SOLSYSTEMS

Charting Your Path Toward Clean Energy Procurement

A Strategic Roadmap for Corporate Energy Buyers

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Introduction

For companies committed to improving their energy resilience and carbon reduction strategy, there is no single solution for procuring renewable energy. Instead, companies should choose from a portfolio of solutions depending on their objectives – their ***why***. Companies often pursue renewable energy because of some combination of cost savings, energy or financial hedging, or an interest (or pressure) from key stakeholders to improve their environmental impact.

Surprisingly, the clean energy industry hasn't always excelled at helping customers work through the full suite of opportunities and explaining their respective strengths and weaknesses. Companies routinely spend years and significant resources and money, charting their path.

This paper is designed to cut through the complexity of these decisions and help companies and large organizations make better, faster, and more informed decisions about their energy transition. It focuses on purchasing and investing in renewable electricity because these efforts help companies reduce their Scope 2 and Scope 3 carbon intensity and are generally more straightforward than Scope 1 objectives.

America has the largest economy by nominal GDP in the world, and U.S. businesses use a huge amount of electricity (2.4 million GWh or about 63% of all retail sales).[1] By 2029, data centers are estimated to consume almost 10% of load with forecasted 80 GW increase in aggregate demand.[2] For the first time in decades, electricity load is growing in the U.S. because of the growth of data centers, the onshoring of manufacturing, increasing electrification and EV expansion, and the overall economy.

Many businesses have committed to purchasing their electricity from renewable energy sources by 2025, 2030, and 2040, and some have also committed to more sustainable supply chains.[3] These commitments have driven companies to contract for over 100 GW of clean energy in the U.S. since 2014 – about 24% of the country's total installed renewable energy capacity.[4] In 2023, the corporate sector procured over 46 GW of new clean power capacity globally, with over 20 GW in the U.S. alone.[5] That's double what it was five years ago, and ten times what it was ten years ago. These companies are leading the overall transition to a more sustainable future.

The clean energy industry can accelerate this transition by simplifying the process and providing clarity around the choices for organizations looking to procure renewable energy. We hope this paper helps.

1 U.S. Energy Information Administration, Electric Power Monthly (2023 data), Februrary 2024. Monthly Energy Review, data for 2022 March 2023.

2 Grid Strategies, Feb Update to Strategic Industries Surging Report, February 2025.

3 Commitments to decarbonize an organization's operational footprint typically cover goals to reduce direct emissions from controlled or owned sources such as fuel combustion in boilers, furnaces, and vehicles (Scope 1) and indirect emissions (Scope 2) from purchases of electricity, steam, heat or cooling, while commitments to decarbonize the upstream and downstream supply chain for these organizations are referred to as Scope 3 emission reduction goals.

4 Includes publicly announced corporate clean energy procurement through power purchase agreements, green tariffs, tax equity investments, and direct and project ownership in the U.S. From 2014-2024. Excludes onsite generation <20 MW. Clean Energy Buyers Association (CEBA), December 2024.

5 Corporate PPA Deal Tracker: March 2024, Bloomberg New Energy Finance, April 2024.

Charting a Path Toward **CLEAN** *Energy Procurement*

STEP ONE

Define Your Why

Ask yourself: Why is your company pursuing renewable energy?

- **Promote Company Leadership**
- **Reduce Carbon Emissions**
- **Invest for Returns**
- **Save Money**
- **Manage Risk with Energy Resilience**

STEP TWO

Identify Stakeholders

Determine who should be involved in the decision-making process

- **Company Owners**
- **Communications Leadership**
- **Senior Leadership**
- **Financial Leadership**
- **Employees**
- **Customers**

STEP THREE

Develop Your Renewable Energy Strategy

Consider the various procurement options based on complexity, timeline, & goals

1. **Procure RECs:**
   - Unbundled RECs
   - Green-E RECs
   - Project-Specific RECs
   - Project-Specific + Additionality RECs
   - Green Tariff or Retail Bundled REC
2. **Onsite Renewable Energy:**
   - Onsite Solar (+ Storage)
   - National Portfolio
   - Own or Lease?
3. **Community Solar:**
   - Community Solar Participation
4. **Offsite Renewable Energy:**
   - VPPA (Contract for Difference)
   - Physical Delivery Contract
5. **Clean Energy Tax Investments:**
   - Tax Equity Investments
   - Transferable Tax Credit (TTC) Purchases

STEP FOUR

Assess Timing & Additional Factors

Consider how fast your organization needs to implement renewable energy

- **Immediate Needs**
- **Medium-Term Goals**
- **Long-Term Investments**
- **Location**
- **Regulatory Environment**
- **Project Size & Scale**

STEP FIVE

Execute & Monitor

Engage experts to guide the procurement process

- **Consider partners for REC purchases, solar installations, and energy market advisory.**
- **Continuously review strategies to adapt to evolving technologies and policies.**

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Define Your *Why*

The most important question that a company or organization needs to address as they consider procuring renewable energy is ***why***. Publicly traded companies seeking to offset massive emissions from data centers will deploy vastly different strategies than a local packaging company seeking to offset more limited emissions from its operations.

