

Solar Marketing: The Future of the Residential Solar Industry



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Abstract

The spark for this project began with the intention to better understand the residential solar market in terms of current marketing strategies being employed as well as evaluating the top players to see what is or isn't working in the industry. After some initial research and finding little information on U.S. residential solar marketing strategies, the goal of this project became to create a marketing analysis with actionable insights and recommendations that solar companies can utilize in their own marketing plans. In accomplishing this goal, the project includes existing research on residential solar marketing, some current strategies by solar companies, an interview with a solar professional, key demographic trends, and finally specific insights on how to accelerate growth. The outcome of this project is a general marketing analysis of the residential solar industry with information and recommendations that any solar company could use to drive growth and further comprehend emerging demographic trends specific to purchasing solar panels.

Introduction

From my research, I have not found much information on U.S. residential solar industry marketing strategies that can drive growth and better target various demographics. By doing research independently of any one residential solar company on some of the best marketing currently available, it will be easier to cover a wide range of strategies and identify specific elements that are successful in accelerating growth and capturing targeted demographics. Several articles have broadly suggested ways for solar companies to employ marketing strategies including basic things like content creation, SEO, pay-per-click, email marketing, social media marketing, etc. These are vital components of a successful marketing strategy, yet many of these articles do not evaluate specific residential solar marketing tactics and the successes or failures that ensue. The goal of this research project is to become much more specific and targeted not only in evaluating marketing strategies used by current residential solar companies but also in identifying the marketing that needs to be done to acquire a range of different customers from various demographics and backgrounds.

Background

I have not found much research specifically on marketing strategies for the U.S. residential solar industry that can be actively applied. A study by the National Renewable Energy Laboratory (NREL) found that aggressive sales and advertising saw very low "click" rates and that three potential strategies for increasing lead generations could be to "frame solar benefits as an avoided loss or as savings, how to frame the timing of solar benefits (monthly, annual, or lifetime savings), and the amount of information displayed in the advertisement."ⁱ Though not the most recent report, these results exemplify the need for improved marketing strategies across

the residential solar industry in order to boost sales. Another study on how various framing strategies can impact consumer demand for solar panels found that emphasizing the financial benefits of solar did not have a powerful influence. Instead, interest in driving the adoption of solar primarily comes from underlying consumer motivations and predispositions (i.e., perceived social support, consumer innovativeness, and personal pro-environmental norms).ⁱⁱ Clearly, further research on what drives consumer demand for residential solar panels is needed to identify areas that are both lacking and excelling so that a more holistic marketing approach can be employed. Building from research like these few studies and bringing together a more current and encompassing marketing analysis report including actionable insights and recommendations is the goal of this project.

Procedures

With the ultimate intention to get more people to purchase solar through improved marketing strategies, understanding target demographics is necessary. First, I started with secondary research to get a general background of the residential solar industry. This included overall market size, growth rate, trends, distribution, cost structure, and target audiences. Also, I searched for any existing reports on improving marketing strategies for residential solar. After discovering opportunities to boost growth utilizing heightened marketing strategies, I set out to determine what strategies some of the top residential solar companies were already employing. Besides my interviews with individuals at Sunrun, I was unable to determine much about other company's marketing strategies outside of online research. In my interviews with marketing professionals at Sunrun, I asked these specific 10 questions:

1. Is there anything superior to your product that you could use as a selling point?
2. What kind of advertising do you employ? Are the ads primarily social, digital like SEO or paid search, TV, etc.? (What channels...)
3. Do you have any specific target demographics? Age, gender, income, location, or anything else of significance?
4. What is your general customer persona?
5. How do you differentiate yourself from competitors? What are Sunrun's main selling points? Is it savings, environmental benefits, or something else?
6. Do you employ any framing strategies to help sell solar to people?
7. Do you have a marketing strategy to follow? Is there anything you can tell me about that?
8. Where do you see there could be improvements in the solar marketing space?
9. Do you do your marketing in-house or with other companies and why? How has that helped or hindered your marketing strategy?
10. How have you seen changes in marketing emerge with COVID?

