

SHORT- AND LONG-TERM IMPACTS OF THE CORONAVIRUS ON RENEWABLE ENERGY

MINI BRIEF 2020



The renewable energy industry is no stranger to disruptions. Over the past decade, the wind, solar and storage industries have experienced explosive growth despite on-and-off trade wars, as well as policy changes and uncertainty at both the state and federal level.

The widespread impacts of the global coronavirus pandemic present enormous challenges to the world economy, including the U.S. clean energy industry. Even as this paper was set to be published the economic, health and societal effects of COVID-19 remained in flux. In early May, 31 states had either partially reopened their economies or had plans to get back to business soon, including large states like Texas and Florida. Other states, including California and New York, set out rigorous benchmarks around testing and contact tracing that had to be met before any return to normalcy could even be contemplated.

Despite the ongoing uncertainty, a host of negative short-term COVID-19 impacts on the renewable energy industry and especially its workers have already been documented. Some of the most significant include:

- According to an analysis issued by Wood Mackenzie Power & Renewables in April, the severe economic disruptions caused by COVID-19 are forecast to reduce 2020 global solar PV installations from an initial estimate of nearly 130 gigawatts

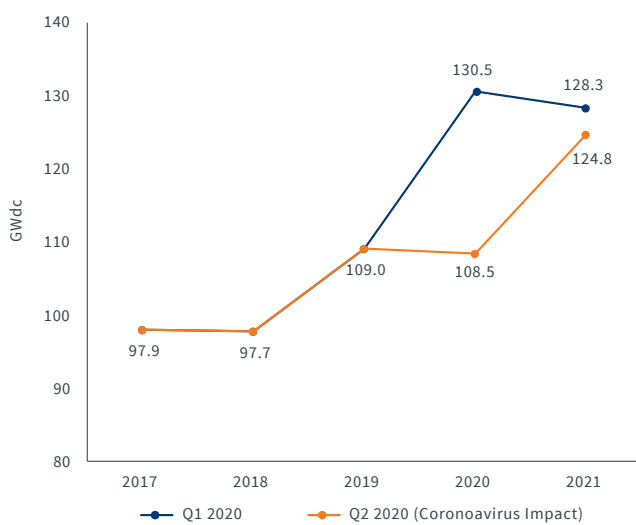
to just over 106 gigawatts. WoodMac also estimates that U.S. solar installations will decline 18 percent in 2020, from 19.6 gigawatts to 16 gigawatts. A variety of factors contributed to this predicted 18 percent reduction in installations, including project delays caused by supply chain disruptions and the rapid onset of an economic recession. In fact, WoodMac projected gross domestic product (GDP) growth in the U.S. to be -8 percent in the second quarter, -4 percent in the third quarter, and -1 percent in the fourth quarter, followed by a robust rebound in 2021.

- The economic recession and subsequent drop in consumer demand has been particularly hard on distributed generation, especially residential PV. No longer able to sell door-to-door and faced with customers unwilling to make big-ticket expenditures, residential PV installers have been hit hard with project cancellations and a scarcity of new prospects. As a result, WoodMac projects U.S. residential demand to drop 40 percent in 2020, to 1.9 gigawatts. Nevertheless, analysis of

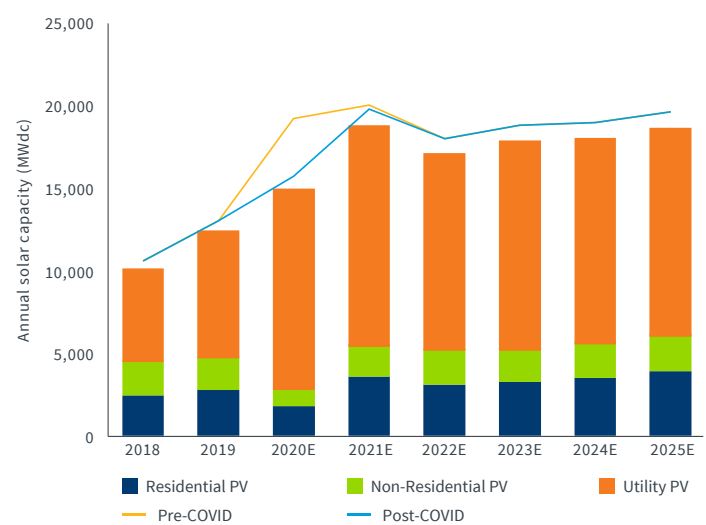
Figure 01: COVID-19 lockdowns drag-down short-term outlook, cutting 2020 outlook by 18%