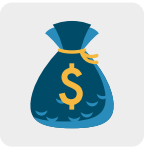
Are you looking to show your customers that your facilities run on renewable energy? Are you looking to save your company money? Are you looking to decarbonize your organization and its operations? Are you prioritizing visibility with your employees or customers? Map out your rationale, your objectives, and the message you intend to deliver. Generally, organizations aim to procure and/or invest in renewable energy for some combination of the following reasons:

Save Money: An organization can sometimes procure renewable energy at a discount to current electricity rates or at a projected discount to future electricity rates. Both onsite and offsite solar may provide these savings.

Manage Risk with Energy Resilience: Organizations procure renewable energy to hedge economic (and reputational) risk by procuring electricity from onsite or offsite clean energy. This financial or physical procurement of clean energy can create energy resilience, giving a company control over a large operating costs or key input of many facilities operations.

Promote Company Leadership: Some organizations are interested in procuring clean energy for reputational or marketing advantages. This strategy typically involves replacing or offsetting the "brown power" an organization is purchasing with clean energy, often in a visible way that can be marketed easily to organizational stakeholders. This can be done through onsite or offsite procurement or through the purchase of RECs.

Reduce Carbon Emissions: Many organizations offset the "carbon footprint" resulting from its specific local electricity consumption, rather than just offsetting the general electricity itself. To do so, they measure the carbon intensity of their load and then procure renewable energy that displaces a similar amount of carbon on the grid.[6]



Invest for Financial Returns: Many organizations, especially financial institutions, invest in renewable energy infrastructure for a financial return, often through a tax-focused investment. An increasing number of companies use this strategy to help fund other decarbonization strategies as part of a portfolio approach.

Identify Your Stakeholders

The second step is identifying organizational stakeholders. Before the organization spends significant time comparing a virtual power purchase agreement (VPPA) with a renewable investment, community solar, onsite solar, or a ten-year forward renewable energy certificate (REC) agreement (more on those later), organizations need to determine who needs to be involved. Who needs to provide input and buy-in? Your stakeholders may include the following:

Once you have identified stakeholders, consider your key objectives and core messages for that audience. It's critical that the message you seek to deliver corresponds to the objectives you have set out.

Finally, a critical input into your organization's decision will be **timing**. What is the timeline that your organization is focused on? There are vast differences in complexity and implementation timelines for these strategies, as discussed below. An organization can potentially buy RECs within weeks, while procuring clean energy from an offsite project may take years.

6 A carbon footprint changes depending on where and when an organization uses its electricity. This is generally referred to as ***emissionality***, and approaches based on emissionality are championed by a number of major organizations through the **Emissions First Partnership**.

Developing Your Strategy Portfolio

Now that you've identified your why, you can develop a portfolio of strategies that meet it. Strategies vary widely and include everything from procuring renewable energy certificates (RECs) to participating in a community solar program and even investing tax structured equity into a project. Each of these strategies has its advantages, and you may require a few different strategies to accomplish your goals. We generally recommend a portfolio of strategies composed of the following.

Procuring RECs

Perhaps the simplest and most popular strategy for procuring renewable energy is through RECs. A REC is a certificate that represents the environmental attributes associated with clean energy production from a renewable energy project. Each REC represents 1 megawatt-hour (MWh) of clean energy production from solar, wind, and hydro power. Green-e RECs are produced from wind and solar projects and are verified and certified by the non-profit Center for Resource Solutions (CRS).[7] CRS also verifies that the RECs are not sold more than once or claimed by more than one party. Organizations interested in purchasing clean energy can buy and pair RECs with retail electricity purchases to claim that their electricity comes from a clean energy project.

RECs provide organizations with a very clear path towards achieving 100% renewable energy and support renewable electricity production. The benefit of a REC purchase is that it can be done quickly and relatively simply, on a significant scale, and with a high degree of fidelity. But not all RECs are the same. RECs come in several different flavors based on (1) whether the RECs are from a specific project, (2) the technology of the project (wind, solar, hydro), (3) the physical location of the project, (4) when the project was or will be placed in service; and (5) the duration of the REC purchase.

We recommend that any organization considering a REC purchase engage in a more thoughtful discussion to ensure that their purchase aligns effectively with their why. Here's a quick overview.

