

Overcoming Risks to Enable an Efficient US Energy Transition

A whitepaper in conjunction with:



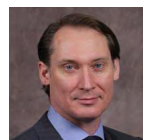
EXECUTIVE SUMMARY

The energy transition is rapidly accelerating, fueled by economic, technological, societal, regulatory, and investment forces. As the demand for renewable energy grows and efforts to decarbonize continue, the risk landscape is becoming more complex. Stakeholders in renewable energy projects need to take a comprehensive and critical review of their risk management plans, including their insurance needs, so they can keep pace with new developments, become more risk resilient, remain competitive, and achieve long-term project success. This paper, developed in association with the insurance brokerage and risk management firm Marsh, looks at the main risks associated with the rapidly evolving energy transition and outlines ways to mitigate them.

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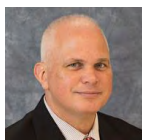
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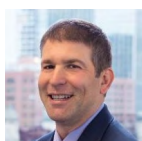
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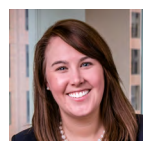
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ENERGY TRANSITION CAUSES RISK LANDSCAPE TO EVOLVE

The pace and scale of change brought on by the U.S. energy transition mean that associated risks are evolving quickly, even as new ones emerge. Key current challenges include the pace of new technology development, the impact of natural catastrophes, financing and tax issues, insurance market concerns, regulatory changes, and workforce developments.

Difficulties in managing this new set of risks are exacerbated by the speed at which efforts to decarbonize are taking place. The Energy Information Administration projects that the share of renewables in the U.S. electricity generation mix will double from 21 percent to 42 percent by 2050, including plans to develop 30 GW of offshore wind by 2030.

Those involved in the ownership, financing, operation and construction of renewable energy assets must take a careful and comprehensive view of the ever-shifting risk landscape, adapting and strengthening their risk management practices and risk financing in the face of change.

New technology changes catastrophe risk exposure

As solar panels, wind turbines, and batteries replace legacy coal and gas-fired boilers and turbines, these fundamentally different technologies are vulnerable to different kinds of risk. For example, while large legacy power plants are relatively hardened against natural events such as floods and windstorms, the distributed and exposed nature of wind and solar projects makes them more prone to severe weather impacts. This changes the way insurers, project developers, and other stakeholders must approach both the financing and mitigation of natural catastrophe risk.

“The natural hazard component is now a more significant factor in the risk profile,” says Michael Kolodner, U.S. Power and Renewables Industry Practice Leader at Marsh Specialty. One problem in assessing these hazards, he says, is that historical records tend not to distinguish between the frequency and the severity of events. And in the absence of data, it becomes more difficult to quantify the risk and to price insurance or other financial risk transfer products.

Marsh is working to improve the understanding of natural catastrophe risks through [advanced screening](#) and risk identification techniques, sophisticated risk modeling, and technical analysis that allows appropriate mitigation processes to be put in place.

New technologies have their own operating risks as well. A leading-edge perspective on innovations and new developments are vital tools as new technologies come into play, because without a track record of performance it can be difficult to determine a fair price for risk. For example, the recent growth of the battery storage market has led to an increased focus on fire risks and mitigation for these systems. When working with new technology, Marsh takes into account technological developments, industry standards and codes, and the current state of best practices to offer a perspective on design and engineering criteria to proactively manage risk.

Financing issues

Financing is arguably the most critical risk associated with the energy transition: without it, renewable energy projects cannot be deployed. Fortunately, U.S. investors and banks are experienced investing in mature renewable energy technologies such as solar and wind.

Marsh says that financiers recognize three broad categories of risk in renewables:

- The project doesn't generate as much power as expected.
- The project breaks down or suffers a catastrophic event.
- Operating costs are higher than predicted.

"If left unmitigated or untreated, any of these could create a substantial financial loss," Kolodner says.

Risk transfer through insurance or some other means is a standard part of the toolkit to manage such financial challenges. But the starting point, Kolodner notes, is to understand the risk and to have a realistic expectation of which stakeholder should carry that exposure. This should allow project developers and financiers to decide which risks they are comfortable retaining, and which are best left to firms that specialize in pricing and carrying risk for others.

It's important that actors in the energy transition have a realistic understanding of the riskiness of their investments. While most risk can be transferred to the insurance market, stakeholders should be careful not to assume that all risk can be transferred to the insurance market at a price that isn't detrimental to project economics.

Renewable energy insurance markets

Like any industry, in order to grow, the renewable energy industry needs sufficient insurance market capacity at a reasonable cost. Some renewable energy asset classes are mature enough to attract attention from mainstream insurers in addition to existing specialty underwriters.

Yet despite the growing maturity of renewable energy, insurance programs are both more expensive and more complex to manage today than in prior years. Some of this is due to trends in the broader insurance market—not just for renewable projects—where pricing has been increasing and insurers are scrutinizing all risks more carefully. As of the end of 2021, insurance pricing globally has increased, on average, for most major coverage lines for seventeen consecutive quarters, according to Marsh data.

