



# BAKER BOTTS ENERGY UPDATE

*2019 – A YEAR OF CHANGE FOR  
WORLDWIDE ENERGY*

2019 YEAR IN REVIEW AND 2020 OUTLOOK

# EDITOR'S NOTE

To our clients and friends,

Early each year, we take the opportunity to review significant developments in the worldwide energy industry for the previous year and offer our views on what these developments may mean for the coming year.

While 2019 was a banner year for the broader market, with the S&P 500 Index increasing close to 30% on the year, not all parts of the energy sector saw the benefits of this market increase. 2019 will be remembered much more in the sector as a year of change than a year of superb performance or returns. There were certainly bright spots, with utility and mineral and royalty stocks having strong years and the renewables space continuing to see notable progress and increasing tailwinds. However, concerns about over-supply, international trade and economic deceleration in China and other international markets, along with a laser focus from Wall Street on free cash flow over growth, all contributed to what was a challenging market for much of the oil and gas space. As a result, 2019 saw a good deal of industry consolidation and restructurings, particularly in the upstream and oilfield services spaces, and an evolution in how companies look to finance projects, particularly in the midstream space. The growing concern over climate change undeniably played a large role in 2019 as well and led to an increase in investments in renewables, even by traditional bellwether oil and gas companies.

Looking ahead, 2020 has already gotten off to an eventful start with U.S. and Iranian tensions coming close to a boiling point and the outbreak of the coronavirus beginning to inject anxiety into the market and place downward pressure on oil prices. With the U.S. presidential elections this coming November and the dust beginning to settle on the UK's recent withdrawal from the EU, the remainder of 2020 promises to be just as exciting and momentous for the energy sector. In the face of great uncertainty ahead for the global markets generally, and the energy industry in particular, the only thing that seems certain is that, in the words of Bob Dylan, "the times they are a changin'."

The discussion below is broadly organized into sections covering (i) Power and Utilities, (ii) Oil and Gas and (iii) Renewables, with particular areas of focus on each of these sections set forth below in the table of contents.



# TABLE OF CONTENTS

<b>Power and Utilities .....</b>	<b>5</b>
U.S. Utilities .....	6
Independent Power Producers and Non-Utility Generators .....	8
Bankruptcy Court May Authorize Rejection of FERC-Regulated Contracts in Sixth Circuit .....	9
Revisions to PJM Interconnection Market Rules .....	10
PURPA Reform .....	11
Electric Transmission Incentives .....	12
Energy Storage and MISO Storage as Transmission-Only Assets .....	13
Electric Transmission Return on Equity Developments .....	14
REMIT Enforcement Intensifies .....	15
Foreign Direct Investment Screening for Investments in the Energy Sector .....	16
Power Companies Advance Voluntary Avian Protection Without Threat of Liability for Incidental Takings .....	18
<b>Oil and Gas .....</b>	<b>20</b>
Upstream Oil and Gas and Mineral/Royalty .....	21
Midstream .....	25
MLPs Evolving to Survive (Perhaps Not as MLPs) .....	27
Midstream REITs as an MLP Substitute .....	29
Texas Bankruptcy Court Denies Rejection of Certain Production Dedication Midstream Agreements .....	30
Oilfield Services .....	33
Liquefied Natural Gas .....	34
Chemicals .....	36
Report on the Environment .....	37
Carbon Capture Tax Credit: Section 45Q .....	38
<b>Renewable Energy .....</b>	<b>40</b>
Wind .....	41
Solar .....	42
Storage .....	44
2019: Preparing for an Uncertain Future for Renewable Tax Credits .....	47
Trends in Corporate PPAs .....	48

European Corporate PPAs.....	50
D.C. Circuit Court’s Decision in Hoopa Valley Tribe v. FERC .....	51
EPA Proposes Significant Revisions to Its CWA Section 401 Regulations .....	52
Renewable Development on Potentially Contaminated Lands.....	53
Index .....	55
Endnotes .....	56

---

## EDITORS:

### **Partner:**

Jonathan Bobinger

### **Associates:**

Jude Dworaczyk, Nathaniel Richards

## CONTRIBUTORS:

### **Partners:**

James Barkley, Jonathan Bobinger, Michael Bresson, Chris Carr, Joshua Davidson, Michael Didriksen, James Douglass, A.J. Ericksen, Manny Grillo, Justin Hoffman, Thomas Holmberg, Matt Levitt, Don Lonczak, Scott Looper, Steve Marcus, Barbara De Marigny, Jim Marshall, Hamish McArdle, Jim Prince, Jason Rocha, Jay Ryan, Timothy Taylor, Elaine Walsh, Matt West

### **Counsel:**

Emil Barth, Peter del Vecchio, Matt Donnelly, Bart Seitz

### **Associates:**

Sean Aguirre, Megan Conner, Sofia Doudountsaki, Jude Dworaczyk, Peter Farrell, Kyle Henne, Leslie Hodge, Branden Lankford, Nathaniel Richards

### **Senior Advisor:**

David Gabathuler, Leigh Hancher



# POWER AND UTILITIES

---

“A very well-regarded energy firm with strength across transactional, regulatory and litigation settings...active in the power space, assisting traditional power, renewable energy and utility clients on a range of transactions.”

*Chambers USA, 2019*



## U.S. UTILITIES

### 2019 IN REVIEW AND HIGHLIGHTS

The U.S. utility sector was faced with both challenges and opportunities in 2019. While the federal government continued its efforts to reduce applicable environmental rules and regulations, including the Clean Power Plan, state and local governments largely rejected such changes and reinforced their support for clean energy initiatives by increasing renewable portfolio standards, resulting in many companies continuing their multiyear pattern of record-breaking capital expenditures. Perhaps surprisingly, however, most companies have largely been able to keep consumer rate increases to a minimum, aided significantly by low natural gas prices and declining costs for renewable energy. Challenges faced by the industry included increased costs from natural disasters (like hurricanes and wildfires) and manmade threats (like cyberattacks and terrorism) and another year of flat load growth, a trend that has been the norm for more than a decade. Despite these headwinds, U.S. utility stocks continued an upward progression in 2019, with the Dow Jones Utility Average Index increasing 22% year-over-year.

Unfortunately, record-breaking capital expenditures and increased stock prices did not translate to a record-breaking year for U.S. utility mergers and acquisitions. In fact, total deal value and total deal volume decreased by 41% and 24%, respectively, from their 2018 levels. These levels were already significantly down from 2016, a record year for U.S. utility mergers and acquisitions. For perspective, 2019 total deal value reached just \$43 billion as compared to a 2016 total deal value of \$157 billion. Large utility mergers and acquisitions deals (those exceeding \$1 billion in total transaction value) also fell sharply with only eight being announced in 2019, down from 14 in 2018. Of those large deals, three were valued at over \$4 billion in total transaction value, namely, (a) the Canada Pension Plan Investment Board's acquisition of Pattern Energy Group Inc., (b) UGI Corporation's acquisition of AmeriGas Partners, L.P. and (c) Infrastructure Investment Fund's acquisition of El Paso Electric Company. These deals accounted for almost 40% of the total deal value for 2019.

Despite the small sample size, some positive trends can be seen. First, two of the three largest deals announced in 2019 demonstrated the trend of financial investors taking a renewed interest in U.S. utility mergers and acquisitions. Financial investors accounted for over 45% of the total deal value for the year, a trend that we expect to continue in 2020. Renewables also remained a key area of interest in 2019, accounting for approximately 40% of total deal value.

2020 looks like it will be a very interesting year for U.S. utilities. Even with historically high valuations for utilities, it remains a seller's market. To the extent that valuations decrease, we expect transaction activity to increase. It also is possible that companies will adjust to high valuations by using common stock as consideration and possibly focusing more on stock for stock transactions that do not involve high acquisition premiums. Another factor that bears monitoring is the continuing role of activists in the sector. Activist investors like Elliott Management Corp. and Bluescape Resources Co. LLC have pressed major U.S. utilities to consider strategic alternatives or to focus on core assets, resulting in a number of potential divestitures of non-core assets. Most recently, Elliott Management has taken a position in Evergy, Inc. and advocated for Evergy to invest in core utility operations and critical system infrastructure to rectify Evergy's prolonged stock price underperformance. There also are several large companies that have indicated a continuing interest in making acquisitions in the sector. For example, NextEra Energy Inc., one of the most active U.S. utilities in the mergers and acquisitions space, publicly announced that it is looking for additional strategic opportunities in 2020 after it submitted a bid for JEA (previously known as the Jacksonville Electric

Authority) and the city subsequently terminated the auction process. NextEra also stated that it is in the process of expanding its renewable portfolio and building out its storage capacity. Continuing interest from financial investors and the desire of U.S. utilities to expand their renewable energy portfolios also seem likely to play a large role in 2020 mergers and acquisitions activity. Overall, the outlook for U.S. mergers and acquisitions activity in 2020 and 2021 seems favorable, although the looming 2020 federal elections and the potential for reductions in environmental rules and regulations to be short-lived may prove to be wildcards for 2020.

#### NOTABLE MERGERS AND ACQUISITIONS TRANSACTIONS

As mentioned above, there were three notable large U.S. utility mergers and acquisitions deals announced in 2019. Below is a brief description of each these transactions.

##### *Canada Pension Plan Investment Board's acquisition of Pattern Energy*

On November 4, 2019, renewable power producer Pattern Energy, which owns wind and solar projects in North America and Japan, announced that it had agreed to be taken private by the Canada Pension Plan Investment Board for \$2.63 billion in equity. The deal, which would net shareholders of Pattern Energy \$26.75 per share in cash, represented a premium of approximately 14.8% to Pattern Energy's closing share price on August 9, 2019, the last trading day prior to market rumors regarding a potential acquisition, and has an enterprise value of approximately \$6.1 billion. The transaction is expected to close by the second quarter of 2020, subject to Pattern Energy shareholder approval, receipt of the required regulatory approvals and other customary closing conditions. While not a condition of this transaction, Pattern Energy's sponsor, Riverstone Holdings LLC, and the Canada Pension Plan Investment Board entered into a simultaneous

separate agreement pursuant to which Riverstone Holdings will sell Pattern Energy Group Holdings 2 LP, which holds development projects and capabilities to the Canadian Pension Plan Investment Board.

##### *UGI's acquisition of AmeriGas Partners*

On April 2, 2019, UGI and AmeriGas Partners announced that they had entered into a merger agreement under which UGI will fully consolidate its ownership of AmeriGas Partners, the nation's largest retail propane marketer, by acquiring the 69.2 million publicly held common units it does not already own. Under the terms of the agreement, AmeriGas Partners unitholders will receive 0.50 shares of UGI common stock plus \$7.63 in cash consideration for each common unit of AmeriGas Partners, representing a premium of 21.9% to AmeriGas Partners' 30-day volume weighted average price and a 13.5% premium to the April 1, 2019 closing price of \$31.13. The consideration represents an enterprise value of approximately \$5.3 billion. The transaction was successfully closed on August 21, 2019.

##### *Infrastructure Investments Fund's acquisition of El Paso Electric*

On June 3, 2019, El Paso Electric and the Infrastructure Investments Fund, an investment vehicle advised by J.P. Morgan Investment Management Inc., announced that they entered into a definitive agreement under which El Paso Electric will be acquired for \$68.25 per share in cash. The consideration represents an enterprise value of approximately \$4.3 billion, including El Paso Electric's net debt, and a 17% premium to El Paso Electric's closing price on May 31, 2019, the last trading day prior to the announcement of the agreement. The transaction is expected to close in the first half of 2020, subject to the receipt of regulatory approvals and other customary closing conditions.

## INDEPENDENT POWER PRODUCERS AND NON-UTILITY GENERATORS

In 2019, there were a number of generation deals, most of which were for renewables and infrastructure assets. Private equity continued to be active in this sector. We expect these trends to largely continue in 2020. Below is a brief description of some notable transactions.

I Squared Capital sold Cube Hydro Partners LLC to Canadian utility company Ontario Power Generation Inc. for \$1.1 billion, enlarging Ontario Power's U.S. presence. Cube Hydro owns 385 MW of hydro facilities in five states. The transaction closed in October 2019.

AltaGas Ltd. continued its divestiture of non-core assets with its subsidiary, WGL Energy Systems, Inc., selling 322 MW of contracted distributed generation renewable assets, including commercial and industrial, residential and fuel cell projects, in the District of Columbia and 20 states to TerraForm Power, Inc. for \$720 million. Similar to the Sempra divestitures described below, this sale was part of a larger divestiture plan previously outlined by AltaGas. The sale closed in September 2019.

After developing and acquiring a sizable portfolio of renewable assets in its unregulated business, Duke Energy Corp. sold a minority stake in its 1.2 GW wind, solar, and battery storage portfolio to John Hancock Infrastructure Fund and John Hancock Life Insurance Company (U.S.A.) for \$415 million. The transaction closed in September 2019.

NextEra Energy Transmission, LLC completed its purchase of TransBay Cable, LLC from Steel River Infrastructure Fund North America for approximately \$1 billion in July 2019. TBC owns a 53-mile 400 MW high-voltage current underwater transmission cable under the San Francisco Bay and supplies approximately 40% of the electrical load in San Francisco. TBC was originally developed by Pattern Energy Group LP.

Southern Power completed the sale of the 115 MW Nacogdoches wood-fired biomass generation facility to Austin Energy for \$460 million. At the time of closing in June 2019, the Nacogdoches facility had a long-term PPA with Austin Energy. More recently, in January 2020, Southern Power completed the sale of its gas-fired Mankato Energy Center in Minnesota to a subsidiary of Xcel Energy, Inc., Northern States Power Company, for \$650 million. Xcel Energy is the offtaker from Mankato with a 20-year PPA.

Avenue Capital Group LLC increased its investments in California peakers with the purchase of a portfolio of six gas-fired plants from The Carlyle Group Inc. in May 2019. The 403 MW portfolio includes Border CT, CalPeak Power Enterprise Peaker Plant, Panoche CT, Vaca Dixon CT, Starwood-Midway and Kings River CT, adding to Avenue's California acquisitions of the Tracy, Hanford and Henrietta plants in 2018.

Sempra Energy completed the divestitures of renewables assets from its unregulated business with the sale of approximately 724 MW of wind projects to American Electric Power Company, Inc. for approximately \$551 million, which closed in April 2019. This follows the sale of Sempra's 981 MW solar, battery storage, and wind portfolio to Consolidated Edison, Inc. for \$1.5 billion, plus debt, at the end of 2018 and furthers Sempra's objective to focus on infrastructure assets after its 2018 purchase of Oncor Electric Delivery Company LLC.

KKR & Co. Inc. invested approximately \$900 million in a NextEra Energy Partners, LP subsidiary, which owns approximately 1.2 GW of utility scale wind and solar projects in the U.S. The investment, announced in March 2019, is reported to provide NEP with lower cost financing and help mitigate the risk of Pacific Gas & Electric PPA exposure. KKR owns 100% of the class B non-controlling shares of the NEP subsidiary and is entitled to 5% of the cash flows. NEP owns 100% of the class A controlling shares. NEP has certain



rights to purchase KKR's stake. If, after 6 years (or 4.5 years under certain conditions), KKR has not bought out NEP, KKR is entitled to 99% of the distributable cash flows of the portfolio.

Emera Inc. closed its sale of the New England gas-fired projects Bridgeport, Rumford and Tiverton to The Carlyle Group Inc. for \$590 million. The deal was originally announced in November 2018 and closed March 2019.

NRG Energy, Inc. sold NRG South Central Generating LLC, which owns eight generating facilities with a total of 3,555 MW, to an unregulated subsidiary of Cleco Corporate Holdings LLC for approximately \$1 billion in February 2019. NRG South Central has power supply agreements with nine Louisiana electric cooperatives, five municipalities in Arkansas, Louisiana and Texas, and one investor owned utility.

### **BANKRUPTCY COURT MAY AUTHORIZE REJECTION OF FERC-REGULATED CONTRACTS IN SIXTH CIRCUIT**

In high-profile utility and regulated-energy bankruptcy cases such as Pacific Gas and Electric Company, Calpine Corp., Mirant Corp., and others, federal bankruptcy courts are frequently asked to prioritize or at least harmonize two competing federal statutes and related policies. On the one hand is a bankruptcy court's exclusive jurisdiction under the Bankruptcy Code to authorize a debtor's rejection of financially burdensome contracts. On the other is FERC's exclusive jurisdiction under the Federal Power Act (FPA) and the "filed-rate doctrine" over the modification or abrogation of FERC-regulated power contracts for any rate filed with FERC.

On December 12, 2019, the Sixth Circuit Court of Appeals weighed in through an appeal arising from the chapter 11 reorganization of FirstEnergy Solutions Corp. and joined the Fifth Circuit in holding that a bankruptcy court can allow a debtor to reject a FERC-approved PPA; but when

doing so, the court must evaluate the public interest and ensure the equities favor rejection. Moreover, before a rejection can occur, the bankruptcy court must first invite FERC to participate and provide an opinion on the effects of rejection, but "need only provide FERC with a reasonable accommodation or suffer a reasonable delay in providing such opportunity."<sup>1</sup>

Subject to bankruptcy court approval, a debtor in bankruptcy, has the right to pick which contracts it wishes to continue performing, which is called assumption, and which contracts it wishes to repudiate, which is called rejection.<sup>2</sup> Valuable contracts are assumed, but financially burdensome contracts are almost always rejected. For most contracts, the legal bar for rejection is low. It is generally enough that the debtor show the rejection is based on sound business judgment—i.e., that rejection would save the company money.

FirstEnergy, an electricity distribution company with 1.3 million customers in six states, buys electricity and sells it to retail clients, affiliates and in the spot market. Facing a decline in retail electricity sales, lower electricity prices and an excess supply of electricity under long term contracts that were no longer needed (and under which FirstEnergy was losing \$46 million per year), FirstEnergy filed chapter 11 and the next day sought an injunction to prohibit FERC from interfering with FirstEnergy's plan to reject the PPAs. The bankruptcy court ruled that it had exclusive jurisdiction over the PPAs and enjoined FERC from taking any action that affected the PPAs. The debtor then sought to reject certain PPAs it determined to be both financially burdensome and unnecessary for its reorganized operations. Because the PPAs were FERC-approved, FERC argued that under the FPA, the PPAs were like federal law which could only be modified with a showing that the PPAs harmed the public interest. Nonetheless, the bankruptcy court authorized FirstEnergy's rejection of the

PPAs, finding that rejection was based on sound business judgment consistent with applicable bankruptcy law.

While the Sixth Circuit confirmed the bankruptcy court's authority to authorize rejection of the PPAs, it also held that the business judgment standard alone is inappropriate for evaluating the rejection of energy contracts that are otherwise governed by FERC under the FPA. Bankruptcy courts must also consider the public interest at stake and balance the equities to make sure rejection is proper. This process requires inviting FERC to provide an opinion on the PPA rejection under reasonable time constraints. Thus, for a debtor to reject a FERC-approved PPA for cases filed in bankruptcy courts in the Sixth Circuit, a showing that rejection satisfies the business judgment standard alone is not enough, a debtor must satisfy a higher threshold as the Sixth Circuit's opinion explained. The court specifically noted that in a different case "it could be in the public interest to compel a Chapter 11 debtor to assume a financially burdensome contract as part of its restructuring."<sup>3</sup>

Beyond this, the Sixth Circuit rejected FERC's argument that PPAs, once filed under the "filed-rate doctrine", are no longer ordinary contracts that can be rejected in bankruptcy, but instead become "de jure regulations" that cannot be rejected.<sup>4</sup> Specifically, the Sixth Circuit held that "the public necessity of available and functional bankruptcy relief is generally superior to the necessity of FERC's having complete or exclusive authority to regulate energy contracts and markets. This means that FERC-approved PPAs are not de jure regulations but, rather, ordinary contracts susceptible to rejection in bankruptcy."

A key part of the FirstEnergy opinion is the determination that FERC and bankruptcy courts have concurrent jurisdiction over the rejection or modification of FERC-approved PPAs, but bankruptcy courts have superior authority and the final word. However, unlike the results in

some prior cases, the Sixth Circuit mandated that a bankruptcy court cannot simply issue a broad temporary injunction against FERC preventing it from taking any action related to PPAs. A bankruptcy court can enjoin FERC from issuing an order (or compelling an action) that would directly conflict with the bankruptcy court's otherwise-authorized authority but cannot prevent FERC from exercising its own jurisdiction, conducting its regular business, or issuing orders that do not interfere with the bankruptcy court.

As we look into the near term, we see that similar jurisdictional issues may soon be litigated before the Ninth Circuit Court of Appeals in the PG&E bankruptcy. Prior to PG&E filing for bankruptcy protection, NextEra Energy, Inc., one of PG&E's PPA counterparties, petitioned FERC to assert jurisdiction over the rejection of certain PPAs. In response, FERC issued a decree stating that it has concurrent jurisdiction with bankruptcy courts over the rejection of the PPAs. Shortly thereafter, PG&E filed chapter 11 and immediately sought injunctive relief from the bankruptcy court to block any FERC action over the potential rejection of its PPAs. In June, the PG&E bankruptcy court ruled that it has exclusive jurisdiction over the rejection of FERC-approved PPAs, not concurrent jurisdiction with FERC, and such matter is now before the U.S. Court of Appeals for the Ninth Circuit. Should the Ninth Circuit affirm, the resulting split between the Sixth and Fifth Circuits, on one hand, and Ninth Circuit, on the other hand, could make the jurisdictional issue ripe for U.S. Supreme Court review.

## REVISIONS TO PJM INTERCONNECTION MARKET RULES

### (MINIMUM OFFER PRICE RULE EXPANSION)

In an order issued on December 19, 2019, FERC directed PJM Interconnection, L.L.C. to revise its Open Access Transmission Tariff and expand its Minimum Offer Price Rule to address the price-distorting impacts of resources receiving out-of-market price support. FERC's directive will have

widespread implications for participants in PJM Interconnection, the largest wholesale competitive electricity market in the country.

PJM Interconnection employs a Reliability Pricing Model (i.e., a forward capacity market) to ensure an adequate supply of generation resources in future delivery years. Historically, PJM Interconnection employed the Minimum Offer Price Rule to ensure that new resources did not depress capacity market prices below a competitive level. The Minimum Offer Price Rule, however, did not apply to baseload resources that took more than three years to develop. As a result, the Minimum Offer Price Rule's application was limited to certain natural gas fired resources which were required to operate at or above a default price offer floor. In response to complaints filed by a number of existing generators alleging that state subsidies were suppressing capacity market prices because they allowed resources to submit bids lower than their true costs, FERC significantly expanded the Minimum Offer Price Rule.

