Module 2

Procurement options

in partnership with wsp

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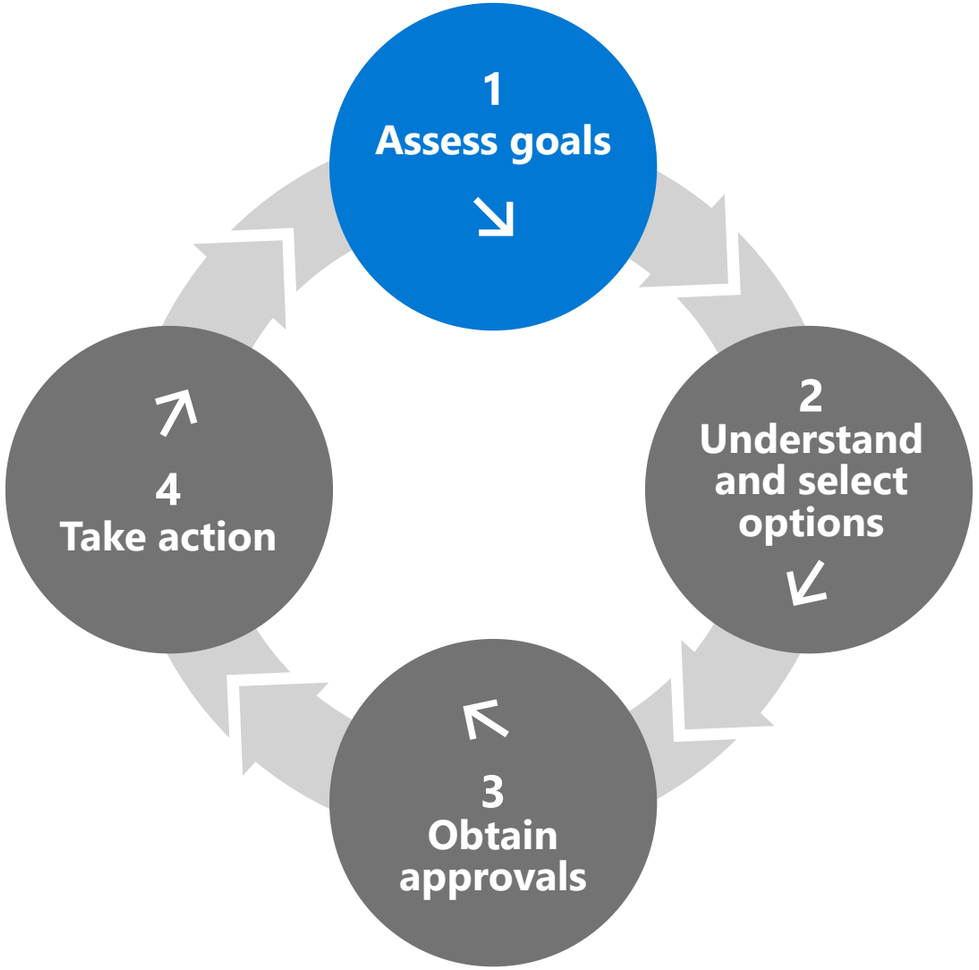
Recap of Module 1: Roadmap development

In **Module 1: Roadmap development** you gained an understanding of:

- The four key steps associated with creating and implementing a renewable energy procurement roadmap.
- The tenets of an impactful, implementable renewable energy procurement roadmap that considers business goals, opportunities, and constraints.
- How to determine energy use and set goals for renewable energy procurement.
- Best practices for public disclosure.



Learning objectives

Once you complete this module, you should understand:

- The fundamentals of each of the renewable energy procurement options* available.
- The type and magnitude of impact that each procurement option offers.

** Please note that this version of the training was developed for a US-based audience. The procurement options described and the terminology are US-specific.*

Once you complete this module, you'll have the following modules left:

Module 1	Module 2	Module 3	Module 4
Roadmap development	Procurement options	Stakeholder engagement	Renewable energy procurement in action

Terms to know

Traditional regulated retail market: Regulated state-level market, meaning that consumers cannot choose who generates their power. They must purchase from the regulated utility in that area.

Restructured retail market: Competitive state-level market, meaning that consumers can choose from competitive energy suppliers, including independent power producers (that is, not utilities), which can enable consumers to choose their provider and generation options (for example, renewable energy). Utilities, in these markets, typically are responsible for retail electric service to customers and are not likely to own generation and transmission.

Regulated wholesale market: Vertically integrated utilities (that own the generation, transmission, and distribution systems used to serve consumers) are responsible for the entire process of providing electricity to consumers.

Restructured wholesale market: Competitive market run by independent system operators (ISOs) or regional transmission operators (RTOs), which permits independent power producers and non-utility generators to sell power. In deregulated wholesale markets, utilities are typically responsible for retail electric service to customers and are not likely to own generation and transmission.

Transaction complexity: Transaction complexity, for the purpose of this module, is dependent on the budget, level of legal review and counsel required, and number of stakeholders involved in a renewable energy procurement transaction.

Terms to know (continued)

Renewable Energy Impact (or Additionality): When the procurement option results in new renewable energy facilities being built. For many procurement options, the impact will come from making a renewable energy project viable by providing or securing a revenue stream. Comparing the relative impact between options can be difficult to do precisely, but at the far ends of the spectrum it is clear: buying unbundled renewable energy certificates (RECs) from an unknown source or existing facility is “low impact” or “non-additional” while incenting significant new capacity and consuming the electrons is “impactful.”

Capacity: Measured as the maximum net generating capacity of power plants and other installations that use renewable energy sources to produce electricity.

