Proactively Managing Risks

TO ACCOMPLISH YOUR LONG-TERM RENEWABLE ENERGY GOALS
» **Organizations face a variety of risks** when it comes to energy procurement and the larger the entity, the greater the risks.

» Long-term renewable energy off-take agreements, like PPAs, can **reduce an organization’s risk and exposure** to volatile, conventional energy costs. These agreements provide stable prices from expertly vetted, clean energy installations.

» Renewable energy can often be procured at below-market rates, resulting in **significant savings**.

» Project developers **come to the table motivated** to partner with a creditworthy buyer.
2015 WAS A RECORD YEAR FOR LONG-TERM RENEWABLE ENERGY PURCHASING IN THE COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL (C&I) SECTORS, AND, BY ALL ACCOUNTS, 2016 PROMISES MORE OF THE SAME.

Dozens of buyers ranging from Google to Philips have purchased wind and solar energy via Power Purchase Agreements (PPAs), collectively bringing nearly six (6) gigawatts of renewable energy onto the grid since 2013.

PPAs are attractive for myriad reasons. They allow organizations to purchase renewables at a large scale, enabling them to meet their sustainability and carbon reduction goals more effectively than other options. They also lock in a stable energy price, often at below-market rates, helping organizations save millions of dollars in energy costs over the life of a project. PPAs are typically signed with new projects, which means that as a result of the contract, additional renewables are added to the grid—an important value for many C&I buyers.

In a PPA, the buyer (also known as an off-taker) contracts directly with a project developer for a portion of the clean energy the project produces. If the project is located in the same grid region as the buyer’s operations, and the energy is “delivered” to the buyer’s facilities, the deals are considered direct. Direct deals are possible if two important factors are true: (1) the project is located within a deregulated wholesale energy marketplace, such as ERCOT, PJM, MISO, SPP and others, and (2) the buyer’s facilities are located within the same wholesale market and within a deregulated retail state.

If a project is located in a different grid region than the buyer’s energy load, or if the buyer doesn’t take delivery of the energy, the deals are referred to as virtual or

PPA market growth is accelerating rapidly, with experts projecting another record year in 2016.
synthetic. In this case, the off-taker bypasses the utility in order to work directly with the project developer. Both direct and virtual PPAs are limited to deregulated, wholesale energy markets.

In either a direct or virtual PPA, the buyer and developer essentially enter into a 10-20 year “contract for differences”. Under this type of contract, the buyer benefits when the price of wind or solar power drops below the spot market price for conventional, or fossil fuel-fired, energy. This can occur in wind and solar thanks to the tax incentives provided by the Production Tax Credit (PTC) and Investment Tax Credit (ITC) and the relative volatility of the conventional energy market. As a result, buyers in a PPA are able to “lock in” a consistent price for their energy, leading to long-term savings.

Most C&I PPA deals also include the renewable energy credits (RECs), or environmental attributes, of the energy produced by the project. These RECs are a secondary, valuable commodity, which the buyer can retain and retire in order to keep the environmental claims of the project for itself, or can choose to sell into the national REC market.

One critical value of a PPA is that it can help organizations address the risks faced in today’s energy market. However, PPA execution can be complicated, involving the engagement of multiple stakeholders to help identify and address its own set of risks.

Renewable Choice has consulted with some of the largest companies in the world on their PPAs. From our experience advising these C&I buyers on more than a gigawatt of PPA purchases, we’ve determined the key energy risks that all companies should be considering—and how PPAs can help to mitigate those risks. We’ve also identified best practices to support our PPA clients in reducing and managing PPA risks in order to reduce their exposure and provide them with maximum long-term value. Whether you’re weighing your options or already underway, our analysis of these six risks can support you on your PPA buyer’s journey.

