



The opportunity for VPPAs in regulated markets

Options to support decarbonization goals in regulated energy markets are not as limited as many energy-consuming entities may believe. Organizations almost anywhere can make progress toward renewable targets through virtual power purchase agreements (VPPAs)—when they understand the nuances.

Introduction

While there are many decarbonization strategies available for organizations, virtual power purchase agreements (VPPAs) can potentially drive high impact, delivering benefits for both the planet and businesses. Sectors such as food and beverage processing, consumer products, and commercial real estate typically have high amounts of purchased electricity (Scope 2), representing a key source of greenhouse gas emissions.

A VPPA is a financial contract in which an energy consumer (e.g., commercial organization, public sector agency, etc.) contracts for a third-party generator to add renewable energy to the grid, at an agreed price per megawatt hour (MWh), which is then netted against the prevailing wholesale market price for energy. The buyer retains the associated Renewable Energy Certificate (REC). Driven by increasing decarbonization efforts by corporations, VPPAs dominate the U.S. power market, accounting for nearly 85 percent of corporate power purchases in 2022.¹

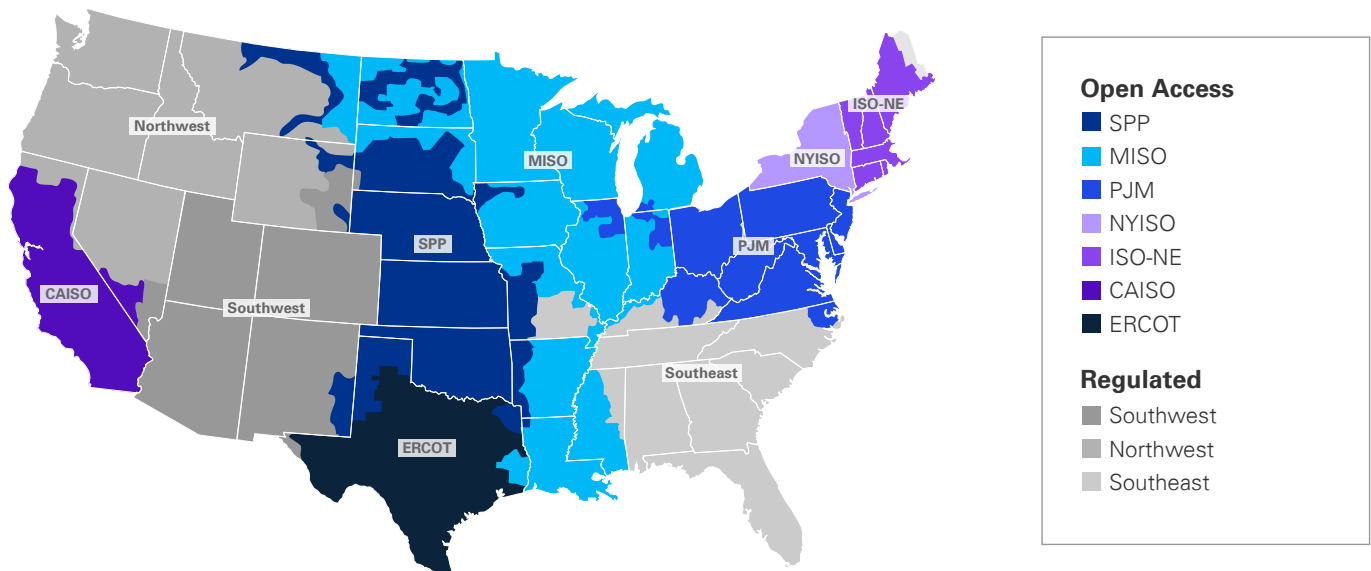
VPPAs are not an obvious choice for organizations that operate in regulated energy markets, which make up

much of America's southeast and west and typically require organizations to purchase their energy from the local utility. Within these markets, the utilities tend to be vertically integrated, owning or controlling the total flow of energy from generation to meter. Given these limitations, VPPAs may not be perceived as a viable option for the procurement of renewables because off-takers assume they need to get energy directly from the state utility through green tariff programs.

