment in clean energy technologies has decreased in the past year. Nevertheless, a DOE study published in early 2025 suggests deployment of renewable energy generation sources will be critical to meet growing energy demand in the United States.

3. What are your country's net zero/carbon reduction targets? Are they law or an aspiration?

The United States' carbon reduction targets are not codified in law. Nevertheless, the country has been on track to meet its commitment of reducing carbon emissions by 25% below 2005 levels by 2025. The United States set its nationally determined contributions ("NDCs") as required under the Paris Agreement and committed to cutting emissions between 50 and 52% from 2005 levels by 2030. As per the NDCs, the United States has set a goal to reach 100% carbon pollution-free electricity by 2035. However, the new United States administration has initiated withdrawal from the Paris Agreement in January 2025 and will no longer be committed to obligations thereunder after January 2026.

The United States Congress had made efforts under the Biden administration to fulfil NDCs under the Paris Agreement through enactment of various programs. Those include the Infrastructure Investment and Jobs Act of 2021 ("IIJA"), the Creating Helpful Incentives to Produce Semiconductors Science Act of 2022 ("CHIPS"), and the Inflation Reduction Act of 2022 ("IRA"). However, the status of these programs and related federal regulation advancing carbon emissions reduction is uncertain. Please see Questions 5, 7, and 8 below for further discussion of these issues.

4. Is there a legal definition of 'renewable energy'

in your jurisdiction?

Yes, there is a legal definition of renewable energy in the United States set forth in the Renewable Energy Resources Act of 1980. As per 42 U.S. Code § 7372, the term "renewable energy resource" means "any energy resource which has recently originated in the sun, including direct and indirect solar radiation and intermediate solar energy forms such as wind, ocean thermal gradients, ocean currents and waves, hydropower, photovoltaic energy, products of photosynthetic processes, organic wastes, and others." In addition, the Energy Policy Act of 2005 ("EPAct 2005") defines "renewable energy" as "marine energy […], or electric energy produced from solar, wind, biomass, landfill gas, geothermal, municipal solid waste, or new hydroelectric generation capacity achieved from increased efficiency or additions of new capacity at an existing hydroelectric project." 42 U.S.C. 15852(b)(2). Accordingly, EPAct 2005 refers to renewable energy resources as those "including solar, wind, biomass, ocean (including tidal, wave, current, and thermal), geothermal, and hydroelectric energy resources." However, this definition is not expressly referenced in the IRA, IIJA, or other relevant energy legislation. The term renewable energy is used in those laws without a specific definition. There are other examples of terms used to describe renewable energy resources. For example, Section 45Y of the IRA provides that clean electricity production tax credits will be available to "qualified facilities" placed in service as of January 1, 2025, and such facilities are defined as those "for which the greenhouse gas emissions rate […] is not greater than zero."

5. Who are the key political and regulatory influencers for renewables industry in your jurisdiction? Is there any national regulatory authority and what is its role in the renewable energy market? Who are the key private sector players that are driving the green renewable energy transition in your jurisdiction?

In the United States, jurisdiction over electricity is divided between the federal government and the states. At the national level, the Federal Energy Regulatory Commission ("FERC") has authority over transmission and wholesale sales of electricity in interstate commerce, including wholesale sales from renewable energy sources. The states and territories have jurisdiction over distribution and retail sales. Each state has a public utility commission or similar body, and Puerto Rico has the United States' largest publicly owned utility as well as a separate regulatory board. Additionally, the U.S. territories of American Samoa, Guam, the Northern Marianas Islands, and the U.S. Virgin Islands each has its own public utility. Since 2024, the roles of regulators discussed here generally remain the same. However, recent actions suggest certain regulations and the corresponding regulatory roles may change in the coming years. For example, recent draft legislation proposes to transfer authority for approving cross-border energy sales from the U.S. State Department to FERC.

The North American Electric Reliability Corporation ("NERC") helps ensure the reliability of the North American bulk electric system, which is divided into three independent interconnections: Eastern Interconnection, Western Interconnection, and Electricity Reliability Council of Texas ("ERCOT") Interconnection. FERC regulations also enabled the establishment of independent, nonprofit organizations that serve as regional transmission operators ("RTOs") or independent system operators ("ISOs").

NERC assesses the system's reliability, develops reliability standards, and has the authority to enforce standards. FERC approves proposed standards and directs NERC to develop modifications to reliability standards in an ongoing process that is designed to respond to changing market and transmission system conditions.

At the state level, the permits required and the process for obtaining permits will vary depending on the jurisdiction. Some states have a single agency or siting authority that manages the permitting process for all solar projects and other large utility infrastructure within the state. By contrast, in other states, the developers may have to obtain permits from multiple state and local agencies.

