

Solar Power:

Friend or Foe? What Californians Think About Solar Energies

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This thesis examines the various health incentives clean air provides and the many rebates available for solar panels. Health incentives and monetary rebates are two important facets of solar panels that can be used as huge selling points. These two facets are thought to be the guiding force behind encouraging Californians to purchase more solar panels. This thesis uses interviews with citizens to show that people are not familiar with the negative health effects associated with the use of coal burning power plants and the multitude of rebates available to them. The interview process consisted of two groups: a control and experimental group. The individuals' interviewed were a mixture of solar power users and traditional fuel users. Based on the assumption that some people are not very informed, we created an experimental group that provided more information to these individuals. The interview was set up to explore this assumption and discover any truth behind this claim. Ultimately my research aimed to discover if Californians are self-interested and have no motivation to help the environment through the use of solar panels.

“Every mammal on this planet instinctively develops a natural equilibrium with the surrounding environment but... humans do not. You move to an area and you multiply and multiply until every natural resource is consumed and the only way you can survive is to spread to another area. There is another organism on this planet that follows the same pattern. Do you know what it is? A virus. Human beings are a disease, a cancer of this planet.”

–Agent Smith, *The Matrix* (1999)

Climate change is a threat that affects the American way of life; it gives us longer, hotter summers and displaces people across the country. Many scientists believe that it is too late to stop climate change and that we must learn how to survive in the new atmospheric conditions. Making the switch from fossil fuels to renewable energies is one way to survive the changing climate and keep particulate matter out of the air. My research is important because it will help American politicians create a renewable energy policy and it will provide insight on techniques that can be used to protect the environment. This paper will utilize terms like tax

incentives and public actors, however even though it is rooted in political science there will be terms used that are specific to the field of environmental science. Terms like ‘photovoltaic panels’ which are glass cells that convert light into electricity, ‘respiratory health’ which is health directly associated with your lungs, ‘particulate matter’ which adds to the problem of air pollution, and ‘renewable energy’ which is energy that is derived from a non-fossil fuel based source.

This paper will explore how monetary rebates and health incentives are necessary for people to help the environment through purchasing solar panels. Additional research will show that due to the inher-

ent self-interest of the general population, incentives and rebates are necessary to spread the usage of renewable energies. This is the expectation because people will not uproot their lifestyles if there is no type of benefit to be earned. Unfortunately, the *hoi polloi* does not think about multiple generations in the future, they only think of themselves. This being said, Californians must see a benefit in their lifetimes so they can make a change.

Aside from the self-interest of the general population, there is a clear cause and effect relationship at play here. I believe health incentives and government funded monetary rebates associated with solar panels will push more Californians to purchase solar panels. This ultimately has the effect of allowing homeowners to rely less on coal burning power plants. This in turn keeps smog out of the air and benefits citizens' respiratory health. It also allows pushes citizens to utilize government rebates such as the "California Solar Initiative Rebate," which decreases the cost of owning and maintaining solar panels.

The subfield of the research is American Politics with a focus on environmental politics, because it will only concentrate on rebates and solar purchases made here in the U.S. All research will be related to how Californians are affected by the various regulatory institutions that control these rebate and incentive programs. Government institutions have a significant amount of oversight over the environment. For example, "[s]ince more than one million acres of the Mojave have already been excluded from...development by a law sponsored by U.S. Senator Diane Feinstein...newly proposed [power] plants have already

been dropped" (Stein, 2012). In this single piece of federal legislation, we see the wide-ranging influence of politics in regards to issues of energy and the environment.

The question of this thesis paper examines is "do the health incentives and monetary rebates associated with renewable energy in 21st century America make Californians buy more solar panels". The expectation is that both rebates and health incentives are necessary for Californians to purchase solar panels. The research has led to this conclusion because without monetary incentives, Californians refrain from the purchase of high priced items. Also if there is no direct effect to their personal health, they will not take steps to better the environment and air pollution.

Californians should buy more solar panels because they are good for the environment, however there are other reasons that will affect their motivation. Due to the inherent self-interest of the general population, incentives and rebates are necessary to spread the usage of renewable energies. As such, going back to the main cause and effect of the argument, monetary rebates and health incentives should be the guiding force behind the spread of photovoltaic panels here in California. Without them, we would continue to utilize coal burning power plants exclusively.

The next portion of the thesis delves into past research on the various health incentives clean air provides and the plethora of government rebates available for solar energy. Respiratory health is important to the longevity of life and rebates are necessary for Californians to purchase big-ticket items.

ACKNOWLEDGEMENT

Prima facie, I am grateful to God for the good health and wellbeing that were necessary to complete this thesis paper. I wish to express my sincere thanks to Dr. Jill Hargis, Principal of the Faculty, for providing me with all the necessary facilities for the research.

I place on record, my sincere thank you to Dr. Sharon Hilles, Dean of the Faculty, for the continuous encouragement. I am also grateful to Dr. Mario Guerrero, assistant professor, in the Department of Political Science. I am extremely thankful and indebted to him for sharing expertise, sincerity and valuable guidance and encouragement extended to me.

I take this opportunity to express gratitude to all of the Department faculty members for their help and support. I also thank my mother, Marnita Tinsley for the unceasing encouragement, support and attention. I am also grateful to my aunt, Christina Wallace who supported me through this venture. Lastly I am grateful to my beautiful girlfriend Jewelayna Fisk who has stayed up till the early morning with me editing my paper.

I also place on record, my sense of gratitude to one and all, who directly or indirectly, have lent their hand in this venture.

Shortly thereafter, the literature review focuses on how health incentives and rebates motivate Californians to purchase more solar panels. Good health and affordable prices are key factors in the purchasing of solar panels here in California. However, once Californians understand that solar panels provide positive health effects, and have great rebates, they will purchase more of them, which in turn will provide positive effects for the environment.

Literature Review

Incentives and rebate programs are necessary for the purchase of renewable energy. The compositions on incentives and rebate programs here in California are limited. However, the literature reveals trends that exist in relation to motivating factors with solar panel purchases. This research explores the incentives and rebates that make it economically viable for Californians to afford and want solar panels. My research is important because it will help American politicians create a renewable energy policy and it will provide insight on techniques that can be used to protect the environment.

The literature review investigates two areas of scholarship. The first portion delves into research on the various health incentives clean air provides, and the plethora of government rebates available for solar energy. Respiratory health is important to the longevity of life and rebates are necessary for Californians to purchase big-ticket items. The second portion focuses on how health incentives and rebates motivate Californians to purchase more solar panels. Good health and affordable prices are key factors in the purchasing of solar panels here in California. However, once Californians understand that solar panels provide positive health effects, and have great rebates, they will purchase more of them, which in turn will provide positive effects for the environment.