Unbundled RECs: In its simplest form, an organization can buy unbundled RECs from the market in a volume equivalent to the load of its facilities. A company can purchase one REC for every MWh of brown power it procures. If the organization has a load of 100,000 MWh annually, and 20% of their power is already from renewable energy, the organization will simply purchase 80,000 RECs annually to pair with their brown power and claim renewable energy. Some organizations procure RECs from hydroelectric or methane sources because they are less expensive; however, these RECs are not recognized in certain reporting, disclosure, and leadership programs.[8]

Most organizations procure Green-E RECs prior to making public statements regarding their procurement. The downside to generic Green-E RECs is that they don't enable a customer to point to a specific project, or claim that they are supporting new construction. This may undermine their ability to market their efforts. These RECs do, however, help support preexisting generation and the overall clean energy market and can be counted towards Scope 2 and some Scope 3 emission reductions.[9]

7 For information on the Green-e program managed by the Center for Resource Solutions please visit its website, **www.green-e.org**.

8 Science Based Targets initiative (SBTi) and the GHG Protocol do not accept RECs other than Green-e RECs.

9 For a more detailed look RECs read our **whitepaper on the subject**.

Project-Specific RECs: Many organizations that procure renewable electricity want to point to the specific project(s) that generated the electricity. This can be done through "project- specific" RECs, which are produced by an identifiable and specific wind or solar project. By paying a slight premium and entering a longer-term contract (typically for 5,10, or 15 years), an organization benefits from a REC purchase that provides a more stable income for a renewable energy project and creates a more tangible and compelling story for stakeholders. We generally advise more sophisticated organizations to consider the purchase of project-specific RECs.

Sol supported REI and its supplier Nester through Project-Specific RECs in North Carolina.

Project-Specific + Additionality RECs: Some organizations want to both buy RECs from specific projects and support new "additional" projects. Through their REC purchase, these organizations are focused on ensuring that their REC purchase is from new projects that displace fossil fuel generation on the grid. We often refer to these as *additionality RECs*. These additionality RECs are impactful but can be more expensive. Additionality RECs are also harder to procure because RECs are typically bundled into a PPA and purchased by the PPA offtaker. For an organization with a limited budget, purchasing Additionality RECs can avoid the cost, complexity or timing challenges of a VPPA but create a similar impact.[10]

Green Tariff or Retail Bundled REC: A green tariff or renewable retail supply contract typically bundles a REC with a customer's electricity bill each month. Many utilities and retail electricity suppliers offer green tariff options, enabling organizations to choose to purchase bundled RECs along with their electricity through their utility. While any organization can buy RECs, not all utilities provide the option for a green tariff program. Regardless of an organization's location, buying RECs separately from retail electricity often gives more control over the quality and specific attributes of the RECs they are supporting, whereas green tariffs may bundle RECs that don't align with an organization's energy resilience, carbon strategy, financial objectives, and/or Scope 2 accounting principles.

Other Considerations: In addition to making claims of project-specific RECs or additionality, many organizations are increasingly procuring RECs from projects located in the same geographic areas as their load or procuring renewable energy strategically to maximize the amount of carbon that is displaced on the grid.Those strategies are described in more detail below. Companies are also increasingly combining community and environmental impact into their REC procurement strategy, leading to *Impact RECs* that represent not only clean energy procurement but also localized community impact.

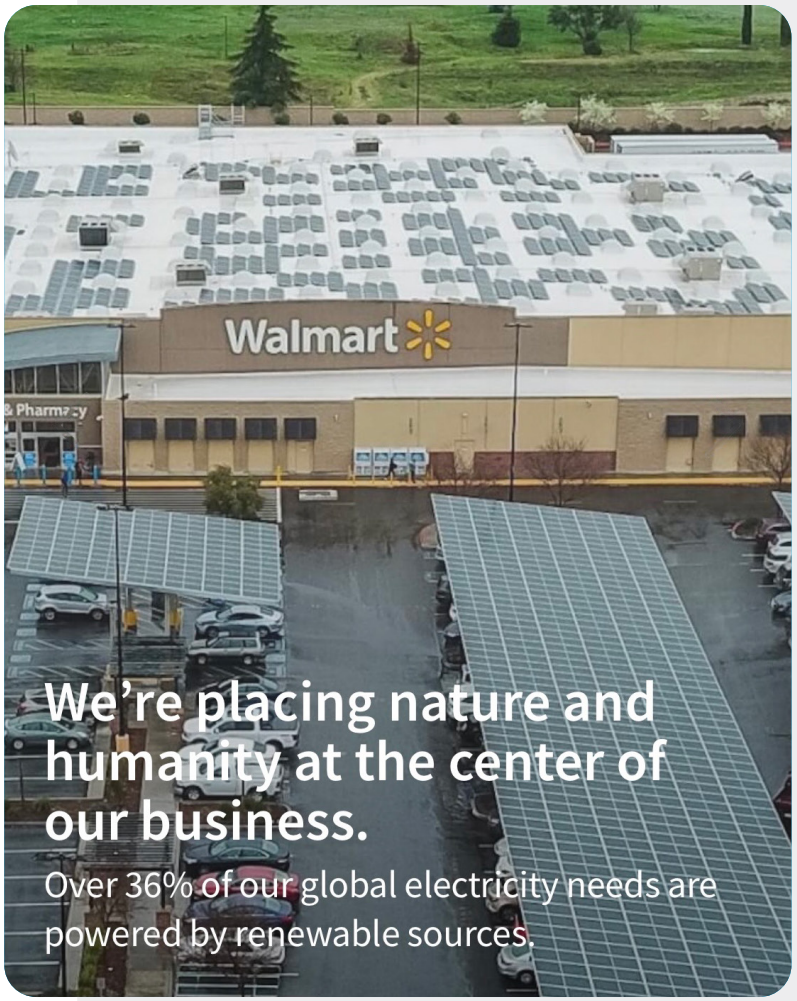
10 A VPPA is simply a combination of a long-term REC procurement coupled with a financial hedge for electricity in the form of a contract for differences (CfD). RECs are instrumental in both strategies.

