



CRS

center for
resource
solutions



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www.green-e.org



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About Center for Resource Solutions

U.S. non-profit creating policy and market solutions to advance sustainable energy since 1997.

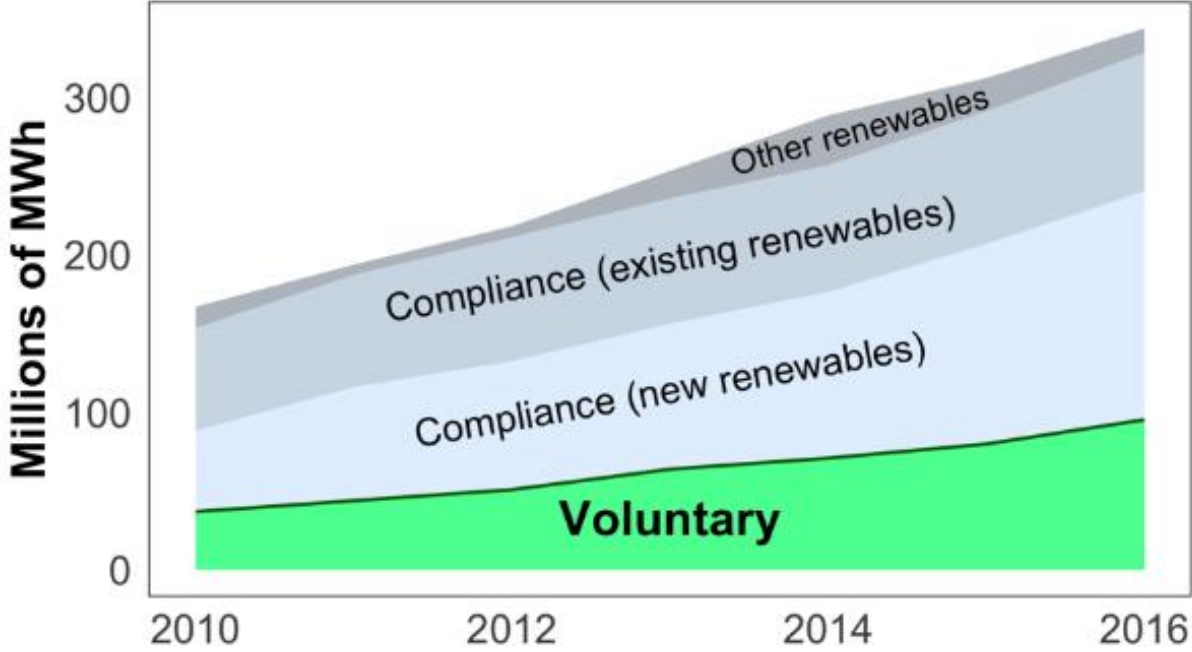
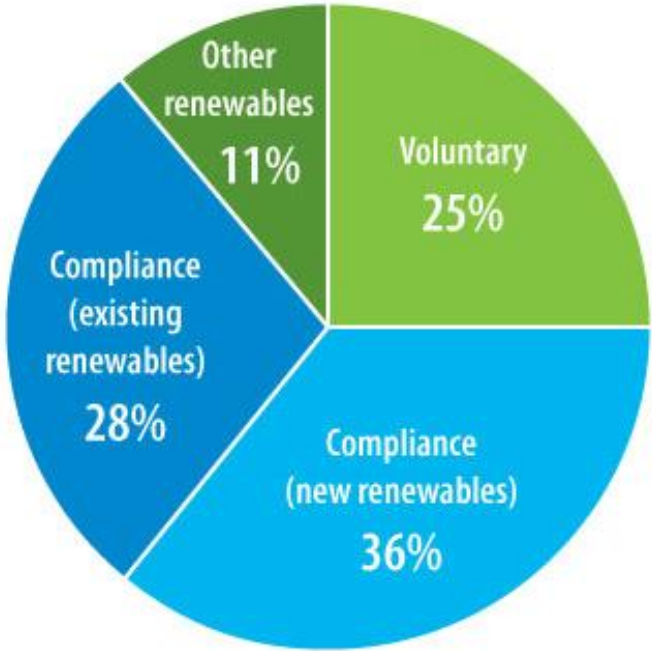
- Expert assistance (consulting)
- Renewable energy and climate policy
- Renewable Energy Markets conference
- Green-e[®] certification for suppliers and users of renewable energy and carbon offsets in the voluntary market



Key Demand Drivers of US Market

1. Preferential tariffs
2. Tax incentives, rebates, other financial incentives
3. Carbon and other emissions regulations
4. RPS (quota system)
5. Voluntary renewable energy markets

US Renewable Electricity Market Growth



Renewable energy sales in voluntary, compliance, and other markets from 2010 to 2016

The figure is based on data from EIA 2017 and LBNL 2017.

