

May 10, 2017

Series II: Solar Energy and Economic Value

Solar is affordable for all.

Highlights:

- **83%** of home solar owned by lower/middle income families.
- Almost **a third** of buyers earn **less than median**.
- Even low margin businesses are fast expanding their solar footprint.

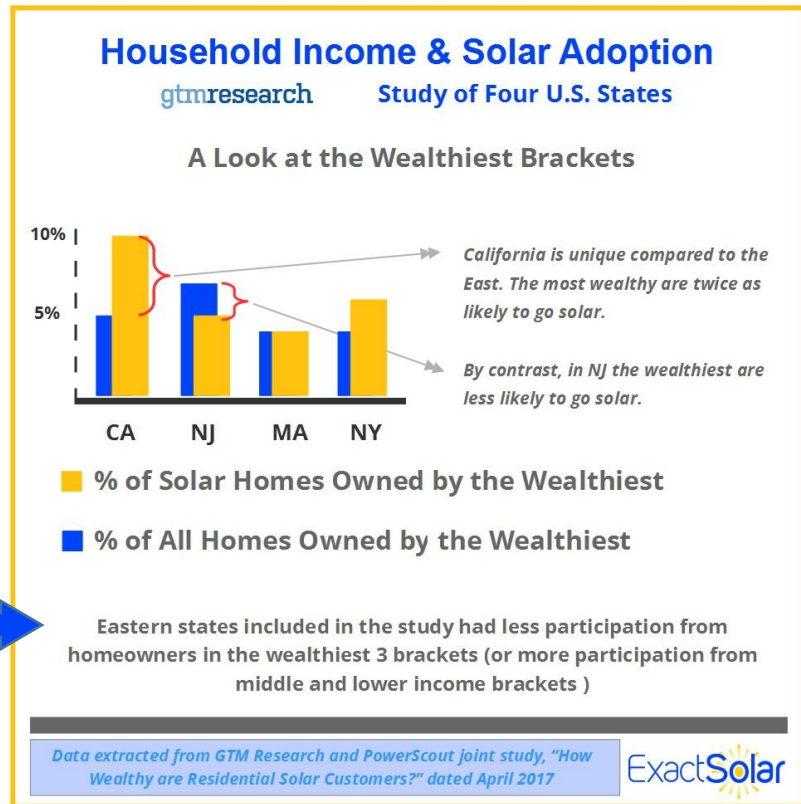
Revolutionary and trend setting technology sometimes is adopted earliest by the rich and famous. From cellular phones to flat screen TVs, the first generation or two of new technology are novelties and toys for the more prosperous.

For solar PV, that might have been true, also. But now the technology has become increasingly more popular over the last decade and more. Manufacturing methods and material science for solar modules has reached a point where mostly small refinements are left. Prices are historically low and capacities are historically high. This is the right time to determine if the country has reached an acceptable point of “affordability” for the average family.

Starting at the Top – Are the Wealthiest Still King?

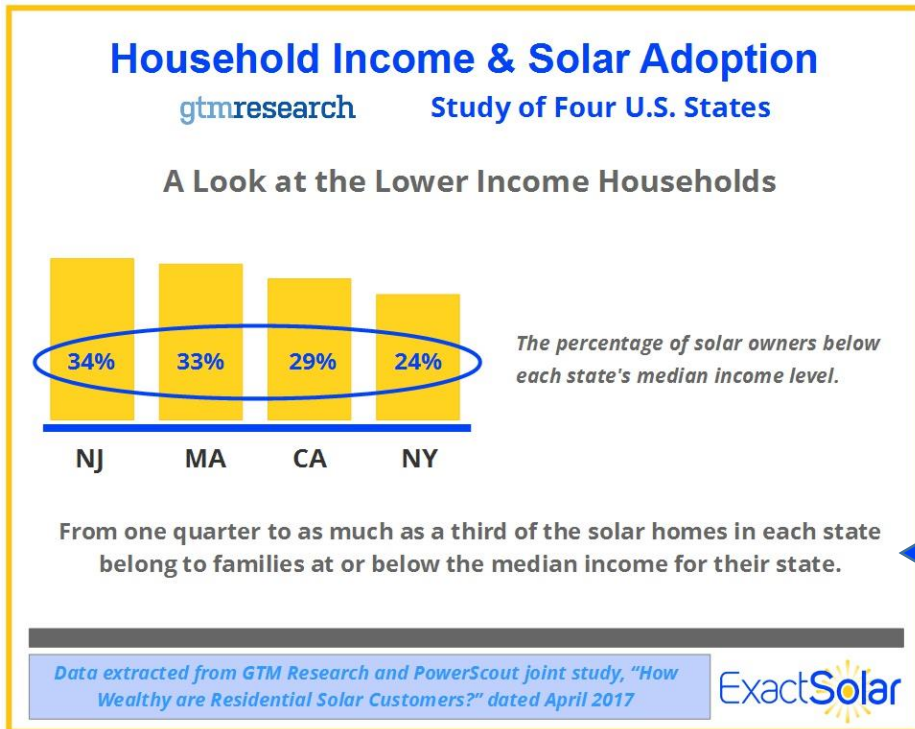
The most recent and complete study about who is buying solar was recently completed by GTM Research, titled, *How Wealthy Are Residential Solar Customers?* The authors looked at data from over a half million buyers across the four most active states (accounting for 65% of all rooftop sales). Dividing into 7 income brackets, they find the wealthiest continue to be investors in solar. Because Californians adopted solar so early, the data suggests they have been more active than counterparts in the East.