How a PPA Helps Mitigate Existing Risks

PPAs for C&I buyers are still relatively new. They’re nuanced. That means that many buyers, rightly, are cautious about entering into a long-term renewable commitment. For most businesses, a 10 – 20 year contract length is longer than any other supply contract. However, there are three key risks associated with not thinking long-term about renewable supply that have the potential to dramatically impact organizations. A PPA can help companies manage the impacts of these risks—or eliminate them altogether.

1. Market & Regulatory Risk

All energy users are exposed to the risk of market- and regulatory-driven shifts in supply and demand, whether they pursue long-term energy contracts or not. These fluctuations in the competitive energy market result in highly volatile prices. The larger the energy use, the

What are the PTC and ITC?

In December 2015, Congress acted to continue support for the renewable energy industry by providing developers and buyers with a long-term extension of the federal incentives for new wind and solar energy projects.

The Production Tax Credit (PTC) provides wind power developers with a production-based tax credit for all projects that start construction by the end of 2019. The PTC is currently worth approximately $23 per megawatt-hour of electricity produced in the first 10 years.

Going forward, the tax credit will be phased out on the following schedule, based on construction start year. Projects that start construction in the year listed below then have two years to complete the project or otherwise prove continuous construction:

- 2016: 100% of PTC
- 2017: 80% of PTC
- 2018: 60% of PTC
- 2019: 40% of PTC

The Investment Tax Credit (ITC) provides solar power developers a tax credit based upon the total capital expenditure of a project, so long as the start of construction occurs prior to December 31, 2021. The credit ramps down over time, with eligibility based on project start year.

- 2016 – 2019: 30% tax credit
- 2020: 26% tax credit
- 2021: 22% tax credit

Projects that start after 2021, or that are started sooner but not placed in service until after 2023, are only eligible for a 10% ITC.
larger the risk of price uncertainty. Particularly as the cost of conventional energy increases, companies can be left in a short position on their energy with risk of regulatory exposure.

Most organizations can only buy power 1 – 3 years in advance. As a result, they are subject to the available market price for that energy. Companies that intend to operate over many years face even greater uncertainty. In this scenario, even buying power three years ahead, organizations face forward price exposure on all outgoing years of operations. If power rates triple over time, companies have little recourse.

PPAs represent a unique opportunity for buyers to lock in a portion of their energy costs over the long term. A PPA that is executed near or in a highly correlated load zone functions as a hedge against forward price exposure. The PPA can allow a company to lock in a below market price, which is difficult to do with conventional generation. By signing a PPA, organizations can reduce their electricity expenses and gain stability in financial planning as a result.

In the current renewable energy environment, the recently extended federal PTC and ITC are part of what led to this favorable market position for wind and solar. The PTC and ITC both provide tax breaks to new projects that allow the price of wind and solar to compete with—or, in some cases, beat—the price of conventional generation.

But how can a buyer be confident that the selected PPA will provide a financial benefit or provide stability relative to the fluctuating, conventional energy market?

Conventional and renewable energy production has a fundamental difference: cost structure. While the development of any new energy generator requires procurement, permitting, and construction, fossil fuel–based generators inherently have a fluctuating fuel cost due to the volatile price of extraction, meaning there is long-term uncertainty as to the cost of energy production from these sources. Renewable energy, on the other hand, is not linked to the price of fuel. Essentially, once a project is built, there are few other expenses to the cost of production, leading to a predictable, long-term energy price.

Predictable prices alone won’t guarantee that a clean energy purchase provides financial benefits. With the variety of clean energy projects on the market, investment-grade financial analysis is critical. Proper analysis integrates a company’s unique financial metrics with the most up-to-date, research-driven projections for the market price of electricity and RECs over the anticipated...
PPA term. Those metrics may include an internal discount rate, anticipated inflation, corporate tax rate, credit carrying costs, and more.

A properly vetted project priced in a competitive environment can bolster the bottom line with a positive net present value (NPV) in many forward-pricing scenarios. Rigorous project selection and negotiation can serve to address financial considerations while simultaneously ruling out projects with elevated market or regulatory risk.