Health Incentives

Photovoltaic panels yield many positive health effects, but my paper will only cover the respiratory benefits of the panels. Although the literature is extensive in terms of which respiratory benefits solar panels may provide, this section briefly covers a few key benefits. The Union of Concerned Scientists (UCS) found that the burning of coal power plants is linked to breathing problems, which lead to missed workdays and increases the overall costs of healthcare. Energy generation via solar panels does not cause air pollution, so the negative respiratory

effects are non-existent with this type of energy generation. The UCS also found that energy generation that utilizes fossil fuels contaminates drinking water and has a plethora of other negative effects on the environment, while the generation of energy using solar panels has no negative effects on the environment (Rogers, 2015).

Similar to the UCS, Taylor gives data gathered on how weak policy in California keeps greenhouse gas levels higher than they should be. Taylor (2008) states, "The unprecedented scale of the technological transformation required to reduce greenhouse gas emissions to "safe" levels...necessitates an emphasis on designing climate policy to foster...environmental innovation." Taylor highlights the benefits of photovoltaic cells because it gives data on dangers of greenhouse gases and how environmental innovation in the form of solar panels will shield Californians from the innate dangers associated with them.

Similar to Taylor and the UCS, Grover has data collected on the health incentives of solar panels. Grover utilized information collected by the Clean Air Task Force and the Clear Skies Act, to show the extreme amounts of particulate matter are pumped into the atmosphere from coal burning power plants. Grover (2007) goes on to say that, "As shown...the emissions reductions...will have a positive impact on a range of respiratory...health issues." A figure Grover includes shows a drastic decline in particulate matter when using solar panels, which in turn as the quote states, dramatically improves respiratory health. Grover's (2007) figure states, "The SAI is projected to reduce annual CO₂ emissions by 69 to 100 million tons in 2030. Annual NO_x emissions would be reduced by 68,000 to 99,000 tons, and SO₂ emissions would be reduced by 126,000 to 184,000 tons."

Similar to Grover, Cooney has data gathered on the positive affects of solar panels on respiratory health. And the decrease of harmful air pollutants is another benefit of PV panels. Cooney (2003) goes on to say, "The report shows...over the past 30 years, total emissions of 6 principle air pollutants have decreased by nearly 25%..." This article supports my research because it demonstrates how harmful air pollutants decreased after the installation of solar. The increase of solar panels in an area drastically decreases the harmful respiratory effects on residents. Ultimately, the literature on these respiratory benefits demonstrates that these panels actively decreases contaminates and greenhouse gases, suggesting that there are some real respiratory benefits for governments to spur citizens to adopt these technologies.

Tax Incentives

Besides the inherent health benefits of PV panels, it's also important to talk about the financial support associated with them. Purchasing solar panels is expensive to the average homeowner. The cost of the system depends on various aspects the average cost per panel here in California is around \$3 to \$9 dollars per watt. The watt refers to the individual solar cell which makes up the entire solar panel, for example a 5 kW system would cost around \$25,000-\$35,000. This steep cost is one of the main reasons homeowners need monetary rebates to help them purchase the panels, this section will go over the various financing and rebate options available to homeowners who plan on purchasing solar panels. The authors Batchelder, et al. (2006) examines if tax incentives are better for the rich or the poor. Batchelder highlights the benefits of socially beneficial projects and rebates. The authors use data gathered on the \$500 billion worth of incentives available to Californians to find that tax incentives for the rich for solar panel installation are less efficient than those for the poor (Batchelder, et al., 2006)

While Batchelder et al. found correlations between incentives for the poor versus the rich, Black discovers data gathered on rate structures and subsidies offered by the California Government. Black (2004) states, "The two most important state government incentives are the \$3.60/Watt rebate based on the AC output wattage as rated by the California Energy Commission and the 7.5% California state income tax credit based on the net after rebate cost of the system." The California Government has various programs that benefit solar power usage, however unless you do research on the various programs most people are unaware. Black's quote shows that these rate structures help to make the solar owner money which puts money into the owners pocket right away in the form of a lowered or nonexistent electricity bill. Even though Black discovered data on rate structures, there has been research done on a wide range of renewable energy rebates and incentives.

An article by Carleyolsen shows information on a wide range of RE policy, which in turn affects rebate programs. Carleyolsen (2006) states, "There is currently a complexity of public actors involved in RE development, all of whom operate according to their own agendas and with a different set of sporadic and often voluntary policies." His quantitative analysis demonstrates how the U.S. government has not updated its renewable energy policies since the 1980's. This shines light on the large disconnect that has been created between policy and rebates,

and how that affects the rebate programs offered to Californians, especially when it comes to renewable energy.

While Carleyolsen gathered data on the disconnect between rebate programs and the effect on renewable energy, Doughman gathered data on the California Solar Initiative rebate program. Doughman (2007) states, "A future where the governor's GHG-emission goals for 2050 are achieved could have the following characteristic... 78... new homes and businesses would have PV panels and/or building-integrated PV, including the evolving thin film technology." This work increases our understanding of multiple building practices that include the addition of solar panels and it gives information on rebates offered to homeowners and businesses. Due to the increased variety of solar panels, RE is becoming more relevant.

Doughman has data gathered on a specific rebate program and various building practices, while Cooney has data gathered on cooperatives or when communities get together to bring about change. Cooney (2003) states, "In late August, local government, advocacy groups, and industry assembled to educate consumers and offer discounted equipment in support of the first-of-its-kind cooperative" the cooperative was located in Sebastopol, California and the individuals involved in this venture were offered large rebates and percentages off solar panel equipment, courtesy of the California Legislature. It shows that when the government provides assistance to individuals it creates a chain reaction that spreads to various parts of cities, as a result of this Californians receive detailed information on incentives for the purchase of solar panels and due to this, more Californians purchase more solar panels.

While Cooney wrote about a state subsidized a solar panel venture here in the California, Landers (2002) has data gathered on rebates offered to businesses and utilities. Rebates are the guiding force behind people purchasing solar panels and this article adds support to this statement, by giving information on the Emerging Renewables Buydown Program. Landers (2002) states, "...half of the project's cost was covered by the state of California's Emerging Renewables Buydown Program, which was established to promote the development of renewable energy sources." This is a perfect example of the positive effects rebates have on getting Californians to buy more solar panels.