Specifically, FERC directed PJM Interconnection to apply the Minimum Offer Price Rule to both new and existing resources, internal and external, that receive out-of-market payments. FERC found that "the accommodation of state subsidy programs would have unacceptable market distorting impacts that would inhibit incentives for competitive investment in the PJM Interconnection market over the long term." As a consequence, FERC has directed PJM Interconnection to apply the Minimum Offer Price Rule to all resource types and both existing and new resources. Resources that do not clear in the capacity market under the new Minimum Offer Price Rule can still sell energy and ancillary services in the relevant PJM Interconnection markets.

As defined by FERC, a state subsidy is a direct or indirect payment, concession, rebate, subsidy, non-bypassable consumer charge, or other

financial benefit that is (1) (a) a result of any action, mandated process, or sponsored process of a state government, a political subdivision or agency of a state, or an electric cooperative formed pursuant to state law, and that (b) is derived from or connected to the procurement of (i) electricity or electric generation capacity sold at wholesale in interstate commerce, or (ii) an attribute of the generation process for electricity or electric generation capacity sold at wholesale in interstate commerce, or (2) will support the construction, development, or operation of a new or existing capacity resource, or (3) could have the effect of allowing a resource to clear in any PJM Interconnection capacity auction.

FERC did provide for limited exemptions to the expanded Minimum Offer Price Rule, including exemptions for certain self-supply resources; exemptions for certain demand response, energy efficiency, and capacity storage resources; and exemptions for resources that certify they will forego any state subsidies (i.e., a "competitive exemption"). FERC also directed PJM Interconnection to maintain its unit-specific exemption that enables mitigated resources to justify offers below the default offer floor. FERC gave PJM Interconnection ninety days to make a compliance filing, including revised dates and timelines for its 2019 and 2020 capacity auctions.

## PURPA REFORM

On September 19, 2019, FERC issued a notice of proposed rulemaking proposing to modernize its regulations implementing Public Utility Regulatory Policies Act of 1978, as amended (PURPA). If adopted, the proposed changes will have significant implications for owners and developers of small renewable and cogeneration facilities relying on PURPA contracts, as well as the utilities that purchase from them. Most notably FERC proposed the changes discussed in more detail below to its existing regulations.

## MANDATORY PURCHASE OBLIGATION

Under current FERC regulations, there is a rebuttable presumption that qualifying facilities with a capacity greater than 20 MW have non-discriminatory access to the CAISO, ERCOT, ISO-NE, MISO, NYISO, PJM Interconnection, L.L.C., and SPP markets, and that utilities that are members of such markets should be relieved of the obligation to purchase electric energy from qualifying facilities. The notice of proposed rulemaking proposes to reduce that threshold to 1 MW for small power production facilities (but leave it unchanged for cogeneration facilities).

### *Rates*

The notice of proposed rulemaking proposes a number of changes that would grant states more flexibility with respect to the rates to be received by qualifying facilities and could significantly reduce the rates that qualifying facilities will receive, including the ability to:

- require that energy rates (but not capacity rates) in qualifying facilities' power sales contracts and other legally enforceable obligations vary in accordance with changes in the purchasing utility's avoided costs at the time the energy is delivered;
- allow qualifying facilities to retain their rights to fixed energy rates, but to base such energy rates on projections of what energy prices will be at the time of delivery during the term of a qualifying facility's contract;
- set as available qualifying facility energy rates: (a) if the qualifying facility is selling to a utility in an organized wholesale power market, at the locational marginal price in that market; or (b) if the qualifying facility is selling to a utility outside of an organized wholesale power market, at competitive prices from liquid market hubs or calculated from a formula

based on natural gas price indices and heat rates; and

- set energy and capacity rates based on competitive solicitations (such as requests for proposals) conducted in a transparent and non-discriminatory manner.

## LEGALLY ENFORCEABLE OBLIGATIONS

States would be required to establish objective and reasonable criteria to determine a qualifying facility's commercial viability and financial commitment to construction before a qualifying facility is entitled to a contract or legally enforceable obligation, potentially increasing the front-end efforts and expenses experienced by qualifying facilities.

## PROTESTS OF SELF-CERTIFICATIONS

The notice of proposed rulemaking would allow an entity to protest a qualifying facility self-certification or self-recertification without having to file for a declaratory order, potentially increasing the risk of challenges by other parties by reducing the burden of engaging in such challenges.

## ELECTRIC TRANSMISSION INCENTIVES

The Energy Policy Act of 2005, which added Section 219 of the Federal Power Act (FPA), directed FERC "to promulgate a rule providing for incentive-based rates for electric transmission for the purpose of benefitting consumers through increased reliability and lower costs of power." On March 31, 2019, FERC issued a notice of inquiry seeking comments on its existing transmission incentives policy.

FERC's transmission incentives policy is set forth in Order No. 679, as clarified in a 2012 Incentives Policy Statement providing additional guidance. Under FERC's existing policy, incentives can be awarded to transmission-only companies, for RTO/ISO participation, for the use of advanced technologies, in the form of 100 percent of

Construction Work in Progress in rate base and recovery of pre-commercial costs as an expense, through the use of hypothetical capital structures, by the recovery of the costs of abandoned plants, and through accelerated depreciation. Transmission providers seeking these incentives must demonstrate that there is a nexus between the incentive sought and the risks and challenges of the particular investment.

The notice of inquiry suggests that FERC is undertaking a comprehensive review of its incentives policy that could result in wholesale changes to how incentives are evaluated and awarded. To illustrate, the notice of inquiry requests comments on whether incentives should sunset or otherwise be of limited duration, whether some existing incentives should be eliminated altogether, and whether different metrics such as network security and resilience should be considered in determining if incentives should be awarded. The notice of inquiry drew a substantial response from interested stakeholders, with transmission providers arguing for the retention and expansion of existing incentives and consumer groups and transmission customers arguing for the elimination or a diminution of existing incentives. There is no indication of when FERC will act or what steps FERC will take next in response to stakeholder comments.

### ENERGY STORAGE AND MISO STORAGE AS TRANSMISSION-ONLY ASSETS

In February 2018, FERC issued Order No. 841, which required ISOs and RTOs to create frameworks for energy storage resources to participate in their wholesale energy, capacity, and ancillary services markets.<sup>5</sup> Considered a landmark rulemaking by FERC commissioners and industry alike, Order No. 841 required each of the six ISOs and RTOs to make compliance filings with proposed changes to their Open Access Transmission Tariff and set a deadline for implementation of December 3, 2019.

On October 17, 2019, FERC issued its first two approvals of grid operator plans to PJM Interconnection, L.L.C. and SPP.<sup>6</sup> PJM Interconnection was required to implement most of its plan by December 3, 2019, and SPP was granted a seven month extension to implement its plan in order to create a new settlement management system.<sup>7</sup> Between November 21 and November 22, 2019, FERC accepted the plans of CAISO, ISO-NE, and MISO, requiring that all three implement their plans by December 3, 2019.<sup>8</sup> Finally, on December 20, 2019, FERC accepted NYISO's compliance filing in part, requested a further filing within sixty days, and granted an extension on implementation until May 1, 2020.<sup>9</sup>

PJM Interconnection began implementation of Order No. 841 on December 3, 2019; however, an important piece of its plan remains outstanding. PJM Interconnection proposed a minimum run-time requirement for energy storage resources of 10 hours, which was intended to reflect peak load during a summer workday. A large group of industry associations, utilities, and private concerns responded, claiming that such a run-time is unjust and unreasonable. A 10-hour run-time would effectively exclude battery resources from participating in wholesale markets. In response, FERC instituted a FPA Section 206 proceeding, which allows for public comment and briefing following publication in the *Federal Register*.<sup>10</sup> On November 26, 2019, PJM Interconnection requested an extension of time to file its brief, until March 11, 2020.<sup>11</sup> PJM Interconnection's motion has been supported by industry commentators.<sup>12</sup> FERC has yet to rule on PJM Interconnection's motion and the public comment period in the *Federal Register* has ended.

The National Association of Regulatory Utility Commissioners, American Public Power Association, American Municipal Power, Inc., Edison Electric Institute and National Rural



Electric Cooperative Association filed Petitions for Review of FERC Order No. 841 before the D.C. Circuit Court.<sup>13</sup> The petitioners argue, among other things, that the application of Order No. 841 to energy storage resources on local electricity distribution systems, which generally fall within state jurisdiction, conflicts with the FPA. FERC filed its response brief on January 31, 2020, arguing that the order does not infringe on the interests to which the petitioners have alleged harm. Oral argument has not yet been scheduled.

In an independent but complementary proceeding, on December 12, 2019, MISO submitted a filing to FERC pursuant to Section 205 of the FPA proposing revisions to the MISO Open Access Transmission, Energy, and Operating Reserve Market Tariff to enable an energy storage facility to become a SATOA in the MISO Transmission Expansion Plan. If accepted by FERC, energy storage facilities could be selected as a preferred solution to an identified transmission problem in the MISO Transmission Expansion Plan process similar to how traditional transmission solutions are selected today. MISO believes that using energy storage as transmission-only assets will enable the utilization of more energy storage resources and increase the functionalization of these resources to enhance system reliability.

Under MISO's proposal, a SATOA must meet minimum qualifications as a transmission project and the framework for studying these projects is intended to apply the same criteria as is applied to a traditional wire solution. MISO also has proposed a framework for evaluating SATOAs against other transmission solutions, including through an assessment of whether the SATOA can address identified transmission issues in all hours in which the issue exists and the SATOA's life-cycle cost relative to other proposed solutions. MISO's proposal includes cost assumptions to be considered that address, among other things, direct capital costs, expected

useful life, and equipment replacement schedules. Of note, MISO's proposal explicitly prohibits SATOAs from participating in MISO's markets except for purposes of providing the transmission service it was selected to provide in the MISO Transmission Expansion Plan process and maintaining its state of charge. FERC has not yet acted on MISO's proposal.

## ELECTRIC TRANSMISSION RETURN ON EQUITY DEVELOPMENTS

On November 21, 2019, FERC issued Opinion No. 569, establishing a base return on equity of 9.88 percent for the transmission-owning members of MISO. Opinion No. 569 was noteworthy for a number of reasons, including: (1) FERC's adoption of a new methodology to determine whether a base return on equity is unjust and unreasonable; (2) the adoption of that same methodology to establish the new base return on equity; and (3) the resultant reduction in the base return on equity of 250 basis points of the transmission-owning members of MISO.

In a previous order in this complex proceeding, FERC had proposed to rely on three financial models—a discounted cash flow model, a capital asset pricing model, and an expected earnings model—to establish a composite zone of reasonableness to evaluate whether an existing return on equity remained just and reasonable. If a rate was determined to be unjust and unreasonable, FERC would employ four financial models, the three listed above plus a Risk Premium Model, to determine a new just and reasonable rate. In Opinion No. 569, however, FERC changed course and determined that it would rely only on the discounted cash flow model and capital asset pricing model to both assess whether an existing rate is unjust and unreasonable and to determine a new just and reasonable rate.

To assess the rate of the transmission-owning members of MISO, FERC established a zone of reasonableness using the discounted cash flow model and capital asset pricing model and evaluated the existing rate taking into account the utilities' average level of risk. For average risk utilities, FERC uses the quartile around the midpoint of the zone of reasonableness. Using this methodology, FERC determined that the base rate of 12.38 percent of the transmission-owning members of MISO during the initial complaint period was unjust and unreasonable. As required by section 206 of the FPA, FERC then established a new base return on equity for the transmission-owning members of MISO using the central tendency of the overall zone of reasonableness established by the discounted cash flow model and capital asset pricing model methodologies. FERC also dismissed a second complaint that immediately followed the initial complaint's refund effective period, finding the newly established rate of 9.88 percent was in the zone of reasonableness for the second complaint period.

A number of parties to the proceeding have filed requests for rehearing of Opinion No. 569, alleging, among other things, legal errors related to the methodology used by FERC to assess and establish a base return on equity and the dismissal of the second complaint. In addition, a number of entities who were not parties to the proceeding intervened out-of-time and filed for rehearing given that Opinion No. 569 could have widespread application and ramifications outside of MISO. FERC has not yet acted on the rehearing requests.

### REMIT ENFORCEMENT INTENSIFIES

The EU Regulation on Wholesale Energy Market Integrity and Transparency (REMIT), introduced back in 2012, is a sector-specific legal framework for identifying and penalising insider trading and market manipulation in wholesale electricity and

gas markets in the EU. This broad framework applies to any person/entity that participates in, or whose conduct affects, EU wholesale energy markets, irrespective of whether the person/entity resides or is based in the EU.

In recent months, there has been a clear increase in the number of investigations into violations of REMIT, as well as the scale of sanctions for non-compliance. However, there remains significant uncertainty regarding the precise scope and application of certain key provisions. REMIT prohibits abusive practices in wholesale energy markets. Specifically, REMIT prohibits insider trading and requires market participants supplying into the EU market to publicly disclose inside information. REMIT also prohibits "market manipulation," which includes false/misleading transactions, price positioning, transactions involving fictitious devices/deception, and disseminating false or misleading information.

Market participants are also required to report suspected violations of REMIT to the relevant national authority. All wholesale energy market transactions, including orders to trade, must be reported at EU-level to the Agency for the Cooperation of Energy Regulators (ACER). ACER then screens this information to identify possible market abuses and, where necessary, alerts and coordinates with national agencies, which are responsible for enforcing compliance and imposing sanctions.

2018 was the first full year of market monitoring by ACER, during which it received approximately three million data records per day. This trend has continued in 2019. ACER has cited improving the quality of this data as a key priority. ACER has now also been given legal powers to introduce registration fees for market participants, to ensure that it has sufficient resources to undertake its market monitoring role.

National regulatory agencies, including the Spanish Commission for Markets and

Competition and the Federal Network Agency of Germany, have issued six decisions regarding market manipulations in violation of REMIT over 2018/2019. This demonstrates a clear trend towards more active enforcement by national agencies. Dawn raids under REMIT have become more common. Additionally, the Federal Network Agency of Germany<sup>14</sup> notably fined two individual traders for gas market manipulation. In 2015, Iberdrola was fined €25 million by the Spanish Competition and Markets Authority for raising the prices for its hydroelectric plants by reducing the quantity it dispatched in the day-ahead market. Iberdrola has appealed this decision. To date, the highest fine issued to a company for non-compliance is €25 million, although sanctions are typically more modest.

This enforcement trend includes investigating certain practices, particularly those involving high prices and unusual price spikes, as violations of REMIT, rather than as violations of competition law (as was traditionally the case). Given the general lack of precedents, however, the boundaries between legitimate and illegitimate market behaviour remain unclear—especially in fast changing markets. For example, legitimate arbitrage between markets in certain circumstances may be captured by REMIT's broad prohibition of "manipulation."<sup>15</sup> The EU's recent legislation governing wholesale and retail markets generally encourages price spikes as necessary signals to stimulate new investment, but at the same time, as long as the boundaries between legitimate and illegitimate market behaviour remain problematic, fears of being accused of market manipulation in times of supply scarcity may lead to doubts as to how robust the signals might be. The broad and arguably vague definition of "inside information" is also problematic, as it can be unclear to market participants when the obligation to disclose such information comes into play.

## FOREIGN DIRECT INVESTMENT SCREENING FOR INVESTMENTS IN THE ENERGY SECTOR

Due to rising geopolitical and trade tensions, governments have started introducing new rules and policies to safeguard national security while seeking to maintain investment flows. Such policies essentially consist of the establishment of screening mechanisms responsible for assessing the compatibility of Foreign Direct Investment (FDI) with national security and public order.

Initially, policies for controlling foreign investment on national security grounds mainly targeted military hardware and traditional defense sectors and, occasionally, sensitive areas of land such as in border areas. In recent years, countries have reevaluated threats to national security from foreign investment and have adapted their FDI policies accordingly. More economic sectors and critical assets, including energy, telecommunications and healthcare services, are now considered to be potentially sensitive from a national security standpoint. The privatization of previously state-owned monopolies has also opened up infrastructure related markets to private foreign investors, adding sectors such as electricity generation and distribution, railways and water supply to the list of critical sectors. Advanced technologies such as artificial intelligence and robotics are the most recent additions to the list of critical assets, while access to sensitive information, including personal data, is also increasingly being identified as of potentially strategic importance.

Activities in the energy sector can fall under the scope of application of FDI screening rules in countries where energy generation or infrastructure are listed among the critical sectors that are subject to review. The list of relevant countries includes the U.S., Australia, China, Japan, UK, Germany, France, Austria, Italy and Spain. Nonetheless, there is still considerable

divergence across jurisdictions in terms of the scope of application of the FDI screening mechanisms, the review processes and, most importantly, the areas and industries of focus.

In light of the above, a foreign investor acquiring an interest in a company operating in the energy sector should carefully consider the risk of foreign investment screening procedures and would thus need to have recourse to the national rules in each of the countries where the company is active directly or through its affiliates, in order to assess the likelihood of an FDI filing obligation. Moreover, attention should be drawn to the fact that each country has adopted different definitions on which specific activities and assets in the energy sector could be subject to review.

In the U.S., the scope of the foreign investment review has been broadened to include more transactions in the energy sector. More specifically, under the new rules, which will enter into force on February 13, 2020, the jurisdiction of the Committee on Foreign Investment in the U.S. (CFIUS) will also cover certain non-controlling foreign investments in an unaffiliated U.S. business that involves critical infrastructure. Even though CFIUS is still expected to issue additional regulations on the definition of critical infrastructure, this provision is likely to impact investments related to domestic energy infrastructure, such as the U.S. power transmission grid or strategic petroleum reserves. In addition, the new rules also capture the purchase, lease and concession of U.S. real estate that is in close proximity to U.S. military or other sensitive U.S. government locations or are part of an air or maritime port. This provision is likely to capture energy deals where, for example, a non-U.S. company acquires or leases a parcel of land to develop wind or solar assets or to extract oil and gas, depending on the location of the land.

At the EU level, concerns over the increasing number of investments by non-EU companies in the energy sector, including by Chinese state-

owned enterprises, led, together with other strategic considerations, to the adoption of a regulation establishing a framework for screening of FDI, which entered into force in April 2019. For the purposes of ensuring cohesion across the FDI screening mechanisms of the EU countries, the regulation provides an indicative list of sectors that could affect security and public order in EU countries, including investments in critical infrastructure related to energy, as well as energy supply.

The operation of critical infrastructure such as energy has become an increasingly sensitive issue at the national level. In July 2018, the German Government intervened when a Chinese state-owned grid corporation attempted to acquire a 20% stake in 50Hertz Transmission GmbH, a German power grid operator. Since the Chinese operator intended to acquire only 20%, the investment was not covered by the FDI review rules in place at the time. The government, therefore, supported another shareholder of 50Hertz in acquiring the stake which was subsequently sold to a state-owned German entity. In the meantime, the German government revised the FDI screening rules in order to cover direct and indirect acquisitions of at least 10% of the voting rights of German companies that operate in the area of "critical infrastructure." In 2020, further changes can be expected, as the German government plans to modernize its Foreign Trade and Payments Act. In this context, it is likely that the government will lower the screening thresholds also for other sectors, define sectors relevant to inspection more precisely, and extend inspection periods.

The list of countries with FDI rules covering foreign investments in the energy sector is expected to expand further, as many governments are currently revising their policies and rules in order to control the impact of foreign investments on national industrial policy and competitiveness. In the coming years, stringent

foreign investment screening is set to become the norm in many countries and foreign investments in the energy sector will increasingly fall under the scope of assessment on national security grounds.

### POWER COMPANIES ADVANCE VOLUNTARY AVIAN PROTECTION WITHOUT THREAT OF LIABILITY FOR INCIDENTAL TAKINGS

With shifts in political winds come shifts in agency legal interpretations. In January 2017, the solicitor of the Department of the Interior issued a formal legal opinion interpreting the Migratory Bird Treaty Act (MBTA) to prohibit the incidental taking (accidental injury or death) of migratory birds. This “midnight” legal opinion was widely viewed as an effort to “lock in” the Obama administration’s interpretation that the MBTA prohibits incidental takings.

Less than one year later, the Department of the Interior issued Opinion M-37050, which interpreted the MBTA not to prohibit the incidental taking of migratory birds. Since then, a flurry of administrative, legislative, and judicial activity has ensued. There is pending litigation challenging the Trump administration’s interpretation and draft legislation that would overrule such interpretation. At the same time, the Department of the Interior is advancing a proposed rule to put the Trump administration’s interpretation into a regulation. Regardless of these shifts and uncertainties, one thing has remained constant—power companies have continued to commit resources to protect migratory and other birds and their habitats.

#### THE STATE OF THE LAW

The MBTA provides that “it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, [or] attempt to take, capture or kill . . .” protected migratory birds. Courts that have addressed whether this

provision prohibits the incidental taking of migratory birds from otherwise lawful conduct have landed in different places. Some have concluded that criminal and civil liability under the MBTA attaches to incidental taking, while other courts have concluded the opposite. This split among the circuit courts has created a fractured MBTA legal regime.

Only days before President Trump took office, then-Interior Solicitor Hilary Tompkins issued Opinion M-37041, which concluded that “the MBTA’s broad prohibition on taking and killing migratory birds by any means and in any manner includes incidental taking and killing.” However, after President Trump took office, the Department of the Interior temporarily suspended Opinion M-37041. Subsequently, in December 2017, Acting Interior Solicitor Daniel Jorjani issued Opinion M-37050, which permanently withdrew and replaced Opinion M-37041, and concluded that “the statute’s prohibitions on pursuing, hunting, taking, capturing, killing, or attempting to do the same apply only to affirmative actions that have as their purpose the taking or killing of migratory birds, their nests, or their eggs.” In other words, under Opinion M-37050, the MBTA’s prohibitions do not apply to incidental takings arising from otherwise lawful conduct.

Since the issuance of Opinion M-37050, several environmental organizations and a coalition of states have challenged such opinion by filing lawsuits in the U.S. District Court for the Southern District of New York. Among other things, these lawsuits allege that Opinion M-37050 is inconsistent with the plain language of the MBTA, constitutes a legislative rule that was not subjected to notice-and-comment rulemaking procedures required by the Administrative Procedure Act, and violates the National Environmental Policy Act. On July 31, 2019, the court partially granted the Department of the



Interior's motion to dismiss in the now-consolidated action, holding that Opinion M-37050 is an interpretive rule and dismissing the claim alleging a notice-and-comment violation. The remaining claims will now proceed to the merits.