Yet, for other companies I gathered information across online channels from paid search to social media strategies to try and garner a better understanding of current marketing approaches by these top players. Next, I delved deeper into demographic information among solar buyers to determine opportunities for more specific targeting strategies within the industry. For example, some of the demographics I investigated in terms of solar buyers included gender, race, urbanity,

and age. Finally, I accumulated all this research to provide my recommendations and insights to help improve overall marketing strategies for the residential solar industry.

Results

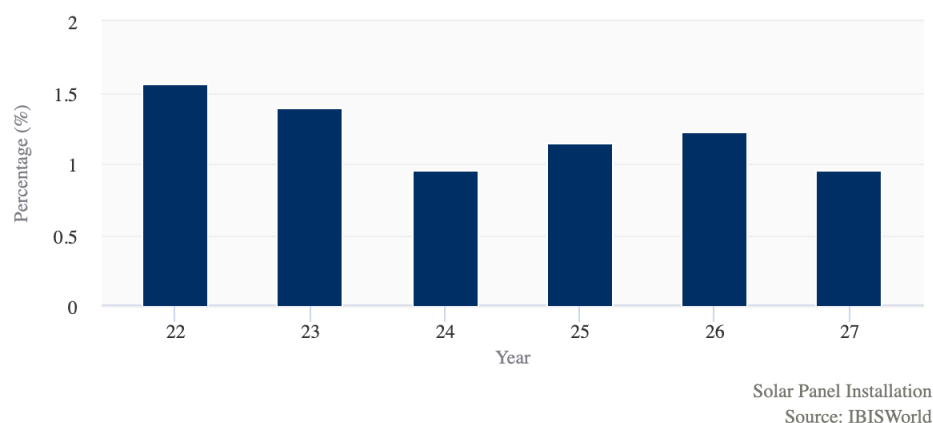
Overview

The residential solar industry is set to grow with developments in technology and reductions in cost driving more purchases. Consumers are generally becoming more willing to purchase solar panels for several reasons including financial benefits and environmental concerns. Some of the key takeaways from the secondary research include how framing strategies can powerfully impact consumers and how there are opportunities to target more women. Framing strategies centered around what can be gained with solar versus what would be lost without it is received better by consumers. Communicating perceived social benefits for going solar, like tax breaks or community group-buys also promotes stronger marketing.ⁱⁱⁱ Another striking opportunity for residential solar marketing is to target more women directly. Since about 77% of solar shoppers are male, more targeted messaging towards women could expand the industry and reach mass-market appeal.^{iv} This gender imbalance provides an opportunity within the residential solar space to develop new messaging and heightened targeting towards more females to attract this underrepresented demographic.

Industry Analysis

Although projections for the residential solar industry estimated higher performance, COVID slowed overall growth. With annual revenue of nearly \$11 billion and an annual growth rate of 1.1% through 2027, the industry is obviously recovering from the significant impacts of the pandemic.^v Still, growth has been driven and will likely continue to be driven by technological progress, changing perceptions that encourage energy efficiency, lower prices for solar panels, and favorable government policies. Various contracts and financing deals are making residential solar more enticing to consumers as they can better rationalize purchasing a home PV system given the benefits. Also, as electrical prices continue to rise, consumers and businesses have turned more to solar power to help alleviate energy costs. A rebounding solar industry will still have to rely significantly on government aid, specifically regarding an extension of tax credits that will expire in 2024. Competition within the solar space is spread across many smaller companies, with the top four businesses accounting for less than 30% of industry revenue. However, Sunrun—the largest US player in the industry—acquired Vivint Solar which is likely to lead to further consolidation among smaller companies to remain competitive. The top two players account for about 30% of the US market share, with Sunrun and SolarCity (a Tesla subsidiary) at the helm.^{vi}

Industry Outlook 2022–2027



Secondary Research

Initial research led me to articles and blog posts that boasted marketing strategies “specific” to residential solar, but only offered general tactics like SEO, paid search, social media marketing, or content marketing. While these aren’t bad methods of marketing, the actual specifics of the residential solar industry weren’t applied. Better targeted advertising and marketing strategies would require insights from research based on facts and data. Further research uncovered several reports pertaining to improving framing strategies, better targeting of untapped demographics, evaluating solar buyers in terms of income, and determining various implications of adopters of solar.