The market should recover in 2021 as projects spill-over, but global recession puts a dampener on growth.

Change in solar PV installation outlook, 2020



Percentage change in solar PV installation outlook, 2020-21



Source: Wood Mackenzie Business

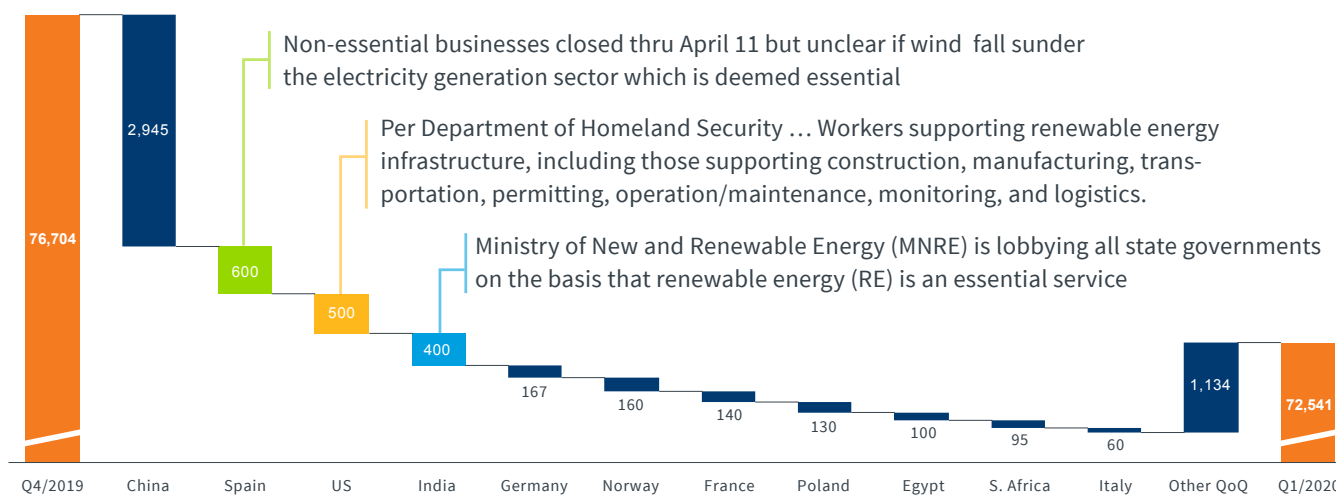
WOOD MACKENZIE DOWNGRADED ITS 2020 FORECAST FOR GLOBAL WIND INSTALLATIONS BY NEARLY 5 GIGAWATTS DUE TO THE IMPACTS OF CORONAVIRUS, WHICH HAVE INCLUDED FACTORY SHUTDOWNS AND EMPLOYEE FURLOUGHS.

Google search and permitting data found that total residential installations were higher in the first quarter of 2020 compared to 2019 as of April 6, a time period that accounts for about 3 weeks of lockdown in much of the country.