Onsite Renewable Energy Procurement

For organizations with large rooftops, outdoor parking space, or available land, onsite renewable solar generation may provide both energy savings and environmental benefits. For companies with large brick-and-mortar facilities, onsite solar provides a very visible and powerful statement to stakeholders, including customers, employees, and shareholders.

Organizations may also consider onsite battery storage to complement their solar, although economics are still challenging and dependent on the battery's use cases.[11]

However, onsite solar also comes with drawbacks. Onsite solar is significantly more complex than REC procurement and generally takes a year or more to implement. While onsite solar can provide significant savings to some customers, these savings largely depend on state incentives and net metering programs. Finally, because onsite systems alone cannot fully match Scope 2 emissions, onsite solar generally needs to be combined with other strategies. In short, while onsite solar is one of the most compelling opportunities to save money and create visible impact, organizations should be prepared for complexity.



Sol Systems has deployed distributed onsite solar for companies such as Walmart, who have leveraged imagery for national advertising campaigns. Screenshot from New York Times Advertisement of Sol Systems developed project.

National Portfolio Site Evaluation

Many organizations have a portfolio of buildings across the country that may accommodate onsite solar. We generally recommend that these organizations triage and then screen their portfolio of sites based on economics, carbon intensity, local regulations, and general feasibility. For larger organizations, a portfolio evaluation is a critical first step in their journey. This evaluation helps identify sites with quick wins and supports internal buy-in for a broader rollout across the portfolio. While onsite solar can be implemented across the country, defining the ***why*** ensures an organization's strategy aligns with its unique priorities, budget, and goals.

11 Onsite storage is largely market dependent. It will become increasingly popular as technology costs come down and as markets increasingly value flexibility.

Own, Lease, or PPA?

If you pursue solar or storage, you will need to decide whether you want to purchase a system or enter into a power purchase agreement (PPA).[12] If you choose to purchase a system, you will pay for that system upfront and produce your own electricity for your facility or facilities. If you enter into a PPA, you will pay a fixed price for each kWh over the agreement's duration, avoiding upfront capital expenses related to your core business. In some states, third-party ownership under a PPA is not permitted; however, an operating lease can be a viable alternative.

Companies that have (1) access to a relatively low cost of capital and (2) tax liabilities are in a good position to own solar assets.[13] These companies should consider the ongoing requirements of operating the assets and should consider hiring a top-tier operations and maintenance (O&M) company to support the project. Organizations should also consider hiring an experienced advisor or partner to help them understand their electricity costs. The economics of an onsite system will largely depend on the type of electricity plan (also called a tariff) an organization has with their utility and the resulting per-unit energy (per kWh) and per-peak demand (per kW) charges that can be offset.

If your company does not have tax liabilities, does not generally invest in equipment with high upfront capital costs, and/or does not have interest in maintaining physical equipment, you might consider a PPA. Many states have valuable state rebates and incentives that can reduce the cost of solar and battery storage; however, the application and annual reporting to receive these funds can be complex. A PPA enables the developer to handle this processing, program management, and reporting and pass on the savings through a lower PPA rate.

Another advantage of a PPA is that you pay only as energy is generated from your system over a 10-to-25-year period, and you can often lock in a flat rate below the current cost of electricity from a utility. Solar companies that offer a PPA to you also provide ongoing O&M services so that any regular or irregular maintenance is handled without additional cost. If you choose to enter into a PPA, you'll want to carefully explore your options and understand the track record of your PPA provider, including their experience and financial backing.

Before you make the decision to pursue onsite solar and storage, familiarize yourself with (1) the net metering framework in place in your target state that supports onsite generation, (2) the renewable portfolio standard (RPS) in your target state that supports renewable energy generators, (3) available state grants or rebates for onsite solar and battery storage; (4) the term of your facility's lease and/or ownership structure, and (5) the age and condition of any relevant rooftops. Finally, understand your utility's retail electricity demand-based and per kWh-based charges. Utility electricity rates are generally complex and evolving, and onsite solar economics are incredibly sensitive to them.

Whether you choose to own your onsite solar project or enter into a PPA, consider whether you are going to sell the RECs from your projects. In some states with an RPS, project economics often depend upon monetizing

12 Some solar developers offer capital and equipment leases as well, although the two primary strategies are (1) to own and operate or (2) to enter into a PPA.