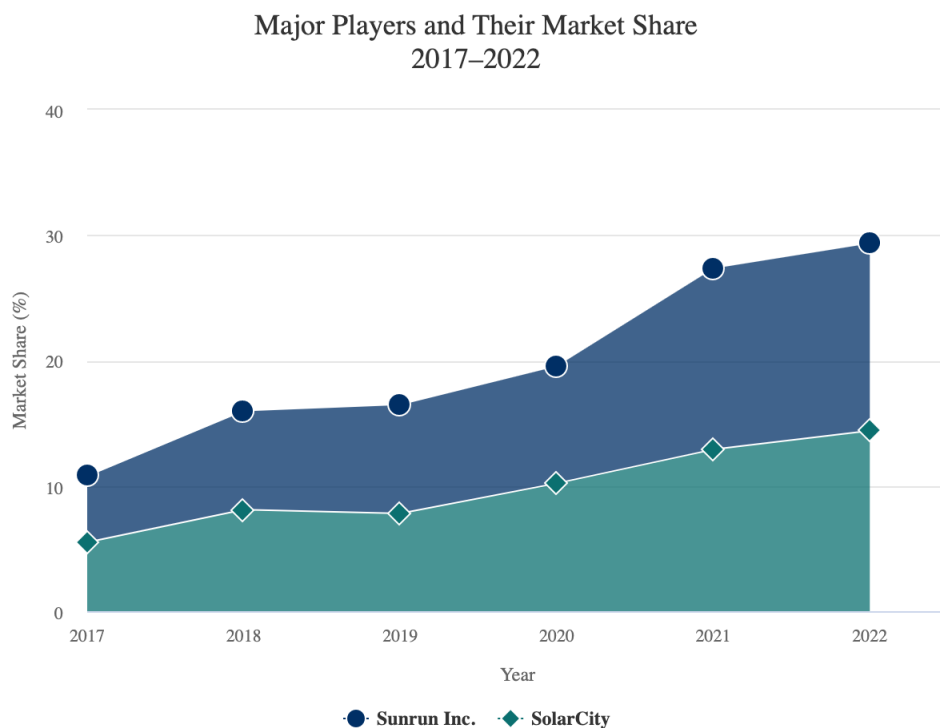
Regarding framing and messaging strategies, a striking find is that “loss framing may be an effective strategy to promote energy-efficient goods.” Part of this NREL study evaluates how consumers psychologically view risk-seeking purchase behaviors, asserting that the pain of potential loss is more powerful than the equivalent pleasure of potential gain. Another aspect in this study tested how the time frame for solar benefits could impact consumer interest. While the studies did not exemplify any significant results concerning framing strategies for either benefit/loss advertising or varying temporal distances, one takeaway from testing the amount of information in the ads found that simple savings projections made consumers less skeptical compared to detailed ones.^{vii}

An iScience study looks at how income-targeted marketing—skewed more towards high-income customers—poses challenges in efforts to build a more equitable residential solar adoption solution. The basic premise of this study is that low- and middle-income households receive less targeting and therefore receive fewer quotes for solar PV adoption. Although most solar adopters are from high-income households, the study suggests a more holistic marketing approach to boost sales by leveraging certain government policies and community solar programs as targeted incentives.^{viii}

Another NREL study focusing on the evolution of consumer information preferences with market maturity in solar PV adoption finds marked differences between solar information coming from local utilities versus more cosmopolitan sources. The study ultimately found that local information preferences across both young and old solar markets yield more stable results with adoption versus larger-scale sources of information.^{ix}

