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## **THE US CLEAN-ENERGY TRANSITION IN THE ERA OF COVID-19: THE PROSPECTS REMAIN ROBUST**

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The devastating impact of COVID-19 is unprecedented – spanning the globe, disrupting daily life, and taking a substantial toll on every sector of the economy. The US energy sector was further roiled by a combination of COVID-19 supply chain challenges and demand reductions, as well as geopolitical tensions between oil-producing countries sending the price of US crude oil negative in late April. This article examines areas that are bright spots for clean energy in the US now and in the future in the midst of current turmoil. Although the US federal government has not bolstered the clean energy economy in its first COVID-19 economic stimulus measures, big new renewable-energy and storage projects continue to be planned and approved, driven by the markets and economics and by political and social forces. These developments are reviewed in the context of the global response to the social and economic disruption of COVID-19, including considerations of how green investments can be part of the economic recovery from COVID-19.

### **Immediate impacts of COVID-19 on the clean-energy industry**

The negative impacts of COVID-19 on the clean-energy economy have been amply chronicled in recent months. A struggling economy will reduce demand for wind and solar development, and may limit the availability of tax equity financing. In early April, Wood Mackenzie reduced its forecast for global solar deployments to 106.4 GW – a reduction of 23.1 GW (18 per cent) relative to its prior forecast. Global electric vehicle (EV) sales are projected to fall 43 per cent in 2020 relative to 2019, from 2.2 million vehicles last year to 1.3 million this year, reflecting a combination of three effects: the impact of COVID-19 and of oil prices and the consumer response to a slower roll-out of new models.

In the US, residential energy-efficiency service providers have inevitably been hit hard, putting many of the 2.4 million jobs in the US energy-efficiency sector at risk. BW Research Partnership noted in early July that half a million jobs in the US clean-energy sector (15 per cent of jobs in the sector) had been lost since March. That number did not include workers who had been furloughed or were underemployed. Yet federal action to support the clean-energy sector has to date been minimal, and many state legislatures have been forced to suspend or postpone their sessions, substantially limiting opportunities to advance clean-energy policy at the state level.

Our current reality is alarming, especially in the context of the urgent need to drastically reduce emissions in the coming decade to avoid the worst impacts of climate change. Yet amidst the tumult, prospects for the US clean-energy transition remain strong. Wood Mackenzie is projecting that the US will add 18 GW of new photovoltaic capacity and 1.2 GW of energy storage capacity in 2020 – both record amounts – and near-term plans for major projects continue to advance under the leadership of state-level policymakers and utilities, bolstered by the entrepreneurship of technology providers and the support of the finance community.



## Planned projects for wind, solar, and energy storage in the US

As lockdowns spread across the globe this spring, global electricity demand dropped by 2.6 per cent. This affected all fuels; in particular, generation from coal dropped by 10 per cent. In contrast, generation from renewables increased by 3 per cent, because renewables beat other sources based on cost. While the International Energy Agency forecasts electricity generation will be down by 5 per cent in 2020, it forecasts that coal generation will be down by 25 per cent and renewables generation will be up by 11 per cent. COVID-19 may ultimately speed the reduction in use of coal.

New wind projects continue to be announced, with ever larger capacities. American Electric Power recently announced state regulatory approval that enables it to pursue its North Central project in Oklahoma, supplying 1.5 GW of power. The project comprises three wind farms with the largest sized at 999 MW, set to be the largest single-phase wind farm in the US. Meanwhile, Xcel Energy is doubling its in-house wind capacity to 4.5 GW by the end of 2021, and will reach that in part by building a 552 MW wind farm, named the Sagamore Wind Project, in New Mexico.

In solar, the largest project in the US, which will be the eighth largest solar facility in the world, was recently approved – a 690 MW project to be built by NV Energy just north of Las Vegas, which could be completed by 2022. Coming in just below that is sPower's Spotsylvania project, which will add 620 MW solar in Virginia. Community solar continues to expand, prompting Arcadia and Nexamp to recruit additional employees as new states open up to community solar, e.g. Florida Power & Light getting approval for 1.5 GW of community solar arrays.

At the state level, California's Public Utilities Commission approved a new programme that is designed to resolve a limitation to building new utility-scale solar under the 1978 Public Utilities Regulatory Policies Act. In Massachusetts, the Department of Energy Resources doubled the capacity of small and medium solar projects that can benefit from the state's Solar Massachusetts Renewable Target (SMART) Program, from 1.6 GW to 3.2 GW.

Working to create equitable access to clean energy for socially vulnerable communities is critically important. The New York State Energy Research and Development Authority and the New York State Department of Environmental Conservation recently allocated \$10.6 million to enable disadvantaged and environmental-justice communities in New York to access solar power. This announcement came shortly after the New York Public Service Commission approved an additional \$573 million in funding for the NY-Sun programme, dedicated to the goal of installing an additional 6,000 MW of distributed solar in New York by 2025 – with almost one-third of that additional funding dedicated to serving socially vulnerable communities.

In their most recent quarterly US Solar Market Insight Report, Solar Energy Industries Association and Wood MacKenzie projected 113 GW of new solar installations in the US from 2020–2025, reduced by 3.6 GW relative to their prior forecast, made in 2019. This projected growth in the coming five years, only slightly dampened by the impacts of COVID-19, is consistent with broader plans for growth in renewables and storage recently announced by major energy companies and utilities.