13 Onsite wind generation struggles to compete with solar generation, although the technology is changing. Large corporations, like Ikea, have decided to own and operate offsite wind projects.

compliance RECs.[14] PPA providers often claim title to the project-specific RECs and sell them from the project they own to the utility required to purchase them as part of the compliance program.

If you install solar onsite but do not hold and retire the RECs, you cannot claim that you procured clean energy—the right to make that claim has been sold. Many companies choose to work with their PPA provider to obtain replacement RECs at a lower cost than the project-specific RECs that have been sold. This process is often called a *REC swap* or *REC replacement* and ensures organizations can (1) keep their PPA rate as low as possible and (2) enable a renewable energy claim to reduce Scope 2 emissions.

Most organizations do not have their own in-house energy team; for that reason, we generally recommend either working with a partner organization that has significant experience; or hiring a consultant. These experts can help you evaluate your utility rate, understand your ownership options, navigate the complexity of modeling the economic benefits and available incentives, and hire your engineering, procurement and construction (EPC) partner. There are a number of tools to get you started, including a modeling tool called **PV Watts** (run by the Department of Energy) and the non-profit **DSIRE**.

Community Solar

Community solar programs are generally state programs that enable customers to collectively purchase (or *subscribe*) electricity from a solar project in the form of an electricity bill credit, typically resulting in a 5-10% reduction in annual electricity costs. Organizations can purchase from multiple projects, and multiple customers can purchase from one project. Community solar can be a great option for organizations who are unable to install solar panels on their roofs or onsite. Community solar purchases are typically simple: an organization purchases $95 of community solar and receives electricity bill credits of $100.

Columbia University Supported Solar Energy as the anchor subscriber of Sol's Croton-on-Hudson community solar project, though they did not receive project RECs due to NY community solar rules.

Currently 23 states and the District of Columbia (DC) have passed "enabling legislation" that encourages or mandates community solar in their jurisdictions. Additionally, 19 states and DC have low-income community solar legislation. For an organization interested in finding a community solar program, the Department of Energy provides **this resource**.

14 Compliance RECs can be sold (generally at a premium) to energy suppliers or utilities to help them meet the requirements of a specific state Renewable Portfolio Standards (RPS). **Dozens of states have RPS or similar frameworks**.

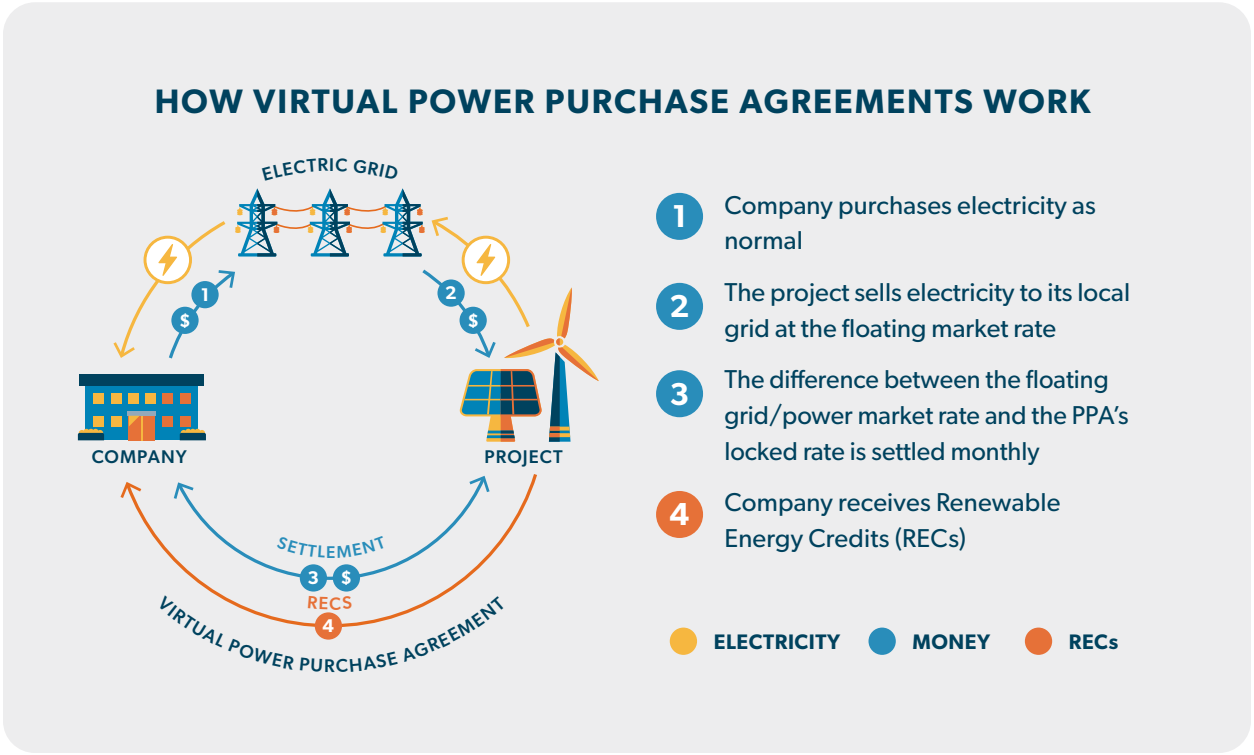
Community solar programs have become powerful tools in addressing a market gap for organizations that do not have the space for solar or the sophistication to purchase offsite solar. These programs have also narrowed the gap for communities that may not be able to afford solar and have **enabled rural cooperatives** to transition to clean energy.

