

STATE OF THE US



MARKETS

Green-e[®] Energy Reporting Year 2023

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Intro to Green-e.

WHO BUYS GREEN-E?

WHO SELLS GREEN-E?

WHY IS GREEN-E VALUABLE?

WHAT BENEFITS DOES GREEN-E

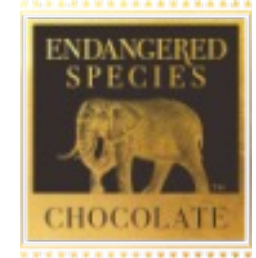
PROVIDE SELLERS & BUYERS?

Who Buys Green-e?

1.3 million retail purchasers buy Green-e® certified renewable energy, including **314,000 businesses**, including some brands you may know:



BANK OF AMERICA



Who Buys Green-e?

Among the 314,000 business purchasers of Green-e® certified renewable energy, are over 100 colleges and universities **and 948 companies, institutions, and buildings that buy >10,000 MWh annually**



Who Sells Green-e?

158 companies sold almost 114 million in retail MWhs from 326 certified products in 2022. 45 million more than in 2019

[3Degrees Inc.](#) [3Phases Renewables](#) [ACT Commodities, Inc.](#) [AEP Energy, Inc.](#) [Agendi Inc.](#) [Aggressive Energy](#) [Algonquin Power](#) [ALLETE Clean Energy](#) [Ambit Energy Holdings LLC](#) [Ameren Missouri](#) [American PowerNet](#) [Ampion](#) [Anew](#) [Austin Energy](#) [Avangrid Renewables](#) [Azalea Solar, LLC](#) [Blue Delta Energy](#) [Blue Source, LLC](#) [Bonneville Environmental Foundation \(BEF\)](#) [BP Energy Company](#) [Bridge to Renewables, LLC](#) [Brookfield Renewable](#) [Bullfrog Power](#) [Collective Energy](#) [Calpine Energy Solutions, LLC](#) [Carbon Solutions Group \(CSG\)](#) [Carbonvert Inc.](#) [Champion Energy Marketing, LLC](#) [City of Las Vegas](#) [City of Palo Alto Utilities](#) [Clean Power Alliance](#) [CleanFuture](#) [CleanPowerSF](#) [Clear Energy Brokerage & Consulting LLC](#) [Clearway Energy Group](#) [Clearway Renew LLC](#) [Climate Impact Partners](#) [ClimeCo Corporation](#) [CMS Energy Resource Management Company](#) [Colorado Springs Utilities](#) [Concha y Toro](#) [Constellation NewEnergy](#) [Copia Power](#) [Cypress Creek Renewables](#) [DESRI Holding](#) [Direct Energy](#) [Dominion Energy Virginia](#) [DTE Electric](#) [Duke Energy](#) [Dynergy Energy Services](#) [East Bay Community Energy \(EBCE\)](#) [East Kentucky Power Cooperative, Inc.](#) [ECOHZ](#) [EDF Energy Services](#) [Elm Branch Solar 1, LLC](#) [Enel Trading North America, LLC](#) [Enel X](#) [Engie Energy Marketing NA](#) [ENGIE Generation North America LLC](#) [Entergy Arkansas](#) [Entergy Louisiana](#) [Entergy New Orleans](#) [Entergy Texas \(ETI\)](#) [Fern Solar LLC](#) [First Climate Markets AG](#) [FirstEnergy Solutions Corp.](#) [Freepoint Energy Solutions](#) [Frontier Windpower II, LLC](#) [GO2 Markets](#) [Green Mountain Energy](#) [Green Power EMC](#) [GreenEnergy GPO](#) [Greenlight Energy Group LLC](#) [Harrison Renewable Energy](#) [Hero Power](#) [Idaho Power Company](#) [Indianapolis Power & Light Company \(AES\)](#) [J.P. Morgan Ventures Energy Corporation](#) [Jasmine Energy](#) [JEA](#) [Just Energy](#) [Karbone Inc.](#) [Kiwi Energy](#) [Kratos Gas & Power](#) [Liberty Power](#) [Longroad Energy Services, LLC](#) [Luminant Energy Company, LLC](#) [MC Squared Energy Services](#) [MCE \(Marin Clean Energy\)](#) [Merrill Lynch Commodities Inc.](#) [Mesquite Star Special, LLC](#) [MidAmerican Energy Services](#) [Mitsui & Co](#) [MN8 Energy](#) [Moffett Solar 1, LLC](#) [Mozart Wind, LLC](#) [MP2 Energy](#) [Muscatine Power and Water](#) [National Grid Renewables](#) [NativeEnergy](#) [Natural Capital Partners](#) [NC GreenPower](#) [New Brunswick Energy Marketing](#) [NextEra Energy Resources](#) [Nexus Energy](#) [Northern Indiana Public Service Company \(NIPSCO\)](#) [NRG Business Solutions](#) [NV Energy](#) [Pacific Gas and Electric \(PG&E\)](#) [PacifiCorp](#) [Peninsula Clean Energy](#) [Pine Gate Renewables, LLC](#) [Pivot Energy](#) [Platte River Power Authority \(PRPA\)](#) [Portland General Electric \(PGE\)](#) [Powerex Corp](#) [Puget Sound Energy \(PSE\)](#) [Pulse Grids](#) [Reliant Energy Retail Services](#) [Sacramento Municipal Utility District \(SMUD\)](#) [San Diego Gas & Electric \(SDG&E\)](#) [San Jose Clean Energy \(SJCE\)](#) [Santee Cooper](#) [Schneider Electric](#) [Seattle City Light](#) [Shell Energy North America](#) [Silicon Valley Clean Energy](#) [Silicon Valley Power \(SVP\) - City of Santa Clara](#) [Skyview Ventures](#) [Smart Charging Technologies, LLC](#) [Smartest Energy](#) [Sol Systems, LLC](#) [SolRiver Capital](#) [SourceOne](#) [South Plains Wind Energy II, LLC](#) [South Pole Group](#) [Southern California Edison \(SCE\)](#) [SP Cactus Flats Wind Energy, LLC](#) [Spring Power and Gas](#) [SRECTrade](#) [Steelcase Inc.](#) [Sterling Planet](#) [STX Commodities](#) [Sun Tribe](#) [TC Energy Marketing](#) [Tennessee Valley Authority \(TVA\)](#) [TXU Energy](#) [Uncle Frank Energy Services](#) [United Energy Trading, LLC](#) [United Green Energy](#) [Valta Energy, LLC](#) [Viant Technology](#) [Watershed](#) [We Energies](#) [Western Farmers Electric Cooperative](#) [WGL Energy Services, Inc.](#) [World Fuel Services, Inc.](#) [X-Elio](#) [Xcel Energy](#)