NextEra is maintaining momentum through the COVID-19 shutdowns and anticipates adding 5 GW of renewables capacity this year. In addition, the company announced that it will spend \$1 billion on energy storage in 2021, on projects including the Manatee Energy Storage Center in Florida with 409 MW capacity. On a slightly longer time frame, they expect to add 10 GW of solar capacity through Florida Power & Light in the 2020s.

Meanwhile PacifiCorp – which serves 1.9 million customers across six states in the Pacific Northwest and Rocky Mountain regions – is preparing an all-source Request for Proposals to be announced in July, to meet the goals of its Integrated Resource Plan through 2024. Within the next three years, the company seeks to collocate 1.8 MW of new solar power and 595 MW of battery storage capacity, and establish 1.9 MW of new wind resources. This may enable four coal-fired power plants in Wyoming to be retired early.

In a similar story of displacing fossil fuel generation, Southern California Edison is pursuing battery storage rather than a gas peaker in Ventura County. This decision was affected by grassroots community pressure against the new fossil fuel generation. Strata Solar will build and operate the largest project for Southern California Edison, which will incorporate a 100 MW/400 MWh battery from Tesla.

Today there is already a compelling economic case for turning to wind, solar, and storage projects – and the levelized cost of energy for each continues to fall as technology continues to advance. Furthermore, as individual wind, solar, and storage projects increase in size, scale enables them to cut the costs associated with the balance of plant, equipment, operations, and maintenance – feeding a virtuous cycle which makes them even more competitive and will further accelerate their adoption. Broad understanding of the need to convert our energy system to one that has substantially lower greenhouse gas emissions and is climate resilient adds to the momentum of growth in clean-energy generation.

### Boosting the economy, reducing GHG emissions globally

All these developments are unfolding at a time when COVID-19 has forced a reckoning on what kind of a society we want to live in, and how governments across the world can direct stimulus efforts to limit the pandemic's economic damage. Many people within and outside the clean-energy and climate community recognize that the emissions reductions and economic benefits that can be realized from a green stimulus effort are compelling. The International Renewable Energy Agency has published a Transforming Energy Scenario, which maps how a global investment of \$110 trillion would increase global GDP 2.4 per cent higher than their baseline scenario, quadruple renewable energy jobs to 42 million (without accounting for additional jobs in related sectors), and cut global carbon dioxide emissions by 70 per cent by 2050. The International Energy Agency is similarly advocating for green stimulus efforts, emphasizing opportunities to support increased energy efficiency, increased renewable energy, and investment in technologies such as lithium ion batteries and electrolysis for hydrogen production.

While the US federal stimulus measures passed to date have provided no direct benefit to the clean-energy sector, there are of course proposals for and discussions of ways in which a future stimulus measure can provide the requisite economic benefit and at the same time drive adoption of clean energy and improved climate resilience. One historical example of this is the success of the 2009 American Recovery and Reinvestment Act in supporting manufacturing related to clean energy such as EVs. That stimulus helped Tesla build its first major car factory in Fremont, California, and ultimately launch the Model S sedan. In addition to the economic benefits and emissions reductions that this investment can support, it also helps the US remain competitive in the global clean-energy economy.

While the federal-level discussion of green stimulus measures is not bipartisan at this time, the outcome of the US election in November has potential to substantially reshape the dialog. In June, the Democrats put forward three substantial stimulus proposals – the GREEN Act as part of the Moving Forward Act, the INVEST Act, and the Climate Crisis Action Plan – based on a framework that includes a national goal of net-zero emissions by 2050 and a price on carbon. The policy proposals include a federal clean-energy standard that reduces power-sector emissions to zero by 2040, a zero-emissions vehicle sales standard that ensures all light-duty vehicles sold are zero-emissions by 2035, and new tax incentives for EVs, solar, storage, and offshore wind. Additional policies cover energy efficiency and agriculture.

The INVEST Act, allocating \$494 billion over five years, focuses on reliable and resilient infrastructure and climate change mitigation for surface transportation. It proposes funding projects to reduce greenhouse gas emissions from transportation in states whose transportation emissions are highest, and includes funding for charging and fuelling stations for electric and zero-emissions vehicles, as well as investment in zero-emissions buses, rail networks, and projects that promote pedestrian and cyclist safety. Additional funding is set aside for climate-resilient infrastructure, including a disaster mitigation programme. Measures to promote equitable clean infrastructure development are woven throughout. The provision of low-cost capital invested to improve building, transit, and bicycle infrastructure to reduce energy consumption can be a significant source of employment to support economic recovery, in which the jobs created are diverse and high-quality, and span states that are traditionally Republican strongholds as well as others that are bastions of the Democratic Party.

The urgency to transition to clean energy rapidly to limit greenhouse gas emissions and safeguard the planet for future generations remains, even as we grapple with the profound consequences of COVID-19. The analogy between COVID-19 and climate change has been made many times: both are immensely disruptive on a global scale; both can be mitigated when science is used to inform prompt and large-scale action; both force us to consider vast and rapid systemic change. In addressing the economic damage wrought by COVID-19, we must prioritize investment in clean energy – to mitigate climate change and the economic damage it will inflict, and to accelerate the transition to a low-carbon energy system that is already underway. As [Enrique Dans wrote in Forbes](#), reflecting on the climate crisis in the midst of COVID-19, 'Reconstructing the energy supply map of a country, even those in the developing world, has never made more sense ... The time has come to abandon outdated concepts, to change our mindset, and to put the use of renewables at the top of our list of priorities.'