Like the Emerging Renewables Buydown Program (ERBP), Yaqub (2012) gives data on various price and financing plans that make owning solar a more affordable option for Californians. Yaqub

(2012) states, “The Solar Photovoltaic...cost gap with traditional power can be narrowed by proposing a financing method involving a combination of a longer-term purchase power...and lower interest rates.” This is an example of an affordable way to purchase solar. It compares homeowners purchasing them without governmental assistance to those who do receive governmental assistance.

Similar to Yaqub, the article by Hsu (2010) has data gathered on programs created by the Californian Legislature that help homeowners purchase solar panels. However, this particular program that is titled “California Solar Initiative Thermal Program” (CSITP) is for water heating. This study also shows how this program’s \$350 million budget will displace older water heater models that utilize fossil fuels. Closely related to Hsu’s data gathered on the CSITP, Lifsher’s (2007) shows how the California Legislature worked to revamp and fix flawed legislation, so more homeowners could reap the benefits of monetary rebates and health incentives. Tax incentives are important because without them most Californians would not be able to afford solar panels and due to this, there would be a lot of toxins present in the air.

Even though there are a plethora of rebate programs offered to homeowners as mentioned above, there is still little incentive for the homeowners to purchase the solar panel system. This is because Californians are used to getting the majority if not all of their energy from coal burning power plants for cheap. The only way to increase the purchase of solar panels here in Californian is to make the population understand the monetary rebates associated with solar panel purchase. The next section goes over how the California Legislature pushes homeowners and businesses toward solar panel purchase or away from it.

Increased Purchase

Positive health benefits and increased tax incentives, will result in the increased purchase of solar panels here in California. The only way for all Californians to learn about the positive benefits of solar panels is through social media and TV, however, these industries are all about profit and if airing info about these facets will not make them money they will not expose the populace to them. So, this is where politicians step in and either create a department that handles the social media aspect of informing citizens about the positive affect of the panels or they pay established social media and TV industries to air commercials and ads about them.

The California Legislature is necessary in the purchase of the panels because they create legislation that funds their creation or the pass legislation that stops it. In contrast to Cooney and Landers who have data gathered on rebates offered to homeowners and how these rebates cut the cost of the PV panels’ price, Frishberg (2014) discusses how the lack of rebates causes less people to purchase the panels. This article gathered data on how the lack of subsidies keeps Californians from purchasing solar panels. It details how government incentive programs for solar panels are slowly disappearing, and that without these subsidies, renewable energy cannot stand on its own two feet.

Complementary to Frishberg, Stein discusses how legislation impedes the progress of solar power and solar companies. The impediment of rebates, and incentives for solar panels keeps Californians from purchasing them, which in turn keeps pollutants in the air and harms citizens’ repository health. Here in California, the legislature passed a plan to have thirty percent of our energy come from renewable sources, which will help with the respiratory health of the state. However, it is difficult to hit this standard when senators push to pass legislation that stops the building of solar plants in areas where they will be of the most benefit. Stein (2012) states, “Since more than one million acres of the Mojave have already been excluded from...development by a law sponsored by U.S. Senator Diane Feinstein...newly proposed plants have already been dropped.” This is an example of how politicians directly influence solar panel purchases here in California, it gives information on how the adoption of renewable energy policies that are inconsistent with one another negatively affects solar panel purchases here in California.

Ultimately, the California Legislature will play the largest role in the increased purchase of solar panels here in California. As was stated above, the legislation that they create either adds to the purchase and use of solar panels or it takes away. They are the ones who create most if not all the rebate programs that are available to Californians for the purchase and maintenance of the panels. So they are singularly responsible for the monetary incentives associated with the panels. A culmination of understanding that there are a lot of positive health and environmental effects associated with solar panels and California Legislature creating more rebate programs will lead to better respiratory health for Californians, which will lead to a healthier environment all due to the increased purchase of solar panels.

Methodology

The research design will show that people are not familiar with the negative respiratory effects of coal burning power plants and that Californians will not purchase panels without governmental assistance. It will also show that if it does not have any type of positive benefit for themselves or their family, they will not have the motivation to purchase them. The research design is interviews, but with an experimental element incorporated into it. The research will utilize a convenience sample of family and friends because it allowed for easy scheduling of interviews, contact of these individuals, and increased comfort of being recorded.

The interviews were broken up into an experimental group and a treatment group. Each group consists of five people. The treatment group will be exposed to short video that has photos and video clips of China which is the most polluted country in the world today. It depicted children playing on smog infested

beaches, and men and women walking their kids to school through chokingly thick fossil fuel vapors, we also threw in a picture showing a smog caked China from space. The video was created because we hoped to explore the compassion of Californians. In addition to seeing how this introduced information would change people's opinions on these issues. My hope for the compassion generated by the video to transfer to the answers given by the interviewers. The intention behind showing these images is to explore the intricacies of the human psyche and see if some Pavlovian methods will produce varied answers from those of the control group. After they are shown these images within the video, the interview would be then administered. The first group, the control, would only be administered the interview. The main reason we are using an experimental group is to figure out if people are willing to purchase solar panels full price after seeing firsthand the awful effects fossil fuels have on the environment and their individual health.

For the interview, a prewritten script was used to conduct the interviews. The first two questions in

Appendix 1a: Questions for the Control Group

1: If electricity from coal burning power plants were free, would you use the electricity created from coal plants instead of solar-generated electricity?
YES or NO / Why?

2: Would you pay full price for solar panels knowing there are government subsidies and tax breaks available to you?
YES or NO / Why?

3: For the following two questions, rate how much you agree with the written statement.

I care about the negative health effects caused by fossil fuels,

- A: Strongly disagree
- B: Disagree
- C: Neither agree or disagree
- D: Agree
- E: Strongly agree

Why?

4: I care about the negative environmental effects of

fossil fuels

- A: Strongly disagree
- B: Disagree
- C: Neither agree or disagree
- D: Agree
- E: Strongly agree

Why?

5: Are you aware of any solar rebate programs?
YES or NO

If yes what is it called?

Follow up Questions

6: What Political Party do you identify with?

7: What is your education level?

8: What gender are you?

9: What is your race/ethnicity?

10: What is your occupation?

Appendix 1b: Control Group Interviews

Interview 1: Jane

1: No

Why: B/c using the natural resource from the sun is better, and its free, the source is free not the ability to utilize it she understands you have to pay for the equipment to utilize/ harness the power of the sun.

2: No

Why: If you have nay problems with the panels that means you own and maintain it, by subsidizing it the government/ company is responsible for them. If there are leaks or not working proper the company/government is responsible for maintaining them that is why she would not want to own them right out.