Why is Green-e Valuable?

Green-e is cited as best practice by more than 20 industry standards, NGOs, government agencies and associations.

Green-e® International Citations



Green-e® U.S./Canada Citations



What Benefits Does Green-e Provide Buyers & Sellers?



- ✓ **Trusted**
- ✓ **Recognized**
- ✓ **Verifiable**
- ✓ **Transparent**
- ✓ **International**

- **3-party independent review and certification**
- **Environmentally impactful**
- **Reduces buyer reputational risk**
- **Trusted by reporting agencies**
- **Regulatory additionality verified**
- **Federal Option (compliant with EO 14057)**
- **Potential optional product add-ons:**
 - **24/7 Green-e** (req. data availability and use of all-generation tracking system)
 - **Product life cycle certification**
 - **Clean energy verification**
 - **Post transaction consumption**

Outline.

CERTIFIED SALES

CUSTOMERS PURCHASING

CERTIFIED SUPPLY

CERTIFIED PRODUCT TYPES

Key Takeaways.

**WHAT YOU NEED TO KNOW
ABOUT CERTIFIED SALES IN
THE 2022 REPORTING YEAR**

Key Takeaways

2022 was the biggest year of certified sales to date.

- **Almost 114 million retail MWh**, or than 2.7% of the overall US electricity mix
- **4 million more MWh sold than in 2021**
- **1.3 million retail purchasers** of Green-e® certified renewable energy, including **314,000 businesses**
- **26% increase** in Direct procurement
- Continued increase of Solar as a source of supply
- Newer renewables continuing to drive the market

Charts, Data and Analysis.

**VISUAL REPRESENTATION
OF THE 2022 REPORTING
YEAR**

Total Certified Sales of Renewable Energy by Product Type and Customer Type

Total Green-e[®] Energy Certified Sales of Renewable Energy by Product Type and Customer Type (in MWh)

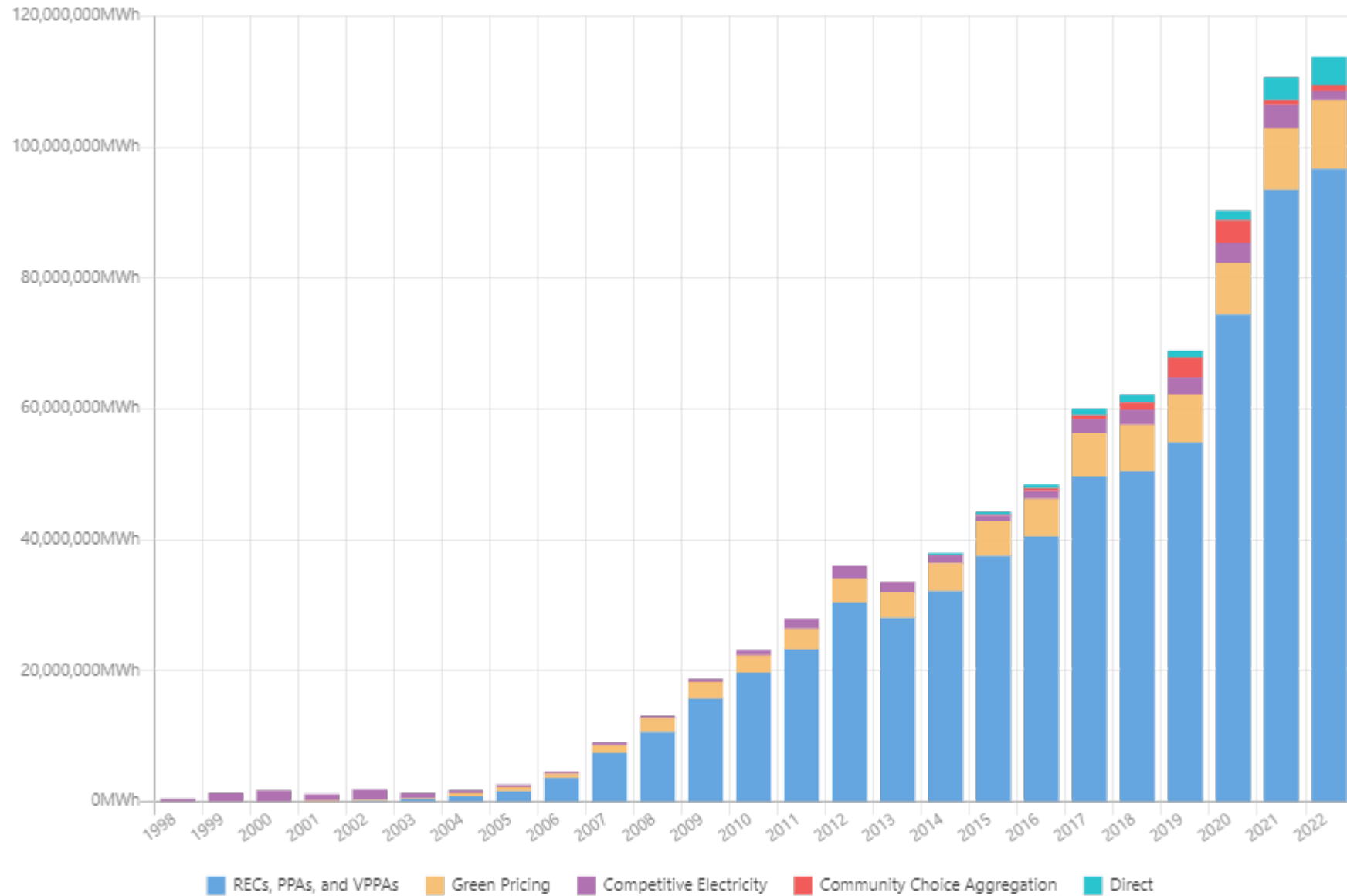
	Residential (Retail)	Non-Residential (Retail)	Wholesale
RECs, PPAs, and VPPAs	636,000	95,977,000	13,351,000
Green Pricing	4,806,000	5,739,000	
Competitive Electricity	112,000	1,279,000	
Direct		4,330,000	
Community Choice Aggregation	118,000	769,000	
Total Sales	5,672,000	108,094,000	13,351,000