Source: National Renewable Energy Laboratory (NREL)

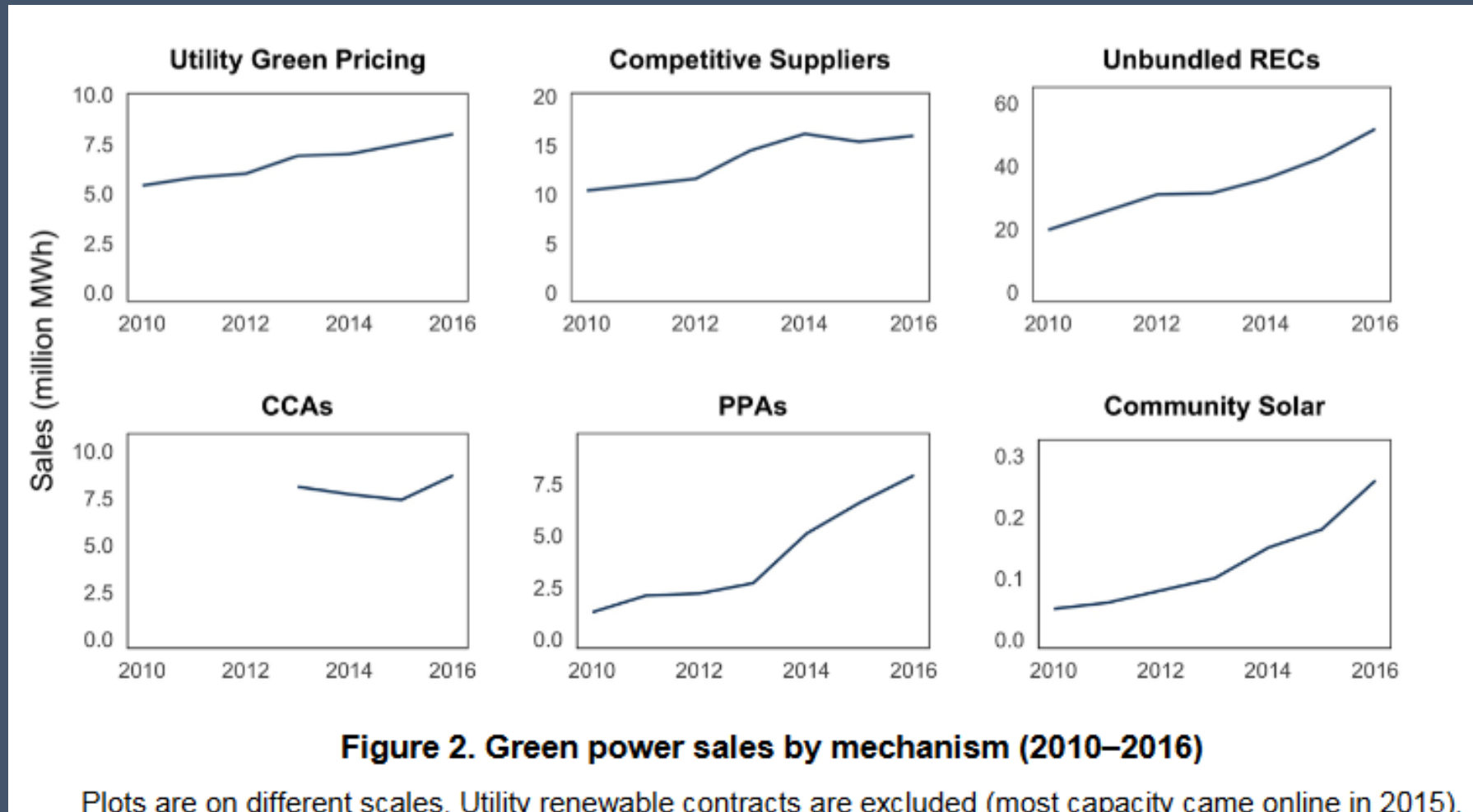
US Voluntary Market by Procurement Type

Table ES-1. Voluntary Green Power Participation and Sales in 2016

Green Power Option	Sales (MWh)	Participants
Utility green pricing	8,012,000	816,000
Utility renewable contracts	2,930,000	9
Competitive suppliers	16,047,000	2,011,000
Unbundled RECs	51,800,000	108,000
CCAs	8,738,000	3,336,000
PPAs	7,891,000	210
Community solar	258,000	23,000
Total^a	95,450,000	6,276,000

Source: U.S. National Renewable Energy Laboratory (NREL)

US Voluntary Market by Procurement Type



Source: National Renewable Energy Laboratory (NREL)

US Renewables Market Growth by Segment

5.1 Status of Competitive Supplier Green Power

In 2016, competitive suppliers sold about 16 million MWh of renewable energy to about 2 million customers (Figure 14).