The reality is more complex. As a purely financial transaction involving no physical transfer of energy, a VPPA presents an alternative option to consider alongside other renewable energy procurement options, such as green tariff programs which may be offered by local utility companies.

This paper explains how VPPAs work, the potential benefits and considerations when examining a VPPA versus a green tariff program, and key nuances for organizations in regulated markets considering using VPPAs.

Exhibit 1. The U.S. power market²



While regulations vary by state, market type largely dictates renewable energy sourcing options. VPPAs are permissible in both regulated and deregulated markets, as no power is physically transmitted.

¹ BloombergNEF, "1H 2023 Corporate Energy Market Outlook," March 21, 2023

² Federal Energy Regulatory Commission (FERC) web site, "Electric Power Markets," updated May 16, 2023

What are VPPAs?

VPPAs are a financial arrangement between a renewable energy developer and a buyer to add renewable energy to the grid in exchange for RECs. In a VPPA, power is not physically delivered to the buyer, but instead the energy is sold into the wholesale market connected to the renewable facility for a financially settled market price.³ Because organizations that enter a VPPA continue to buy power from their local utility, the contract structure can be utilized by organizations in regulated and open access power markets.⁴

Like a signatory of a utility green tariff, an organization that engages in a VPPA with a generator of renewable energy receives RECs that account for GHG reductions. This is based on the idea that the financing of the contract directly promotes additionality, or renewable energy development that would not have occurred without the VPPA.

More options, more opportunities

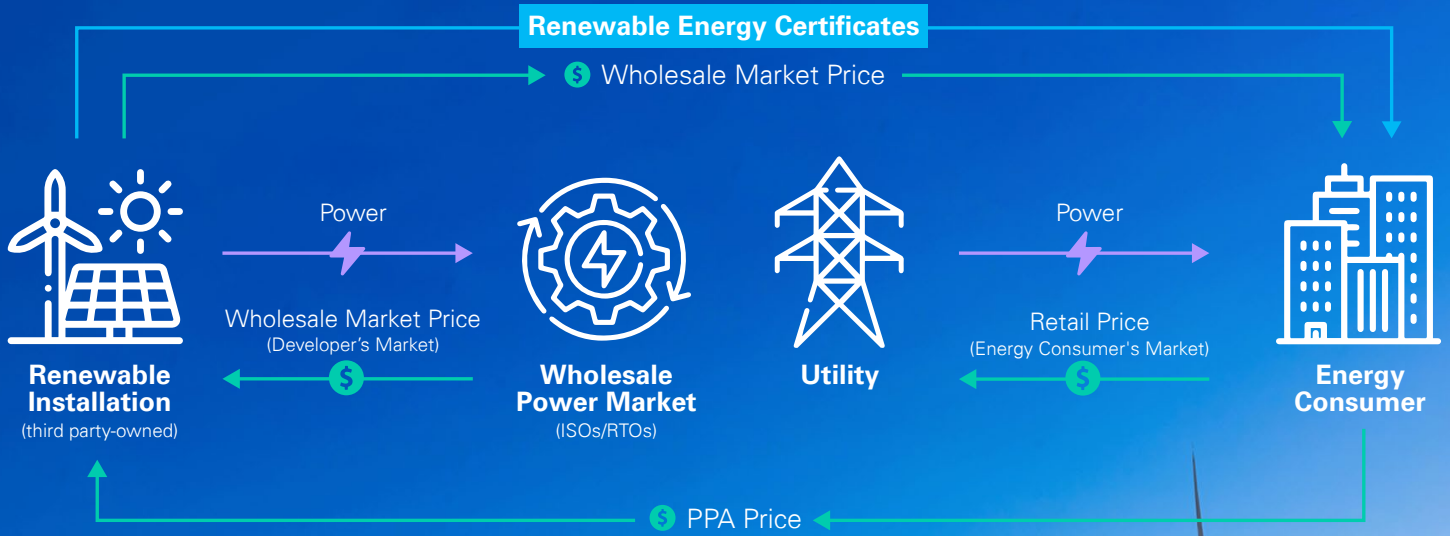
It is essential that organizations understand the breadth of possibilities to meet their renewable goals. Why? Because clean energy procurement is quickly gaining momentum as a crucial pathway for organizations to reach sustainability targets, resulting from several internal and external forces.