Total Retail: 113,766,000 MWh

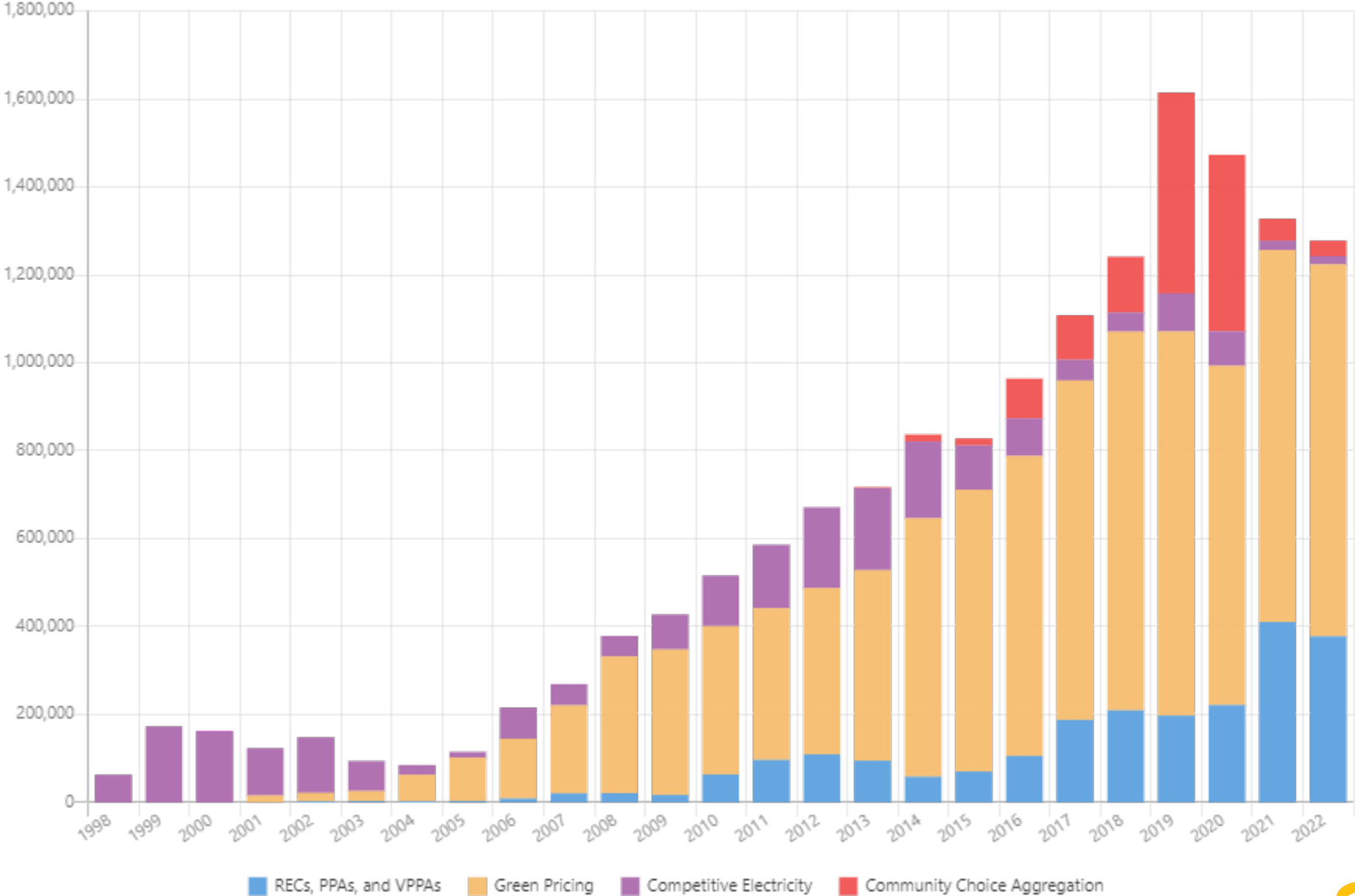
Total Unique Certified: 122,366,000 MWh

Total Certified Transactions 127,117,000 MWh

Sales By Product Type, 1998 – 2022 (In MWh)

