

THE PROJECTS AND
CONSTRUCTION
REVIEW

ELEVENTH EDITION

Editor
Júlio César Bueno

THE LAWREVIEWS

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PREFACE

*La meilleure façon d'être actuel, disait mon frère Daniel Villey,
est de résister et de réagir contre les vices de son époque.*

Michel Villey, *Critique de la pensée juridique modern* (Paris: Dalloz, 1976)

This book has been structured following years of debates and lectures promoted by the International Construction Law Committee of the International Bar Association, the International Academy of Construction Lawyers, the Royal Institution of Chartered Surveyors, the Chartered Institute of Arbitrators, the Society of Construction Law, the Dispute Resolution Board Foundation, the American Bar Association's Forum on the Construction Industry, the American College of Construction Lawyers, the Canadian College of Construction Lawyers and the International Construction Lawyers Association. All these institutions and associations have dedicated themselves to promoting an in-depth analysis of the most important issues relating to projects and construction law practice, and I would like to thank their leaders and members for their important support in the preparation of this book.

Project financing and construction law are highly specialised areas of legal practice. They are intrinsically functional and pragmatic, and require the combination of a multitasking group of professionals – owners, contractors, bankers, insurers, brokers, architects, engineers, geologists, surveyors, public authorities and lawyers – each bringing their own knowledge and perspective to the table.

Although there is an increased perception that project financing and construction law are global issues, the local knowledge offered by leading experts in several countries has shown us that to understand the world, we must first make sense of what happens locally; to further advance our understanding of the law, we must resist the modern view (and vice?) that all that matters is global, and that what is regional is of no importance. Many thanks to all the authors and law firms that graciously agreed to participate.

Finally, I dedicate this 11th edition of *The Projects and Construction Review* to my mother, Natalina Passoni Bueno, on the 25th anniversary of her passing on 8 March 1996.

My mother was born in Nova Aliança, in the countryside of the state of São Paulo. Born to a family of second-generation Italian immigrants (Bento and Helena), she had two brothers (Inês and Olímpio). She married my father, Ozias Bueno, in 1960 and had two sons,

my brother Paulo Roberto and me. My mother was a seamstress, seller of graduation rings and owner of jewellery stores. Above all, she was a generous and extremely caring mother. To her, my continuous longing for you.

Júlio César Bueno

Pinheiro Neto Advogados

São Paulo

June 2021

UNITED STATES

*Karen Wong, Henry Scott and Miguel Duran*¹

I INTRODUCTION

The project finance market in the United States benefits from a well-developed legal framework and sophisticated financial markets. The US legal system is generally viewed as clearly codified, stable and efficient, as well as one that is enforced in a regular and open manner.² Contractual agreements between parties are recognised by law with few exceptions related to public policy concerns. The project finance sector has strong access to both the public and the private financial markets and is in some limited areas even supported – directly or indirectly – by government policies.

This combination of a strong legal framework and financial markets has facilitated the development of a robust project finance sector in the United States. Project finance is premised on the ability of the parties to contractually allocate risks among themselves and to enforce those contractual obligations in a reliable manner. A successful project finance regime is also dependent on commercial laws that allow developers to protect themselves through special purpose entities that benefit from non-recourse financing and that, similarly, allow lenders and investors to obtain security in the project assets and to enforce their claims against the project. Likewise, a sophisticated private financial market has the flexibility to allow the developer and the financing providers to create complex financing structures and to tailor those structures to the specific needs of a particular project.

This chapter discusses various transactional structures available to projects and the legal documentation frequently used to implement them. It reviews the various risks associated with project finance transactions and how parties allocate these risks. It also examines how the US legal framework supports the ability of lenders and investors to protect their interests, including obtaining, perfecting and enforcing security interests in a manner that permits lenders to enforce their rights in the event that a project encounters financial problems. This chapter also considers how the legal framework is influenced and affected by social and environmental considerations. The role of a complex legal framework and sophisticated private financing providers and the public sector is also addressed, followed by a summary of the impact of taxes on investment, which may be of particular interest to foreign lenders and investors. The framework for how dispute resolution is processed in the United States is discussed in the final section.

1 Karen Wong and Henry Scott are partners and Miguel Duran is a senior associate at Milbank LLP. The information in this chapter was accurate as at June 2020.

2 See WJP Rule of Law Index 2020, by the World Justice Project, available at https://worldjusticeproject.org/sites/default/files/documents/WJP-ROLI-2020-Online_0.pdf.

II THE YEAR IN REVIEW

The nature and complexion of project finance in the United States has been shifting, mostly as a result of the expiry of certain government incentives, regulatory changes relating to power plant emissions, declining prices of distributed generation technologies, including battery storage, and lower natural gas prices as a result of increased domestic production. More recently, the sector has been shaped by the enactment of a package of amendments to the tax code at the end of 2017,³ by the imposition of tariffs on imported solar cells and modules in January 2018 and the covid-19 pandemic. The issuance on 1 May 2020 of an executive order addressing national security threats facing the US bulk-power system, in particular by restricting the acquisition, installation and use of certain imported equipment essential to the power grid,⁴ could potentially be significant for the sector as the result of the regulatory uncertainty created by the new ban given that clarification on the scope and impact of that executive order on the development and operations of energy projects using equipment from countries deemed to be 'foreign adversaries' will depend on the US Department of Energy's rulemaking process. Furthermore, while the long-term impact of the covid-19 pandemic remains to be seen, the pandemic has already impacted a number of projects with force majeure claims and construction delays, and introduced uncertainty given the turbulence in financial markets and economic recession.

Despite fears that the approval of the US tax reform (particularly the reduction in the corporate tax rate from 35 per cent to 21 per cent and the implications of the base erosion anti-abuse tax to certain international financial institutions active in the market) would curtail the availability of tax equity financing in the market in 2018 and beyond, tax equity investors have maintained a substantial presence as financing sources and renewable energy projects continue to remain a significant component of the market. In 2019, approximately 30 per cent of the total value of project finance transactions in the country was invested in the renewable energy sector.⁵ For example, 9,143MW of wind energy (a 20 per cent increase from the 2018 level)⁶ and 13.3GW of solar energy (a 23 per cent increase from the 2018 level, and including approximately 8.4GW of utility-scale installations, which represents a 37 per cent increase from the 2018 level) were installed in 2019.⁷ Approximately 24,690MW of wind capacity (the highest amount on record) was still under construction at the end of March 2020⁸ and nearly 20GW of solar capacity is expected to be completed in 2020.⁹ Additionally, hydroelectric capacity could increase from 101GW to approximately 150GW

3 Pub. L. No. 115-97 (2017).

4 Executive Order on Securing the United States Bulk-Power System, available at <https://www.whitehouse.gov/presidential-actions/executive-order-securing-united-states-bulk-power-system/>.

5 These statistics do not include public-private partnership transactions and were researched and extrapolated from data available at the Infrastructure Journal website (<https://ijglobal.com/league-tables>).

6 See American Wind Energy Association, 'US Wind Industry Fourth Quarter 2019 Market Report – Public Version', available at <https://www.awea.org/Awea/media/Resources/Publications%20and%20Reports/Market%20Reports/4Q-2019-AWEA-Market-Report-Public-Version.pdf>.

7 See the Solar Energy Industries Association website (<https://www.seia.org/research-resources/solar-market-insight-report-2019-year-review>).

8 See American Wind Energy Association, 'US Wind Industry First Quarter 2020 Report – Public Version', available at the American Wind Energy Association website ([https://www.awea.org/resources/publications-and-reports/market-reports/2020-u-s-wind-industry-market-reports-\(1\)/q12020_public](https://www.awea.org/resources/publications-and-reports/market-reports/2020-u-s-wind-industry-market-reports-(1)/q12020_public)).

9 See footnote 7.

by 2050, not only through the construction of new power plants but also through the upgrade and optimisation of existing plants and by the increase of the pumped storage hydropower capacity.¹⁰

Throughout 2019, much of the project financing activity in the United States involved energy projects that were able to qualify for a production tax credit (PTC)¹¹ or the 30 per cent investment tax credit (ITC)¹² by meeting certain requirements. Additionally, developers of clean energy projects employing new or innovative technology that was not in general use were able in 2019 to request loan guarantees pursuant to Section 1703 of the Department of Energy's loan guarantee programme,¹³ including for advanced fossil energy projects that avoid, reduce or sequester greenhouse gases¹⁴ and for renewable or efficient energy technologies.¹⁵ In December 2016, the Department of Energy announced a conditional commitment to guarantee up to US\$2 billion of loans to construct a methanol production facility employing carbon capture technology in Lake Charles, Louisiana, which would represent the first loan guarantee made under those solicitation programmes.¹⁶ In February 2018, Congress enacted the Bipartisan Budget Act of 2018,¹⁷ which substantially increased the value of the Section 45Q tax credit available for carbon capture, utilisation and storage projects, and significantly expanded the universe of companies that would be eligible for this federal subsidy (which was originally made available in 2008) by increasing the eligible uses, decreasing the carbon capture threshold and eliminating the prior programme's limitation to the first 75 million tons of carbon captures. The Section 45Q tax credit will be available for eligible projects placed in service after 9 February 2018 and for which construction begun prior to 1 January 2024 and can be claimed over a 12-year period.¹⁸ In February 2020, the Internal Revenue Service (IRS) issued guidance with respect to the determination of the beginning of construction for purposes of the Section 45Q tax credit¹⁹ and the allocation of the Section 45Q tax credit by partnerships,²⁰ which is expected to increase the development of carbon capture and sequestration projects.