- **Stakeholder pressures:** Employees, customers, and investors are demanding organizations adopt aggressive decarbonization goals and help lead the charge to a net-zero future.
- **Rising regulation:** Policymakers at the city, state, and federal levels are setting ambitious, broad GHG emissions reduction targets and reporting requirements.
- **Economic incentives:** Policy changes, such as the Inflation Reduction Act, are introducing significant tax and other incentives, catalyzing innovation in clean energy by helping reduce initial renewable project capital costs.
- **Operational resilience:** A means to cost-effectively fortify energy supply for critical operations independent from grid outages, renewables now dominate investment in new power generation.

³Typically, trading services can be provided by the renewables developer or a third party service provider.

⁴Some exceptions apply for smaller renewable energy developments in regulated markets. The Public Utility Regulatory Bodies Act of 1978 grants developers the right to install renewable energy facilities less than 80 MW and sell to the local utility at the Avoided Cost rate.

Exhibit 2. How a VPPA works



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Considering VPPAs in regulated markets

Due to regulatory requirements to source power only from the local utility, some business leaders mistakenly believe that their organizations can only pursue opportunities for renewable energy through programs offered by their local utility. Utility programs typically come in the form of green tariffs, which provide the opportunity for energy consumers to sponsor renewable energy development in the regulated market by buying renewable electricity from a specific project through a special sleeved tariff rate. This is a common misconception among companies operating in regulated markets.

In reality, VPPAs may offer benefits for organizations no matter their location. As a financial contract where no energy is physically transmitted, a VPPA is an option that can be employed as part of a clean energy sourcing strategy. Further, a VPPA can help supplement green tariff programs, which—while useful and growing—often come with their own limitations.

Here are some of the considerations associated with the use of VPPAs, and a description of how they compare to utility green tariffs:

01 Additional mechanism to claim additionality

VPPAs provide an additional mechanism beyond green utility tariffs for claiming additionality. Additionality describes when a project or activity that reduces GHG emissions would not have happened without contracted offtake from the buyer. In this way, a VPPA provides an opportunity for the buyer to claim additionality for renewable energy generated, thereby promoting renewable energy development and showing progress toward renewable targets. As regulations around how emissions reductions are calculated and recognized evolve, VPPA support for additionality may require taking a closer look at the specific region in which the contract is entered.⁵

02 Increased access to renewable energy projects

An organization's home market may have a backlog of renewable energy development. Many states today are experiencing interconnection queues and development delays for three or more years. Organizations may also be confronted with caps or restrictions on utility green tariff programs within their home market in terms of a max MW capacity that can be issued annually through the state's program, as set by the local public services commission. A VPPA provides the buyer access to different markets with more project availability, which can be particularly useful for organizations with fast-approaching renewables target deadlines.



⁵ Wall Street Journal, Dieter Holger, "Carbon Accounting Changes Could Lift Corporate Greenhouse-Gas Emissions," May 18, 2023

03 Power market economics to mitigate potential financial risks

The VPPA structure carries a financial risk due to the variability in power market prices. Given that an organization will continue to pay its local utility bills in its home jurisdiction, it is important for energy consumers to consider power market pricing risk when structuring a VPPA. The complexity of the structure is based on the following factors:

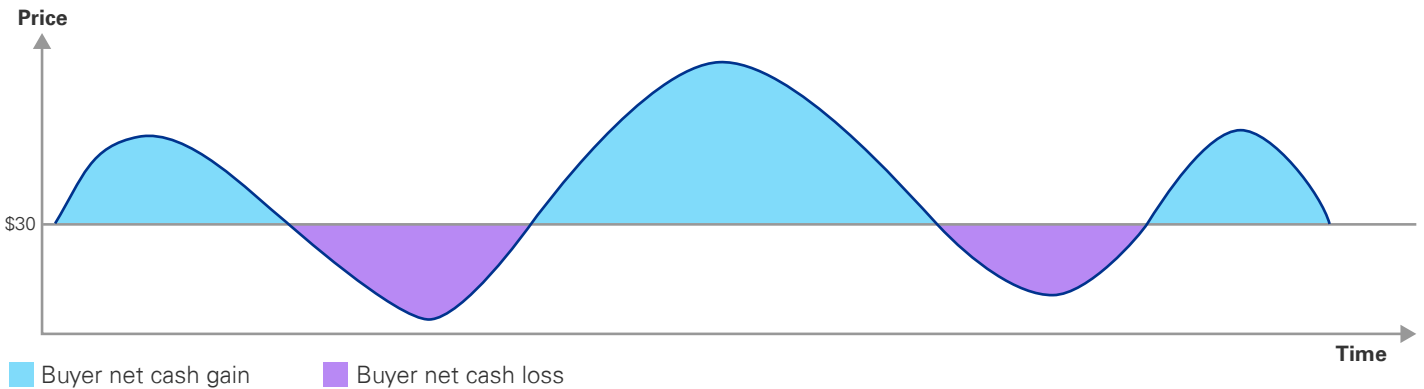
A. The relationship between PPA price offers and the floating market rate in the developer's market:

Under the VPPA structure, the energy consumer pays a negotiated price per MWh to the renewable energy developer. These prices are determined by a variety of factors including market activity (the level of development in the local area) and environmental factors (the amount of sunlight and wind in the developer's market). This price is then offset by the wholesale price received from the sale.

When wholesale market prices increase beyond the fixed payment, the buyer takes in a net cash gain—an economic benefit to the energy-consuming organization. The relationship between the fixed and floating rate varies by market.

Exhibit 3. VPPA economics

Fixed-for-floating illustrative: Assumes \$30 fixed price

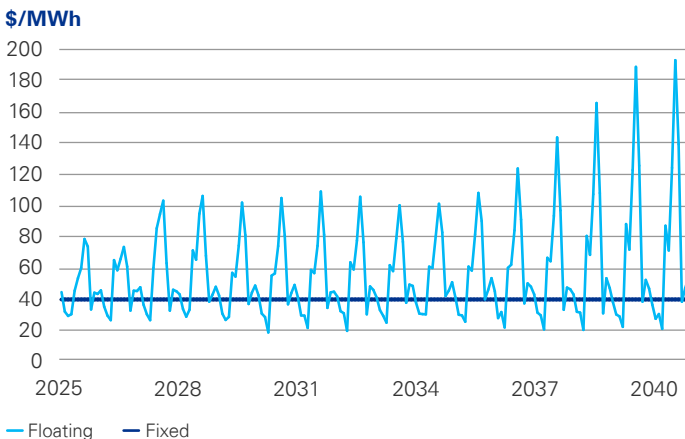


"The opportunity for VPPAs in regulated markets," KPMG LLP, 2023.

As seen in Exhibit 4, the VPPA in Market 1 offers financial benefit to a buyer, as the fixed price of \$40 is on average below the fluctuating market rate. Conversely, a VPPA would be unattractive to the buyer in Market 2 as the price of \$60 exceeds, on average, the floating market rate.

