

Building Retrofits for Solar Energy

What is this measure?

This measure would provide incentive funding for residential and/or commercial rooftop solar. Helping to fund local renewable energy projects will help achieve the state's renewable energy goals identified in the revised scoping plan, and solar energy is a good fit for the Central Coast climate. Solar photovoltaic prices have dropped in recent years, and this sector offers opportunities for local jobs and long-term energy cost savings for residents and businesses.

Why would someone do this as mitigation?

Solar photovoltaics (PV) projects are a very straightforward way to reduce the carbon intensity of the electricity used at a specific location, or to reduce the carbon intensity of the electricity that is available "on the grid". Manufacturing and transport aside, solar PV is 100% renewable, and emits no GHGs when in use. When combined with battery storage, solar PV projects can enable a specific location or user to essentially operate in a carbon neutral way, in terms of electricity usage. The concept of using battery storage to reduce GHG emissions from the utility sector is also discussed in a separate paper.

Increasing renewable energy generation is a key component of California's GHG reduction and climate planning goals.¹

How would you implement this measure?

Implementing Agency

This type of measure could be implemented in a variety of ways:

- A local agency, such as a city or the county, could provide a monetary incentive for qualifying projects that apply for building permits. Incentives could also be reserved for low-income applicants, or for projects located in certain designated low income and/or disadvantaged communities.
- A local housing authority, or a nonprofit organization that manages government-owned or subsidized housing, could apply mitigation funds directly to projects that add solar PV to their properties. This type of direct approach has the advantage of having access to energy usage data, to support the calculations of GHG reductions.
- A city or county could include a measure in a climate action plan that focuses on installing solar PV.²
- A local agency or organization could design a program that utilizes group purchasing power to economize on equipment and installation costs, and also offers a monetary incentive for project applicants. Such a program could also be designed to target low-income applicants, or for projects located in certain designated low-income and/or disadvantaged communities.

¹ California Senate Bill 350 calls for an increase in California's use of renewable energy to a 50% renewable portfolio standard by 2030, www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf

² For example, Santa Barbara County has adopted an Energy Climate and Action Plan: longrange.sbcountyplanning.org/programs/climateactionstrategy/climateaction.php

Enforceability

If this measure were implemented for CEQA mitigation, it would likely be enforced through conditions of approval, and an implementing agency or organization would be held accountable for developing a plan and following through on the spending of mitigation funds on qualifying projects. A binding document such as a memorandum of understanding or a grant agreement, between the provider of the funds and the implementing entity, would ensure that the program is run properly, and that funds are used to yield the expected GHG reductions.

Interaction with Existing Programs

Solar photovoltaics are already an important part of Santa Barbara County and California's energy supply, and many programs and incentives have been implemented to encourage the installation and use of solar PV.

- California established a Renewable Portfolio Standard (RPS) in 2002 under Senate Bill 1078; the standard has been updated twice in 2006 and 2011.³ It sets ambitious goals for the procurement of renewable energy; solar projects are a very important component. The California Public Utilities Commission implements the RPS, and regulates and monitors utilities to ensure that the RPS goals are being reached.
- Go Solar California is a state initiative that offers solar installation rebates for customers serviced by Southern California Edison, Pacific Gas & Electric, and San Diego Gas & Electric. Currently, rebate funds for this program have been exhausted.⁴
- The local Community Environmental Council has implemented several Solarize programs in Santa Barbara County and other areas that offer favorable group purchasing rates for equipment, and information on installation contractors.⁵
- There are currently federal income tax credits for qualifying solar projects.⁶

How would you quantify the benefits?

The California Air Resources Board has developed a *Greenhouse Gas Greenhouse Gas Quantification Methodology for the Department of Community Services and Development Low-Income Weatherization Program Single-Family Energy Efficiency & Solar Photovoltaics*.⁷

This methodology provides a separate calculation for solar PV projects. It assumes a project life of 30 years, and that the amount of power generated by the installation degrades at a rate of 0.5% per year. The calculation is a straightforward one that considers the estimated power output of the solar panels, and multiplies that output by the average GHG intensity of grid power provided by the local utility to yield the amount of GHG reductions.