A study funded by the US Department of Energy investigated evolving customer segments in the solar photovoltaics market found that “adopters appear to be increasingly pursuing solar installations not just in an effort to contribute to mitigating environmental challenges, but also because it is an economically attractive investment option.” The report also delves into buyers versus leasers and what motivates these segments whether it be recent increases in electricity prices, planning a remodel project, or thinking about retirement planning. One key takeaway from this is that someone is more likely to **lease** a PV solar system when electricity prices rise or from radio/TV ads versus someone who is more likely to **buy** solar when thinking about retirement planning or planning a remodel project.^x

Top Players



Solar Panel Installation
Source: IBISWorld

The top two players in the residential solar industry are Sunrun and SolarCity (Tesla-owned) with around 15% market share each. Tesla purchased SolarCity in 2016, setting the stage for larger solar companies to ensue. While the industry is cluttered with lots of competition at the local level, trends indicate that companies will begin to consolidate to compete with these larger solar players.

Sunrun is the largest residential solar installation company in the US and is involved in the design, development, installation, sale, ownership, and maintenance of solar systems. Along with providing solar panels, Sunrun offers home batteries for energy storage. Sunrun can drive distribution by marketing solar service offerings through several channels, including its diverse partner network and direct-to-consumer operations. The company creates revenue from operating leases and incentives, and from solar energy systems and product sales. Also, Sunrun has partnered with Ford to dually promote the F-150 Lightning and the holistic solar service of PV energy storage, and EV charging.

Tesla is the next largest residential solar installation company in the US and offers a similar holistic system with solar panels, solar roofs, and home battery backup. Combined with SolarCity's traditional capabilities as a solar installer and Tesla's sleek technological prowess, the two companies are set to be a dominant player in the solar industry. Furthermore, Tesla has stated that it will offer the lowest cost solar installation on the US market at just \$1.49 per watt.^{xi} In terms of marketing, Tesla does not officially employ any.

Social Media Analysis

Instagram

1. Sunrun



sunrunsolar

Follow



797 posts

20k followers

6,043 following

Sunrun Solar 🌞

Product/service

Maximize your F-150 Lightning™ with at-home charging

sun.run/FordF150

a.

- i. Low engagement with posts and seems to have an inconsistent voice/content

- ii. Posts rarely reach more than 400 likes, videos have more impressions with a bit over 1000 views
- iii. Very few comments – do not respond to followers

2. Tesla Energy



teslaenergy

Follow



38 posts

14.1k followers

4 following

Tesla Energy

Energy Company

Solar panels, batteries and sustainable energy.

tesla.com/energy

b.

- iv. Low engagement as well with inconsistent posting and little brand voice
- v. Posts infrequently and does not ever get much more than 1000 likes
- vi. Not many comments and no response from Tesla

3. SunPower



sunpower

Follow



708 posts

27.6k followers

534 following

SunPower

Changing the way our world is powered by making solar and storage more accessible to everyone.

✉ Need help? customersuccess@sunpower.com

us.sunpower.com/blog

c.

- vii. Low engagement, average around 150 likes per post
- viii. Posts more frequently and engages some with upset customers, however, does not manage trolls
- ix. Tries to engage with consumers

Overall, social accounts for residential solar companies are lacking engagement and effective consumer interactions. While I only evaluated Instagram accounts, other social accounts like Facebook and Twitter had even lower engagement and followers.