Impact on development of green energy capacity resulting from renewable energy procurement varies depending on whether the procurement strategy:

High impact

- **Directly brings new projects online and consumes the electrons.**
- **Helps enable project financing and assumes some of the risk for a new project through long-term commitments.**
- **Simply uses the assets of an existing green power project.**

Low impact

Renewable energy procurement options

Arranged according to potential impact **High** → **Low**

Onsite and near-site generation

Offsite generation

Retail supply

Unbundled solutions

The renewable energy procurement options included in this module are those most commonly implemented by companies; several additional renewable energy procurement options more complex and less frequently deployed renewable energy procurement options exist, but are not being discussed in this module.

Onsite and near-site renewables

What are onsite and near-site renewable energy projects?

Energy generated onsite by a system located behind the electric meter:

- Solar photovoltaic (PV) (roof)
- Solar thermal (roof)
- Solar PV (ground mounted)
- Bio-energy
- Micro-hydro
- Onshore wind
- Micro-geothermal
- Storage

Understand onsite options and potential impact

- Assess opportunity for onsite and near-site renewable energy generation capacity (for example, land, roof area at company-owned facilities) (total potential kilowatt-hours (kWh).
- Contextualize the potential impact of on-site generation toward achieving corporate renewable energy goals (percent of target).
- Determine the generation potential for renewable energy available at proposed project sites compared with facility energy consumption (percent of facility usage).

Onsite and near-site transaction types

Onsite and near-site renewable energy projects typically involve a transaction between a corporate buyer (for example, a company) and a renewable energy project.

Transaction types include:

Owned generation/direct investment ⊞

Power purchase agreement (PPA) ⊞

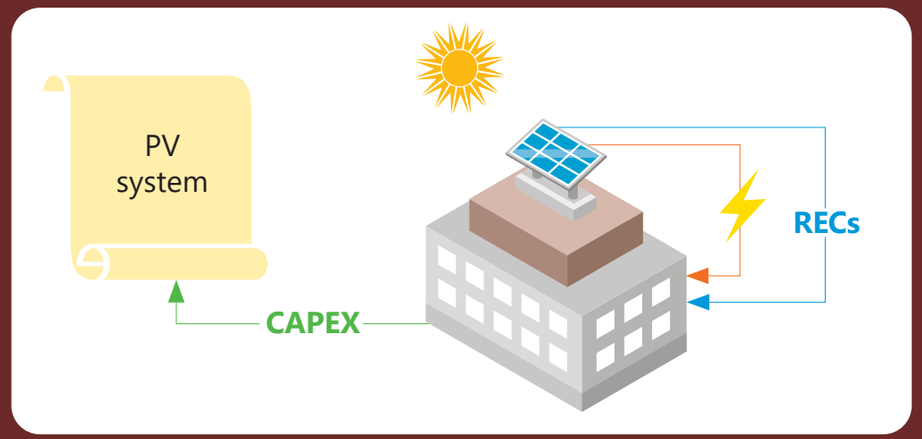
Owned onsite generation

Benefits

- Provides green power directly to the facility, which has the highest impact.
- Is high visibility, with the opportunity to highlight in internal/external communications.
- Results directly in development of new green power project.
- Reduces electricity costs after initial capital investment and minimal ongoing operations and maintenance costs.
- Insulates from volatility in electricity and fuel prices
- Can typically provide up to 10–15 percent of a facility's power needs as well as high-quality RECs, reducing the total number of RECs that need to be purchased.

Considerations

- Requires upfront capital investment.
- Includes responsibility for contracting or conducting operation and maintenance of system.
- Typically cannot meet 100 percent of facility electricity demand given required installation space and load-matching limitations.
- Depends on local renewable resources for generation potential.



Owned onsite generation

Source: WSP

Screening and evaluation tool for onsite and near-site renewable energy generation

REopt: Renewable Energy Integration & Optimization | NREL

REopt Lite is a tool that, at no cost to the user, helps commercial building managers evaluate the economic viability of grid-connected solar PV, wind, and battery storage at a site and identify system sizes.

Source: REopt NREL

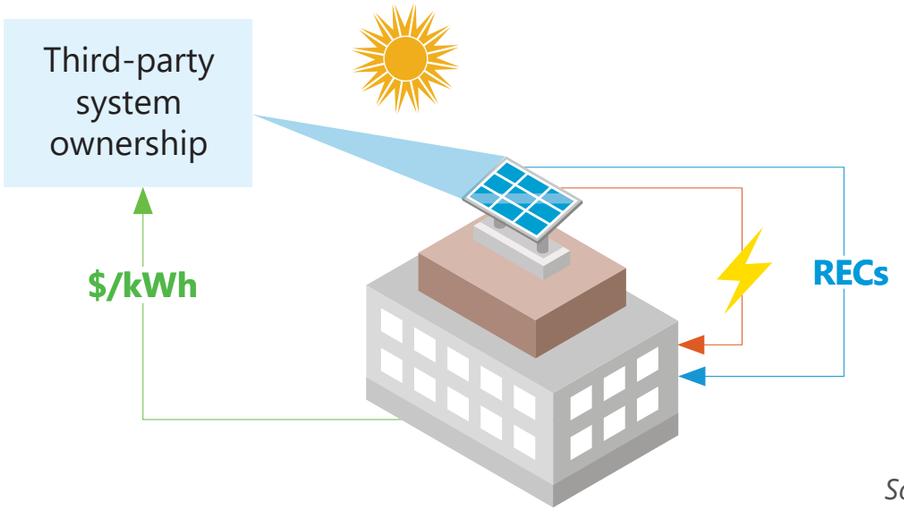
Onsite power purchase agreement (PPA)

Benefits

- Has a low upfront cost, with monthly payments based on production.
- Puts maintenance responsibility on the system owner (this is not the buyer).