³ www.cpuc.ca.gov/renewables/

⁴ www.gosolarcalifornia.ca.gov/csi/index.php

⁵ www.cecsb.org/go-solar/solarize/solarize-sb/

⁶ energystar.zendesk.com/hc/en-us/articles/216375477

⁷ www.arb.ca.gov/cc/capandtrade/auctionproceeds/csd_liwp_finalqm_15-16.pdf

Questions for Discussion

- Which agency or nonprofit group would be best suited to implement this measure?
- Would it be preferable to implement this as an incentive program, or to directly implement projects?
- Should projects focus on rooftop solar only, or also include standalone solar arrays?
- What locations in Santa Barbara County are particularly suitable for rooftop or standalone solar projects (with available land, or buildings with high energy usage)?

Input Received

Comments Made at Workshops

Opportunities:

- Combine installing solar PV with energy efficiency retrofits and battery storage.
- Install solar PV on municipal buildings and schools (roofs and covered parking).
- Oil companies can mitigate GHG emissions onsite by installing solar panels in their oil fields. The oil companies can then use the solar power that they generate for on-site production instead of relying on fossil fuel-fired combustion, and sell the excess solar energy back to the grid. This could also be combined with battery storage on-site.
- Solar-plus-storage can boost local resiliency and preparedness in case of a natural disaster.
 - a. This is an important consideration for critical facilities like hospitals, schools and government buildings.
 - b. Can be used in place of emergency diesel generators, adding resiliency and reducing GHG emissions.

Challenges:

- Existing building stock in the County have older roofs and need to be retrofitted before solar PV can be installed; this can potentially add to the cost of projects.
- Large solar arrays and rooftop solar aren't visually appealing and can affect the character of the buildings/roofs in Santa Barbara.
- There is a need to address energy efficiency in addition to solar (energy efficiency retrofit first, and then install solar PV).
- Renters and multifamily housing are an untapped potential for implementing solar but have unique challenges; property owners are responsible for costs, while tenants enjoy benefits.

Potential Implementers:

- Grid Alternatives, www.gridalternatives.org
- Community Environmental Council
- Housing Authority of the City of Santa Barbara

Comments Submitted in Writing

The Community Environmental Council (CEC) submitted a letter on July 5, 2017.⁸ The full letter is available on the District's website. Below is a summary of the comments from the letter related to solar retrofits:

- Encourage staff to consider a longer mitigation life of 20 to 25 years. It is common for solar warranties to be 25 years and solar power purchase agreements (PPAs) to be 20 years.
- It is hard to prove additionality with this measure since some individuals and organizations would move forward with retrofits without incentives for solar improvements.
- The cost of solar retrofits presents financial barriers to lower-income households, as documented in a recent report from the California Energy Commission.⁹
 - a. Prioritizing incentives for lower-income households or areas, such as those designated by CARB for the implementation of Assembly Bill 1550, would increase the likelihood of solar offsets achieving additional GHG emission reductions.¹⁰
- If utilized for a residential program, the APCD could consider tying the rebate to solar group purchasing programs (such as CEC's Solarize program) that offer a limited time discount on new home solar systems. Group purchase programs include community-based marketing and outreach that could create extra buzz about a solar incentive for GHG mitigation, possibly leading some people to install solar who wouldn't do so otherwise.
- Additional co-benefits could be realized if the program prioritized nonprofits or schools instead of individuals. Larger arrays for these types of facilities may see lower costs and thus a better return on GHG reductions per dollar of mitigation investment.

Additional District Discussion

- We estimated GHG emission reductions for a hypothetical "battery + solar" combination project in a separate spreadsheet tab and included it in the revised spreadsheet.¹¹
- Consistent with the CARB methodology, our example assumes a project life of 30 years for Solar PV installations.

⁸ Comments from the Community Environmental Council (CEC) were received July 5, 2017 (prior to the workshops). Some of the comments were already addressed in the workshop materials, see www.ourair.org/ghgmitigation-sbc/.

⁹ [SB 350 Low-Income Barriers Study, Part A](#) – Commission Final Report. Adopted December 14, 2016.

¹⁰ [Disadvantaged and Low-income Communities Investments](#) - California Air Resources Board. Last reviewed April 20, 2017.

¹¹ See spreadsheet at www.ourair.org/ghgmitigation-sbc/.