Potential changes in federal energy policy by the Trump Administration may increase the importance of states and state policy in supporting incentives for renewable energy and the energy transition.

In addition to the applicable energy regulations, federal, state and local environmental and natural resources laws may also apply to projects and require analysis that can shape the development of the project and materially affect timing and cost. Certain projects may be required to prepare detailed environmental impact assessments and obtain certain environmental permits that require retaining experienced environmental consultants and counsel to lead the environmental review process. Determining which regulations apply and which agencies have jurisdiction will depend on factors including the siting of the project, protected species and other impacts, project alternatives, the type of technologies employed,

and whether the project will apply for or receive government funding.

For example, the federal National Environmental Policy Act ("NEPA") often holds significant implications for projects involving federal agency permits or authorizations, or which receive federal funding. Specifically, NEPA requires federal agencies to incorporate environmental considerations in their planning and decision-making through a systematic interdisciplinary approach, whereby agencies prepare detailed statements analysing the environmental impact of, and alternatives to, major federal actions significantly affecting the environment, which often occasion delay and cost concerns for developers. The Council on Environmental Quality ("CEQ") has historically played a critical role in NEPA oversight, including ensuring that agencies meet their obligations under the statute, overseeing agency implementation of the environmental impact assessment process, and issuance of regulations and other guidance to federal agencies. While CEQ will continue to play an important role vis-à-vis NEPA implementation, the January 2025 Executive Order ("EO") 14154 and other early actions by the current administration indicate that CEQ's position and influence could change significantly, especially in areas such as energy and minerals extraction. EO 14154 notably calls for CEQ to rescind NEPA implementing regulations, which were subsequently rescinded by an interim CEQ rule (issued February 2025) that became effective in April. Also issued in January 2025, the separate EO 14156 requires the Department of Interior ("DOI") to expedite the completion of energy projects, which has resulted in DOI proposals to forgo certain stages of NEPA review (approved by CEQ in April 2025). One should reasonably anticipate needing to closely review current and evolving NEPA-related requirements to assess their implications for energy project development, including any inconsistencies with state-level environmental impact assessment laws.

Many private sector participants have undertaken efforts to reduce their carbon emissions. Investors of all sizes have committed to net zero carbon pledges. Public and private corporations in various industries have also made net-zero commitments. Some of these efforts are discussed in Questions 6, 18, and 19 below.

As in the past, project developers have been at the forefront of developing renewables projects and expanding the range and scale of technologies being deployed across the country, including battery and energy storage (stand-alone or added to generation projects) and innovative applications combining electric vehicle ("EV") charging stations and storage, micro grids, demand response, distributed energy resources, and hydrogen production and storage. In addition to traditional bank lenders and tax equity providers, project developers continue to tap equity and debt investments from private equity ("PE") funds and other institutional investors to scale up their companies and their ability to complete projects on an increasingly larger scale. We also see more consumer-facing businesses, including retailers, manufacturers, tech companies, and banks, looking to fulfil their net zero commitments through power purchase agreements ("PPAs"), virtual power purchase agreements ("VPPAs"), and other offtake agreements, as well as other partnerships and investments with companies developing renewable energy projects. Lastly, we see a continued push by large investment funds, institutional investors and banks to provide equity and debt financing for companies involved in the energy transition space.

6. What are the approaches businesses are taking to access renewable energy? Are some solutions easier to implement than others? If there was one emerging example of how businesses are engaging in renewable energy, what would that be? For example, purchasing green power from a supplier, direct corporate PPAs or use of assets like roofs to generate solar or wind?

(A) Businesses are continuing to procure energy from renewable sources through a number of different arrangements, primarily through PPAs, VPPAs and other offtake arrangements. In addition, we continue to see companies that are not utilities and are outside the energy sector shifting to renewable energy, and even getting involved with development, particularly now with the volatility of the global fuel markets. VPPAs and other corporate power sourcing instruments are increasingly common.

For example, several large technology companies, manufacturers and other large electricity users have adopted plans and policies to reduce their carbon footprint, including by committing to gradually switching their source of power for their operations to 100% renewable energy. Specifically, we have seen a number of large PPAs signed that provide renewable power to data centres. In 2024, corporate and industrial customers procured 21.7 GW of clean energy, the largest amount in a single year to date. The market for these products is expected to continue, as the EIA forecasts electricity consumption will grow by 2% in both 2025 and 2026.