- WoodMac also downgraded its 2020 forecast for global wind installations by nearly 5 gigawatts due to the impacts of coronavirus, which have included factory shutdowns and employee furloughs by the likes of equipment manufacturers such as Siemens-Gamesa. The American Wind Energy Association (AWEA) projects that COVID-19 puts 25 gigawatts of U.S. wind projects representing \$35 billion in investments at risk.
- The quickly growing storage industry has not been shielded from the effects of COVID-19, with WoodMac projecting a 31 percent reduction of its baseline behind-the-meter storage forecast for the U.S. Overall, WoodMac’s preliminary forecast saw a drop of 20 percent from its original projections for 2020 battery storage additions.
- It’s also clear that COVID-19’s impact on the U.S. electricity markets and generators is significant. The U.S. Energy Information Administration recently revised its Short-Term Energy Outlook to include the repercussions of the pandemic. The EIA expects retail sales of electricity to the commercial sector to fall by 4.7 percent, with a projected 4.2 percent drop in industrial sales, the result of shuttered factories and businesses.

By no means is this an exhaustive list of the painful toll COVID-19 is exacting on the renewable energy industry. The Solar Energy Industries Association reported that over half of all solar workers could be laid off or furloughed as a result of the pandemic. More broadly, over 106,000 clean-energy workers – a figure that includes solar, wind and construction workers as well as electricians – filed for unemployment benefits in March, according to an analysis by BW Research.

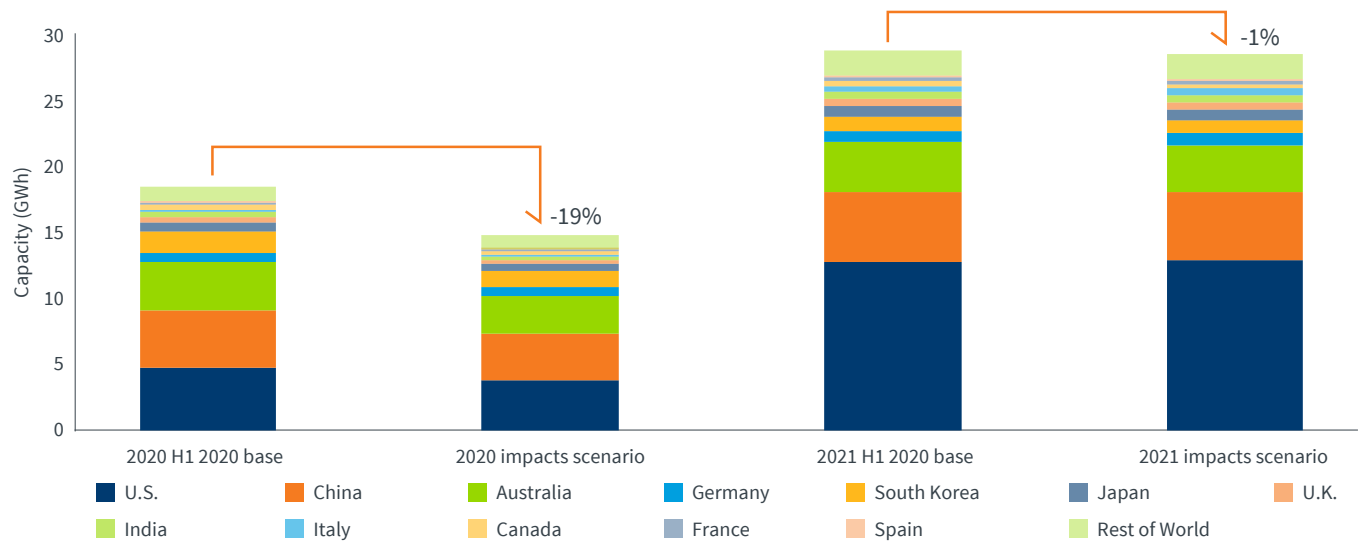
Figure 02: QoQ market outlook changes for CY2020 global wind energy market due to coronavirus (MW)



Source: Wood Mackenzie Business

THE QUICKLY GROWING STORAGE INDUSTRY HAS NOT BEEN SHIELDED FROM THE EFFECTS OF COVID-19, WITH WOODMAC PROJECTING A 31 PERCENT REDUCTION OF ITS BASELINE BEHIND-THE-METER STORAGE FORECAST FOR THE U.S.