Demographic Trends

The residential solar industry has somewhat rigid demographics that marketing typically skews towards. Some of the most common demographics in the US include people that are generally

white, middle-aged, primarily English-speaking, live in rural areas, have higher education levels, have higher incomes, and live in higher-value homes. However, the rooftop solar market is becoming more equitable over time so marketing toward more underrepresented groups is necessary. Low- and moderate-income households are adopting more solar—in 2020 about 41% of adopters earned less than 120% of their area's median income. In general, solar buyers' incomes skew high relative to the US population standing at \$115K versus a median of \$63K for all US households.^{xii}

Interview with Sunrun

Mike Dits

Some key consumer takeaways from my interview with Mike Dits, an Energy Consultant at Sunrun, include differences between young and old homeowners, fears when buying solar, and general impacts COVID had on sales. When asked about segmenting customers and delivering different messaging to each target, Dits offered insights from his personal experiences of selling solar panels. In segmenting a neighborhood or local group, he immediately looks at the age of homeowners since younger owners see clean energy as more embraceable, which makes a conversation about going solar easier to have. Contrarily, homeowners that are 65 and older tend to be a harder sell for solar because they generally do not want change. Additionally, one of the biggest factors when considering going solar for consumers is cost. Dits stated that a substantial hurdle in the selling process is convincing customers that the initial cost will be worthwhile and that they won't get screwed over with poor equipment or bad deals.

Conclusions

Improving Framing Strategies

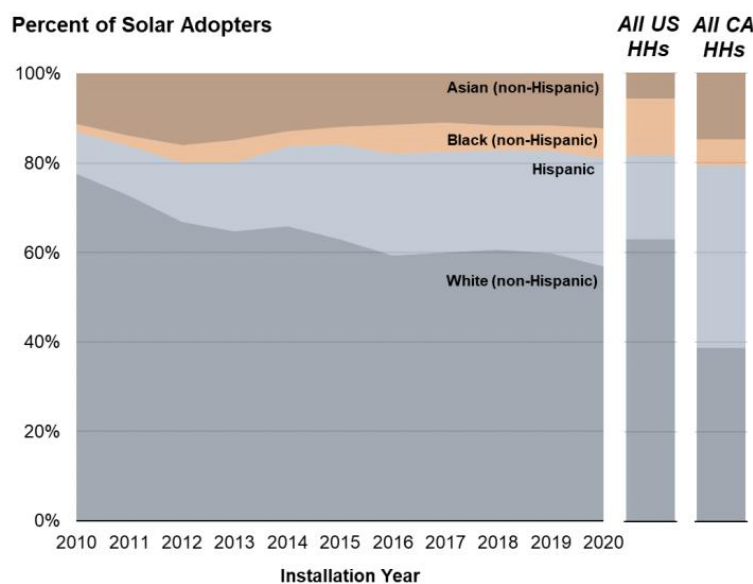
Although the NREL study did not find any significant results regarding positive versus negative framing strategies for residential solar, the psychological component holds value for further testing. Loss framing has the potential to better influence residential solar consumers since the pain of losing out on a deal or valuable purchase is more powerful than the equivalent pleasure of the potential gain. Therefore, I suggest that residential solar companies do their own A/B testing on this concept with advertising trying to be consistent as possible while only changing the framing of the ad between positive benefits and negative losses. If marketers within residential solar can better understand what motivates people to purchase solar, then ads will be able to yield better results.

Altering messaging strategies from those currently employed to become simpler in terms of information along with highlighting truthful benefits is crucial for residential solar companies. Since the onset of the pandemic, solar companies have had to adapt to a more online model for selling rather than in-person sales calls. Though this provides an opportunity to expand digital selling, many solar companies utilize third-party lead generators that post ads on their behalf to

find potential customers.^{xiii} However, the reality with these advertisements is that many were offering fake deals or just straight-up false information. Trust plays a huge role when it comes to deciding to purchase or lease a solar unit, especially with high costs and potential risks involved. Thereby, I suggest that residential solar marketers ensure that lead-generators are not posting false information on their behalf or better yet, take more control of their own advertising strategies.