(B – Emerging Example) Recently, there is increasing

interest and investment in renewable energy-powered fertilizer production projects. Typically, grey hydrogen (i.e. hydrogen produced from fossil fuels) is a crucial component used in production of ammonia for fertilizer manufacturing. Green hydrogen, which is produced using renewable energy, can replace grey hydrogen in fertilizer production and provide a more sustainable alternative. In 2024, state governments offered developers forgivable loans to construct such renewable energy-powered fertilizer projects within the state. A prominent recent example is the Pacific Green Fertilizer project, which received an $80 million USDA grant in 2024. This project aims to leverage solar energy to power the electrolysis process for green hydrogen, which will facilitate the production of 700,000 tons of fertilizer annually and dramatically reduce carbon emissions associated with traditional production approaches.

7. Has the business approach noticeably changed in the last year in its engagement with renewable energy? If it has why is this (e.g. because of ESG, Paris Agreement, price spikes, political or regulatory change)?

The overall approach has not significantly changed in the past year although a combination of factors, including changes in federal energy policy, tariffs and supply disruptions, inflation, the impact of interest rates on the cost of capital, and lengthy interconnection queues have delayed new generation projects. Key industry actors also continue to navigate other recent shifts in federal and state government energy policy, including withdrawal from the Paris Agreement, pending regulatory changes and potential reductions of funds provided under the IRA and IIJA.

As companies consider ways to get involved in the energy transition, there continue to be calls from an increasingly diverse group of stakeholders to resolve transmission and grid constraints. This is in part a result of the growing recognition that such constraints represent a significant hurdle to reaching renewable energy targets.

The North American Electric Reliability Corporation ("NERC") has projected higher than expected demand for electricity driven by new data centres, electrification and industrial activity, which has driven up interest in increasing sources of generation, particularly baseload. Those concerns have sparked efforts by private sector and federal and state governments to delay refinements of coal-fired power plants, incentivize new gas-fired generation, restart refined nuclear plants and accelerate new plants and advanced nuclear technology, and brought additional attention to the role of battery storage. While these efforts are complementary to renewable energy, they may also expand or shift the focus of investors. In addition, recent changes in federal policy towards wind projects will reduce those efforts.

In contrast, there has been political backlash to certain forms of "ESG" investing that has led to investors to be more cautious in publicizing their commitments. Experts also suggest costs of decarbonization for corporations has contributed to a recent loss in momentum.

8. How visible and mature are discussions in business around reducing carbon emissions; and how much support is being given from a political and regulatory perspective to this area (including energy efficiency)?

As described in the examples provided in answers to Questions 6 and 7 above, discussions and initiatives in the U.S. business community about reducing carbon emissions are often publicly reported by companies in the press and in periodic reporting of publicly traded companies, particularly among public companies and companies in consumer-facing industries. In addition, higher economic growth in the U.S. in manufacturing and the increased computing requirements of technology companies because of AI (which has led to a greater demand for data centres) have brought renewed attention to the accompanying carbon footprint and opportunities to address that demand with renewable energy. Regarding political and regulatory support in this area, there are both federal and state support measures aimed at reducing emissions across all economic sectors.

However, recent actions discussed in Questions 3, 5, and 7 above suggest that government support measures for renewable energy and energy transition will be significantly reduced in the future. In 2025, the current administration has proposed elimination or reduction of programs and funds authorized under the IRA, IIJA and CHIPS Act in support of renewable energy. This would include the elimination of direct financial support to renewable energy projects of different types. Other recent proposals aim to eliminate various carbon emission reduction requirements and standards (including reporting requirements) that promoted greater investment in renewable energy and energy efficiency projects.

One key example of reduced financial support to renewable energy projects is the "One Big Beautiful Bill" Act (H.R.1) budget reconciliation bill, which passed in the

U.S. House of Representatives on May 22, 2025 (the "House Bill"), and has been sent to the U.S. Senate for consideration. Among other efforts to scale back federal government investment in renewables, this bill aims to expedite the phasing out of federal tax credits for renewable energy and other technologies, which were expanded and extended under the IRA. Importantly, the House Bill limits project eligibility for credits to projects that commence construction no later than 60 days after adoption of the bill and are "placed in service" prior to December 31, 2028. The House Bill also rescinds unobligated funds for grants and loan guarantees supporting various renewable energy projects, energy transition projects and equipment manufacturing. In addition, the House Bill proposes new Foreign Entity of Concern Requirements that will prohibit (i) taxpayers that are "Prohibited Foreign Entities" or "Foreign Influenced Entities" and (ii) projects that include "Material Assistance from a Prohibited Foreign Entity" from claiming tax credits. As of this writing, the U.S. Senate will review the House Bill and is expected to propose changes. As a result, renewable industry experts are uncertain of the outcome of the various incentive programs under the IRA, which were designed to promote investment in renewable energy and energy transition.