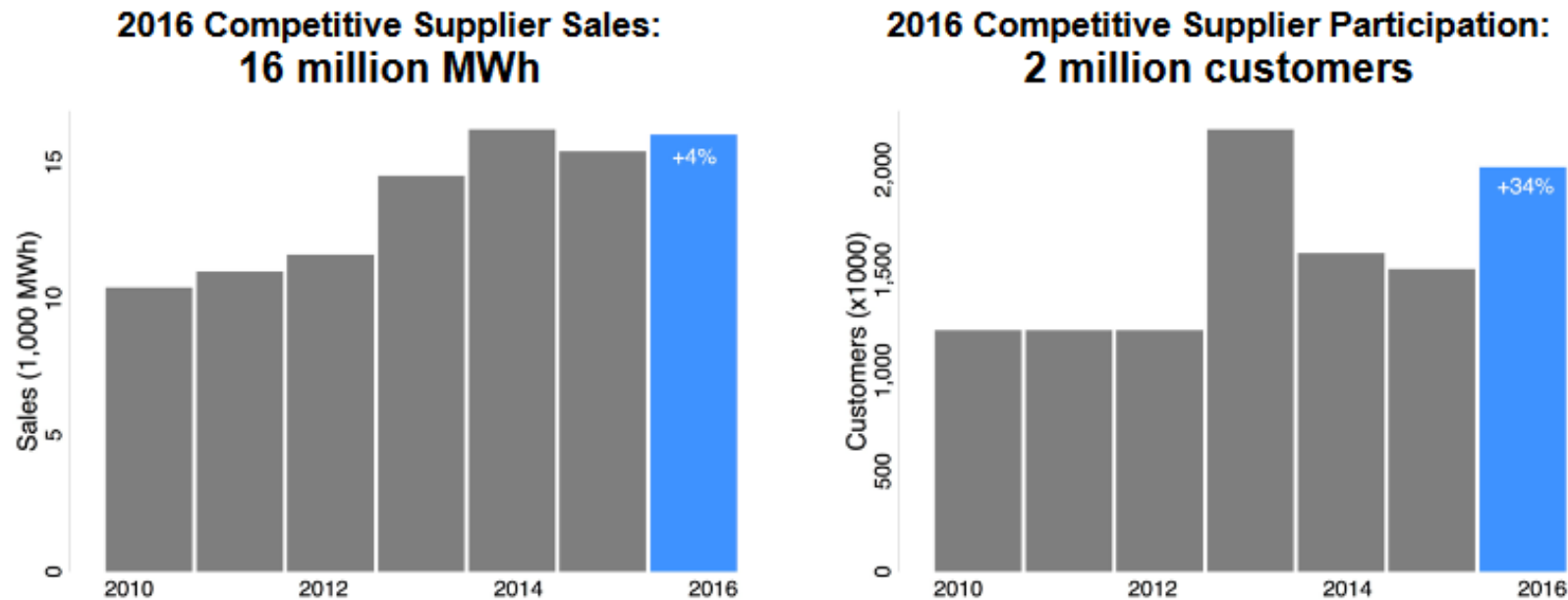
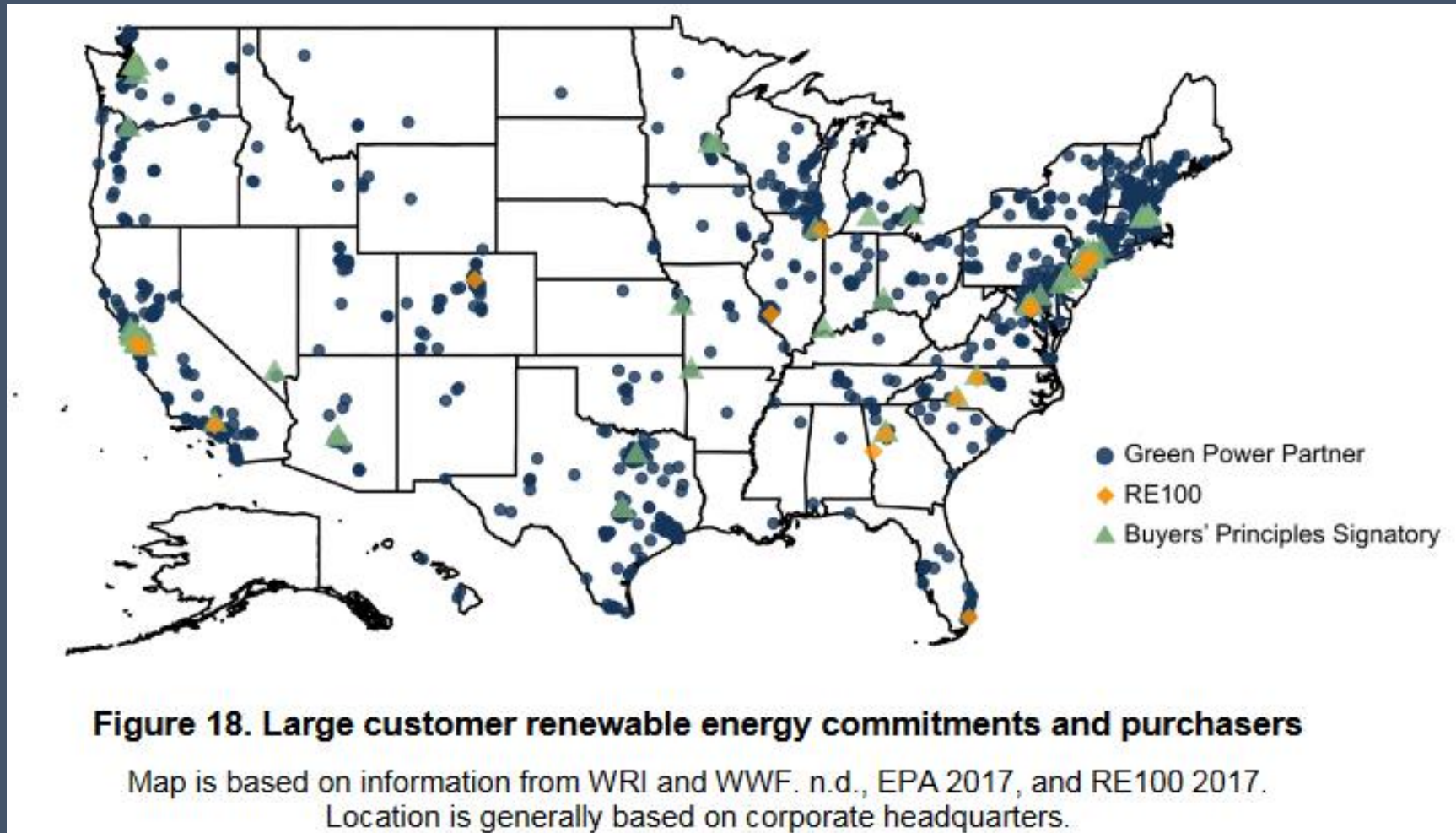