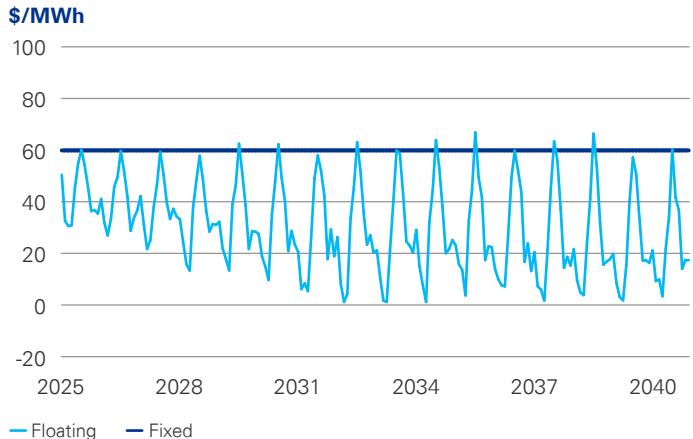
Exhibit 4. Example VPPA market comparison

Market 1



— Floating — Fixed

Market 2



— Floating — Fixed

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B. *The correlation between the wholesale market price in the developer's wholesale market and the utility rate paid by the organization in its home market:*

To mitigate the market risk embedded in a VPPA, it is important for the energy prices in the organization's home market and the wholesale market price in the market where the renewables facility is located to be closely correlated. Should market prices in the renewable project's wholesale energy market rise above the VPPA price, the organization would receive a settlement that would go toward offsetting a corresponding rise in prices in its home market. However, if prices in the home market were to rise and those in the renewable project's wholesale energy market remained consistent, the financial settlement would not be sufficient to cover the increased energy price in the home market.

04 Allocation of risk

Under a green tariff program, production of energy by the renewable facility may not be guaranteed by the utility, as there may not be any contingencies in place contractually to replace any RECs that were not received by the buyer. In contrast, a VPPA can include contingencies for underproduction. It can also provide compensation from the developer to help offset additional renewable purchases required, should the facility underproduce.

In this way, a VPPA contract can protect an organization from financial and climate reporting risk of underproduction in a way that may not be possible in a green tariff program. Further, using the VPPA structure, organizations can form a consortium of buyers to contract the electricity from a single renewable asset to improve pricing and reduce legal costs and process burden.



How to evaluate your VPPA prospects

Organizations operating in a regulated market should consider exploring a VPPA as a possible option at their disposal to meet their GHG emissions reduction target. Although less well-known and more complex than utility green tariff programs, VPPAs are a viable pathway to meeting renewable energy goals.

Of course, all financial instruments come with risk—VPPAs included. Home market conditions, business goals and operating structures, specific contract terms, and other factors, will all impact an organization's assessment of the value of entering a VPPA. However, with careful analysis and financial planning they may even offer some financial advantages over other more familiar renewable energy strategies.

We recommend the following steps to evaluating the value of entering a VPPA.

Understand the regulatory construct of potential energy markets. Regulations governing renewable energy procurement are ever-evolving. Largely driven at the state level, they can vary substantially between localities. For example, while the recent passage of the Inflation Reduction Act provided considerable financial incentives to develop renewable energy, the exact degree of tax incentives is driven by location. Before pursuing any renewable energy sourcing strategy, a review of applicable regulations is key to ensure selection of the best path forward.

Develop a comprehensive list of sourcing options. A business case allows organizations to ensure that all internal stakeholders understand the approach that was used to select the preferred procurement strategy. Given their inherent contractual complexity, a comprehensive plan is crucial. VPPAs require a well-executed procurement process, can be more complex than a green tariff program, and may require the inclusion of contractual instruments such as ceilings, floors, or collars to mitigate wholesale market price risk. With careful planning, a competitive procurement process can help organizations achieve attractive pricing.

Undertake a financial analysis of each sourcing option. Once the menu of renewable energy sourcing options is specified, the financial implication of each path should be assessed. Attractiveness of each option is driven by both wholesale energy market forecasts and available PPA offer prices for each option, which can vary considerably between location. Power market forecasts must be assessed to quantify the impact that each sourcing strategy could have on the organization.

Understand current market trends through dialogue with developers. Conversations with developers can provide insight into availability of existing and planned projects, timing of projects, and the renewable energy project market outlook. By understanding the market from the developer's perspective, it is possible to assess how closely such a developer and market could support an organization's renewable energy goals and timetable. It is also possible to obtain insight on pricing, which can be leveraged as an additional data point in assessing the attractiveness of the given market.