Tapping into Demographic Opportunities

Since residential solar market demographics tend to skew towards specific qualities—those that have higher incomes, are middle-aged, have higher education levels, are white, and live in rural areas—there is a clear gap in the market to cater to underrepresented demographics. Disparities among racial and ethnic groups are particularly significant when it comes to rooftop solar installations. Solar installations for census tracts that are over 50% black or Hispanic have “significantly less” rooftop solar installations than census tracts that are majority white.^{xiv} Thereby, residential solar companies need to pay attention to these inequities by adjusting their targeting and overall marketing strategies. To better establish an equitable distribution of solar adopters, I suggest that residential solar companies expand their marketing to more specifically target these overlooked demographics.



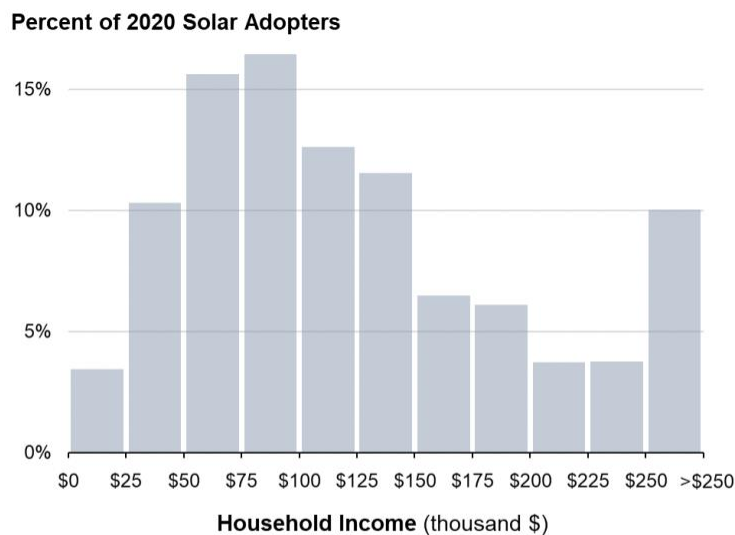
Notes: Distributions for solar adopters are based on the primary householder.



Targeting strategies to generate more leads from these underrepresented groups would be the first step to a more equitable solar installation process. Proportionally representing these groups of people across various demographics may be difficult so marketing strategies that rely on consumer data are vital.

Holistic Income Targeting

Similarly, inequities exist among solar adopters based on household incomes. As seen below, solar adopters span all household income levels with a large portion of adopters considered as “middle income,” with one-third having incomes ranging from \$50-100k range. Still, this distribution has a long upper tail with 17% of solar adopters over the \$200k range.^{xv} A study on income-targeted marketing and its impact on solar adoption states that “income-targeted marketing explains about one-quarter of the difference in PV adoption rates between LMI and higher-income households.”^{xvi} While part of the issue is purely about cost and a lack of policies in place to support low to medium-income households, marketing clearly does play a role in determining what sorts of homes get quotes and who then becomes more likely to purchase solar.



* Notes: Experian does not differentiate income estimates >\$250k, thus all households above that level are aggregated, leading to the spike on the right-hand side of the distribution



Given these disparities in income among solar adopters, marketers can better leverage government subsidies in their advertising and offers when targeting low to medium-income households. Obviously, government programs and incentives vary state by state so marketing campaigns would have to be regional when targeting these specific households. Some of the top states for solar tax incentives include several northeast states like New York, Rhode Island, Connecticut, and Maryland.^{xvii}

Better Establish Local Marketing

Since local marketing efforts versus cosmopolitan messaging tend to be more trusted by consumers of residential solar, marketers need to be more cognizant and proactive in utilizing local sources when possible. Earned media sources would be ideal ways to better gain trust with solar consumers compared to information coming from larger sources. Marketing efforts that

come from larger companies could be received poorly because of a lack of trust. I suggest that residential solar companies put more effort into establishing localized marketing through partnerships with local news channels, local information sources, and more personalized advertising based on regional factors to not only gain trust with consumers but also convert more sales.