Figure 14. Competitive supplier sales and participation from 2010 to 2016

Source: National Renewable Energy Laboratory (NREL)

US Renewables Large Buyers by Location



Source: National Renewable Energy Laboratory (NREL)

US Renewables Small / Res. Buyers by Location

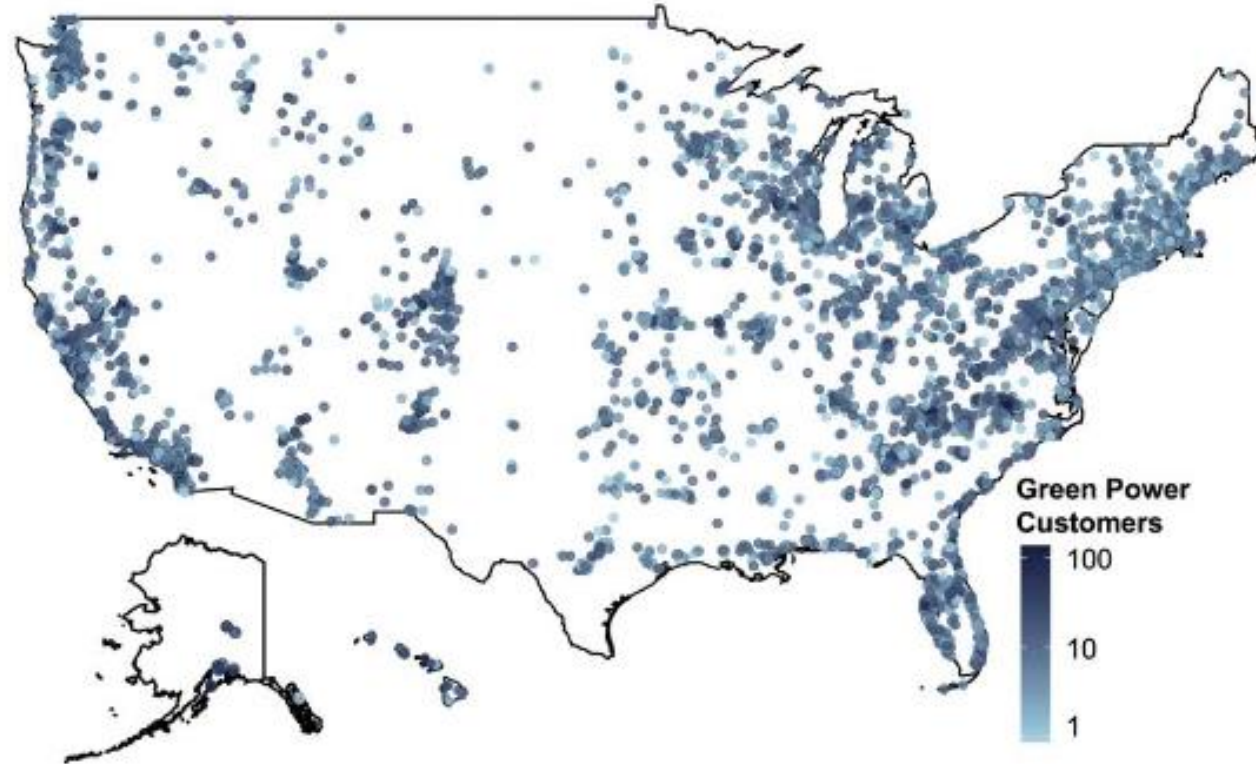


Figure 42. Geographic sample of residential and small commercial green power customers