Figure 03: H1 2020 base case vs coronavirus impacts scenario, 2020-2021



Source: Wood Mackenzie Business

Put simply, the short-term impacts of COVID-19 on renewable energy remain uncertain but undeniably painful. Nevertheless, it remains important not to lose sight of the long-term strength and momentum of the industry. In this paper, we will outline some of the fundamental reasons why renewables are particularly well positioned for the long term.

We will also delve more deeply into the impacts of COVID-19 on other aspects of renewable energy and financing, including:

- Tax equity financing
- Mergers and acquisitions
- The CARES Act
- Policy support
- Recent developments
- The road ahead

IN A POST-COVID-19 WORLD, THE DESIRE FOR INDEPENDENCE AND RESILIENCE SHOULD ONLY INCREASE INTEREST AND DEMAND FOR RENEWABLES.

A DIFFICULT AND UNCERTAIN NEAR TERM, BUT A BRIGHT FUTURE

At the beginning of 2020, before the full global impact of COVID-19 began to come into focus, the U.S. Energy Information Agency released its 2020 Annual Energy Outlook. The EIA's projections about the proportion of renewables in America's future electricity mix historically have been conservative.

In fact, just last year, the EIA forecast that natural gas would be the top source of electricity through 2050, easily outpacing renewables. This year was different. The EIA's forecast projected that America's electricity mix at midcentury would be 38 percent renewables and 36 percent natural gas. The EIA also estimated that cost declines for renewables would make wind and solar the fastest-growing sources of electricity generation, even in the absence of state and federal support.

The underlying reasons for EIA's newly bullish forecasts for renewables remain relevant even in the face of COVID-19's negative impacts. A few drivers behind the enduring long-term strength of renewables include:

- **Pure economics:** The cost-competitiveness of renewables only improves each year and has already made wind and solar an equal or better economic proposition than most fossil fuel alternatives. As just one example, the International Renewable Energy Agency last year found that 83 percent of global utility-scale solar projects set to be commissioned in 2020 offered lower prices than the cheapest fossil fuel alternatives. According to WoodMac, mature solar and wind technologies are already lower cost than natural gas across North America. WoodMac also forecasts that the cost advantage for renewables will remain even as subsidies phase down and that by 2030 offshore wind and behind-the-meter solar will be cheaper than carbon capture, coal, and nuclear generation.
- **Policy support:** Across the U.S., policymaker support for clean energy also remains robust at the state and local levels, where it is arguably the most important. According to a report released at the end of last year by the UCLA Luskin Center for Innovation, a total of 13 states, districts and territories, as well as 200 cities, have a commitment to achieve 100 percent clean energy targets. While not all states have targets or mandates to achieve the 100 percent goal, a host of states aim to generate a significant percentage of electricity from renewable sources. COVID-19 has done little to diminish those ambitions and has even prompted regulators in Hawaii, Connecticut and Arizona to reaffirm their commitments. In New York, the state hit hardest by COVID-19 to date, the government has made it clear that renewable energy will play a pivotal role in the state's economic recovery plans. A long-term improvement in the efficiency of permitting and interconnections may also result from COVID-19, as states have worked to better utilize technology to allow for remote inspections and permitting.
- **Corporate demand:** Continuously improving economics and ambitious sustainability goals have also led to massive corporate renewable energy procurements – a trend that is unlikely to reverse as a result of COVID-19. For instance, consumers are continuing to demand that the companies they do business with set and achieve ambitious sustainability goals. In addition, the already attractive and improving economics of renewable energy can help corporations cut costs in an economic climate where operational efficiency will be particularly important. According to Bloomberg New Energy Finance, 2019 saw corporate power-purchase agreements (PPAs) signed by over 100 large companies, with a cumulative total of nearly 20 gigawatts. This was a continuation of a trend driven by – though by no means limited to – demand

DESPITE SOME CONCERNS, THE ATTRACTIVENESS OF RENEWABLE ENERGY AS AN INVESTMENT - WHETHER FOR TAX EQUITY OR DEBT OR SPONSOR EQUITY - HAS REMAINED DURABLE.

from tech giants such as Google and Facebook. Indeed, 2019 represented a 44 percent increase from 2018's 13.6 gigawatts' worth of corporate PPAs and is the inevitable outgrowth of the 233 corporations that have committed to 100 percent renewable energy targets.

