
**SENATE COMMITTEE ON ENERGY, UTILITIES AND
COMMUNICATIONS**
Senator Steven Bradford, Chair
2023 - 2024 Regular

Bill No: SB 688 **Hearing Date:** 4/10/2023
Author: Padilla
Version: 3/20/2023 Amended
Urgency: No **Fiscal:** Yes
Consultant: Nidia Bautista

SUBJECT: Agrivoltaic systems: grant funding

DIGEST: This bill requires the California Energy Commission (CEC), upon appropriation, to award grants for agrivoltaic systems – solar energy systems on agricultural land – as specified. Additionally, this bill includes agrivoltaic system as an agriculture use for purposes of the Williamson Act and its related taxation benefits.

ANALYSIS:

Existing law:

- 1) Establishes the 100 Percent Clean Energy Act of 2018 as a policy of the state that eligible renewable energy resources and zero-carbon resources supply 100 percent of retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. (Public Utilities Code §454.53)
- 2) Establishes the California Renewable Portfolio Standard (RPS) Program which requires investor-owned utilities (IOUs), publicly owned utilities (POUs), community choice aggregators (CCAs), and energy service providers (ESPs) to increase purchases of renewable energy such that they each procure a minimum quantity of electricity products from eligible renewable energy resources, as defined, so that the total kilowatt hours (kWh) of those products sold to their retail end-use customers achieves 25 percent of retail sales by December 31, 2016, 33 percent by December 31, 2020, 44 percent by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030. (Public Utilities Code §§399.11, 399.13, 399.15, 399.30)
- 3) Establishes the State Energy Resources Conservation and Development Commission (also known as the California Energy Commission (CEC)), consisting of five members appointed by the governor, and specifies the duties of the CEC. Requires the CEC to undertake various actions in furtherance of

meeting the state's clean energy and pollution reduction objectives. (Public Resources Code §25200 et. seq.)

- 4) Requires the CEC to assess trends in energy consumption and analyze the social, economic, and environmental consequences of these trends. The CEC must establish energy conservation measures, including building and appliance energy efficiency standards, and recommend additional conservation measures to the governor and the Legislature. (Public Resources Code §25216)
- 5) Establishes the Williamson Act and authorizes a city or county to contract with a landowner to limit the use of land devoted to agricultural use or located in an agricultural preserve designated by the city or county in exchange for reduced property tax assessments. (Government Code § 51201)

This bill:

Relevant to establishing a grant program for agrivoltaics:

- 1) Requires, contingent upon an appropriation for its purposes, the CEC to award grants for agrivoltaic system projects to support research and development in agrivoltaic systems and study the impacts of agrivoltaic systems on farms and on electricity generated from solar panels.
- 2) Requires the CEC, in consultation with the Department of Food and Agriculture, to develop guidelines defining agrivoltaic systems and criteria for determining a project's eligibility for grant funding.
- 3) Requires the CEC to conduct an evaluation of the grant program, as specified, and make the evaluation publicly available on its internet website.

Relevant to amending the Williamson Act:

- 4) Specifies that the use of land for an agrivoltaic system pursuant to this bill's provisions is an "agricultural use" for purposes of the Williamson Act.
- 5) Makes numerous non-substantive changes to the provision related to the Williamson Act.

Background

SB 100 renewable energy and zero-emissions target. In 2018, the Legislature adopted SB 100 (De León, Chapter 312, Statutes of 2018) to establish a target for

renewable and zero-carbon resources to supply 100 percent of retail sales and electricity serving all state agencies by 2045. The statute calls upon the CEC, California Public Utilities Commission (CPUC), and California Air Resources Board (CARB) (collectively: the Joint Agencies) to use programs under existing law to achieve this policy and issue a joint policy report. The Joint Agency report was finalized in March 2021, and notes it “is intended to be a first step in an iterative and ongoing effort to assess barriers and opportunities to implementing the 100 percent clean electricity policy.” The Joint Agency report forecasts system needs out 24 years to 2045, but notes “the preliminary findings are intended to inform state planning and are not intended as a comprehensive *nor prescriptive* roadmap to 2045...future work will delve deeper into critical topics such as system reliability and land use and further address energy equity and workforce needs.” The report finds the likely need to triple solar photovoltaic energy procurement (includes both in-state and out-of-state resources) to meet the 2045 goal, from about 12.5 gigawatts (GW) in 2019 to nearly 70 GW in 2045 – a build out of just under 3 GW of solar energy annually. The report acknowledges the many potential impacts of the build-out of energy resources to achieve the SB 100 target, including the need to address impacts to land-use, both working and natural lands.

A rose by any other name? Agrivoltaic is a term intended to encompass the co-location of agriculture working lands and solar photovoltaic energy resources. While the siting of solar energy on farm land has existed for decades, agrivoltaic projects, generally, intend to explore how the dual-use of the land can benefit both energy generation and the growth of crops and improve overall land productivity. In the case of agrivoltaic projects, agricultural crops are grown beneath and/or in between rows of solar panels, so as to utilize the same land for both purposes. These projects tend to consider and explore the role of light, including the shade and light spectra provided by solar panels and their impacts on crop production, livestock grazing, and pollinator habitat. According to the U.S. Department of Energy (DOE), in the United States, less than two percent of solar energy projects are co-located with crops or pollinator habitats.