With community solar, participants generally purchase electricity bill credits, not the RECs associated with the solar generation. So, while community solar is a helpful strategy to reduce costs and support solar, it does not support a reduction in Scope 2 carbon emissions or enable a renewable energy claim for an organization. Organizations should consider coupling participation in community solar with a REC purchase. Fortunately, participation in a community solar program may create economics to support that strategy.

Organizations considering a community solar program should explore the mechanics of their bill credit and their savings, as these structures can be complex. They should compare multiple providers and be thoughtful about the fees associated with signing up for a community solar program, including terms, exit fees, and sign-up fees.

Offsite Renewable Energy Procurement (VPPA)

Offsite renewable (solar and wind) energy procurement is one of the most powerful tools for driving an organization's decarbonization. Because this type of procurement is complex, we suggest working with an energy advisor and a sophisticated lawyer. For this strategy, an organization purchases clean energy from a utility-scale solar or wind farm by either (1) working directly with a developer or (2) working through its energy supplier. These transactions can take many forms but are generally a contract for difference (CfD), often referred to as a Virtual Power Purchase Agreement (VPPA).



Contract for Differences

A CfD is a financial agreement between a seller (e.g., a solar or wind project developer) and a buyer (typically a large corporation) where the buyer guarantees a fixed strike price for the electricity generated by the seller. Power/grid market prices fluctuate over time, but the buyer guarantees a fixed source of income for the wind or solar project. The project developer uses this expected income to finance the wind or solar project, enabling new renewable generation on the grid. Generally, buyers also purchase the RECs associated with electricity generation. This is referred to as a *bundled product* and supports the claim that buyers are supporting new renewable energy.

In a CfD, the buyer is only paying the *difference* between the strike price and the power/grid price, not the strike price itself. If the market price is below the strike price, the buyer pays the project the positive difference. If the market price is higher than the strike price, the project pays the buyer the negative difference.

Key Risks

One of the primary risks in a VPPA is the power/grid market price volatility. The financial structure of a CfD means that the buyer guarantees a fixed strike price for the electricity generated by the renewable project. However, market prices for electricity can fluctuate due to many factors, including changes in demand, shifts in fuel prices, changes to generation capacity on the grid, and regulatory developments.

If market prices fall below the strike price, the buyer is responsible for covering the difference, which can lead to unexpected costs. Over the long term, sustained low market prices can create a financial strain on both the buyer and the project developer. For the buyer, this means higher-than-anticipated costs, potentially undermining the financial viability of the VPPA and impacting overall energy resilience and carbon strategy goals. For the developer, variability in the projection of prices may jeopardize project financing, reducing the expected revenues after the VPPA term and stalling the project before it even reaches construction.

One key consideration of any CfD is how and where pricing differentials are handled. Most corporate buyers contract to purchase electricity at an electricity hub, which generally has lower volatility, but the actual electricity generation and pricing for the project occurs at the node.[15] The price difference between an electricity hub and a node is referred to as basis risk, and properly managing and allocating this risk is essential to any VPPA.

Alternatively, some organizations may opt for a physical delivery contract, where they pay for the electricity to be physically delivered to their facilities. This typically requires an energy supplier to firm and shape the otherwise variable production of renewable electricity, but doing so may simplify the transaction. In a VPPA, firming and shaping refers to strategies used to manage the variability and intermittency of clean energy generation, to create a more reliable and predictable power supply that better matches a buyer's energy demand. Firming and shaping generally come at a premium when working directly with a developer.

15 An electricity hub is designed to mirror physical trading hubs but is virtual. A hub is an aggregate of a number of nearby physical geographic electricity nodes with the intention of reducing volatility and providing common pricing for a geography. There are thousands of individual geographic nodes focused on individual injection points on the grid, each priced individually.

Changes in government policies or electricity market regulations (specifically those related to clean energy or incentives) can significantly impact the viability and timing of a VPPA. Organizations must remain vigilant about the evolving regulatory landscape, as policy changes can affect the cost structure and financial feasibility of renewable projects. For example, the frequently changing trade policy has impacted many planned VPPA projects from developers that relied on equipment manufactured outside of the U.S. In addition, many projects (and therefore VPPAs) were delayed in regions because of delays in interconnection. We recommend evaluating how advanced a proposed project is, and the completion of key milestones, to determine a realistic timeline for project delivery.