2. Competitive & Reputational Risk

Increasingly, C&I buyers are making public commitments to renewable energy adoption, carbon emissions reduction, or climate change mitigation. In 2015, 154 companies joined the White House’s American Business Act on Climate Pledge, and, to date, 55 multinational corporations have committed to the RE100. An organization’s energy choices can have a major impact on reputation and can lead to a significant competitive advantage. PPAs can help companies make the most of opportunities to be a leader in their industry while also reducing the risk of pressure from consumers, NGOs, and the competition.

High impact, newsworthy, and popular with employees and customers, PPAs can bolster brand image by showing a long-term commitment to environmental preservation, healthy air quality, pollution prevention, and community values. Leaders such as Google, IKEA, and Procter & Gamble have earned exceptional public visibility by actively promoting their commitments to sustainability via long-term renewable energy purchases.

When an organization makes a clean energy commitment with a PPA, company leaders and their communication teams can capitalize on the announcement in order to attract positive press and gain reputational clout. However, it is important to understand exactly what environmental claims a PPA allows an organization to make. Taking possession of, and retiring, the RECs associated with the PPA are required in order to claim the environmental attributes of that clean energy purchase. Signing an agreement for the energy alone without the associated RECs is not sufficient enough to claim the use of green power. Environmental claims are regulated by the FTC, so organizations must use caution when promoting a PPA purchase.

Brands that are slow to adopt sustainability initiatives and clean energy are at risk of falling behind their competitors and/or becoming the target of NGO watchdog groups. Organizations without visible sustainability action—or worse, false claims or commitments—increasingly risk their brand reputation and bottom line with negative press. Consider what happened in 2015 when Volkswagen was discovered to have intentionally misled buyers by claiming their vehicles were low emission when they were not. The company faces billions of dollars in fines and will struggle to regain the trust of even its most loyal customer base.

Consumers, employees, and future talent—especially Millennials—take notice when a brand earns media kudos for making and fulfilling a public

The Value of a PPA Buyer’s Agent

Choosing the right project in the right market at the right price is where a buyer’s agent like Renewable Choice provides considerable value. The nuances of PPA risk management can be difficult for C&I buyers to manage on their own. A reputable buyer’s agent can, and should, provide deep expertise in order to help an organization meet its goals in a credible, reliable way.

Buyer’s agents can:

• Educate and engage internal stakeholders in order to establish trust in and understanding of the project selection and contracting process
• Assist organizations in identifying the project that meets the buyer’s goals while avoiding regulatory and operational risks
• Perform investment-grade financial analysis to assess the long-term market risk of a PPA, by modeling multiple forward-looking cases for each PPA opportunity
• Conduct rigorous analysis and due diligence to evaluate the project’s viability, development risk, market risk, basis risk, and construction risk to ensure the lowest possible risk of execution for the buyer
• Help buyers understand the quality of a project and provide perspective on market conditions in order to negotiate favorable contractual terms
• Work to overcome obstacles in the project selection process by having access to a wide variety of potential project options
• Provide valuable insight into current and future regulatory risks during project selection and contracting by maintaining an intimate familiarity with the global energy market
• Offer expert perspective on contractual terms that have the potential to impact the financial performance and accounting treatment of the PPA
sustainability commitment. A PPA can help organizations meet their goals and create positive press associated with their story.

3. Environmental Risk

Leading organizations across the globe are working to mitigate environmental risk that could disrupt their facilities, supply chains, and core markets. While all organizations are exposed to environmental risk, those that pursue a PPA can work to mitigate long-term, climate related concerns.

Climate change threatens to shrink economic activity across the globe, with published 2015 research predicting a 23% reduction in average global incomes by 2100 if climate change goes unmitigated. Globally, those areas that are already facing warmer average temperatures—such as global production hubs in India and Indonesia—will experience the greatest losses in economic activity.