Significant measures are being adopted at the state level to spur greater disclosure of GHG emissions, climate risk, and carbon offset activities. Highlights in this milieu include the following:

- On October 7, 2023, California adopted a new set of far-reaching climate laws in the form of SB 253, the Climate Corporate Data Accountability Act ("CCDAA"), and SB 261, the Climate-Related Financial Risk Act ("CRFRA") (collectively, the "California Climate Accountability Regime"). The CCDAA requires public and private companies "doing business" in California, with total annual revenues exceeding $1 billion in the prior fiscal year, to publicly report their direct and indirect GHG emissions. The CCDAA categorizes GHG emissions by scope, requiring companies to publicly disclose Scope 1 and 2 emissions starting in 2026, and Scope 3 emissions starting in 2027. The CRFRA requires public and private companies "doing business" in California with annual revenues exceeding $500 million to prepare a biennial climate-related financial risk report. The report must disclose the company's (i) climate-related financial risk, and (ii) measures adopted to reduce and adapt to climate-related financial risk. "Climate-related financial risk" is defined in the bill as material risk of harm to immediate and long-term financial outcomes due to physical and transition risks, e.g. risk to corporate operations, provision of goods and services, supply chains, employee health and safety, capital and financial investments, institutional investments, financial standing of loan recipients and borrowers, shareholder value, consumer demand, and financial markets and economic health.
- Although SB 253 and SB 261 present significant disclosure requirements that will be implemented this year, the State of California has recently made efforts to scale back this legislation and other policies supportive of the renewable energy industry. On September 27, 2024, the California state lawmakers passed SB 219 to combine the CCDAA and CRFRA, now collectively known as CCDAA. In addition to combining the acts, SB 219 (i) delays implementation from January 2025 to July 2025 and (ii) removes requirements for entities to pay annual fees upon filing reporting disclosures, among other changes.
- Also on October 7, 2023, California enacted Assembly Bill 1305, the Voluntary Carbon Market Disclosures Business Regulation Act ("VCMDA"). This bill requires businesses marketing or selling voluntary carbon offsets within the state to disclose on their website (i) specified information about the applicable carbon offset project and (ii) details regarding accountability measures if a project is not completed or does not meet the projected emissions reductions or removal benefits. As discussed above, State of California government efforts to scale back renewable energy investment are relevant to the VCMDA as well. Initially effective in January 2024, the first compliance deadline for VCMDA disclosures was January 1, 2025. California state lawmakers proposed Assembly Bill 2331 to delay the deadline to July 2025, but the proposed bill failed to pass before the end of the 2024 legislative session. As of the date of this publication, the California state legislature has not introduced a new bill to delay VCMDA enforcement.
- Community solar "enabling legislation" has been enacted in 24 states, which encourages or mandates community solar in these jurisdictions. These states typically have more projects developed and subscriptions available to state customers. Subscribers receive credits for energy generated by the relevant community solar provider, which is typically applied to the subscriber's monthly electric bill and helps reduce electricity costs. As of June 2024, community solar projects represent more than 7,800 MWac of total installed capacity in the United States.
- In contrast to the above three examples, states have also made efforts to increase regulation of renewable energy development and slow down growth. In Texas, recently proposed legislation aims to impose new fees

on renewable energy companies seeking regulatory approval and requires additional approvals for solar and wind projects from the Texas Public Utility Commission.

9. How are rights to explore/set up or transfer renewable energy projects, such as solar or wind farms, granted? How do these differ based on the source of energy, i.e. solar, wind (on and offshore), nuclear, carbon capture, hydrogen, CHP, hydropower, geothermal; biomass; battery energy storage systems (BESS) and biomethane?

In addition to the energy and environmental regulatory authorizations and permitting requirements described in Question 5 above, a developer typically starts the development of a new project by securing rights (i) to a project site and (ii) to connect the project to the existing electricity grid or transmission system. The selection of the project site often is interrelated with the potential options for interconnection, and those rights may be shaped by the potential options for securing long-term offtake agreements and contracts for the sale of the power or capacity (or even the sale of the project itself in the case of build-transfer agreements). Note that recent government actions pause permitting or require additional review for certain projects (e.g. onshore and offshore wind). As discussed in Question 5 above, pending regulatory changes also contribute to uncertainty around the processes discussed in this response.