GTM Research finds the wealthiest Californians and New Yorkers buy solar at a rate greater than their portion of all homeowners.



Although the age of the systems is not detectable, one reasonable conclusion is that states like New Jersey see more middle and lower income activity because they have enjoyed better pricing, having entered the market later. It is also possible that the combination of high energy costs and favorable state policies have made solar energy a more necessary but affordable investment for the eastern states. No matter the causes, the study finds that only 17% of earners defined as "high income" adopt solar. The vast majority – or 83% – of solar buyers are lower and middle income families.

How Affordable is Solar for Working Families?



This 83% of all buyers breaks down to 70% that study authors defined as middle income, and a laudable 13% of lower income owners that have solar. Clearly there is room to improve. Yet, it is promising that anywhere from a quarter to a third of solar adopters in each state fall below their respective median income levels. This proves we are on a path of solar "affordability".

The GTM Research study finds that nearly a third the homeowners getting relief from high utility costs earn at or below their state's median levels.

There may be a range of reasons that participation across incomes varies in the included states. For example, some states offer additional incentives in the form of tax credits, requiring sufficient tax liability. Others have more complicated electricity rate structures, making those with larger homes and probably higher incomes more likely to be negatively affected. The area cost of living is also a factor that can cause some families to think about taking fewer financial risks.

It is therefore a great sign that solar PV, a technology that just a decade ago or less was mostly valued by the richest homeowners, is already more popular with average earners.