On the merits, plaintiffs undoubtedly will rely on the 1978 decision of the U.S. Court of Appeals for the Second Circuit in *United States v. FMC Corporation*. In that case, the court concluded that the MBTA prohibited the incidental taking of migratory birds caused by a company's handling of highly toxic pesticides. However, the court, acknowledging ambiguity in the text of the statute, declined to conclude that the MBTA's plain language required this outcome. Instead, the court focused on principles of strict liability for engaging in "extrahazardous activities," while making clear that interpreting the MBTA generally to prohibit incidental takings "would offend reason and common sense." Any decision on the merits would likely implicate the *Skidmore* deference doctrine applicable to an agency's statutory interpretation reflected in legal opinions and other guidance documents. As a result, the court likely would afford the Department of the Interior's interpretation some weight.

## POWER COMPANY AVIAN PROTECTION EFFORTS

Regardless of the outcome of the pending litigation and the proposed rule to codify Opinion M-37050, power companies have shown that they will continue their voluntary efforts to reduce incidental taking of birds. They have been developing and implementing avian protection policies to protect birds from power lines and wind turbines, conducting and funding innovative avian protection research, and partnering with nonprofit and governmental organizations to, among other things, support conservation efforts. These under-recognized (and often unrecognized) efforts deserve greater attention from policymakers, regulators, and the public at large.

Since the formation of the Avian Power Line Interaction Committee (APLIC) in 1989, electric utilities have collaborated with the U.S. Fish and Wildlife Service to reduce avian electrocution and collision mortality. APLIC, whose members own nearly 80% of U.S. power lines, voluntarily developed Avian Protection Plan (APP) Guidelines to help companies reduce avian interactions with electric utility facilities. Many power companies have relied on these guidelines to develop their own APPs.



# OIL AND GAS

---

*"The team at Baker Botts has 'deep knowledge and relevant industry experience' across the full range of upstream, midstream and downstream oil and gas work."*

*Legal 500, 2019*

## UPSTREAM OIL AND GAS AND MINERAL/ROYALTY

### 2019 IN REVIEW AND HIGHLIGHTS

While the U.S. equities markets achieved historical highs during 2019, the upstream oil and gas industry continued to face challenges as a result of continued low commodity prices and global economic volatility. These factors continued to exert downward pressure on the industry and fueled uncertainties as the calendar flipped to 2020.

Public E&P companies continue to face pressure from investors to mitigate volatility, increase returns and maintain strong free cash flow, all while remaining within a manageable leverage profile. This sentiment has limited access to both bank and traditional capital markets financing for many operators. Potential weakening global economic growth, climate change concerns and regulatory and political uncertainties have also contributed to lower growth in the sector. In the mergers and acquisitions space, the aforementioned challenges have created a value mismatch, as buyers are unwilling to pay the multiples that sellers are requesting, resulting in decreased deal volume. Private equity sponsors, unable to find suitable exit transactions due to this value mismatch, are pressuring their operating portfolio companies to merge in an attempt to maximize synergies and hopefully unlock unrealized value.

The per barrel price of crude oil held steadily between the mid \$50s to \$60s in 2019. Brent crude oil prices averaged around \$63 per barrel, as the international benchmark has traded mostly within the \$60 to \$65 price range. WTI crude oil prices averaged around \$57 per barrel and traded mostly within the \$52 and \$58 price range with a high of \$66.30 in April. Factors at play suppressing price increases included increased stockpiles and weaker refinery demand, increased U.S. domestic production and global trade uncertainty impacting investment and development and contributing to a lower demand for oil. Tension between the U.S. and Iran, Iranian attacks on Gulf of Oman shipping and Saudi refining capacity, and other flash points in 2019 in the Middle East in Yemen, Syria and Iraq had modest but temporary upward impacts on oil prices.

Price increases in December 2019 may indicate an improved market expectation for 2020 based on global trade factors, including the potential for a U.S.-China trade deal and the UK's recent withdrawal from the EU OPEC's continued production cuts through the second quarter of 2020 and continued Middle East regional tensions may also contribute to price growth and volatility in the first quarter of 2020.

Similar to 2018, mergers and acquisitions in the upstream sector was dominated by several multi-billion-dollar mergers. The capital markets remained largely closed to most industry players. On the legal and regulatory front, climate change, hydraulic fracturing, the building of pipelines and opening of public land to drilling, as well as the energy transition, are all issues that continue to receive a large amount of attention and scrutiny and present ongoing legal and business implications.

### ENERGY TRANSITION TO CONTINUE

The comparative price of renewables compared to fossil fuels continued to improve in most regions globally in 2019 as demand for renewable energy sources grew strongly in both industrial and emerging markets. The adoption of clean technologies, at costs that directly threaten fossil fuel power generation and the use of fossil fuels in the automotive industry, is happening at a faster pace globally than originally anticipated, raising the prospect that the continued rise in demand for fossil fuels may start to stall in the 2020s. International oil companies, their investors and investors in the oil and gas sector more broadly, continue to take note of these changes and are well placed to work together to deploy their sector expertise, finance and technologies to make such transitions. The Oil and Gas Climate Initiative, which includes BP p.l.c., Eni

S.p.A., Repsol S.A., Royal Dutch Shell plc, Saudi Arabian Oil Co., Total, Equinor ASA and Exxon Mobil Corporation, among others, aims to increase investments in carbon use and storage and to develop decarbonisation strategies within their upstream sector operations. These changes are already impacting the availability of capital to drive oil and gas investments and mergers and acquisitions activity globally, and this trend is expected to continue and accelerate through 2020.

### MERGERS AND ACQUISITIONS

Overall deal volumes in 2019 were largely in line with those in 2018, with North American deals leading the charge as the top region for oil and gas deals ahead of Europe and Asia-Pacific. U.S. oil and gas mergers and acquisitions markets saw more than \$96 billion of transactions in 2019, with the majority coming from the upstream industry. This was the highest annual total since \$101 billion was recorded in 2014. However, 60% of that value came from a single transaction when Occidental Petroleum Corporation acquired Anadarko Petroleum Corporation for \$57 billion in the largest oil and gas deal of the decade. 2019 also saw a number of mega-deals from around the globe, including Var Energi AS's \$4.5 billion acquisition of ExxonMobil's Norwegian interests, Saudi Aramco's roughly \$15 billion acquisition of a 20% stake in Reliance Industries Limited's oil/chemicals business and MOL Plc's \$1.57 billion acquisition of Chevron Corporation's Azerbaijan upstream/midstream assets.

The U.S. shale sector continued to be a significant contributor to the 2019 mergers and acquisitions figures with opportunities in the Permian Basin, which have comparatively lower costs than other basins, remaining strong to dominant. One notable transaction was Ecopetrol S.A.'s purchase of Occidental's Permian Basin interests for \$1.5 billion.

### UK TRENDS

The trend for oil majors to sell-down and progress North Sea exit strategies continued in 2019, with deals announced in the second quarter of 2019 including ConocoPhillips' asset sale to Chrysaor E&P Limited for \$4.8 billion and Ithaca Energy Limited's \$2 billion acquisition of Chevron assets. These deals progressed despite value uncertainty affecting large portfolio sales processes, triggered by 2018 oil price declines, although private equity interest in these opportunities remained strong. There is rumoured interest from a range of parties in UK North Sea interests still held by ExxonMobil, with ExxonMobil understood to be planning a full withdrawal after many years as a dominant UK oil and gas producer. In mid-to-small scale deals, PT Medco Energi Internasional Tbk's \$539 million acquisition of Ophir Energy plc and the acquisition of Marathon Oil UK by RockRose Energy plc for \$140 million were of note.

### NOTABLE MERGERS AND ACQUISITIONS TRANSACTIONS

#### *Occidental's \$57 billion acquisition of Anadarko*

On August 8, 2019, Occidental announced the successful completion of its acquisition of Anadarko in a transaction valued at \$57 billion, including the assumption of Anadarko's debt. More than 99% of Anadarko's shareholders voted in favor of the Occidental merger agreement pursuant to which they received \$59.00 in cash and 0.2934 shares of Occidental common stock per share of Anadarko common stock, which combined for a total value of \$72.34 per share.

This came after Chevron backed out of its own \$33 billion attempted acquisition of Anadarko when Occidental submitted a superior bid in May. Occidental was able to submit its superior bid, in part, due to a \$10 billion preferred stock investment from Warren Buffett's Berkshire Hathaway Inc. Subsequently, Carl Icahn, who owns a significant portion of Occidental stock, unsuccessfully attempted to halt the deal. Icahn

and Occidental now appear to be gearing up for a proxy battle in 2020.

#### *BP sells Alaska assets to Hilcorp Alaska for \$5.6 billion*

On August 27, 2019, BP announced that it agreed to sell its entire business in Alaska to Hilcorp Alaska, LLC. Under the terms of the agreement, Hilcorp Alaska will pay BP total consideration of \$5.6 billion, comprised of \$4.0 billion payable near-term and \$1.6 billion through an earnout thereafter. The sale includes BP's entire upstream and midstream business in the state, including BP Exploration (Alaska) Inc., the entity that owns all of BP's upstream oil and gas interests in Alaska, and BP Pipelines (Alaska) Inc.'s interest in the Trans Alaska Pipeline System. Subject to state and federal regulatory approval, the transaction is expected to be completed in 2020. The deal forms a significant part of BP's plan to divest \$10 billion of assets over 2019 and 2020.

#### *Callon's \$2.7 billion merger with Carrizo*

On December 20, 2019, Callon Petroleum Company announced that it had completed its \$2.7 billion merger with Carrizo Oil & Gas, Inc. The transaction initially faced opposition from hedge fund Paulson & Co. Inc., who asserted that the premium was too high and that Callon would lose its position as a Permian Basin pure play by acquiring a company with holdings in the Eagle Ford Shale. Under the terms of the final merger agreement, Carrizo shareholders received 1.75 shares of Callon common stock for each share of Carrizo stock they owned. This consideration represented a reduction to the equity exchange ratio the companies originally agreed to when the all-stock transaction was first announced in July and increased the share of the combined company owned by Callon stockholders post-merger. Combined, the company holds core oil-weighted positions in both the Permian Basin and Eagle Ford Shale with over 100,000 barrels of oil equivalent per day of pro forma production.

#### *WPX's \$2.5 billion acquisition of privately held Felix Energy II*

On December 16, 2019, WPX Energy, Inc. announced that it agreed to acquire Felix Energy Holdings II, LLC from private equity firm EnCap Investments L.P. for \$2.5 billion. WPX's acquisition of EnCap-funded Felix Energy II, which was formed in September 2015, shows there are still exits available for the "built to sell" model of private equity portfolio companies. Notably, this was the largest oil and gas deal of the fourth quarter of 2019 and fourth largest oil and gas deal of 2019.

#### *Kimbell Royalty Partners' Mineral and Royalty Acquisitions from EnCap, NGP and Others*

In the mineral and royalty sector, Kimbell Royalty Partners, LP engaged in multiple acquisitions in 2019 and early 2020 totaling over \$350 million. Among these transactions were Kimbell Royalty Partners' \$150 million acquisition of EnCap Investments L.P.-backed Phillips Energy Partners in February 2019 and its \$175 million pending acquisition of NGP Energy Capital Management LLC-backed Springbok Energy Partners in January 2020. After taking the Springbok Energy Partners acquisition into account, Kimbell Royalty Partners estimates that over 96% of all rigs operating in the continental U.S. at the end of 2019 are located in counties where it holds mineral and royalty interests and that approximately 12% of all rigs operating in the continental U.S. are actively drilling on its combined acreage.

## CAPITAL MARKETS

### *Equity*

The public equity capital markets remained effectively closed for most operators in 2019 and are likely to remain closed in 2020 barring a sustained rise in commodity prices. One bright spot in the industry was in the mineral and royalty sector, which saw multiple equity raises by different mineral and royalty companies in 2019 (Viper Energy Partners LP and Brigham Minerals,



Inc.) and early 2020 (Kimbell Royalty Partners). In addition, there are a number of E&P operators and mineral and royalty companies that are currently in various stages of confidential registration with the SEC for an initial public offering.

Economic and political uncertainties, increasing ESG concerns and a growing rejection of the borrowing in the name of growth model all contributed to the challenging equity capital markets in 2019 and are expected to continue into 2020. Despite these challenges, more nimble private investors are focusing on smaller non-operated interest opportunities rather than larger company-wide deals.

The most notable initial public offering of 2019 was completed by Saudi Aramco on December 11 and also happened to be the world's largest (across all industries) to date. After months of speculation on the company's true value, Saudi Aramco listed 1.5% of its shares locally on the Saudi Tadawul where share price rose 10% on the first day of trading, giving the company a \$1.88 trillion valuation. In April 2019, Brigham Minerals completed its initial public offering, raising approximately \$245 million in proceeds.

#### *Debt*

The high-yield debt markets have essentially dried up for most upstream players. There is little to no access to the high-yield market for most E&P companies that have over 2.5x debt/EBITDA leverage. Continued lack of access to funds may further exacerbate market distress as maturities approach. In the bank markets, lenders have continued to tighten credit standards for reserve-based-loans due to the use of more conservative price decks.

2019 saw the creation of new and potentially transformative financial instruments in the oil and gas capital markets. In September, Raisa Energy LLC closed the industry's first rated securitization of oil and gas wells, achieving an investment-

grade rating and establishing a distinct, new asset class. In November, Diversified Gas & Oil PLC completed a \$200 million securitization of its gas wells. It remains to be seen whether these complex financial products can help alleviate some of the capital shortages in the industry without a corresponding influx of traditional capital providers.

#### *2020 Look Ahead*

In 2020, we anticipate that oil and gas companies and investors in the upstream sector will continue to evaluate their portfolios and energy strategies against a backdrop of global trade and political uncertainties, seeking value for money, portfolio strengthening and rationalisation in their deal-making. We expect decisions to be partly framed by a focus and conversation on decarbonising the global economy, which will lead to an increased focus on opportunities for diversification and investment in renewable energy, storage and related technologies.

The trend of industry consolidation, particularly in the upstream space, is expected to continue in the near term until there is more confidence in oil and gas prices. If commodity prices can remain stable and continue to increase, initial public offering planning and activity will resume. The Energy Information Administration predicts WTI crude oil prices to average \$59.25 per barrel and Brent crude oil prices to average \$67.53 per barrel in 2020. Ultimately, the floodgates for energy initial public offerings are expected to remain closed until investors have more clarity regarding economic growth, international trade and other geopolitical uncertainties.

In the mineral and royalty sector, 2020 promises to be another strong year. Industry analysts estimate that the mineral market is over \$500 billion in size, with public mineral and royalty companies representing only 2% of the market. The significant capital invested by private equity sponsors, combined with challenging capital markets opportunities and lack of scale for many

private companies, likely means continued consolidation and acquisition opportunities by well capitalized companies.

## MIDSTREAM

### THE PERMIAN BOTTLENECK CONTINUES TO DE-BOTTLENECK

Over the past few years, a shortage of pipeline space created a bottleneck for oil coming from the Permian Basin, the hottest U.S. shale basin, but experts expected that to end with an expansion of capacity that would help send more U.S. crude into the Gulf Coast and out onto the world market.<sup>16</sup> As expected, in 2019, players in the Permian Basin raced to increase pipeline capacity to accommodate the increasing production.<sup>17</sup>

The oil and gas industry built, and continues to build, pipelines as drillers aim to up their output from the Permian Basin to where it could double over the next four years to eight million barrels of oil per day (bopd).<sup>18</sup> That is more than all of the oil the U.S. produced just six years ago.<sup>19</sup> Crude loadings at the Port of Corpus Christi rose to a record 1 million bopd in August of 2019, after two major new pipelines carrying Permian Basin oil—EPIC and Cactus II—went into service.<sup>20</sup> Those lines have a total capacity of more than 1 million bopd, near-doubling the deliveries from July's average of 525,000 bopd.<sup>21</sup>

Regarding the Permian Basin bottleneck, Chevron Corporation said it has had more than sufficient takeaway capacity and primarily relies on pipelines but also a few trucks.<sup>22</sup> "Our offtake strategy allows us to keep up with our production," the company said in a statement. "In 2018, we had takeaway capacity for oil and liquids that was more than sufficient, and we have already added more capacity this year."<sup>23</sup> Exxon Mobil Corporation said it hoped to reach 1 million bopd in five years, and Chevron said it expects to more than double its output, taking production to 900,000 bopd by the end of 2023.<sup>24</sup> Several more

pipeline projects are in the construction phase as the Permian Basin continues to de-bottleneck, ensuring there will still be a battle for pipeline space in the future.<sup>25</sup>

### CONSTRUCTION/IN-SERVICE TRACKER

Coming off an active year for the midstream sector, 2020 is expected to see a number of new projects. Below are some major projects expected to impact the industry in 2020.

The Cactus II Pipeline will be further developed in 2020 to include new and expanded pipeline facilities with the ability to transport 670,000 bopd.<sup>26</sup> FERC approved the Cactus II Pipeline project development in April 2019, and full operations are anticipated to be commenced by mid-2020. The Cactus II Pipeline will transport oil from the Permian Basin to Corpus Christi and other nearby destination points.

The ICG terminal in the inner harbor of the Corpus Christi Ship Channel is currently under construction.<sup>27</sup> Upon completion of the project, the marine terminal will consist of a West Dock and an East Dock. The West Dock will be able to hold up to 750,000 barrels (bbl) at a maximum rate of 20,000 bbl/hour. The East Dock will be able to load up to 1,000,000 bbl at a maximum rate of 40,000 bbl/hour. The project is expected to enter service in the third quarter of 2020.

The Gray Oak Pipeline is expected to ramp up to full service in the first quarter of 2020 after having started line fill in October 2019.<sup>28</sup> The pipeline is expected to move 900,000 barrels of crude oil per day from the Permian Basin and Eagle Ford Shale to destinations near Houston and Corpus Christi.

Enbridge Inc. and Enterprise Products Partners L.P. have executed a letter of intent to jointly develop the deepwater terminal known as Sea Port Oil Terminal off the coast of Freeport, Texas.<sup>29</sup> The Sea Port Oil Terminal project includes two crude pipelines running from the port to the shore. Further, two single-point mooring buoys

will have the ability to load and export oil at 85,000 bbl/hour.

Construction has begun on the western phase of the Permian Highway Pipeline.<sup>30</sup> The pipeline is expected to carry up to 2.1 billion cubic feet of natural gas from the Waha Hub in Pecos County to the Gulf Coast. The partners working on the project (Kinder Morgan, Inc., EagleClaw Midstream Ventures, LLC and Altus Midstream Processing LP) intend to put the pipeline into service in the first quarter of 2021.

Harvest Midstream Co. has started construction on the Ingleside Pipeline and the Harvest Midway Terminal.<sup>31</sup> The project includes a 24-mile pipeline that will start at the Harvest Midway Terminal and connect to multiple oil export terminals in the Ingleside area. The pipeline will have a final capacity of 600,000 bopd. The project also includes the construction of a terminal that will cover 160 acres and have the capacity to store over 10,000,000 bbl. The pipeline is expected to begin service at the end of the first quarter of 2020. The terminal is expected to be in-service in the fourth quarter of 2020.

#### NEW PROJECT OPPORTUNITIES

As we look forward to 2020, several developments may create opportunities for new midstream projects. Recent dredging activity in ports, such as the Port of Corpus Christi, will allow for producers to export an increased amount of crude oil. Further, a proposed change to national environmental policy may speed up the time line for completion of midstream projects.

The Port of Corpus Christi has become the largest crude oil export port in the U.S. In 2019, the Port of Corpus Christi began the dredging work necessary to expand the Corpus Christi Ship Channel to prepare for the anticipated increase in U.S. crude oil exports.<sup>32</sup> The ship channel improvement project will deepen the ship channel entrance from 47 feet to 57 feet and widen the entrance from 400 feet to 530 feet. The

dredging work is expected to be completed in 2020. The dredging project will allow the port to increase its capacity for exporting crude.

A proposed change to national policy may lessen the time it takes for midstream projects to complete required environmental reviews. President Trump has proposed changes to narrow the scope of the National Environmental Policy Act.<sup>33</sup> The National Environmental Policy Act requires federal agencies to assess the impact of a major project before construction begins and to include the public in the process. The proposed changes would exclude from the definition of a “major federal action” privately financed projects that have minimal government funding or involvement. Other aspects of President Trump’s proposal would set deadlines for environmental reviews so that, with few exceptions, agencies would be required to finish their reviews within two years. If implemented, the changes would speed up the time line for many midstream projects.

#### ENERGY SECTOR STATE REGULATORY COMPETITIVENESS SURVEY

In November 2019, the Fraser Institute, a public policy think tank, performed a survey of senior upstream oil and gas sector executives designed to rank jurisdictions according to perceived barriers to investment in oil and gas E&P.<sup>34</sup> The survey found that, among 20 jurisdictions in the U.S. and Canada, Texas was the most favorable due to, among other factors, its “simple and efficient permitting process that provides much-needed certainty for investors.” Oklahoma, Kansas, and Wyoming followed closely after Texas. In contrast, California and Colorado ranked among the jurisdictions with higher perceived barriers. Only 10 percent of survey respondents for Texas indicated that the cost of regulatory compliance was a deterrent to investment. In Oklahoma and Kansas, this figure was 14 percent and 25 percent, respectively. In contrast, in California and Colorado, 90 percent of

respondents reported that investment was deterred due to the cost of regulatory compliance. The survey found that the differences among these states generally carried across to a variety of other factors, including the impact of uncertainty concerning environmental regulations, regulatory enforcement trends, and regulatory duplication.

#### FERC REQUESTS COMMENT ON APPLYING ELECTRIC RETURN ON EQUITY POLICY TO INTERSTATE OIL AND GAS PIPELINES

On March 21, 2019, FERC issued a notice of inquiry seeking comment on whether to change its return on equity policies that apply to cost-of-service ratemaking for interstate oil and gas pipelines to mirror the policies recently adopted for electric utilities.<sup>35</sup> The notice of inquiry was precipitated by a federal court decision in *Emera Maine v. FERC*,<sup>36</sup> which reversed and vacated an order in which FERC had established a new return on equity policy that it applied to certain electric transmission owners. Following that decision, FERC issued further orders revising its new return on equity policy and also issued the notice of inquiry, noting that it “recognize[d] the potentially significant and widespread effect of [its] ROE policies.” The notice of inquiry requests comment on, among other things, a transition from exclusive reliance on a two-step discounted cash flow model in its determination of just and reasonable rates to a multi-method evaluation, including, namely, use of the capital asset pricing model, the expected earnings model, and the risk premium method. In addition to the notice of inquiry proceeding, FERC has continued to further revise its new return on equity policy in individual rate proceedings involving electric transmission owners.