Create a business case to help define a procurement strategy and gain stakeholder support. Identify options across markets, develop a method of assessment, and evaluate potential contractual terms. Renewable sourcing options vary on a state-by-state basis, and understanding the menu of available options is essential for choosing the best path forward.



How KPMG can help

Sourcing renewable energy is one of the most impactful levers for organizations to decarbonize their portfolios and realize their sustainability goals.

Using our strong record advising organizations on how to execute their renewables strategy, deep knowledge of the renewable energy sector, and advanced modeling capabilities, KPMG helps organizations evaluate renewable energy sourcing options for optimal alignment with their sustainability and financial goals. Our approach includes:



Energy consumption data collection and review



Regulatory, economic, and market assessment



Financial analysis and scenario planning



Sourcing strategy business case development



Procurement and contract execution

Illustrative client story: A renewable energy procurement strategy to achieve net zero

A manufacturer in a regulated market seeks to accelerate its net zero target deadline for its U.S. operations. A KPMG team with renewable energy sourcing expertise works with the client to outline potential options and considerations aligned with its short- and long-term objectives.

To help the client identify feasible renewable energy sourcing procurement options to achieve its renewable targets, the KPMG team:

- Assesses the client's existing and projected consumption and load profile
- Conducts a regulatory assessment of the client's home and key target markets
- Analyzes regulated renewable sourcing options, including qualitative and quantitative benefits
- Develops a financial model to assess the various renewable options, including potential VPPAs
- Provides PPA pricing information to inform a future procurement





Glossary

Additionality:

When a project or activity that reduces greenhouse gas emissions would not have happened without financing from the buyer or collective buyers of the project.

Energy market types:

- **Open access/competitive/deregulated:** Energy markets where industrial, commercial, and sometimes residential customers are free to choose their own supplier.
- **Regulated:** Energy markets where vertically integrated utilities own or control the total flow of energy from generation to meter.

Renewable energy certificates (RECs):

A certificate that represents ownership of the environmental and other non-power attributes of one MWh of renewable energy generation.

Utility green tariff:

Optional programs provided by utilities that allow larger commercial customers to buy bundled renewable electricity from a specific project through a special utility tariff rate.

Virtual power purchase agreement (VPPA):

An arrangement between a renewable energy developer and a buyer for RECs and the creation of renewable energy development. Under a VPPA, power is not physically delivered to the buyer, but instead enters the local grid and is sold at a variable rate.

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Mark is the lead for the U.S. Climate Advisory practice with more than 20 years of strategy consulting experience in M&A, commercial and operational due diligence, and post-close delivery to a wide array of corporate and private equity clients. Mark focuses on helping corporate and private equity clients design practical ESG strategies that drive value creation.



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Frederick has more than 24 years of experience providing financial advisory services to corporates, energy infrastructure investors, government agencies, and utilities on energy infrastructure project finance and procurement across a range of capital investments in renewables and carbon-free projects (utility-scale solar, onshore and offshore wind, geothermal, and nuclear), campus district energy systems, energy storage, and HVDC transmission.



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Fiona has more than 15 years of cross-industry experience providing infrastructure financial advisory services. She specializes in renewable energy feasibility studies, PPA assessments, project finance, procurement assistance, term sheet development, and commercial and financial structuring. Fiona has provided financial evaluations of renewable energy projects, including PPAs and VPPAs, for corporate clients and government agencies.



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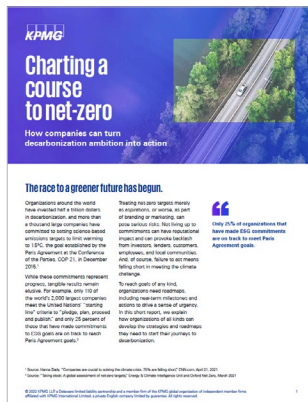
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