



# Buying Green Power

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For Small Businesses & Congregations

May 21, 2020



# EPA's Green Power Partnership

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EPA's Green Power Partnership is a free, voluntary program that encourages organizations to use green power as a way to reduce the environmental impacts associated with conventional electricity use

<https://www.epa.gov/greenpower>

Partners include:

- Fortune 500 corporations
- Higher Education institutions
- Federal, State and local governments
- Small & medium sized businesses
- Non-profits



# Green Power Use: Program Benchmarks

<b>Annual electricity usage</b>	<b>Partnership minimum requirements</b>
<i>If your annual electricity use in kilowatt-hours is ...</i>	<i>You must, at a minimum, use this much green power*:</i>
<b>≥ 100,000,001 kWh</b>	<b>7% of use</b>
<b>10,000,001 – 100,000,000 kWh</b>	<b>10% of use</b>
<b>1,000,001 – 10,000,000 kWh</b>	<b>25% of use</b>
<b>100,000 – 1,000,000 kWh</b>	<b>50% of use</b>

\*All green power must be surplus to regulation or what is otherwise available to all ratepayers as part of the grid mix  
EPA Green Power Partnership Program Requirements: <https://www.epa.gov/greenpower/requirements-green-power-partnership>



# What is Green Power?



- **Green power** is a subset of renewable electricity and represents those renewable energy resources and technologies that provide the highest environmental benefit.
  - Meets national standards for product quality and content
  - Green Power is specific to the “voluntary market” and is driven by consumer preference rather than by policy mandate
  - Is generation that is incremental to what is required by mandate
- **Renewable Electricity** is a broader category and includes some resources and technologies that have significant impact on the environment.

# Making a Difference: Voluntary Green Power Use

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- Making the simple choice for how your power is generated
- Ensuring your purchase goes above and beyond what is otherwise available or mandated (incremental or surplus to)
- Buy third-party certified green power when possible
- Commit to long-term contracts
- Directly engage with new projects (economic benefits)
- Substantiate your use and claims through REC ownership

# National Voluntary Markets

Millions  
of MWh

400

Voluntary Green Power Use Is An Important Market Driver

200

0

2010

2017

16%

21%

36%

26%

Other renewables

Compliance (existing renewables)

Compliance (new renewables)

Voluntary

# How EE & Green Power Work Together

$$\text{Energy (kWh)} \cdot \text{Emissions Rate} \left( \frac{\text{lbs CO}_2}{\text{kWh}} \right) = \text{Air Emissions}$$

**Energy Efficiency**

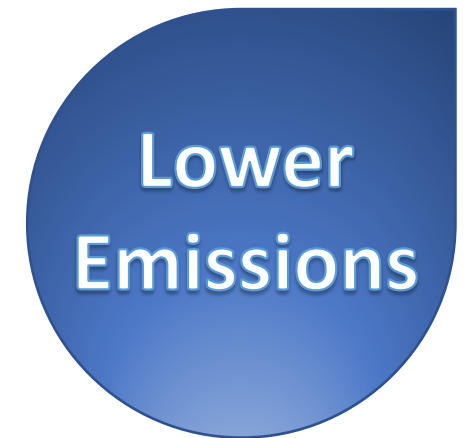


**Green Power Use**



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# Green Power Supply Options

<b>Retail Options</b>	<b>Retail (Unbundled) RECs</b>
	<b>Utility Products or Programs</b>
	<b>Community Choice Aggregation</b>
<b>Project Specific Options</b>	<b>Self-Supply</b>
	<b>Physical PPAs</b>
	<b>Shared Renewables</b>
	<b>Utility Green Tariffs</b>
	<b>Financial Contracts</b>



# Green Power Supply Options

**Will Cost  
You More**



**Retail Options**

**Retail (Unbundled) RECs**

**Utility Products or Programs**

**Your Current Electricity Cost**

**May Save  
You Money**



**Retail Options**

**Community Choice Aggregation**

**Self-Supply**

**Physical PPAs**

**Project Specific Options**

**Shared Renewables**

**Utility Green Tariffs**

**Financial Contracts**

# Smaller Buyer Options: Today's Focus

**Will Cost  
You More**



<b>Retail Options</b>	<b>Retail (Unbundled) RECs</b>
	<b>Utility Products or Programs</b>

**Your Current Electricity Cost**

**May Save  
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<b>Retail Options</b>	<b>Community Choice Aggregation</b>
<b>Project Specific Options</b>	<b>Self-Supply</b>
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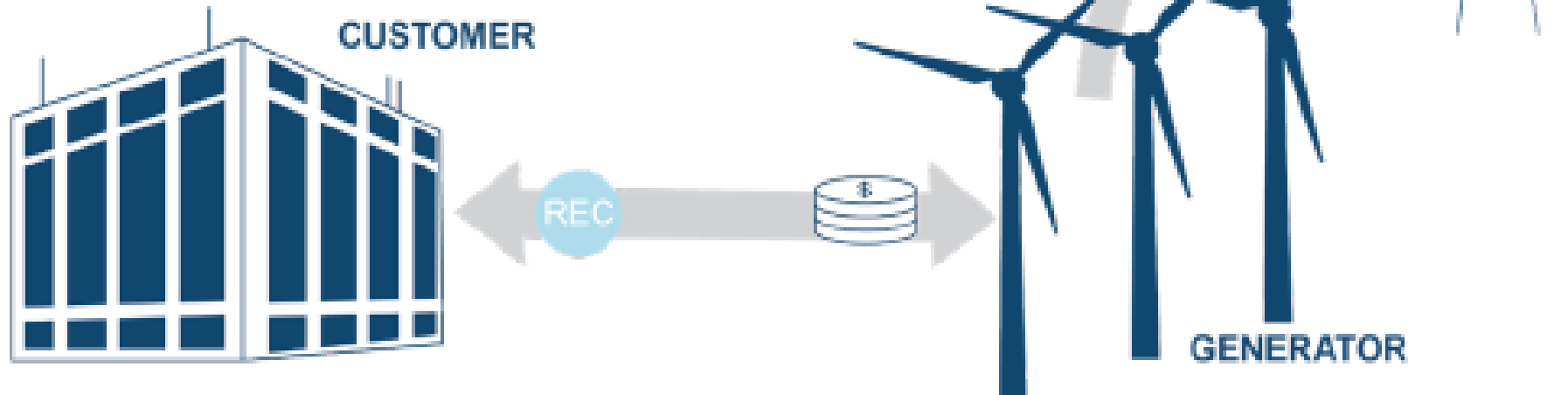
# Consumer Access to Green Power

