Voluntary Green Power Procurement:

An Overview of the voluntary renewable energy market in the U.S.

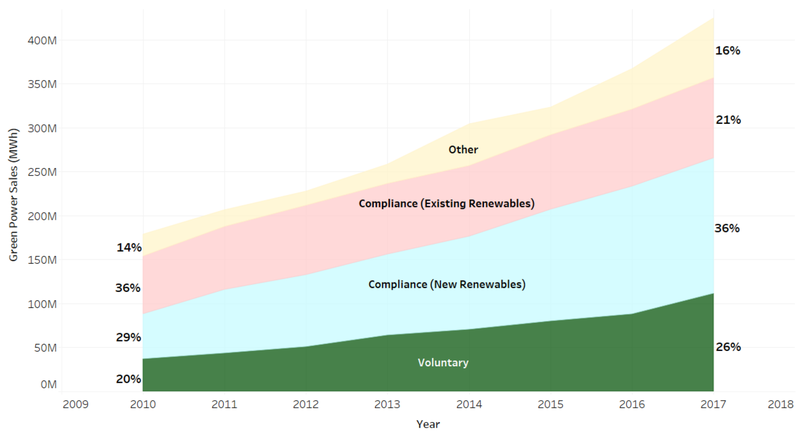
Introduction:

Over the past decade, demand for renewable energy has grown significantly. With limited federal energy and climate policy, states, municipalities, corporations, and individuals have taken the lead on combating the ever-growing threat of climate change. A growing awareness of the impact our energy consumption has on the environment has led to individuals looking for ways to manage their carbon footprint. Consequently, voluntary green power procurement has gained significant popularity throughout the past decade and now plays a considerable role in spurring the clean energy transition. Utilities, corporations, and individuals all may voluntarily acquire renewable energy through a variety of programs. Among others, these programs include utility green pricing programs, competitive suppliers, community choice aggregators (CCAs), power purchase agreements, utility renewable contracts, community solar programs, and unbundled RECs not associated with another green power procurement. Each program relies on renewable energy certificates, or RECs, to account for green power generation. RECs represent one megawatt-hour of renewable electricity generated and delivered to the grid. My project will illustrate how the voluntary green power market has experienced steady and impressive growth over the past decade.

Methods:

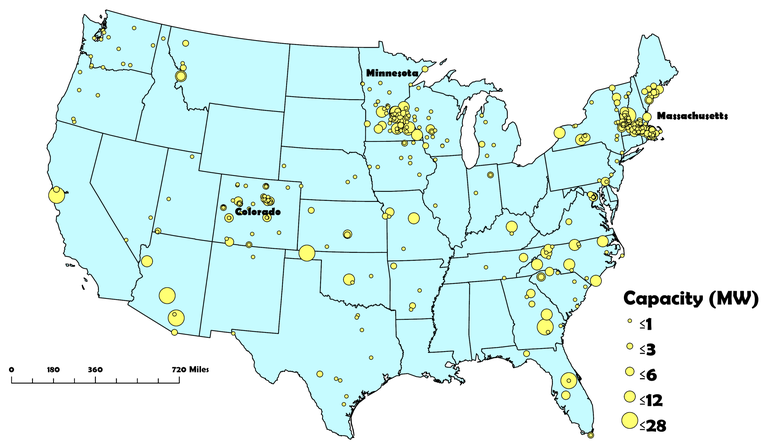
Publicly available data from the National Renewable Energy Laboratory's annual status report on the voluntary green power market provided the basis for this project. Drawing from an excel file with many datasets, I created three unique visualizations using three different software platforms. The stacked area chart was developed in Tableau using data regarding renewable energy sales by market. Next, the stacked bar chart was made in Excel using data on the various green power products. Finally, my first case study, which focuses on community solar, was created in ArcGIS Pro using latitude and longitude data from the same NREL file. I added a second case study with a visualization made in Tableau on Jackson Hole's Green Power Program, working with data provided by Lower Valley Energy, Jackson's energy cooperative.

Annual Renewable Energy Sales by Market



Impressive growth in the voluntary green power market supports an expanding renewable energy market. Expect compliance through new renewables and voluntary procurement to continue to increase their market share in the future as state governments set more ambitious clean energy policy, citizens demand more green energy, and renewables become more cost competitive.

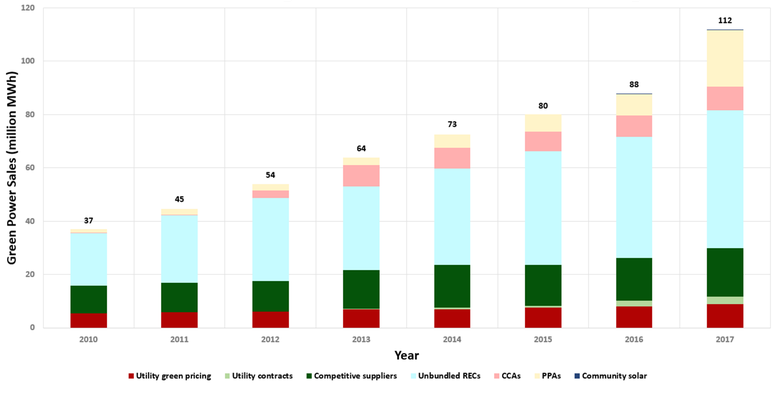
Community Solar Farm Location and Capacity



The map shows community solar project capacity nationwide. Large concentrations of projects exist in Colorado, Minnesota, and Massachusetts due to favorable state policy. Most community solar projects were built within the last three years, but their popularity has grown quickly.

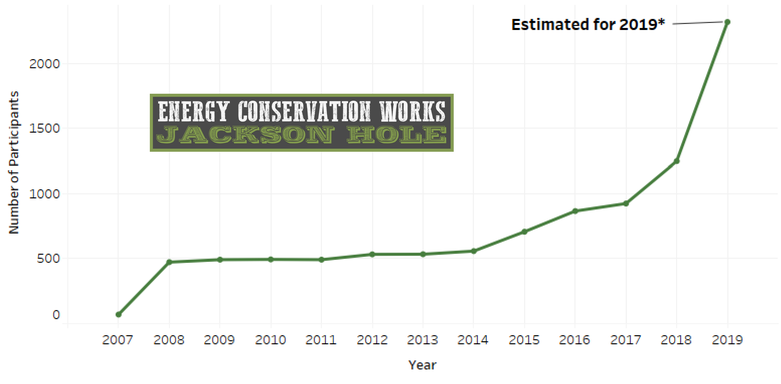
Note: the 113 MW project in Sacramento, California, has been omitted due to its disproportionately large capacity.

Annual Voluntary Green Power Sales by Product



Over seven years, the voluntary green power market tripled in size. New products, including CCAs, utility contracts, and community solar, have helped promote renewable energy consumption and will likely be major factors in the continued growth of the market.

Jackson Hole Green Power Program Participation



Jackson, Wyoming's Green Power Program has experienced exponential growth over the past five years. The 2019 estimate is a result of high energy users converting to green power recently, helping improve renewable energy consumption to 13% of the town's total energy consumption.

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Environmental Data Visualization
December 17, 2019

Data Sources: NREL, Lower Valley Energy
Images: ArcGIS StoryMaps

Acknowledgements: Special thanks to Kyle Monahan and Phil Cameron

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