Furthermore, the Protecting Americans from Tax Hikes Act of 2015²¹ and the Further Consolidated Appropriations Act of 2020²² extended the PTC programme for certain eligible facilities for which construction began before 1 January 2017 and for otherwise qualifying wind facilities for which construction began before 1 January 2021 (with a progressive

10 See 'Hydropower Vision, A New Chapter for America's 1st Renewable Electricity Source', prepared by the US Department of Energy, Wind and Water Power Technologies Office, available at <https://www.energy.gov/sites/prod/files/2018/02/f49/Hydropower-Vision-021518.pdf>.

11 Section 45 of the Internal Revenue Code of 1986, as amended.

12 Section 48 of the Internal Revenue Code of 1986, as amended.

13 Section 1703 of the Energy Policy Act of 2005.

14 See the Department of Energy website (<https://www.energy.gov/lpo/services/solicitations/advanced-fossil-energy-projects-solicitation>).

15 See the Department of Energy website (<https://www.energy.gov/lpo/services/solicitations/renewable-energy-efficient-energy-projects-solicitation>).

16 See the Department of Energy website (<https://energy.gov/articles/energy-department-offers-conditional-commitment-first-advanced-fossil-energy-loan-guarantee>).

17 Pub. L. No. 115-123 (2018).

18 See Section 45Q of the Internal Revenue Code of 1986, as amended.

19 See IRS Notice 2012-12, available at <https://www.irs.gov/pub/irs-drop/n-20-12.pdf>.

20 See IRS Revenue Procedure 2012-12, available at <https://www.irs.gov/pub/irs-drop/rp-20-12.pdf>.

21 Pub. L. No. 114-113, Div. Q, 129 Stat. 2242 (2015).

22 Pub. L. No. 116-94 (2019).

phase-out reduction if construction begins after 31 December 2016) and the ITC programme for qualified solar facilities for which construction began before 1 January 2022. Current IRS guidance provides for certain safe harbour provisions with respect to the beginning of construction requirement, requiring the performance of certain specified actions (based on either physical work or the incurrance of costs) prior to the applicable qualification deadline and placement in service of the facility within four years of the qualification deadline. On 27 May 2020, the IRS modified its prior guidance and extended the four-year safe harbour requirement by one additional year to address the unforeseen interruptions experienced by developers because of the covid-19 pandemic.²³

Propelled by extended federal incentives, advances in green technology that decrease investment costs, state incentives and regulatory policies implementing renewable energy portfolio standards (RPS) on utilities, and the positioning of renewable energy as a key component for strategic energy independence for the nation, the development of renewable projects is expected to continue moving forward. As at June 2019, 29 states, the District of Columbia and three US territories have enacted RPS programmes, and eight additional states and one US territory now have voluntary goals for generation of renewable energy.²⁴ For example, California's RPS programme, one of the most ambitious in the United States, requires that utilities derive 33 per cent of their energy from renewable sources by the end of 2020, 44 per cent by the end of 2024, 52 per cent by the end of 2027 and 60 per cent by the end of 2030 (with the ultimate goal of obtaining 100 per cent of the retail sales of electricity to end-use customers and the electricity to serve all state agencies from renewable energy resources and zero-carbon resources by the end of 2045).²⁵ While all three of the largest California utilities have enough renewable energy capacity under contract to meet the 2020 threshold, the generation forecasts that those utilities prepared in 2019 (risk adjusted to account for a certain degree of project failure) show that, in the aggregate, there will be a deficit beginning in 2026.²⁶ Other states, such as New Mexico and Washington, have similar 100 per cent carbon-free goals in the next few decades and Hawaii has gone further by requiring 100 per cent renewable energy generation by 2045.²⁷ As a result, there is a need for additional renewable energy generation in California and the rest of the United States. As the existing fleets of wind generation projects developed before 2000 approach the end of their useful lives, it is also expected that repowering investment will significantly increase during the next decade.

23 See IRS Notice 2020-41, available at <https://www.irs.gov/pub/irs-drop/n-20-41.pdf>.

24 See the NC Clean Energy Technology Center website (<https://s3.amazonaws.com/ncsolarcen-prod/wp-content/uploads/2019/07/RPS-CES-June2019.pdf>).

25 See the California Public Utilities Commission website (<http://cpuc.ca.gov/rps/>).

26 See California Renewables Portfolio Standard: Annual Report, November 2019, prepared by the California Public Utilities Commission, available at https://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy_-_Electricity_and_Natural_Gas/2019%20RPS%20Annual%20Report.pdf.

27 See New Mexico SB 489 (<https://www.nmlegis.gov/Sessions/19%20Regular/final/SB0489.pdf>); Washington SB 5116 (<http://lawfileext.leg.wa.gov/biennium/2019-20/Pdf/Bills/Session%20Laws/Senate/5116-S2.SL.pdf>); Hawaii HB 623 (https://www.capitol.hawaii.gov/session2015/bills/HB623_CD1_.pdf).

While still in its early stages, the US offshore wind energy sector recently experienced noteworthy developments. In 2018, Vineyard Wind LLC's 800MW offshore wind project was awarded six long-term power purchase agreements with Massachusetts utilities through a competitive process,²⁸ which represents the largest single procurement of offshore wind in the United States.²⁹ Besides the mere size of the award, the most significant feature of those power purchase agreements is perhaps the energy purchase price, which is substantially lower than the price in prior reported transactions and confirms the increased competitiveness of offshore wind energy. The first offshore project to be constructed and achieve commercial operations is the 30MW Block Island Wind Farm, which has a power purchase agreement with a starting price of US\$244/MWh and the reported price in other subsequent offshore power purchase agreements ranged between US\$132/MWh and US\$160/MWh.³⁰ In contrast, the starting price under the Vineyard Wind power purchase agreements is US\$74/MWh for the first 400MW phase and US\$65/MWh for the second phase.³¹ While the Vineyard Wind project experienced an unexpected permitting delay in the summer of 2019, the US Bureau of Ocean Energy Management anticipates its final decision by 18 December 2020.³²

Fuelled in part by improvements in technology (lowering costs and reducing risk) and government support, particularly on the north-east coast of the United States,³³ offshore

28 The power purchase agreements were approved by the Massachusetts Department of Public Utilities on 12 April 2019 (see the order of the Massachusetts Department of Public Utilities, available at <https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/10617250>). See the Commonwealth of Massachusetts website (<https://www.mass.gov/news/project-selected-to-bring-offshore-wind-energy-to-the-commonwealth>).

29 See the Commonwealth of Massachusetts website (<https://www.mass.gov/news/project-selected-to-bring-offshore-wind-energy-to-the-commonwealth>).

30 See 'The Vineyard Wind Power Purchase Agreement: Insights for Estimating Costs of U.S. Offshore Wind Projects', Technical Report NREL/TP-5000-72981 by the National Renewable Energy Laboratory, February 2019, available at <https://www.nrel.gov/docs/fy19osti/72981.pdf>.

31 *ibid.*

32 See Vineyard Wind Offshore Wind Facility One Federal Decision Permitting Timeline, available at <https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Vineyard-Wind-SEIS-Permitting-Timetable.pdf>.

33 For example, the Governor of New Jersey signed two executive orders aimed at achieving 7.5GW of offshore wind-generating capacity (see Executive Order No. 8, signed on 31 January 2018, available at <https://nj.gov/infobank/eo/056murphy/pdf/EO-8.pdf> and Executive Order No. 92, signed on 19 November 2019, available at <https://nj.gov/infobank/eo/056murphy/pdf/EO-92.pdf>) and the Public Service Commission of the State of New York issued an order adopting an offshore wind standard (see Order Establishing Offshore Wind Standard and Framework for Phase 1 Procurement, issued and effective 12 July 2018, available at <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7b37EE76DF-81B1-47D4-B10A-73E21ABA1549%7d>) authorising solicitations by the New York State Energy Research and Development Authority [NYSERDA], after which NYSERDA awarded contracts for 1696MW of offshore wind energy capacity in its first solicitation (see <https://www.nyserdanyc.gov/All-Programs/Programs/Offshore-Wind/Offshore-Wind-Solicitations/Generators-and-Developers/2018-Solicitation>) and expects to issue a second solicitation in 2020 for at least 1,000MW (see <https://www.nyserdanyc.gov/All-Programs/Programs/Offshore-Wind/Offshore-Wind-Solicitations>).

wind is becoming widely seen as a notable opportunity;³⁴ it was brought to the industry's attention with Ørsted's acquisition of Deepwater Wind (the owner of the Block Island Wind Farm) in November 2018.³⁵

In recent years, the US Environmental Protection Agency (EPA) has attempted to implement regulations aimed at limiting greenhouse gas emissions from existing fossil fuel-fired electric generating units in part by setting state-specific goals for reducing emissions from the power sector. The final rules were released in August 2015 (the clean power plan) but were confronted by immediate legal challenges from a large number of affected states and state agencies, utility companies and energy industry trade groups. After a protracted legal process (including actions before the US Supreme Court), the EPA's final repeal rule became effective on 6 September 2019.³⁶ Numerous affected parties (including 22 states, multiple cities, power companies and non-profit organisations) immediately filed petitions for review before the US Court of Appeals for the DC Circuit. The petitioners' opening briefs were filed on 17 April 2020 and the briefing is expected to continue until 13 August 2020.³⁷

Going forward, most renewable energy projects will increasingly rely upon commercial banks and capital markets to satisfy capital demands. For larger projects, mixed bank-private placement transactions with two or more tranches of funds may provide a preferred financing structure. In the past couple of years, the market has seen an increase in the amount of available capital for project financings combined with a reduction in the number of projects seeking funding, as a result of which financiers have been driven to offer almost unprecedented conditions (including a significant downward trend in pricing for capital) to remain competitive. This environment has allowed sponsors to refinance existing facilities with inexpensive long-term capital sources and has fostered an increased interest in the acquisition of operating assets.