Meanwhile, individuals and organizations across the globe have begun to experience economic losses from increasingly devastating extreme weather events. These once isolated events are expected to grow in frequency as climate change progresses. In 2011 alone, extreme weather events accounted for 8 of the 10 most costly natural catastrophes of the year, resulting in $148 billion in total losses and $55 billion in insured losses.

Alongside these concrete events, warming temperatures contribute to poor air quality, growing risk of asthma and respiratory concerns, and expanding regions in which damaging diseases such as Dengue Fever and West Nile Virus can thrive. When community health and wellbeing is threatened, organizations likewise lose stability and productivity.

Many innovators have secured PPAs in order to reduce their long-term environmental impact. Some, like Microsoft, are using unique financing structures like an internal carbon tax, to fund their endeavors, while others, like Google, see their role in renewable energy generation as central to their organizational mission. Smart businesses with an eye on the future understand that a long-term renewable deal like a PPA is a critical way to shift to a greener global grid.

PPA Risks that Must Be Managed

For an increasing number of organizations, a long-term renewable contract like a PPA is the answer to the three risks outlined above. These contracts are complicated, however. They require the education and buy-in of multiple internal stakeholders. One of the most important steps in the due diligence process on a PPA is to identify any executional risks and to take steps ahead of time to limit or eliminate exposure to those risks.

1. Locational Risks

Where a project is located can dramatically increase or reduce the associated risks of that project. Numerous factors such as transmission line congestion, wind and solar intermittency, and state-based or regional regulations can influence a PPA’s value.

One locational risk that PPA off-takers must manage is basis risk, or the difference in market pricing between a project’s “busbar” (AKA Locational Marginal Pricing Node or Point of Interconnection) and the nearest liquidly-traded hub (a transactional location which averages the pricing of all busbars in a region). A virtual PPA or “contract for differences” structure can either be “settled” against the busbar market price or the hub market price.

If a PPA is settled at the busbar, then the value to the buyer is the fixed PPA price versus the generation facility’s busbar market price. If a PPA is settled at the hub, then the value to the buyer is the fixed PPA price versus the average of all busbars in the region, AKA the hub market price.

Depending on the congestion of a project’s transmission line and the supply/demand of energy in the region, the price differential between energy at the busbar versus energy at the hub can be significant. Historically, average hub prices tend to be higher than busbar prices of energy generators, particularly in regions where there is considerable supply available, such as west Texas (AKA “negative basis”). If a deal is projected to have negative basis, it is important for a corporate PPA buyer to consider negotiating a hub-settled option (which may be priced higher than a busbar PPA offer) in order to mitigate this basis risk. At the very least, it is vital to analyze the basis risk of any busbar-settled PPA to make sure that historical and future basis risk for the project is accounted for in the financial model.
Load mismatch, sometimes referred to as covariance risk, is another locational risk in a PPA. When there is an overabundance of wind or sunlight within an area with substantial wind or solar production respectively, regional electricity market prices can be affected. Fundamentally, the market price of energy is determined based upon supply and demand, and when there’s over-supply, prices drop.

When there is an overabundance of wind in an area with significant wind energy installations, for example, it can automatically depress market power prices in the region because there is no fuel cost attached to wind energy production. If a PPA is located in a region where wind energy makes up only a small part of the grid, there may be no negative price correlation. In other regions where wind makes up a considerable part of the grid, this price variability can impact the performance of the PPA. For example, under a contract for differences, the covariance effect could reduce the market price achieved by the buyer, resulting in a lower than expected overall value of the PPA.

PPA buyers can either contract for clean energy “as generated” or at a fixed volume. Both pricing structures have pros and cons, depending on the covariance risk in a region. In an “as generated” deal, the intermittency of wind and solar can impact the price dramatically. For example, in California, power prices are lower in the middle of the day thanks to the wide availability of solar. However, energy expenses increase at night when there is no sunshine, and this variability in the “as generated” price can impact how the PPA performs. A fixed volume deal can mitigate covariance risk, but this type of deal structure is riskier, will potentially increase the PPA price, and may have negative accounting implications. Fixed volume deals also push the covariance risk onto the developer, and may lead to challenges in getting the project financed.