The process of securing the rights to the project site and the related transmission and interconnection infrastructure can vary depending on the location and the counterparty who can grant the rights. Rights in a site are typically obtained through long-term leases, easements, rights-of-way, licenses or permits, and counterparties can range from private landowners and leaseholders to federal, state, local, and tribal government entities, agencies and other bodies. For example, when developers propose to build renewable energy projects on federal land managed by the U.S. Bureau of Land Management ("BLM"), the BLM, in coordination with other agencies such as the U.S. Fish and Wildlife Service and state and local authorities, is authorized to permit development of solar and other energy projects. Permits and rights-of-way are typically awarded after the completion of any NEPA review. The Bureau of Ocean Energy Management ("BOEM") oversees the leasing process for offshore wind. The process of securing interconnection agreements can vary depending on the party that owns or operates the transmission or distribution system where the project wishes to interconnect. Those parties can range from utilities to independent and regional systems operators. In any case, the developer will need to negotiate some form of interconnection agreement based on the forms used by those parties, which may be based on a form specifically used by that party and may require a certain commitment by the project to complete certain network upgrades. Those interconnection agreements may require additional approval by the relevant regulatory authority.

In addition, certain types of renewable energy projects (e.g. geothermal, carbon capture, hydrogen, etc.) may also require special licensing, authorizations and permits related to their development, construction, and operation which can turn on the location of the project and regulators involved. As discussed in Question 5 above, recent executive orders have called for CEQ removal of NEPA implementing regulations, which were rescinded by an interim CEQ rule issued in February 2025. Following these changes to CEQ regulations, federal agencies figure to play a growing part in shaping the timing and scope of project approvals and environmental reviews. Given these regulatory developments, it remains unclear how agencies will individually implement NEPA regulations and carry out permitting processes. Regulatory compliance should be considered on an agency-by-agency basis, and experienced environmental and resources counsel should be engaged early in the development process.

10. Is the government directly involved with the renewables industry (auctions etc)? Are there government-owned renewables companies or are there plans for one?

Over the past few decades, federal, state, and local governments have enacted policies to encourage the renewables sector, but except for a handful of exceptions, governments have not had direct ownership of renewable energy projects or companies. The federal government owns and operates significant hydropower assets. At the state level, some local governments (typically cities) operate utilities. Certain state governments also hold auctions to solicit development of renewables projects or procure energy and environmental attributes from renewable sources. For example, in recent years, the New York State Energy Research & Development Authority ("NYSERDA") has released a number of competitive solicitations for the development of solar, wind and BESS projects and procurement of Renewable Energy Certificates.

While not direct ownership, governments do provide various forms of financial support for renewable energy. The DOE has previously administered grant, loan, and financing programs for the renewables sector. However, recent presidential executive orders and congressional legislation have proposed significantly reducing these programs at DOE and other federal agencies.

In addition to federal programs, some states and the District of Columbia have created special government agencies referred to as "green banks" to support the deployment of renewable energy projects through a variety of financial products and technical support. For example, state green banks can offer loans supporting the installation of residential solar units, provide credit enhancements to financing agreements, and facilitate warehousing portfolios of smaller loans.

11. What are the government's plans and strategies in terms of the renewables industry? Please also provide a brief overview of key legislation and regulation in the renewable energy sector, including any anticipated legislative proposals?

The United States' carbon reduction targets are not codified in law. The federal government previously adopted a "whole of government" approach to climate change, including renewable energy. However, as generally discussed in responses above, recent government actions aim to limit programs and regulation that benefit renewable energy development including those funded under the IRA. Many of these government actions place an emphasis on baseload power, natural gas and coal as fuel sources and the need for a diversified generation mix.

As discussed in Question 3, the United States has withdrawn from the Paris Agreement, which underpinned commitments to achieving 100% clean power in the electricity sector by 2035. Accordingly, there is uncertainty around the government's current and future plans for involvement in the renewables industry. At this time, federal laws and programs facilitating achievement of the 100% clean power milestone largely remain in effect. However, any such programs are expected to be scaled back or eliminated by the House Bill (and other efforts of the current administration) detailed in the response to Question 8. Incentives under the IRA such as investment tax credits ("ITCs"), production tax credits ("PTCs") and carbon capture tax credits are expected to remain intact, although an expedited phaseout schedule for ITCs and PTCs is proposed in the recent House Bill.

Otherwise, government support for federal legislation focused on grants (and other mechanisms to facilitate growth of the renewables industry) is expected to diminish in the next few years. For example, in response to January 2025 executive orders that paused disbursement of funds under the IRA and IIJA, the U.S. Department of Agriculture ("USDA") announced plans to rollback the Powering Affordable Clean Energy ("PACE") program in March 2025. USDA recipients of forgivable loans under the PACE program for development of renewable energy projects must revise project plans to align with EO 14154 discussed in Question 5 above, which broadly encourages the development of fossil fuel resources. As of the date of this publication, federal judges have ordered the restoration of environmental grant funding in April and May 2025. However, the House Bill discussed in Question 8 proposes to eliminate or more quickly phase out agency-directed funds authorized under the IRA which were intended to benefit development of renewable energy projects.