3: 5

Why: I don't want to agree with anything that causes health affects for anybody. The average person with no health affects will be affected by it over time and she doesn't want to agree with anything that harms anyone. There are people who have health problems and fossil fuels make these problems worse so she does not want that.

4: 5

Why: Same reason as above answer.

5: No

Currently no, got solar and stopped "looking" "this shows that solar rebate info is not readily available and have to be sought after"

6: Independent

7: BS Degree from University of Phoenix Online

8: Female

9: I don't answer that question

10: Retired

Interview 2: John

1: No

Why: If I had a choice I would rather use solar, I don't buy into global warming. But what I do know is that the solar is a much cleaner source of energy. When I WAS A KID in Santa Ana during the day smog was so bad it burned your eyes, on Fridays the fire department would sound a smog alarm. Due to the programs and restrictions created in CA the air has been cleaned up a lot. There is a connection between fossil fuels and pollution but I don't think Humans have enough of an effect on the universe as a whole to say that we are ruining the planet.

2: No

Why: Because the government has a way of misappropriating funds I have been paying into social security since I was 14 years old. 50 years I have been paying into this program and they are saying its appropriations, every cent the government has belongs to the people, therefor every cent that I can get out of them I

am going to get it. Addicted to spending other people's money.

3: 4

Why: I do believe that we have an effect on the environment but its not to the extent that the government says the have an agenda I don't have an agenda. I want clean air but it comes at a cost, part of the cost is that we might not have clean air because of certain necessities.

4: 4

Why: It's the same as before, some things are just cost of doing business. There are things you can do, the clean air act and improved exhaust systems and catalectic converters, this helps improve the environment without wrecking the economy. I think you can improve the environment without wrecking the economy.

5: Yes

Follow up: I don't know of any titles or program names.

6: Republican

7: High School Diploma

8: Male

9: African American

10: Retired

Interview 3: Richard

1: No

Why: The damage its doing to the environment creates a lot of external costs, its free for me now but not in the future when I have to pay to repair the eco system around it once it destroys it. I rather pay up front and help the environment out even if it costs a little extra.

2: No

Why: Because I am frugal

3: 5

Why: They have a direct impact on my life and will have a direct impact on my children's life.

4: 5

Why: I want to know what is occurring so we learn how to prevent and mitigate it in the future.

5: Yes

Me: Do you know any names? Him: not off the top of my head. I know of companies like solar city but I don't know if they offer rebate programs.

6: N/A

7: College Senior Cal Poly Pomona

8: Male

9: Black

10: Student, and Clerical Work

Interview 4: George

1: No

Why: Even if it's monetary value is free, it would cost us in the long run if we continue to use coal burning plants for an energy source. As much as I would love to

the script were simple yes or no questions, the middle questions had a numbered Likert scale of 1-5: one corresponds to strongly agree and five corresponds to completely disagree. Lastly, there will be one short answer question, with a yes or no option, asking respondents to elaborate if they responded yes. Throughout all these questions, I took an informal style, where I also allowed respondents to expand on their answers however they saw fit. And for the experimental group these interview questions contained a caveat that made sure to ask respondents to elaborate on their feelings about the video, the solar rebate broadcasting system and their answers to some of the close-ended questions.

The first question is “if electricity from coal burning power plants was free would you use them instead of solar?” This question strengthens my research because an interviewee that responds in the

affirmative will show that Californians are money conscious and look for the best deal. This shows that if rebates are offered for the panels and they are able to get a good deal they will jump at the chance of owning solar. The next question will examine if Californians understand the benefits of subsidies, the question is “would you pay full price for solar panels knowing there are subsidies and tax breaks available to you?” An interviewee that does not respond in the affirmative will show that Californians do understand the benefits of subsidies and will utilize them if possible.

The remaining questions are meant to demonstrate that Californians do not care about the negative health and environmental effects caused by the hyper use of fossil fuels. For the question of “how much do you care about the negative health effects caused by fossil fuels?” I expect my respondents to not care

Appendix 1b: Control Group Interviews, Continued

not have to pay for electricity, paying for solar-generated electricity, or any renewable energy source, would benefit not only me, but the rest of the world.

2: No

Why: If I was eligible and approved, I'd avoid paying full price for them. There aren't many that would want to pay full price for anything. If I had the chance for a reduction in price, there would be solar panels all over the roof of my home.

3: 4

Why: The burning of fossil fuels causes multitudes of respiratory problems that plaque many people in the world. I wouldn't want to have to live with chronic bronchitis or any of my children to have to live with other problems because of particulates released from burning fossil fuels.

4: 5

Why: It affects us all. The life we live could get much worse if it's left unchecked.

5: Yes: SCE Solar Incentives

6: Nonpartisan

7: Some College

8: Male

9: American/Hispanic

10: Journeyman Inside Wireman IBEW LU 477

Interview 5: Bob

1: No

Because it provides cleaner energy, coal is bad for the environment, solar is being developed for full coverage for ones home through solar batteries.

2: No

Why: I do not have a lot of money and I want to save where ever I can.

3: 5

Why? Because it causes cancer and lung issues.

4: 5

Because negative effects on the environment will effect us negatively so its important to stray away from it.

5: Yes

I leased Solar panels using a rebate program and know there are multiple out there but do not know of any names.

6: Independent

7: BA Cal State San Bernardino

8: Male

9: Caucasian

10: Store Manager

about the health effects caused by the use of fossil fuels. For the question of “how much do you care about the negative environmental effects of fossil fuels”, I would similarly expect that respondents do not care about the environmental effects. While some Californians might care about the effects on their health and environment, there needs to be some type of monetary subsidy to help with the purchase of solar panels and they must be reminded of the negative effects fossil fuels have on their respiratory health.

The final question examines if the legislature is doing a good enough job in exposing Californians to the plethora of rebates available to them. The question asks “Are you aware of any solar rebate programs? If yes, what is it called?” I fully expected my respondents not to be aware of solar rebate programs, but this highlights the need of the legislature to find a more efficient way of letting Californians know about the various tax incentives available to them for solar panels.

In the next section, I analyze the results of these interviews in great detail. First, I explore how the control group, with no video or stimulus, responded to these questions in my interview. Second, I move to see how the video stimulus potentially changed the answers to some of these questions. Third, we compare and contrast our two groups, we elaborate on how the various answers evolved from the control group to the experimental group. We do this by using quotes and implying inferences based on the data collected. These responses are evidence for my argument that incentives and rebates are necessary for the increased purchase of solar panels here in California. Our control group results will show that without rebates none of the respondents would fathom purchasing solar panels.