PPAs and REC Swaps

In many markets across the U.S., VPPAs are projected to cost organizations money over the contract term because the fixed price of the VPPA is projected to be higher than the hub market price the buyer receives for the electricity generated. This situation leads to a *negative settlement* value, where the buyer pays the difference between the fixed VPPA price and the lower market price.

Sol has supplied numerous Fortune 500 customers with renewable energy certificates from wind and solar projects including the Chisholm View II project in Oklahoma.

To mitigate the cost of a VPPA, companies can sell the compliance and/or project-specific RECs generated by the renewable energy project. These RECs are typically more expensive because they represent the renewable energy produced directly by the project. In exchange, the buyer can swap these RECs for less expensive RECs, which still allow them to meet a renewable electricity goal or Scope 2 carbon reduction claims. Through this strategy, organizations can effectively lower the overall projected costs of the VPPA while still demonstrating their commitment to renewable energy and achieving their energy resilience and carbon strategy targets.

This approach helps organizations manage their financial exposure within the VPPA framework and supports broader market liquidity for RECs. However, organizations must ensure that the national RECs they acquire meet the necessary standards and requirements to fulfill their carbon reduction goals and maintain the integrity of their energy resilience and carbon strategy initiatives. Due to the inherent complexities and risks of a VPPA—and the need in certain markets to swap RECs to reduce costs—many organizations simply choose to purchase project-specific RECs directly.

Clean Energy Tax Equity

Background

Since 1992, U.S. clean energy tax policies like the Production Tax Credit (PTC) and Investment Tax Credit (ITC) have driven remarkable growth in clean energy projects. The Inflation Reduction Act (IRA) of 2022 marks the most significant milestone in this policy since its creation, enhancing and extending these credits. Specifically, the IRA extended the ITC and PTC for ten years to 2032, introduced a new base rate and adders, expanded eligibility, and added a transferability option.

However, beginning in 2025, recent executive actions have paused or suspended some rule making related to the ITC and PTC, and paused various funding programs originally authorized by the IRA. This evolving policy environment has introduced new uncertainties, particularly around the rules for tax investments and other incentives for renewable energy developers and corporate investors.

Despite these shifts, purchasing or investing in clean energy tax credits can still allow for-profit organizations paying U.S. federal income taxes to support additional new clean energy generation while potentially realizing financial benefits such as reduced tax liability and cash payments.[16] Clean energy tax credits continue to offer a positive return on investment (ROI), though policy monitoring is essential.

Sol Systems and Google structured a clean energy tax investment and renewable energy procurement in 225 MWdc of new solar energy projects and 18 MW of battery storage resources in a region with relatively low renewable energy penetration to help meet Google's 24/7 carbon-free energy goal.

Because renewable energy developers typically do not have enough tax appetite to use the tax credits from their solar, wind, and battery projects, they need to sell these credits to finance their projects. These tax credits represent a significant portion of the capital stack, 30-50% for the ITC, and are critical to clean energy projects.

While most investment opportunities do not come with RECs, many companies use the returns from tax credit transactions to fund clean energy purchases, such as replacement RECs from the same region or specific projects.

16 Only tax equity investing provides cash payments, not purchase of TTCs.

Tax Equity Investments

A tax equity investment structure is best for corporations with recurring U.S. income taxes greater than $20 million annually, and an experienced internal tax or finance team lead. Tax equity investments enable a corporation to invest in a project partnership in exchange for cash yield, valuable tax credits (ITC, PTC), and depreciation benefits.

There are two types of tax equity investment structures: the partnership flip and the inverted lease. Both structures are relatively safe and stable for the tax equity investor because the investor has a preferred position in the partnership, and because much of the investment is returned upfront. Both structures provide predictable returns that are insulated from electricity market swings. While the main risk for a tax equity investor is the recapture of the tax credits by the Internal Revenue Service (IRS), the investor is generally protected by guarantees and insurance from the sponsor developer.

With the cash payments from a tax equity investment, a corporation can buy RECs so that both the energy resilience and carbon strategy and tax teams (typically cost centers) receive benefits from the structure. To explore a tax equity investment, we recommend partnering with an experienced syndicator or advisor to support and supplement the internal tax and finance teams, define a target credit strategy and internal approval process, and diligence to identify target projects.

Transferable Tax Credit (TTC) Purchases

The Inflation Reduction Act (IRA) introduced TTCs that enable developers to sell all or part of their tax credits to unrelated parties for cash. This transferability option has expanded the market for clean energy tax credits, making it easier for developers to finance projects and for investors to participate without direct project ownership required in a tax equity investment. TTCs have increased liquidity, broadened the investor base, and simplified tax credit transactions in the U.S.