These possible changes to FERC’s return on equity policy have the potential to introduce uncertainty into the oil and gas pipeline ratemaking process, although the ultimate rate impact is difficult to predict. Notably, FERC’s trend with respect to

utilities has been to adopt changes to its new return on equity policy that have resulted in significantly reduced return on equity. Further, the application of a uniform and expanded ratemaking standard to both electric utilities and oil and gas pipelines could pose certain practical difficulties. For example, while FERC has been able to rely on numerous settlements over the preceding 15 to 20 years to support its analysis under the risk premium method, oil and natural gas pipelines are typically settled pursuant to “black box” arrangements where no agreed-upon return on equity is specified. In light of the pending notice of inquiry proceeding, real-time developments in the electric utility return on equity cases, and the high likelihood of further judicial review that will shape the final return on equity policy, jurisdictional pipelines and their investors should closely monitor this area.

#### MLPS EVOLVING TO SURVIVE (PERHAPS NOT AS MLPS)

Since oil prices collapsed in 2014, midstream MLPs have been evolving.

The traditional MLP structure included IDRs, which entitle the IDR holder to an increasing share (usually up to 50%) of distributions by the MLP above specified per common unit thresholds. Those MLPs emphasized maximizing distribution growth and used acquisitions (often drop downs from the parent) to drive such growth and increased IDR payouts. The combination of high distribution payouts and mergers and acquisitions activity also meant high leverage levels and frequent equity issuances, which was possible when MLPs had a low cost of capital and investors clamored for yield.

Today’s MLP model involves a simpler structure without IDRs and with lower leverage. MLP “2.0” focuses on organic growth projects and generating better returns on invested capital over externally financed acquisitions. Of necessity, the modern MLP seeks to be self-funding. Finally,

since investors do not give MLPs credit in low yield for high distribution growth, MLP management teams have been reducing their forecasted distribution growth rates.

The greatest trend at work, however, is abandoning the MLP structure entirely, in large part as funds flow out of actively managed midstream funds into passive generalist funds. Passive funds hold significantly more midstream C-corps than MLPs. For example, as of January 2020, BlackRock, Inc. funds held greater than 10% of the common equity of large cap midstream C-corps ONEOK, Inc. and Williams Companies, Inc. but less than 1% of large cap MLPs like Enterprise Products Partners L.P., Energy Transfer LP and Plains All American Pipeline, L.P. As a result, investors have enjoyed better returns in energy infrastructure from C-corps than MLPs. Additionally, entities structured as corporations for state law purposes (as opposed to merely for tax purposes) do not face the same investor skepticism about governance as partnerships do. C-corps also simplify tax compliance for investors.

As commentator Hinds Howard (the MLPguy) noted, despite 87 MLP initial public offerings in the last decade (primarily over the 2009–2014 period), the total number of energy MLPs has gone down over the same period.<sup>37</sup> There does not appear to be any indication that these trends will reverse in the near term.

## CAPITAL MARKETS

In 2019, the Alerian MLP Index (AMZ) generated positive total return (up 6.6%) for the first time since 2016. Most of that positive performance was in the first quarter of 2019, which was followed by eight months of negative returns and capped by the strongest December performance in many years. The broader Alerian Midstream Energy Index (AMNA), which includes energy infrastructure corporations and MLPs, outperformed the AMZ, generating a 24.0% total return for 2019. Both AMZ and AMNA

underperformed the broader market, which saw gains for the S&P 500 Index of close to 30%.

In the third quarter of 2019, no MLP in the AMZ cut its distribution—the first time that distributions have stayed at the same level or increased in a year. Year-over-year, nearly 83% of AMZ constituents grew or maintained their distributions. However, 2020 has already brought at least two significant distribution cuts.

Against this backdrop, traditional equity capital markets activity was virtually non-existent, with only three follow-on transactions in 2019 (two by former MLPs taxed as C-corps) raising \$0.9 billion (compared to seven transactions for \$2.3 billion in 2018).<sup>38</sup> New Fortress Energy LLC and Rattler Midstream LP, the only initial public offerings in the sector since 2017, collectively raised \$1.0 billion and both elected to be taxed as C-corps.

Debt market activity was similar year-over-year, with the number of deals increasing to 36 (from 34 in 2018) but gross proceeds decreasing to \$36.5 billion (from \$43.8 billion in 2018).<sup>39</sup> Debt offerings skewed toward the stronger issuers, with 16 transactions raising \$23.5 billion coming in the investment grade space.

## MERGERS & ACQUISITIONS

Mergers and acquisitions activity dropped off significantly in 2019, with 46 transactions announced having a disclosed value of \$64.2 billion (compared to 85 transactions for disclosed value of approximately \$146.9 billion in 2018). Take-private transactions and IDR simplifications were particularly popular. Sponsors of SunCoke Energy Partners, L.P., Teekay Offshore Partners L.P., Buckeye Partners, L.P., Andeavor Logistics LP, American Midstream Partners, LP, AmeriGas Partners, L.P. and Tallgrass Energy, LP took those companies private. IDRs were eliminated at PBF Logistics LP, EQM Midstream Partners, LP, Summit Midstream Partners, LP, GasLog Partners LP, Phillips 66 Partners LP, Hess Midstream



Partners LP, DCP Midstream Partners, LP and Noble Midstream Partners LP.

Drop downs were less common in 2019, as many drop down stories had largely played out. However, Shell Midstream Partners, L.P., Noble Midstream, PBF Logistics, GasLog Partners and Westlake Chemical Partners LP each purchased significant assets from their sponsors. Energy Transfer continued industry consolidation through its acquisition of SemGroup Corporation, and numerous MLP and midstream names added to their asset portfolios.

## 2020 OUTLOOK

Public commentary by MLPs around growth capital expenditures for 2020 indicate meaningfully lower capital investment by MLPs and midstream companies compared to 2019. These reductions also correlate with expected declines in the rate of production growth by upstream companies in 2020.

We anticipate that a few MLPs will convert to C-corps in 2020. Also, recognizing the need to appeal to generalist investors, MLPs will continue shifting to generalist metrics like return on invested capital, total shareholder return and earnings per share, rather than distributable cash flow and distribution coverage, to enhance comparability to non-MLPs.

2020 is off to a healthy start with several midstream and MLP names raising capital on a brief spike in crude oil prices in early January, including debt offerings by Energy Transfer, Enterprise Products, Western Midstream Partners, LP and Genesis Energy, L.P., plus a common equity raise by Kimbell Royalty Partners, LP and preferred unit issuances by Energy Transfer and Summit Midstream. However, we do not expect any MLP initial public offering activity, and we expect the public equity capital market to remain generally closed to MLPs.

We expect to see continued consolidation in MLPs and midstream in 2020. We believe that

additional sponsors will decide to buy-in their MLPs after concluding there is no longer sufficient benefit of having the public vehicle as a financing source. We also expect to see some of the remaining MLPs that still retain elements of the traditional structure (primarily smaller market cap MLPs) eliminate their IDRs. At the end of 2016, a majority of AMZ constituents retained IDRs; however, by the end of 2019, that number fell to less than 15%.

## MIDSTREAM REITS AS AN MLP SUBSTITUTE

In early 2019, the IRS published a ruling that has caused midstream businesses to look harder at accessing capital markets through a real estate investment trust (REIT) structure. As discussed below, REIT shares may be more attractive to many, if not most, investors than units in an MLP; so, if a midstream business can qualify to use the REIT structure, there may be a cost-of-capital advantage.

The idea that a pipeline, storage or other midstream business could be organized in the form of a REIT is not a new one; there has been at least one midstream REIT since 2013, CorEnergy Infrastructure Trust, Inc. With the highly-publicized exodus of many midstream companies from the MLP model in recent years, however, the REIT structure, with its ability to combine public trading with favorable, essentially one-tier, taxation, is getting a closer look.

REITs may offer certain advantages over a partnership structure. The tax reporting is greatly simplified by use of a Form 1099 instead of a K-1. Tax-exempt investors, such as pension plans, are not exposed to unrelated business taxable income since they receive dividends rather than a share of partnership earnings from operations. Foreign investors in a REIT are generally not exposed to U.S. tax on income or gain, other than withholding tax on dividends. These tax attributes

make REITs attractive to tax-exempt and foreign investors, and such deep-pocketed investors are coveted targets for midstream capital raising.

If a REIT distributes all of its taxable income, there is no entity-level tax on its earnings. Even though a REIT is treated as a corporation for tax purposes, if it satisfies the distribution requirement, it will not pay corporate tax on the income it distributes. In avoiding entity-level tax on its distributed income, a REIT's tax treatment is like that of a partnership.

In order to qualify as a REIT, it is necessary for the business to pass a number of tests regarding its income and asset composition that are strictly applied. For example, at least 75% of its assets must be real property and 75% of its income must be derived from the rental of real property, interest from mortgages on real property and gains from the sale of non-inventory real property or mortgages. Note that the determination of whether income constitutes rent from real property is in no way dependent on the nature of the products moving through the pipelines. In contrast, in order to meet the qualifying income test for publicly traded partnerships, MLPs have typically depended upon a determination that the income was from the transportation of "natural resources" as defined for that purpose.

In its private letter ruling 201907001, dated February 15, 2019 (February 2019 PLR), the IRS endorsed a pipeline company's treatment of its income as rent from real property even though its customer contracts were service arrangements. Most MLPs traditionally set up their relationships with customers in the form of a service arrangement rather than a lease, but REITs take the opposite approach and typically seek to receive rental income from leasing real property.

Although the assets of a midstream business, for example, pipelines and tanks, can qualify as real property, could the income be treated as rent

from real property if the taxpayer does not lease the assets to the customer? The February 2019 PLR held that income derived from long-term, dedicated capacity or minimum volume commitment-based pipeline and storage arrangements with unrelated customers constituted rent from real property. This provides an avenue for a business that might have been structured as an MLP in previous years to qualify as a REIT without materially changing its business model.

However, there is one MLP problem that a REIT structure may not resolve. In 2017, FERC unexpectedly announced that, for cost-of-service based rate cases, it would no longer include an allowance for income taxes for pipelines owned by MLPs without a showing of an entity-level tax burden. Several midstream partnerships, in converting from MLP to corporate status, cited concern regarding this FERC position as the driver for their decision to change forms. Although MLPs and not REITs were the focus of discussion at that time, the same question as to the entity-level tax burden could arise with respect to REITs. Accordingly, a REIT structure may be more attractive to intrastate pipelines that are not subject to FERC jurisdiction, since a REIT structure may not be a silver bullet for this issue with respect to interstate pipelines.

Despite this concern, in the coming year, we expect to see midstream MLPs continuing to give careful consideration to whether conversion to a REIT structure would be advantageous.

### TEXAS BANKRUPTCY COURT DENIES REJECTION OF CERTAIN PRODUCTION DEDICATION MIDSTREAM AGREEMENTS

Many midstream companies (some of which are organized as MLPs) rely on dedications<sup>40</sup> of oil and gas leases, wells and the production therefrom as a form of credit support from producers to assure the future cash flows

necessary to recover the significant capital expenditures incurred by such companies to construct and maintain the gathering, transportation and processing assets built for such producers.

In 2016, the viability of such dedications was drawn into question when a New York bankruptcy court, in *In re Sabine Oil & Gas Corporation*<sup>41</sup>, held that under Texas law the “dedications” that were before the court failed to qualify as covenants running with the land; thus, the gathering agreements secured by such dedications were simply executory contracts that could be rejected by the bankrupt producer under section 365 of the Bankruptcy Code.<sup>42</sup>

In September 2019, a bankruptcy court in Colorado reached an opposite result, finding that certain gathering agreements servicing upstream assets in the Uinta Basin ran with the land under Utah law and thus could not be rejected as executory contracts.<sup>43</sup> The Houston bankruptcy court, in *Alta Mesa Resources*, also differed with the analysis of the New York courts, holding that a midstream service provider’s rights under its agreements to gather and transport production in the Oklahoma STACK formation could not be rejected in bankruptcy because those rights were covenants running with the land under Oklahoma law.<sup>44</sup>

#### IN RE ALTA MESA RESOURCES

After Alta Mesa Holdings, LP became a chapter 11 debtor-in-possession, it sued Kingfisher Midstream, LLC, former officers and directors and its parent companies, seeking to invalidate two gathering agreements on various grounds. The crux of the lawsuit was “Alta Mesa’s belief that its owners, sitting on both sides of the negotiation table, agreed to pay Kingfisher exorbitant gathering fees.” Alta Mesa asserted claims to avoid the gathering agreements as fraudulent transfers and preferences, to rescind the agreements as breaches of fiduciary duty and to reject them as executory contracts. The Kingfisher

defendants moved for partial summary judgment, asserting that the gathering agreements formed real property running covenants under Oklahoma law that could not be rejected as executory contracts as a matter of law.

The court held that under Oklahoma law, which the court described as mirroring Texas law, a covenant runs with the land if all of the following are true:

- the covenant touches and concerns real property,
- there is privity of estate, and
- the original parties to the covenant intended to bind successors.

Only the first two issues were in meaningful dispute.

#### *The Dedicated Agreements Touched and Concerned Real Property; Namely, Alta Mesa’s Oil and Gas Leases*

For the touch and concern prong, which required the court to evaluate whether the gathering agreements made Alta Mesa’s real property interests more or less valuable, the court first had to identify the real property interest that Alta Mesa held. Distinguishing the New York courts in *In re Sabine*, which focused on the fee simple mineral estate as the relevant real property, the court in *Alta Mesa* instead focused on Alta Mesa’s interests in its oil and gas leases, which the court found distinguishable from the fee simple mineral estate, noting that each are overlapping but that each contain a separate bundle of rights.

The court found that the gathering agreements both burdened and benefitted Alta Mesa’s leasehold interests by four relevant provisions:

- First, the agreements carved out surface easements from easements granted to Alta Mesa under its oil and gas leases, which enabled Kingfisher to build and maintain the system—the surface

easements thus burdened Alta Mesa's possessory interest in its leases, "[reduced] Alta Mesa's real property interest under the leases [and] contrary to the holding in *Sabine*, the surface easements directly affect the lessee's underlying mineral interest";

- Second, the agreements dedicated all of Alta Mesa's production from the dedicated leases and wells, which restricted Alta Mesa's use of its reserves. The gathering system also enhanced the value of such reserves;
- Third, the agreements required recordation and the affirmation by subsequent transferees; and
- Finally, the agreements provided for fixed gathering fees, which during periods of low commodity prices diminished the value of Alta Mesa's reserves and impacted Alta Mesa's drilling schedule and use of its leases.

#### *The Parties Were in Privity of Estate*

For a covenant to run with the land in Oklahoma, privity of estate must exist between the party claiming the benefit of the covenant and the party burdened by the covenant. The court noted that common law recognizes two types of privity of estate: vertical and horizontal. Vertical privity, which relates to the present owner of the land and the original parties to the covenant, was not relevant under the facts before the court. Neither party had transferred its interests. Additionally, the gathering agreements had been recorded, which would charge any subsequent transferee with knowledge of the gathering agreements.

The parties disputed whether horizontal privity is required under Oklahoma law. Horizontal privity arises when the covenant—the dedication at issue in *Alta Mesa*—is created in conjunction with a conveyance or reservation of a real property interest. The court concluded that it need not

decide such issue because, even if Oklahoma required horizontal privity, horizontal privity was present. The court found that the gathering agreements conveyed surface easements, a possessory interest in Alta Mesa's leasehold estate, to Kingfisher, which was enough to show horizontal privity. In so holding, the court again distinguished *Sabine's* analysis of fee mineral estates, not oil and gas leases, reasoning that:

Alta Mesa's surface easements spring directly from its leasehold mineral interests. Because a surface easement is a crucial component [of] an oil and gas lease, the Court does not view this conveyance as creating privity only with respect to the surface estate . . . Instead, it supports a finding that the covenants were created alongside the conveyance of a property interest in Alta Mesa's leasehold estates.<sup>45</sup>

#### *Key Takeaways*

The opinions in *Alta Mesa* and *Badlands* reinforce that the parties' intent as evidenced by their writings will continue to be critical and, in many cases, outcome determinative. So too is a careful analysis of the state law supplying the rule on running covenants. The granting and structure of surface easements, an important part of both decisions in *Alta Mesa* and *Badlands* and a common provision in most modern gathering agreements providing for the construction or future expansion of a gathering system, will continue to be important, if not mandatory, going forward in states like Oklahoma and Texas that treat oil and gas leases as real property. While the recent opinions in *Alta Mesa* and *Badlands* may reasonably be viewed as alleviating some of the uncertainty around the viability of dedications, the issues nevertheless remain complex, fact-specific and largely unsettled in most states. We thus expect credit support and the impact of bankruptcy to remain key issues as producers and their midstream counterparties continue their

navigation of a prolonged commodity price downturn.

## OILFIELD SERVICES

Any description of the oilfield services sector in 2019 typically included some variation of “challenging.” The derivative effects of trends in oil and natural gas prices continued to be acutely felt, particularly as exploration and production companies shifted focus from production growth to free cash flow generation. The pressure to increase efficiencies only increased through 2019, negatively impacting margins for service companies and driving them to be leaner.

While mergers and acquisitions among E&P companies captured many of the recent headlines in the energy industry, mergers and acquisitions activity in the oilfield services sector has been more measured, and the reasons for deals more varied. Transactions such as Transocean Ltd.’s acquisition of Ocean Rig UDW Inc. and the merger of Keane Group, Inc. and C&J Energy Services, Inc. to form NexTier Oilfield Solutions Inc. demonstrated that opportunities for consolidation extend beyond the E&P sector. More often, however, larger oilfield services companies have been looking at acquisitions to fill a niche, or to better position themselves in an emerging application. Even General Electric Company’s decision to divest itself of majority ownership of Baker Hughes Company, which marked another milestone in that company’s winding path during the 2010s, stands as more of a strategic reorientation than a transformation.

Entering 2020, larger oilfield services companies have indicated that they will be sharpening their focus on core, higher margin businesses, with Schlumberger Limited and Halliburton Company among those publicly acknowledging plans to divest non-core businesses that do not fit their near-term execution strategies. The largest service companies echo consistent themes when discussing the macro outlook, including:

- Pivoting to international markets as growth targets, in contrast to recent years when U.S. onshore markets were viewed more favorably;
- Recalibrating pressure pumping capacity in the U.S. onshore market to better align with demand expectations in an environment where drillers are reducing capital spending; and
- Directing investment toward technologies and data analytics capabilities as a means to separate from competitors.

With the shift away from the U.S. shale basins toward international opportunities comes reason for cautious optimism in offshore drilling. In 2019, there was a modest increase in exploration drilling, as well as a rise in licensing activity. Offshore drillers have already announced new contracts in 2020, with an increase in contract opportunities for ultra-deepwater and harsh environment drilling services. According to recent press releases, demand for the highest specification ultra-deepwater floaters is now in line with or in excess of the number of marketable rigs that are currently available in many regions. As a result, operators expect to see improved dayrates for new contracts for such rigs. However, there remains significant stacked capacity, particularly among older, lower specification drilling rigs, which continues to depress dayrates.

For more levered oilfield services companies, both onshore and offshore, we expect management teams will seek opportunities to address upcoming debt maturities through opportunistic refinancings or, alternatively, restructuring transactions. Although energy high yield markets lagged substantially behind the overall high yield market in 2019, there recently have been encouraging signs for companies in the sector trying to enter these markets in 2020. Absent an overall improvement in capital and



lending markets, however, smaller companies with weaker balance sheets or with battered stock prices, which can make using stock as currency less attractive for acquirers, may otherwise find it difficult to preserve their current operating levels or scale up through mergers and acquisitions to a more stable position.

No doubt management at many oilfield services companies are happy to put 2019 behind them. That is not to say that the pressures faced by the sector last year have entirely abated, but management teams are now viewing the current environment more as an opportunity for differentiation. As participants in the sector grow more nimble, one can expect transactions in 2020 to reflect a shuffling of assets and product lines as companies optimize the asset mix for their respective businesses. The “challenging” period may not be over, but for many the strategy for thriving in 2020 is becoming clearer.

## LIQUIFIED NATURAL GAS

### U.S. EXPORTS OF LNG REACH RECORD HIGH

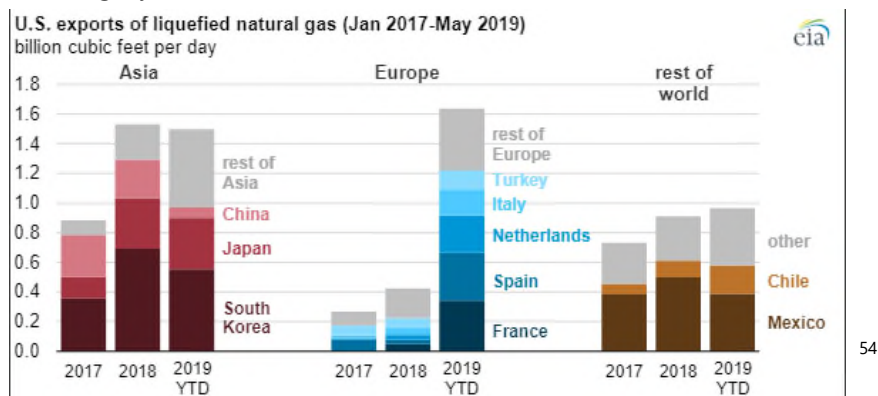
From March to October 2019, more than three billion cubic feet per day of new U.S. LNG export capacity entered service, which, according to the DOE, is the largest concentration of capacity additions in the history of U.S. LNG exports.<sup>46</sup> The new capacity comes from facilities along the Gulf Coast of the U.S., including Corpus Christi, Freeport, Cameron, Elba Island and Sabine Pass.<sup>47</sup> Such capacity addition resulted in American exports of LNG increasing by more than 60% in

2019.<sup>48</sup> This increase sees the U.S. become the third largest exporter of LNG in the world, after Qatar and Australia.<sup>49</sup> The growth of American LNG exports is on track continue. FERC approved a record number of LNG export projects in 2019.<sup>50</sup>

### U.S. EXPORTS TO EUROPE INCREASE

While in previous years Europe has functioned primarily as a backstop market for the LNG cargoes that went unsold in Asia, 2019 saw Europe take in a larger volume of LNG from the U.S. (and elsewhere).<sup>51</sup> With increased demand in 2019, Europe’s role in the global LNG market expanded beyond its former role as a balancing force that worked to temper fluctuating demand in Asia and instead became a more regular destination for American exporters of LNG.