Green Power Supply Option	Number of States with Green Power Access	Total Green Power Access by Option		Total Green Power Access Compared to Total US Electricity Data	
		Customers* (Million)	Electricity Sales (Billions of kWh)	Percent of Customers*	Percent of Electricity Sales
Utility Green Pricing Programs	37	58.3	1097	43.0%	35.0%
Competitive Green Power Marketing Products	19	45.2	1017	33.0%	32.2%
Community Choice Aggregation	7	3.3	9	2.4%	0.3%
Physical Power Purchase Agreements	27	21.8	659	15.9%	20.9%
Financial Power Purchase Agreements	50	0.21	756	0.2%	23.9%
Renewable Energy (Green) Tariffs	16	3.2	76	2.4%	2.4%
Community Solar/Shared Renewables	17	54.3	270	40.0%	8.6%
On-site Generation	48 <sup>1</sup>	33.7	570	24.7%	18.1%
Retail (Unbundled) RECs <sup>2</sup>	50	All	All	100%	100%

# Retail (Unbundled) Renewable Energy Certificates

Unbundled REC customers purchase RECs from renewable energy providers, typically through a third-party REC marketer. The unbundled REC customer does not receive power in the transaction.

Electricity is "unbundled" from the RECs and delivered to the grid, which need not be in the same service territory as the unbundled REC customer.



# Retail (Unbundled) Renewable Energy Certificates

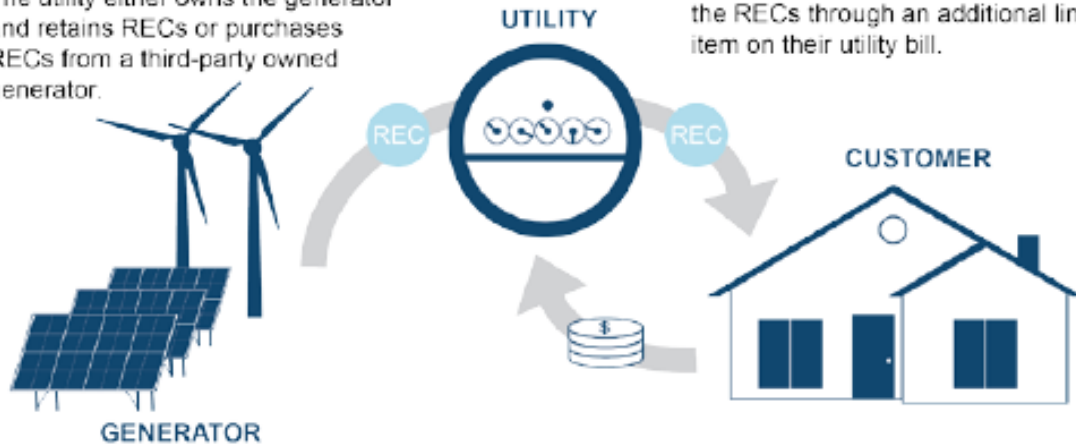
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Customer type:	Available to all customers
Contract term:	Month-to-Month to long-term (>10 yrs)
Billing:	Separate billing from your REC marketer from your electricity provider
Cost:	Cost premium (> 1.5 cents per kWh)
Price stability:	Depends on supply
Resource:	Completely customizable supply option (resource, location, scale etc.)
REC Treatment:	RECs are purchased and retired on behalf of customer by REC marketer
How to find:	<a href="https://www.green-e.org/certified-resources">https://www.green-e.org/certified-resources</a>

# Utility Green Power Products or Programs

Utility green pricing programs begin with a renewable energy generator. The utility either owns the generator and retains RECs or purchases RECs from a third-party owned generator.

The utility retires the RECs on behalf of green pricing customers, who pay for the RECs through an additional line item on their utility bill.

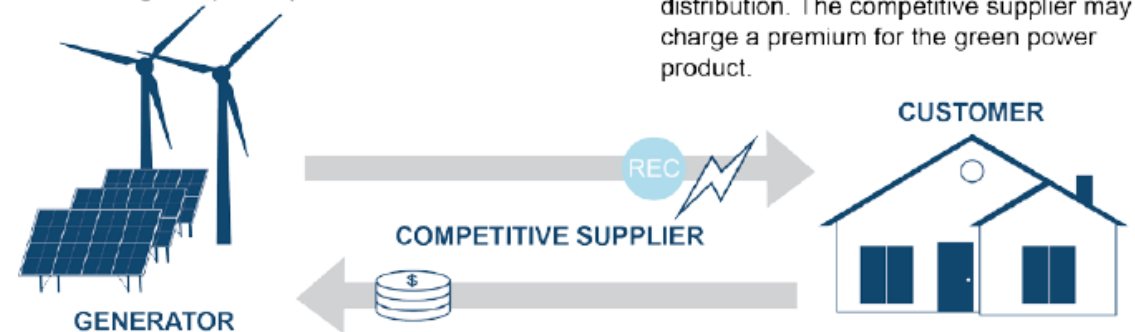


## Traditionally Regulated Markets Green Pricing Products

## Competitive Retail Markets Green Marketing Products

In restructured electricity markets, customers may choose a competitive electricity supplier that offers a green power product.

The competitive supplier provides the customer with power and RECs. The utility remains responsible for transmission and distribution. The competitive supplier may charge a premium for the green power product.