- **Energy independence:** One factor that has always driven the growth of renewables is the promise of the energy independence they can provide to consumers and businesses. The combination of wildfires and blackouts in California with improved battery storage economics and performance contributed to 2019 being the biggest year yet for U.S. installations. In a post-COVID-19 world, the desire for independence and resilience should only increase interest and demand for renewables. If anything, the singular importance of maintaining resilience for hospitals and other critical facilities has only been accentuated by COVID-19.
- **Oil price collapse** Just one indication of how bad things have gotten for oil producers was the price drop for West Texas Intermediate crude scheduled for May delivery. At one point, it was down 306 percent at negative \$37.63 a barrel. Yet while the world's oil majors slashed spending for traditional exploration and cut dividends, companies like BP and Shell largely retained their investments in low-carbon energy. Shell, for example, has already invested in clean energy companies like U.S. solar developer Silicon Ranch and has backed wind projects in both the U.S. and Europe. Shell's CEO Ben van Beurden explained that the rationale for the continuing investments was Shell's desire to be well positioned for an energy transition that may accelerate after COVID-19. The large oil and gas companies are exploring diversification of their existing traditional energy holdings through new renewable investments, electrification of transportation and new carbon fuel alternatives to extracted resources including hydrogen and other clean technologies.

TAX EQUITY FINANCING

Third-party tax equity has been instrumental in the explosive growth of renewable energy in the U.S. Even before COVID-19 began disrupting clean-energy supply chains and the global economy as a whole, there were questions about tax equity's role in financing wind and solar projects moving forward. The Tax Cut and Jobs Act signed into law in 2017 lowered the corporate tax rate from 35 percent to 21 percent. Because tax equity constitutes between 40 percent and 60 percent of renewable energy project financing, lower corporate tax bills were expected to translate into reduced appetite for tax equity.

Despite those concerns, the attractiveness of renewable energy as an investment – whether for tax equity or debt or sponsor equity – has remained durable. In fact, competition among large institutional investors for portfolios of projects to invest in has been exceptionally intense in recent years.

The impact of COVID-19 does inject complexity and uncertainty in the short term for renewable energy investors. Here are two reasons why:

- **Timing and supply chain disruptions:** Problems with the global supply chain and project delays could become an issue for wind and solar projects that need to be placed in service this year or next in order to receive the full federal Production Tax Credit (PTC) for wind or the Investment Tax Credit (ITC) for solar. Project delays are a major reason why renewable energy advocates have been lobbying the federal government for extensions of the ITC and PTC as well as clarification about how projects that are delayed can qualify for the credits.

On May 27th the IRS issued the latest guidance on the PTC and ITC commence construction safe harbor (IRS Notice 2020-41), in direct response to the impact of the Covid-19 virus on renewable energy projects that were relying on the commence construction rules. This guidance extended the continuity safe-harbor by adding one additional year,

COMPANIES WITH STRONG BALANCE SHEETS AND LITTLE DEBT ARE EYEING THE PROJECT PORTFOLIOS OF SMALLER DEVELOPERS, WHICH COULD LEAD TO SIGNIFICANT CONSOLIDATION IN THE NEAR FUTURE.

as well as provide a new safe-harbor for those projects relying on the special 3.5 month rule in order to meet the 5% spending safe harbor for construction beginning in 2019 before the pandemic.

- **Uncertainty about tax equity appetite:** What may be a larger concern for projects and developers seeking tax equity investors is the uncertain state of the economy. Less profitability for big companies simply means less need for the credits that reduce corporate tax obligations. But there are distinctions among investors. Major investors have publicly declared they will continue with multi-billion dollar investments, while some in the syndicate market and smaller investors have paused their activities.