In the first half of 2019, U.S. exports to Europe accounted for almost 40% of U.S. LNG exports. The increase in exports to Europe was primarily due to falling spot prices in Asia after a milder-than-normal winter in Japan and trade tension between the U.S. and China. A narrowing price spread between European spot prices and Asian spot prices, along with lower round-trip transportation costs, encouraged deliveries of U.S. LNG.<sup>52</sup> Beyond impacting U.S. export volumes, the increased demand for LNG in Europe has also influenced the broader gas market in Europe, as for the first time in at least four years, Equinor ASA and Gazprom PAO (EDR), the two largest pipeline gas suppliers in Europe, lost European gas market share.<sup>53</sup>

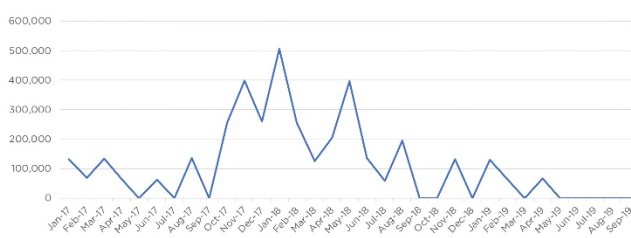


## TRADE WAR BETWEEN THE U.S. AND CHINA

As the U.S. continues to become a larger exporter of LNG and China continues to hold a position as one of the world's largest importers of LNG, the ongoing trade war between the two countries has affected LNG trade between the two countries. Since China imposed a 10% tariff on LNG imports from the U.S. in September 2018, LNG from the U.S. went from accounting for 7% of China's total LNG imports to 1% of China's total LNG imports.<sup>55</sup>

High tariffs on either side of the trade war have pushed China to look elsewhere for supply and the U.S. to look elsewhere for demand. Accordingly, the trade war between these two countries presents new opportunities for projects outside the U.S. (in places like Mozambique, Papua New Guinea and Russia) to meet Chinese demand, while U.S.-based projects are seeking offtakers (and investors) from places other than China.<sup>56</sup>

Figure 3: China's LNG imports from the US (tons)



Source: Customs Statistics, <http://A3.2-18.49.97/indexEn>

57

## LNG REGULATORY MATTERS

On November 22, 2019, FERC issued the Order on Petition for Declaratory Order, FERC Docket No. RP 18-851-000 (Cheniere Order).<sup>58</sup> In the Cheniere Order, FERC denied Cheniere Energy, Inc.'s petition, filed in May 2018, for a declaratory order that its proposed gas purchase scheme does not violate FERC's prohibition of buy/sell arrangements. However, FERC granted a limited waiver of the prohibition, subject to ongoing reporting requirements by Cheniere.

As described in the Cheniere Order, Cheniere intends to undertake the following "Proposed Transaction":

- purchase gas in the U.S. and Canada from "Suppliers",
- transport that gas to its facilities at Sabine Pass and Corpus Christi using its contracted pipeline capacity,

- utilize the gas as feedstock in its LNG facilities, and
- sell LNG on an FOB basis to Suppliers or affiliates of Suppliers.

In its petition for a declaratory order, Cheniere attempted to distinguish the Proposed Transaction from other prohibited buy/sell arrangements. FERC disagreed with Cheniere's analysis, stating that, "under the Proposed Transaction, [Cheniere] accumulates gas from entities and then uses its firm interstate pipeline capacity to ship the gas to the LNG terminal wherein it potentially resells the gas, as LNG, to the entities from which it originally acquired the gas."<sup>59</sup> FERC's characterization of the Proposed Transaction is the type of arrangement prohibited by FERC's buy/sell policy even though, under the Proposed Transaction, the downstream sales would occur as LNG from Cheniere's facilities, which are regulated under Section 3 of the Natural Gas Act (rather than Section 7).<sup>60</sup>

Although FERC rejected Cheniere's arguments that the Proposed Transaction would violate the buy/sell prohibition, FERC agreed that a waiver of that prohibition is merited because the Proposed Transaction "may help foster an efficient, transparent international market for natural gas based on diverse natural sources of supply."<sup>61</sup>

## CHEMICALS

The U.S. chemical industry saw a significant uptick in mergers and acquisitions activity in 2019 as compared to 2018 and 2017, with over \$125 billion in transaction value announced in 2019 as compared to around \$30 billion in 2018 and \$25 billion in 2017. The biggest transaction announced in 2019 was the DuPont de Nemours, Inc. Nutrition & Biosciences Division Reverse Morris Trust transaction with International Flavors & Fragrances Inc., announced in December. Another interesting 2019 transaction was the fight over transactions involving Versum Materials, Inc.—a merger of equals with Entegris, Inc. or an acquisition of Versum by Merck KGaA.

There were a number of corporate carve-out divestitures announced or completed in 2019, including the sale of Huntsman Corporation's chemical intermediates businesses to Indorama Ventures Public Company Limited and PolyOne Corporation's Performance Products and Solutions business to SK Capital Partners. In addition, DuPont completed the separation of its materials science business through the spin-off of Dow Inc. on April 1, 2019 and the separation of its agriculture business through the spin-off of Corteva, Inc. on June 1, 2019.

While we cannot predict whether 2020 will match 2019 in terms of U.S. chemical industry mergers and acquisitions activity, we believe that U.S. and global chemical companies will continue to focus on scaling their core businesses and divesting their non-core businesses through sales or spin-offs. A number of industry experts are predicting an uptick in carve-out transactions ahead of a

potential downturn in 2020. Carveout transactions are usually very challenging transactions to execute because of the complexities associated with separating a business that was previously integrated with another business or businesses of the seller. This complexity is compounded when one or more of the carveout business facilities are located within larger chemical sites that remain with the seller after the closing of the transaction.

Another point of interest will be whether recent sustainability announcements by large institutional investors will impact U.S. chemical industry mergers and acquisitions activity in the next few years. Recently, Larry Fink, Chairman and Chief Executive Officer of BlackRock, Inc., in his letter to CEOs noted that physical climate risk will lead to a significant reallocation of capital in the near future—and sooner than most people expect.

## DUPONT NUTRITION & BIOSCIENCES DIVISION/INTERNATIONAL FLAVORS & FRAGRANCES

In December 2019, DuPont and International Flavors & Fragrances announced that they entered into a definitive agreement for the merger of International Flavors & Fragrances and DuPont's nutrition & biosciences business in a Reverse Morris Trust transaction, a transaction under U.S. law that allows a tax-free transfer of a subsidiary if certain legal requirements are met. The deal values the combined company at \$45.4 billion on an enterprise value basis, reflecting a value of \$26.2 billion for the nutrition & biosciences business based on International Flavors & Fragrances' closing share price prior to the announcement of the transaction. Under the terms of the agreement, DuPont shareholders will own 55.4% of the shares of the new company and existing International Flavors & Fragrances shareholders will own 44.6%. Upon completion of the transaction, DuPont will receive a one-time

\$7.3 billion special cash payment, subject to certain adjustments.

Upon closing, the new company's board of directors will consist of 13 directors: 7 current International Flavors & Fragrances directors and 6 DuPont director appointees until the annual meeting in 2022, when there will be 6 directors from each company. International Flavors & Fragrances' Chief Executive Officer will continue as Chief Executive Officer and will be the Chairman of the Board, with DuPont's Executive Chairman serving as the lead independent director.

#### VERSUM/MERCK

On January 28, 2019, Entegris and Versum announced that they had agreed to combine in a merger of equals with a pro forma enterprise value of approximately \$9 billion, based on the closing stock prices on the trading day prior to announcement. On February 27, 2019, Merck sent Versum a non-binding unsolicited proposal to acquire Versum for \$48 per share in cash. On February 28, 2019, the Versum board adopted a limited duration shareholder rights plan and declared a dividend of one preferred share purchase right for each outstanding share of Versum common stock pursuant to the Versum rights plan.

After six weeks of fighting in the market and in SEC filings over which deal was better for Versum shareholders, Versum terminated its merger agreement with Entegris and signed a definitive agreement to be acquired by Merck for \$53 per share in cash. In connection with the termination of the Entegris merger agreement, Versum paid Entegris a \$140 million break-up fee. Merck acquired all of the capital stock of Versum on October 7, 2019.

#### HUNTSMAN CHEMICAL INTERMEDIATES BUSINESSES/INDORAMA VENTURES

On August 7, 2019, Huntsman announced that it entered into a definitive agreement to sell its chemical intermediates businesses, which includes propylene oxide/methyl tertiary butyl ether, and its surfactants businesses to Indorama Ventures in a transaction valued at approximately \$2 billion, comprising a cash purchase price of approximately \$1.93 billion, which includes estimated adjustments to the purchase price for working capital, plus the transfer of up to approximately \$76 million in net underfunded pension and other post-employment benefit liabilities. The transaction closed on January 5, 2020 with Indorama Ventures acquiring Huntsman's manufacturing facilities located in Port Neches, Texas; Dayton, Texas; Chocolate Bayou, Texas; Ankleshwar, India; and Botany, Australia.

#### REPORT ON THE ENVIRONMENT

In 2019, FERC's Office of Enforcement continued to prioritize matters involving fraud and market manipulation, anticompetitive conduct, conduct that threatens the transparency of regulated markets, and violations of the North American Electric Reliability Corporation standards. In the past fiscal year, FERC's Department of Investigations opened 12 new non-public investigations and closed 14 pending investigations with no action. Additionally, the Department of Investigations staff negotiated two settlements, totaling \$7.4 million in civil penalties and \$7 million in disgorgement.

The first settlement involved violations of a Certificate of Public Convenience and Necessity issued to Algonquin Gas Transmission, LLC. The Office of Enforcement found that Algonquin had conducted work in a wetland area without authorization. Algonquin did not admit or deny the violation but agreed to pay a civil penalty of \$400,000. In the second settlement, Dominion Energy Virginia agreed to settle claims made by

the Office of Enforcement that Dominion had violated FERC's Anti-Manipulation Rule. The Office of Enforcement staff had alleged that Dominion was targeting and maximizing its receipt of lost opportunity cost credits in a manner that was inconsistent with supply and demand fundamentals. Dominion did not admit or deny the violation but agreed to resolve the matter through the payment of a civil penalty of \$7 million and disgorgement to PJM Interconnection, L.L.C. of \$7 million.

FERC's Division of Audits and Accounting completed 11 audits of public utility and natural gas companies, resulting in \$161.2 million in refunds and other recoveries. The audits addressed, among other things, issues related to formula rates, allowance for funds used during construction, transmission rate incentives, open access transmission tariffs, and data reporting by RTO market participants.

## **CARBON CAPTURE TAX CREDIT: SECTION 45Q**

Although the federal income tax credit for carbon capture and sequestration (CCS Tax Credit), Section 45Q of the U.S. Internal Revenue Code of 1986, as amended (IRC), has been around for over a decade, the past year may be remembered as the year that plans to take advantage of the CCS Tax Credit really kicked into high gear. Almost every large oil and gas company is reviewing the CCS Tax Credit's availability and impact because of the significant enhancements to the CCS Tax Credit enacted in 2018. Companies have now announced plans to build more than 20 large carbon capture facilities and many more are under study.

Just as federal tax credits supported the growth in wind and solar project investment, it is expected that the CCS Tax Credit will lead to significant investment in carbon capture and sequestration. Unfortunately, however, 2019 did not see the promulgation by the IRS of highly-

anticipated interpretative regulations regarding the CCS Tax Credit. Current predictions suggest IRS guidance will be issued in early 2020, after which investment can be expected rapidly to increase.

Section 45Q offers a credit against federal income tax liability in a specific dollar amount per metric ton of carbon that is captured and either sequestered (buried) or put to some other commercial use, including enhanced oil recovery. For carbon that is put in secure storage, the CCS Tax Credit is \$22.66 per metric ton in 2017, with increases up to \$50 in 2026. For carbon used in enhanced oil recovery or other commercial use, the CCS Tax Credit is \$12.83 per metric ton in 2017, increasing to \$35 per metric ton in 2026. For businesses that capture millions of tons of carbon, the CCS Tax Credit can be worth millions.

To date, activity has focused on carbon traps at coal-fired power plants, but the captured carbon need not come solely from emissions from power plants. Carbon dioxide that is a by-product of any industrial production process, such as petrochemicals or LNG liquefaction, is eligible for the CCS Tax Credit. There is also a nascent industry working on technology to pull carbon dioxide out of the atmosphere in direct air capture by facilities that are sometimes referred to as "artificial trees."

Enhanced oil recovery is the most common use for captured carbon. By some estimates, enhanced oil recovery will cause the release of as much as an additional 25% of the original oil deposit. Once injected, the carbon dioxide is trapped below ground in the oil reservoir. A portion of the injected carbon dioxide will return to the surface with the produced oil, but the returned carbon dioxide is usually re-injected; in the process, the majority of the carbon dioxide ends up left buried in the ground. The reason that the amount of the CCS Tax Credit for captured



carbon used in enhanced oil recovery is less than the amount of the CCS Tax Credit for captured carbon buried or put to other uses is the assumption that the taxpayer will get additional profit from selling the captured carbon for use in enhanced oil recovery.

A very unique feature of the CCS Tax Credit is that there is a mechanism to permit transfer of the CCS Tax Credit from the party that owns the equipment to the taxpayer that sequesters or uses the captured carbon dioxide. This provision facilitates tax equity investment in carbon capture facilities.

The lack of guidance from the Department of the Treasury as to a number of issues related to the CCS Tax Credit has delayed many investment decisions. Investment in carbon capture and sequestration, especially tax equity investment, will be limited until taxpayers have confidence that the rules for qualifying for the CCS Tax Credit are clear.

In May 2019, the IRS issued Notice 2019-32, 2019-21 I.R.B. 1187, identifying the key issues it was grappling with in providing guidance and requesting public comments on those issues. It received a large number of comments in response, especially on the standards to be applied in using the captured carbon in enhanced oil recovery. Although the statute requires that the Department of the Treasury consult with the EPA in establishing regulations, IRS guidance has implied that enhanced oil recovery projects must meet requirements that are more burdensome

than the EPA's existing regulations regarding use of carbon dioxide for enhanced oil recovery. The EPA regulates geological sequestration under its Class VI well program and Subpart RR, but it regulates the use of carbon dioxide in enhanced oil recovery under its Class II well program and subpart UU, a significantly less burdensome standard. Requiring compliance with the EPA's requirements for geological sequestration, and thus subjecting enhanced oil recovery to more burdensome requirements than currently promulgated by the EPA with respect to enhanced oil recovery, has created confusion and hesitancy on the part of taxpayers to pursue the CCS Tax Credit. Regardless of the ultimate decision as to which standards to apply, a clear delineation of the required standard will be an improvement over the current situation.

To be eligible for the maximum CCS Tax Credit, construction of a facility needs to begin before January 1, 2024, and either (i) the construction of carbon capture equipment must begin before such date or (ii) the original planning and design for the facility must include installation of carbon capture equipment. Because carbon capture facilities are major construction projects requiring several years lead time to put into operation, if regulations are not soon forthcoming, investment decisions may not be made in time to meet the beginning of the construction deadline.

We can only hope that IRS guidance will be forthcoming soon. Watch for a huge upswing in carbon capture and sequestration investment in 2020 once regulations are promulgated.



# RENEWABLE ENERGY

---

“They are excellent; their advice is always practical, always spot-on and considers our business needs.”

*Chambers USA, 2019*

## WIND

According to the American Wind Energy Association, total operating wind capacity in the U.S. reached over 100,000 MW (or 100 GW) in nameplate capacity as of the end of the third quarter of 2019, with another 46.5 GW of wind projects in near-term advanced development (including 6 GW of offshore wind projects in advanced development).<sup>62</sup> The third quarter of 2019 registered the strongest third quarter of 2019 for wind installations on record with 1,927 MW of projects brought online.<sup>63</sup> More than half of the 100 GW installed wind capacity amount has been installed since the beginning of 2012.<sup>64</sup> This capacity comes from over 57,700 wind turbines across 41 states and two U.S. territories and a combined output sufficient to supply 32 million homes in the U.S. and to avoid approximately 240 million tons of carbon dioxide emissions annually.<sup>65</sup> Texas had the most capacity installed, being home to over a quarter of total U.S. wind generation (27,036 MW), followed by Iowa, Oklahoma and Kansas.<sup>66</sup> The July-September 2019 period marked a new record in terms of wind capacity additions, with developers rushing to place their projects in service ahead of the planned phase-out of the production tax credit (PTC), as provided in Section 45 of the IRC. In the third quarter of 2019, 3,667 MW of new wind capacity was installed in the U.S., representing a 123% increase over the first nine months of 2018.<sup>67</sup> Eight wind projects were brought online in the third quarter of 2019, including 1,232 MW in Texas, 475 MW in Kansas and 221 MW in New Mexico.<sup>68</sup> The pipeline of projects under construction or in advanced stages of development grew by a record 10,090 MW in the third quarter of 2019, including 3,945 MW of projects under construction and 6,145 MW of projects in advanced development. This pipeline boosted the near-term wind project pipeline in the U.S. to 46,495 MW, including 5,792 MW of offshore wind.<sup>69</sup>

Through the third quarter of 2019, new U.S. wind power capacity was installed across nine U.S. states as part of 19 new wind projects. Corporate and other non-utility purchasers committed to 1,539 MW of capacity in 2019.<sup>70</sup> The biggest players in the market in 2019 included NextEra Energy Resources, LLC, Invenergy, LLC, EDP Renewables North America LLC, Avangrid Renewables, LLC, EDF Renewables, Inc., Tradewind Energy, Inc., E.On Climate & Renewables North America LLC, Pioneer Green Energy, LLC, Renewable Energy Systems Americas, Inc. and Apex Clean Energy, Inc.<sup>71</sup> The U.S. is expected to install a record 19 GW of new wind capacity in 2020, as developers race to meet the one-year deadline extension through year-end 2020 for the PTC.<sup>72</sup> According to the Energy Information Administration, electricity generated from wind in 2019 had been predicted to surpass hydropower generation, an additional 8 GW of wind capacity is scheduled to come online in 2020, and the share of total U.S. generation from wind is projected to increase from 7% in 2018 to 9% in 2020.<sup>73</sup> The Department of Energy forecasts that by 2050 total wind capacity in the country will exceed 400 GW.<sup>74</sup>

Wind power, which currently produces about 7% of U.S. electricity, is expected to produce from one-quarter to one-third of the world's electricity by 2050. Such dramatic growth presents several grand challenges, including the need for an improved understanding of atmospheric and wind power plant flow physics, according to the National Renewable Energy Laboratory.<sup>75</sup> Other challenges include dealing with the constraints on transportation that come from wind turbines of ever-increasing size and dealing with their recyclability,<sup>76</sup> as well as structural integrity issues.<sup>77</sup> Grid operators will need to find ways to deal with wind's variability in order to integrate such a large volume of a variable resource.<sup>78</sup> Finally, climate change, and the potential shifts in wind resources as a result, is a confounding and ultimately unknown problem that has the potential to impact cost-effectiveness and productivity of wind farms.<sup>79</sup>

2019 represented the year in which offshore wind has finally taken off as a result of technological improvements and falling costs, but challenges persist.<sup>80</sup> The first offshore wind farm in the UK, the 60 MW North Hoyle Project, was operational in 2003 at a depth of less than 10 meters and at a distance of 7.5 km offshore.<sup>81</sup> By contrast, the 588 MW Beatrice Offshore Wind Farm, located in the Moray Firth, northern Scotland, reached commercial operation on July 29, 2019 at a depth of 45 meters and at a distance of 13 km offshore.<sup>82</sup> The UK hopes to produce 30 GW of offshore wind by 2030, a massive transition in which 33% of the UK's electricity will come from offshore wind, up from 8% in 2018.<sup>83</sup> At present, the U.S. has only one offshore wind farm, but that is about to change dramatically.<sup>84</sup> In 2016, only three wind turbines off of Block Island, Rhode Island produced 30 MW powering electricity to the small island community. According to the DOE, offshore wind has the potential to generate more than 2,000 GW of capacity per year, nearly double the U.S. current electricity use.<sup>85</sup> States along the Eastern Seaboard, from Maine to Virginia, are planning major offshore wind projects.<sup>86</sup> The U.S. is about to join Northern Europe, which has a total installed capacity of nearly 18.5 GW of offshore wind, in terms of growth engendered by technological innovation<sup>87</sup> and lowering costs.<sup>88</sup>

The wind industry continues to deal with other inherent challenges, including blade design, locational issues and the availability of land, grid connection, impacts on the environment, including wildlife, noise, and visual impacts, high cost of investment capital, limited investment channels, various regulatory, policy and social barriers, shortage of skilled professionals, and high operating and maintenance costs. Regardless, wind power is an important element in the global energy transition away from fossil fuel and has proven itself as a main source of new power capacity over the past half-decade. In

addition, investors are increasingly betting on "green assets," with the global sustainable debt market increasing from \$5 billion in 2012 to over \$247 billion in 2018.<sup>89</sup> Industry observers believe that wind power could supply up to 34% of global electric power demand in 2040, up from 4% today. Such power generation would be equivalent to 14,000 TWh, or the total power generation of China, Europe and the U.S. today.<sup>90</sup>

## SOLAR

According to the Solar Energy Industries Association (SEIA) / Wood Mackenzie Power & Renewables U.S. Solar Market Insight Report, dated December 12, 2019, in the third quarter of 2019 the U.S. solar market installed 2.6 GW<sub>dc</sub> of solar photovoltaic, representing a 45% increase from the third quarter of 2018 and a 25% increase from the second quarter of 2019.<sup>91</sup> A total of 21.3 GW<sub>dc</sub> of new utility photovoltaic projects were announced from the first through the third quarter of 2019, bringing the contracted utility pipeline to a record high 45.5 GW<sub>dc</sub>.<sup>92</sup> In addition, the U.S. saw record-setting residential solar capacity added with more than 700 MW installed.<sup>93</sup> Wood Mackenzie forecasts 23% year-over-year growth in 2019, with 13 GW<sub>dc</sub> of installations expected.<sup>94</sup> In total, more than 9 GW were added to the five-year forecast since the last quarter to account for new utility-scale procurement. In addition, total installed U.S. photovoltaic capacity is expected to more than double over the next five years, with annual installations reaching 20.1 GW<sub>dc</sub> in 2021 prior to the expiration of the investment tax credit (ITC), as described in Section 48 of the IRC, for residential systems and a drop in the commercial ITC to 10% under the current version of the law.<sup>95</sup> The three highest ranking states in terms of solar photovoltaic installations in the period of first through the third quarter of 2019 are California (1,911 MW), Florida (1,109 MW) and Texas (498 MW).<sup>96</sup>