Considerations

- Must specify in the contract that the purchaser will retain all rights to the environmental attributes generated by the system to be able to make renewable energy use claims.
- Would be added to the company's balance sheet as capital lease.



Source: WSP

Onsite PPA/operating lease

For informational purposes only. Not legal advice or counsel.

Offsite generation

Offsite renewable energy projects are energy generation projects owned in full or in part by a corporate buyer.

Transaction types include:

Virtual power purchase agreement (vPPA) ⊞

Tax equity investment with RECs ⊞

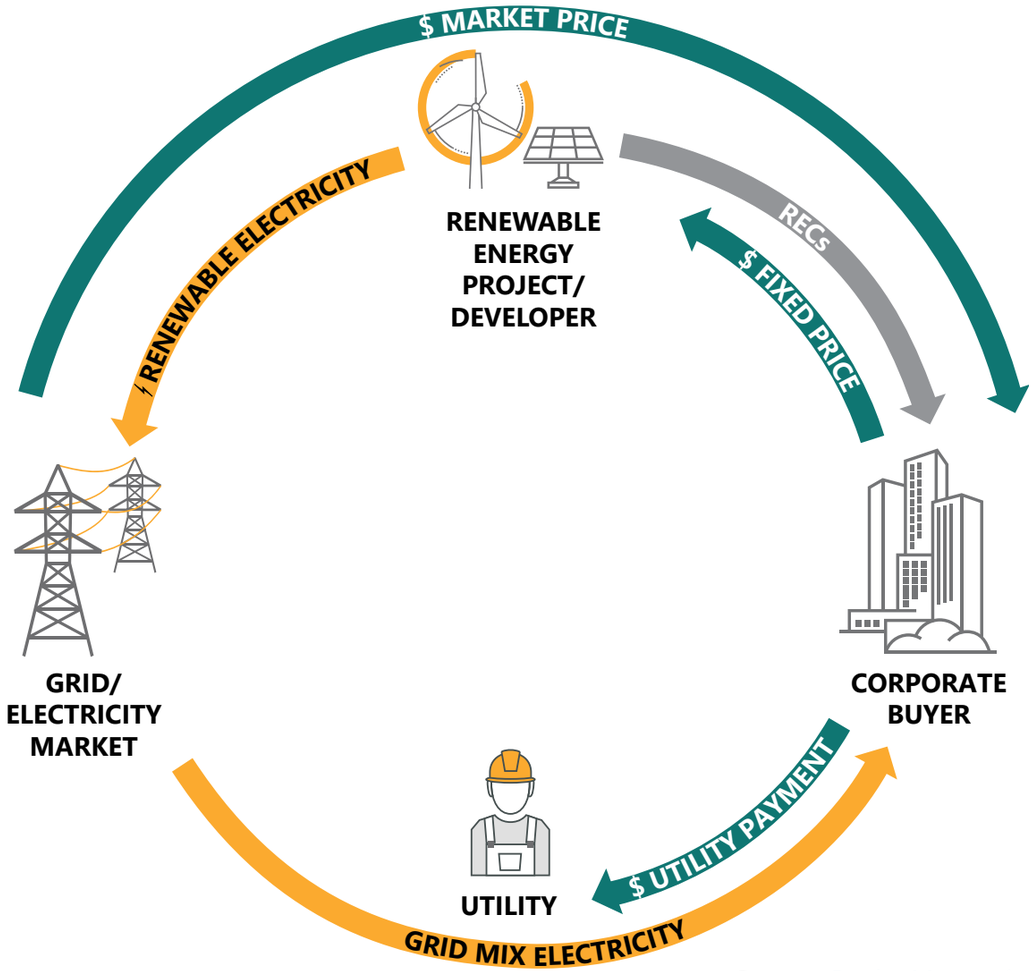
For informational purposes only. Not legal advice or counsel.

Offsite virtual power purchase agreement (vPPA)

vPPA contracts are financial transactions. The corporate buyer does not own or have responsibility for the electrons generated by the renewable energy project, which are sold to the grid.

A fixed-price cash flow (strike price) per megawatt-hour (MWh) is guaranteed by the buyer in exchange for a variable-market-price cash and RECs from the project.