# Utility Green Power Products or Programs

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Customer type:	Available to most customers
Contract term:	Varies; Often sold as blocks or on percentage basis
Billing:	On-bill payment for both power and REC
Cost:	Cost premium (> 1.5 cents per kWh)
Price stability:	Some suppliers pass electricity market volatility to customers
Resource:	Generally a pre-determined mix of resources
REC Treatment:	RECs are retired on behalf of participating customers
How to find:	<a href="https://www.epa.gov/greenpower/competitive-green-power-products">https://www.epa.gov/greenpower/competitive-green-power-products</a>

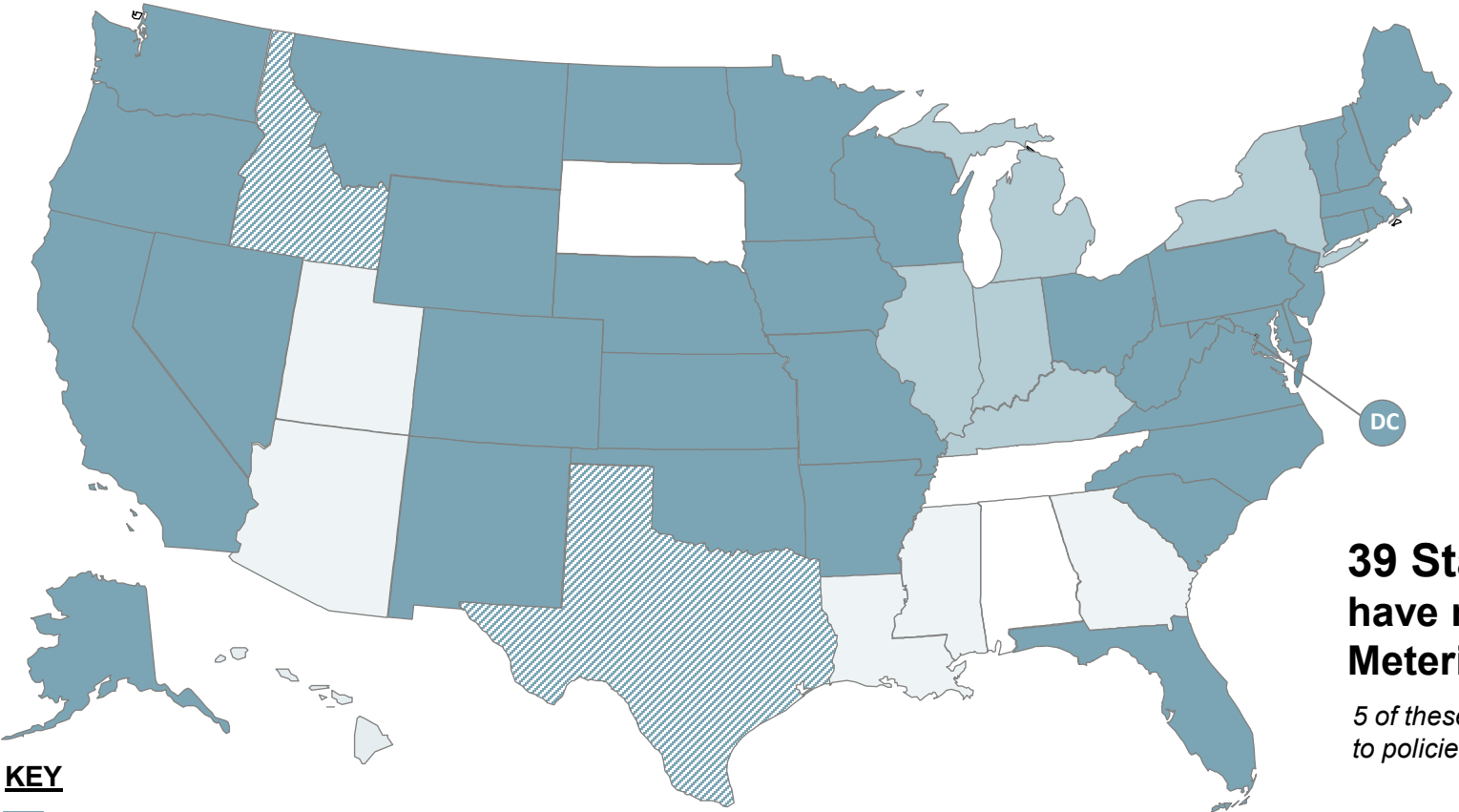


# Self-Supply

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Customer type:	Any electricity consumer
Contract term:	Operational life or project; >20 years
Billing:	Upfront capital investment; no billing
Cost:	Varies by technology, project size and market location; <a href="https://news.energysage.com/how-much-does-the-average-solar-panel-installation-cost-in-the-u-s/">https://news.energysage.com/how-much-does-the-average-solar-panel-installation-cost-in-the-u-s/</a>
Price stability:	Known fixed cost for life of project
Resource:	Typically solar for building integrated projects
REC Treatment:	Most states give the owner of a renewable generator ownership of all energy attributes and RECs generated by project
Find Developer:	Compare project bids at <a href="http://www.energysage.com">www.energysage.com</a> (US DOE Supported)

# Self-Supply: Net-Metering Rules



**39 States + DC,  
have mandatory Net  
Metering rules**

*5 of these states are in transition  
to policies other than net metering*

- KEY**
- State-developed mandatory rules for certain utilities (39 states + DC+ 4 territories)
  - In transition to statewide distributed generation compensation rules other than net metering (5 states)
  - Statewide distributed generation compensation rules other than net metering (6 states)
  - No statewide mandatory rules, but some utilities allow net metering (2 states)