New financing tools have also become increasingly important for renewable energy projects, particularly in the field of structured finance. For instance, approximately US\$1,600 million was raised in 2019 as part of the securitisation of thousands of residential and commercial solar energy contracts.³⁸ As other solar developers increase their portfolios, they may choose to follow this lead to secure financing.

After several years of uncertainty and doubt about its staying power, the 'yieldco' model has started to gain stability and remains a prominent feature of the US market. A yieldco is a publicly traded corporation similar to a publicly traded master limited partnership (MLP) vehicle except that its assets do not qualify for MLP status. In the renewable energy sector, a

34 As at April 2020, there was approximately 26GW of offshore wind capacity in the development pipeline in the United States, with over 9.1GW of offshore wind capacity expected to be operational by 2026. See US Offshore Wind Industry Status Update – April 2020 by the American Wind Energy Association, available at <https://www.awea.org/Awea/media/Resources/Fact%20Sheets/Offshore-Fact-Sheet.pdf>.

35 Ørsted is the largest owner of offshore wind capacity in Europe and, at the end of 2019, owned 16 per cent of the cumulative offshore wind installed capacity in Europe. See *Offshore Wind in Europe – Key trends and statistics 2019*, by WindEurope, available at <https://windeurope.org/wp-content/uploads/files/about-wind/statistics/WindEurope-Annual-Offshore-Statistics-2019.pdf>.

36 84 FR 32520 (8 July 2019).

37 See Order of the US Court of Appeals for the DC Circuit filed on 23 March 2020, available at the Environmental Defense Fund website (<https://www.edf.org/sites/default/files/content/2020.03.23%2019-1140%20Order%20Granting%20Motion%20for%20Extension%20and%20Modification%20of%20Briefing%20Schedule.pdf>).

38 See, for example: <https://mercomcapital.com/product/2019-q4-annual-solar-funding-ma-report/>.

yieldco is expected to obtain stable cash flows from ownership of operating projects that have entered into long-term power purchase agreements and minimise corporate-level income tax by combining recently built projects that are still producing tax benefits with older projects. Yieldcos started achieving prominence in 2013 for energy companies and increased their presence exponentially until the downfall of prominent sponsors of yieldcos, such as SunEdison (TerraForm Power Inc and TerraForm Global Inc) and Abengoa (Atlantica Yield, formerly known as Abengoa Yield), turned investors' attention to, and increased investors' concerns about, yieldcos. After years of sharp declines in the value of shares of yieldcos and a flurry of dispositions by sponsors that led to the conversion of some yieldcos to private entities,³⁹ some of the remaining yieldcos have shown improved health.⁴⁰

Outside the renewable energy space, the retirement of coal and nuclear facilities generated renewed interest by sponsors in the development of new gas-fired power plants. Since 2016, natural gas-fired generation in the United States has surpassed coal generation every year and the gap keeps increasing.⁴¹ Natural gas-fired electric generation is expected to grow to a forecast level equal to over 36 per cent of the total generation by 2050 while coal-fired electric generation is expected to decrease to less than 14 per cent of total generation by 2050.⁴² The introduction of new capacity markets may further spur investment in gas-fired projects, which have been challenged by lower wholesale electricity prices in some markets, such as Texas. Additionally, project developers have devoted more attention on gasification facilities, which convert feedstock into a synthetic gas that is used as fuel or further converted into a variety of products, including hydrogen, methanol, carbon monoxide and carbon dioxide. These projects have commonly used fossil materials such as coal and petroleum coke as feedstock, although there are several gas-to-liquid projects in development and there is an intensified interest in the use of biodegradable materials, including municipal solid

39 TerraForm Global, Inc went private after it was acquired by Brookfield Asset Management Inc (see TerraForm Global, Inc Form 15, available at <https://www.sec.gov/Archives/edgar/data/1620702/000095015718000059/form15-12b.htm>), 8point3 Energy Partners LP (the First Solar/SunPower yieldco joint venture) went private after it was acquired by an investment fund managed by Capital Dynamics, Inc and other investors (see 8point3 Energy Partners LP Form 15, available at <https://www.sec.gov/Archives/edgar/data/1635581/000162828018008779/a8point3628201815-12b.htm>) and Pattern Energy Group Inc went private after it was acquired by the Canada Pension Plan Investment Board (see Pattern Energy Group Inc Form 15, available at https://www.sec.gov/Archives/edgar/data/1561660/000095010320008115/dp126740_1512b.htm).

40 For instance, between 7 May 2019 and 7 May 2020, (1) the stock price for TerraForm Power, Inc increased by over 29 per cent, and (2) the stock price for NextEra Energy Partners, LP increased by over 12 per cent. These statistics were researched and extrapolated from data available at the Yahoo! Finance website (<http://finance.yahoo.com/>).

41 See Electric Power Monthly with data for February 2020, prepared by the US Energy Information Administration, available at <https://www.eia.gov/electricity/monthly/archive/april2020.pdf>.

42 This is based on the 'reference case' situation under the US Energy Information Administration, Annual Energy Outlook 2020 (29 January 2020), Table 8, available at https://www.eia.gov/outlooks/aeo/excel/aeotab_8.xlsx.

waste and forestry, lumber mill and crop wastes. The bankruptcy filings of Westinghouse Electric Company in March 2017⁴³ and FirstEnergy Solutions Corp in April 2018⁴⁴ may be a harbinger of further headwinds in the nuclear sector.⁴⁵

Although still in its infancy from a technological and economic perspective, the nascent sector of electro-chemical energy storage (batteries that store electrical energy in the form of chemical energy) is beginning to attract the attention of a broad range of project finance participants.⁴⁶ Reliable and cost-efficient battery energy storage systems have the potential to shake up the energy sector. Significantly, this type of storage system could become an ideal complement for intermittent resources such as wind and solar energy power plants and facilitate power grid balancing efforts. As a consequence, natural gas ‘peaker’ plants (those that are used when there is high demand for electricity) may become less significant and the electricity generation mix could be reshaped further.

Another development in the energy sector involves an ongoing transformation in the identity of the power purchasers in the market. As electricity prices have been declining, it has become more difficult for developers to secure long-term offtake agreements with investment grade utilities, and businesses, universities and other non-traditional offtakers gradually have been taking their place. Additionally, in some states, communities have started forming Community Choice Aggregations (CCAs) to source electricity.⁴⁷ CCAs purchase electricity from a utility and sell it to their residents and businesses. While only eight states have legislation governing CCAs,⁴⁸ these entities may become more significant in the near future. Utilities, especially those in western states, face increasing difficulty in maintaining their credit standing, as they confront a declining customer base due to the emergence of CCAs and distributed generation technologies, legacy pension liabilities, and the implications of climate change, including liability for utility-caused wildfires.

In addition, constrained state and local fiscal budgets, limited federal transportation funding, decreased tax revenue and the considerable need for new infrastructure assets and the refurbishment, repair and replacement of existing assets may hasten the further use of the

43 See https://www.toshiba.co.jp/about/ir/en/news/20170329_1.pdf. In January 2018, Brookfield Business Partners LP announced an agreement to acquire Westinghouse Electric Company, and the related reorganisation plan was approved by the bankruptcy court in March 2018. See Brookfield Business Partners LP Form 6-K, available at https://www.sec.gov/Archives/edgar/data/1654795/000117184318000160/f6k_010418.htm, and the bankruptcy court order, available at <http://www.kccllc.net/westinghouse/document/171075118032800000000012>.

44 See FirstEnergy Solutions Corp Form 8-K, available at <https://www.sec.gov/Archives/edgar/data/1407703/000119312518104000/d561242d8k.htm>.

45 The US Energy Information Administration [EIA] projects the retirement of close to 24GW (24 per cent of the current capacity) of nuclear electric generating capacity by 2050 in the reference case scenario under the EIA's Annual Energy Outlook 2020 (29 January 2020), available at <https://www.eia.gov/outlooks/aeo/pdf/AEO2020%20Full%20Report.pdf>.