TAX EQUITY DEALS CONTINUE, BUT SIZE MATTERS

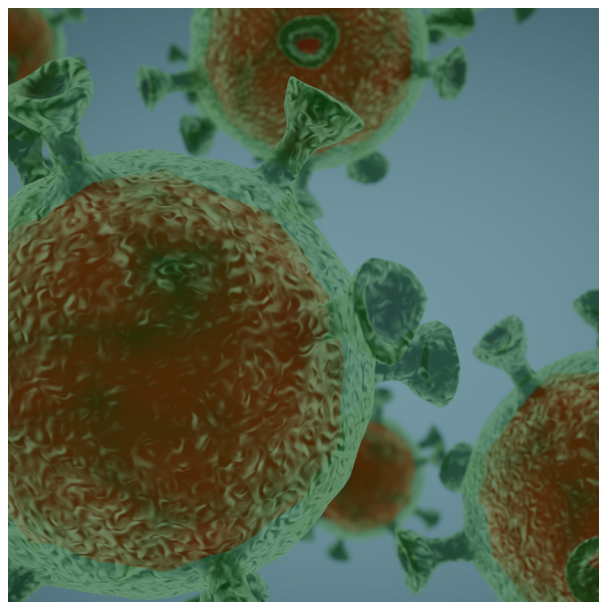
Even in the face of COVID-19 disruptions and uncertainties, there is evidence that renewable energy financing is available. For example, in April, Engie North America announced a \$1.6 billion tax equity package from HSBC and Bank of America to support up to 2 gigawatts' worth of renewable projects. Also in April, the independent power producer sPower announced that it had closed a \$350 million tax equity deal to support the development of the 620-megawatt Spotsylvania Solar Energy Center in Virginia. Other tax equity investors such as JPMorgan and large insurance companies have also been public about their ongoing commitment to renewable energy.

The impact of COVID-19 on project developers, however, varies significantly depending on their size and balance sheet strength. Here's why:

- **Size matters:** Smaller developers have been particularly hard-hit by project delays and even cancellations resulting from supply chain issues. Small solar, wind and storage developers

are also more likely to be impacted by any pullback in tax equity investment. By contrast, large developers are showing little sign of COVID-19 financing and construction problems. For example, NextEra Energy announced in April that it is not seeing any slowdown in its development of 5 gigawatts of new renewable capacity this year. While announcing its first-quarter financial results, NextEra also unveiled plans to invest \$1 billion in battery storage in 2021, including the 409-megawatt Manatee Energy Storage Center in Florida, which will replace two natural gas plants.

- **Merger and acquisition opportunities:** The fact that some smaller developers are struggling while larger players are continuing to operate almost as they did before COVID-19 has opened up merger and acquisition opportunities. Companies with strong balance sheets and little debt are eyeing the project portfolios of smaller developers, which could lead to significant consolidation in the near future.



ALTHOUGH THE RECENT CORONAVIRUS AID, RELIEF, AND ECONOMIC SECURITY ACT LEGISLATION DID NOT SPECIFICALLY ADDRESS RENEWABLE ENERGY POLICY, SPECIFIC ASPECTS OF THE CARES ACT ARE MEANINGFUL FOR THE RENEWABLE ENERGY INDUSTRY.

Though the dynamics for tax equity overall remain variable and uncertain, the solid fundamentals of renewables make the space likely to attract even more corporate investors over the long term. The post COVID-19 economy will very likely require a federal and state tax increase to pay for it. There is already talk about this in the industry. If this happens, tax equity will likely grow in popularity in the next 1-2 years, especially after the election with the possibility of a new Congress that is very likely to raise overall corporate tax rates even if they do not revoke the TCJA tax reform. A faction of the renewable energy sector is pushing Congress for a cash alternative to the ITC. This is particularly attractive to those companies that cannot or will not access the tax equity market. Time will tell if this comes into being.