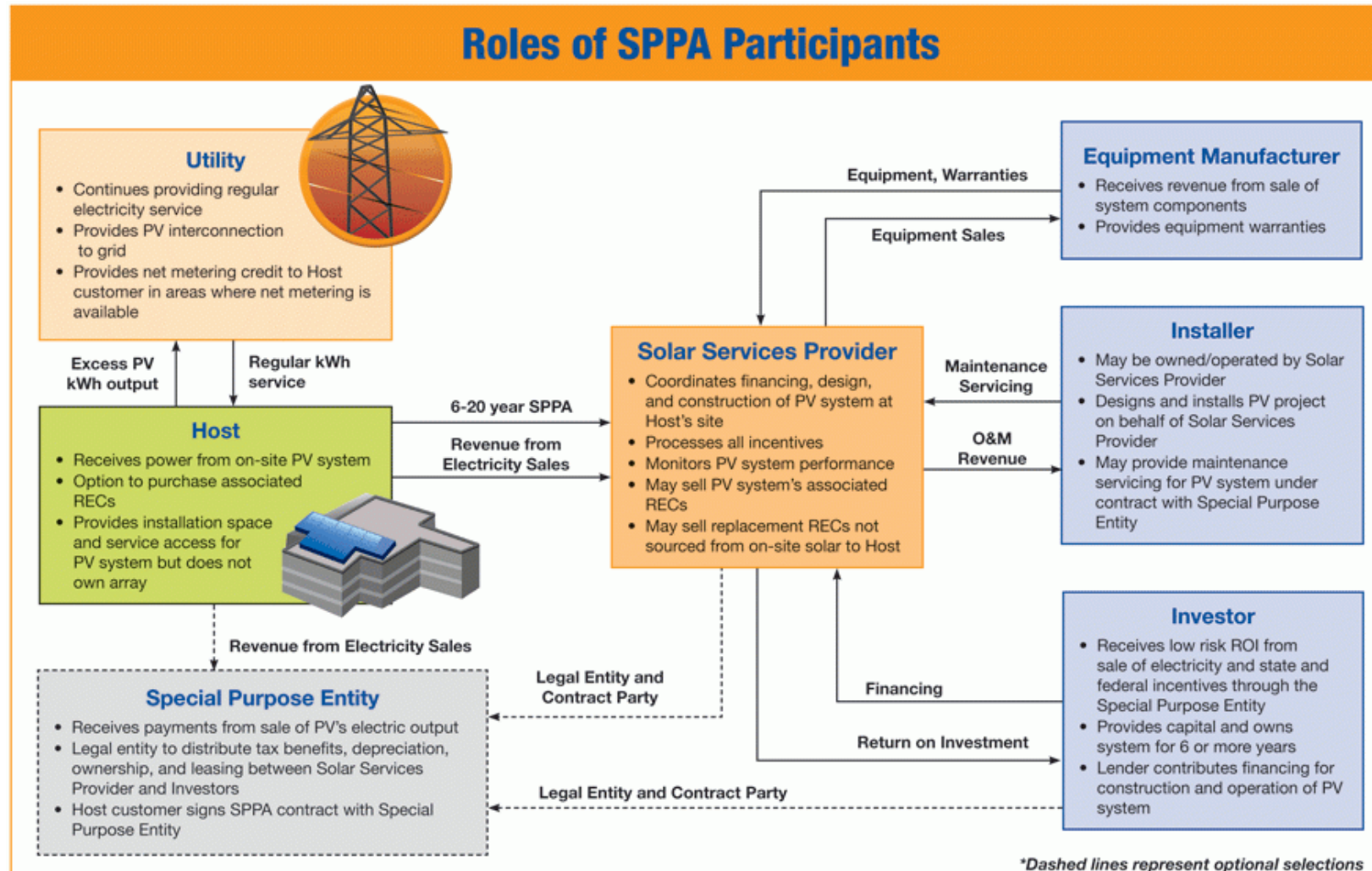


# Self-Supply: Key Drivers

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- Having a suitable site for a project – leased space split incentives
- Long-term commitment >20 years
- Incumbent cost of electricity
- Customer access to internal financing sources (i.e., cash, loan etc.)
- State Net-Metering Rules
- Project permitting processes and costs
- Interconnection procedures
- EPA recommends working with developers that are NABCEP certified for project design and installation
- Where to get quotes: [www.energysage.com](http://www.energysage.com) (US DOE supported)