46 The battery energy storage projects currently operational in the United States are based on lead-acid, lithium-ion, nickel-based, sodium-based and flow batteries. See 2019 US Grid Energy Storage factsheet, Pub. No. CSS15-17, prepared by the Center for Sustainable Systems, University of Michigan, available at http://css.umich.edu/sites/default/files/US%20Grid%20Energy%20Storage_CSS15-17_e2019.pdf.

47 See the National Renewable Energy Laboratory website (<https://www.nrel.gov/state-local-tribal/blog/posts/community-choice-aggregation-cca-helping-communities-reach-renewable-energy-goals.html>).

48 See ‘Community Choice Aggregation: Challenges, Opportunities, and Impacts on Renewable Energy Markets’, Technical Report NREL/TP-6A20-72195 by the National Renewable Energy Laboratory, February 2019, available at <https://www.nrel.gov/docs/fy19osti/72195.pdf>.

public-private partnership (PPP) project finance structure (further described in Section IX). While most large infrastructure projects in the United States, at least since the introduction of the interstate system in the 1950s, have been completed using public funds rather than through the participation of private entities, a confluence of factors may be creating a fertile ground for the development of increased government and public acceptance of PPPs. According to the latest report card by the American Society of Civil Engineers, the infrastructure of the United States has a D+ grade point average⁴⁹ and an estimated investment of approximately US\$5.1 trillion (in addition to the approximately US\$5.6 trillion currently contemplated to be funded) will be required by 2040 to maintain a state of good repair.⁵⁰ The Trump administration's infrastructure plan, published in February 2018, is intended to stimulate at least US\$1.5 trillion in new infrastructure investment over the next 10 years⁵¹ and 12 federal agencies agreed on a framework to expedite the environmental review and approval of infrastructure projects.⁵² Given that existing legislation has been insufficient to satisfy the country's needs for infrastructure funding, state and local governments started to turn to the private sector to fill the gap. Recent significant PPP projects include the up to US\$4.9 billion Automated People Mover project and US\$2 billion Consolidated Rent-A-Car facility at the Los Angeles International Airport,⁵³ the approximately US\$3.7 billion I-66 Outside the Beltway project in Virginia,⁵⁴ and the approximately US\$5.7 billion Gordie Howe International Bridge connecting Detroit (United States) and Windsor (Canada).⁵⁵ While in some jurisdictions developers will need to navigate uncharted legislative and regulatory waters, and may also have to overcome negative public perception regarding the private management of public infrastructure, the opportunities for growth may be unprecedented.

49 A 'D' grade means that '[t]he infrastructure is in poor to fair condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration. Condition and capacity are of serious concern with strong risk of failure'. See '2017 Infrastructure Report Card: A Comprehensive Assessment of America's Infrastructure', American Society of Civil Engineers, available at <https://www.infrastructurereportcard.org/wp-content/uploads/2019/02/Full-2017-Report-Card-FINAL.pdf>.

50 See 'Failure to Act: Closing the Infrastructure Investment Gap for America's Economic Future', American Society of Civil Engineers, available at www.infrastructurereportcard.org/wp-content/uploads/2016/10/ASCE-Failure-to-Act-2016-FINAL.pdf.

51 See 'Legislative Outline for Rebuilding Infrastructure in America', available at <https://www.transportation.gov/sites/dot.gov/files/docs/briefing-room/304441/legoutline.pdf>.

52 See Memorandum of Understanding Implementing One Federal Decisions Under Executive Order 13807, available at <https://www.whitehouse.gov/wp-content/uploads/2018/04/MOU-One-Federal-Decision-m-18-13-Part-2-1.pdf>.

53 See the Los Angeles World Airports website (<https://www.lawa.org/en/connectinglax/automated-people-mover>) and <https://www.lawa.org/en/connectinglax/consolidated-rent-a-car-facility>).

54 See the Virginia Department of Transportation website (http://outside.transform66.org/about_the_project/default.asp).

55 See the Gordie Howe International Bridge website (<https://www.gordiehoweinternationalbridge.com/en/project-overview>).

III TRANSACTION STRUCTURES AND DOCUMENTS

i Transaction structures

The one basic structural feature common to almost all project finance transactional structures is that the project is operated by a single, non-recourse special purpose vehicle (the project company). Beyond that, the transactional structures are subject to a number of permutations based on the type of project, tax considerations, risk allocation, equity requirements and debt financing demands.

Limited liability companies (LLCs) have become the popular business organisation used for project companies. LLCs have the same limited liability protection that traditional corporations offer, but LLCs offer some advantages in the project finance area. LLCs have the option of being treated as a pass-through tax entity for US tax purposes, and gains, losses and depreciation can be passed to an LLC's owners, who are known as members. LLCs allow for considerable flexibility in management and ownership structure, which is advantageous for partnership or joint venture transactions. Management rights can be vested in the primary developer, but can be shifted to a co-sponsor or equity investor upon the occurrence of certain events. Gains and losses for tax purposes can also be allocated to suit the business deal, which is key to the partnership-flip structure discussed further below.

A common ownership structure involves a project sponsor owning the project company directly or indirectly through a holding company. In a joint venture structure, the ownership of the project company⁵⁶ is allocated between the project sponsor and another equity participant.

Developers will often be simultaneously developing multiple projects owned by different project companies. Most often, developers will arrange for separate financing transactions for each project. Some developers will seek to engage in a portfolio financing for multiple projects through a holding company. In these portfolio transactions, the projects are typically cross-collateralised and cross-default against each other.

Broadly speaking, there are two sources of debt financing available in the United States: the bank market and the private placement market (including the bond market).

The bank market provides loan facilities and letter of credit facilities to a project company. Banks offer a broad variety of financial products. Most project finance transactions involve traditional construction and term loan facilities for the development, construction and operation of a project. Banks can also provide more specialised products. In the wind energy sector, some banks have offered turbine supply loan facilities to provide funds for the purchase of wind turbine generators from the turbine manufacturer prior to the completion of development and permitting of specific projects. These turbine supply loan facilities, which are sometimes provided on a portfolio basis, are extended with the expectation that they are refinanced by a construction and term loan facility. Banks have offered similar loans in respect of solar equipment. To the extent that project sponsors lack sufficient funds to meet their equity contribution commitments, some banks may be willing to provide equity bridge loans to support a project. Some project companies may qualify for reimbursements or repayments for the construction of network upgrades or for cash grant proceeds, and some banks have extended loans based on these expected cash receipts. In addition, back-leveraged

56 We note that investors sometimes prefer to own interests in the holding company that is the owner of the project company, rather than the project company itself, as another layer to limit their liabilities with respect to the project company.

term loans made to the holding company of a project company have been used in lieu of traditional term loans in some transactions, including the partnership-flip structure discussed below.

The private placement market is another potential source of debt financing. Institutional investors participating in a private placement will typically offer only a fixed interest rate and will not provide specialised financial products that are available in the bank market. Project financing can also be accomplished through issuances of bonds in the capital markets. Project bonds can be offered pursuant to Section 4(2) or Rule 144A of the Securities Act of 1933. Most private placements under Section 4(2) transactions are made to accredited investors, which are often insurance and pension companies. An offering under Rule 144A is only made to qualified institutional buyers, which are sophisticated purchasers with more than US\$100 million of qualifying assets. Section 4(2) private placements are generally made directly to a very small number of accredited investors, but in mixed bank–private placement transactions, an administrative agent will be involved. Rule 144A transactions are typically sold to a larger number of investors and are administered by a trustee, pursuant to an indenture, on behalf of the qualified institutional buyers. The covenant package and level of oversight and consent requirements under a Rule 144A transaction are often less onerous than either a Section 4(2) transaction or a standard bank transaction.

In larger transactions, sophisticated arrangers may opt to use two or more tranches of funds for a mixed bank–private placement financing. In the energy sector, mature conventional and renewable assets are increasingly using long-term bond markets for leverage, both at the project and the portfolio levels.

In the renewable sector, federal renewable energy tax credits, such as PTCs and ITCs, have helped to shape transactional structures. PTCs offer designated tax credit amounts for certain classes of renewable projects that may be offset against income tax liability.⁵⁷ ITCs offer reductions in federal income taxes depending on the resource type that is placed in service, and primarily benefit solar and geothermal projects.⁵⁸ Developers have taken advantage of these tax-driven incentives to attract investors with sufficient taxable income who are able to use these federal renewable energy tax credits (tax equity investors). Prior to the inception of the Section 1603 programme, which was established under the Recovery Act to fill the gap in the market place when the pool of tax equity investors dried up during the financial crisis of 2008 and 2009, these were the dominant drivers for the development of renewable projects. With the expiry of the Section 1603 programme, PTCs and the ITCs once again became increasingly important for the development of renewable projects.