The ability for organizations to pursue a PPA is also influenced by regional regulation. For example, most C&I virtual PPA opportunities must be located in deregulated wholesale energy markets (such as PJM, ERCOT, SPP, MISO and others). Direct PPAs, for the most part, must be located within deregulated retail markets, where buyers can choose their electricity providers (such as Illinois, Texas, and Maryland). Within these markets there can be forces at work that affect the financial viability of a deal, such as a state Renewable Portfolio Standard (RPS). An aggressive RPS can radically affect the value of the RECs generated by a project—and can, therefore, change the overall economics of a PPA opportunity.

### 2. Project Execution Risk

As with any long-term contract, PPAs open a question about execution risk. What if the wind or solar project fails to be built after the PPA is signed? What if the project doesn’t perform to expectations after construction is completed? There are many reputable renewable energy developers looking for partnerships with corporate PPA buyers,
because they need creditworthy off-takers in order to secure financing for the construction of a new project. While it is rare for projects with PPAs to fail to be built, a corporate buyer may only have one opportunity to obtain the approvals for a PPA, so needs to avoid the chance of the project failing to execute as contracted.

Buyers can reduce their exposure to project execution risk by performing due diligence on both the project and the developer, and by utilizing effective risk reduction strategies in the contracting phase. For instance, requiring a developer to post meaningful credit to guarantee the PPA can indicate the developer’s confidence in executing the project once a PPA is signed. This can also provide financial relief to the buyer in the event something happens and the project does fail to be built.

If a project isn’t built, there is a lost opportunity cost to the PPA buyer, as well as the potential loss of internal stakeholder support for PPAs. Another similar hurdle is that a project may become unavailable. It may be sold to another buyer, or a development or financing impediment may arise. Buyers in this scenario may have to go back to the drawing board to look for a replacement project, which can take considerable time and effort.

Overall, execution risk can be minimized in the project selection phase by identifying the most viable project options and by structuring contracts according to existing PPA best practices.

3. Project Operational Risk

Project operational risk is a concern for many PPA buyers. Multiple variables can impact how a wind or solar project performs for the off-taker. How can an organization protect itself if the selected project fails to produce power to the expected levels once it is built?

Renewable energy developers conduct detailed studies to determine the expected project output, taking into account variables such as technology performance over time and year-to-year variations in weather. Buyers must ensure that thorough due diligence and analysis has been conducted to evaluate the developer’s projections prior to selecting a project and executing a contract.

In reality, a PPA buyer bears relatively little of the operational risk for a project. Wind and solar developments rely on mature and reliable technology that, by and large, performs well over the long term. The buyer
is contracting for energy production. This means that if the project does not produce, the buyer is not obligated to pay anything; there is no downside risk for under-production. In the event that a project fails to produce energy at the expected rate, the only real risks to the contracted buyer are the opportunity costs—and associated loss of financial upside—and the reduced ability to make claims due to the forfeiture of the environmental attributes of the clean energy.

The savvy buyer can protect itself from operational risk by seeking contract provisions that limit their exposure in the event that actual production falls below the projected levels. A well-developed PPA contract will mitigate that exposure by including stipulations defining the buyer’s risk if the project does not perform according to plan.

Organizations that choose to act quickly, while there is ample supply of high-quality, financially-attractive PPA project opportunities on the market, will reap long term benefits for their organizations, and for the global community. The renewable energy market is ripe for the C&I buyer to leverage increasingly sophisticated purchasing and technology options and gain competitive advantage from large-scale, long-term clean energy commitments.

CONCLUSION

Commercial renewable energy adoption has experienced a sea change in the past two years, demonstrated by its widespread adoption by buyers across a variety of industry sectors. While there are risks associated with long-term renewable acquisition, those risks can be mitigated with thoughtful planning and the support of a strategic partner like Renewable Choice Energy.