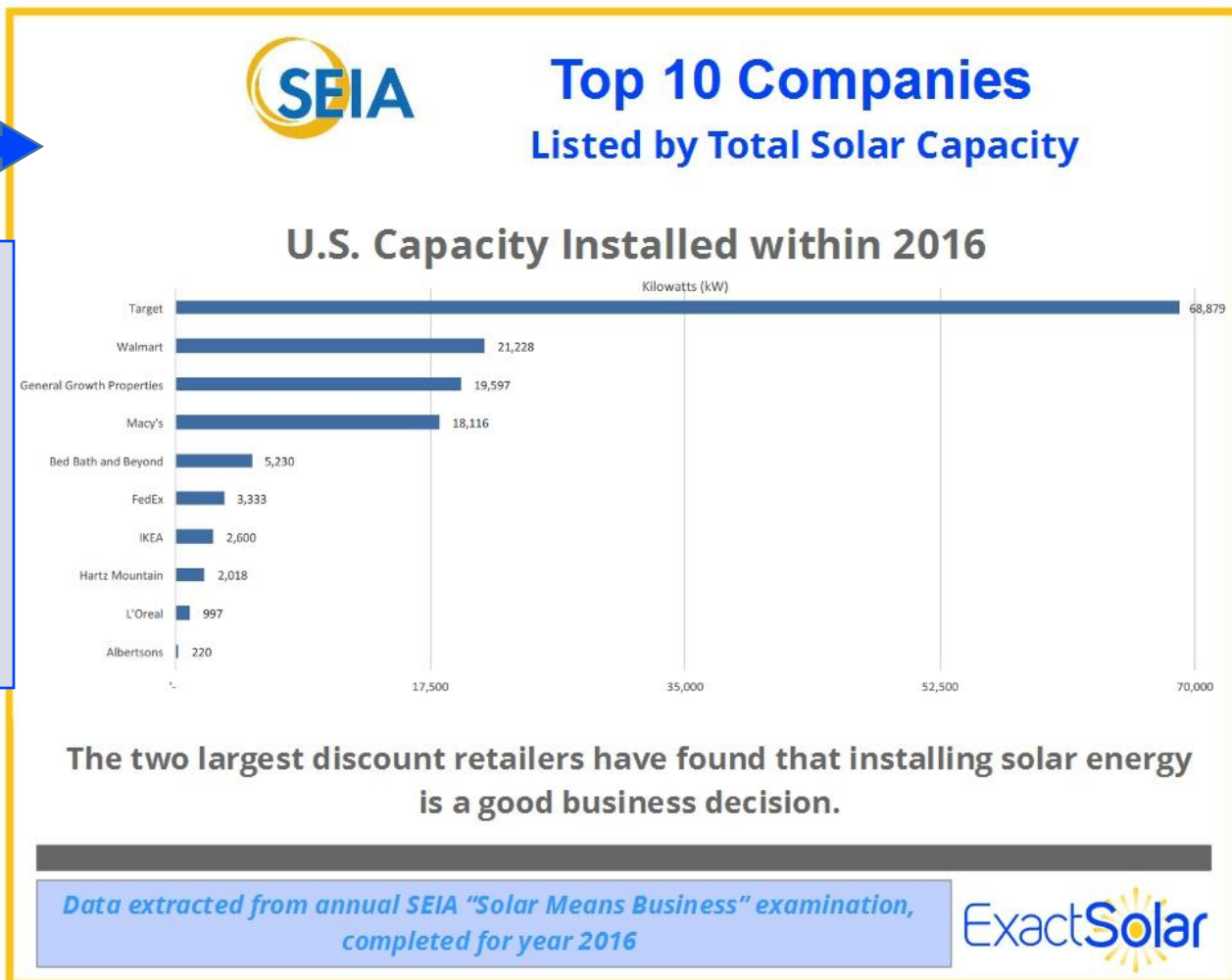
Like other revolutionary technologies that have such positive social impact, more than state and federal incentives are needed for true, organic growth. And because the solar value proposition is so desirable, there is a new catalyst these days. Businesses are buying solar.

Commercial Solar – Good for Business, Great for Everyone

As solar energy technology reaches levels of maturity, scale and market growth become even more important. Similar to cell phones, as solar participation grows it reduces costs, drives further innovation, reducing costs further. This is a vital cycle. And thanks to businesses and utilities, this has been accelerating over the past few years in the U.S. In fact, two of the most cost sensitive, low margin retailers have become the most solar friendly companies in the nation. Both Target and Walmart have increased their solar investment. These are not political or marketing decisions alone. These are business choices. Solar savings are demonstrably real for these leading companies. As they add MW of solar capacity, everyone benefits from passed along savings to customers to a further invigorated solar market.



Per the Solar Energy Industries Association (SEIA), 100s of MW were added by Target and Walmart in 2016 alone. All solar from business installations now exceeds 1GW.



Beyond adding capacity and scale, driving costs further down, business activity in solar provides other benefits, too. Investors and financial institutions are participating to a greater degree. Large solar projects attract added competition, but also better opportunities for profits, even if that comes with smaller margins. More successful lending leads to a greater tolerance for taking risks, for example with middle and lower income families.

In fact, the business case for solar has become so attractive that one company, Apple, is taking the next step. The company has created Apple Energy. That division is seeking the ability to sell the renewable energy it generates to other businesses and consumers at retail prices.

What Does It All Mean?

To anyone considering a rooftop solar energy system, the past, present, and future look bright. No longer are only the wealthiest benefitting from the technology. Families of modest means and income are increasingly finding solar affordable and getting energy cost relief. Trends that created affordable solar are only growing, for the most part:

- *Already, a third of homes to go solar represent below median incomes.*
- *States are finding ways to assist an even greater number of middle and lower income homeowners.*
- *Business and industry are doing their part, not just for publicity. They also are finding the financial benefits convincing.*
- *The risks have never been lower and the rewards have never been greater for the average homeowner. Why not check out solar?*

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