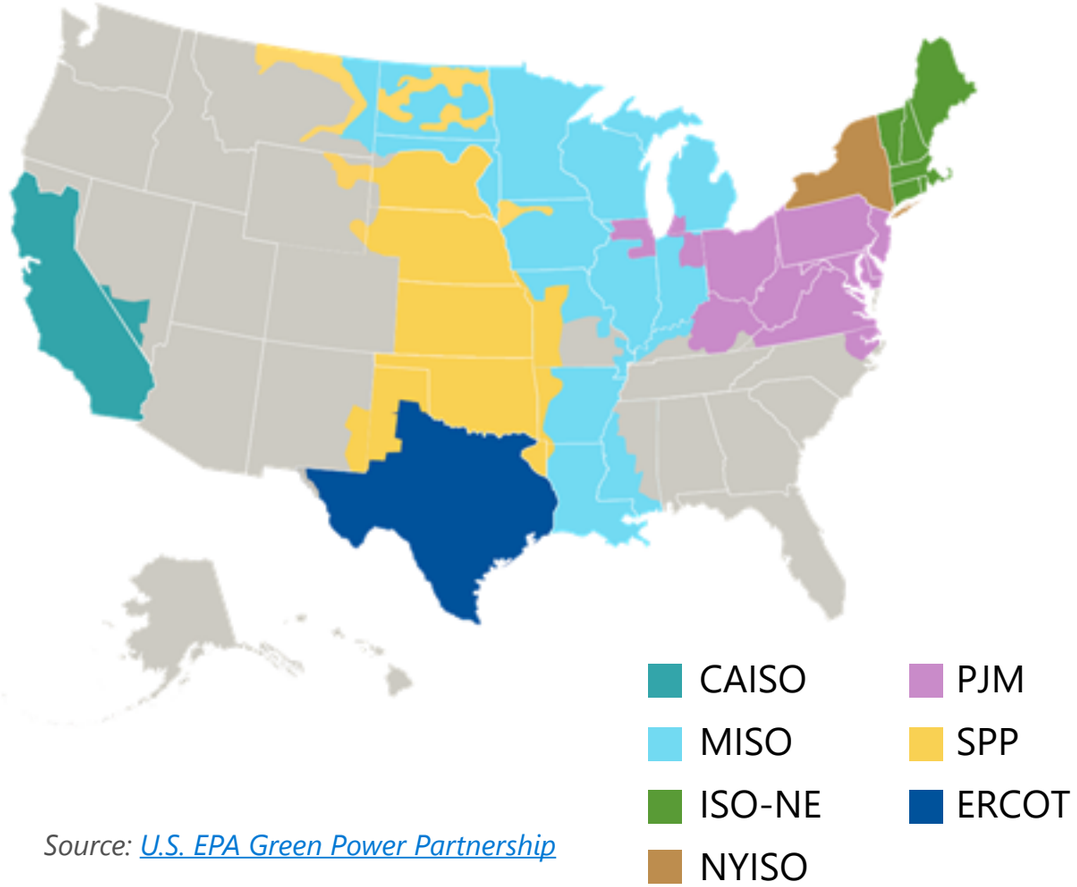
The buyer still needs to meet its electricity load by procuring electricity outside of the vPPA. A vPPA does not alter existing utility service agreements.



Source: Rocky Mountain Institute

Where vPPA buyers and projects can be located

- The renewable energy **project** must be in a restructured wholesale market.
- Buyers and developers need not be located in the same electricity market.
- Buyers can be anywhere in the US or Canada.



Source: U.S. EPA Green Power Partnership

Offsite large-scale vPPA

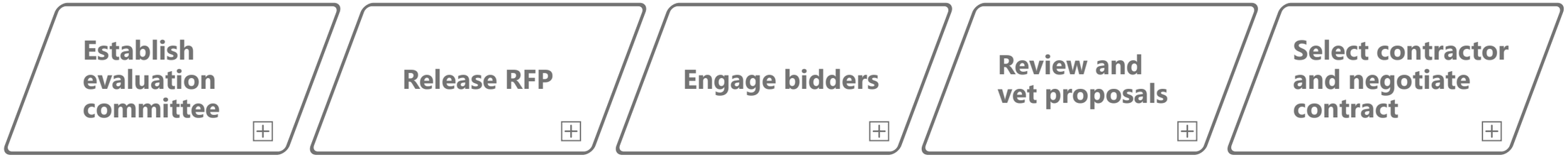
Benefits

- Can purchase a significant number of RECs in a single transaction.
- Sends a marker signal for increased demand of renewable energy.
- Results in new renewable energy capacity.
- Offers potential for revenue generation during periods of high electricity prices (however this should not be a basis for selecting this procurement option as cash flows are unpredictable).

Considerations

- Typically requires significant effort for stakeholder communication.
- Requires long-term commitment.
- Purchaser may be exposed to long-term power price volatility.
- Includes zero-price floor language in the agreement, which can limit exposure to strike price or stop the transaction from executing.
- Does not provide purchaser with physical electricity from renewable sources.

vPPA: Evaluation and procurement process



vPPA example

Microsoft is taking action and leading by example. In 2019, Microsoft Corporation and EDP Renewables signed two 15-year vPPAs totaling 125 megawatts of power from a wind farm in Ohio.

"We are constantly looking for opportunities where our corporate demand can not only be met but can also accelerate the transition to renewable sources. Bringing new wind projects online, particularly in states with relatively few projects but strong potential for growth, delivers both economic benefits and environmental progress."

—Brian Janous, General Manager, Energy and Sustainability at Microsoft

(Photo: An EDP Renewables wind farm under construction. Credit: EDP Renewables North America on YouTube)

Source: Environment and Energy Leader 2019
Source: Microsoft

Microsoft's commitment to execute power purchase agreements equivalent to 100% of our energy needs by 2025 has positioned Microsoft as one of the largest purchasers of renewable energy in the world. In 2020 and 2021, Microsoft has signed new purchase agreements for approximately 5.8 gigawatts of renewable energy across 10 countries around the globe. This procurement brings Microsoft operating and contracted renewable energy projects to 7.8 GW globally. In addition, Microsoft has a long term vision that we refer to as **100/100/0**, that on all the world's grids, 100 percent of electrons, 100 percent of the time, are generated from zero carbon sources.

Tax equity with RECs

A tax equity investment with RECs entails financing a renewable energy development project. The returns are delivered through tax credits and dividends from the project. Investing in tax equity in a renewable energy project (for exmaple, a large-scale wind farm) to support achievement of corporate renewable energy targets is a relatively new solution for companies.

When is a tax equity investment a good option?

- If an organization has a tax liability and other renewable energy procurement options are either not a good fit or don't achieve the quantity of renewable energy desired.
- As part of a renewable energy procurement portfolio diversification strategy.
- A tax equity deal can be structured so that the tax equity party gets the rights to claim to the renewable energy produced, to deliver on renewable energy goals.

Outcomes

Tax equity deals provide a return on the investment by way of tax credits; the internal rate of return on these deals can be roughly of 4–8 percent.