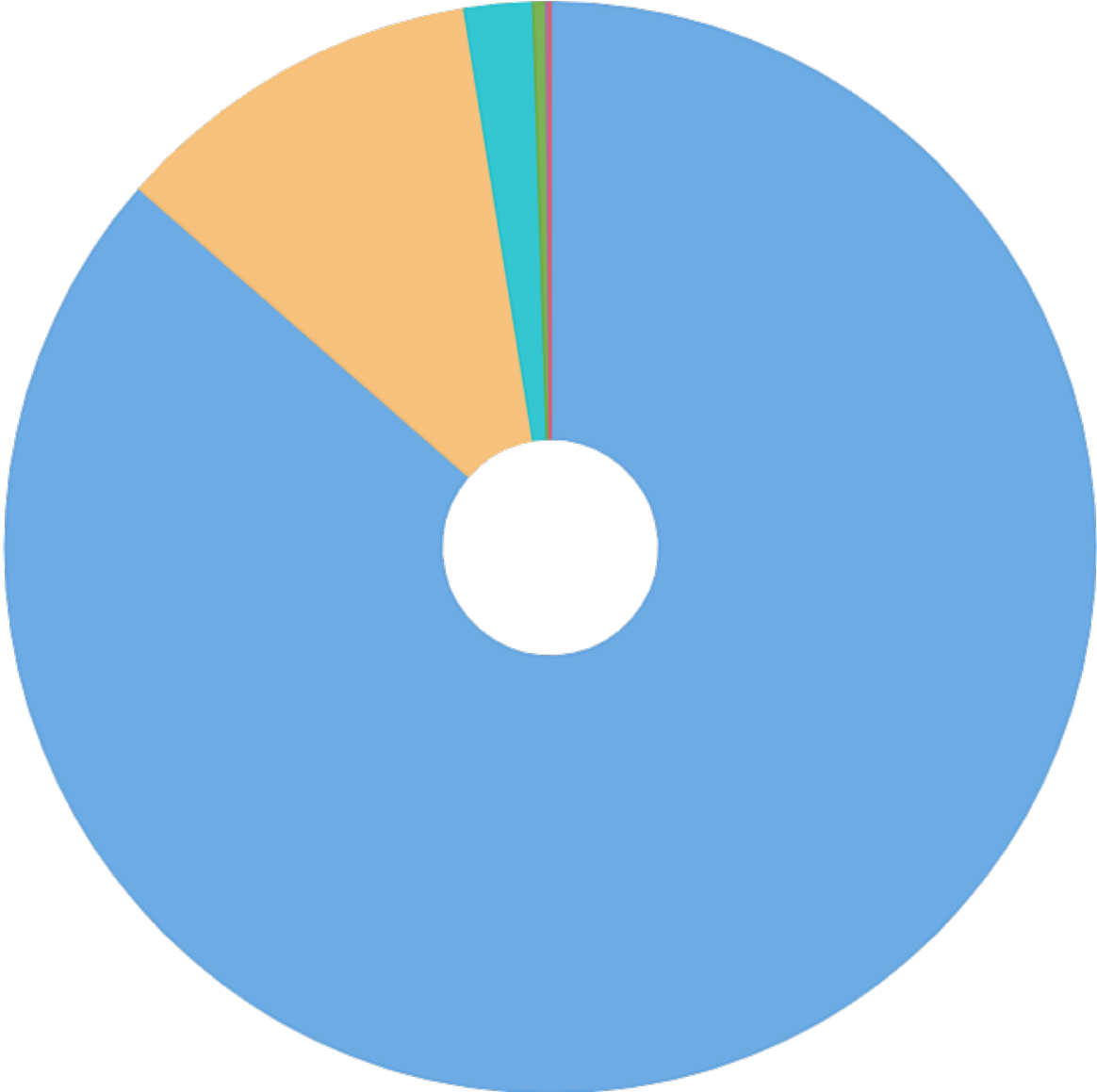


Customers by Product Type, 1998 – 2022



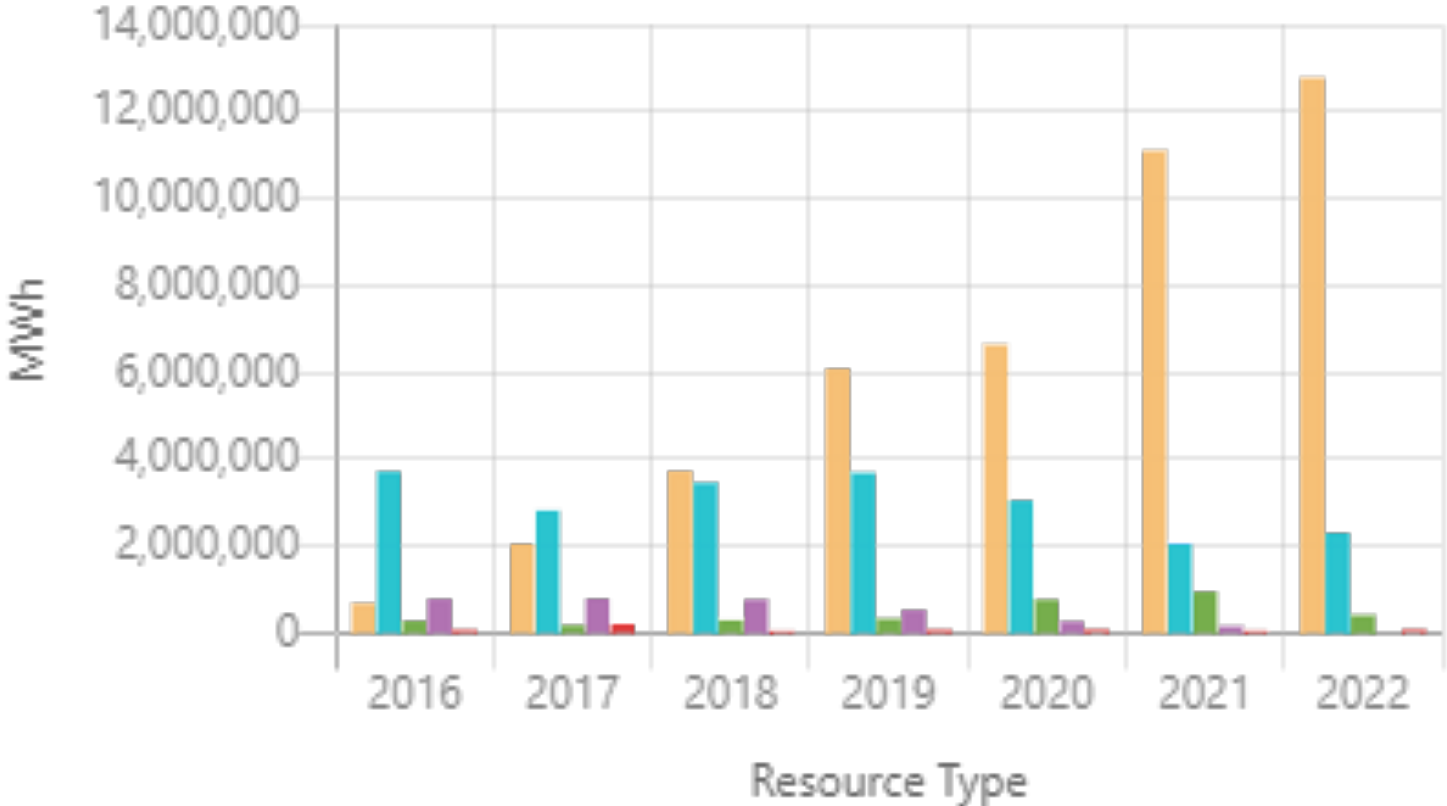
Contributions of Renewable Resource Types

● Wind (86%)
 ● Solar (11%)
 ● Non-Gaseous Biomass (2%)
 ● Low-Impact Hydro (.4%)
 ● Gaseous Biomass (.1%)
 ● Geothermal (.01%)

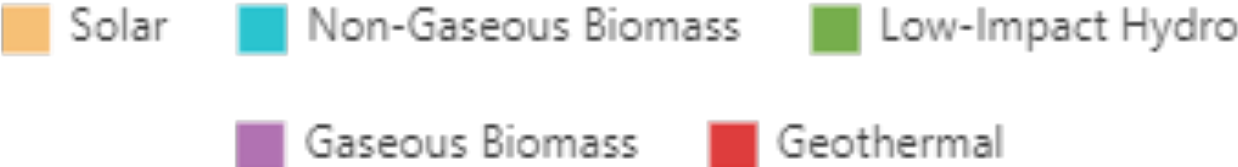


Resource Type	MWh	Percentage
Wind	98,199,000	86%
Solar	12,777,000	11%
Non-Gaseous Biomass	2,304,000	2%
Low-Impact Hydro	399,155	0.4%
Gaseous Biomass	142000	0.1%
Geothermal	6,400	0.01%