The partnership-flip structure has been a popular vehicle for financing wind energy projects in which the project sponsors are unable to fully utilise the available tax benefits. As

57 26 US Code, Section 45 identifies a number of resource types, including wind, closed-loop biomass, open-loop biomass, geothermal energy, landfill gas, municipal solid waste and large-scale marine and hydrokinetic projects and designates a credit amount for each type. To qualify, closed and open-loop biomass facilities, geothermal facilities, landfill gas facilities, trash facilities, qualified hydropower facilities, and qualified marine and hydrokinetic renewable energy facilities are required to meet the begun construction requirement before 1 January 2017, and wind facilities are required to meet the begun construction requirement before 1 January 2021 (subject to the credit being phased out between 2017 and 2021).

58 26 US Code, Section 48 provides credits that could offset between 10 per cent and 30 per cent of federal income tax liability. Small wind projects, fuel cells, combined heat-power, solar, geothermal and microturbine technologies are covered under Section 48.

has already been mentioned, given the pass-through election available to LLCs, tax equity investors that are members, directly or indirectly,⁵⁹ of the project company are able to benefit from the tax credits. For projects in the construction phase, a tax equity investor will enter into an equity contribution agreement committing to acquire a membership interest in a project company at the time the project has been completed and placed in service, and the proceeds of the equity contribution are applied to repay the construction debt. A variation of the partnership-flip structure is the pay-as-you-go (PAYGO) structure, in which the tax equity investor contributes roughly half of the initial equity that would be required under a traditional partnership-flip deal and, during the operational period of the project, will make periodic payments with respect to the remaining equity that would have been required under a traditional partnership-flip transaction. The PAYGO structure provides a tax equity investor with the ability to defer the timing of its equity contributions and ties its contributions to the number of PTCs actually generated (rather than projected).

Another alternative financing structure is to use a single investor lease or a leveraged lease transaction. Many energy assets have been financed using lease structures whereby a tax equity investor acquires the power project and the tax attributes of ownership, such as depreciation and investment tax credits, and leases back the asset to the project developer, who assumes operational responsibility. The lease structure has been popular with solar projects as it complements the ITC mechanics,⁶⁰ and since 2010 there have been a number of single investor and leveraged lease transactions in the wind and solar sectors.⁶¹

In some jurisdictions, utilities and developers have applied a build-transfer structure. This typically involves a developer agreeing to develop and construct a project that, upon commercial operation, would be transferred to the utility for a designated purchase price. Given the number of independent power producers (IPPs), however, utilities do not have as strong a need to own their electrical generation sources and have often elected to enter into economically feasible offtake agreements with IPPs.

ii Transaction documents

The transaction documents for a project finance deal can be classified broadly into three categories: project documents, financing documents and equity documents.

The project documents provide for the development, construction and operation of the project. The specific documents depend on the type of project and how risks are to be allocated in a particular project. Project lenders typically prefer a turnkey engineering-procurement-construction (EPC) contract entered into with a creditworthy contractor that has the requisite resources, capabilities and experience to engineer and design the project, procure all the necessary materials and components, and to construct and assemble the project. In certain sectors of the energy industry, a turnkey contract may not always be available and the project developers have sought to allocate responsibilities among parties who are capable of performing the relevant obligation most efficiently and at the lowest cost; for example, in

59 To the extent that the holding company is the investment vehicle, the holding company would also be an LLC and any intermediary companies would also need to be an LLC to allow the tax attributes to flow to an entity that is taxable under federal tax laws.

60 To benefit from these federal tax credits, the tax equity investor must be an owner prior to the placed-in-service date.

61 These transactions include the Alta Wind projects, the Hatchet Ridge Wind project, the Ridgewind Wind project, the Lakefield Wind Project, the Pacific Wind project and the Shiloh IV Wind Project.

wind generation projects, wind turbines are customarily procured directly from a turbine manufacturer under a turbine supply agreement and, in situations where a project sponsor does not have internal operating personnel, accompanied by a service and maintenance agreement. The construction of the balance of the project, such as the turbine foundations, collection system, substation and transmission lines, are performed by a contractor under a balance of plant contract.⁶² The operation and maintenance of the project may sometimes be performed by an affiliate of the project sponsor that is in the business of performing operational and maintenance services for all the project sponsor's projects. The offtake agreement is crucial for the viability of a project, as the lenders and investors rely principally on the revenues generated by the project. The offtake agreement mitigates the potential fluctuations of spot market transactions and allows for the project to provide a more reliable base case model to its lenders and investors. For electrical generation projects, an interconnection agreement will be required to interconnect the project to the relevant electricity grid. Projects that require fuel, such as coal-fired, biofuel, biomass or natural gas-fired plants, will need a reliable source of fuel that can be procured on a fixed-price basis under a long-term fuel supply or feedstock agreement.

The financing documents for a project finance transaction will generally depend on the type of financing structure being implemented. For a traditional bank financing transaction, the documents consist of a credit agreement that will provide a construction and term loan facility, often with a letter of credit facility or working capital facility, and the set of collateral security documents described below. A private placement transaction will include a purchase or subscription agreement entered into by the financial institutions for funding and an indenture to provide for the covenants that the project company must follow, along with the same set of collateral security documents typically used for bank financings. For transactions that combine bank and private placement sources, a master agreement or common terms agreement will typically govern the principal terms of the financing, such as conditions precedent, covenants, representations and warranties, events of default, indemnities and miscellaneous boilerplate provisions, with separate credit agreements and note purchase agreements or indentures for the respective tranches. A lease transaction will include a lease⁶³ and, for a sophisticated leveraged lease transaction, a financing agreement and a participation agreement, along with customary tax indemnity agreements. The security for a financing will be provided under the security or collateral documents. Lenders will also often seek to have direct agreements with the counterparties to the material project documents that provide for consent by the counterparties to the collateral assignment of the particular project document, an agreement by the counterparty to deposit amounts payable under the project agreement to a designated collateral account, a right to receive default notices and other material notices, an ability to step in and cure events of default on behalf of the lenders, as well as an agreement not to amend, modify, assign or terminate the project document.

The equity documents represent the commitment of the sponsors and owners of the project to make equity contributions to the project company under a variety of circumstances. Basic equity contribution agreements cover cost overruns and provide for the minimum equity required to maintain the debt-equity ratio prescribed by the lenders.

62 In some instances, even the balance of plant obligations are sometimes even further subdivided to include an electrical installation or engineering and design contract for the balance of the plant.

63 Some lease transactions will separate the personal property and real property into a facility lease and a ground lease, respectively.

A project company seeking tax equity will often enter into either a membership purchase and sale agreement (MIPA) or an equity capital contribution agreement (ECCA) with a tax equity investor. Tax equity investors do not typically assume construction risks and their investment is conditional on the satisfaction of a number of requirements, including that the project has achieved, or is about to achieve, commercial operation as required under the offtake agreement and subject to satisfaction of performance and other testing requirements under the relevant construction contracts. For ITC transactions, it is important that the tax equity investor become an owner before a project has been placed in service and reached commercial operation. A form of revised limited liability company agreement for the project company will be negotiated at the time of execution of the MIPA or ECCA to govern the relative rights and obligations between the developer and the tax equity investor, and to set out the respective allocations of cash, distributions and tax benefits, as well as to detail the governance rights prior to and after the date on which the tax equity investor has received its net economic return on its investment.

IV RISK ALLOCATION AND MANAGEMENT

Project finance ideally allocates risks to the party that is best able to manage and mitigate the particular risk, and the relevant risk allocation can vary from project to project depending on the specific details of a project and the relative negotiating leverage of each party.

A basic project finance transaction can be broadly divided into two periods: construction and operational.

To understand the construction period, it is helpful to understand the importance of the operational period and its associated risks. A lender or investor to a project finance transaction relies on the cash flow generated by the project during the operational period for repayment or recovery of investment, as applicable. To give lenders and investors some degree of certainty about cash-flow generation, lenders and investors analyse a project's base case projections based on the price of the offtake and the expected production, the two keys to generating cash flow.

An offtake agreement (between a project company and an offtaker) is the key project document that will mitigate the risk of fluctuating prices and give some degree of certainty as to what price is paid for the product generated by the project. A typical offtaker, however, requires some level of assurance that it will receive a minimum amount of product commencing by a certain date – essentially requiring minimum production guarantees. The offtaker will often obtain the right to receive liquidated damage payments for insufficient production. A production and performance guarantee is often provided under the equipment or construction contracts to provide the project company with some assurance that these minimum production levels can be met and are often evaluated as back-to-back mitigation measures to protect the project company from failure by the contractor to complete the facility in accordance with technical specifications.

Each type of facility will also have a different risk profile. A baseload project, such as nuclear, coal or natural gas facilities, will be able to meet minimum production but will be reliant on fuel supply, and project developers of these types of facilities attempt to mitigate the risk of commodity price fluctuations by entering into long-term fuel supply contracts. An intermittent project, such as wind or solar facilities, will require projections of wind resource or solar resource that are probability assessments based on historical resource reports

for the specific region.⁶⁴ Equipment warranties from construction and supply contracts also have a key role in ensuring that the facility will be protected against defects in design and manufacture.