12. Are there any government incentive schemes promoting renewable energy (direct or indirect)? For example, are there any special tax deductions or subsidies (including Contracts for Difference) offered? Equally, are there any disincentives?

As discussed in Questions 8, 10, and 11, there are governmental policies at the federal and state level promoting renewable energy and the transition from fossil fuels to reduce greenhouse emissions, but recent government actions aim to limit or rescind such policies at the federal level.

At the state level, several jurisdictions have encouraged project development and created robust state and regional markets for renewable energy credits. The first regional carbon market initiative in the country is the Regional Greenhouse Gas Initiative ("RGGI"), which is a market-based effort among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont to cap and reduce carbon emissions from the power sector.

Key federal initiatives include:

- Federal Income Tax Credits: PTCs and ITCs reduce the tax liability of renewable project owners. Legislation extending PTCs and ITCs and expanding their availability was introduced in late 2021 and further expanded in 2022 by means of the IRA. As noted above, the House Bill aims to reduce and modify the

requirements of these tax credits in order to reduce the federal expenditures associated with these programs.
- DOE Loan Guarantees and Conditional Commitments: The DOE previously had a guarantee program for different types of clean energy and energy transition projects. However, the scope and substance of this program is being changed under proposed congressional legislation. As of the date of this writing, the House Bill seeks to rescind any unallocated funding for the DOE Loan Programs Office ("LPO").
- Although contracts for difference (often in the form of a VPPA) are not a dominant method of renewable energy procurement for the government compared to corporations, state governments have entered into VPPAs in an effort to achieve clean energy transition commitments.

There are currently no disincentives to renewable energy at the federal level, but recent government actions aim to halt the financial incentives discussed in this Question 12.

13. How does the structure of the natural gas industry in your country impact the price of electricity? Are there any plans to de-link the price of renewable electricity from gas prices?

As discussed in Question 1 above, natural gas is a major fuel source for electricity generation in the United States. As a result, the price of electricity generally tracks shifts in the price of natural gas.

Currently, the price of renewable electricity is not linked to gas prices under relevant United States federal or state laws.

14. What are the significant barriers that impede both the renewables industry and businesses' access to renewable energy? For example, permitting, grid delays, credit worthiness of counterparties, restrictions on foreign investment, regulatory constraints on acquisitions; disputes/challenges?

Lack of transmission remains a significant barrier to the development of renewable energy. In the last year, the total capacity of projects in interconnection queues grew ~27%. There are now more than 1,570 GW of generation and 1,030 GW of storage waiting to connect to the grid. One analysis found that solar, wind, and battery projects constitute more than 95 percent of the capacity in interconnection queues. The passage of the IRA has continued to drive increases in the interconnection queue.

The DOE released a draft of the National Transmission Needs Study ("Needs Study") which estimates that the United States will need a 57% increase in transmission by 2035 to support new clean energy generation. The Needs Study found that increasing interregional transmission would be the most effective means of alleviating transmission constraints and bringing renewable generators online. Resolving interconnection issues would also be helpful. In 2024, FERC issued a rulemaking updating its generator interconnection procedures. Additionally, FERC is expected to release a separate rulemaking on transmission planning later this year.

As discussed in responses above, recent government efforts potentially pose new regulatory barriers for the renewables industry. For example, these government actions include the pause of government leases and additional regulatory review processes for wind projects. Although funding freezes have been temporary and many proposals are pending to date, decreasing federal government support for the renewables industry has created serious uncertainty for key industry players.

15. What are the key contracts you typically expect to see in a new-build renewable energy project?

- Construction Contracts (e.g. EPC (engineering, procurement and construction) and BOP (balance-of-plant) contracts).
- Interconnection and Transmission Contracts and Energy Management/Scheduling Services Agreements.
- Investment Documentation (e.g. tax equity investment agreements, including equity contribution agreements and LLC agreements; joint venture agreements; parents' guaranties and other credit support agreements).
- Off-take Agreements (e.g. power purchase agreements, power hedges, and sale agreements for Renewable Energy Certificates ("RECs"), carbon offsets and similar environmental attribute instruments).
- Project finance agreements (e.g. loan agreements or other guarantee agreements).
- Leases, easements and other site-control instruments.
- Asset Management, Operation and Maintenance and other operating-stage services agreements.

16. Are there any restrictions on the export of renewable energy, local content obligations or domestic supply obligations? What are the impacts (either actual or expected) of the implementation of the Net Zero Industry Act (EU) Regulation 2024/1735?