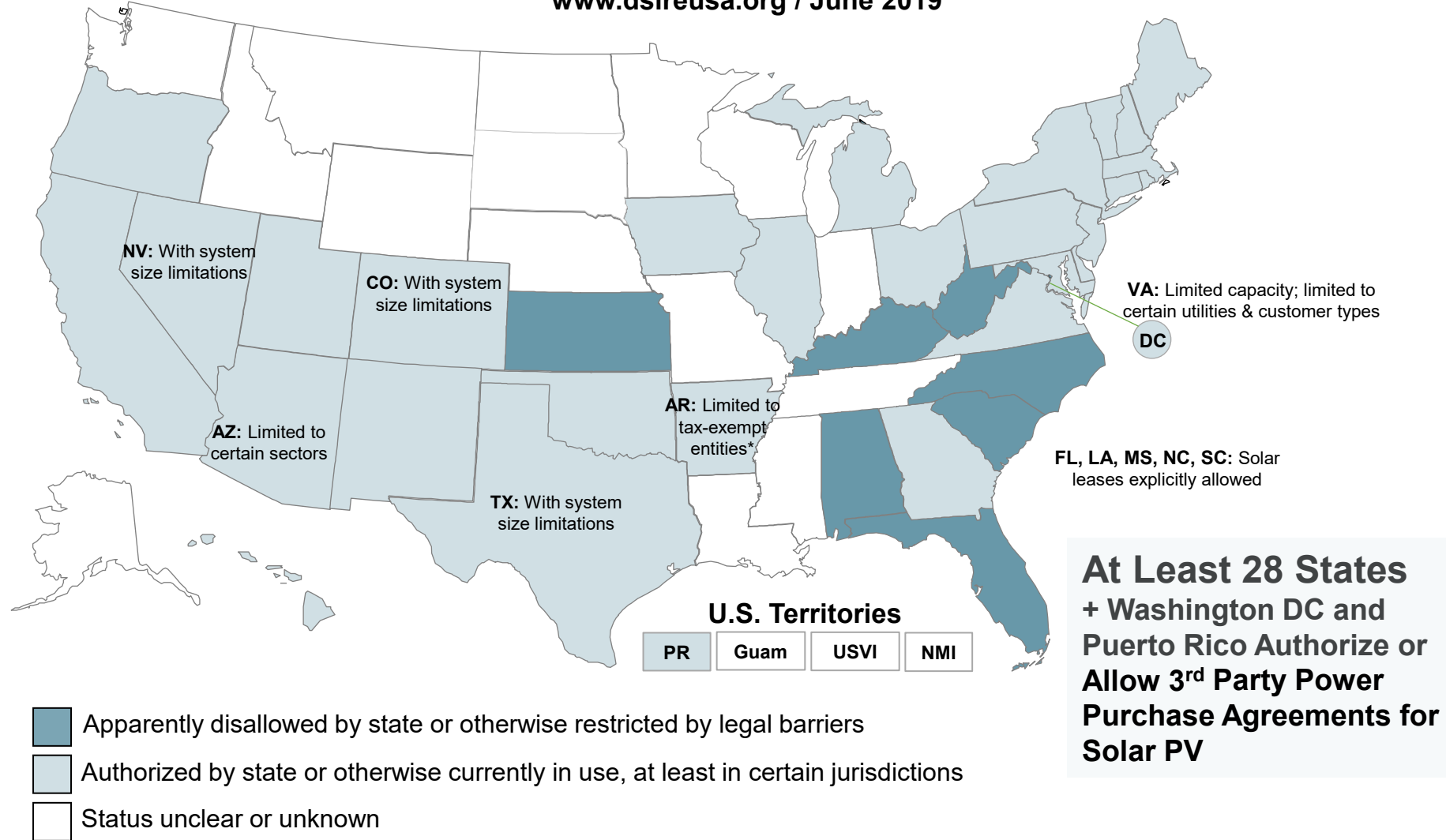
# Power Purchase Agreements



Source: <https://www.epa.gov/greenpower/solar-power-purchase-agreements>

# Power Purchase Agreements

www.dsireusa.org / June 2019



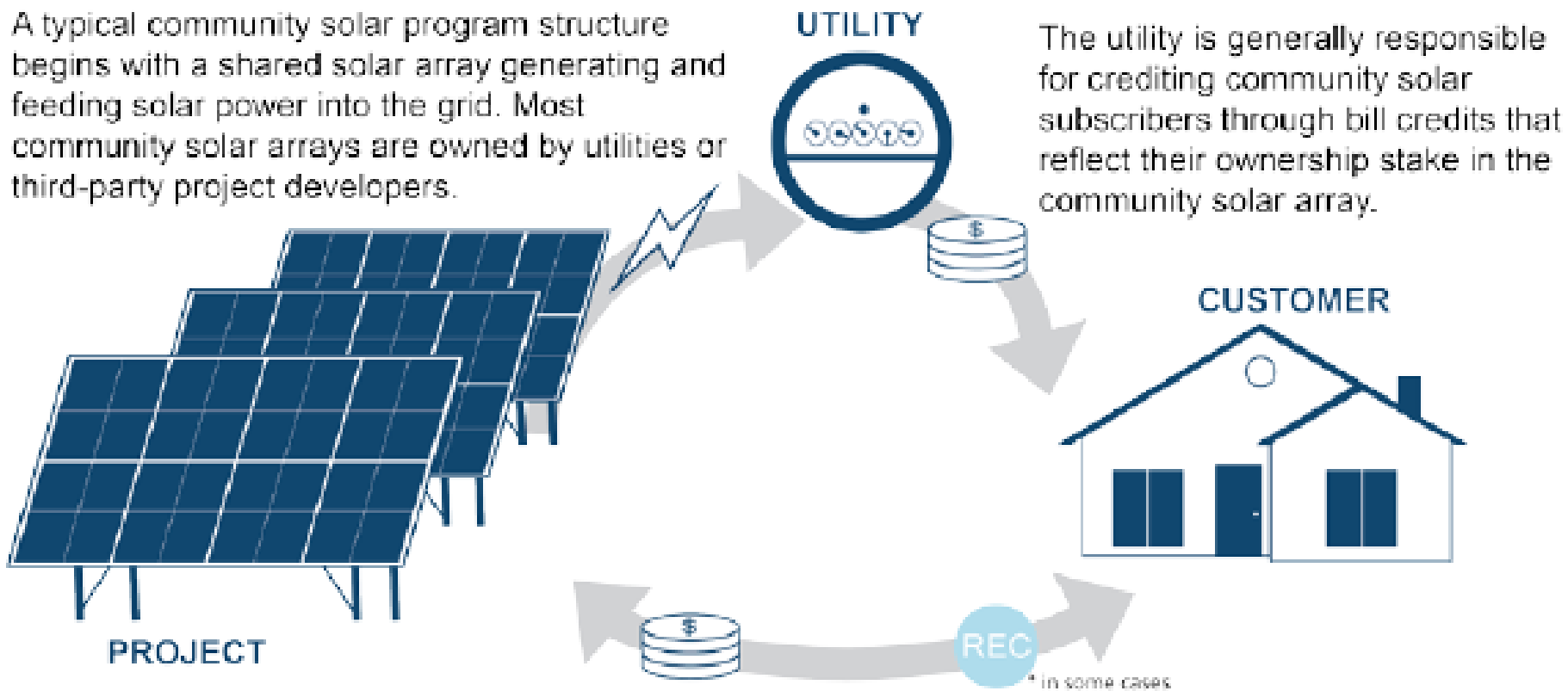
# Power Purchase Agreements

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Customer type:	Available to most depending on state policy authorization
Contract term:	5-25 years; can include opt out and buy back clauses
Billing:	Customer pays for project output only
Cost:	Varies, can offer savings to customer over term of contract
Price stability:	Known cost for electricity over contract; can include escalator rates or electricity cost can be indexed
Resource:	Onsite is generally solar; offsite can vary
REC Treatment:	Customer must contractually obtain project RECs
How to find:	EPA recommends working with NABCEP certified project developers and installers; Consider obtaining bids through <a href="http://www.energysage.com">www.energysage.com</a> (US DOE Supported)