Results

Control Group Results

All names listed are aliases we have chosen not to use the subject’s real names to protect their privacy. Even though our initial hypothesis stated that Californian Residents would be unfamiliar with the negative health effects of coal burning power plants, my results showed otherwise. After the completion of the first set of interviews on our control group we realized that all of the subjects would need some type of monetary rebate in order for them to purchase solar panels.

The first topic we aimed to answer was the one associated with Californian’s and their unfamiliarity

with the negative health effects associated with coal burning power plants. All of our subjects understood what a coal burning power plant was, and they were able to come up with a plethora of negative health effects caused by them. This went against our initial hypothesis and we were able to identify the null hypothesis. There is no relationship between Californians not knowing the negative health effects caused by fossil fuels therefor keeping them from purchasing solar panels.

All of my interviewees agreed with the statement “I care about the negative health effects caused by fossil fuels.” One person who really cared was Bob who said “[I] strongly agree, because it causes cancer and lung issues.” This statement shows that he believes there is a correlation between fossil fuels and harm to the government. Bob is a home owner that utilizes solar, he does this for the tax breaks and for the betterment of the environment. George; on the other hand, does not strongly agree. He states, “[I only] agree because the burning of fossil fuels causes multitudes of respiratory problems that plague many people in the world.” He works in the field of solar energy and deals with these rebate programs on a regular basis.

Another individual who cared for the health of individuals was Jane. She stated, “[I] strongly agree, because I don’t want to agree with anything that causes health affects for anybody. The average person with no health effects will be affected by it over time” The compassion for others’ lives is a common theme across our interviewees. However, these same individuals who have compassion for the lives of others would not purchase solar panels without utilization of a monetary rebate. In a perfect world getting rid of fossil fuels and using one hundred percent green energy would be great. But this is reality, and reality is tough and gritty, and things need to be done in an efficient manner. This efficiency would be lost if we switched industries like trucking and shipping to green energy sources and our next interviewee understands this. At first John was indifferent about his answer but after explaining the score to him he states,

“[I] neither agree nor disagree [after explanation] no [I] agree, [because] some things are just the cost of doing business. There are things you can do, the clean air act [for example] and improved exhaust systems, and catalectic converters, this helps improve the environment without wrecking the economy. I think you can improve the environment without wrecking the economy.”

This quote shows that there are a plethora of ways to combat the negative health effects caused by smog and other air pollutants, and it also shows that Californians understand the need for these green energies to work within our non-green society.

Our second statement, “I care about the negative environmental effects of fossil,” was unanimously agreed upon by the interviewees similar to the first statement. Bob stated, “[I] strongly agree, because negative effects on the environment will affect us negatively so it’s important to stray away from it.” This shows that he is passionate about protecting the environment and that he does not want these negative

consequences to affect not only himself but others as well. Similar to Bob, George stated, “I strongly agree, because it affects us all. The life we live could get much worse if it’s left unchecked.” His statement furthers our argument that fossil fuels are harmful to the environment, and that if we don’t find alternative energy sources we will live in an environment that is detrimental to our health.

The common theme amongst the results is awareness. These outcomes show that each individual has a full understanding of the harsh effects fossil fuels have on the environment and individual health. They are all aware that fossil fuels effect the lives of

Appendix 2a: Questions for the Experimental Group

Experimental Group Interviews

Consisted of a Survey (Same as Control Group interview questions) and a two question Interview.

1: If electricity from coal burning power plants were free, would you use the electricity created from coal plants instead of solar-generated electricity?
YES or NO / Why?

2: Would you pay full price for solar panels knowing there are government subsidies and tax breaks available to you?
YES or NO / Why?

3: For the following two questions, rate how much you agree with the written statement.

I care about the negative health effects caused by fossil fuels,

- A: Strongly disagree
- B: Disagree
- C: Neither agree or disagree
- D: Agree
- E: Strongly agree

Why?

4: I care about the negative environmental effects of fossil fuels

- A: Strongly disagree
- B: Disagree
- C: Neither agree or disagree
- D: Agree
- E: Strongly agree

Why?

5: Are you aware of any solar rebate programs?
YES or NO

If yes what is it called?

Follow up Questions

6: What Political Party do you identify with?

7: What is your education level?

8: What gender are you?

9: What is your race/ethnicity?

10: What is your occupation?

Interview Question:

11: What do you think the key Points of video were?

12: Do you think rebates are broadcasted well enough?

Appendix 2b: Experimental Group Interviews

Interview 6: Eliana

1. Yes / Why: Because they were free. I would not have to worry about the financial means.
2. Yes/Why: Because it would give me more incentive to invest.
3. 4 - Why: My health, as well as my future children and grandchildren will be affected.
4. 4 - Why? These effects are detrimental to future generations and we need to worry about the issue of climate change.
5. No
6. Neither/ N/A
7. Senior
8. Female
9. Filipino
10. Tutor
11. To show how bad the environment has gotten, shows the rest of the world how bad things have gotten.
12. No, we advertise more for water conservation than solar issues. Do not look for them, and not advertised well enough, water is key issue.

Interview 7: Rachel

1. No/Why: Because I do not know what a coal burning power plant is.
2. Yes/Why? Because I would want to make sure the company was reputable, don't want to rent the panels and have other requirements it would have to meet.
3. 4/Why? Because if its making us ill, that's a concern.
4. 4/Why? Because if it is hurting our environment it is a concern.
5. No
6. Democratic
7. Associates Degree
8. Female
9. Black
10. Child Care Provider
11. Protecting themselves from pollution in the air.
12. Yes/ because several people have come to the house for solar panels, there is a lot of traffic coming her way to switch to solar panels.

Interview 8: Carl

1. No/Why: Because solar energy is more responsible

and the trade off is not with it.

2. Yes and No / Why: As a taxpayer, I feel that I should take advantage of government offered programs. If there were no rebates available, he would purchase them full price. But if I can save money I will, "its just good since".
3. 4/Why: Because our health is the most important thing we have.
4. 4/Why: Because we are to be good stewards of our planet.
5. Yes/Not sure
6. Democrat
7. MA
8. Male
9. Black
10. Educator
11. Corporations not changing, the people had to change their life styles.
12. Not in a position to purchase so he does not do research on them. But he believes that there is not enough broadcasting of them for people who are in a position to purchase the panels. "This is coming from the perspective of someone who cannot afford or purchase them though."