The $1.2 trillion IIJA includes major domestic procurement requirements for infrastructure materials. The law permits federal funding for infrastructure only if the iron and steel, manufactured products, and construction materials used in the project are produced in the United States, though there are several exceptions. One exception is when the inclusion of domestic products would increase the overall cost of the project by more than 25%. As of the date of this publication, there has been no change to these domestic procurement requirements under the IIJA.

Uncertainty about tariffs and permitting are delaying construction and investment decisions for new projects. In addition, certain states are changing incentive programs and permitting that had been in place for years. The State of Texas has proposed new legislation that would impose new permitting and eligibility requirements on wind and solar projects.

Subject to potential changes under the House Bill referenced above, the IRA requires that projects be built with certain percentages of domestic content in order for a project to qualify for the maximum available tax credits. For example, a project must use 100% domestic steel and iron for structural construction materials. For additional discussion please see the response to Question 12.

In addition, recent executive actions establish tariffs on imports (i) from certain countries and (ii) of certain metals, which may push developers to rely on domestic resources to limit increased costs related to production of racking systems, enclosures, and other structural elements necessary for solar, battery, and other renewables projects. Further, executive actions seek to increase domestic production of critical minerals, which are a key resource in the development and operations of renewables projects.

The Net Zero Industry Act (EU) Regulation likely will not directly impact the United States renewables industry, but indirect impacts may be expected. The regulation focuses on reducing GHG emissions in the EU, increasing clean technology capacity, and attracting investments for clean tech development. However, the regulation encourages EU market participants to shift more quickly from reliance on fossil fuel resources to renewable energy resources. As a result, United States companies may need to consider that reliance on fossil fuels can hinder potential business relationships with EU companies, which must comply with Net Zero Industry Act requirements.

17. Has deployment of renewables been impacted in the last year by any non-country specific factors: For example, financing costs, supply chain or taxes or subsidies (e.g. the US's Inflation Reduction Act)?

Beginning on June 7, 2024 after a two-year hiatus, solar cell and module imports from Cambodia, Malaysia, Vietnam and Thailand became subject to countervailing, antidumping and other duties and tariffs imposed by the U.S. International Trade Commission. Further, recent executive actions institute tariffs on metals and equipment relevant to renewables development (e.g. aluminium, steel, copper, circuits, semiconductors, etc.) and on imports from various other countries (e.g. China, Mexico, and Canada). Increased costs associated with such tariffs may disincentivize new development of renewables projects, and industry groups have come out against any additional tariffs.

Similarly, solar inverters and transformers face supply chain issues. As a result, manufacturers may seek to take advantage of manufacturing tax credits under the IRA and increase domestic production. Under the IRA, inverters manufactured in the United States were eligible for a $0.11/watt of capacity PTC. In 2024, inverter manufacturers have announced increases in U.S. manufacturing in response to increased demand and the availability of credits under the IRA. The House Bill discussed in Question 8 aims to phase out these credits.

Additionally, analysis published in August 2024 suggests that higher interest rates, as have been experienced in recent years, have a greater impact on the cost of developing renewable energy projects. This is in part by narrowing the gap in borrowing costs between renewables, which until recently realized lower borrowing costs, and traditional projects which possessed higher borrowing costs. Increased borrowing costs have not had an impact on renewable development so far, but the impact of higher rates may be realized in the long term.

18. Could you provide a brief overview of the major projects that are currently happening in your jurisdiction?

Despite growing uncertainty in the face of recent

government actions, there are a variety of large capacity projects under development and a movement towards operationalizing newer technology. For example, the IIJA authorized the creation of regional hydrogen hubs. In 2023, seven hubs were announced, which will operate as regional networks for pursuing various clean hydrogen goals. Within these hubs, there are significant projects under development that will produce and store green hydrogen. The hope is to produce 10 million tons of clean hydrogen by 2030. In 2024, the largest direct air capture project was announced outside of Midland, Texas. Expected to go live in mid-2025, the project is expected to remove 500,000 tons of carbon from the air each year. However, as discussed in Question 8, note that the recent House Bill seeks to eliminate hydrogen tax credit incentives authorized under the IRA.

Broadly, the deployment of battery storage capacity is expected to increase significantly in 2025. Capacity growth of utility-scale battery storage capacity in the U.S. experienced record growth with 10.3 GW added by the end of 2024, and an additional 18.2 GW is planned for 2025. That near-doubling of deployed battery capacity is driven largely by projects in Texas (6.4 GW) and California (5.2 GW). In 2024, battery discharge in Texas (ERCOT) reached an all-time high, when batteries served 5.1% of load in the state. This growth is likely driven, in part, by a change in the IRA that made standalone battery energy storage system ("BESS") projects eligible for the full investment tax credit. This is a trend we would expect to continue as battery storage projects are built and capacity increases. Conversely, the recent House Bill may impact incentives for BESS developers under the IRA by (i) expediting phaseout of ITCs and (ii) limiting generation of tax credits to when a project begins producing energy, as discussed above.