Although lenders will be granted a security interest in all assets of the project company, the lenders cannot fully rely on this collateral package to repay their loans given that, at the inception of construction, the only real assets of the project company are the project documents and the rights in real estate, which in many transactions are often only leasehold interests. As such, it is fundamental to a project lender that a facility is constructed in a timely manner and in accordance with expected and agreed technical specifications. Given the reliance of lenders and investors on the ability of a project to produce enough energy or other product to generate sufficient cash flow, the risk allocation for the construction period is vital to the viability of a project and to ensure that the project sponsors are duly incentivised to complete it. Lenders in debt transactions will typically require equity contribution funding obligations in the range of 10 to 30 per cent of total project costs,⁶⁵ depending on the perceived construction and operational risks of the particular asset being financed.

In addition to the need to cover the increased interest costs during construction caused by a delay in completion of the construction of a project, offtakers will often impose liquidated damages for delays in commercial operation and a termination date if the delay goes beyond a certain date. To offset the risk of delays in construction, developers will demand delay liquidated damages from suppliers and construction contractors to ensure that components are delivered in a timely manner and that the facility is erected and constructed on schedule. In certain cases, when new technology is being deployed, construction completion guarantees may also be required of project sponsors if the lenders are not comfortable with the allocation of risk to the EPC contractor, as well as in other cases where the completion deadline is critical (e.g., if a delay may result in the loss of the offtake contract, key tax benefits or critical operating permits).

Standard project documents will contain limitations on liability to the project counterparties. These limitations will customarily exclude special, exemplary, indirect or consequential losses (including lost profits) and punitive damages from the scope of the counterparty's liability. A limitation on the aggregate liability of the counterparty under the project document will also be imposed and, to the extent that liquidated damages are payable, there are often sublimits for delay liquidated damages and performance liquidated damages that are lower than the aggregate liability for liquidated damages.

Project documents are also negotiated to allocate the risk of force majeure events between the project participants. A force majeure event is generally defined as being reasonably beyond the control of the party affected, such as acts of God, floods, wars, riots and other similar events.

Depending on the nature and size of the project, the parties may also need to address political risks. Certain projects, such as nuclear projects, must overcome local political and

64 These resource reports provide metrics based on probability scenarios. A P50 production means that there is a 50 per cent probability that the facility will produce the amount expected in a P50 production scenario for the designated period, and a P99 production means that there is a 99 per cent probability that the facility will produce the amount expected in a P99 production scenario for the designated period.

65 For technology that is well proven and construction risks that are not perceived to be high, the debt-equity ratio can be as low as 10 per cent; and for new technology that is being used or has not been fully commercialised, the level of equity contributions required can be even higher than 30 per cent.

public concerns about safety and the handling of waste materials. On the other hand, even renewable projects, including wind and solar projects, have encountered public opposition for a number of reasons.⁶⁶ PPPs, as discussed in Section IX, face their own particular challenges in terms of public and political opposition.

As previously noted, many renewable energy projects benefit substantially from federal tax grants or credits. These tax credits and benefits were designed to offer an incentive to developers, but these incentives are typically limited in time and subject to periodic renewal. Currently, PTCs will only be available for qualifying renewable projects that have begun construction before 1 January 2017 or, in the case of wind projects, before 1 January 2021. ITCs are available for solar facilities that have begun construction before 1 January 2022.

V SECURITY AND COLLATERAL

i Security interest and priorities

Secured transactions are primarily governed by state law. Given the potential variation among the 50 states, the National Conference of Commissioners on Uniform State Laws and the American Law Institute⁶⁷ has sought to harmonise the commercial laws among the states through the promulgation of the Uniform Commercial Code (UCC). Each state has more or less adopted the UCC with few substantive modifications.⁶⁸ Secured transactions with respect to personal property are covered under Article 9 of the UCC (Article 9). Real property transactions, however, have not been uniformly codified and are subject to the particular laws of the state and jurisdiction where the real property is located.

A lender or other secured party can obtain a security interest in the personal property of an obligor upon the execution of a security agreement, which will include a clause granting a security interest in favour of the secured party.⁶⁹ The personal property of the obligor will cover the hard, that is the physical and tangible, assets (e.g., wind turbines, solar panels,

66 Large wind and solar projects have significant footprints across hundreds and even thousands of acres of land, even though the foundation for each individual wind turbine generator or solar module is not that substantial. Some members of the public have objected for aesthetic reasons, claiming that the wind turbines or solar arrays obstruct residents' view of their surroundings. Others have raised concerns that wind turbines or solar arrays may affect endangered animals, particularly certain types of birds in the case of wind projects, and desert wildlife in the case of solar projects. The Shepherds Flat project in Oregon also faced an objection from the Department of Defense, which argued that, because of the proximity of the project to a military base, the blades of the wind turbines could interfere with radar. Similar objections have been raised with respect to solar projects near military installations and test facilities. We note that the objections of the Department of Defense in the Shepherds Flat project were settled. Most of these socio-political objections for wind and solar projects have not resulted in the closing down of projects, but these are risks that developers, lenders and investors must take into account.

67 The National Conference of Commissioners on Uniform State Laws and the American Law Institute are private, non-profit institutions.

68 The State of Louisiana has enacted most of the provisions of the Uniform Commercial Code [UCC], though we note that it did not adopt Articles 2 or 2A. See Cornell University Law School's Legal Information Institute's Uniform Commercial Code Locator at www.law.cornell.edu/uniform/ucc.html.

69 See Section 9-203 of the UCC. We note that for a security interest to be enforceable, the following conditions must be satisfied: (1) value must be given; (2) the grantor must have rights in the collateral; and (3) the debtor has authenticated a security agreement that provides a description of the collateral (or, with respect to certain assets that can be perfected by possession or control, the assets are possessed or controlled).

transmission lines, substations) and soft (intangible) assets (e.g., rights under material project documents and accounts). To the extent that the owner of the obligor is required to pledge its ownership interests as security for the benefit of the secured party, it will be required to execute and deliver an equity pledge agreement.

To protect the position of a secured party against other creditors, the security interest must be perfected under Article 9. The vast majority of personal property can be perfected by filing a financing statement⁷⁰ in the location of the obligor (for an organisation registered under state law,⁷¹ its location would be the state where it is registered). Article 9 provides that certain forms of personal property cannot be perfected merely by the filing of a financing statement and applies a different rule to perfection of such property.⁷² For certificated securities, tangible negotiable documents, instruments, money or chattel paper, perfection is obtained by actual possession of the documents.⁷³ At the closing of a project financing, the originals of the documents are delivered to the secured party. A security interest in deposit accounts or letter of credit rights may be perfected only by control.⁷⁴ Control of a deposit account is usually established pursuant to a tripartite agreement⁷⁵ between the obligor, the secured party and the bank where the deposit account is maintained. The most basic control agreement is an acknowledgment by the depository bank that it will comply with the instructions of the secured party without further consent of the obligor. A project finance transaction will involve a more complex depository agreement that provides detailed instructions as to the application of construction loan proceeds and operating revenues. For letter-of-credit rights, control is obtained through a consent by the issuer to an assignment of proceeds.⁷⁶ In addition to Article 9, the choice of law for the validity, perfection and priority of a security interest in securities held by an intermediary is also governed by the Hague Convention on the Law Applicable to Certain Rights in Respect of Securities Held with an Intermediary, which came into legal force and effect in the United States on 1 April 2017.⁷⁷

Security interests in real property interests are obtained pursuant to the execution of a deed of trust or mortgage. Each state has its own special requirements, but generally requires that the obligor grants its rights in the real property to the secured party and clearly identifies the real property interests involved. The security interests in real property are perfected by filing a mortgage or deed of trust with the local county recorder's office.

70 See Section 9-301 and 9-502 of the UCC.

71 For the purposes of the UCC, corporations, limited liability companies and limited partnerships are ordinarily registered organisations (see Comment #11 to Section 9-102 of the UCC). For entities registered with the federal government, including foreign organisations, their location is in the state that the law of the United States designates or the state designated by the registered organisation if the law of the United States so authorises; however, if neither of the foregoing applies, the default location would be the District of Columbia.

72 This chapter discusses investment property, deposit accounts and letter-of-credit rights. Article 9 of the UCC also imposes specific rules on the perfection of agricultural liens, goods covered by a certificate of title, electronic chattel paper and other narrow types of personal property.

73 See Sections 9-305 and 9-313 of the UCC.

74 See Section 9-312 of the UCC.

75 See Section 9-104 of the UCC.

76 See Section 9-107 of the UCC.

77 See the Hague Convention on the Law Applicable to Certain Rights in Respect of Securities Held with an Intermediary, available at <https://assets.hcch.net/docs/3afb8418-7eb7-4a0c-af85-c4f35995bb8a.pdf>.

ii Credit support

Project companies will often be required to deliver credit support in favour of third parties, including construction contractors, suppliers and offtakers. Likewise, project companies will sometimes be able to obtain credit support from such counterparties to the extent that the counterparties are not creditworthy. The credit support will often take the form of a letter of credit or a guarantee from a creditworthy entity.