Based on data from Arcadia 2017

Source: National Renewable Energy Laboratory (NREL)

Voluntary Markets in the US

- 80,000+ businesses
- Millions of individuals
- Represents 2% of total electricity load
- 10+% annual growth
- >50% new utility-scale solar in 2016 built to serve voluntary customers

The majority of voluntary sales are certified by CRS's Green-e Program

About Green-e®

A program of the Center for Resource Solutions



Green-e

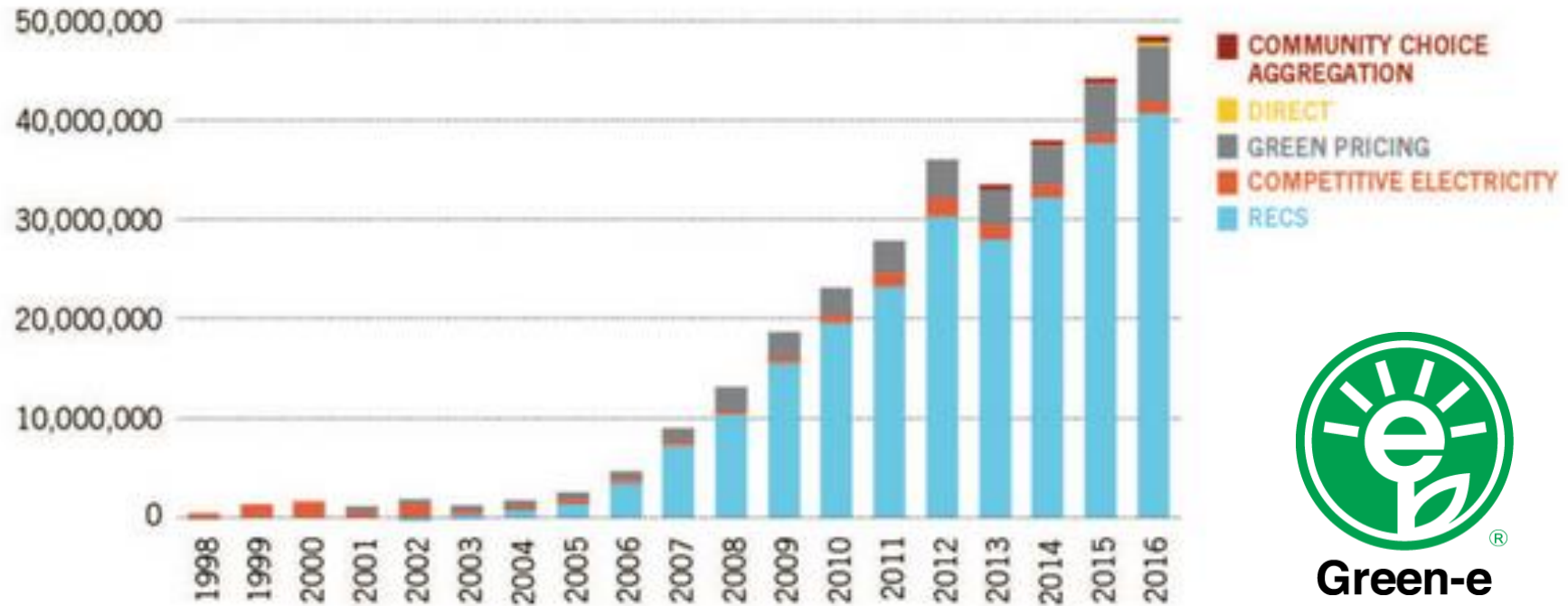
- Independent, non-profit, develops standards and certification programs for green power sellers and buyers
- Certifies renewable energy sales, buyers and products made with renewable energy in the U.S. and Canada, and expanding in Asia and Latin America
- Broad industry, NGO and stakeholder support:



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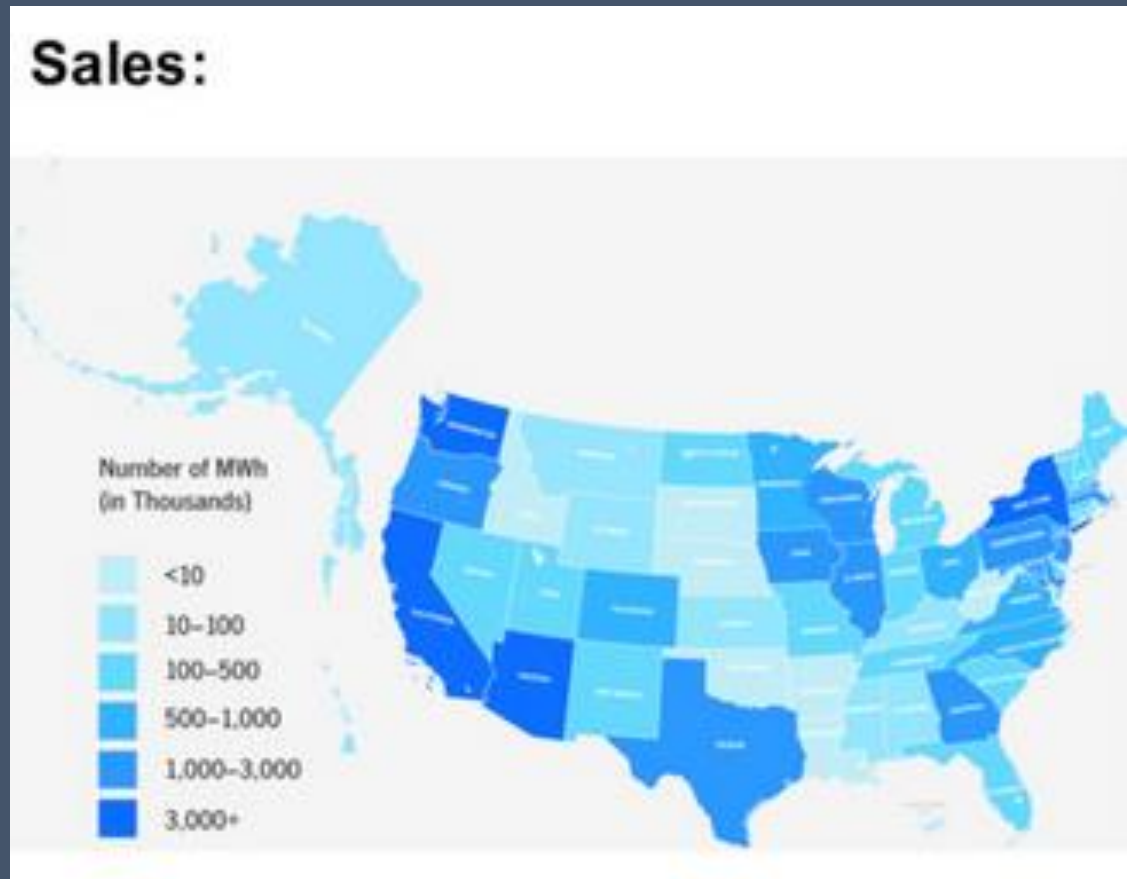
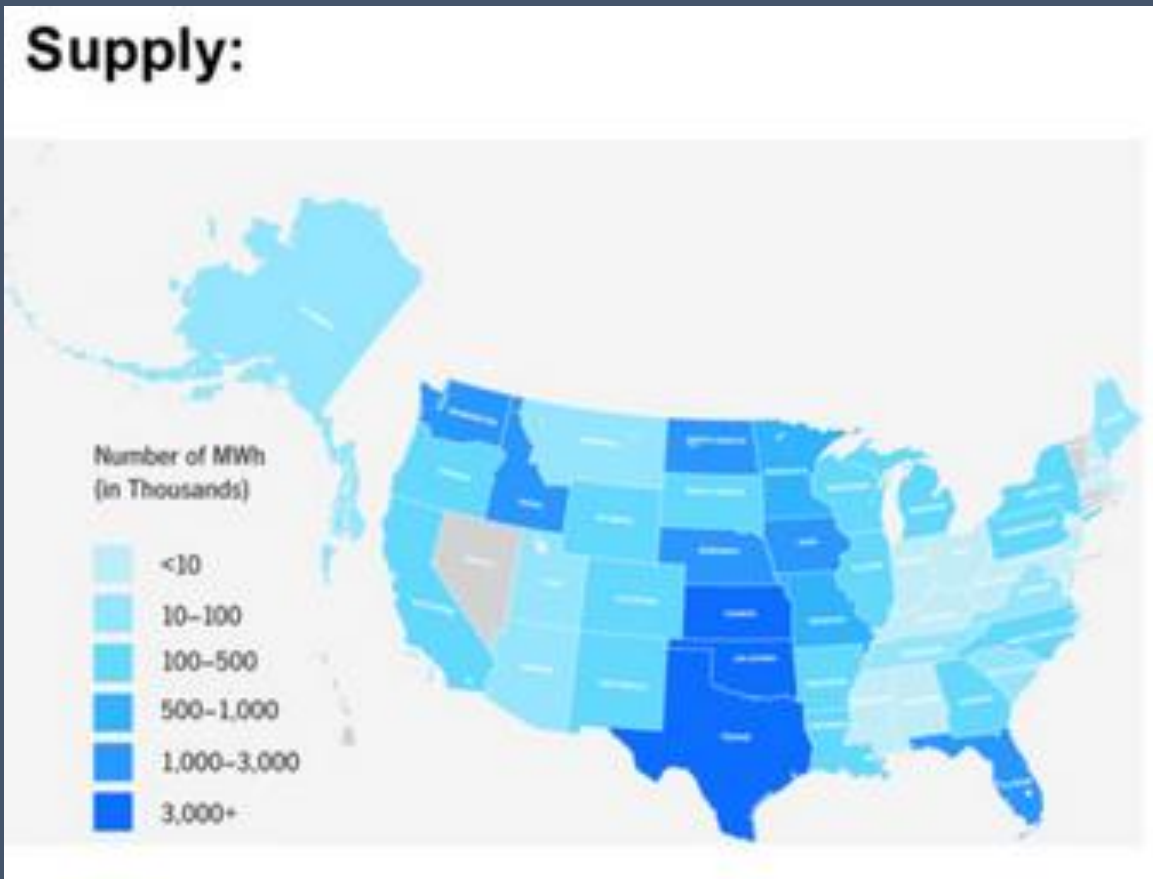
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Green-e[®] Energy Certified Retail Sales by Product Type