19. How confident are you that your jurisdiction can become a leader in newer areas like offshore wind or hydrogen?

In recent years, the United States has been positioned to become a leader in developing energy technologies. Conversely, the short-term and long-term outlook is much less certain given recent government actions that decrease support for clean energy transition efforts. Increased demand for clean power and state policies are expected to continue creating incentives to pursue newer technologies, but diminishing support from the federal government may undermine the United States' potential as a leader in cutting-edge renewables development.

With respect to offshore wind specifically, there are currently two operating offshore wind projects, with a pipeline of projects scheduled to come online. The South Fork Wind facility recently completed construction and began delivering power to New York. Vineyard Wind, another Atlantic coast project, also recently began delivering power from turbines installed as part of phase 1 of construction. Currently, almost all of the projects under development are off the East Coast of the United States. There is also an opportunity to develop offshore wind projects in the Gulf of Mexico, the Great Lakes, and the Pacific Ocean.

The offshore wind industry is facing challenges in the United States because of supply chain constraints, higher capital costs, and, more recently, from a lack of government support. Recent executive actions including orders by the Department of Interior have suspended federal offshore wind leasing, permitting, and construction of projects in-progress.

Hydrogen is another area of focus for the public and private sectors in the United States. In recent years, the DOE Hydrogen Program has offered a number of grants for research and development of hydrogen projects. However, the House Bill discussed above aims to reduce incentives to invest in hydrogen, and EIA analysis shows that growth in hydrogen over the past few years has been slow.

20. How are renewables projects commonly financed in your jurisdiction?

Renewable energy projects in the United States are commonly financed through project finance schemes, including a mix of debt and equity. The most common structure is bank debt financing during construction with tax equity financing providing the long-term financing solution for the project once construction has been completed. Financing sources vary depending on the specific stage of the project cycle: development, construction, or operation. During the development phase, which represents the most speculative phase in which funds invested are at risk of total loss, projects are mostly financed through equity. Most of the equity comes from the developer or other equity investors expecting a high return. This phase ends when the project is ready to build ("RTB"). During the construction phase, the project is financed with debt to be refinanced by tax equity prior to the commercial operation date ("COD"). Interest rates are lower than in the development phase but still higher than in the refinance phase due to the risk that the project may not reach its COD. During the operation phase, the re-finance or permanent financing takes place. Bank debt is typically replaced by tax equity although the developer may procure bank debt at a corporate level above the

operating level as “back-leverage." The impact of interest rate increases over the past year on the cost of capital and financing of renewable energy projects is yet to be determined.

Under a project finance structure, the project developer creates a project company that holds all of the project's interests, rights, and assets. The equity interest in the project company will usually be held by a limited liability company created for pledging the equity to the lenders in the project financing.

As of the date of this publication, the approach to financing renewables projects described above remains typical. However, financing approaches may evolve in response to recent government actions and changes to tax credits under the IRA proposed in the House Bill, as discussed in Question 8 and other responses above.

21. What is your forecast for the coming year(s) for renewable energy in your jurisdiction?

As discussed in Question 1 above, continued growth in the development and deployment of renewable energy resources is expected in the coming years given projected increases in electricity demand, especially with respect to solar and battery storage projects. As mentioned in Question 2, a recent DOE study finds that deployment of renewable energy generation sources will be critical to meet growing energy demand in the United States. This forecast is reasonable considering long deployment timelines for other energy sources, such as nuclear energy and natural gas.

However, as discussed in the responses above, government support for renewable energy development and investment in clean energy technologies has decreased in the past year. The recent House Bill, tariffs, suspensions of leasing and permitting for wind projects, and pending regulatory changes pose immediate and substantial challenges for the future of renewable energy in the United States. Although there is uncertainty around further government actions and some policies supportive of renewables development remain in place (e.g. the IRA and IIJA), the trend of decreased government support for renewable energy is expected to continue under the current administration.

Contributors

Jorge Kamine
Partner and Co-Chair of Project Finance & Investment Practice
jkamine@willkie.com

Norman Bay
Partner, Chair of Energy Regulatory & Enforcement Practice, Co-Chair of Energy & Commodities Practice
nbay@willkie.com

The authors wish to thank partner Robert Jacobson, counsel William Thomas and associates Samara Cohen, Maria Clara Castro do Egito Coelho, and Behn Sorbi for their contributions to the chapter.