Percentage of Non-Wind Resources to Certified Retail Sales by MWh, 2016-2022

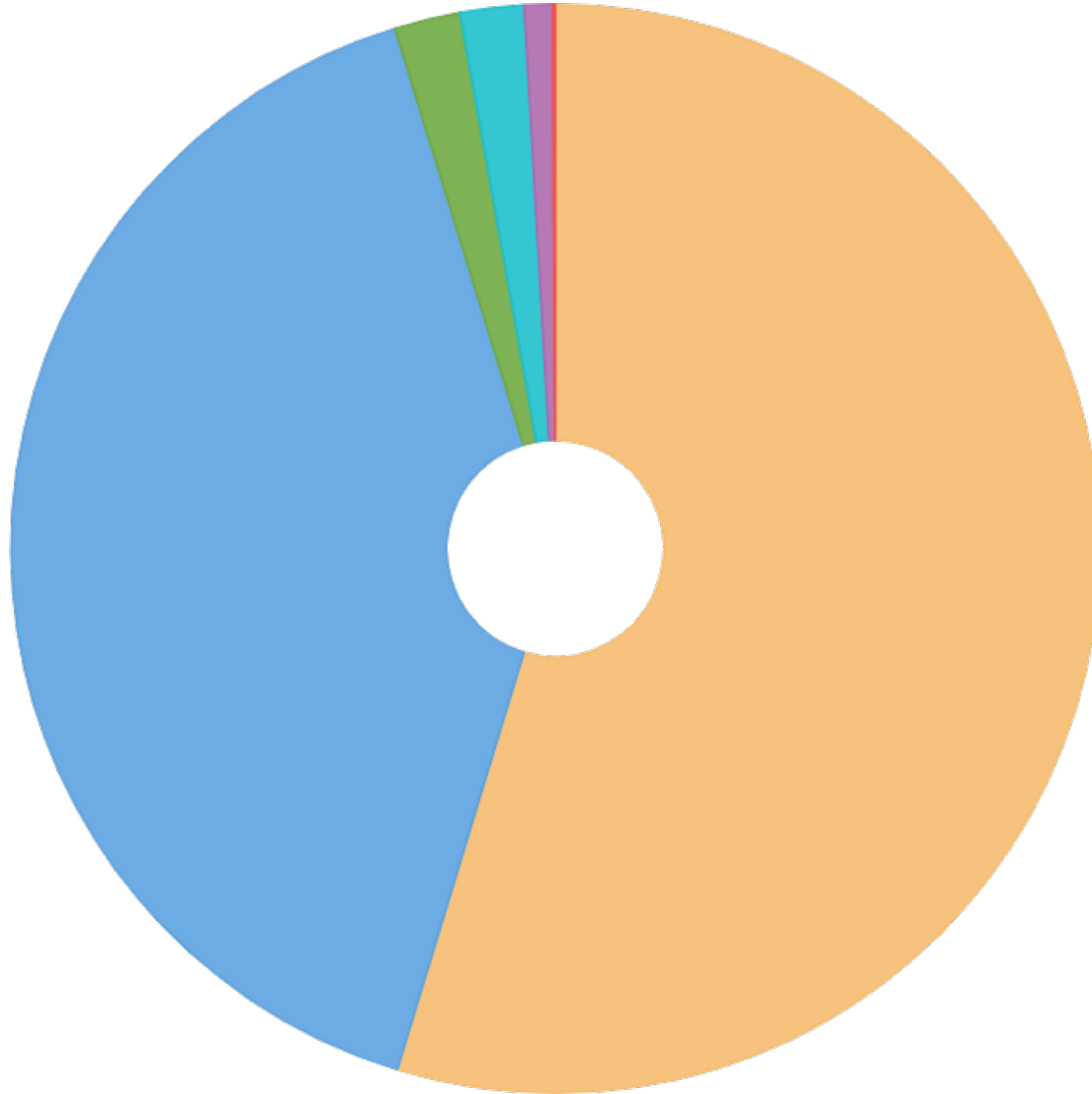


- **1900%** increase of solar generation in Green-e® Energy Certified retail sales since 2016



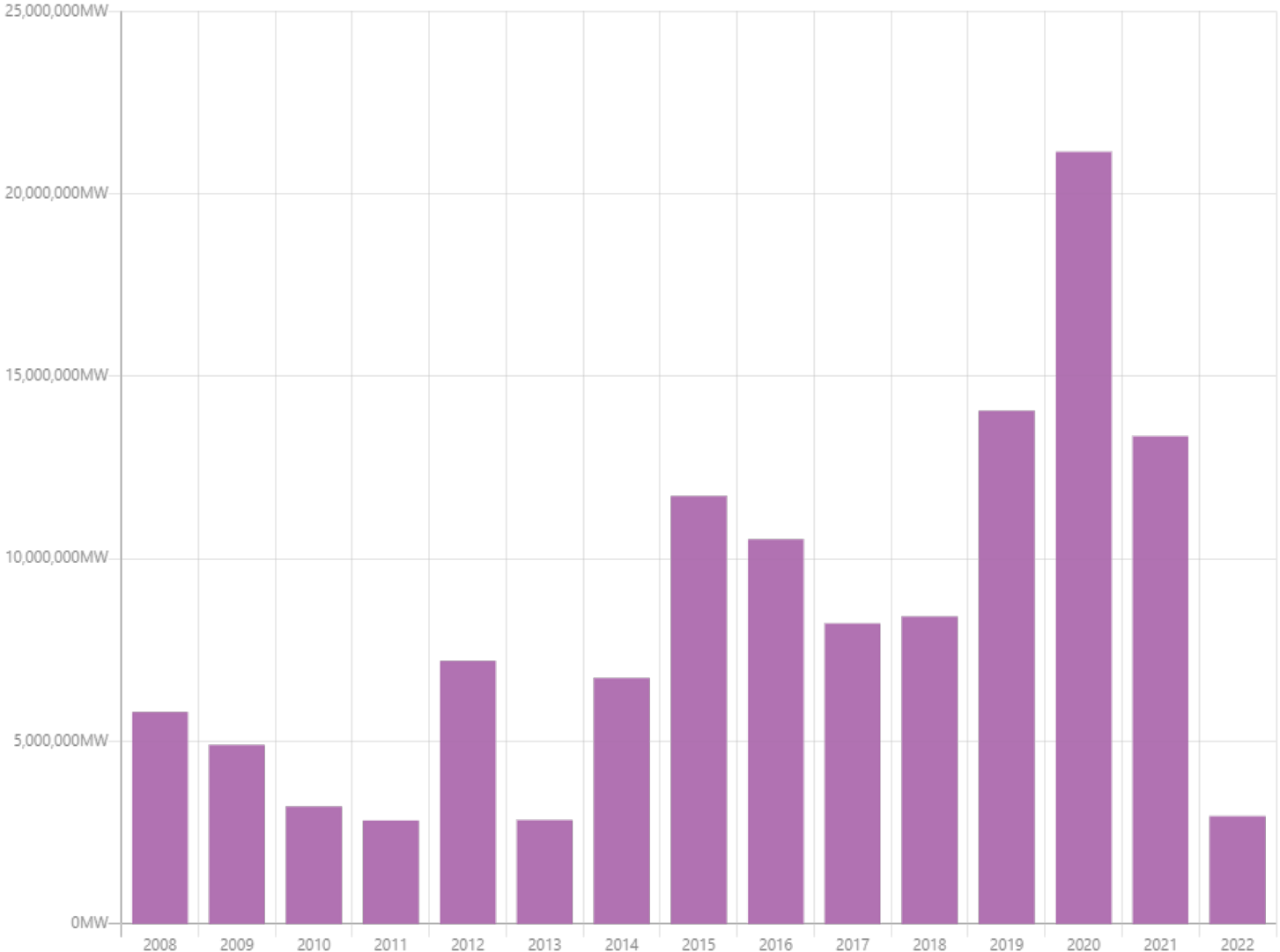
Facilities Supplying Certified Sales by Resource Type