Tax equity with RECs: evaluation of opportunity

- Ensure a tax appetite exists: very roughly $20M–$200 million.
- Canvass the market to understand the availability of projects needing tax equity.
- Assess federal policy and actions that may restructure tax credits for renewable energy.

Tax equity example investments with RECs

Increasingly, tax equity investments are being executed by non-traditional investors.

Best Buy

"The Best Buy Solar Field will produce 174,000 megawatt hours of clean electricity per year for the local power grid—enough to power the equivalent of 260 Best Buy stores for an entire year...helping Best Buy reduce its carbon footprint and meet its renewable energy goals."

Best Buy considers the solar field, which contributes 6 percent toward its SBTi aligned, 75 percent carbon reduction goal, a big step toward achieving its future goals.

Source: US Bank
Source: Best Buy

Retail supply

Retail supply refers to products that can be purchased from a utility, energy services company (ESCO), or local government.

- Each of the retail options described below represents a bundled solution, with the potential to be more impactful—in terms of adding new renewable energy capacity to the grid—than unbundled options and often has a local impact.
- Another benefit of retail options is that the renewable energy procurement can be incorporated into a company's existing operational expenses.

Community choice aggregation (CCA) ⊞

Utility green tariffs

Retail agreements ⊞

Community choice aggregation (CCA)

In a CCA arrangement, local governments procure power on behalf of their residents, businesses, and municipal accounts from a supplier. Transmission and distribution are provided by the existing utility provider.

What does a CCA offer?

- CCA programs reflect the values of their governing boards, the communities they serve, and the states in which they operate.
- Most emphasize reducing the cost of electricity.

Some also focus on:

- Reducing greenhouse gas emissions.
- Establishing new revenue streams to support local energy programs.
- Creating local jobs.
- Accomplishing several of these goals simultaneously.

Where are CCAs available?

Authorized in 10 states:

- California
- Illinois
- Maryland (Montgomery Co, pilot)
- Massachusetts
- New Hampshire*
- New Jersey
- New York
- Ohio
- Rhode Island

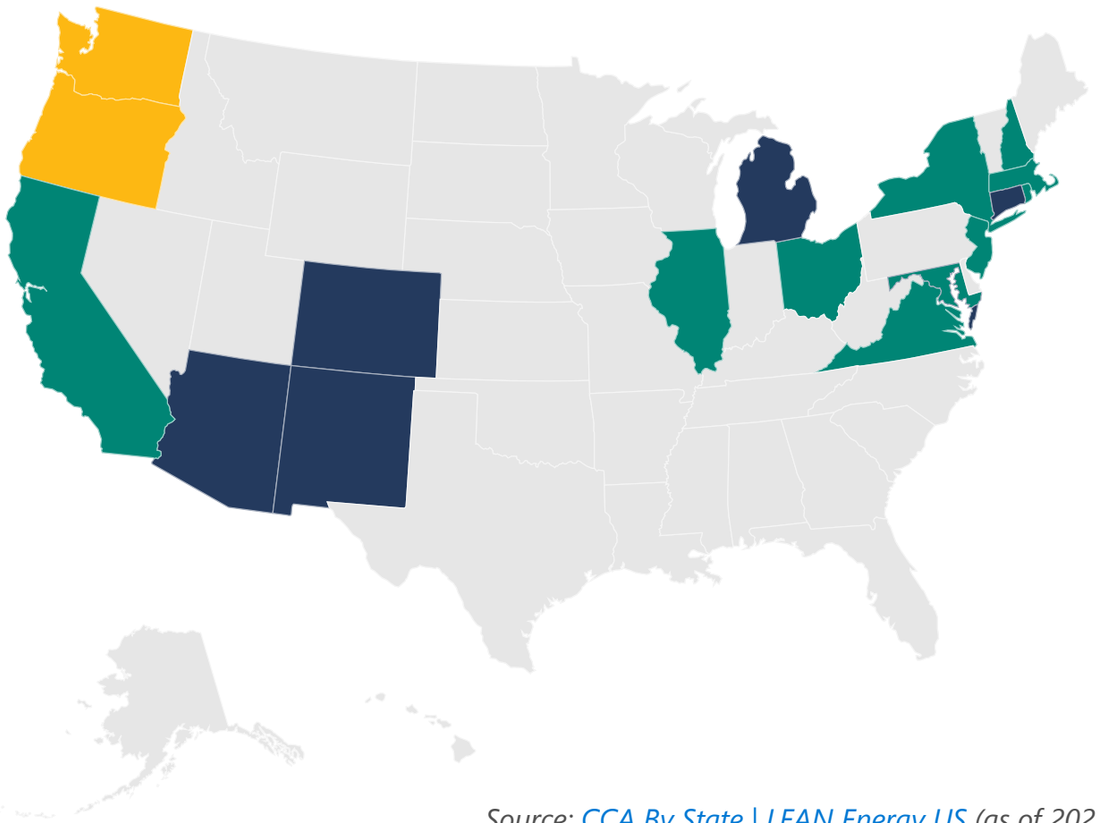
Actively investigating:

- Arizona
- Colorado
- Connecticut
- Michigan
- New Mexico

Watch list/potential:

- Oregon
- Washington

* Not yet implemented



Not all states or CCAs offer 100 percent green power options. However, demand is driving an increase and advancements in CCA development, quality, and implementation.

Note: CCAs can be available in both regulated and deregulated markets.

Source: CCA By State | LEAN Energy US (as of 2021)

CCA benefits and considerations

Benefits

- Requires no upfront capital costs.
- Renewable energy procurement that is not very different from a typical company's current model of procuring energy from the utility.
- Enables procuring more green power and/or lower electricity prices than is offered by the default utility.
- By aggregating demand, gives communities leverage to negotiate better rates with competitive suppliers and choose greener power sources.
- Retires RECs on behalf of consumer.