While important, tax equity clearly is not the only component of renewable financing. Increased risk and uncertainty are likely to make debt more expensive for a relatively short period of time – somewhere between the next six to 12 months. While spreads on interest rates are likely to increase as a result, the intense competition among prospective project investors should normalize spreads over the long term.

A similar dynamic can be expected on the sponsor equity side. Before the COVID-19 pandemic, there was far more money from institutional investors available than there were renewable projects to support. While COVID-19 introduces a level of risk that may give pause to some investors, there's little doubt that equity investors will remain focused on financing renewable projects over the long term.

THE CARES ACT

In Late March, President Trump signed into law the Coronavirus Aid, Relief, and Economic Security Act, the federal government's first policy effort to soften the economic impact of COVID-19. Although the legislation did not specifically address renewable energy policy, specific aspects of the CARES Act are meaningful for the industry, including:

- **Net operating loss deduction:** One important change addressed IRS rules on the income tax accounting for net operating loss (NOL) deductions. The change allows taxpayers to carry back NOLs for five years from the tax years 2018 through 2020.
- **Business interest deduction:** Another significant element of the CARES Act was a change to the Section 163(j) business interest deductibility rules. As part of the Tax Cut and Jobs Act, allowable business-interest deductions were reduced from 100 percent of the interest expense to the interest income of the borrower plus 30 percent of the borrower's adjusted taxable income. Under the CARES Act, Section 163(j) was modified to allow certain businesses to temporarily deduct interest up to 50 percent of their adjusted taxable income.

AS OF MAY 27TH, A U.S. TRADE COURT DENIED THE TRUMP ADMINISTRATION'S ATTEMPT TO WITHDRAW AN EXCLUSION IT HAD GRANTED TO TWO-SIDED (BI-FACIAL) SOLAR PANELS.

RECENT DEVELOPMENTS

- On May 1 President Trump issued an executive order prohibiting the acquisition of bulk power system equipment, including generation turbines, metering equipment, and industrial control equipment supplied by countries deemed foreign adversaries or those under their control. The order was presented as a step to protect national security and directed the U.S. Department of Energy (DOE) to conduct a rulemaking within 150 days. Among the most pressing questions for the clean energy industry is whether the order will ultimately limit the use of equipment manufactured in China. As of the date of this paper, industry experts' commentary on the executive order is that it was not intended to disrupt the renewable energy industry.
- On May 4, the U.S. Department of Commerce also announced its plans to begin an investigation into whether imported transformers pose a threat to national security. The investigation could lead to the imposition of tariffs that would add to the existing tariffs on imported aluminum and steel components used to make transformers. Solar and wind developers often order transformers as a way to officially commence projects in order to qualify for federal tax credits. Based on the current industry understanding on the purpose of the tariff proposal is that if imposed, this tariff most likely will only apply to a few components or subsystems of the transformer rather than the entire transformer.
- On May 27th, in Notice 2020-41, the IRS provided an extra year to the four-year "Continuity Safe Harbor" previously provided in existing guidance for the production tax credit under section 45 and the investment tax credit for energy property under section 48. The guidance was in response to concerns expressed by companies facing supply chain delays related to the COVID-19 pandemic. Under this new guidance, projects begun in 2016 and 2017 and that are placed in service in five years from the date construction was commenced, such construction will be deemed continuous.

In the same guidance, the IRS also provided assurance for taxpayers who had begun construction by incurring 5 percent of eligible project costs and had made payments for services or property with the reasonable expectation to receive those services or property within 3 ½ months. The IRS notice expressly provides that if the services or property are received by October 15, 2020, the taxpayer's expectations at the time of the 2019 payment are deemed to be reasonable. It is believed that this new guidance will add a higher level of certainty to the capital markets which in some sectors had expressed hesitation to commit investment capital absent this clarification by the IRS.