# Shared Renewables (Community Solar)

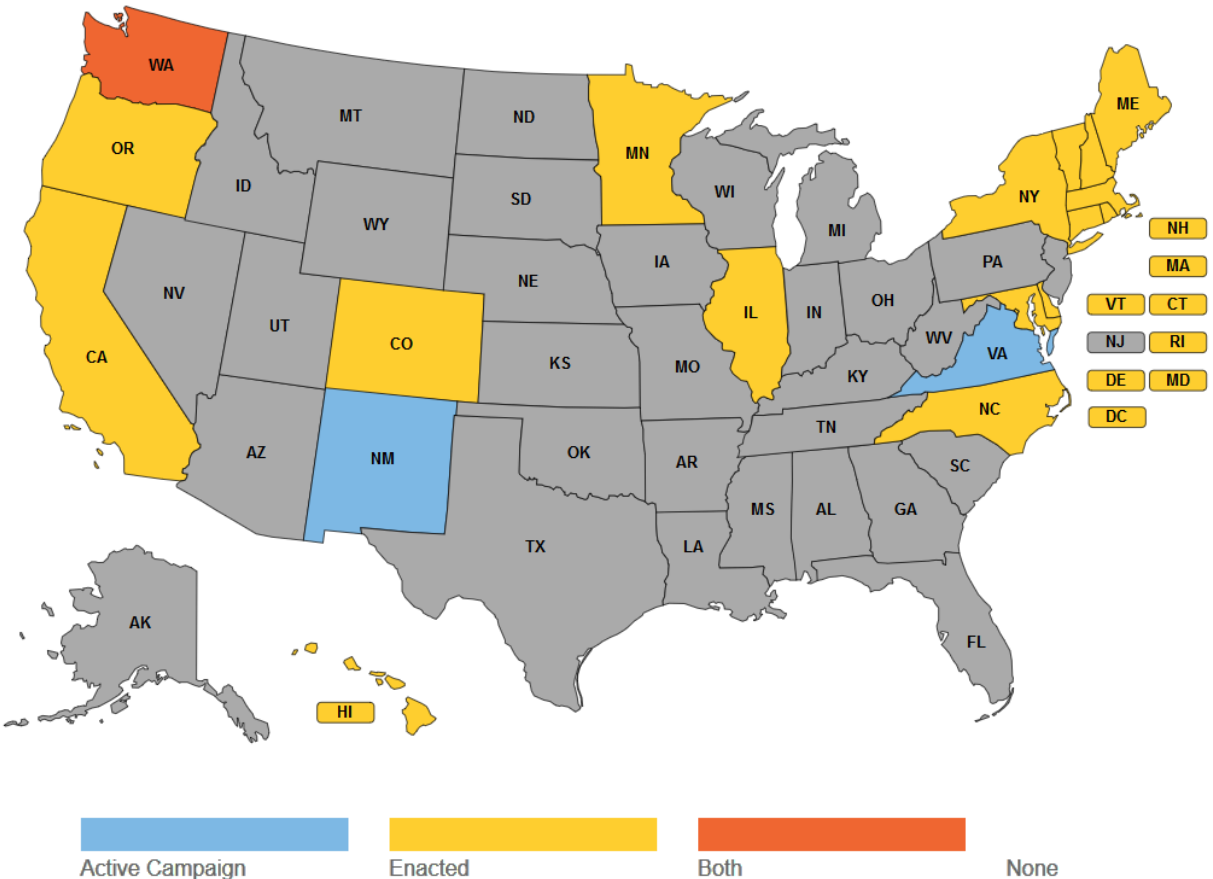
A typical community solar program structure begins with a shared solar array generating and feeding solar power into the grid. Most community solar arrays are owned by utilities or third-party project developers.



The utility is generally responsible for crediting community solar subscribers through bill credits that reflect their ownership stake in the community solar array.

Community solar subscribers generally pay for their subscription through up-front purchases of capacity (kW) or output (kWh). In return, the subscribers receive bill credits. This figure represents a community solar green power program where RECs are conveyed to the subscriber. However subscribers do not commonly receive the RECs, in which case their subscription is not a green power purchase.

