

Kevala Whitepaper

Income Distribution of Rooftop Solar Customers

It used to be rare to see solar panels shining from residential rooftops, but in the last two years the sight has become much more common. As solar installations have doubled, installations are increasingly located in predominantly moderate-income neighborhoods. This demographic shift was what was intended when the California Solar Initiative (CSI), a state incentive program designed to create a solar market, started more than ten years ago. In this regard the program has been a success - effective and with bipartisan support from California's past two governors resulting in 3451 megawatts (MW) of solar.¹ According to our analysis, most California installations, sixty-five (65) percent, are now deployed to homeowners living in zip codes where the median owner occupied income is less than \$70,000 per year, according to the 2000 census – the last year owner occupied income was surveyed.

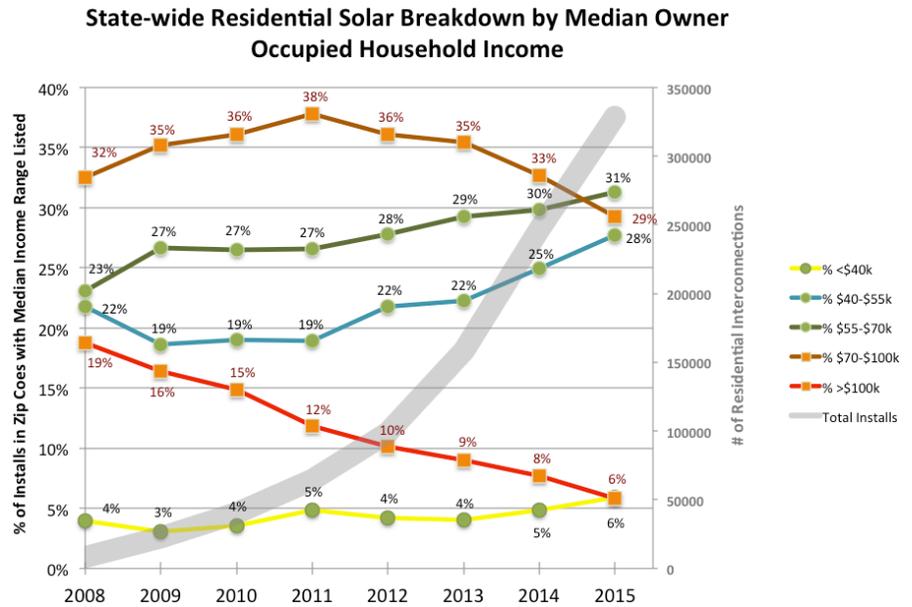


Figure 1 - Household income and solar adoption 2008-2015, California

Using CSI and investor-owned utility interconnection data, we associated the zip code of the solar installation with the median owner-occupied income associated with the same zip code. **Since 2014, 59% of residential solar installations were in zip codes with median incomes of \$40,000 - \$70,000 per year.**

As can be seen in Figure 1, the low penetration of solar in the lowest-income zip codes has remained relative constant over time at roughly 5%, while the highest-income areas have declined from 19% of systems in 2008 to 6% in 2015. This relatively flat adoption rate in low-income areas should be the subject of further investigation and may be due to a number of factors, including credit and savings requirements of available financing alternatives for low-income ratepayers. It is worth noting the Multi-family Affordable Solar Housing (MASH) program and the Single-family Affordable Solar Homes (SASH) program are designed to bring solar to lower-income Californians. These programs are relatively nascent and new legislation seeks to further drive low-income solar adoption.²

The numbers show a decline in the penetration ratio for high-income zip codes as compared to the moderate-income zip codes. This may be the result of lower prices making solar more attainable for people in moderate-income zip codes. Moreover, people living in the highest-income zip codes may be

¹ <http://www.gosolarcalifornia.ca.gov/>

² AB 693 (Eggman) passed in 2015 and aims to fund deeper penetration of solar into low-income communities.

less sensitive to high electricity bills and therefore not as motivated to invest in solar. Whatever the reason, relative solar penetration has dropped about 2% a year in zip codes with median owner occupied income of greater than \$100,000 since 2008.

This same story is evident in both inland and coastal communities. Looking at both Fresno and Los Angeles Counties we see similar trends.