Interview 9: Jonathan

1. No/Why: Dangerous to our health.
2. Yes/Why: Actually yes and no depends if any of these plans are legit, and their main objective. I would purchase to own it, and avoid leans against my home, and its doable only if you have the money to do so.
3. 4 and 5/Why: Health conscious and the environmental effects.
4. 4 and 5/Why: Environment
5. Yes/Not by name, but through store, magazines and phone calls. (Advertisements)
6. Democrat
7. 14 years (Junior College 2 years)
8. Male
9. Black
10. Correctional Officer
11. Environment, dangers of where we are now, utilizing fossil fuels and coal and the dangers to our health.
12. They are broadcasted well but they are not telling the whole truth and they contain hidden agendas.

Interview 10: Roscoe

1. No/Why: Because is does not help the environment.
2. No/Why: Solar is too expensive.
3. 5/Why: Because it effects your respiratory system.

a lot of people around the world. Even though each individual is aware of the effect some do not feel that there is a strong enough alternative for us to get rid of fossil fuels while other interviewees believe that green energies can supplement fossil fuels.

The second topic we aimed to answer was first to find out if Californians would purchase solar panels because they were good for the environment, not for the monetary gains secondly we measured Californian's and their unfamiliarity with solar rebate programs.

Similar to the first set of answers there is a common theme to this topic, and this theme is frugality. Each individual knew that there were solar rebates available to them. This being said, they all felt it was a little illogical to not utilize these rebates and save money where they could. The second set of answers also has a theme, and it is the media. They all knew that rebates existed but only one of them was able to name one. Even the individuals who purchased solar panels with rebates were unable to give the name of the rebate they used. Because of commercial and radio bombardment, they were unable to remember even one of the rebates they heard or read about.

Even though rebate programs are broadcasted constantly they are not done so in a productive manner, and this 1:5 ratio of knowing a rebate program by name shows it. This is an important facet to figure out because if these individuals knew the names of these programs they would be able to pass them on to co-workers or family members. They would not have to do a search on their phone which sometimes leads to expired or non-existent rebate programs. The government here in California needs to do a better job at exposing its populace to these rebates via social media and TV because the more aware people are the more solar panels will be sold to the population.

The question is, "Would you pay full price for solar panels knowing there are government subsidies

and tax breaks available to you?" Richard states, "No, because I am frugal." This statement goes to show how money directly effects the willingness of individuals to protect the health of the environment and the inhabitants of the environment. It also goes to show that solar panels are too expensive for most Californians to even think about purchasing them full price even if it's good for the environment. George states,

"No, if I was eligible and approved, I'd avoid paying full price for them. There aren't many that would want to pay full price for anything. If I had the chance for a reduction in price, there would be solar panels all over the roof of my home."

This quote speaks volumes about the mind set of many Californians who are trying to save money where they can, when they can. The frugality of Californians and the individuals in our research shows that the environment, even though important, is not number one on their minds: making ends meet is. Shining light on the statement regarding making ends meet is John, who states,

"[B]ecause the government has a way of misappropriating funds, I have been paying into social security since I was 14 years old. [So for] 50 years I have been paying into this program and they are saying its appropriations, every cent the government has belongs to the people, therefore every cent that I can get out of them I am going to get it. [The government is] addicted to spending other people's money."

This individual has paid into social security for over four decades and when he wants to utilize the

Appendix 2b: Control Group Interviews, Continued

4. 5/Why: It effects the ozone layer.
5. No
6. Democrat
7. 1.5 Years College
8. Male
9. Black
10. Retired
11. Air pollution, how it effected the quality of life where they live. Breathing being effected by the environment and the masks show this.
12. No, they are not because they don't show the actual cost of owning solar.

money he has paid into the system he is met with malice and contempt from government officials and lawmakers who call social security welfare. These are real problems from real people, and these problems effect whether they can purchase solar or not. And if they can, these issues effect whether they can do it with or without government rebates. Due to this we were able to identify that our hypothesis does have significance and that government incentives are necessary for more Californians to purchase solar panels.

Furthermore, our control did not answer the way we wanted them to in our first topic regarding the health effects. Each interviewee knew that there are a plethora of negative facets associated with coal burning power plants and fossil fuels. This was a surprise to us because we thought the more aware people are of the negative effects, especially those on their children, they would take measures to mitigate or stop them. But we created this hypothesis via a perfect world, one that does not have financial or property restraints. These two facets can keep even the most environmentally conscious person from being able to purchase solar panels.

Being able to memorize and utilize rebates would help to mitigate the individuals who have monetary restrictions. They would be able to gather information on specific rebates and cross reference it with their finances to see if it is a viable option for them. However, due to the radio and commercial dysentery this is hard to accomplish. These individuals do a quick google search which turns up nonfactual information on rebate programs. This is where the government needs to step in and protect its citizens from fraudulent practices and untruthful information.

Experimental Group Results

The results from our control group were very eye opening, we were able to confirm the null hypothesis between Californians not knowing the negative health effects caused by fossil fuels and them purchasing solar panels. Similarly, we were able to identify a relationship between government incentives and Californians purchasing solar panels. I believe that my respondents asked more questions than a standard interview because the topic of solar panels is not widely accessible. As such, we ran an experimental group to see whether or not additional information would encourage people to respond positively to health effects and rebates, this group consisted of five people and we created a stimulus that we hoped would make the subjects answer the same questions we gave to the control group differently and more

compassionately.

Similar to the control group, all of my interviewees agreed with the statement “I care about the negative health effects caused by fossil fuels.” One of my interviewees was very passionate about the negative effects fossil fuels have on her health and the health of future generations, Elliana states, “My health, as well as my future children and grandchildren will be affected.” This quote is just one of many that highlights the thought process of my convenience sample. It shows that all of them want to live in a place that has clean air and would like to leave their children and grandchildren in a non-toxic environment. Another individual from my experimental group believed health is important and anything that hinders that is deemed dangerous. Rachel states, caring about the negative effects on the environment is important, “because if it’s making us ill, that’s a concern.” This individual who is a homeowner, mother, and business women understands that even though fossil fuels can be used to continue to live the comfortable lifestyles we here in California are used to, there needs to be a way to mitigate or lessen these effects on our respiratory health.

On a similar token, an additional interviewee states, “[I care about the environment] because our health is the most important thing we have.” Similar to a plethora of Californians, Carl is an educator and registered Democrat, who believes individual health is more important than the majority of the facets Californians deem as important. His quote goes to show that a third interviewee feels that respiratory health is an important and desirable quality that the environment helps to provide.