# Shared Renewables (Community Solar)



Source: <http://www.sharedrenewables.org/community-energy-projects/>





# Shared Renewables (Community Solar)



- STATE WITH ENABLING POLICY
- STATE WITHOUT ENABLING POLICY
- UTILITY WITH COMMUNITY SOLAR IN ITS SERVICE TERRITORY

Source: SEPA Community Solar Database. Data up to date as of December 31, 2017



# Shared Renewables (Community Solar)

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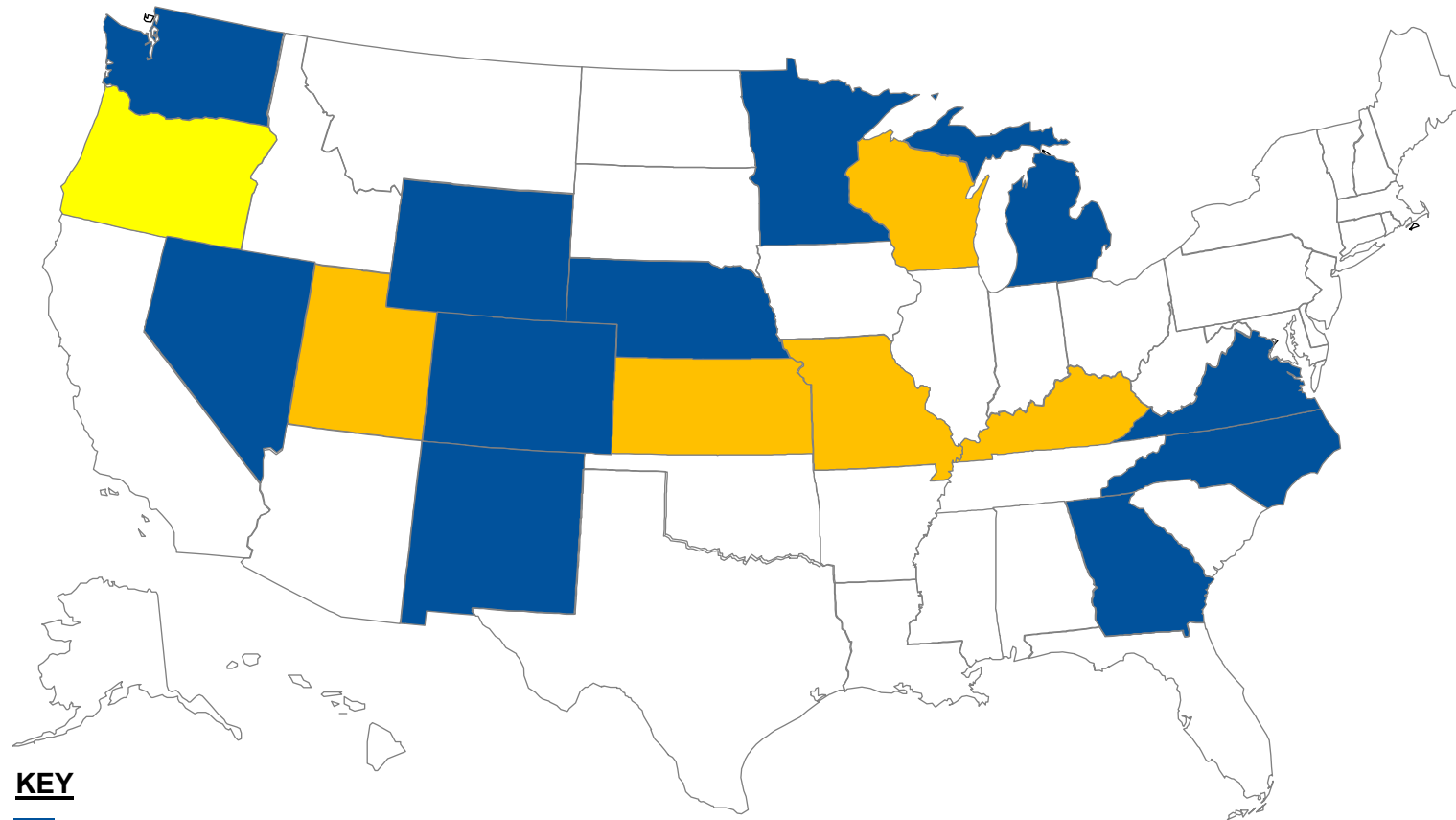
Customer type:	Available to most customers where available
Contract term:	Varies by project; may include customer exit penalties
Billing:	On-bill credit or charge for solar in place of alternative electricity service
Cost:	Varies; often provides lower cost to customer
Price stability:	Varies; often reflects known fixed price for solar component of customer electricity consumption
Resource:	Generally solar, but can include other resources as well
REC treatment:	Few community solar projects convey RECs to customers!
How to find:	Best to check with your utility service provider regarding availability of these programs and project opportunities

# Utility Green Tariffs




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Customer type:	Tariff dependent; determined by customer class, rates, electricity use
Contract term:	Varies; Multi-year (M2M: 2-20 years)
Billing:	On-bill RE charge net regular electricity charge
Cost:	May be cost competitive depending on structure & term
Price stability:	Varies by tariff structure
REC Treatment:	Conveys RECs to customer from specified project
Resource:	May allow customer to choose renewable resource

# Utility Green Tariffs

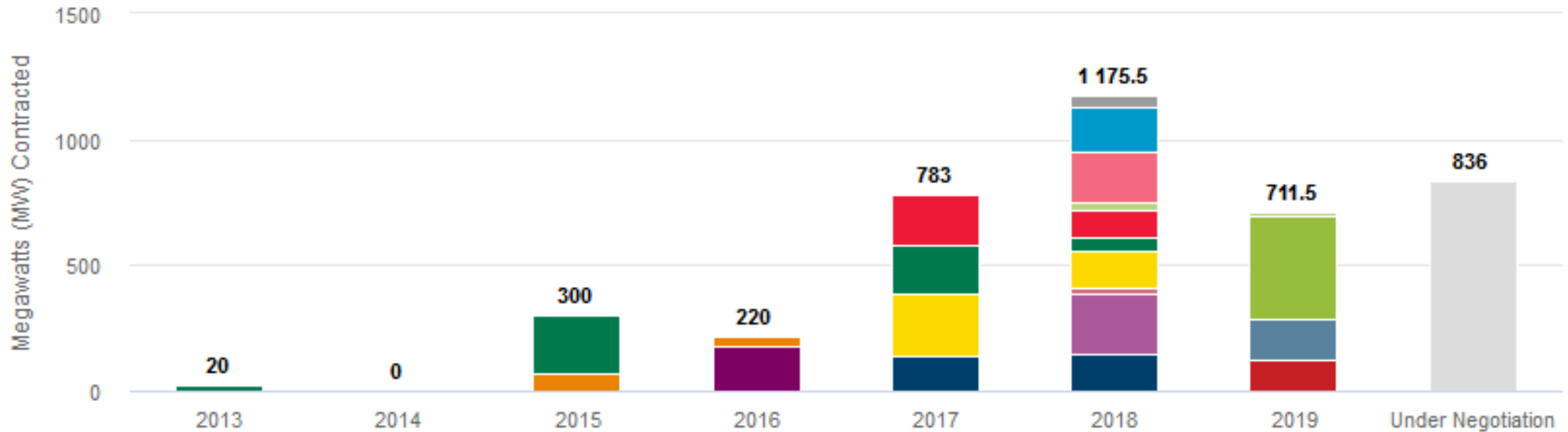


**KEY**

-  Green Tariff and executed RE deals through Tariff (11 states)
-  Green Tariff(s) but no deal(s) through Tariff to date (5 states)
-  Considering Green Tariff (1 state)