Considerations

- Supports limited flexibility, linked to the options offered by the CCA.
- In most cases, automatically enrolls all eligible customers in the CCA community to participate in the program by default, unless they choose to opt out.

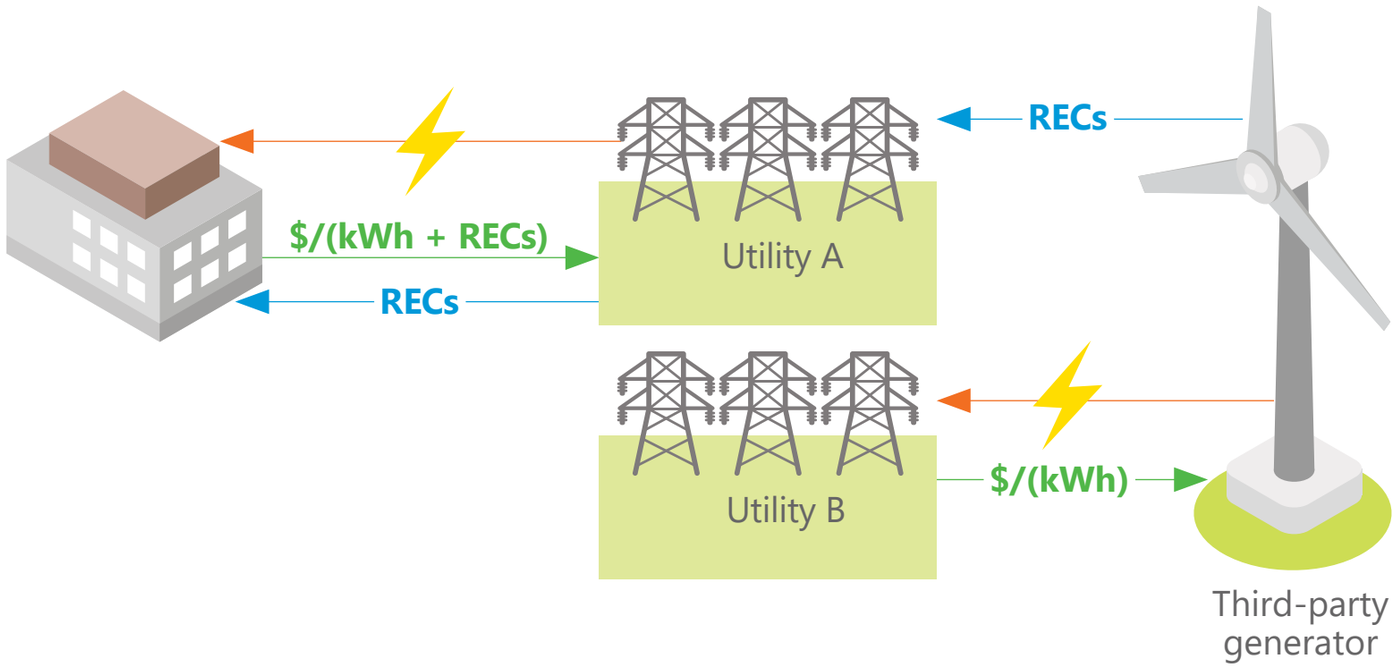
Utility green tariffs

Utilities may offer a renewable energy product through green tariff programs.

A green tariff is an electricity rate or price structure offered by a local utility that enables eligible customers to access renewable energy in a specific service territory.

Green tariffs can allow a buyer to purchase both the power and the associated RECs from a renewable energy project for up to 100 percent of their energy needs.

The quality of green tariffs (for a buyer) can vary significantly depending on the terms and conditions, which should be reviewed carefully.



Source: WSP

Source: [Renewable Energy Procurement—REBA]