Green-e Energy certified retail sales reached over 48 million megawatt-hours (MWh) in 2016, the highest number of certified retail MWh to date. Green-e Energy certified sales have increased at an average rate of 8% per year over the past four years.

US Voluntary Market: Supply vs Sales

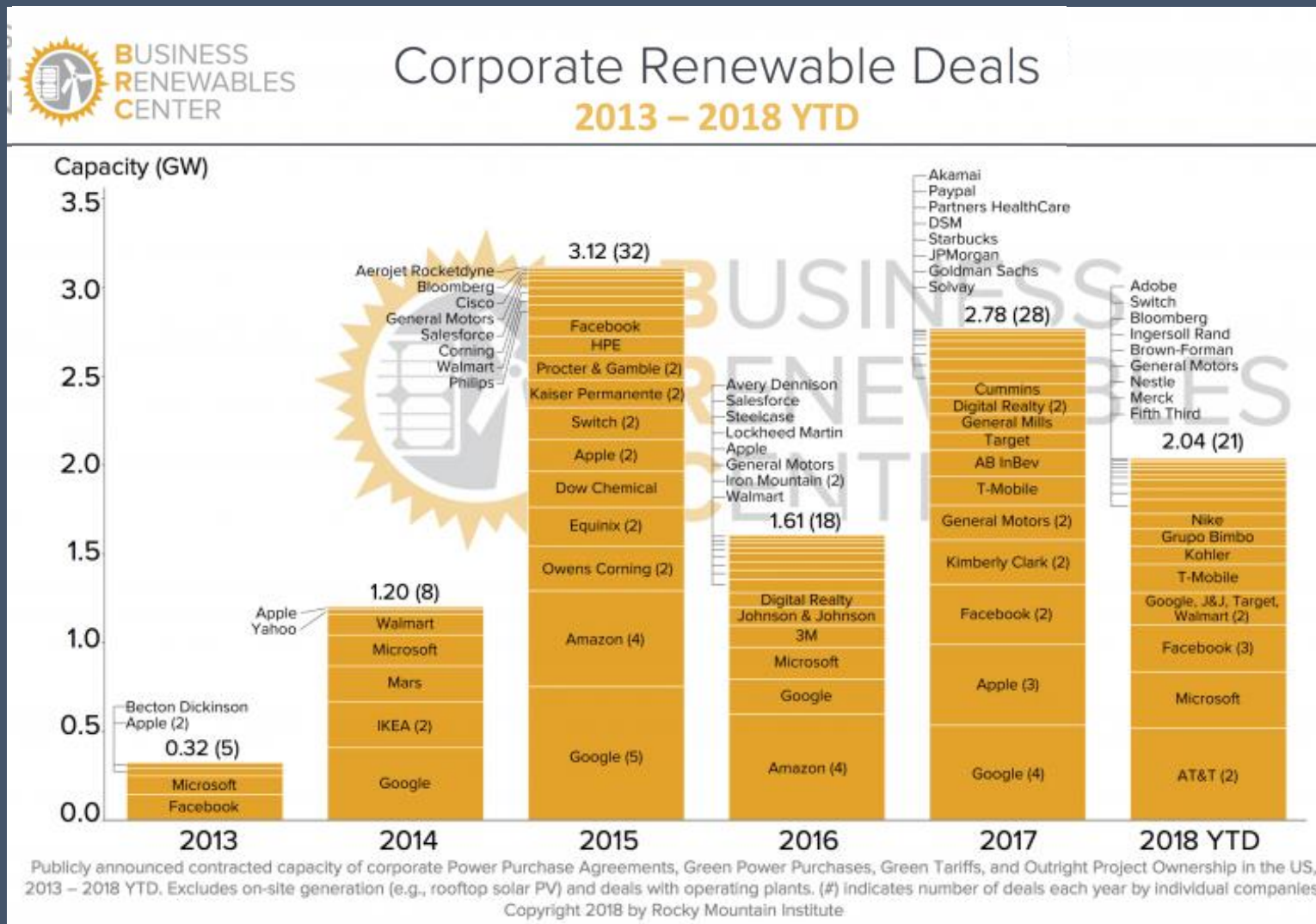


2016 Green-e data. Illustrative of overall voluntary market activity.

Trends

- Corporate PPAs/VPPAs
- Growth of CA CCAs/
Community RE

“it is estimated that over 50% of California residents will be served by a CCA by 2020” – CalCCA.org



CA CCA Impacts to Date:

940,388 Metric Tons
GHGs Avoided Per Year

\$33,078,000
2016 Estimated On-bill Savings