Source: WRI 2020

# Utility Green Tariffs



Source: WRI/REBA 2020

- Colorado - Xcel Energy - Renewable\*Connect
- Georgia - Georgia Power - Commercial and Industrial REDI
- Kansas - Eergy - Renewables Direct
- Michigan - CMS - Voluntary Large Customer Renewable Energy Pilot Program
- Michigan - DTE - Large Customer Voluntary Green Pricing Program, Rider 19
- Nebraska - OPPD - Schedule No. 261 M
- Nevada - NV Energy - Green Energy Rider, Schedule NGR
- New Mexico - PNM - Green Energy Rider, No. 47
- North Carolina - Duke Energy - Green Source Rider, Rider GS
- Oregon - PGE - Green Future Impact
- Utah - RMP - Schedule 32
- Utah - RMP - Schedule 34
- Virginia - Dominion Energy - Schedule MBR
- Virginia - Dominion Energy - Schedule RF
- Washington - PSE - Green Direct, Sched No. 139
- Wisconsin - MGE - Renewable Energy Rider
- Under Negotiation

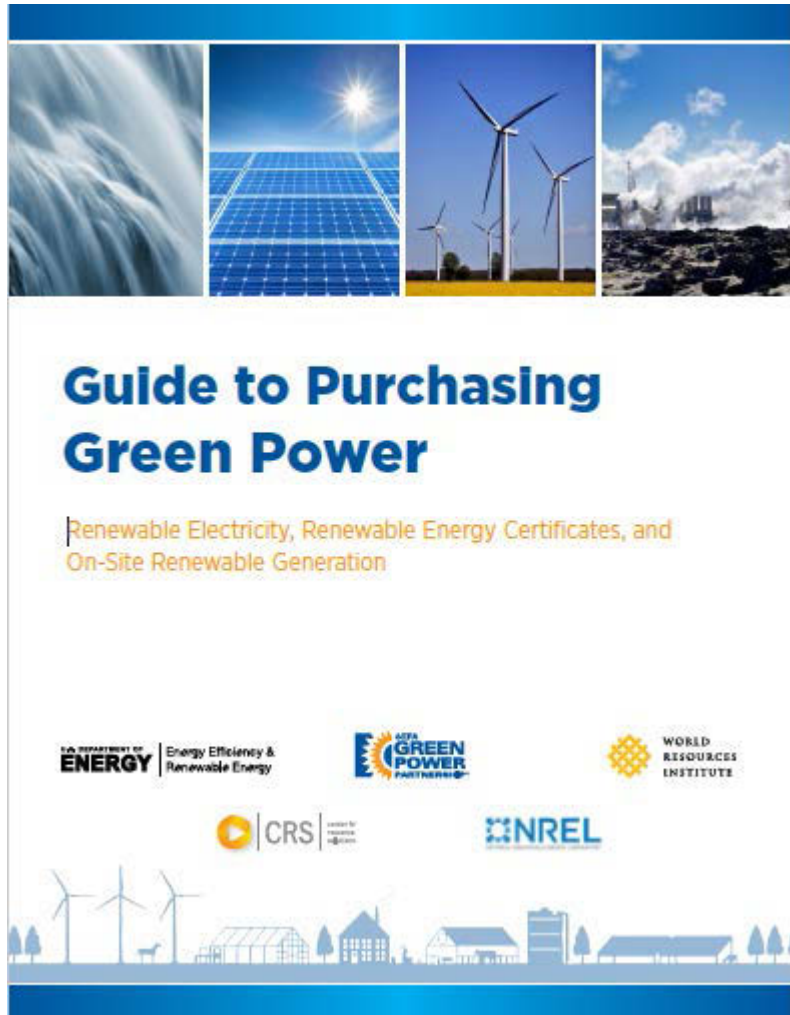
# Utility Green Tariff: Examples

Program Characteristics	Xcel Energy (CO)	NV Energy	Kansas City Power & Light
Eligible participants	Residential and commercial customers (Rate classes R, RD, C, SG, SGL, PG, and TG)	Certain classes of large customers	Customers with >740,000 kWh in annual usage
Potential cost savings	Potential exists, determined by future avoided energy credit rate	Determined by final agreement with RE supplier	Likely, as expressed by utility
Length of contract	Month-to-month, 5 years, 10 years	At least 2 years	5, 10, 15, or 20 year
REC treatment	RECs owned by / retired for customers	Retired against customers' share of RPS obligation; beyond that, RECs are retired on behalf of customer	RECs owned by / retired for customers
Enrollment period and program limits	Program full but Xcel is taking expressions of interest now for a second round. The first program was limited to 50 MW.	No specific enrollment period Annual subscription limit: 250,000 MWh for N. Nevada, 250,000 MWh for S. Nevada	Ongoing expressions of interest before the RE resource is procured.

Source: DOE FEMP / NREL 2019



# Resources: Getting Started



## Guide To Purchasing Green Power

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- Great place to start if you have never purchased green power before
- Authors include EPA, DOE, World Resources Institute, Center for Resource Solutions and NREL
- <https://www.epa.gov/greenpower/guide-purchasing-green-power>

# Find Third-Party Certified Retail Products

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- EPA recommends that consumers purchase third-party certified retail green power as a consumer best practice
- Third-party certification and verification helps ensure
  - that what you buy meets nationally accepted standards for project quality and content a
  - that what is being sold has verified supply contracts backing it
- The US has a single third-party certification standard and program
- To check for available supplies/products:  
<https://www.green-e.org/certified-resources>



# EPA's Toolbox for RE Project Development

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- The “Toolbox” provides a wide range of resources on various steps, topics and issues related to project development supply options
  - Project development process
  - Policy considerations
  - Financing approaches
  - Project economics and evaluation
  - RFP and contracts guidance
  - Consumer claims guidance
- Toolbox: <https://www.epa.gov/repowertoolbox>
- Searchable Resource Directory: <https://www.epa.gov/repowertoolbox/renewable-energy-project-development-resource-directory>

**You are only using**

**RENEWABLE**

**ELECTRICITY**

**when you have both a**

**REC and**

**ELECTRICITY**

# Questions?

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<https://www.epa.gov/greenpower>