Despite increasing supply in the insurance market for renewables, risk appetites between insurers can vary tremendously, which makes the process of optimizing that supply more difficult. When stakeholders combine these varying appetites, the broader insurance market price dynamics, the pace of technological development, and the requirements of project finance, the insurance market for renewables remains challenging.

Leading renewable energy industry players may be able to offset some of the cost by taking an alternative, more mature approach to risk management. For example, Kolodner cites a developer that reduced the cost of insurance by 40 percent simply by aggregating certain risks across its global portfolio following a comprehensive risk assessment that supported alternative program structuring acceptable to lenders. By investing in risk identification and risk analysis, this developer dramatically expanded the suite of options available to manage their project risks.

Because not all companies may be willing or able to invest in improving their approach to risk management in this way, the current insurance climate could lead to a growing distance between industry leaders and other companies, he says.

“The renewable industry got used to cheap insurance, structured in a very specific way,” Kolodner says. As costs increase, “valuations are adversely affected, and there’s less cash to fund operations and maintenance, putting some project sponsors and their financial partners at greater risk—unless we can deploy more sophisticated approaches to risk.”

Segment and region-specific issues

Beyond the generic risks associated with the energy transition and resultant insurance market shifts, each geographical or technology market has its own set of challenges. A good example of current geographical risk is the coastline of the Gulf of Mexico. This region is attractive to renewable energy developers because of its abundant wind and solar resources. However, this area experiences frequent hurricanes that are expected to become more severeⁱ. In addition to geographic factors, wind, solar, and battery storage projects carry distinct risks, so carriers assess each type of technology differently.

Battery storage, for example, has come under scrutiny following a number of fires. Such events can substantially alter the insurance conditions for an asset. These incidents have led to an increase in both insurance prices and in deductibles, potentially limiting the coverage available. In another example, wind turbine manufacturers regularly release newer, more powerful models—but until these wind turbines have a demonstrated track record, insurance underwriters can be reluctant to take on the risks associated with the wind turbines’ performance.

But developers and investors should be aware that—with new technologies particularly—a single event can have an outsized impact on a project’s risk profile. Renewable energy developers can benefit by working with their risk advisors to develop a strategy that showcases their approach to risk management, including documenting all project-related information in detail for insurance providers.

Tax credits

The financing of any renewable energy development in the United States is also contingent on a project’s tax credit eligibility. Tax credits have played a major role in developing renewable energies in the United States, with the Investment Tax Credit (ITC) helping the U.S. solar industry grow by more than 10,000 percent since its introduction in 2006ⁱⁱ. Despite longstanding plans to phase them out, the ITC and the Production Tax Credit have thus far been regularly renewed to support the solar and wind industries, respectively. The current administration does not seem likely to reverse this trend.

Nevertheless, there are at least half a dozen features of the current tax regime that continue to constrain the financing of renewable energy projects, according to Marsh. These are:

- Not all projects eligible for credits are palatable for tax equity providers. To counter this, tax credit insurance often can be used to bridge the gap between absolute investor certainty and a ‘should’ level of comfort regarding tax credit eligibility.
- Credits cannot overcome investor concerns arising from weak developer balance sheets, although tax credit and representations and warranties insurance potentially can be used to transfer risk to a pool of highly rated insurers.
- Plants exposed to natural catastrophe damage may lose their tax credit status if they cannot fully replace equipment. This risk may be mitigated with adequate insurance coverage.
- Tax equity providers typically prefer developers with large pipelines and a proven track record, which can put lesser-known developers and smaller projects at a disadvantage.
- Tax credits for new technologies are still in development, so it is important to seek expert advice on appropriate risk management tools.
- There may not be a sufficient depth of tax equity to support the current pipeline of onshore wind, solar and other technologies, as well as looming large scale offshore wind projects and carbon sequestration.

In light of these challenges, and where circumstances of a project do not fit squarely and unambiguously within the scope of tax legislation and Internal Revenue Service guidance, renewable energy companies can use specialized advisory services that bring thorough knowledge of changing and new tax credits to provide protection required by capital providers.

Shifting regulatory risks

The new administration in Washington is making changes to federal regulations and to incentives that impact renewable energy supply and demand, along with changes that affect where and when projects can be built. From Federal Energy Regulatory Commission directives and emissions restrictions to increased environmental scrutiny, renewable energy stakeholders need to be aware of how shifting policies may impact their business operations.