California’s Renewable Energy for Agriculture Program funding. The Renewable Energy for Agriculture Program (REAP), funded under AB 109 (Ting, Chapter 249, Statutes of 2017), provides grants for the installation of onsite renewable energy on agricultural operations in California, to reduce greenhouse gas (GHG) emissions and support the state’s efforts to reduce greenhouse gas emissions. The goals of the program include accelerating the adoption of onsite renewable energy technologies on agricultural operations to accomplish a number of benefits including reducing GHG emissions, reducing demand for fossil fuels and grid electricity, and providing additional co-benefits to local communities. The program received \$10 million from the Greenhouse Gas Reduction Fund. The CEC awarded

45 grants across 18 counties, representing \$9.5 million, with grants ranging from \$25,000-\$350,000. In total, the program funded renewable energy system size ranges from 11.5 kW (kilowatts) to about 1 megawatt (MW). All funding has been awarded for the program and no additional funding remains.

California also provides funding through the State Water Efficiency and Enhancement Program (SWEEP) which provides financial assistance in the form of grants to implement irrigation systems that reduce GHG and save water on California agricultural operations. Eligible projects include those that use solar energy to operate the irrigation systems.

U.S. Department of Energy funding. At the federal level, the DOE in December 2022 announced \$8 million for six solar energy research projects across six states and the District of Columbia as part of the Foundational Agrivoltaic Research for Megawatt Scale (FARMS) program that supports agrivoltaics. According to the DOE website: The FARMS program supports agrivoltaics in the co-location of agricultural production and solar energy generation on the same land—and aims to reduce barriers to utility-and community-scale solar energy deployment while maximizing benefits for farmers and local communities. The six projects selected are all outside California, with the closest located in Arizona. All of the six projects, except one, were awarded to universities in order to research the role of agrivoltaics. The projects selected for FARMS build on ongoing DOE-funded research, which is focused on conducting research, analysis, and dissemination of agrivoltaics best practices.

Inflation Reduction Act funding. Additionally, as part of federal IRA funds, the federal government is funding the Rural Energy for America Program Renewable Energy Systems & Energy Efficiency (REAP). The federal REAP program aims to distribute \$1.7 billion over five years, 2022-2027, to support renewable energy systems in rural areas. Grant funding is available from \$2,500 up to \$1 million per grant to help fund biomass, geothermal, hydropower, hydrogen, small and large wind generation, ocean generation, and both large and small solar energy.

About the Williamson Act. The Williamson Act, also known as the California Land Conservation Act of 1965, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments which are much lower than normal because they are based upon farming and open space uses as opposed to full market value. These contracts renew automatically each year, unless the contract is ended through nonrenewal, cancellation, or termination. This bill adds agrivoltaics to the definition of agriculture use within the Williamson Act, thereby authorizing contracts between

local governments and private landowners to access the property tax benefits afforded by the Act.

Need for agrivoltaic research in California. Agrivoltaic projects can be crop and climate dependent, as noted by some of the supporters, related studies, and DOE projects. While California does seem to have a few agrivoltaic projects sprinkled throughout the state, based on DOE maps, there do not seem to be many given the importance of agriculture and renewable energy in the state. In this regard, the proposed grant program could help better inform the state's efforts to site solar energy and support agriculture operations with specific research in California, ideally encompassing the diverse regions of the state (funding dependent).

Amendments. *The author and committee may wish to amend this bill to:*

- *Ensure grants are made available in different regions with different climate conditions in the state (funding dependent).*
- *Include a definition for agrivoltaic to encompass the dual-use of the land.*
- *Require the CEC evaluation provides recommendations regarding crop layout and solar system designs.*

Double Referral. This bill is also referred to the Senate Committee on Agriculture.

Prior/Related Legislation

SB 1489 (Committee on Governance and Finance, Chapter 427, Statutes of 2022) made several minor changes to state laws governing local governments' powers and duties, including re-instating the solar use easements originally established by SB 618 (see below).

SB 100 (De León, Chapter 312, Statutes of 2018) established the 100 Percent Clean Energy Act of 2018 as a policy of the state that eligible renewable energy resources and zero-carbon resources supply 100 percent of retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. The bill also increased the state's RPS to 60 percent of retail sales by December 31, 2030 and requires all state agencies to incorporate these targets into their relevant planning.

AB 109 (Ting, Chapter 249, Statutes of 2017) Budget Act of 2017 appropriated six million dollars to fund renewable energy projects in the agriculture sector from the Greenhouse Gas Reduction Fund.

SB 856 (Budget and Fiscal Review Committee, Chapter 30, Statutes of 2018) appropriated four million dollars to fund renewable energy projects in the agriculture sector from the Greenhouse Gas Reduction Fund.

SB 618 (Wolk, Chapter 596, Statutes of 2011) authorized a city or county and a landowner to simultaneously rescind a Williamson Act contract on marginally productive or physically impaired lands and enter into a solar-use easement that restricts the use of land to photovoltaic solar facilities, as specified.

FISCAL EFFECT: Appropriation: No Fiscal Com.: Yes Local: No

SUPPORT:

American Farmland Trust
Climate Action California
Community Alliance with Family Farmers, if amended

OPPOSITION:

None received

ARGUMENTS IN SUPPORT: According to the author:

Including agrivoltaic projects in California would help farmers improve working conditions for workers, shield crops from extreme weather, generate energy needed around their farming operations, and offers an additional revenue stream to farmers. As our summers get hotter and our winters colder, it is vital that we protect our agricultural workforce from these climate change consequences. Agrivoltaics are an exciting tool that benefits farmers and workers alike. Establishing this pilot program will serve as the test case for California, paving the way to future projects and improvements.

-- END --