Capstone Memo
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Madeline Sarvey, Sofia Abramsky-Sze, Evan Belk, Victoria Manasyan

Part 1

Problem definition and summary of evidence for its existence (Sofia Abramsky-Sze)

The current problem definition is that too few low-income communities in California, defined as census tracts that do not exceed 80% of the median statewide family income, can afford renewable electricity. This problem is at the nexus of environmental and economic injustice. Climate change is occurring at an unprecedented rate and is continuing to lead to devastating social and environmental consequences; policymakers must focus on renewable energy to reduce carbon emissions. California, which aims to be at the forefront of combating climate change, has set goals of 60% renewable energy generation by 2030 and 100% renewable energy generation by 2045 (S.B. 100, 2018).

If the state is to meet this target, it must ensure that all state residents have access to renewable energy, including low-income communities. However, at the same time, it is unreasonable to demand that these communities use renewable energy when the costs of making that switch are often prohibitively high. Environmental action must have its basis in inclusivity and intersectionality. Low-income communities have long been overlooked in policy efforts to move towards sustainability. High solar panel installation costs place an undue financial burden on a large portion of Californians. The question then becomes how to make this type of energy more affordable and more accessible.

According to data obtained from Forbes, in the status quo, solar panel installation can cost upwards of $16,000 upfront, which is an undue financial burden for a large portion of

Californians[1]. The average median statewide per capita income is $38,576, and 80% of that (the given threshold for low-income) would thus be $30,860[2]. Furthermore, millions of Californians face food or housing insecurity. Understandably, these more imminently pressing concerns take precedence over issues such as renewable energy. A huge disparity in renewable energy exists, as solar households have a median annual income of over $100,000, as opposed to the overall median household income of $64,000[3]. Clearly, wealthier communities are more able to afford solar panels and other types of renewable energy.

In the status quo, homeowners in California are financially incentivized to install rooftop solar panels, which environmental advocates view as a significant step in reducing the state's carbon emissions. However, this incentivization is problematic in two key ways, according to the California Public Utilities Commission.[4] First, the financial benefits largely occur after the panels have already been installed, which ignores the fact that lower-income communities likely do not have those funds at their ready disposal and therefore are not able to partake in the implementation of solar panels at the same rate as their wealthier counterparts. Consequently, most of the people who this policy has benefited are actually higher income, and it has arguably exacerbated economic disparities in the realm of renewable energy. Furthermore, the benefits to solar power owners can result in higher power rates for the rest of the population, which is disproportionately felt by poorer communities.

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[1] https://www.forbes.com/advisor/home-improvement/average-cost-of-solar-panels/
[2] https://www.census.gov/quickfacts/CA
[3] https://insideclimatenews.org/news/15042021/inside-clean-energy-rooftop-solar-income-disparity/
[4] https://calmatters.org/commentary/2022/01/newsom-in-the-middle-of-solar-panel-battle/

Explanation of chosen alternatives and criteria (Victoria Manasyan)

The first alternative is to allow current trends to continue undisturbed. California is a national and global leader in renewable energy technology and implementation. An example of this is the law SB 100, which aims to fully transfer California to clean energy by 2045. The legislation specifically outlines a goal to make renewable energy, so it is likely that the cost of solar panel installation will decrease. Ultimately, these natural policy changes that take place and are geared towards renewable energy expansion might be sufficient in addressing the issue of affordability which we have defined.

The next alternative to this problem is requiring new businesses to implement solar panels. While our economy is undergoing constant fluctuations, new commercial infrastructure is being built all the time. Businesses should integrate solar panels into the framework of every new building the same way restrooms and exit signs are included with newly developed property. If commercial buildings such as shopping centers, hotels, business parks, parking lots, warehouses, gyms, post offices etc. were required to include solar panels on their roofs, this alternative could vastly increase the amount of renewable energy being fed into the grid and offset the carbon footprint of business operations. With the increase in renewable energy fed into the grid under this alternative, renewable energy options could benefit society with cheaper costs.

Lastly, a powerful alternative is subsidizing solar panel installationfor low-income communities with a focus on infrastructure. The alternative of subsidizing solar panel installation for low-income communities merits deeper exploration as it could address systemic lack of access to renewable energy sources. This alternative could focus on implementing more sustainable infrastructure, which is interesting as it is oriented towards helping communities at

large rather than individual families. CA is in a budget surplus so we have the funding to subsidize this without reducing funding allocated to other social programs. Also, Californians have been overwhelmingly supportive of other solar subsidy programs, as evidenced by the public outcry following the CPUC's proposal to slash those subsidies in December 2021. Therefore, we see the subsidization of solar panel installation for low-income communities as a viable and effective policy to pursue in order to increase renewable electricity affordability for low income communities.

The criteria selected to assess these alternatives were "maximize equity," "maximize efficiency," and "maximize political feasibility." Focusing first on equity, the outcome of any policy designed to make renewable energy more affordable should be equitable, meaning it improves affordability across a range of income levels and other demographic factors. This will require the policy to be adjustable to a variety of circumstances, as some potential beneficiaries will require more extensive measures than others in order to receive the same benefit. The efficiency of an alternative needs to be successful in meeting the goal of increasing affordable energy. Any alternative that is selected must be aligned with this objective. When considering alternatives, it is also critical to discuss the likelihood that a given alternative would be able to surpass political barriers. Since environmental measures have historically been politically controversial, it is likely that any proposed alternative would face wide scrutiny. Therefore, the projected outcome of each alternative could be predicted through analyzing which similar measures were successful in the past, both at the state and federal level. Political feasibility could be measured by the percent of legislators and government officials who would support/oppose each alternative, as well as the amount of lobbying organizations in favor/against it.