● Solar (55%)
 ● Wind (41%)
 ● Non-Gaseous Biomass (2%)
 ● Gaseous Biomass (2%)
 ● Low-Impact Hydro (1%)
 ● Geothermal (.08%)



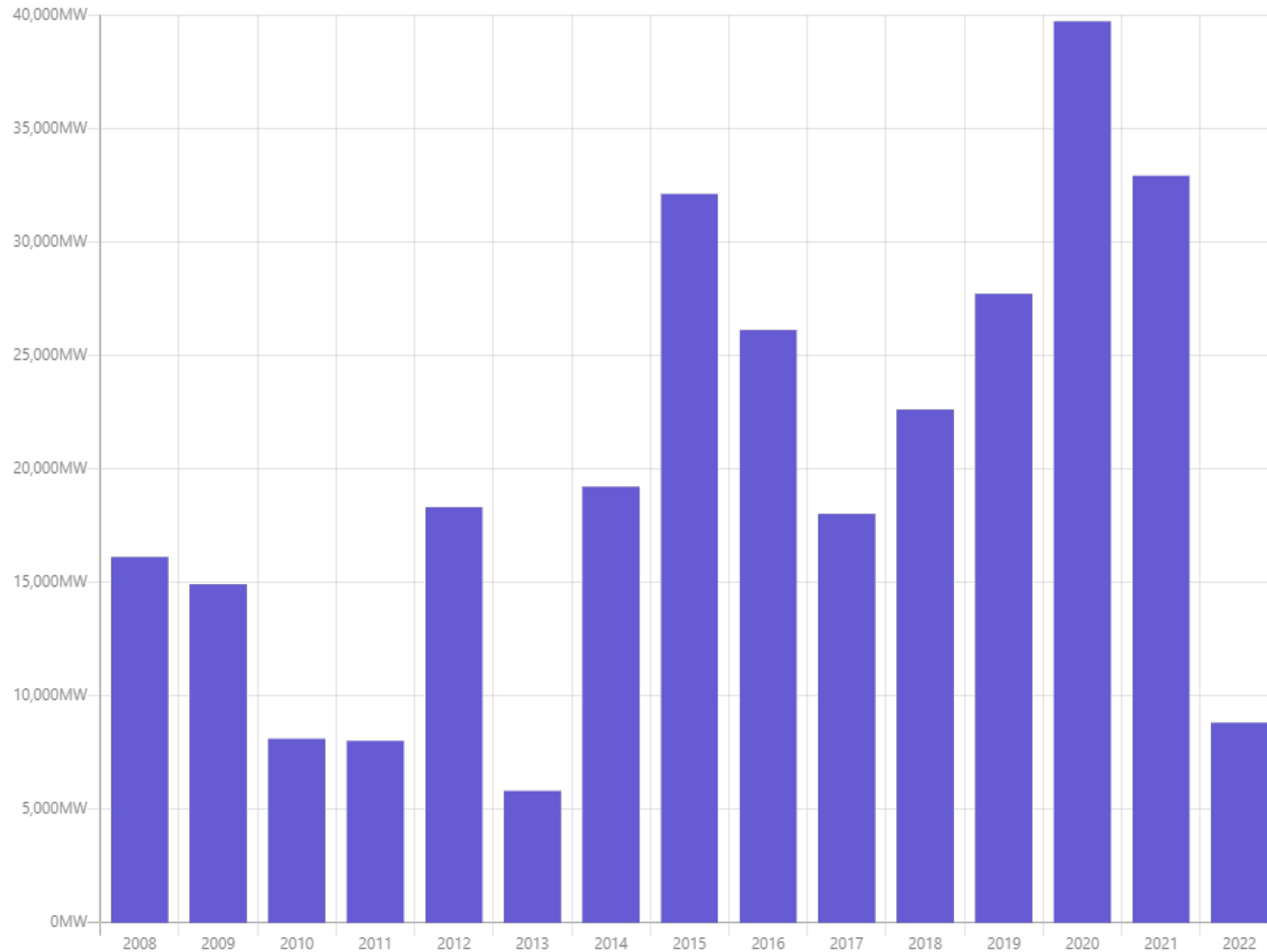
Resource Type	Unique Facilities	Percentage
Solar	723	55%
Wind	536	41%
Non-Gaseous Biomass	26	2%
Gaseous Biomass	25	2%
Low-Impact Hydro	11	1%
Geothermal	1	0.08%