Our first interview questions was, “What do you think the key points of the video were?” The reason we asked this is to get a feeling on how effective or ineffective our video was in changing the opinions of the interviewees, and to test the validity of our stimulus. Eliana states, “[The video] show[s] how bad the environment has gotten, [and it] shows how bad the rest of the world has gotten.” This is a perfect example of what we wanted our stimulus to do, we wanted it to inform people about the harmful effects of the hyper use of fossil fuels, and we wanted this newly gained knowledge to make their answers on the survey/interview fusion differ from the control group. Another issue that my interviews unearthed were that of corporate greed, one of my interviewee’s interpretations of the video was one related to big business. Carl states, “[The video] show[s] corporations not changing, [and] the people having to change their life styles.” This interpretation was an outlier, the majority of our interviewees had a response similar to

Eliana's for this question. However, Carl's viewpoint is extremely valid because the video depicts various images of businesses pumping pollutants into the atmosphere. The degradation of the environment, the poor advertisement for solar panels, and poor advertisement for rebate programs have a lot to do with big business and where their interests lie. However, for the sake of this paper we will not focus on big business.

Our second interview question was, "Do you think rebates are broadcasted well enough?" The reason we asked this question is because we feel that due to the government not informing Californians well enough on rebates and other programs to save money on solar panels they are simply not purchasing them. The main theme for the answers to this question was virtually split: two interviewees answered yes while three answered no. An enthusiastic interviewee by the name of Rachel states, "Yes because several people have come to the house for solar panels, there is a lot of traffic coming [our] way to switch to solar panels." Rachel, who was mentioned previously is a homeowner, and like the quote says, she is visited frequently by individuals asking her and her family to switch to solar. However, as we conducted the rest of our interviews we saw that only a select few are approached and asked to switch to solar.

Eliana, who is not a homeowner, but lives in a traditional none apartment home states, "No, we advertise more for water conservation than solar issues. [I] do not look for [rebates], and [they] are not advertised well enough, water is key issue." This quote shows that there is a divide in who gets offered solar and who does not, be it not enough manpower, economic status, or even where you live there is a clear picking and choosing concept at play here. However, similar to the big business, this paper is not going to dive into this seemingly messy concept. Another one of my interviewees who is not a home owner states.

"[I] am not in a position to purchase so [I] do not do research on them, but [I] believe that there is not enough broadcasting of them for people who are in a position to purchase the panels. [However], this is coming from the perspective of someone who cannot afford or purchase them."

The reason we chose this quote is because it should not matter is you're a homeowner or not all Californians should be exposed to solar rebate programs so they can in turn share this information with their friends or family who do own homes. There is

no need for the constant phone calls or going door to door, all California needs is a social media outlet dedicated to exposing Californians to solar rebate programs. This would be cheaper and will reach more people than the old and traditional ways that are currently in place. As the quotes show these ways are not reaching a wide enough audience.

A paramount survey question we incorporated was, "Would you pay full price for solar panels knowing there are government subsidies and tax breaks available to you?" because we thought that a 'Yes' for this question would show that people care about the environment and are willing to pay full price for the solar panels to protect the health of future generations. Even though 4 out of 5 interviewees answered 'Yes' to this question, only one answered this way out of concern for the environment and our health. Carl states,

"As a taxpayer, I feel that I should take advantage of government offered programs. [However] if there were no rebates available, [I] would purchase them full price. But if I can save money [I] will, it's just good sense."

This quote shows the inner struggle that all Californians have to deal with. On the one hand they want to save money and be financially responsible, but on the other hand they feel that being stewards of the environment is also important. Carl's statement identifies my null hypothesis. There is no relationship between compassion for the environment and purchasing solar panels. Even though all my interviewees believed the environment was important, none of them would be willing to purchase the solar panels full price if rebates were available to them, and none of them would jeopardize their financial status for the better of the environment and individual's respiratory health alone.

On the other side of the spectrum is Jonathan, and his opinion brings us back to a similar theme mentioned in the control group section, this theme is frugality, the answer given goes against the former mentioned theme of frugality. He states,

"Actually yes and no depends if any of these plans are legit, and their main objective. I would purchase to own it, and avoid leans against my home, and this is doable only if you have the money to do so."

His initial answer of 'yes' is what we were hoping for, however, his reasoning behind it is not. We

were hoping that he would want to purchase them full price because of the negative effects fossil fuels have on the environment. This goes against the former mentioned theme of frugality because this individual is willing to pay full price to ensure his property is not taken from him in the long run. The control group interviewees never came to a conclusion like this regarding rebates. Jonathan is an outlier because he knows about solar rebate programs and he is willing to pay full price for solar panels.

The running of an experimental group substantially helped strengthen our research and initial thesis question. By using a stimulus, we were able to come to the conclusion that it is necessary for Californians to be influenced in some way to purchase the panels. In the case of the paper, the stimulus would be rebates. By giving more Californians rebates (stimulus), more of them will go out to purchase solar panels. This is shown in both the control and experimental group minus a couple of outlier interviewees.

Compare and Contrast

Our control group exhibited content and outright anger towards some of our interview questions. All of our control group subjects would not purchase solar panels without government rebates, the reasons for their answers varied though. Some of them believed that the government should provide funding for ventures such as these while others believed that without the rebates purchasing the panels would not be cost effective. This group had one outlier who due to his frugality could not will himself into purchasing the panels without governmental assistance.

The experimental group was more compassionate and all but one of them would purchase the solar panels without rebates because of the negative health effects caused by the hyper use of fossil fuels. They agreed for various reasons, however the main theme of the answers was environmental responsibility. All of the interviewees believed that the extensive use of fossil fuels was detrimental to the environment but one of them, even though very caring about the future of the environment would not purchase the panels mostly based of their price.

We think the differences between the two groups came about after the stimulus was implemented. Our interviewees were asked the same questions minus the two new questions presented to the experimental group, however these two questions were in direct connection with our stimulus. This being said we believe that our video had a lot to do with this transformation, out of the ten people interviewed, four would purchase solar panels full price due to

the positive health effects they provide. The various quotes previously used show the differences between their answers, there is a sharp divide between the frugal consciousness of the control group and the health consciousness of the experimental group.

These differences could be due to their political ideology. In my control group there were three Independents, one Republican, and one declined to answer, the control group had four Democrats and one not affiliated. Due to the heavy amount of non-affiliated identifiers, this might explain why monetary benefits outweighed the health benefits in their minds. And on the other hand due to the overwhelming number of Democrats in the control group they felt a stronger connection and need for health over monetary gain.