Utility green tariffs

Benefits

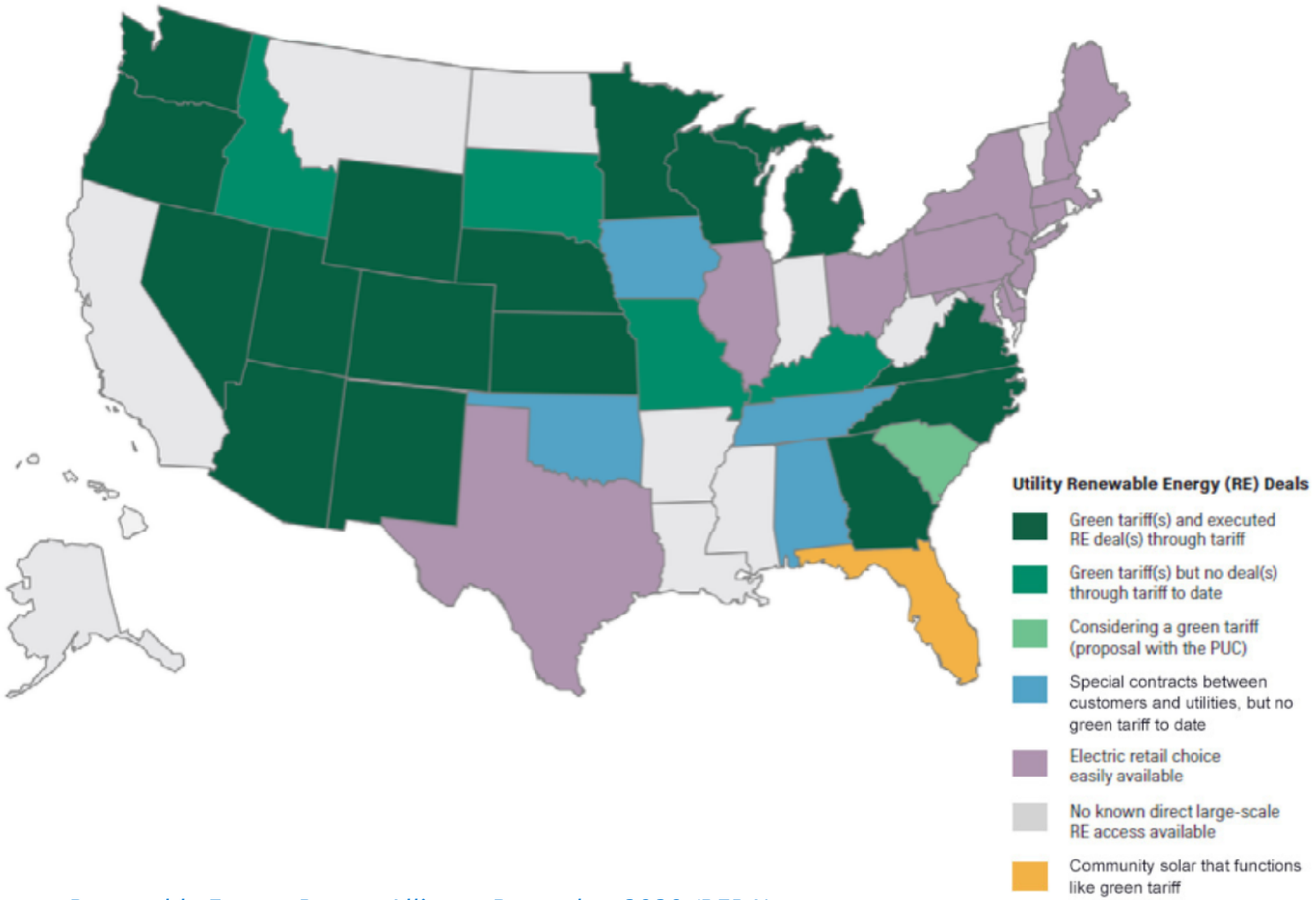
- Is not very different from a company's current model of procuring energy from the utilitythe utility. However, the energy can be:
  - Local
  - Impactful
  - Increasingly at cost parity (no premium)
- Is integrated into a buyer's utility bill, eliminating the need for additional contracting.
- Offers long-term contracts.

Considerations

- May not be available depending on the market.
- Features minimal choice.
- Review the contract and do due diligence to understand the impact (additionality).

Source: Green Tariffs – REBA (rebuyers.org)

Where are utility green tariffs available?



Source: Renewable Energy Buyers Alliance December 2020 (REBA)

Utility green tariffs are not currently available in all states. However, demand from large energy buyers is driving an increase in their development, quality, and implementation.

Want to learn more?

Renewable Energy Buyers Alliance Dec 2020

Includes examples of organizations such as Apple, Google, and REI that have used utility green tariffs.
—EPA Green Power Partnership

Utility Green Tariff Update

Provides specific details about several green tariff programs.
—Renewable Energy Buyers Alliance

Retail solutions: Evaluation and procurement process

The evaluation and procurement process for bundled solutions in regulated markets, including CCAs, utility green tariffs, and retail agreements, typically includes the following:

Retail agreements through electricity suppliers

Under a retail agreement, the buyer pays for electricity and RECs from a renewable energy project that is being developed and owned by or contracted with their electricity supply retailer. The buyer is not a direct party to the power purchase agreement (PPA) between the project and retailer. They agree on a rate for the output of the renewable energy project and the RECs associated with its energy generation.

Benefits

- Renewable energy procurement that is not very different from a typical company's current model of procuring energy from suppliers in deregulated markets.

Considerations

- Typically commands longer terms than traditional supply contracts (for example, a renewable energy supply contract may have a term of roughly seven years compared with one to two years for traditional supply contracts).

Retail supply in restructured markets: evaluation and procurement process

Unbundled RECs

Unbundled RECs are RECs that are sold separately from the underlying electricity. The purchaser does not get physical electricity or pay for the electricity value with the RECs but rather continues to contract with their utility for electricity generated in the region's grid mix.

Unbundled RECs are important to a roadmap when a purchaser has little control (for example, leased facilities), scattered small facilities/operations, and few options (for example, regulated markets with no green tariffs available from utilities). They are used to "true up" renewable energy purchases with actual usage.

However, they will always represent an incremental cost, as they are purchased in addition to purchasing electricity. They are the least credible option in terms of additionality (spurring the creation of additional renewable generating capacity), since they often are relatively low cost and are generated from existing facilities.

Unbundled RECs

Benefits

- May be applied to facilities of choice, although facilities must be located in the U.S. or Canada.
- Can purchase a large number of RECs in a single transaction.
- Establishing an annual REC purchase budget as a recurring operating expense enables the consideration of other renewable energy options through an opportunity cost lens.
- Can be used to true up renewable energy purchases with actual usage.

Considerations

- Sends a weak demand signal for renewable energy to the electricity market.
- Does not reduce exposure to future electricity price volatility.
- Is a recurring operating expense with no financial return.

Attribute purchase agreements (APAs)

APAs are long-term contractual agreements for purchase of RECs from a specific renewable electricity project that does not include physical transmission of electricity.

Benefits

- Low complexity.
- Low risk.
- Low volatility.
- Directly linked to a specific project.
- Credible contribution to new capacity.
- Long term procurement of RECs.

Considerations

- Cost.
- Does not reduce exposure to future electricity prices volatility.
- Recurring operating expense with no financial return.
- Limited availability.
- Lower bankability for the renewable energy seller.

APAs: evaluation and process for procurement

Comparing renewable energy procurement options

Compare and select one or more options based on energy requirements, geography, corporate goals, and capacity to develop a proposed procurement strategy.