Consumer Segments—Leasers vs. Buyers and Beyond

Looking at what drives consumer segments to either lease or buy solar, a common theme emerges from the two: economic incentives. While some consumers will go solar simply because it is the environmentally friendly thing to do, others look for economic benefits and how much money they could be saving. Understanding the electricity market along with other factors like when a consumer is planning to remodel or upgrade their home is essential to deliver relevant and highly targeted marketing campaigns that would likely boost conversion rates. Also, knowing whether a customer is looking to lease or buy a solar PV system will help determine the type of marketing needed to better convince them to adopt.

Furthermore, instead of creating marketing messages that appeal to the masses, a better strategy could be to specifically tailor more personal advertising based on psychological inclinations. An NREL study states that “solar providers could target innovative consumers with messaging about advances in PV technology or provide messaging about the environmental benefits of PV to consumers with pro-environmental inclinations. This is not to suggest that ads should avoid describing the financial benefits of PV altogether; rather such information may be of greater interest to individuals with a greater proclivity to adopt.”^{xviii} Therefore, marketers in residential solar need to be aware of what is driving consumer decisions to best deliver messaging that will resonate with them. A company could perform A/B testing with an advertisement where one highlights the financial benefits of adopting solar whereas the other emphasizes the environmental gains from going solar. Then, if a consumer engages with one ad over the other, the company could retarget more specific ads catered to the customer’s preference.

Social Media Expansion

Residential solar companies need to expand their positions on social media to better engage and communicate with consumers. Since many millennials and gen Z individuals are on social channels and could be potential buyers either now or soon, it is imperative to establish relationships with them early to then be top of mind when they do decide to adopt solar. Most solar companies do not seem to have dedicated social media teams to deal with the complexities of these social platforms, which is a missed opportunity. I suggest that residential solar companies begin to take social media more seriously and hire qualified people to run their accounts who can engage consumers.

Further Develop Digital Selling

Understanding the necessary rise of digital selling thanks to COVID, I suggest that residential solar companies further expand online selling capabilities. While many companies have already had to transition to a more online selling strategy, further developing virtual sales calls and meetings with customers would increase efficiency and likely boost sales.

Contributing to Sustainability Issues

Although this project does not directly contribute to sustainability issues, it can be beneficial to residential solar companies looking for further insights on consumers and emerging trends. Therefore, if these insights could help sell more solar systems, then the project would be contributing to sustainability issues by making more homes powered by solar energy.

Summation

Overall, this project has offered several insights into the residential solar market along with demographic trends on consumers. Some key takeaways from the results of this project are that solar marketers need to develop social media capabilities, establish more equitable marketing in terms of income and race, understand consumer preferences for more personalized messaging, and be more flexible when it comes to evaluating target segments. Keeping these recommendations in mind, solar marketers will be able to simultaneously create a more equitable solar process and increase growth within the residential solar market.

Appendix



Investigating residential solar in my local neighborhood

ⁱ Nrel.gov. 2021. *Solar Energy Evolution and Diffusion Studies: 2014–2016*. [online] Available at: <<https://www.nrel.gov/solar/market-research-analysis/2014-2016-study.html>>.

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ⁱⁱⁱ ScienceDirect. 2018. *Accelerating demand for residential solar photovoltaics: Can simple framing strategies increase consumer interest?*. [online] Available at: <<https://www.sciencedirect.com/science/article/pii/S0959378018301894>>.

^{iv} Pickerel, Kelly. "Energysage Market Report Finds Solar Shoppers Are Mostly Male". *Solar Power World*, 2021, <https://www.solarpowerworldonline.com/2017/04/energysage-market-report-finds-solar-shoppers-mostly-male/>.

^v Al Bari, Shahool. "Solar Panel Installation". *My-Ibisworld-Com.Proxy.Library.Nd.Edu*, 2022, <https://my-ibisworld-com.proxy.library.nd.edu/us/en/industry-specialized/od4494/about>.

^{vi} Al Bari, Shahool. "Solar Panel Installation". *My-Ibisworld-Com.Proxy.Library.Nd.Edu*, 2022, <https://my-ibisworld-com.proxy.library.nd.edu/us/en/industry-specialized/od4494/about>.

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