1,853,000
Customer Accounts

Brands That are Green-e Certified



HOUSTON 2018

www.RenewableEnergyMarkets.com

The leading forum for the clean energy marketplace

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US Renewables Market Growth by Segment

6.1 Status of Unbundled RECs

We estimate that about 108,000 customers bought about 51.8 million MWh of green power through unbundled RECs in 2016 (Figure 17). The increase in customer numbers is likely due to more marketers actively targeting residential customers.

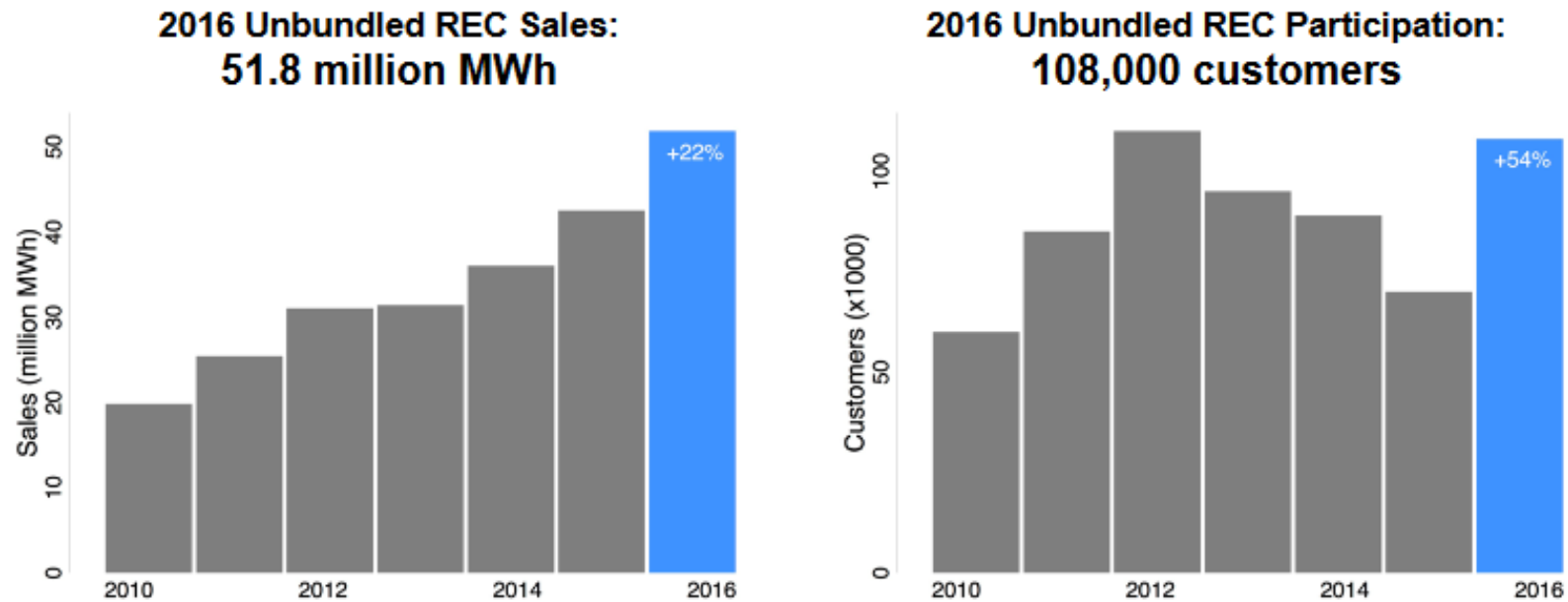


Figure 17. Unbundled REC sales and participation from 2010 to 2016

US Renewables: REC Price by Location