	Onsite and near-site		Offsite		Retail			Unbundled	
Procurement Option	Owned generation	Direct-line PPA	Virtual vPPA	Tax equity investment with RECs	CCA	Green tariffs	Retail agreement	Unbundled RECs	APA
Upfront capital investment	Y	N	N	Y	N	N	N	N	N
Potential net financial impact	Savings	Potential savings	Potential savings/ costs	Minimal savings	Potential savings/ costs	Potential savings	Minimal savings/ costs	Additional cost	Additional cost
Term of commitment	Multi-year	Multi-year	Multi-year	Multi-year	Flexible	Flexible	Multi-year	Flexible	Multi-year
Transaction complexity	Moderate	Moderate	Complex	Complex	Simple	Simple	Simple	Simple	Simple

APA = attribute purchase agreement

CCA = community choice aggregation

PPA = power purchase agreement

REC = renewable energy certificate

vPPA = virtual PPA

Additional resources

REBA provides a community and extensive resources.

REBA is designed for companies seeking to understand how others have procured renewable energy, build deep knowledge, and be part of a global community.

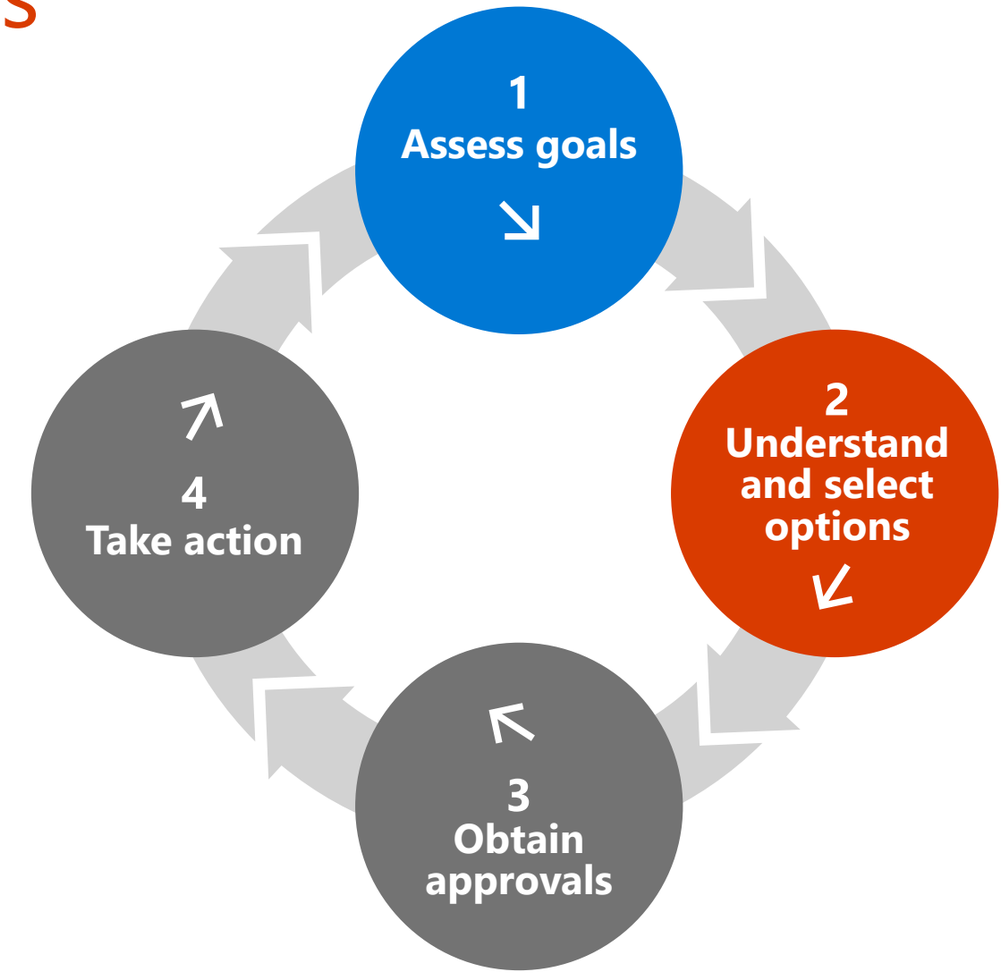
- REBA has worked since 2013 to build a community focused on corporate procurement of renewable energy. There are over 250 members in the community with over 150 buyers (July 2021).
- Dozens of resources covering all areas of renewable energy procurement to help companies build the view of what's important to them, including:
  - Onsite and offsite project roadmaps.
  - Business case development guides.
  - Transaction term sheet guides.
  - Risk explanation and allocation primers.
  - Case studies on real transactions.
  - Videos on specific technical content.
- In-depth trainings bring learning and connection with peers and leading buyers.
- Online platform allows you to connect with buyers worldwide on areas of mutual interest, such as those in the same market/region, or focused on the same procurement options.
- Semi-annual gatherings and regional events make online connections real and accelerate market understanding through focused conversations.

Microsoft supply chain partners have complimentary access to all REBA resources for six months; reach out to your Microsoft sustainability counterpart to get connected.

Congratulations! You've completed Module 2: Procurement options

You have completed this module. You should now understand:

- The renewable energy procurement options including the various onsite, offsite, bundled, and unbundled options.
- The benefits and considerations associated with each option, to help you determine how they align with your corporate sustainability goals.
- The evaluation and procurement process associated with each option.
- That bundled options have greater impact, or additionality, in terms of new renewable energy being added to the grid.



What's next?

The next module (3 of 4) will cover **stakeholder engagement** and provide a foundation for the completing the "obtain approvals" step of the roadmap process.