Despite the non-recourse nature of project financing, lenders will typically seek a limited guarantee from the project sponsor. This limited guarantee will usually cover specified risks, such as cost overruns or minimum equity contribution amounts. For loan facilities that are contingent on the receipt of cash grant proceeds, reimbursement amounts or cash rebates from a government agency, a guarantee might be required to cover a potential shortfall. In addition, certain risks allocated to the project that are viewed as 'non-market' by lenders may be expected to be covered by a limited guarantee of the project sponsor.

For partnership-flip transactions, the tax equity investor is typically a special purpose entity and credit support from the tax equity investor's creditworthy parent will be required to backstop its capital contribution obligations. In some instances, a tax equity investor's capital contribution can be reduced under the terms of the ECCA and lenders will often seek a shortfall guarantee by the project sponsors to cover any such reduction.

VI INSURANCE AND PERFORMANCE BONDS

Insurance represents a highly specialised and regulated area of contract law. The allocation of insurance requirements among the parties in a project financing transaction follows the general project finance proposition that the party best able to manage the risk that is covered by a particular insurance policy should procure and maintain that insurance.

The project company will be required under the terms of financing documents to carry at all times commercial general liability insurance, worker's compensation insurance, pollution liability and umbrella or excess liability coverage. Areas that are subject to floods, earthquakes or other natural hazards will also require appropriate coverage. During the construction period, the project company will typically maintain all risk builder's insurance, and delay in start-up insurance and, to the extent applicable, marine transit insurance. The project company will also be required to maintain business interruption insurance during the operational period. These requirements represent a combination of standard industry practices and insurance requirements under project documents.

Lenders and investors will not carry their own insurance but rather will be added as additional insured parties to the project company's insurance. Additionally, lenders will require that they are named as the loss payee and that the proceeds of insurance policies be deposited into collateral accounts.

Construction contractors will be required under the terms of the relevant construction contract to carry commercial general liability insurance, workers' compensation insurance, professional liability, contractors' equipment and pollution liability, and umbrella or excess liability coverage. It is also customary for construction contracts to provide that the project company and its lenders be additional insured parties under these insurance policies.

During the operational period, to the extent that an operator⁷⁸ is retained to operate the project, the operator will also be required to maintain commercial general liability insurance, workers' compensation insurance and umbrella or excess liability coverage. Lenders and investors will retain an insurance consultant to review the insurance programme and to ensure that the insurance requirements for the project will meet market standards, the specific requirements of the project and the project company's obligations under project documents.

Unlike insurance, performance bonds are not always required for every project finance transaction. A performance bond is a contract between a contractor and a surety to provide assurance to the developer of a project that if the contractor defaults under its construction contract, the surety will perform the obligations under the construction contract. The surety also has a few other options available, including to buy back the bond, to substitute another contractor to perform the construction contract or to deny the bond if permitted under the terms of the performance bond. The owner must not be in default under the construction contract to make a claim under the performance bond. In addition, state law may impose certain statutory requirements for a performance bond. The cost of the performance bond is a project cost and is sometimes not required if the contractor is well established and has a strong track record for completing projects in a timely manner. In addition, in certain geographical areas or markets, the availability of a number of proven construction contractors allows the option of substituting and replacing a defaulting contractor with a strong developer.

Some construction contracts may also be supported by payment bonds. In most construction contracts, liquidated damages for delays are payable by a contractor and a payment bond can be issued, in lieu of a letter of credit, to support the payment obligations of the contractor.

VII ENFORCEMENT OF SECURITY AND BANKRUPTCY PROCEEDINGS

Upon the occurrence and continuation of an event of default under the financing documents, the lenders, as secured parties,⁷⁹ may elect to exercise remedies against the project company and its assets. The remedies provided under a customary financing agreement will include the right to suspend making additional loans, to accelerate the outstanding obligations, to cure breaches of the project company under the project documents, to possess the project, to marshal the project's assets and to conduct a private or public sale of the project company and its assets. The financing documents will also provide that the lenders are permitted to exercise all rights available to them under Article 9.

Chapter 6 of Article 9 is devoted to setting out the rights of creditors against personal property after a default in situations outside bankruptcy. A secured party may deliver notices to account debtors of the project company, including the counterparty to the offtake agreement⁸⁰ and enforce the obligations of an account debtor to make payment or render

78 In many instances, this will not be a third-party operator but an affiliate of the developer.

79 In most transactions, a collateral agent is appointed to act on behalf of the lenders and the other secured parties under the credit agreement. Under customary financing documents, a collateral agent may only undertake actions to which the majority lenders have consented.

80 As indicated above, it is typical for lenders to obtain consents to collateral assignment or direct agreements with counterparties to material project documents. A consent or direct agreement will set forth the collateral account to which payments must be directed, and as a result, a post-default notice is unnecessary since there is an existing agreement to deposit proceeds into the collateral account for which the secured party has rights to in an event of default.

performance.⁸¹ The secured party may take possession of the collateral and dispose of the collateral with or without judicial process.⁸² The disposition of collateral may be conducted privately or publicly, but in all instances, must be undertaken in a commercially reasonable manner.⁸³

Foreclosure on real property is subject to individual state laws. A foreclosing lender must also be aware that each state may have a special or unique statutory provision with respect to enforcement proceedings. For instance, California has the one action rule under Section 726 of the California Code of Civil Procedure,⁸⁴ which requires that a secured party exhaust all its remedies against a debtor's collateral before suing the debtor for deficiency; failure to do so may result in the loss of the secured party's liens on both personal and real property.

The proceeds of foreclosure are applied as follows: first, to reasonable expenses of collection and enforcement, including reasonable attorneys' fees; second, to interest and bank fees; third, to principal; and fourth, to any remaining outstanding obligations.

Most lenders in project finance transactions prefer to enter into work-out arrangements with defaulting borrowers in lieu of exercising Article 9 foreclosure remedies because of the flexibility available under a workout arrangement, coupled with the basic reality that in a non-recourse project deal, the principal source of repayment is revenue generation rather than asset disposition. Federal bankruptcy of a project company is generally the least attractive option for lenders; a debtor is more likely to obtain some sort of relief under a bankruptcy proceeding than a private workout or Article 9 foreclosure.

Federal bankruptcy law⁸⁵ pre-empts state law creditor laws, including Article 9. A bankruptcy case for a debtor may be voluntary (filed by the debtor) or involuntary (filed by creditors).⁸⁶ Once a bankruptcy petition is filed, it creates a bankruptcy estate and imposes an automatic stay against creditors that prevents any creditor from taking action against the debtor or its assets.⁸⁷ The rights of a lender to exercise any of its remedies under the finance documents or Article 9 is prohibited after the imposition of an automatic stay, notwithstanding its senior secured position. In addition, some liens, such as unperfected

81 See Section 9-607 of the UCC.

82 See Section 9-609 of the UCC. The taking of possession and disposal of collateral without judicial process may be done so long as it can be accomplished without a breach of the peace. A secured party may also agree with the debtor to have the debtor assemble the collateral and make it available to the secured party.

83 See Section 9-610 of the UCC. The factors for determining whether conduct is commercially reasonable is a function of statutory provisions, such as Section 9-627, and case law. The UCC provides for certain safe harbour provisions to demonstrate that a secured party has acted in a commercially reasonable manner. Section 9-612 offers one such safe harbour: 'a notification of disposition sent after default and 10 days or more before the earliest time of disposition set in the notification is sent within a reasonable time before the disposition'.

84 The purpose of Section 726 of the California Code of Civil Procedure was to protect defaulting debtors against multiple suits and harassment from secured parties by requiring 'one form of action for the recovery of any debt or the enforcement of any right secured by mortgage upon real property', but failing to comply with this provision has serious consequences for lenders.

85 Federal bankruptcy law is a composite of the Bankruptcy Act of 1898, the Bankruptcy Reform Act of 1978 and The Bankruptcy Abuse Prevention and Consumer Protection Act of 2005.

86 Section 301 of the Bankruptcy Code addresses voluntary bankruptcy petitions and Section 303 of the Bankruptcy Code provides for involuntary bankruptcy filings.

87 See Section 362 of the Bankruptcy Code.

security interests, may be invalidated under Section 544(a) of the Bankruptcy Code.⁸⁸ There are two basic types of bankruptcy cases for corporations and other business organisations: Chapter 7 and Chapter 11.

Chapter 7 of the Bankruptcy Code covers a liquidation bankruptcy in which all personal property⁸⁹ is converted to cash and distributed among the creditors. The bankruptcy court will appoint a bankruptcy trustee to oversee the liquidation of the debtor's estate.

Chapter 11 of the Bankruptcy Code applies to reorganisation of a debtor's assets, rather than liquidation. A debtor retains custody of its assets and is considered a debtor-in-possession. A debtor will be subject to a Chapter 11 plan pursuant to which a debtor will operate in the post-petition period. The debtor initially has an exclusive period in which to propose a Chapter 11 plan, but if the debtor fails to propose a plan that is accepted by creditors, any party in interest may file a plan and more than one plan may be filed.⁹⁰ After confirmation of the Chapter 11 plan, the debtor must perform under the approved plan. The liens of a pre-petition lender will not extend to personal or real property acquired after the filing of Chapter 11.⁹¹ In some instances, when a debtor can obtain financing from a post-petition lender, that post-petition lender may be granted priority over pre-petition lenders, by order of the bankruptcy court.⁹² A debtor-in-possession may continue to use, sell and lease encumbered property in the ordinary course of business in accordance with the Chapter 11 plan.