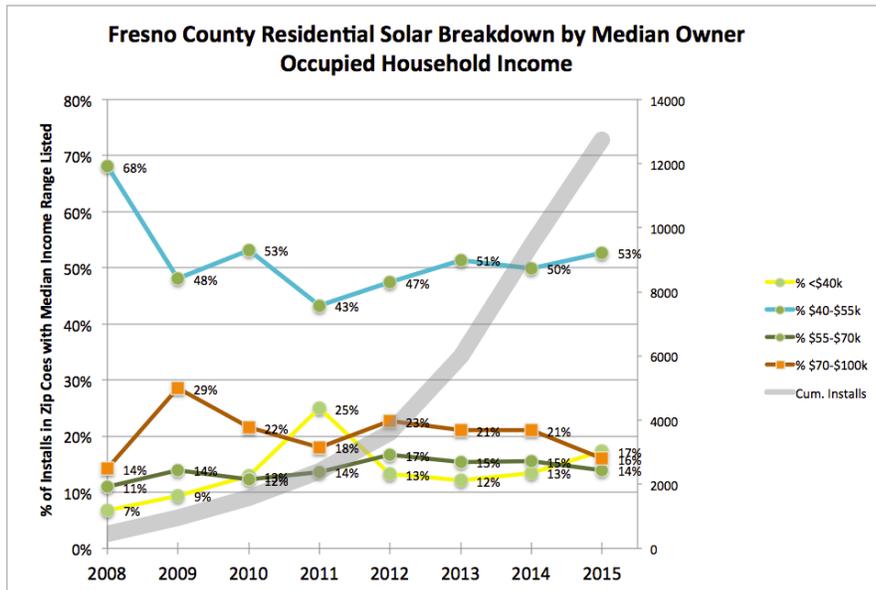


Figure 3 – Fresno County household income and solar adoption 2008-2015, California

In Fresno, zip codes with homeowner-median-income of \$40,000 - \$55,000 consistently represented half the solar deployment. Income segments below \$55,000 were the only segments with growing solar market share since 2014. The highest median-income group (\$70,000-100,000) is the only group to markedly decline in relative penetration since 2009 from 29% of the total to 16% this year, while those in zip codes with median-income above \$55,000 have remained relatively flat.

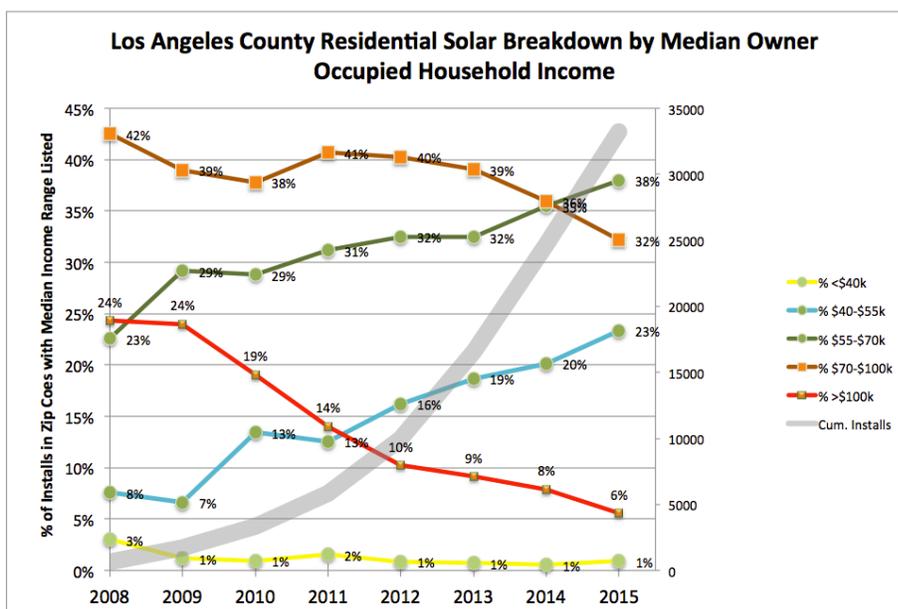


Figure 4 – Los Angeles County household income and solar adoption 2008-2015, California

In Los Angeles County³ we see a steep decline (down 28%) across the two upper-income zip code bins (above \$70,000) and very strong growth (up 30%) across the two moderate-income zip code bins (between \$40,000 – \$70,000) over the program life. Deployments in the lowest-income zip codes are essentially flat since 2009.

These trends illustrate what makes intuitive sense – the market for solar is strongest among people where a 10-20% savings in their electricity costs is meaningful enough to drive investment in alternative electricity supplies. This adoption rate may also be influenced by the ability to “lock in” those savings over time and not being subject to unknown rate increases, a common point made in the marketing of residential solar systems.

Regulatory policies are likely to continue to affect the value proposition for solar in the state. This complicates the ability to predict solar adoption in moderate-income zip codes in the future.

Note: See Appendix A for additional data and county-level details across other California geographies.

³ This data does not include systems for the Los Angeles Department of Water and Power