Conclusion

Climate change is a threat that affects the American way of life; it gives us longer, hotter summers and displaces people across the country. Making the switch from fossil fuels to renewable energies is one way to survive the changing climate and keep particulate matter out of the air. Our survey and interview questions were aimed at informing the subjects about the above statement. We feel that this was achieved, our control group understood the challenge America has ahead, but climate-wise but they still choose to be frugal and save as much money as they can rather than save the environment. This is very perplexing because without a healthy environment, there will be nowhere to spend the savings accrued through the rebates.

However, as my research showed, there were a plethora of reasons people would not pay full price for panels and one of those reasons is fixed incomes. There were multiple people we interviewed that were on fixed incomes and were unable to pay the money for the panels. But, even if they were working full time, they still would never fathom purchasing them full price simply for the environmental and respiratory benefits. This shows that due to the self-interest of Californians rebates are necessary for the purchase of solar panels. Frishberg states,

“Yet the renewable energy industry, and solar power in particular, has been held up as a prime example of an industry that cannot stand on its own two feet yet, and therefore needs government subsidies and support to gain traction in the market.”

This quote links perfectly to the self-interests of Californians, more solar panels are sold in California than any other state, but since we have the largest population density these numbers are dwarfed by states like New Jersey and Arizona who have lower rates of sale, but have half or even a quarter of Californians population size. Is it that these states care more about the environment? Our research did not lead us to that conclusion but these differences do show that even though solar is a great technology rebates are necessary for the average Californian citizen to purchase them.

Our control group showed what a little Pavlovian chicanery could do to a group of people. We were able to get ninety percent of our subjects to agree that purchasing solar panels full price was worth it due to the positive effects they have on the environment. This was a great triumph, because it shows that if you present solar panels in a different light than we have been in the last decade, you can get people on board the renewable energy train a lot faster. Our stimulus depicted a toxic China, full of citizens who had to cover their faces to walk to the grocery store and children who have to live in a thick chok-

ing smog. These images and the clips associated with them was the trigger mechanism that made four out of five interviewees sympathize and understand the importance of the introduction statement and the relevance of switching our dependence and hyper use of fossil fuels.

The control group proved our hypothesis which was due to the self-interest of Californians rebates are necessary for the purchase of solar panels, and our experimental group gave us hope for the future by confirming the null for that hypothesis. The experimental group showed that Californians have sympathy and compassion towards the environment and the health of others, it showed that there are people out there willing to purchase big ticket items because they are good for something other than their pocket or checkbook. A very passionate individual from our interviews stated, "These effects are detrimental to future generations and we need to worry about the issue[s] of climate change." Eliana is right, we do need to worry about the effects of climate change now, so we can augment the negative effects and implement changes in the 21st century to avoid major hardships on people in the 22nd century.

References

- Batchelder, L. L., Goldberg, Fred T., Jr., & Orszag, P. R. (2006). Efficiency and tax incentives: The case for refundable tax credits. *Stanford Law Review*, 59(1), 23-76.
- Bentham, A. V., Gillingham, K., & Sweeney, J. (2008). Learning-by-doing and the optimal solar policy in California. *The Energy Journal*, 29(3), 131-151.
- Black, A. (2004). Financial payback on California residential solar electric systems. *Solar Energy*, 77(4), 381-388.
- Brown, A. S. (2014). By the numbers: concentrated solar power makes a comeback. *Mechanical Engineering*, 136(4), 30-31.
- Carleyolsen, S. (2006). Tangled in the wires: an assessment of the existing US renewable energy legal framework. *Natural Resources Journal*, 46(3), 759-792.
- Cooney, M., Catherine (2003). News briefs: California strives for 1 mw of solar power. *Environmental Science & Technology*, 37(21), 383-383A.
- Doughman, P. M. (2007). Californian's climate change policy: raising the bar. *Environment*, 49(7), 35-43.
- Frishberg, M. (2014). Solar subsidies help against financing headwinds. *Research Technology Management*, 57(2), 7-8.
- Grover, S. (2007). *Energy, Economic, and Environmental Benefits of the Solar America Initiative*. Portland, Oregon: ECONorthwest.
- Hsu, T. (2010, Jan 22). Rebates for solar water heaters okd; state utility regulators approve a program to offer \$350 million. *Los Angeles Times*.
- Klise, G. T., Johnson, J. L., & Adomatis, S. K., S.R.A. (2013). Valuation of solar photovoltaic systems using a discounted cash flow approach *The Appraisal Journal*, 81(4), 316-331.
- Landers, J. (2002). California sewage plant turns to solar power. *Civil Engineering*, 72(10), 31.
- Lifsher, M. (2007, May 10). Gov. acts to salvage solar in California; legislative deal will lower electricity rates linked to state rebates. installations fell as law's fine print added costs. *Los Angeles Times*.
- Park, S. (2015). State renewable energy governance: policy instruments, markets, or citizens. *Review of Policy Research*, 32(3), 273-296.
- Rogers, John. (2015). "Benefits of renewable energy use." Union of Concerned Scientists.

- Stein, S. (2012). The environmentalist's dilemma. *Policy Review*, (174), 49-62.
- Taylor, M. (2008). Beyond technology-push and demand-pull: lessons from california's solar policy. *Energy Economics*, 30(6), 2829-2854.
- Yaqub, M., Sarkni, S., P.E., & Mazzuchi, T. (2012). Feasibility analysis of solar photovoltaic commercial power generation in California. *Engineering Management Journal*, 24(4), 36-49.
- Yi, H., & Feiock, R. (2014). Renewable energy politics: policy typologies, policy tools, and state deployment of renewables. *Policy Studies Journal*, 42(3), 391-415.
- Zelazo, D., Dai, R., & Mesbahi, M. (2012). An energy management system for off-grid power systems. *Energy Systems*, 3(2), 153-179.



Most interview subjects were enthusiastic supporters of clean energy, but the prohibitive cost of solar panels leave many in the cold.



Steven Tinsley



Steven Tinsley started his undergraduate career at Riverside Community College. It was there that he fell in love with the study of politics. Mr. Tinsley will graduate Magna Cum Laude with a major in political science and a minor in regenerative studies. He is a proud member of the graduating class of 2016. He will go on to be an Organizing Fellow for Students for New American Politics Political Action Committee (“SNAP PAC”) in summer 2016. After his fellowship, he will teach English in China for a year through the American China Culture and Education Foundation (AACCEF), then return to the United States to pursue his Masters in Public Administration.