On an industry sector basis, the U.S. residential solar market continued to rebound in the third quarter of 2019, gaining 10% quarter-over-quarter and 18% year-over-year.<sup>97</sup> On the other hand, the non-residential photovoltaic market (utility-scale, and commercial and industrial sectors) in the third quarter of 2019 was flat and continues to see pipelines diminish due to policy transitions and persistent interconnection issues in key commercial states.<sup>98</sup> According to the SEIA/Wood Mackenzie Solar Market Insight Report, a handful of state-specific regulatory cliff and policy reforms that took effect in 2018 continued to impact non-residential solar installations through the third quarter of 2019.<sup>99</sup> Specifically, major policy reforms in California, Massachusetts and Minnesota continued to hamper non-residential installations in these core markets. However, positive policy developments in New York, Maryland and New Jersey over the first half of 2019 are expected to boost the non-residential sector from 2020 to 2022 before declining in 2023 in response to the step-down for the solar ITC.<sup>100</sup> SEIA/Wood Mackenzie have increased their utility photovoltaic forecast by 5.0 GW for 2022–2024, demonstrating increased utility demand for solar for a variety of reasons, including using solar as a primary source of additional energy capacity, assisting in meeting more stringent state-mandated renewable portfolio standards, and the cost-competitiveness of solar.<sup>101</sup> As the wind PTC begins to roll-off, solar begins to fall below the cost of wind on levelized cost of energy basis in many traditional wind states, such as Illinois, Iowa, Kansas, Michigan, North Dakota and South Dakota. Solar also provides a complementary production profile to wind, i.e., wind experiences higher production at night, while solar obviously produces energy during daylight hours.<sup>102</sup> It should be noted that 4.8 GW of utility-scale solar projects with corporate offtakers have been announced through the first nine months of 2019, with a total of 3.9 GW of such projects expected

to come online with a corporate offtaker. Offsite corporate demand for solar power is expected to increase as more U.S. corporate and industrial offtakers pledge to become carbon-neutral or powered by 100% renewables. SEIA/Wood Mackenzie expect that corporate demand will drive more than 20% of utility solar development from 2019–2024.<sup>103</sup>

Globally, the growth of photovoltaics has been close to exponential from 1992 through 2018, evolving from a niche market with small-scale applications to a mainstream source of electrical power. By the end of 2018, cumulative global installed capacity of photovoltaic exceeded 512 GW, of which about 180 GW (approximately 35%) were utility-scale solar projects,<sup>104</sup> representing a growth of 27% from 2017.<sup>105</sup> Global photovoltaic installations in 2019 continued the same trajectory with new installations equaling 121 GW,<sup>106</sup> an amount sufficient to supply 3% of global electricity demand. China led the world with 2019 solar photovoltaic capacity installations in 2019 of over 45 GW, followed by India, with 10.8 GW, narrowly edging out the U.S. at 10.6 GW. The International Energy Agency has regularly and consistently increased their estimates for forecasted photovoltaic growth for decades, while falling far short of projecting actual deployment in each forecast.<sup>107</sup> Bloomberg New Energy Finance projects global solar installations to grow in 2019, adding another 125–141 GW, resulting in a total capacity of 637–653 GW by the end of the year.<sup>108</sup> By 2050, the International Energy Agency foresees solar photovoltaic to reach 4.7 TW (4,674 GW) in its high-renewable scenario, of which more than half will be deployed in China and India, making solar power the world's largest source of electricity.<sup>109</sup>

2018 saw the introduction of import tariffs under the Trump Administration; however, despite those challenges, the solar industry expanded and matured in 2019.<sup>110</sup> As a general matter, state



level policy supports more than made up for retrograde national policies unfavorable to solar and renewable energy generally. For instance, New Jersey passed a renewable portfolio standard with a goal of 50% renewables by 2030, with the governor stating his intention of achieving 100% renewable energy by 2050. The District of Columbia passed a 100% renewable energy goal by 2032. In September 2018, California passed SB 100, which requires the state to generate 100% of electricity from carbon-free sources, with a 60% renewable portfolio standard. New Mexico Governor Michelle Lujan Grisham signed an executive order in January 2019 committing the state to reduce carbon emissions by at least 45% below 2005 levels by 2030. In addition, governors in Maine, New York, Colorado and Illinois have all set 100% renewable energy targets.

Dramatic and continuous reductions in costs and increasing efficiencies have driven the rapid deployment of solar photovoltaic. The all-in costs of solar projects have fallen 80% since 2008.<sup>111</sup> Modules, which as recently as 2018 were priced at \$0.30 per watt, are now priced at \$0.30 and below, due to increase supply of modules, reduction in the costs of module production and the slowing of China's procurement.<sup>112</sup> Technological innovation continues to produce positive results, with increased adoption of PERC, N-type cells, split cell, and bifacial modules driving module performance upward. These trends are expected to continue. Researchers at the Massachusetts Institute of Technology and the National Renewable Energy Laboratory see a path for module pricing at \$0.15 per watt and an increase in efficiency of almost 50%, from an industry standard of 15% to a record of 22.38%.<sup>113</sup>

## STORAGE

The energy storage industry has passed rapidly from an initial pilot/pioneer stage, to a period of increased procurement for evaluation and now

finally to a stage of widespread adoption driven in large part by the participation of utilities. In short order, battery storage has been reconceptualized from its role and use for niche applications—frequency response, remote and island projects, and emergency deployments—to something more approaching a mainstay in utility resource planning. In December 2017, there was only about 798 MW of large-scale battery storage operational in the U.S., most of which was operated by ISOs and RTOs, organizations responsible for balancing the power grid.<sup>114</sup> The transformation in thinking by utilities has been dramatic. According to Wood Mackenzie Power & Renewables, in 2017, almost none of the 43 utilities surveyed by them expected to adopt any energy storage, suggesting that storage would not play a meaningful role in grid modernization during the 2020s.<sup>115</sup> In 2018, six utilities made plans for some battery procurement. However, according to Wood Mackenzie, in 2019, everything changed, with 10 utilities planning to install storage in their integrated resource plans calling for five times the storage capacity than in their prior year's plans. As a result, the combined integrated resource plans anticipate 6.3 GW of battery deployments from 2020 to 2029, with the Tennessee Valley Authority, the Puerto Rico Electric Power Authority and PacifiCorp leading in such expected deployments. Wood Mackenzie reports that "[o]nce utilities test energy storage and like it, they keep procuring more and more."<sup>116</sup> Examples of the foregoing are Florida Power & Light Company, which build a 10 MW pilot plant and is now following up with a 409 MW system due to be placed in service by the end of 2021 and expected to be the largest lithium-ion battery system in the world. Likewise, Duke Energy Corporation started out with a handful of sub-megawatt pilots that led quickly to 300 MW across its Carolina service territory.

Storage and battery solutions are expected to propel rapid electrification of the transport,

building and manufacturing sectors, allowing for the smooth integration of variable renewable resources and providing financial flexibility. According to DNV GL AS's 2019 Energy Transition Outlook, the combination of storage for grid and storage available in vehicle-to-grid systems will exceed 40 TWh in 2050.<sup>117</sup> Storage technologies increase the reliability of renewable generation smoothing out the variability of solar and wind resources.<sup>118</sup> At the same time, storage and battery systems provide ancillary and support services to the power grid. In addition, they provide key components to an increasingly electric transportation sector (electric vehicles) and increase the opportunities and options for demand-side response and flexible rate regimes.<sup>119</sup>

Advances in battery technology continue to accelerate. Lithium-based chemistries predominate, although flow batteries are demonstrating themselves for important applications. Energy densities are increasing, raw resource use and cell weights are decreasing, and battery lives are lengthening at increasingly dramatic rates. Storage costs have declined driven by increased and more efficient production. In the past decade, costs of energy storage, together with costs of solar and wind energy, have decreased dramatically. A project by Xcel Energy Inc. in Colorado produced bids with a median price for energy storage and wind of \$21 MWh, and \$36 MWh for solar + storage. This compares to \$18.10 MWh and \$29.50 MWh, respectively for wind and solar power without storage, but still distant from the \$4.80 MWh median price for natural gas generation. A recent Greentech Media Research report estimates that energy storage systems will fall 8% annually through 2022, largely due to the falling prices of lithium-ion batteries.<sup>120</sup>

The combination of solar plus batteries (solar + storage) has increase dramatically in 2019. In 2016, Hawaii had experimented with solar energy

and large storage batteries, inspiring a \$2.8 billion global expansion of investments and mergers in 2019, an increase of 103%.<sup>121</sup> Royal Dutch Shell plc acquired Sonnen GmbH, a German company whose business linked homes powered by solar arrays and battery storage. Two large utilities in Florida and California set forth plans to use solar + storage to power their service territories. In November 2019, UBS reported that energy storage costs could drop by more than two-thirds by 2025 and future demand for renewable energy could triple. UBS predicted that the global battery storage market value could grow by six times. In early January 2020, the Department of Energy announced its "Energy Storage Grand Challenge," a plan to sustain America's global leadership in energy storage, as a way to jump-start America's relatively miniscule battery storage market. China and other Asian countries currently lead the world in making battery storage systems, but uniform standards for batteries do not exist and safety problems have become increasingly common.

The battery storage industry in the U.S. has had its challenges in 2019. On April 19, 2019, one day after the Energy Storage Association, a U.S. trade group, ended its annual convention in Phoenix, Arizona, a large lithium-ion battery at a nearby solar energy storage site exploded, injuring eight firefighters and a police officer. The cause of that explosion is still not fully understood. One of the biggest challenges to the further development of the battery storage market is the development of safe and reliable products and the development of standards that are well-informed by scientific research. Another major challenge for the industry is the training of the next generation of workers.

2019 had seen several major developments in the battery storage industry led by the following:<sup>122</sup>

#### HUGE UTILITY PROCUREMENTS LED BY CALIFORNIA<sup>123</sup>

Utilities are procuring large battery portfolios in unprecedented numbers. In early 2019, The AES

Corporation built what was then the largest solar + storage facility in the world for Kauai Island Utility Cooperative.<sup>124</sup> Later in the same month, the Hawaiian Electrical Company awarded contracts for 1,048 MWh of storage over three islands.<sup>125</sup> In February 2019, Arizona Public Service announced plans to pair up nearly all of their solar plants with 850 MW of storage over the next five years.<sup>126</sup> In March, Florida Power & Light announced that it was planning to build a huge 409 MW/900 MWh battery storage facility to shift solar power into the evening and replace older plants.<sup>127</sup> In June, 2019, Nevada Power Company contracted a “hulkingly big” set of projects totaling 1,200 MW of solar paired with 590 MW of storage.<sup>128</sup> NextEra announced two deals for triple-threat plants that combine solar, wind and energy storage: one to go to Portland General Electric Company and the other to a rural electric cooperative in Oklahoma.<sup>129</sup>

#### STORAGE DEVELOPMENT IN THE U.S. SOUTH

The Southeast U.S. had previously lagged behind on several grid trends, including market deregulation, RPS, wind farms and energy storage. However, they are catching up on battery storage in 2019. Utilities in Alabama, Arkansas, Tennessee and Georgia have started to request energy storage proposals.

#### FEDERAL ENERGY STORAGE POLICY

In May 2019, FERC upheld its Order 841, pursuant to which it required ISOs and RTOs controlling competitive wholesale markets to remove barriers to entry for energy storage participants, allowing batteries large and small to participate in the grid, enhancing competition and promoting FERC’s policies of just and reasonable rates. In May 2018, the DOE’s Advanced Research Projects Agency committed up to \$30 million in funding for long-term energy storage innovation. The funding went to the Duration Addition to electricity Storage (DAYS) program, which focuses on developing new technologies that can make it possible for energy storage facilities in all U.S.

regions to power an electrical grid for up to 100 hours.<sup>130</sup>

#### STATE ENERGY STORAGE POLICY

Several states have shown keen interest in energy storage as shown by their implementing policies,<sup>131</sup> including:

- Hawaii, where importing fossil fuels is very costly and subject to variable commodity prices, has been at the forefront of the transition to renewables and energy storage. Two recent Hawaiian Electric Industries, Inc. projects come in at 8 cents per kilowatt-hour, half as much as the price for fossil fuel generation in the state.
- Massachusetts passed H.4857 in July of 2018, setting a goal of 1,000 MWh of energy storage by the end of 2025.
- New York Governor Andrew Cuomo announced in January 2018 that New York had set a goal of reaching 1,500 MW worth of energy storage by 2025. Under this directive, New York Green Bank has agreed to invest \$200 million towards energy storage technologies.
- California’s three largest electric cooperatives have been mandated to develop a combined energy storage capacity of 1,325 MW by the end of 2024. An extra 500 MW was added to the mandate in 2016.
- In Oregon, law HB 2193 mandates that 5 MWh of energy storage must be working in the grid by 2020.
- New Jersey passed A3723 in 2018 that sets New Jersey’s energy storage target at 2,000 MW by 2030.
- Arizona State Commissioner Andy Tobin has proposed a target of 3,000 MW in energy storage by 2030.

## LARGE AMOUNTS OF INVESTMENT

In prior years, European utilities bought their way into the U.S. storage market by buying startups. In 2019, oil and gas giants, such as Shell, bought their way in. As discussed above, Shell bought Sonnen GmbH. In December 2019, BP p.l.c. increased its investment in storage developer Lightsource BP Renewable Energy Investments Ltd. to 50%.<sup>132</sup> In addition, Energy Capital Partners bought Convergent Energy & Power Inc., the large industrial storage developer responsible for the largest behind-the-meter batteries in North America.<sup>133</sup> In December 2019, BlackRock, Inc., the world's largest fund manager, closed \$1 billion of a total \$2.5 billion fund dedicated to solar, wind and storage.<sup>134</sup>

## STORAGE REPLACING GAS PLANTS

Southern California Edison Company replaced a large beachfront gas plant proposed by NRG Energy, Inc. in Oxnard, California, with a 195 MW energy storage portfolio that includes a massive 100 MW plant.<sup>135</sup> Glendale, California's municipal utility backed off a \$500 million gas plant in order to build a group of batteries backed by some Wartsila Corporation engines.<sup>136</sup>

## SAFETY TOP OF MIND AFTER ARIZONA EXPLOSION

After a long stretch of years with no battery fires, the Phoenix, Arizona battery fire in April 2019 changed all that. New York City has taken the strongest stance on battery fire safety.

## BREAKOUT YEAR FOR RESIDENTIAL

Residential storage reached more customers than ever before, setting two quarterly installation records in 2019.

## AGGREGATED BATTERIES INCREASE

Companies aspiring to aggregate home batteries into grid assets closed deals in 2019 that proved that demand exists for such service. Participants include Sunrun Inc. which won a capacity contract for a home battery fleet in ISO-NE and for solicitations in Oakland and Glendale, California.

Sonnen GmbH also equipped entire housing developments in Salt Lake City, Utah with batteries for backup power and grid services. Green Mountain Power Corporation has actually operated a network of home batteries that it owns.

## LONG-DURATION STORAGE DEVELOPMENTS

In 2019, Hawaii and California pledged to eliminate fossil fuels from its grids. Maine, Nevada, New Mexico and New York, plus Puerto Rico and Washington, D.C., also made the same pledge. Long-duration technologies will almost certainly provide necessary to power the grid when the sun does not shine.

## TESLA'S STORAGE DEPLOYMENTS

No discussion of energy storage developments is complete without reference to Tesla, Inc.'s storage deployments in 2019. Tesla reported that it achieved a new quarterly energy storage installation record of 530 MWh (as well as 54 MW of solar deployments) in the fourth quarter of 2019. Tesla deployed its newest battery storage product, the commercial-scale integrated storage product called Megapack™, in the latest quarter. In total, Tesla deployed 1.65 GW of energy storage in 2019, which is more than it installed in all prior years combined.<sup>137</sup>

## 2019: PREPARING FOR AN UNCERTAIN FUTURE FOR RENEWABLE TAX CREDITS

### THE FIRST STEP-DOWN OF THE SOLAR ITC

2019 saw solar developers hoping for an extension of the ITC that ultimately did not come, but it did not stop developers from taking active steps to maximize the ITC that was available. Congress did provide a one-year extension of tax credits to developers of other renewable technologies.

Under current law, the ITC for solar energy property is 30% for projects the construction of which began in 2019. The credit percentage stepped down to 26% for projects that begin construction in 2020 (22% for 2021; and 10% for

projects that either begin construction after 2021 or that are placed in service after 2023 (regardless of when construction began)). The 30% ITC for solar projects had been in the law since 2006, and its expiration had been extended repeatedly by Congress. In 2018, Congress enacted the current phase-out schedule, although there was hope among developers (and proposed legislation) that the phase-out itself would be extended. To date, no such relief has been provided. Neither Congress nor the IRS provided any further guidance on when storage equipment will qualify for the ITC, although continued improvements in technology (and a 2018 private letter ruling regarding the availability of the residential investment tax credit for a retrofitted battery) spur hope for future positive pronouncements.

#### SAFE HARBOR STRATEGIES FOR SOLAR

Nevertheless, 2019 saw significant self-help activity to make the most of the 30% ITC. The IRS issued guidance in 2018 on how a taxpayer can “begin construction” of a solar project. The guidance provided both a “Physical Work Test” and a “Five-Percent Safe Harbor” that a taxpayer may use to determine when it has begun construction. Under the Physical Work Test, taxpayers generally must show that physical work of a significant nature has begun on the solar energy facility—a facts-and-circumstances inquiry that excludes work to produce equipment that is normally held in inventory by the seller. Under the Five-Percent Safe Harbor, a taxpayer is considered to have begun construction if the taxpayer has paid or incurred five percent or more of certain costs of the project in the applicable year.

Utility-scale solar developers generally spent 2019 beginning construction under one or both standards for projects in their early stages, while residential and other distributed generation solar developers were typically focused on purchasing equipment in 2019 that could be deployed in their pipeline and thereby enable such future

projects to satisfy the “Five-Percent Safe Harbor.” Vivint Solar, Inc., Sunrun Inc., SunPower Corporation and Sunnova Energy International Inc. all announced credit facilities in 2019 to finance their safe harbor strategies. Similar activity may follow in 2020 and 2021.

#### LEGISLATIVE DEVELOPMENTS FOR WIND AND OTHER TECHNOLOGIES

Some renewable industries other than solar received legislative assistance. In particular, at the end of 2019, as part of a legislative package intended to fund the government and avoid a shutdown, Congress extended the PTC to wind facilities that begin construction in 2020. PTCs from such facilities are subject to a 40% haircut—a step-up from the 60% haircut that is applicable to wind facilities that began construction in 2019. Thus, taxpayers who commence construction in 2020 will be entitled to a greater PTC than taxpayers who commenced construction in 2019 (which is likely to frustrate developers who began construction on their facilities in 2019 and may cause other developers to be wary of “safe harbor” planning going forward). The PTC (and the ITC in lieu thereof) was also extended for closed loop biomass, open loop biomass, geothermal plants, municipal solid waste (landfill gas and trash), qualified hydropower, and marine and hydrokinetic renewable energy facilities that begin construction in 2020.

The legislation did not provide any changes to the rules governing the ITC for qualifying solar facilities, and as such, qualifying solar facilities that commence construction during the 2020 calendar year will have a reduced ITC rate of 26% (subject, of course, to the possibility of relief under future legislation).

#### TRENDS IN CORPORATE PPAs

Corporate PPAs continued to increase in popularity in 2019 and analysts predict, based on projects in the pipeline, that 2020 will break records.<sup>138</sup> As the number of unique corporate PPAs and MW under contract increase at a steady



pace, contracting norms, expectations, and goals evolved rapidly in 2019.

#### NEW TRENDS EXPECTED IN 2020

##### *In Solar, Offsite Projects Will Dominate*

Currently, 70% of corporate solar PPAs are for energy generated onsite. While the number of onsite projects is expected to remain flat, the number of offsite projects is expected to triple in 2020.<sup>139</sup> These will require greater complexity than typical behind-the-meter, take-or-pay style PPAs. Such offsite PPAs may be for physical delivery of power or, in the case of a virtual PPA, a financial contract for differences. In most cases, such PPAs will be bespoke agreements.

##### *Shaping and Other Enhanced Services*

Historically, corporate renewable goals were based on an annualized percentage of load. A corporate offtaker with a goal of “50% renewable energy” would calculate its annual energy consumption and execute a PPA for a project that is expected to deliver a certain number of MWhs over the course of a year equal to 50% of that annual energy consumption. Increasingly, sophisticated corporate customers are looking for PPA providers that can shape the power to match customer load, either from conventional power or from designated renewable resources. Finally, a certain subset of large corporate customers will work collaboratively with utilities and energy providers to develop more finetuned mechanisms to decarbonize the grid. For instance, Google and The AES Corporation announced a 10-year strategic alliance in November 2019, under which the two companies will collaborate on clean energy project opportunities, ancillary customer solutions, and artificial intelligence applications.<sup>140</sup> Also, in the case of Google, the tech company has joined two regional transmission organizations, MISO and SPP.

##### *European Corporates Go Renewable*

While the U.S. corporate PPA market is maturing with over 15.7 GW under contract in 2019, the European corporate PPA market has remained quiet this past decade, with less than 2.5 GW contracted.<sup>141</sup> This is expected to change in 2020, as European markets heat up due to (a) the demand from U.S. corporations with facilities in Europe and (b) the general decline in government subsidies and feed-in-tariffs.<sup>142</sup>

#### 2019 TRENDS EXPECTED TO CONTINUE INTO 2020

##### *Increasing Customer Sophistication*

Corporate customers are becoming increasingly sophisticated. Sustainability officers and individuals with such expertise are becoming commonplace even in mid-size companies. ESG issues are front and center for executives and shareholders.<sup>143</sup> Meanwhile, a PPA consulting industry has blossomed. From individual consultants to brand-named electric service providers, corporate customers have many options to assist in originating and negotiating a PPA.<sup>144</sup>

##### *Shorter Tenures*

Corporate PPAs once garnered a standard 20-year term. In recent years, that term has compressed substantially. A variety of factors have contributed to this, including the shortening of the payback period for investment in renewable projects, the increased comfort level of investors and lenders with respect to renewables as an asset class, and the growing negotiating strength of corporate customers. Based on current market forces, PPA terms are likely to continue to shorten. This change will affect how the projects behind the PPAs are financed. In order to finance such projects, owners and financiers must take a view on merchant revenues in the post-PPA term. Many project-specific factors will play an important role, as merchant “tail revenue” determines project valuation. These factors include the length of site control, the

strength of site control, the location of the project on the grid and its proximity to transmission and load, the jurisdiction in which the project is located, the availability of remote net-metering and community solar tariffs, and the political climate of the state in which the project is sited.