VIII SOCIO-ENVIRONMENTAL ISSUES

A number of licensing and permit requirements are relevant to project finance transactions in the United States. The project company will need to comply with federal permits as well as state, county and municipal permits applicable to projects in its jurisdiction. Permitting obligations are customarily spread between the project company and the counterparties to various project documents, ideally allocated to the parties best suited to perform and manage the obligations.

For the construction period, a number of permits will need to be obtained by the construction contractor in connection with the performance of its obligations, including building permits, air quality permits and construction permits with respect to any demolition, erection or construction of facilities. The project company will customarily obtain permits that will need to be issued in the name of the project owner during the construction period, as well as permits that may need to be in place during both construction and operational periods. These permits include local permits (such as any facility site permits and road

88 Section 544(a) may only invalidate the lien of a creditor, but does not extinguish the underlying claim. A creditor with an invalidated lien will be treated as an unsecured creditor.

89 There are exceptions for exempt property, but this generally does not apply in project finance.

90 See Section 1121 of the Bankruptcy Code. The substantive terms of the Chapter 11 plan are set out in Section 1123 of the Bankruptcy Code.

91 To the extent that a security agreement includes a provision to cover property acquired after the execution of the security agreement, Section 9-204 provides that such after-acquired property will be part of the collateral covered under the security agreement. Section 522(a) of the Bankruptcy Code overrides this state law by making it clear that property acquired by debtor after the Chapter 11 filing will not be subject to liens pursuant to any pre-petition security agreement.

92 See Section 364(d) of the Bankruptcy Code. Section 364(d) sets out requirements as to when a post-petition lender can prime the priority of a pre-petition lender.

use agreements) as well as federal permits (such as a Federal National Pollutant Discharge Elimination System permit if storm water is likely to cause discharge from a construction site). Certain types of projects will need to obtain specialised permits. For example, since wind turbine generators will exceed federal obstruction standards, a wind energy generating facility seeking a Determination of No Hazard to Air Navigation from the Federal Aviation Administration for each of its wind turbine generators, must demonstrate that there will be no substantial adverse effect.

Certain permits will need to be obtained at or around the time of commercial operation. Emissions and noise permits in certain jurisdictions are obtained during the testing period based on the results of the test performance of the facility. Other permits for use and operation will need to be obtained by the project company or its operator. To the extent that feedstock or other fuel is used to supply the facility, one or more permits will need to be obtained to allow the project company to transport and consume the fuel.

It is customary for lenders and investors to obtain a Phase I environmental site assessment (ESA) from an environmental consultant. A Phase I ESA will include a physical inspection of the site, examination of public records for environmental liens, prior land use and permits, and other investigations to determine whether any hazardous materials have been released or could potentially be released on the site. To the extent that a Phase I ESA reveals any recognised environmental condition or a potential environmental condition, a Phase II ESA will be undertaken and involve more intrusive sampling and measurements. In addition, a number of studies may be needed to demonstrate that the environmental and site impact does not adversely affect cultural resources or wildlife.⁹³

Importantly, compliance with the Equator Principles⁹⁴ may not be a legal requirement for financial institutions participating in project finance transactions, but it is an internal requirement for many banks participating in the project finance market. Accordingly, many financing agreements require that the borrower comply with the Equator Principles.

IX PPP

The PPP structure is used in a subset of project financing transactions when a government entity and a private sector entity are collectively engaged in the development, construction and operation of a public project. In the United States, the federal government does not usually engage directly in PPP transactions but has an important role through legislation and allocation of funding to states for infrastructure projects. The PPP market can be supported with legislation promoting infrastructure projects, with funding to states. States and local government agencies are the principal players in the PPP market. Unfortunately, legislation for PPP projects is not uniform throughout the 50 states and private sector developers and investors must understand the differences in both process and substance in the state where they seek to bid for a PPP project. The bidding process itself varies from state to state, but the

93 The nature of the studies needed will depend on the type of project. For example, bat and avian studies are needed to assess the impact of wind turbine generators.

94 The term Equator Principles is described in 'An industry approach for financial institutions in determining, assessing and managing environmental and social risk in project financing', dated 4 June 2003 and developed and adopted by the International Finance Corporation and various other banks and financial institutions.

underlying tenet of establishing an open and competitive process is a common theme. The review and acceptance process for bids differs substantially as each state has its own statutory requirements regarding the evaluation criteria.

One of the major considerations for PPP transactions is the level of public support for the project, the potential private investor and its corresponding bid. Public support can, directly or indirectly, affect both legislation with respect to PPPs and the bid and approval process for any potential PPP project.

The vast majority of PPP transactions in the United States to date have been primarily focused on transport infrastructure projects.

X FOREIGN INVESTMENT AND TAX ISSUES

An investor in the United States must consider the application of federal, state and local income taxes, franchise taxes, transfer taxes and intangible taxes. There is considerable variation in state and local tax regimes, which makes it difficult to generalise about state and local tax considerations, which are therefore not addressed.

A non-US lender to a US project will generally be subject to US federal withholding tax at a rate of 30 per cent on interest payments. This withholding may be reduced if the lender is entitled to the benefits of any of the applicable income tax treaties, many of which provide for an exemption from, or reduction in, withholding tax on interest. However, almost all US tax treaties include fairly mechanical anti-treaty shopping tests, and there are a number of other anti-abuse rules that make it very difficult for a non-treaty lender to access the US treaty network. Nevertheless, certain non-bank lenders that are not treaty eligible may qualify for an exemption from withholding on interest if they are not otherwise related to the borrower and the loan is in registered form for US tax purposes (which is generally easy to ensure).

The tax consequences of an equity investment in a US project will depend on whether the investor invests in the project through a partnership or corporation for US tax purposes. In either case, project income will generally be subject to net income tax, although in the case of a partnership, this may be imposed on the partners (collected by partnership advance withholding). In addition, if an investment is made through a corporation, distributions that constitute dividends will be subject to US federal withholding tax at a rate of 30 per cent. If an investment is made through a partnership, an equivalent branch profits tax may be imposed on the non-US partners on amounts they are deemed to have repatriated. These withholding or branch profits taxes may be reduced or eliminated by an applicable income tax treaty. There can be substantial variation in tax consequences depending on the structure for the project and the relevant investment vehicles.

XI DISPUTE RESOLUTION

In US project finance transactions, the historical preference of lenders is to have the financing documents governed by the law of New York State and to require borrowers and other counterparties to financing documents to consent to the jurisdiction of the courts of New York. The comparatively straightforward issues raised in disputes involving loans and other credit facilities have been viewed as rendering those disputes more suitable to judicial, as opposed to arbitral, determination.

Nonetheless, US courts follow the strong policy in favour of arbitration to enforce agreements that have elected arbitration. There are a number of project documents that

provide arbitration as the avenue for settling disputes. Parties choose from a large variety of institutions and rules, or ad hoc arbitration under rules of the parties' own design. Arbitral proceedings can be tailored by contract to modify the institutional rules and meet the specific needs of the particular transaction. Parties in US transactions typically designate the American Arbitration Association for their project finance disputes, and frequently choose New York as the place of arbitration.

The United States is also a party to the 1958 New York Convention and the 1975 Inter-American Convention on International Commercial Arbitration, which requires courts of contracting states to give effect to private agreements to arbitrate and to recognise and enforce arbitration awards made in other contracting states. Other enforcement mechanisms are available, including multilateral treaties, bilateral friendship, commerce and navigation treaties, and traditional principles of comity among nations.

XII OUTLOOK AND CONCLUSIONS

In the long term, project finance is expected to continue to be a popular vehicle to finance the necessary energy and infrastructure assets in the United States, particularly to replace the ageing fleet of coal-fired plants, nuclear plants and other public infrastructure, given the support of the strong legal framework and a strong, sophisticated private financing market (in addition to political support and other factors).

The US Energy Information Administration (EIA) estimates that energy consumption, across all sectors, will increase by 0.3 per cent per year between 2019 and 2050.⁹⁵ While additions to power plant capacity are expected to slow from the construction boom years in the early 2000s, it is expected that there will be more long-term growth in certain sectors, such as projects from renewable sources and natural gas. For example, the EIA projects that electricity generation from renewable sources will grow so that its share of total US energy generation will increase from approximately 19 per cent in 2019 to approximately 38 per cent in 2050 in the reference case, or as high as 40 per cent based on a high oil price case.⁹⁶ Additionally, projections from industry sources foresee that the United States may need close to US\$5.1 trillion in additional funding to support its standard infrastructure needs in the coming years.⁹⁷ With the enduring need for energy and infrastructure, the United States will look to project finance structures as one of the tools for satisfying this need.

95 See the US Energy Information Administration, *Annual Energy Outlook 2020* (29 January 2019), Table 2, available at https://www.eia.gov/outlooks/aeo/excel/aeotab_2.xlsx.

96 See footnote 42.

97 See footnote 50.

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