Projected outcomes for chosen alternative (Madeline Sarvey)

At the beginning of the policy analysis, there were a total of three criteria considered: maximizing efficiency, maximizing equity and maximizing political feasibility. However, maximizing efficiency and political feasibility did not result in sufficient outcomes for the policy problem when applied to the three alternatives, whereas maximizing equity resulted in better outcomes. The following section will compare the projected outcomes from applying the selected criterion of maximizing equity to the following three alternatives, [1] Let present trends continue, [2] Require new businesses in CA to implement solar panels, and [3] Subsidizing installation of solar panels for low-income communities. The criterion of maximizing equity was selected because when combining it with the three alternatives, it resulted in the best outcomes for the policy problem.

To recap, the policy problem being focused on is that too few low-income communities in California, defined as census tracts that do not exceed 80% of the median statewide family income, can afford renewable electricity. The next section will discuss how the selected criterion, maximizing equity will be applied to the three alternatives and the projected outcomes from those selected combinations.

Applying the selected criterion to alternative [1] could result in low-income communities being unable to afford renewable electricity. For the present trends in utility rates in California have continually shown to be higher than the national average[5]. Comparing the data of utility costs in California would be a reliable source to help predict this outcome.

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5 https://pv-magazine-usa.com/2021/02/24/californias-rate-inequality-is-likely-to-worsen-as-energy-transition-advances/#:~:text=Residential%20customers%20of%20California%27s%20three,moderate%2Dincome%20people%20the%20most

The outcome projected from applying the selected criterion to alternative [2] could be predicted by analyzing the measurements of renewable energy and nonrenewable energy running through the California grid. One hunch from this criterion-alternative combination is parallel to the original problem definition and may result in small businesses being unable to afford installing solar panels on their place of business. So unless the state provides subsidies for businesses to install solar on their place of business, this combination would not work.

The final alternative of subsidizing installation of solar panels for low-income communities, combined with the selected criterion results in the best and most relevant outcome for the policy problem. In order to predict the outcome, the data to analyze would be the amount of homeowners and renters in California whose income qualifies them as low-income, just to get clear on how many total households are in need of utility bill assistance. The next set of resources to analyze would be the laws around making changes to a rental property. For example, TV satellites are allowed to be installed on most rental properties, what are the rules around that? Are they different, according to the landlord? Or are they determined by the neighborhood? Can those same rules be applied to allowing solar panel installation? Furthermore, can a statewide policy to allow solar installation on rental properties be initiated? Nevertheless, this data would drive the predicted outcomes. If the rules around making changes on rental units are flexible, then allowing low-income renters to participate in renewable energy through a subsidized solar panel installation program could work and policies could be implemented to support that. Therefore, maximizing equity by subsidizing the installation of solar panels for low-income communities, for both renters and homeowners is the criterion-alternative combination we chose.

Reflections on the Eightfold Path Method of Policy Analysis (Evan Belk)

Going through the steps of the Eightfold Path to write Memos 1-3 has given us all a greater familiarity with this method of policy analysis, and has led us to recognize both its strengths and shortcomings in the context of our problem and chosen policy area. The pointers given as part of Step 1 were of great help, pushing us to come up with a problem definition that was clear, concise, and broad enough that it allowed for a variety of potential policy solutions. This included recognizing the difference between affordability and accessibility (of renewable electricity) and choosing to focus on the former.

Step 2 was likewise very helpful, as it cautioned us to think critically about what information we really needed to have in order to proceed, instead of wasting time aimlessly looking through sources that seemed somewhat related to our topic. We then arrived at Step 3 and found it to be somewhat enjoyable, as it gave us the freedom to be able to throw a lot of policy alternatives on the table without having to worry yet which were the best or most feasible ones. It makes a lot of sense for this step to be situated where it is in the Eightfold Path, as by this point the policy analyst has a clear definition of the problem and has done some research on it, so probably has some ideas floating around of potential ways to address it. One area where we found the Eightfold Path to be slightly lacking was Step 4, specifically with regard to "equality, equity, fairness, justice" criteria, which are all lumped together in a rather short section. One of our three chosen criteria was "maximize equity," especially important given that our problem falls into the overlapping areas of economic, social, and environmental injustice. It would have been nice to have more guidance on how to evaluate outcomes in terms of this criterion. One bit of advice given in Step 4 that provided clarity was the guidance to select a "primary criterion," which Bardach & Patashnik say is "to be maximized (or minimized)" and is typically "the obverse of your problem definition" (2020). Our primary criterion was "maximize efficiency,"

meaning how efficiently the projected outcome improved affordability of renewable electricity for low income communities.

When we finally began filling in the cells of our outcomes matrix for Step 5, it was essential to think about what our "base case" would be. We decided to have the base case be the outcomes of "let present trends continue," one of our alternatives. Step 6 was a challenging step, due to the sometimes counterintuitive way of thinking and speaking about trade-offs. Had it not been for an explicit warning given by Bardach & Patashnik in this step, we would all have written about the trade-offs between alternatives rather than between projected outcomes. One thing that seemed to be lacking in the text for this step was a concrete example of how to go about establishing commensurability across criteria. With our criteria of "maximize efficiency," "maximize equity," and "maximize political feasibility," it would have been a daunting task to figure out some metric that could be used for all of those things. Such a metric would need to be decided on and calculated for each projected outcome in order to truly confront the trade-offs rather than just providing qualitative reasoning for why a certain alternative is projected to be the winner.

Part 2

https://sarveycreative.com/solar/

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