#### *Retail Sleeves*

Many corporate customers are looking for simplified contracting structures. Retail sleeves, where a retail electric provider offers renewable energy from a designated project or pool of projects to a customer on a simple, short-term (1–5 year) contract, have gained popularity among small to mid-size companies. Retail providers such as NRG Energy, Inc., Xcel Energy Inc., and WGL Energy Services, Inc. are among the retail providers that have offered such products.<sup>145</sup> In most cases, the retail provider executes a longer-term PPA with the project owner to support the retail contracts. We expect this trend to continue among smaller customers without refined additionality goals.

### EUROPEAN CORPORATE PPAS

Renewable energy is increasingly at the top of the agenda of large corporations from a range of industries. Under the RE100 initiative, over 200 global companies have made commitments to 100% renewable energy.<sup>146</sup> Corporate PPAs have been deployed by such companies to lead the global movement towards the energy transition.

A corporate PPA is an agreement in which a corporate power purchaser enters into a long-term supply contract directly with a power generator. The U.S. has been the largest market so far for corporate PPAs, but the corporate PPA capacity in Europe has risen steadily over the past five years from around 200MW to 2,500MW.<sup>147</sup>

The two main benefits of PPAs are economic and environmental. Corporations with PPAs will have the advantage of long-term price certainty and the ability to hedge their position against the risk of fluctuating energy prices. This reduces their

exposure to volatility in the electricity spot market. Additionally, corporations with PPAs will become participants in the energy transition and attain enhanced green credentials. This demonstrates environmental commitment to key stakeholders, customers and investors. In addition to long term stability, a key benefit of PPAs to generators is long term offtake necessary for a project finance-route to securing project finance in an increasingly post-subsidy era. Through PPAs, generators may also be exposed to diversified market sectors such as tech, retail and healthcare.

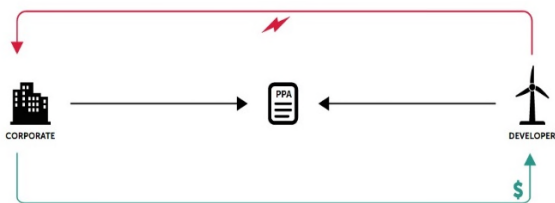
The EU's Clean Energy for all Europeans Package will accelerate the growth of PPAs in Europe as Member States will soon be required to identify and remove existing administrative barriers to their development.<sup>148</sup> The recent Renewable Energy Directive 2018/2001/EU has a binding EU-wide 32% renewable energy target for 2030 and an enabling framework for self-consumption through PPAs. Additionally, the role of guarantees of origin in tracking renewable energy from the generator to the customer is strengthened. Guarantees of origin verify the commitment corporations have towards renewable energy and increase financial viability in the sector. Without a guarantee of origin, energy could unknowingly come from sources that include fossil or nuclear. When a corporation purchases a guarantee of origin, the guarantee of origin is cancelled on the electronic registry, and it can only be sold once to ensure that there is no double counting.

There are three main PPA structures that are regularly adopted in Europe: (1) Physical, (2) Sleeved and (3) Virtual.

A Physical PPA is a long-term contract between a third-party buyer and a seller. Under that structure, the buyer will receive physical delivery of energy through the grid or through private wire. Typically, a Physical PPA suits corporations with consumption co-located with generation

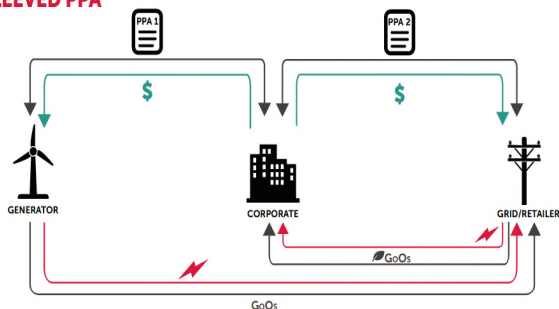
capacity or within a relatively short distance (e.g., large data centers).

#### PHYSICAL PPA



A Sleeved PPA is typically a back-to-back structure where there is an agreement between the generator and the buyer (PPA 1) to buy and sell electricity and another agreement between the buyer and a utility (PPA 2) in which the utility manages offtake and provides a balancing service for the buyer for a fee.

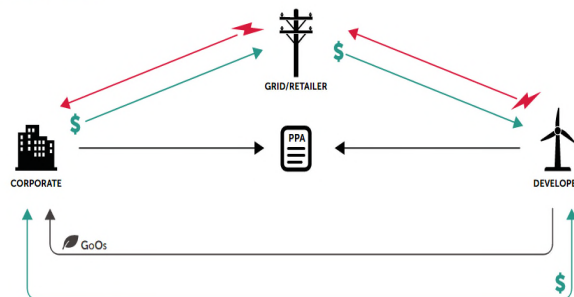
#### SLEEVED PPA



A structure being seen prominently now is the Virtual PPA (also known as a Synthetic PPA). A Virtual PPA is an agreement between a generator and an offtaker in which there is no physical delivery of energy. The parties agree to a fixed strike price, and the Virtual PPA essentially functions like a contract for difference. If the strike price is higher than the prevailing weighted market price for a period (often a month), the generator pays the offtaker the difference. If the market price is lower than the strike price, the offtaker will pay the difference to the generator. In this way, the offtaker is effectively guaranteeing to the generator a return at the strike price for the amount of capacity nominally sold under the PPA.

Among other benefits, this may facilitate the project financing of the generator's renewable assets by providing a long-term commitment by a credit worthy offtaker to provide such financial stability. This has been necessary in a number of jurisdictions as subsidiaries are phased out for certain types of renewable energy. In many Virtual PPAs, the offtaker will receive a transfer of guarantees of origin relating to the notional capacity dealt with under the PPA.

#### VIRTUAL PPA



### D.C. CIRCUIT COURT'S DECISION IN HOOPA VALLEY TRIBE V. FERC

On January 25, 2019, in *Hoopa Valley Tribe v. FERC*,<sup>149</sup> the D.C. Circuit Court determined that a prearranged scheme to withdraw and subsequently resubmit water quality certification requests does not trigger new statutory review periods under Section 401 of the Clean Water Act (CWA). The court determined that such a prearranged withdrawal-and-resubmission scheme results in waiver of a participating state's certification authority over a federally regulated hydropower project. The court denied rehearing on April 26, 2019, and, ultimately, on December 9, 2019, the U.S. Supreme Court denied environmental groups' petition for writ of certiorari.

The relevant facts in *Hoopa Valley Tribe* present a familiar, though admittedly extreme, example of the delay faced by many energy industry project developers subject to Section 401 of the CWA. In 2004, PacifiCorp filed an application with FERC requesting FERC's authorization pursuant to the

FPA to relicense in part and decommission in part a series of dams along the Klamath River. In connection with this application, in 2006, PacifiCorp filed requests for water quality certifications, pursuant to Section 401 of the CWA, from California and Oregon. PacifiCorp formally agreed, through a settlement with certain parties to the FERC proceeding, including both California and Oregon, to repeatedly withdraw these CWA Section 401 requests prior to the statutorily mandated one-year period, after which the states' certification authority would be deemed waived by the statute, and then resubmit the same requests. The intent of this arrangement was to have the resubmission treated as a new request, resetting the one-year statutory clock, while at the same time allowing PacifiCorp to meet its separate obligation to diligently prosecute its FERC application.

In 2012, the Hoopa Valley Tribe, whose reservation is downstream of the PacifiCorp dams in question, petitioned FERC for a declaratory order that California and Oregon had waived their CWA Section 401 authority and that PacifiCorp had correspondingly failed to diligently prosecute its FERC license application. FERC denied the petition both initially and on rehearing, and so the Hoopa Valley Tribe sought review by the D.C. Circuit Court.

The D.C. Circuit Court found that the withdrawal-and-resubmission scheme employed in this case was at odds with the clear text of the CWA, and that, because the pendency of the requests far exceeded the one-year statutory maximum, both Oregon and California waived their CWA Section 401 authority. The court explained that rather than "exploit[ing] a statutory loophole," a written agreement with certifying states to delay water quality certification through withdrawal-and-resubmission "serves to circumvent a congressionally granted authority" in a way that could "be used to indefinitely delay federal licensing proceeding and undermine FERC's

jurisdiction to regulate such matters." Notably, the court declined to resolve the legitimacy of such actions in other circumstances, such as the withdrawal of a certification request followed by submission of a wholly new request in its place. Similarly, it declined to examine how different a subsequent request must be to constitute a genuine new request.

*Hoopa Valley Tribe* lays a critically important legal foundation for increasing state accountability in the CWA Section 401 process. Although the holding in *Hoopa Valley Tribe* is limited to a specific set of facts, other courts and agencies can rely on it more broadly. For example, FERC has already implemented the case in a number of permitting proceedings, including the Constitution Pipeline Co. case, and may very well broaden its interpretation of the waiver provision in Section 401 of the CWA to the benefit of energy-project applicants like natural gas pipelines and export facilities over time.

## EPA PROPOSES SIGNIFICANT REVISIONS TO ITS CWA SECTION 401 REGULATIONS

On August 22, 2019, the EPA published in the *Federal Register* for public comment the proposed Updating Regulations on Water Quality Certification, dated August 22, 2019 (CWA Proposed Rule).<sup>150</sup> According to the EPA, the purpose of the CWA Proposed Rule is to increase the predictability and timeliness of CWA Section 401 certification by resolving uncertainty regarding timeframes for certification, the scope of certification review and conditions, and related requirements and procedures.<sup>151</sup> Among other revisions, the CWA Proposed Rule provides the following:

- that the requirement for a CWA Section 401 certification is triggered by the potential for any federally licensed or permitted activity to result in a discharge from a point source into the waters of the U.S., circumscribing the broader view that

some states have taken in certification proceedings;

- that the CWA Section 401 waiver period begins upon receipt of a certification request, not upon receipt of a complete application or a complete request, providing uniformity and predictability for all interested parties and avoiding allowing the question of the perceived completeness of an application to become another venue for expense and delay; and
- that CWA Section 401 certification review and conditioning is limited to assuring that a discharge from a federally licensed or permitted activity will comply with water quality requirements, restraining certifying agencies from blocking proposed projects and extracting concessions from applicants for reasons unrelated to water quality conditions imposed by water quality certifications, which in some instances have strayed significantly from water quality concerns (e.g., extending to recreational obligations and payments that are at best tenuously related to the proposed federally licensed or permitted activity, as many developers have in the past experienced).

The CWA Proposed Rule was generally well received by impacted industries, including the energy industry. It provides increased certainty as to the scope, timing, and potential outcomes of the CWA Section 401 process. If finalized, the CWA Proposed Rule should help to prevent unnecessary uncertainty and delay for project developers, without sacrificing necessary environmental protections. However, once finalized, it is generally expected that the rule will be subjected to extensive legal challenges, potentially undermining its impact for some period of time.

## RENEWABLE DEVELOPMENT ON POTENTIALLY CONTAMINATED LANDS

With the ITC stepping down on January 1, 2020 and set to expire with respect to commercial projects in 2023, many renewable developers and asset owners are looking for avenues to (a) reduce build costs and (b) increase revenues. Building on potentially contaminated brownfields presents such opportunity.

With respect to cost reduction, federally, the EPA's RE-Powering America program offers siting and development toolkits for projects on superfund and other contaminated sites.<sup>152</sup> At the state and local level, certain jurisdictions offer permitting support.<sup>153</sup> Additionally, building on a capped landfill or a fully remediated site may offer particular efficiencies. Environmental and geotech studies may have already been completed by the site owner, and civil work (such as grading) may be minimal.

With respect to revenue optimization, many states have enacted tariffs and incentives that provide new revenue streams or adders to existing tariffs. Implemented in 2019, the Massachusetts SMART Program and the New York Value of Distributed Energy Resources tariffs and NY-Sun Megawatt Block Program include rich adders for projects sited on landfills.<sup>154</sup> Other states with brownfield related incentives for renewable energy projects include New Jersey and Vermont.<sup>155</sup>

Finally, expanded community solar tariffs have also opened up markets for projects sited on landfills. A community solar tariff enables a project to be sited on a closed landfill or landfill cell and supply power remotely to multiple subscribers. This configuration is ideal for municipal landfills without the acreage to support a utility-scale installation and without co-located load for a behind-the-meter application. Maryland, Massachusetts, and New York have active community solar programs and multiple



case studies of community solar projects located on previously contaminated lands.<sup>156</sup>

Given potential build efficiencies, increased revenues, and expanded market opportunities, we expect that renewable development on contaminated lands will continue to be an active area of growth in 2020. Nevertheless, it is important for renewable developers and asset owners to consult with environmental counsel early in the development process. The federal

Comprehensive Environmental Response, Compensation, and Liability Act and the body of laws establishing cleanup requirements for contaminated properties may impose liability on the owners of renewable projects, even where such projects merely lease (or have license to) the land atop of the landfill. The law provides certain exceptions to liability for bona fide prospective purchasers and financing parties.

## INDEX

"CAISO" means California Independent System Operator Corporation.

"E&P" means exploration and production.

"EPA" means the U.S. Environmental Protection Agency.

"ERCOT" means Electric Reliability Council of Texas, Inc.

"ESG" means environmental, social and governance.

"Federal Network Agency of Germany" means the Bundesnetzagentur.

"FERC" means the U.S. Federal Energy Regulatory Commission.

"GW" means gigawatts.

"GW<sub>dc</sub>" means gigawatts direct current.

"IDR" means incentive distribution right.

"IRS" means the U.S. Internal Revenue Service.

"ISO" means independent system operator.

"ISO-NE" means ISO New England Inc.

"LNG" means liquefied natural gas.

"Member State" means a member country of the EU.

"MISO" means Midcontinent Independent System Operator, Inc.

"MLP" means master limited partnership.

"MW" means megawatts.

"MWh" means megawatt-hour.

"NYISO" means New York Independent System Operator, Inc.

"PERC" means passivated emitter real cell.

"PPA" means power purchase agreement.

"RTO" means regional transmission organization.

"SATOA" means a storage facility as a transmission-only asset.

"Spanish Commission for Markets and Competition" means the Comisión Nacional de los Mercados y la Competencia.

"SPP" means Southwest Power Pool, Inc.

"TW" means terawatts.

"TWh" means terawatt-hour.

## ENDNOTES

- <sup>1</sup> *In re FirstEnergy Sols. Corp.*, No. 18-3787, 2019 WL 6767004, at \*16 (6th Cir. Dec. 12, 2019).
- <sup>2</sup> The counter-party, in turn, can file a general unsecured claim for breach, but such rejection damage claims are frequently impaired in bankruptcy, receiving cents on the dollar in cash or stock.
- <sup>3</sup> *In re FirstEnergy Sols. Corp.*, No. 18-3787, 2019 WL 6767004, at \*15.
- <sup>4</sup> As noted by the Sixth Circuit, “the ‘filed-rate doctrine, as applied in the [Federal Power Act], holds that FERC has plenary and exclusive jurisdiction over wholesale power rates, terms, and conditions of service for any such rate filed with FERC.” *Id.* at \*6 (citing, *Miss. Power & Light co. v. Miss. ex rel. Moore*, 487 U.S. 354, 371-72 (1988)).
- <sup>5</sup> *Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators*, 162 FERC ¶ 61,127 (2018) (“Order No. 841”).
- <sup>6</sup> *PJM Interconnection, L.L.C.*, 169 FERC ¶ 61,049 (2019); *Southwest Power Pool, Inc.*, 169 FERC ¶ 61,048 (2019).
- <sup>7</sup> *Id.*
- <sup>8</sup> *California Independent System Operator Corp.*, 169 FERC ¶ 61,126 (2019); *Midcontinent Independent System Operator, Inc.*, 169 FERC ¶ 61,137 (2019); *ISO New England Inc.*, 169 FERC ¶ 61,140 (2019).
- <sup>9</sup> *New York Independent System Operator, Inc.*, 169 FERC ¶ 61,225 (2019).
- <sup>10</sup> *PJM Interconnection, L.L.C.*, 169 FERC ¶ 61,049 (2019). FERC also opened a Section 206 proceeding with respect to SPP. See *Southwest Power Pool, Inc.*, 169 FERC ¶ 61,048 (2019).
- <sup>11</sup> *PJM Interconnection, L.L.C.*, Motion for Extension of Time, E19-100-000 (November 26, 2019).
- <sup>12</sup> See e.g., Energy Storage Association, *In Re PJM Interconnection, L.L.C.*, Docket No. EL19-100 (December 3, 2019), available at <https://energystorage.org/wp/wp-content/uploads/2019/12/2019.12.03-EL19-100-Letter-in-Support.pdf>.
- <sup>13</sup> *American Public Power Association, et. al. v. FERC*, Case Nos. 19-1142 and 19-1147 (D.C. Cir. filed July 11, 2019).
- <sup>14</sup> Source: [https://www.bundesnetzagentur.de/SharedDocs/Pressemitteilungen/EN/2019/20190220\\_Marktmanipulation.html](https://www.bundesnetzagentur.de/SharedDocs/Pressemitteilungen/EN/2019/20190220_Marktmanipulation.html).
- <sup>15</sup> Regulation on Wholesale Energy Market Integrity and Transparency, Article 5.
- <sup>16</sup> Source: <https://www.cnbc.com/2019/03/08/permian-oil-output-doubling-to-8-million-barrels-boosting-exports.html>.
- <sup>17</sup> Source: <https://www.cnbc.com/2019/03/08/permian-oil-output-doubling-to-8-million-barrels-boosting-exports.html>.
- <sup>18</sup> Source: <https://www.cnbc.com/2019/03/08/permian-oil-output-doubling-to-8-million-barrels-boosting-exports.html>.
- <sup>19</sup> Source: <https://www.cnbc.com/2019/03/08/permian-oil-output-doubling-to-8-million-barrels-boosting-exports.html>.
- <sup>20</sup> Source: <https://www.forbes.com/sites/davidblackmon/2019/09/05/the-oil-and-gas-situation-exxon-not-panicking-permian-de-bottlenecking/#51d3567d2de1>.
- <sup>21</sup> Source: <https://www.forbes.com/sites/davidblackmon/2019/09/05/the-oil-and-gas-situation-exxon-not-panicking-permian-de-bottlenecking/#51d3567d2de1>.
- <sup>22</sup> Source: <https://www.cnbc.com/2019/03/08/permian-oil-output-doubling-to-8-million-barrels-boosting-exports.html>.
- <sup>23</sup> Source: <https://www.cnbc.com/2019/03/08/permian-oil-output-doubling-to-8-million-barrels-boosting-exports.html>.
- <sup>24</sup> Source: <https://www.cnbc.com/2019/03/08/permian-oil-output-doubling-to-8-million-barrels-boosting-exports.html>.

- 
- <sup>25</sup> Source: <https://www.cnn.com/2019/03/08/permian-oil-output-doubling-to-8-million-barrels-boosting-exports.html>.
- <sup>26</sup> Source: <https://www.nsenergybusiness.com/projects/cactus-ii-pipeline>.
- <sup>27</sup> Source: <https://www.oj.com/pipelines-transportation/article/14073459/epic-begins-corpus-christi-crude-exports>.
- <sup>28</sup> Source: <https://www.bizjournals.com/houston/news/2019/12/17/phillips-66-eyes-billions-of-dollars-in-2020.html>.
- <sup>29</sup> Source: <https://www.argusmedia.com/en/news/2030740-enbridge-joins-enterprise-vlcc-offshore-project?backToResults=true&selectedMarket=Crude%20oil>.
- <sup>30</sup> Source: <https://www.constructionequipment.com/construction-begins-natural-gas-pipeline-texas>.
- <sup>31</sup> Source: <https://www.rigzone.com/news/harvest-reports-new-eagle-ford-pipeline-terminal-06-nov-2019-160257-article>.
- <sup>32</sup> Source: <https://www.seatrade-maritime.com/americas/corpus-christi-kicks-360m-dredging-channel>.
- <sup>33</sup> Source: [https://www.washingtonpost.com/climate-environment/white-house-wants-to-change-rules-to-speed-up-highway-projects-pipelines-drilling/2020/01/08/4e248fda-325a-11ea-9313-6c8a89b1b9fb\\_story.html](https://www.washingtonpost.com/climate-environment/white-house-wants-to-change-rules-to-speed-up-highway-projects-pipelines-drilling/2020/01/08/4e248fda-325a-11ea-9313-6c8a89b1b9fb_story.html).
- <sup>34</sup> Fraser Institute, *Canada-US Energy Sector Competitiveness Survey 2019*, available at: <https://www.fraserinstitute.org/sites/default/files/2019-canada-us-competitiveness-survey.pdf>.
- <sup>35</sup> *Inquiry Regarding the Commission's Policy for Determining Return on Equity*, 166 FERC ¶ 61,207 (2019).
- <sup>36</sup> 854 F.3d 9 (D.C. Cir.).
- <sup>37</sup> Decadence to Decay: A Decade of MLPguy, <https://mlpguy.com/insights/decadence-to-decay/> (Jan. 9, 2020).
- <sup>38</sup> To further illustrate the shift since the oil price collapse, in 2014 there were 61 MLP follow-on equity raises for \$19.1 billion of gross proceeds.
- <sup>39</sup> Unlike the equity markets, the debt markets have generally remained open. In 2014, debt capital markets activity was similar to 2019, with 29 deals totaling \$28.1 billion of gross proceeds.
- <sup>40</sup> A dedication is a common provision in a midstream contract that grants the exclusive right to gather, process or transport all hydrocarbons produced from leases and wells located within an agreed geographic area. These provisions are called "dedications" because they dedicate all hydrocarbon production from identified upstream assets (namely, leases and wells) to a particular midstream asset.
- <sup>41</sup> *Sabine Oil & Gas Corp. v. HPIP Gonzales Holdings, LLC (In re Sabine Oil & Gas Corp.)*, 550 B.R. 59 (Bankr. S.D.N.Y. 2016), *aff'd*, 567 B.R. 869 (S.D.N.Y. 2017), *aff'd*, 734 Fed.Appx. 64 (2nd Cir. 2018) (summary order).
- <sup>42</sup> In bankruptcy, a burdensome unperformed contract may be rejected, thereby effectively replacing future performance obligations with a general unsecured claim for damages. Because unsecured claims share pro rata with other unsecured claims after all secured lender claims are satisfied, where the cash flows of upstream companies have dropped due to low commodity prices, such unsecured claims may receive substantially less than the face value of their claims in bankruptcy. In contrast, many courts have ruled that covenants running with the land cannot be rejected in bankruptcy because they constitute interests in real property rather than future contract performance obligations.
- <sup>43</sup> *Midlands Midstream, LLC v. Badlands Energy, Inc. (In re Badlands Energy, Inc.)*, 2019 WL 5549463, No. 17-01429, at \*15 (Bankr. D. Colo. Sept. 30, 2019).
- <sup>44</sup> *Alta Mesa Holdings, LP, et al., v. Kingfisher Midstream, LLC, et al., (In re Alta Mesa Resources, Inc., et al.)*, Ch. 11 Case No. 19-35133, Adv. No. 19-03609 (Bankr. S.D. TX December 20, 2019), The Honorable Marvin Isgur presiding (hereinafter, the "*Memorandum Opinion*").
- <sup>45</sup> *Memorandum Opinion*, pp. 21-22 (citing, *Badlands*, 2019 WL 5549463, at \*14). *But see Sabine*, 550 B.R. at 69.
- <sup>46</sup> Source: <https://lngjournal.com/index.php/the-journal/item/98760-us-pushes-ahead-with-infrastructure-buildout-of-lng-plants-and-pipelines>.