- As of May 27th, a U.S. trade court denied the Trump administration's attempt to withdraw an exclusion it had granted to two-sided (bi-facial) solar panels. A federal judge set a June 17 date for the parties to submit a schedule for how the case will proceed.
- On May 20th, the Office of Comptroller of the Currency (OCC) published the updated and the final Community Reinvestment Act (CRA) rules which for the first time expressly support renewable energy and in particular solar energy. There is now a new definition of Essential Infrastructure (which should pick up solar and renewable energy activities) and in addition, the rules expressly discuss how renewables would fit into a CRA evaluation. There are also now several express examples of solar energy on the CRA Qualifying Activities list. This recent development is noteworthy because such CRA regulatory 'credit' is of critical importance to many federally regulated financial institutions. Accordingly, this change to federal financial regulations is expected to positively incentivize such regulated institutions to increase their investment and lending activity in renewable energy projects. This has been the historical impact of similar rules in the affordable housing tax-equity market, where tax-equity credit pricing has been proved to have been increased strictly due to the CRA value of such investments.

THERE IS EVERY REASON TO BELIEVE THAT RENEWABLES WILL RESUME THEIR ROBUST GROWTH TRAJECTORY ONCE THE WORLD MOVES BEYOND COVID-19.

LOOKING FORWARD

One fundamental truth about the ongoing COVID-19 crisis is that its impacts on renewable energy companies and their employees have been painful, including:

- Significant job losses
- Project delays and cancellations
- Reduced demand
- Financing uncertainty

Because these challenges are so immediate and serious, it can be difficult to keep the long-term strength of the renewable energy sector top of mind. Nevertheless, those fundamental strengths remain, and many are likely only to increase in a post-COVID-19 world.

Not only will wind, solar and storage continue to decrease in cost and become increasingly attractive compared to fossil fuel alternatives, but demand among corporations, consumers and utilities alike will continue to expand in the future.

Policy support at the state level also remains steadfast and is even accelerating, however this should be tempered in the immediate to near term how state and local budgets will enable such support due to the tremendous impact that COVID-19 has had on their budgets. If the elections in November lead to a change of administration and the U.S. Senate, increased federal government support could also buoy the growth of renewables. Even if no such change occurs, the industry has proven its ability to grow vigorously in any policy environment. There is every reason to believe that renewables will resume their robust growth trajectory once the world moves beyond COVID-19. Continuously improving economics is a big part of the reason. But the fundamental reality that renewable energy is an indispensable tool in the world's effort to decarbonize assures that wind, solar, and storage will continue to attract significant investment long into the future.

To fully understand the risks and opportunities of a shifting renewable energy market, it's important to choose a team with deep advisory, financial, tax and audit expertise in this sector. Together, CohnReznick and CohnReznick Capital make up one of the largest renewable energy advisory practices in the nation. We provide trusted M&A advisory, tax and audit services for many of the largest and most active renewable energy companies including project developers, IPPs, infrastructure and private equity funds, tax equity investors and utilities. To learn more, please visit:

www.cohnreznick.com/renewableenergy and www.cohnreznickcapital.com

SHORT- AND LONG-TERM IMPACTS OF THE CORONAVIRUS ON RENEWABLE ENERGY


MINI BRIEF 2020


Copyright © CohnReznick LLC/ CohnReznick Capital Markets Securities LLC. All Rights Reserved.

General Disclaimer

While the information provided herein is believed to be accurate and reliable, neither CohnReznick or CohnReznick Capital (“CohnReznick”), nor any of their affiliates makes any representations or warranties, express or implied, as to the accuracy or completeness of such information. In particular, no representation or warranty is given as to the achievement or reasonableness of, and no reliance should be placed on, any projections, targets, estimates or forecasts contained herein. Delivery of this presentation shall not, under any circumstances, create any implication that the information contained herein is correct or complete.

CohnReznick has not independently verified any such information and assumes no responsibility for its accuracy or completeness.

CohnReznick 
ADVISORY • ASSURANCE • TAX

CohnReznick 
Capital

gtm.
A Wood Mackenzie Business