A TTC structure is best for corporations with fluctuating annual U.S. income taxes, a less experienced tax and finance team, and/or a lower return hurdle. In a TTC transaction, the corporate buyer purchases just the ITC or the PTC from a project but cannot purchase the MACRS depreciation benefits and receives no ongoing cash. Therefore, the corporation's 1.05-1.07x ROI is lower than a tax equity investment, and the developer sponsor typically loses out on monetizing the depreciation.

Compared to a tax equity investment, a TTC transaction is shorter term (one year vs. five), involves simpler contracting and accounting, offers lower returns, and is typically more challenging to find for large-scale portfolios or projects because the terms are less beneficial to developers. The risks are similar between a tax equity investment and a TTC purchase, but the risk management is weaker in a TTC transaction because the buyer lacks the control of a project owner.

While in a TTC purchase there are no extra cash payments to fund renewable energy purchases, a corporate energy resilience and carbon strategy team can use some of the returns from the tax transaction to set up a parallel REC transaction for RECs from a nearby specific project to further greenhouse gas (GHG) reduction. The

steps to explore a TTC purchase are the same as those for a tax equity investment: first, find a syndicator/advisor to educate the internal tax and finance teams; then, define a target credit strategy and internal approval process. There are marketplaces with TTCs where a corporation can transact, but internal education is often a prerequisite to transacting on these marketplaces.

Other Considerations for Procurement: Location and Time

Organizations focused on offsetting their carbon footprint or making a claim regarding carbon neutrality should consider (1) the carbon intensity of their load and (2) the carbon intensity of the electricity grid where they procure renewable power. An organization's carbon footprint changes depending on where and when it uses its electricity and where and when it buys its renewable energy.

A data center in Wyoming generally has a larger carbon footprint than one in Texas because the underlying electricity grid is more carbon intensive. As such, a corporation looking to offset the carbon from its facilities in Wyoming will have to procure more renewable energy, all else being equal. Conversely, a wind farm in Wyoming will generally displace more carbon than one in Texas. The same corporation would have to procure more RECs from Texas than from Wyoming to offset the same amount of carbon. Similarly, producing renewable energy during the day generally offsets more carbon than clean energy produced at night because more coal-fired electricity is generated on the grid mid-day.

The most sophisticated organizations are increasingly focused not just on procuring 100% renewable energy but on offsetting the carbon footprint associated with their electricity load. This requires them to first measure the underlying *emissionality* of the portfolio of their facilities, which corresponds to the amount of carbon produced from the electricity they procure and depends on both location and time. Second, this requires them to offset this carbon by procuring clean energy from wind and solar that displaces an equivalent amount of carbon on the grid, which also depends on location and time.[17] Other organizations focus on a time matching approach to accomplish the same goal, matching their electricity load with renewable energy procurement in a specific geography.

Organizations interested in this approach should explore the Emissions First Partnership[18] and the large coalition of members of the independent non-profit EnergyTag[19] that works on setting a standard for hourly and locational tagging of emissions to Energy Attribute Certificates (EACs) globally, including RECs in North America.

17 This is often referred to as location marginal emissions **See here** for more detail.

18 The 'Emissions First Partnership' (**www.emissionsfirst.com/principles**) was created by practitioners – companies working to reduce their emissions with impactful clean energy projects today – to contribute to standards that can improve emissions accounting accuracy and ensure clean energy investments maximize electricity decarbonization.

19 EnergyTag (**www.energytag.org**) promotes granular accounting to ensure consumption is matched with clean energy in the same hour from a location where electricity can be delivered. It encourages new clean energy supply.

Conclusion

Pursuing a clean energy procurement strategy is a journey, and each organization begins this journey in a different place with different resources. This paper is designed to provide rungs in the ladder so that organizations can begin where they need to and move up the ladder as they build momentum in their energy resilience and clean energy efforts.

Comparing Clean Energy Procurement Strategies

	Complexity	Savings	Timeline	Additionality Claim	Carbon-Free Claim	Potential Scale
Unbundled RECs	Low	No	Immediate	No	No	Very High
Unbundled Green-E RECs	Low	No	Immediate	No	Yes	Very High
Project-Specific RECs	Medium	No	1-3 Months	No	Yes	Very High
Additionality RECs	Medium-High	No	3-12 Months	Yes	Yes	High
Community Solar	Low	Generally	1-3 Months	Potentially	No	Medium-High
Onsite Solar (+ Storage)	High	Potentially	6-24 Months	Yes	Potentially	Medium
Offsite Solar or Wind	Very High	Potentially	2-5 Years	Yes	Potentially	High – Very High
Invest Tax Equity / TTCs	High	Yes	6-12 months	Yes	No	Medium

Have questions?

Explore your path with us by reaching out to Enterprise@SolSystems.com

*In the renewable energy industry, "additionality" generally means that but for a specific agreement to buy energy from a specific facility, that facility would not be built. For more on this topic, please read our white paper: **Reimagining REC Markets: Integrating Additionality and Emissionality into a New Carbon-Free Paradigm**