---

<sup>47</sup> *Id.*

<sup>48</sup> Source: <https://www.reuters.com/article/us-usa-lng-record-graphic/u-s-lng-exports-soar-in-2019-but-supply-glut-may-await-in-2020-idUSKBN1YY09M>.

<sup>49</sup> Source: <https://www.reuters.com/article/us-usa-lng-record-graphic/u-s-lng-exports-soar-in-2019-but-supply-glut-may-await-in-2020-idUSKBN1YY09M>.

<sup>50</sup> Source: <https://www.aogr.com/web-exclusives/exclusive-story/lng-exports-continue-to-set-new-records>.

<sup>51</sup> Source: <https://oilprice.com/Energy/Natural-Gas/Europe-To-Become-Increasingly-Important-LNG-Demand-Market.html>.

<sup>52</sup> Source: <https://www.eia.gov/todayinenergy/detail.php?id=40213>.

<sup>53</sup> Source: <https://www.reuters.com/article/us-lng-europe-graphic/equinor-gazprom-lose-european-gas-market-share-as-lng-surges-idUSKCN1V918I>.

<sup>54</sup> Source: <https://www.eia.gov/todayinenergy/detail.php?id=40213>.

<sup>55</sup> Source: <https://www.eia.gov/todayinenergy/detail.php?id=40213>.

<sup>56</sup> Source: <https://www.woodmac.com/news/opinion/what-does-the-us-china-trade-war-mean-for-us-lng>.

<sup>57</sup> Source: <https://energypolicy.columbia.edu/research/commentary/high-anxiety-trade-war-and-china-s-oil-and-gas-supply-security>.

<sup>58</sup> *Cheniere Energy, Inc.*, 169 FERC ¶ 61,148 (2019).

<sup>59</sup> Order at P 23.

<sup>60</sup> See Order at P 28.

<sup>61</sup> Order at P 36.

<sup>62</sup> American Wind Energy Association (AWEA) U.S. Wind Industry Quarterly Market Reports (Third Quarter 2019, Public Version) (“AWEA Q3 2019 US Wind Industry Report”), available at [https://www.awea.org/resources/publications-and-reports/market-reports/2019-u-s-wind-industry-market-reports/3q2019\\_marketreport-\(1\)](https://www.awea.org/resources/publications-and-reports/market-reports/2019-u-s-wind-industry-market-reports/3q2019_marketreport-(1)).

<sup>63</sup> *Id.*

<sup>64</sup> *Id.* The US wind industry started in California in the 1980s and by 2008 began to grow quickly to 25GW. Since 2008, the US wind industry has added an additional 75 GW of installed capacity.

<sup>65</sup> *Id.* The wind industry in the US supports over 114,000 jobs, sustains 500 factories and results in over \$1 billion in lease payments annually to landowners. Technological innovation has cut the cost of wind energy by 69% in the last decade alone.

<sup>66</sup> *Id.* At p. 3.

<sup>67</sup> *Id.*

<sup>68</sup> *Id.*

<sup>69</sup> *Id.*

<sup>70</sup> *Id.* at p. 6.

<sup>71</sup> “Who’s Powering the Wind Industry in 2019?”, Energy Acuity (Jan. 7, 2019) at <https://energyacuity.com/blog/top-wind-power-companies>.

<sup>72</sup> HIS Markit, “2019 Wind Power Plant Benchmarking in North America” at <https://ihsmarkit.com/products/wind-benchmarking.html>; G. Zimmerman, “10.U.S. Wind Projects to Watch in 2019 & 2020” Energy Acuity (Jun. 10, 2019) at <https://energyacuity.com/blog/10-u-s-wind-projects-to-watch-in-2019-2020/>. 2019/2020 wind projects identified in the Energy Acuity article, include (i) Kitty Hawk, a 1486MW offshore wind project (pre-construction), Dare County, NC, (ii) Empire Wind I & II, a combined 1,816 MW project (pre-construction) in NY, (iii) Antelope Creek Wind, a 300 MW project (pre-construction) in Lamar, CO, (iv) Ajax Wind, a 630 MW project (pre-construction) in Warbarger County, TX, (v) Grape Creek Wind, a 525 MW project (pre-construction) in Coke County, TX, (vi) Azure Sky Wind 1 & 2, a 350 MW project (pre-construction) in Throckmorton County, TX, (vii) Wild Rose Wind, a 302.5 MW project (pre-construction)



---

in Swisher County, TX, (viii) Ball Hill, a 100.5 MW project (pre-construction) in Villanova & Hanover, NY, (ix) Carbon-AD1-143, an 80 MW project (pre-construction) in Carbon County, PA, and (x) Sky River Wind, a 61.7 MW project (pre-construction) in Tehachapi, CA.

<sup>73</sup> "Wind expected to surpass hydro as largest renewable electricity generation source," (Jan. 24, 2018) U.S. Energy Information Administration ("US EIA") at <https://www.eia.gov/todayinenergy/detail.php?id=34652>.

<sup>74</sup> U.S. EIA, Annual Energy Outlook 2019 (with projections to 2050) at <https://energynews.us/2019/10/18/west/nrel-engineer-on-the-grand-challenges-of-supersizing-wind-power-on-the-grid/https://www.eia.gov/outlooks/aeo/pdf/aeo2019.pdf>.

<sup>75</sup> K. Kowalski, "NREL engineer on the 'grand challenges' of supersizing wind power on the grid," Energy News Network (Oct. 18, 2019) ("Kowalski") at <https://energynews.us/2019/10/18/west/nrel-engineer-on-the-grand-challenges-of-supersizing-wind-power-on-the-grid>.

<sup>76</sup> C. Stella, "Unfurling the Waste Problem Caused by Wind Energy," National Public Radio (Sept. 10, 2019) at <https://www.npr.org/2019/09/10/759376113/unfurling-the-waste-problem-caused-by-wind-energy>.

<sup>77</sup> Kowalski. The author reports that these larger wind turbines need to be "as strong as an aircraft and last 10 times as long and [are] 10 times cheaper."

<sup>78</sup> *Id.*

<sup>79</sup> *Id.*

<sup>80</sup> M. Singh & S.M. Koshy, "Powerful winds of change: Offshore wind power has taken off but challenges persist," DownToEarth (Nov. 12, 2019).

<sup>81</sup> *Id.*

<sup>82</sup> *Id.*

<sup>83</sup> *Id.*

<sup>84</sup> B. Woods, "US has only one offshore wind energy farm, but a \$70 billion market is no the way," CNBC (Dec. 13, 2019) ("Woods").

<sup>85</sup> Woods. The author points out that just 1% of such amount has the potential to power nearly 6.5 million homes.

<sup>86</sup> *Id.*

<sup>87</sup> *Id.* The author points to the technological advances that have led to larger and more efficient turbines, citing GEW's Haliade-X 12 MW turbine, standing 850 feet tall, with three rotors spanning 720 feet which can each individually power 16,000 homes.

<sup>88</sup> *Id.* The author quotes Thomas Bostrom, US CEO of Orsted, a Danish offshore wind company, that costs for offshore wind have been reduced by 17% in the US since 2014. For a list of currently operational and proposed offshore wind projects, see, "List of offshore wind farms in the United States," *Wikipedia* at [https://en.wikipedia.org/wiki/List\\_of\\_offshore\\_wind\\_farms\\_in\\_the\\_United\\_States](https://en.wikipedia.org/wiki/List_of_offshore_wind_farms_in_the_United_States).

<sup>89</sup> "The socioeconomic impacts of wind energy in the context of the energy transition," KPMG Study conducted on behalf of Siemens Gamesa (October 2019) at <https://www.siemensgamesa.com/-/media/siemensgamesa/downloads/en/explore/journal/report-impact-socioeconomics-wind-2019.pdf>.

<sup>90</sup> *Id.*

<sup>91</sup> SEIA/Wood Mackenzie Power & Renewables U.S. Solar Market Insight Report, Executive Summary (December 2019) ("SEIA/Wood Mackenzie Report") at p.5.

<sup>92</sup> *Id.* at p.5.

<sup>93</sup> *Id.* at p.5.

<sup>94</sup> *Id.*

<sup>95</sup> *Id.*

<sup>96</sup> *Id.* at p.10.

<sup>97</sup> SEIA/Wood Mackenzie Report at p.6. After years of double-digit percentage growth over the first half of the current decade, the US residential solar market experienced "growing pains" as national installers pulled back across critical geographies in California and the Northeast. *Id.* at p. 7.

---

98 *Id.*

99 *Id.*

100 *Id.* at p.8.

101 *Id.* at p. 15.

102 *Id.*

103 *Id.*

104 "Utility-scale solar in 2018 Still growing thanks to Australia and other later entrants". Wiki-Solar. (March 14, 2019).

105 *Id.*

106 "Energy, Vehicles, Sustainability – 10 Predictions for 2020". BloombergNEF (January 16, 2020).

107 See, e.g., Osmundsen, Terje (March 4, 2014). "How the IEA exaggerates the costs and underestimates the growth of solar power". *Energy Post* (October 30, 2014), and Whitmore, Adam (October 14, 2013). "Why Have IEA Renewables Growth Projections Been So Much Lower Than the Out-Turn?", *The Energy Collective*.

108 "Transition in Energy, Transport – 10 Predictions for 2019 – 2. Solar additions rise despite China". BNEF – Bloomberg New Energy Finance (January 16, 2019).

109 International Energy Agency (2014), *Technology Roadmap: Solar Photovoltaic Energy*, [www.iea.org](http://www.iea.org); and also, "One Chart Shows How Solar Could Dominate Electricity In 30 Years". *Business Insider* (September 30, 2014).

110 Y. Horowitz, "A Solar CEO's 2019 Forecast: More Complexity, New Investors and Continued Growth," GreenTech Media (Mar. 1, 2019) at <https://www.greentechmedia.com/articles/read/a-solar-ceos-2019-forecast>.

111 *Id.*

112 *Id.*

113 J. Weaver, "MIT and NREL see solar modules reaching well below \$0.20 per watt," PV Magazine (January 29, 2020) at <https://pv-magazine-usa.com/2020/01/29/mit-and-nrel-see-solar-modules-well-under-15%C2%A2-per-watt>.

114 Fact Sheet: Energy Storage (2019) (Feb. 22, 2019), Environmental and Energy Study Institute ("EESI 2019 Energy Storage Fact Sheet"), at <https://www.eesi.org/papers/view/energy-storage-2019>. PJM, an RTO located in 13 eastern states, including Pennsylvania, West Virginia, Ohio and Illinois, had the largest amount of utility-scale battery storage (278 MW) by the end of 2017, followed by California's ISO (CAISO) with 130 MW.

115 J. Spector, "2019 Was the Year Everything Changed for Utilities and Energy Storage," GreenTech Media ("GTM") (Jan. 24, 2020) at <https://www.greentechmedia.com/articles/read/as-time-goes-on-utilities-want-loads-more-energy-storage>.

116 *Id.*

117 DNV-GL, "2019 Battery Performance Scorecard (December 2019)."

118 *Id.*

119 *Id.*

120 EESI 2019 Energy Storage Fact Sheet.

121 J. Fialka, "Solar projects with batteries boomed in 2019. Some literally," E&E News (Jan. 29, 2020).

122 "What a Yea! 10 Stories That Propelled Energy Storage in 2019," GTM (Dec. 17, 2019) at <https://www.greentechmedia.com/articles/read/10-stories-that-propelled-energy-storage-in-2019>.

123 T. Paraskova, "U.S. Utilities Rush To Procure Energy Storage Capacity," Oil Price (Jan. 28, 2020) at <https://oilprice.com/Energy/Energy-General/US-Utilities-Rush-To-Procure-Energy-Storage-Capacity.html#>.

124 "AES Completes Record-Breaking Solar and Battery Plant on Kauai," GTM (Jan. 8, 2019) at <https://www.greentechmedia.com/articles/read/aes-completes-its-record-breaking-solar-and-battery-plant-on-kauai>.

- 
- <sup>125</sup> "Hawaiian Electric Announces 'Mind-Blowing' Solar-Plus-Storage Contracts," GTM (Jan. 4, 2019) at <https://www.greentechmedia.com/articles/read/hawaiian-electric-industries-announces-mind-blowing-solar-plus-storage-cont#gs.TRT2ms05>.
- <sup>126</sup> "APS Plans to Add Nearly 1 GW of New Battery Storage and Solar Resources by 2025," GTM (Feb. 21, 2019) at <https://www.greentechmedia.com/articles/read/aps-battery-storage-solar-2025>.
- <sup>127</sup> "Florida Power & Light's Huge Solar-Plus-Storage System the 'New Norm' for Utilities," GTM (March 29, 2019) at <https://www.greentechmedia.com/articles/read/florida-power-light-to-build-409-megawatt-solar-powered-battery-system#gs.4ovs7q>.
- <sup>128</sup> "NV Energy Announces 'Hulkingly Big' Solar-Plus-Storage Procurement," GTM (June 25, 2019) at <https://www.greentechmedia.com/articles/read/nv-energy-signs-a-whopping-1-2-gigawatts-of-solar-and-590-megawatts-of-stor>.
- <sup>129</sup> "'Cheaper Than a Peaker': NextEra Inks Massive Wind + Solar + Storage Deal in Oklahoma," GTM (July 25, 2019) at <https://www.greentechmedia.com/articles/read/nextera-inks-even-bigger-windsolarstorage-deal-with-oklahoma-cooperative>.
- <sup>130</sup> EESI 2019 Energy Storage Fact Sheet.
- <sup>131</sup> *Id.*
- <sup>132</sup> "BP Increases Stake in Solar Developer Lightsource," GTM (Dec. 5, 2019) at <https://www.greentechmedia.com/articles/read/bp-signs-amazon-ppas-and-ups-its-stake-in-solar-developer>.
- <sup>133</sup> "Energy Capital Partners Acquires Industrial Energy Storage Specialist Convergent," GTM (July 18, 2019) at <https://www.greentechmedia.com/articles/read/energy-capital-partners-acquires-industrial-energy-storage-specialist-conve#gs.rno4ya>.
- <sup>134</sup> E. Wesoff, "BlackRock aims a \$2.5 billion fund at commercial and industrial solar, wind, and battery storage," PV Magazine (Dec. 6, 2019) at <https://pv-magazine-usa.com/2019/12/06/blackrock-aims-a-2-5-billion-fund-at-commercial-and-industrial-solar-wind-and-battery-storage>.
- <sup>135</sup> "Southern California Edison Picks 195MW Battery Storage Portfolio in Place of Puente Gas Plant," GTM (Apr. 25, 2019) at <https://www.greentechmedia.com/articles/read/sce-picks-major-battery-portfolio-in-place-of-puente-gas-plant>.
- <sup>136</sup> "Another California City Drops Gas Peaker in Favor of Clean Portfolio," GTM (July 30, 2019) at <https://www.greentechmedia.com/articles/read/glendale-drops-gas-peaker-in-favor-of-clean-and-distributed-portfolio#gs.0refhu>.
- <sup>137</sup> "Tesla Q4 storage deployments at all-time high, solar at 54 MW," Renewables Now (Jan. 30, 2020), at <https://renewablesnow.com/news/tesla-q4-storage-deployments-at-all-time-high-solar-at-54-mw-685363>.
- <sup>138</sup> *How C&I Customers Are Shaping Utility and DG Solar Markets*, Wood Mackenzie Power & Renewables, Inc. d/b/a Greentech Media (November 11, 2019), available at [https://www.woodmac.com/our-expertise/focus/Power--Renewables/cni-customers-solar-landscape/?utm\\_source=gtmarticle&utm\\_medium=web&utm\\_campaign=wmptr\\_c%26isolarus19](https://www.woodmac.com/our-expertise/focus/Power--Renewables/cni-customers-solar-landscape/?utm_source=gtmarticle&utm_medium=web&utm_campaign=wmptr_c%26isolarus19).
- <sup>139</sup> *Utility-Scale Solar Set to Eclipse Onsite Installation in U.S. Corporate Market*, Wood Mackenzie Power & Renewables, Inc. d/b/a Greentech Media (November 20, 2019), <https://www.greentechmedia.com/articles/read/corporate-utility-scale-solar-to-surpass-onsite-solar>.
- <sup>140</sup> *AES and Google Create Strategic Alliance to Accelerate the Future of Energy*, Bloomberg (November 6, 2019), available at <https://www.bloomberg.com/press-releases/2019-11-06/aes-and-google-create-strategic-alliance-to-accelerate-the-future-of-energy>.
- <sup>141</sup> *Fueled by flexible PPAs, corporate clean energy purchases surged to 19.5 GW in 2019: BloombergNEF* (January 29, 2020), available at <https://www.utilitydive.com/news/fueled-by-flexible-ppas-corporate-clean-energy-purchases-surged-to-195-gw/571299/>.

<sup>142</sup> *Power & Renewables Key Themes for 2020*, Fitch Solutions (December 4, 2019), available at <https://www.fitchsolutions.com/utilities-power/power-renewables-key-themes-2020-04-12-2019>.

<sup>143</sup> The Investor Revolution, Harvard Business Review (May-June 2019), available at <https://hbr.org/2019/05/the-investor-revolution>.

<sup>144</sup> See e.g., Schneider Electric, Neo Network, available at, [https://neonetworkexchange.com/landing\\_page/landing?destination=home](https://neonetworkexchange.com/landing_page/landing?destination=home); See also *As corporate PPAs Surge, Consultants Aim to Bring Lower Prices*, Utility Dive (July 16, 2018), available at <https://hbr.org/2019/05/the-investor-revolution>.

<sup>145</sup> See e.g., NRG Launches Renewable Select, Simplified Renewables without the PPA, NRG (October 18, 2018), available at <https://www.nrg.com/about/newsroom/2018/2372284.html>.

<sup>146</sup> RE100 is a global corporate leadership initiative bringing together influential businesses committed to 100% renewable energy. Led by The Climate Group in partnership with CDP, RE100's purpose is to accelerate change towards zero carbon grids, at global scale.

<sup>147</sup> European Corporate PPA Capacity: <http://resource-platform.eu/files/toolkit/RE-Source-introduction-to-corporate-sourcing.pdf>.

<sup>148</sup> The EU Clean Energy Package was first published in 2016 and it comprises of 8 different legislative proposals to facilitate the energy transition in Europe. The legislative proposals have been gradually adopted by Member States and in May 2019, the European Parliament and Council set EU countries a 2 year deadline to reflect the full EU Clean Energy Package into their national law.

<sup>149</sup> 913 F.3d 1099 (2019).

<sup>150</sup> *Updating Regulations on Water Quality Certification*, 84 Fed. Reg. 44,080 (Aug. 22, 2019).

<sup>151</sup> *Id.*

<sup>152</sup> EPA, RE-Powering America, available at <https://www.epa.gov/re-powering/learn-more-about-re-powering>.

<sup>153</sup> e.g., NYSEDA Municipal Solar Toolkit to Aid Municipalities in Developing Solar Projects on Underutilized Land, available at <https://www.nyserda.ny.gov/About/Newsroom/2018-Announcements/2018-08-22-NYSEDA-Announces-New-Municipal-Solar-Toolkit>, and California County Planning Directors Association, Solar Energy Facility Permit Streamlining Guide, available at <http://www.ccpda.org/documents/solar-issues/solar-energy-facility-permit-streamlining-2012-02-03/139-ccpda-sef-permit-streamlining-guide-2012-02-03/file>.

<sup>154</sup> Massachusetts Department of Energy Resources, SMART Program Summary, available at <https://www.mass.gov/files/documents/2018/11/09/SMART%20Program%20Overview%2011218.pdf>; NYSEDA, NY-SUN Upstate and Long Island Program Manual, available at <https://www.nyserda.ny.gov/-/media/NYSun/files/Contractor-Resources/upstate-program-manual.pdf>.

<sup>155</sup> See <https://www.nj.gov/dep/aqes/oepa-solar.html>; See also <https://legislature.vermont.gov/Documents/2018/WorkGroups/Senate%20Natural%20Resources/Energy/Net-Metering/W~Jake%20Marren~Net-Metering%20Final%20Presentation~2-14-2017.pdf>.

<sup>156</sup> Maryland utility tariffs available at <http://www.psc.state.md.us/electricity/community-solar-pilot-program/>; Massachusetts regulations found at 225 CMR 20.20, available at <https://www.mass.gov/files/documents/2017/10/16/225cmr20.pdf>; and New York Public Service Commission, Case 15-E-0082, available at <file:///C:/Users/lhodge/Downloads/%7B76520435-25ED-4B84-8477-6433CE88DA86%7D.pdf>.

AUSTIN

BEIJING

BRUSSELS

DALLAS

DUBAI

HONG KONG

HOUSTON

LONDON

MOSCOW

NEW YORK

PALO ALTO

RIYADH

SAN FRANCISCO

WASHINGTON