Megawatt-Hours by Facility Date of First Operation or Repowering



- **51%** of supply from facilities aged 5 years or younger

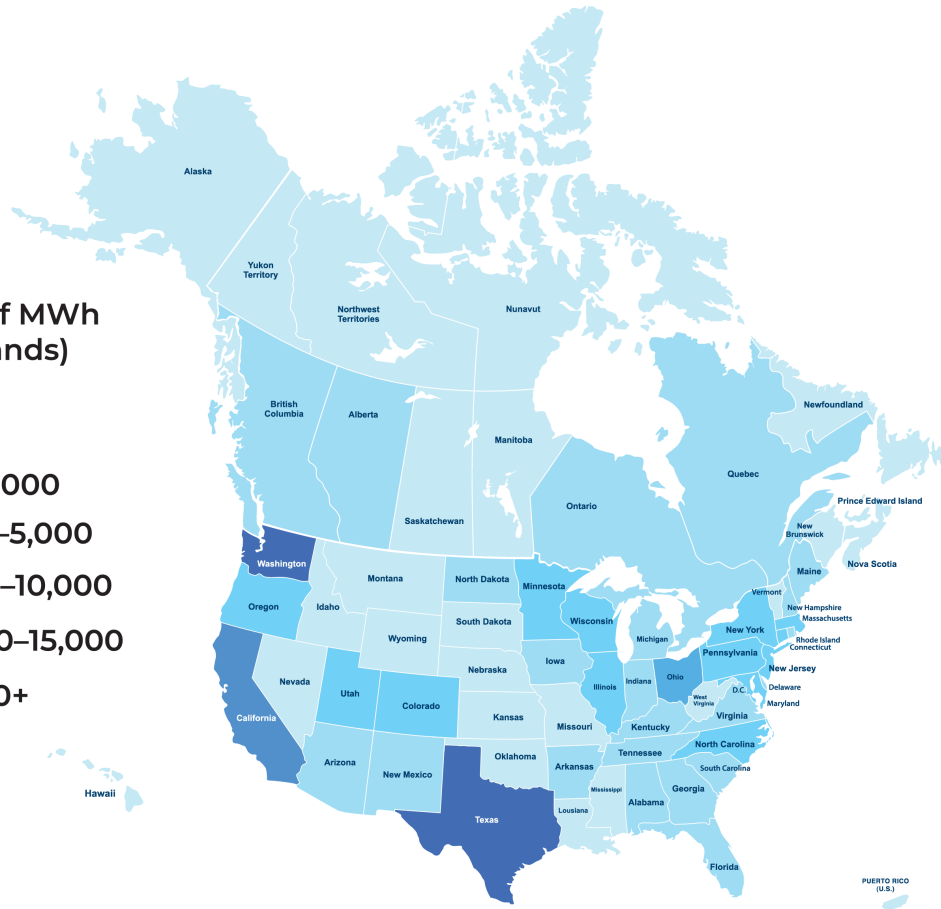
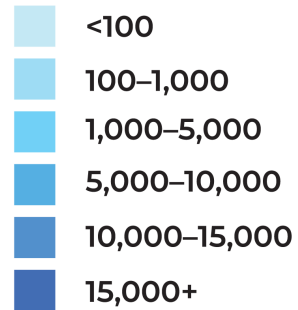
Overall Capacity (MW) by Year of First Operation or Repowering



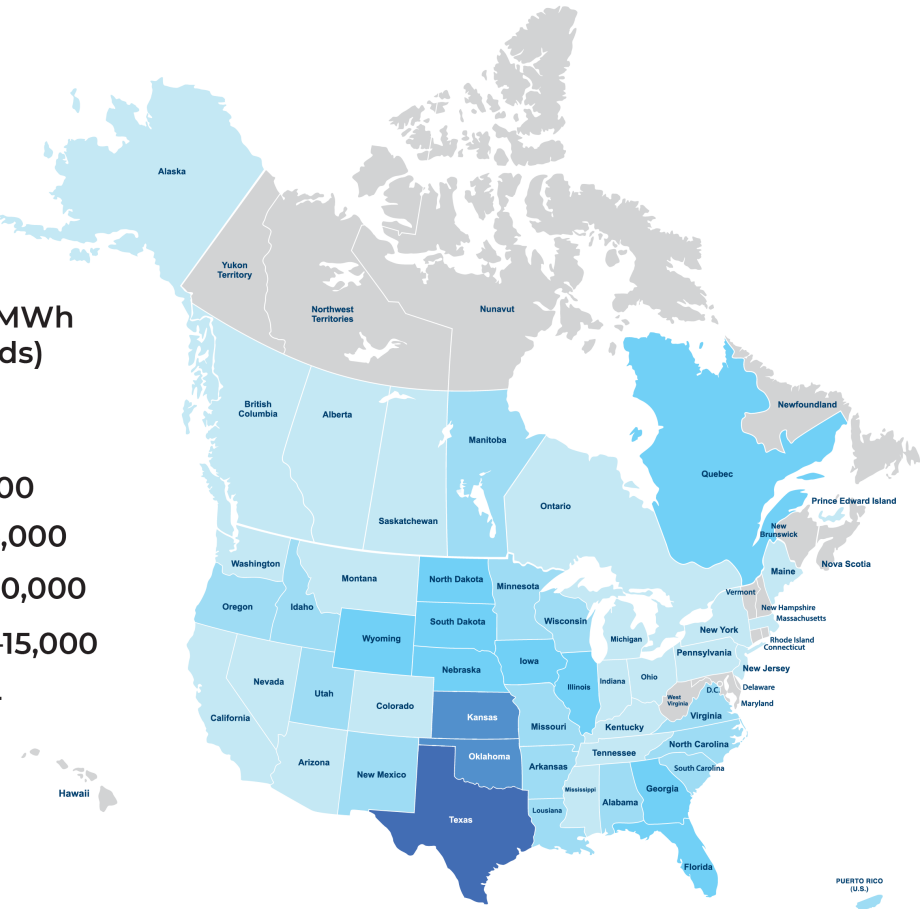
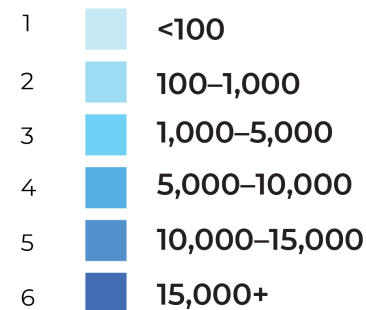
- **49%** of overall capacity comes from facilities 5 years old or younger

Certified Sales and Supply

Number of MWh (in Thousands)



Number of MWh (in Thousands)



State	% of Customers
OR	30%
CA	10%
WA	9%
CO	6%
TX	5%
UT	5%
OH	4%
PA	5%
MI	3%
NY	3%

Percent of Total Retail Customers by State (Includes REC Sales)

The states with the highest amount of customers tend to be in states with successful utility green pricing programs, showing the stability that utility programs can offer.

Contact.

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