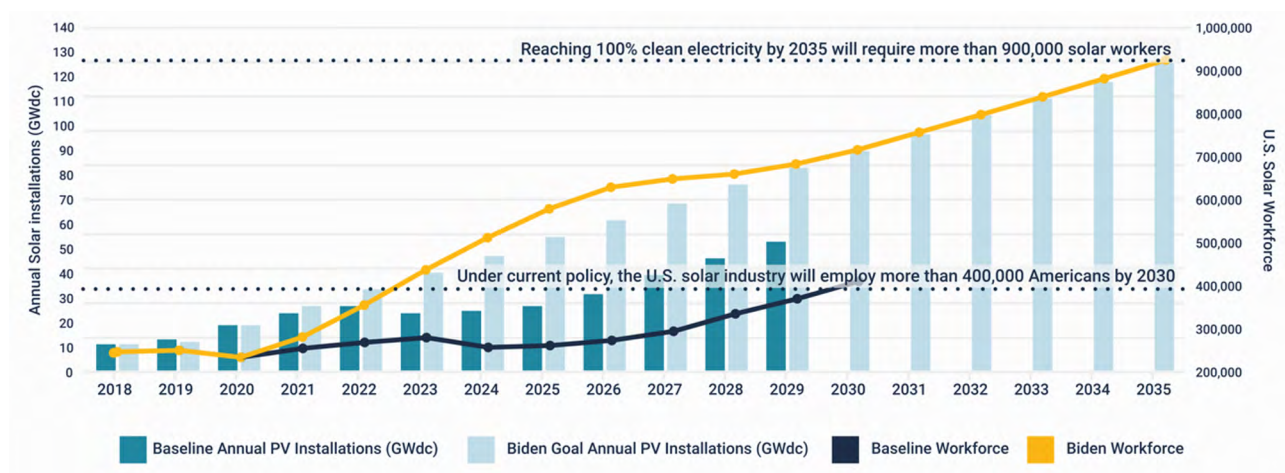
One of the main forms of regulatory risk in the United States is simply that regulators do not move fast enough to keep pace with the sectors they regulate. Further, multiple layers of government create a patchwork of overlapping, and sometimes conflicting, authority. For example, navigating the unique patchwork of federal, state, and international laws has contributed to severe delays in the permitting of offshore wind farms.

Additional challenges include a lack of transmission and distribution infrastructure to take renewable energy from where it is produced to where it is needed. The recently enacted Infrastructure Investment and Jobs Act contains roughly \$65 billion for investment in clean energy, and much of that sum may be directed to upgrades in transmission and distribution infrastructure. But complex webs of federal, state, and local laws and regulations can limit the pace of these projects and ultimately derail their completion. Competition for high-quality assets in prime locations is already high and will likely remain fierce. Those with a better understanding of risks and a more sophisticated approach to risk management will have an edge over their peers.

The workforce

The renewable energy sector is experiencing a shortage of skilled labor, which can be impacted by changing federal regulations and increased demand.

A Solar Energy Industries Association analysis, for example, shows that the solar industry will need to employ more than 900,000 workers to reach the United States' 2035 clean energy target. And in offshore wind, a shortage of trained engineers is making it difficult to perform installation tasks safely and effectively. Competition for local skilled labor is likely to intensify as major projects begin development.



U.S. solar workforce needs by 2035. Source: Solar Energy Industries Associationⁱⁱⁱ.

While industry, state and federal bodies will likely scramble to plug labor shortages arising from the energy transition, it remains to be seen how easy it will be to find people with the right skills for every job—particularly in emerging technology areas such as offshore wind. “For policymakers, a skills shortage can be a nice problem to have because it translates to job creation,” says Rupert Mackenzie, Marsh Specialty’s Energy and Power Practice Leader for the Americas. “But for developers, not having workers on hand can be a major source of delays.” Project delays, a tighter labor market, and safety challenges have greater emphasis in the renewable energy sector, as they proportionally can have a higher impact on overall return on investment than other asset classes.

Outlook and conclusions

The ongoing energy transition comes with an evolving risk landscape. For example, the move from large, centralized energy generation plants to smaller, more distributed assets affects an energy company’s natural catastrophe exposure, and thus its insurance needs.

So far, the industry has done a good job of minimizing these risks and insurers have in general moved to provide the levels of coverage needed to offer peace of mind to investors. The industry continues to evolve at a rapid pace, however, with significant new challenges arising in areas such as transmission and distribution infrastructure or the buildout of offshore wind and battery storage assets.

For asset owners, the key to risk management will be to work with insurance providers on ways to minimize risks and premiums at the same time.

“We see less of a distinction between specialties and sub-specialties in underwriting, which is going to unleash a larger amount of risk capital than most had access to in 2021,” says Kolodner. “You’ve got large, sophisticated players putting a lot of capital into this space.”

As the renewable energy industry continues to mature, he says, “It’s likely to be a bit messy, but some folks are going to be well positioned to access more supply, which is going to further separate the first- from the second-quartile performers.”

Mackenzie adds: “Managing future risks in the energy transition will not always be easy, but it is important for leaders to remember that they have a vast pool of risk mitigation expertise at their disposal. The U.S. is a global leader in risk management and at Marsh Specialty, for example, we can tap into worldwide expertise to deliver risk and insurance solutions tailored to meet the needs of any project.”

References:

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ⁱⁱⁱ Solar Energy Industries Association press release, May 6, 2021: Solar Jobs Support 231,000 Families, Must Grow 4X to Reach Biden’s Clean Energy Target. Available at <https://www.seia.org/news/solar-jobs-census-2020>.



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