RISK & INNOVATION

Winds Of Change: Risk Management's Role In Renewable Energy

OVERVIEW

For decades, the promise of renewable energy far outpaced its actual impact. However, in only just the last few years, suppliers of power from the wind and sun have moved from being bit-part players to taking the center stage. In the U.S., for example, the rapid adoption of renewable energy sources has put the country 40 years ahead of where the U.S. Energy Information Administration forecast it would be just five years ago.

Thanks to environmental, financial, and societal forces, innovation in renewable energy is occurring at a dizzying pace. Companies such as SolarCity have developed solar roof technology to power homes while the National Renewable Energy Laboratory has crafted windows that double as solar cells. Elon Musk's Tesla has built the world's largest lithium ion battery in South Australia.

However, as more and more solar and wind farms come online, the chance of them being hit by a natural disaster increases. For example, smoke from the recent wildfires in California has meant that the state's solar power plants have not been able to generate as much power as usual. Other weather events such as high winds and flooding highlight the vulnerability of this industry to external threats, and adversely affect margins and complicating efforts to secure financing.

The increasing use of renewable sources of power will demand a new approach to risk management. Banks and insurers are taking a closer look at the potential impact of natural perils on renewable energy facilities.

IN DEPTH

Thanks to advances in technology, renewable energy has moved from being considered impractical or prohibitively expensive to becoming a central part of the power plans of governments, businesses, and households. Beyond the potential environmental advantages, renewable energy sources also offer the ability to more efficiently serve remote or underdeveloped areas, improve access to energy and overall enhance the reliability and resiliency of an area's power grid.

Governments have also made developing renewable energy sources a priority to address the environmental and social costs associated with fossil fuels. The Paris Agreement and recent COP23 conference in Bonn, Germany, drew attention to the global commitment to carbon reduction and renewable energy.

The EU, for example, has established aggressive targets for the share of power generated from renewable sources. The EU's Renewable Energy Directive sets a binding target of achieving 20 percent of final energy consumption from renewable sources by 2020. Elsewhere, China is planning to spend $360 billion on renewable energy through 2020.

In addition to reducing carbon emissions, renewable energy sources can also provide more efficient alternatives to delivering power to remote or underdeveloped areas. As Puerto Rico looks to rebuild its devastated power grid in the wake of Hurricane Maria, using renewables to create "microgrids" is seen as an opportunity to create a more sustainable power system. Renewables also have the potential to increase power grid resilience as an alternative energy supply during spikes.

Harder Insurance Markets

It's not all plain sailing for renewable energy projects – after all, many face financial challenges. Since the industry is relatively new, no one blueprint for earning sustained profits has emerged. Companies in an already precarious position can quickly go under when market conditions change. Recently, rising insurance costs have begun to pose a new challenge.

The renewable energy industry has thus far largely enjoyed the benefits of competitive insurance market conditions including low rates, low deductibles, and innovative terms. But compared with the insurance industry's experience with established power sources such as gas and coal, hydroelectric, and even nuclear, the U.S. renewables space was a relatively immature one, according to Mark Fishbaugh, Aon's U.S. Power Practice Leader. "The industry lacks historical data on the potential impact of natural catastrophes on renewable energy generating facilities, presenting a challenge for insurers."

Recent natural catastrophes have begun to provide some of that loss history – with solar power facilities in particular experiencing significant losses. Insurance markets have taken keen notice of the damage Hurricane Maria caused to the few solar power facilities in Puerto Rico and tornado damage to a California solar farm in 2015.

"Traditionally, the insurance market for renewable energy has been very soft, and terms have been very good," Fishbaugh said. "Recent industry losses may show signs that it's starting to harden."

"The expectation is that the recent losses we've experienced from hurricanes Harvey, Irma, and Maria are going to create some uncertainty and volatility in the insurance marketplace," said Daren Gretz, Senior Vice President, Aon Global Power.

Up until now, renewable energy facilities have seen insurance prices holding steady or even decreasing at annual renewals. According to Will Persyn, Senior Vice President of Aon Global Power, those same facilities are likely to see insurers increase premiums by 20 percent and deductibles tenfold. "Insurers are saying that given the losses they have suffered and their own rising reinsurance costs, these rate increases are absolutely necessary in order to sustainably write coverage for renewable energy," said Persyn.

Understanding External Threats: When Weather Threatens Operations

Renewable energy facilities are particularly vulnerable to damage from numerous major natural catastrophes – not just hurricanes.

More volatile weather and an increasing occurrence of all types of events, such as tornados, lightning strikes, hail, and floods, also have the potential to cause significant losses. California is experiencing the largest forest fire in its history, which has threatened communities and facilities long assumed to be beyond the reach of fires. Insurers are now factoring those exposures into policy renewals.

The Growing Importance Of Risk Management: Data And Decision-Making

Faced with the impact of external threats such as natural disasters, renewable energy facilities will likely need to rethink risk management. Fishbaugh explains: "With insurance markets responding to recent natural disaster – related losses they may look to tighten terms. Given margins on renewable energy farms are limited, risk prevention and understanding the financial impact of tighter terms will become more critical."

The result will be an increased emphasis on underwriting the risk exposures, modeling probable maximum losses, and taking steps to better mitigate them. Gretz offers the example of how high winds can negatively impact solar farms and notes the importance of forward-thinking approaches. "As we gather more data, we're able to see how the design and construction of facilities can improve to limit destruction," he noted.

As the insurance markets respond to recent renewable energy losses, self-insurance programs may well have to be part of the solution for many new renewable energy projects in areas such as Puerto Rico that are at greater risk of natural catastrophes. Persyn underscores the importance of such data in this new industry: "We don't have history of natural catastrophes' impacts on this industry quite yet."

Delivering On The Renewables Promise

While renewable energy continues to make significant strides, unknown risks and lack of historical data pose their own obstacles to the industry's considerable promise. Fishbaugh sees the role of risk management shifting to ensure that renewables play a major part in our energy future. This year's catastrophic events such as hurricanes Harvey, Irma, and Maria, will likely "encourage the risk management function to play an even more critical role in identifying exposures and creating solutions that mitigate the impact of such destructive events."

TALKING POINTS

"If you wanted to power the entire United States with solar panels, it would take a fairly small corner of Nevada or Texas or Utah; you only need about 100 miles by 100 miles of solar panels to power the entire United States. The batteries you need to store the energy, so you have 24/7 power, is one mile by one mile. One square mile. That's it." – Elon Musk

"It doesn't take much of a stretch of the imagination to think of a world powered by renewable energy. It is fast becoming necessary – to cut air pollution and combat climate change" – Richard Branson

"I am 100% backing renewables. This is an opportunity to make microgrids in Puerto Rico so they can be sustained in different areas" – Puerto Rico Governor Ricardo Rosselló.

FURTHER READING

- A Greener Path To Commerce: Exploring the Future Of Renewable Energy – Forbes, Dec. 11, 2017
- Alfen: Energy Storage Makes The Hague Football Stadium Self-Sustainable – PV Magazine, Dec. 19, 2017
- New Global Survey Reveals That Everyone Loves Green Energy – Especially The Chinese – Vox, Nov. 21, 2017
- Climate Change Could Take The Air Out Of Wind Farms – Wired, Dec. 11, 2017
- California To Meet 2030 Renewable Energy Targets By 2020 – CleanTechnica, Nov. 21, 2017
- Researchers Identify Nontraditional Sites For Future Solar Farms – Phys.Org, Dec. 19, 2017